PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

JULY 1, 2020 – JUNE 30, 2021

YUKON RIVER, Y.T.
CHINOOK, FALL CHUM, AND COHO

Oncorhynchus keta

Fisheries and Oceans Canada | Pêches et Océans Canada | Canada

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

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DEPARTMENT CONTACTS

A more comprehensive list of contacts can be found online at:
http://www.dfo-mpo.gc.ca/contact/index-eng.htm

24 Hour Recorded Information (Commercial)
Vancouver ..... (604) 666-2828
Toll Free 1-888-431-3474

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

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

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

REGIONAL HEADQUARTERS

Regional Director, Fisheries Management Branch
Andrew Thomson ..... (604) 666-0753

Director, Resource Management, Program Delivery
Neil Davis ..... (604) 666-0115

Director of Salmon Management and Client Services
Jennifer Nener ..... (604) 666-0789

Regional Resource Manager – Salmon
Jeff Grout ..... (604) 666-0497

Regional Salmon Officer
Ge Li ..... (604) 666-3935

Regional Salmon Officer
Cynthia Johnston ..... (604) 658-2841

Project Manager – Salmon Team
Marla Maxwell.....(604) 666-9993

Regional Recreational Fisheries Coordinator
Carole Eros .....(604) 666-3271

Regional Director, Conservation and Protection
Mike Carlson .....(604) 666-0604

Regional Director, Ecosystem Management
Cheryl Webb .....(604) 666-6532

Director, Aquaculture Management Division
Allison Webb .....(604) 666-7009

Pacific Fishery Licence Unit (By appointment only)
200-401 Burrard Street
Vancouver, B.C. V6C 3S4
Toll-Free: 1-877-535-7307
Email fishing-peche@dfo-mpo.gc.ca

YUKON RIVER OPERATIONAL AREA

Director, Yukon Transboundary Rivers
Steve Gotch .....(867) 393-6719

Manager, Treaties, Fisheries and Salmon Enhancement (Yukon River)
Steve Smith .....(867) 393-6840

Fishery Manager (Yukon River)
Jesse Trerice .....(867) 393-6815

Detachment Supervisor, Conservation & Protection
Richard Christiansen.....(867) 393-6820

Senior Stock Assessment Biologist (Yukon River – Chinook Salmon)
Michael Folkes.....(867) 393-6865

Senior Stock Assessment Biologist (Yukon River – Chum/Coho Salmon)
Oliver Barker / Chris Carli ..... (867) 393-6720

24 Hour Recorded Information (Salmon Hot Line)
Whitehorse ..... (867) 393-3133
Toll Free ..... (877) 725-6662

OTHER KEY CONTACTS

Yukon Salmon Sub-Committee (YSSC) Office..... (867) 393-6725

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

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FISHERIES AND OCEANS CANADA - GENERAL INFORMATION

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

Our Vision, Latest News, Current Topics

Twitter:
DFO Pacific: @DFO_Pacific
En Français: @MPO_Pacifique

ACTS, ORDERS, AND REGULATIONS

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

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

REPORTS AND PUBLICATIONS

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

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

FISHERIES AND OCEANS CANADA LIBRARY

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

Fisheries and Oceans Canada online library catalogue

PACIFIC SALMON TREATY

http://www.psc.org

Background information; full text of the treaty

PACIFIC REGION - GENERAL

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

General information, Area information, Latest news, Current topics

POLICIES, REPORTS AND PROGRAMS

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

Reports and Discussion Papers, New Directions Policy Series, Agreements

OCEANS PROGRAM

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

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

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

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http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html
or http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/index-eng.htm

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

AQUACULTURE MANAGEMENT

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

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

RECREATIONAL FISHERIES

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

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

COMMERCIAL FISHERIES

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

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

INITIATIVE TO UPDATE THE COMMERCIAL SALMON ALLOCATION FRAMEWORK

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

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

FISHERIES NOTICES

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

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

INTEGRATED FISHERY MANAGEMENT PLANS

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

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

SALMON TEST FISHERY - PACIFIC REGION

http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/research-recherche/testfishery-pechedessai-eng.html

Definition, description, location and target stocks

LICENCING

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

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

NATIONAL ON-LINE LICENSING SYSTEM (NOLS)

https://fishing-peche.dfo-mpo.gc.ca
E-mail: fishing-peche@dfo-mpo.gc.ca
(Please include your name and the DFO Region in which you are located.)
Telephone: 1-877-535-7307
Fax: 613-990-1866
TTY: 1-800-465-7735

SALMON

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

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

FRASER RIVER/BC INTERIOR AREA RESOURCE MANAGEMENT AND STOCK ASSESSMENT

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

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

NORTH COAST RESOURCE MANAGEMENT

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

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http://www.dfo-mpo.gc.ca/media/index-eng.htm

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

CONSULTATION SECRETARIAT

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

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

PUBLICATIONS CATALOGUE

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

Information booklets and fact sheets available through Communications branch

SPECIES AT RISK ACT (SARA)

http://www.registrelep-sararegistry.gc.ca/species/default_e.cfm

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

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

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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

http://yukonriverpanel.com/salmon/

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

YUKON SALMON SUB-COMMITTEE

http://www.yssc.ca/

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

GLOSSARY AND LIST OF ACRONYMS

A comprehensive glossary is available online at:
http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/gloss-eng.html

LIST OF ACRONYMS USED IN THIS PLAN:

ACRONYM	PHRASE
ABM	Abundance-Based Management
ADF&G	Alaska Department of Fish and Game
AFS	Aboriginal Fisheries Strategy
ATK	Aboriginal Traditional Knowledge
ATP	Allocation Transfer Program
BASIS	Bering-Aleutian Salmon International Survey
BNA	Basic Needs Allocation
C&P	Conservation and Protection unit
COSEWIC	Committee for the Status of Endangered Wildlife in Canada
CWT	Coded Wire Tag
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
IK	Indigenous Knowledge
IYRSA	Interim Yukon River Salmon Agreement
JTC	Joint Technical Committee of the Yukon River U.S./Canada Panel
MRP	Mark-Recapture Program
NMFS	National Marine Fisheries Service (U.S.)
NOLS	National Online Licencing System
PSARC	Pacific Scientific Advice Review Committee
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
R/S	Return per spawner
RCMP	Royal Canadian Mounted Police
RRC	Renewable Resources Council
SARA	Species at Risk Act
SEP	Salmon Enhancement Program
SFF	Sustainable Fisheries Framework
SPA	Scale Pattern Analysis
S/R	Stock/Recruitment

TAC	Total Allowable Catch
TEK	Traditional Ecological Knowledge
UFA	Umbrella Final Agreement of the Yukon First Nations Land Claims
USF&WS	United States Fish and Wildlife Service
WSP	Wild Salmon Policy
YRP	Yukon River Panel
YRSA	Yukon River Salmon Agreement
YSCCC	Yukon Salmon Conservation Catch Card
YSSC	Yukon Salmon Sub-Committee

FORWARD

The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the specific objectives and requirements for the management of Canadian salmon fisheries in the Yukon River, 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 (YSSC)), First Nation Governments, harvesters, and other interested parties. This IFMP provides a common understanding of the basic "rules" for the sustainable management of the salmon 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 – consistent with the intergovernmental co-management approach established between Yukon First Nation Governments and Fisheries and Oceans Canada.

NEW FOR 2020

Highlights / Key Changes for Yukon River Salmon Fisheries

Reminder: Yukon Salmon Conservation Catch Card Only Available Online

- Anglers who plan to fish for salmon in the Yukon (Yukon River mainstem and all tributaries as well as the Alsek River watershed) must purchase their Salmon Conservation Catch Card online (http://www.pac.dfo-mpo.gc.ca/yukon/rec/catchcard-carteprises-eng.html). Salmon Conservation Catch Cards are not available for purchase over the counter from vendors.

COVID-19 PUBLIC HEALTH MEASURES: The issuance of Yukon Salmon Conservation Catch Cards is limited to Yukon or Canadian residents (including Seniors, Minors and First Nation and Inuvialuit) only while restrictions on non-essential international travel are in effect.

Chinook Salmon in the Yukon River Mainstem

- Outlook is for a run that is below the historical average.
- A partial to full allocation for First Nation subsistence fisheries is anticipated.
- No harvest opportunities are anticipated in the public angling fishery.
- No directed commercial or domestic fishery opportunities are anticipated.

Fall Chum Salmon in the Yukon River Mainstem

- The outlook is for an average run.
- A full allocation for First Nation subsistence fisheries is anticipated.
- Opportunities for harvest in the public angling fishery is anticipated.
- Directed commercial and domestic fishery opportunities are anticipated.
- Any Chinook salmon caught incidentally in commercial or domestic Chum fisheries must be released.
- Gillnet mesh size restricted to maximum 152.4 mm (6-inch) mesh in Commercial and Domestic fisheries to reduce likelihood of interception of Chinook salmon.

Chinook Salmon in the Porcupine River

- A partial to full allocation for the First Nation subsistence fishery is anticipated.
- No harvest opportunities are anticipated in the public angling fishery.

Fall Chum Salmon in the Porcupine River

- The outlook is for a weak run.
- A partial allocation to the First Nation subsistence fishery is anticipated.
- No harvest opportunities are anticipated in the public angling fishery.

Coho Salmon in the Porcupine River

- The outlook is for an average to above-average run.
- A full allocation to the First Nation subsistence fishery is anticipated.

1 OVERVIEW

1.1 INTRODUCTION

The Yukon River Salmon Integrated Fisheries Management Plan (IFMP) covers the period July 1, 2020 to June 30, 2021.

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. A number of governments and mandated bodies are also involved in the management of salmon harvest in Canadian portion of the Yukon River. The Yukon Salmon Sub-Committee (YSSC) 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 YSSC 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 Fisheries and Oceans Canada and to Yukon First Nations on matters related to salmon. The YSSC 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 YSSC through the provision of technical expertise and participation in the First Nation consultation and public meeting processes.

When adult Canadian-origin Yukon River salmon return to their natal streams to spawn, they migrate through Alaska before reaching Canada and their spawning grounds. Fisheries occur on both sides of the international border. 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* YSSC 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 YSSC and Yukon First Nations and cover a one-year span. It concerns the

management strategies for Chinook, fall Chum[1], and Coho 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 harvesters, processors and other interested parties about the expected run sizes, management considerations, and plans.

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. DFO and the YSSC will continue to consult with First Nations, commercial, domestic[2] 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. Feedback on this IFMP is encouraged so that future plans can be made as useful as possible to stakeholders.

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 have 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 the persistence of these populations, 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.

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[1] 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.

[2] The Yukon domestic fishery is a non-aboriginal subsistence fishery.

1.3 LOCATION OF FISHERY

This IFMP describes the Chinook fall Chum, and Coho salmon fisheries in the Canadian portion of the Yukon River watershed (see Map Appendix 4).

1.4 TYPES OF FISHERY, PARTICIPANTS AND CHARACTERISTICS

This plan describes the management of First Nations, recreational, domestic, and commercial fisheries for Pacific salmon in the Yukon River and the factors that influence decision-making.

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 fishery participants 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. In accordance with 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 in which they wish to fish.

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. Coho salmon are also caught in these late fisheries on the Porcupine River.

1.4.2 COMMERCIAL FISHERY

The Canadian Yukon River commercial salmon fishery began in 1898. The commercial fishery currently involves up to 22 licensed fishers, with a minimum of eight additional licences guaranteed to Yukon First Nations (for a total of 30).

The mainstem Yukon River commercial salmon fishery is restricted to the following areas (see map in Appendix 4):

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

Commercial fishing gear consists of fish wheels and gillnets. Fish wheels are only permitted in the mainstem Yukon River within designated 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 occurs after Chinook (based on run timing), peaking in mid-September and concluding in mid to late October.

Commercial licences are administered via the web-based National Online Licensing System (NOLS). Through this system, commercial harvesters/licence holders/vessel owners may view, pay for, and print their commercial fishing licences, licence conditions and receipts. 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.

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 (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 PUBLIC ANGLING FISHERY

The first official public angling (alternatively called sport or recreational fishing) salmon licences in the Yukon were issued in 1949 shortly after the construction of the Alaska Highway (1942-1947). The majority of public angling effort for salmon occurs in the mainstem Yukon River near Tatchun River, as well as Klondike, Teslin, Takhini and Pelly rivers. The timing of the Chinook salmon angling effort on the Yukon River is typically from mid-July through mid-August. It is unlawful to use any hook other than a single-pointed barbless hook with a distance greater than 2 cm (3/4 in.) between the point and the shank while angling for salmon in the Yukon River and major tributaries from July 1st to October 15th.

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 (Catch Card) 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 anglers who are issued a Catch Card must submit a catch and harvest report (even if salmon fishing did not occur, or no salmon were caught) to DFO by no later than November 30. Failure to submit the catch and harvest report will result in issuance of a non-compliance notice and a fine. In addition, anglers who do not submit a catch and harvest report will not be able to purchase a Catch Card in subsequent years until such time as the catch and harvest report is submitted. Catch Cards are only available for purchase online through the National Recreational Licencing System (NRLS: https://recfish-pechesportive.dfo-mpo.gc.ca/nrls-sndpp/index-eng.cfm).

2020 COVID-19 PUBLIC HEALTH MEASURES: The issuance of Yukon Salmon Conservation Catch Cards is limited to Yukon or Canadian residents (including Seniors, Minors and First Nation and Inuvialuit) only while restrictions on non-essential international travel are in effect.

1.4.4 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 seven (7) licensed fishers. Domestic fisheries are restricted to the same geographic areas as commercial fisheries (see map in Appendix 4) while fishing gear is limited to one gillnet of up to 90 metres in length. When there are no conservation concerns, the domestic fishery follows the same schedule of openings and closures as the commercial fishery.

2 GOVERNANCE

Departmental policy development related to the management of fisheries is guided by a range of considerations including legislated mandates, judicial guidance, international and domestic commitments, 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, the United States and Canada agreed to co-operate in the management, research and enhancement of Pacific salmon stocks of mutual concern by ratifying the Pacific Salmon Treaty (PST). Various chapters in Annex IV of the Treaty have been renegotiated and ratified since 1985. A component of the 1985 PST was a commitment of the Parties to continue negotiations with the objective of establishing a chapter specific to Canadian-origin Yukon River salmon stocks. 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 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.

The Pacific Salmon Commission (PSC), established under the Pacific Salmon Treaty, provides regulatory and policy advice as well as recommendations to Canada and the United States (U.S.) with respect to interception salmon fisheries. Under the terms of the Treaty, the responsibility for in-season management of all species rests with the Parties to the agreement. One exception is the in-season management of Fraser River Sockeye and Pink salmon which is specifically delegated to the Fraser River Panel with support from the Pacific Salmon Commission Secretariat staff.

Coded-wire tag (CWT) data are essential to the management of Chinook and Coho salmon stocks under the Pacific Salmon Treaty. On August 13, 1985, the United States and Canada entered into a Memorandum of Understanding in which "the Parties agree to maintain a coded-wire tagging and recapture program designed to provide statistically reliable data for stock assessments and fishery

evaluations". Both countries recognize the importance of the coded-wire tag program to provide the data required to evaluate the effectiveness of bilateral conservation and fishing agreements. In addition, alternatives to CWT data have been explored by the PSC, including through the feasibility of parentage-based genetic tagging.

The chapters in Annex IV outline the joint conservation and harvest sharing arrangements between Canada and the U.S. for key stocks and fisheries subject to the Treaty. Those are:

- Chapter 1: Transboundary Rivers
- Chapter 2: Northern British Columbia and South Eastern Alaska
- Chapter 3: Chinook Salmon
- Chapter 4: Fraser River Sockeye and Pink Salmon
- Chapter 5: Coho Salmon
- Chapter 6: Southern British Columbia and Washington State Chum Salmon
- Chapter 7: General Obligations
- Chapter 8: Yukon River

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 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 s. 35 the *Constitution Act*. Chapter 16 of the Final Agreements establishes the framework for many aspects of salmon management and allocation processes in the Yukon, including the creation of the Yukon Salmon Sub-Committee (YSSC) and guaranteeing that the majority of Canadian representation on the Yukon River Panel is comprised of YSSC 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, including:

- 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
- Increased participation in commercial fisheries (Allocation Transfer Program)

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 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.

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* (WSP), *An Allocation Policy for Pacific Salmon, Pacific Fisheries Reform*, *A Policy for Selective Fishing, A Framework for Improved Decision Making in the Pacific Salmon Fishery*, and the Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries. These policies are available at:

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

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

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

DFO is working collaboratively with key partners on a 5-year WSP implementation plan. This implementation plan will include guidance and activities, deliverables, timelines, and accountabilities, and will be updated as new projects and programs are implemented by DFO or by others. More information on this can be found at:

http://www.pac.dfo-mpo.gc.ca/consultation/wsp-pss/index-eng.html

For Canadian-origin Yukon River Chinook salmon, 12 Conservation Units have been preliminarily 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. Nordenskiold 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 Canadian-origin Yukon River Chum salmon, 7 Conservation Units have been preliminarily 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
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)

The Department's *Allocation Policy for Pacific Salmon* (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. In 2019 the Department announced that the *Allocation Policy for Pacific Salmon* undergo a review, modernization and renewal process (anticipated to be completed by 2021).

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

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

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

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 exist or are being developed to improve catch monitoring programs by identifying standards that must be achieved as well as by 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 are 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

2.6 SPECIES AT RISK ACT

The *Species at Risk Act* (SARA) came into force in 2003. The purposes of the *Act* are "to prevent wildlife species from being extirpated or becoming extinct, and to provide for the recovery of a wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened". More information on SARA can be found at:
http://www.sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1

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

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

No SARA-listed species or species assessed by COSEWIC and currently under consideration for listing under SARA are encountered by salmon fisheries in the Yukon River.

2.7 SALMONID ENHANCEMENT PROGRAM

The Salmonid Enhancement Program (SEP) produces Pacific salmon at enhancement facilities, restores habitat, and undertakes projects that include public participation by local communities and First Nations in fisheries and watershed stewardship activities. Enhanced salmon enable economic, social and cultural harvest opportunities for commercial, recreational and First Nations harvesters, support vulnerable stock rebuilding, and contribute to Canada's stock assessment commitments under the Pacific Salmon Treaty with the United States. Projects with community partners include stewardship activities and the development of integrated local and area watershed plans. SEP also support school education and public awareness projects.

With respect to projects that undertake fish culture, about 150 projects release fish annually from sites throughout British Columbia and the Yukon. Projects range in size from spawning channels releasing nearly 100 million juveniles annually to school classroom incubators releasing fewer than one hundred juveniles. SEP enhances Chinook, Coho, Chum, pink, and sockeye salmon, as well as

small numbers of steelhead and cutthroat trout. Project types include hatcheries, fishways, spawning and rearing channels, habitat improvements, flow control works, lake fertilization, and small classroom incubators. Projects are operated by SEP staff or contracted with some SEP support to First Nations and community and volunteer groups.

The program is delivered through three components:

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

2.8 SCIENTIFIC SUPPORT

Research on Yukon River salmon stocks is being conducted through coordinated efforts of the Department, U.S. agencies (Alaska Department of Fish and Game, United States Fish and Wildlife Service), and the National Marine Fisheries Service, 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.

The annual report of the Yukon River Panel's Joint Technical Committee (JTC) provides a comprehensive summary and data report 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/

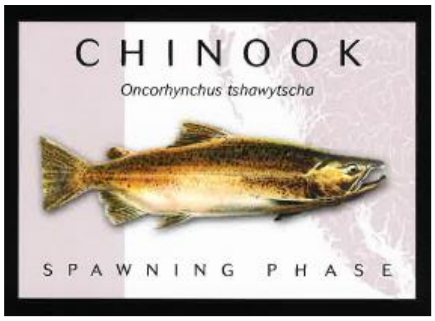
Some of the research activities of the Department's Science Sector are summarized in annual reports and/or scientific papers that are peer reviewed through Centre for Scientific Advice – Pacific (CSAP). The advice is then forwarded to the client for review and adoption as required. Additional information and reports are available at: (http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/research-recherche/assessment-eng.html)

2.9 INTEGRATED FISHERIES MANAGEMENT PLAN APPROVAL PROCESS

Following the development of this IFMP by 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 IFMP is considered final once approved by the Pacific Regional Director General of Fisheries and Oceans Canada and following the Minister's Response to allocation and management recommendations provided by the Yukon Salmon Sub-Committee.

3 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE BIOLOGICAL SYNOPSIS

3.1 CHINOOK SALMON (ONCORHYNCHUS TSHAWYTSCHA)



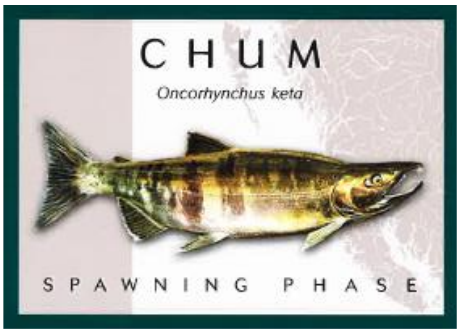
Chinook salmon spawn in streams and rivers along the west coast of North America. The Yukon River is one of the most northerly of the major Chinook spawning rivers, and hosts some of the longest upstream migrating salmon stocks in the world. Some headwater stocks migrate in excess of 2,960 kilometres 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.

Over the winter, the eggs incubate in the gravel and Chinook fry emerge in the spring and early summer. 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. Through the summer, many fry will migrate into "non-natal" streams to feed and may migrate significant distances upstream (in a number of documented cases upwards of 75 kilometres) and hundreds of kilometres downstream. In large rivers, juvenile Chinook are often found along the river margins and in the mixing zones where streams and rivers join larger ones. In lakes, Chinook fry have been found in nearshore habitats and near the mouths of tributaries. Juveniles may be abundant in tributaries not used for spawning.

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 juveniles has been documented only in streams and smaller rivers, although it is expected to also occur in larger rivers. After their winter in freshwater as free swimming juveniles, fry begin their downstream migration to the ocean. The first winter at sea is thought to be a very important time

for Chinook salmon and survival during this period can greatly influence the strength of this brood year. Chinook salmon then spend the next two to five years in the Bering Sea before returning to their natal spawning grounds. Most Chinook salmon return at age-five or age-six, but some return as age-four or age-seven olds (typically less than 10%). There used to be some Chinook salmon in the Yukon River that returned as age-eight olds, however none have been recorded for several decades.

3.2 FALL CHUM SALMON (ONCORHYNCHUS KETA)



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 the Mackenzie River drainage. The upper Yukon River stocks of this species may have the longest upstream Chum spawning migration in the world with some migrating over 2,700 kilometres[3] 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. Summer Chum generally spawn in the lower 800 kilometres of the Yukon drainage and only occasionally migrate into the Canadian section of the drainage.

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. Upper Yukon fall Chum salmon return as spawning adults to the river mouth 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

[3] Spawning fall Chum salmon have been observed spawning on the Teslin River near Boswell Creek and are known to migrate into Teslin Lake.

occurs in mid-September. Predominant age classes of mature upper Yukon fall Chum salmon are age-four (62%) and age-five (35%). Spawning has been documented in ground water discharge areas that have water with a 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 occurs from October through early November.

Juvenile upper Yukon fall Chum salmon emerge from the gravel in April and May. After emergence, they spend little time in the natal area. By mid-June, most have moved away from the spawning areas. Little is known about the downstream migration of juveniles, although it is thought to occur close to the time of spring break-up.

3.3 COHO SALMON (ONCORHYNCHUS KISUTCH)

Coho are swift, active fish that spawn in streams from California to Alaska with the majority of their territory located between the Columbia River and the Cook Inlet in Alaska.

In northern populations, juvenile Coho spend two or three years in freshwater before entering the ocean. Juvenile Coho favour small streams, sloughs and ponds, but can also be found in lakes and large rivers. Migrating as smolts to the oceans, Coho spend up to 18 months in the sea before returning to their natal streams to spawn. While most Coho salmon return to fresh water as mature adults at three years of age, some mature earlier and migrate to their home streams as jacks at only two years. Little is currently known about Coho populations in the Canadian portion of the Yukon River despite observations in the mainstem and regular First Nation harvests in the Porcupine River.

3.4 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.

DFO is moving away from management of salmon by 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 Wild Salmon Policy or WSP, outlines the Department's intent to progressively incorporate ecosystem values in salmon management and identifies these actions:

- 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.

3.5 ABORIGINAL TRADITIONAL KNOWLEDGE/TRADITIONAL ECOLOGICAL KNOWLEDGE

Both Aboriginal Traditional Knowledge (ATK) and Traditional Ecological Knowledge (TEK) reflect the cumulative knowledge gathered over generations and encompass regional, local cultural and spiritual connections to ecosystems and all forms of plant and animal life.

ATK is knowledge held by Aboriginal peoples and First Nation (FN) communities, while TEK is local knowledge held by Aboriginal and non-Aboriginal people and communities, including industry, academia, and public sectors. While qualitatively they may be different, both represent

cumulative knowledge that may be gathered over many generations and can be regionally and/or locally specific, and can often be utilized to inform and improve the management process, and the foundation upon which it is based.

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 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*).

3.6 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 confirm spawning escapement and harvest share obligations in the Treaty. This sonar program replaced a long-standing mark-recapture assessment project. In the Porcupine River drainage, a sonar program on the Porcupine River (near Old Crow) provides information on return of Chinook and fall Chum salmon to the Canadian Porcupine watershed and a weir on the Fishing Branch River provides information on escapement of fall Chum salmon to the drainage's main spawning grounds. Both projects provide occasional information about Coho 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.

Considerable effort has been spent on collecting tissue samples from major spawning populations throughout the Yukon drainage to develop 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 Chinook and fall chum baselines are well developed to assign to major sub drainage stocks, but due to the many individual spawning stocks in remote locations, finer resolution assignment would require additional baseline samples.

3.7 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.

3.8 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). Information on many Yukon River research projects can be found on the Yukon River Panel's website at:

http://yukonriverpanel.com/salmon/publications/reports/

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 supporting 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 meet treaty provisions (e.g., *Yukon First Nation Final Agreements*), to provide access for food, social, ceremonial (FSC) fisheries, and for commercial purposes. With respect to FSC and treaty fisheries, DFO manages these fisheries to ensure that after conservation needs are met, they have priority over other fisheries.

In the Yukon, the Umbrella Final Agreement (UFA) between the Government of Canada, the Council for Yukon Indians and the Government of the Yukon was signed in May 1993. Subsequent to this, the following Final and Self-Government Agreements have been reached with 11 of the 14 Yukon First Nations:

- Champagne and Aishihik First Nations (1995)
- Teslin Tlingit Council (1995)
- First Nation of Na-Cho Nyäk Dun (1995)
- Vuntut Gwitchin First Nation (1995)
- Little Salmon/Carmacks First Nation (1997)
- Selkirk First Nation (1997)
- Tr'ondëk Hwëch'in (1998)
- Ta'an Kwäch'än Council (2002)
- Kluane First Nation (2004)
- Kwanlin Dün First Nation (2005)
- Carcross/Tagish First Nation (2006)

4.2 PUBLIC ANGLING SECTOR

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

Economic benefits from the anglers include, but are not limited to the purchase of: angling licences, Salmon Conservation Catch Cards, angling equipment, accommodation, travel, and air charter services. In addition to economic benefits, angling also has 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.

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 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. Chinook salmon have experienced generally poor runs from 1998 through 2002 and since 2007. The 1998-2001 period for Yukon River mainstem fall Chum salmon experienced poor runs while the Fishing Branch River / Porcupine fall Chum salmon have been returning in low numbers since 2008.

It is believed that changes in marine survival play a significant role in these abundance fluctuations and it is reasonable to expect these situations may 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 Yukon River commercial fishery for over a decade. Although the opportunity to harvest fall (mainstem) Chum salmon is anticipated this year in the commercial fishery, the availability of viable markets due to remoteness and the timing of the fishery is anticipated to continue to be a significant limiting factor.

6 OBJECTIVES

6.1 CONSERVATION OBJECTIVES

The Conservation Objectives are to restore and maintain healthy and diverse salmon populations and their habitat for the benefit and enjoyment of the people of Canada in perpetuity.

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.

DFO establishes escapement goals for the Chinook and fall Chum salmon returns prior to each fishing season after considering recommendations from the YRP and YSSC. The Yukon River In-Season Fishery Management Decision Matrices were developed following extensive consultations with Yukon First Nations, fishers, and the YSSC. These matrices provide pre-defined specific reference (trigger) points and associated 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.

For 2020, the YRP adopted the following spawning escapement goal ranges:

Chinook salmon – Yukon River Mainstem in Canada	42,500 – 55,000*
Fall Chum salmon – Yukon River Mainstem in Canada	70,000 – 104,000
Fall Chum salmon – Fishing Branch River (Porcupine Drainage) in Canada	22,000 – 49,000

**For the 2020 season the Yukon River Panel recommended that the Parties manage fisheries to achieve spawning escapement "within" the interim management escapement goal range.*

6.2 First Nation Fisheries Objectives

The First Nation Fisheries Objectives are to manage fisheries in recognition of *Section 35* of the Canadian Constitution, recognizing both aboriginal and treaty rights.

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

While these opportunities will be provided on a priority basis, it does not necessarily mean that fishery targets for First Nations will be fully achieved before other fisheries can proceed. The general guideline is that fishing plans must adequately provide for the First Nations' FSC and/or domestic Treaty harvests over a reasonable range of potential run sizes.

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

6.3 International Objectives

The International Objectives are 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 Domestic Allocation Objectives are 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 amongst fisheries. The allocation priorities are described below:

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

Priority 2: First Nation subsistence (or FSC) fisheries, and in accordance with *Yukon First Nation Final Agreements* (as applicable);

Priority 3: Provide salmon harvesting opportunities for public angling. The fishery is provided opportunities to harvest only if a full allocation is available to the First Nation fishery; and,

Priority 4: Provide salmon harvesting opportunities for domestic and commercial fishers. Fisheries are provided opportunities to harvest only if a full allocation is available to the First Nation fishery.

International allocations are specified in the YRSA, whereas domestic allocations may be recommended by the YSSC, 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 Communication Objectives are to provide timely information to fishers, communities and the public regarding the status of salmon runs and management decisions.

To achieve this objective a number of communications practices, tools, and procedures are implemented annually:

Pre-season

- Outlooks for major stocks (including Yukon River stocks) are published on DFO's website (http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/index-eng.html)
- Outlooks for Yukon River stocks are provided to the Yukon Salmon Sub-Committee, Yukon First Nations government representatives, and are available to the public who attends Yukon River Panel meetings and are available in Yukon River Panel press releases (http://www.yukonriverpanel.com/meetings/past-meetings/)
- Together with the Yukon Salmon Sub-Committee, DFO provides information on the upcoming salmon season to First Nations, other fishery participants, and the general public during meetings in many Yukon communities (typically held in May each year).

- The Yukon Salmon Information Line is updated with information on fishery expectations for all Yukon fisheries.
- This IFMP is available online through the Federal Science Library (http://www.pac.dfo-mpo.gc.ca/fm-gp/ifmp-eng.html).
- Information is available directly from DFO staff at the Yukon/Transboundary Rivers Area office.

In-season

- The Yukon River Drainage Fisheries Association (YRDFA) hosts weekly conference calls with fishery participants along the entire length of the river in Alaska and Yukon. Information is provided by U.S. and Canadian managers about fishery and run status throughout the season. The calls are intended for individuals from communities along the Yukon River and are held once a week from June through to August.
- DFO hosts conference calls with Canadian First Nation representatives and the Yukon Salmon Sub-Committee. The purpose of the calls is to disseminate information on the status of Canadian-origin salmon runs, assessment programs, and the in-season management strategy.
- Fisheries and Oceans Canada distributes a weekly run status update that includes the latest stock assessment information based on the Lower Yukon River Test Fishery, Pilot Station Sonar and Eagle Sonar assessment programs, catch information and fishery management information (i.e. openings/closures) in both Canada and the U.S.. These are also available online (http://www.pac.dfo-mpo.gc.ca/yukon/season-saison-eng.html).

Post-season

- Post-season reviews for Yukon River stocks are provided to the Yukon Salmon Sub-Committee, Yukon First Nations government representatives, and are presented to the public at Yukon River Panel meetings (and available in Yukon River Panel press releases) (http://www.yukonriverpanel.com/meetings/past-meetings/)
- The Joint Technical Committee of the Yukon River Panel prepares an annual report that includes a season summary and outlooks for the coming year. These reports are available through Fisheries and Oceans Canada, the Alaska Department of Fish and Game or the YRP website (http://www.yukonriverpanel.com/publications/yukon-river-joint-technical-committee-reports).

6.6 ENFORCEMENT OBJECTIVES

The Enforcement Objectives are 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 pieces of legislation for salmon fisheries 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 with cooperatively with First Nations and other Federal and Territorial agencies and departments to deliver services.

Fishery officers work closely with other management and enforcement agencies such as the Canadian Food Inspection Agency, RCMP, 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.

7 ACCESS AND ALLOCATION

Allocation decisions are made in accordance with the recommendations from the YSSC, 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) of Chum, Chinook, and Coho salmon for the Vuntut Gwitchin First Nation (VGFN) in the Porcupine River is specified in the VGFN Final Agreement (16.10.7.4). The BNA for First Nations that harvest mainstem Yukon River salmon have yet to be finalized. Nonetheless, a primary objective of this management plan is to address the requirements of the First Nation fisheries in Yukon.

7.1 LONG TERM OBJECTIVES FOR THE FISHERIES

There are four key long-term objectives:

a) Achieve the obligations contained in the Canada/U.S. *Yukon River Salmon Agreement*
b) Conserve and restore spawning stocks and habitats
c) Provide for the Basic Needs Allocation for First Nations
d) Develop and/or maintain sustainable and viable Canadian fisheries

7.1.1 MEETING OBLIGATIONS OF THE YUKON RIVER SALMON AGREEMENT

The YRP meets twice a year, usually in December and April. Principal items addressed by the YRP include a post-season review, reviewing the run outlooks, reviewing and approving projects to be funded under the Restoration and Enhancement Fund and recommending escapement goals for Canadian-origin Yukon River salmon stocks.

The Yukon Joint Technical Committee also meets twice a year and prepares an annual report that includes a season summary and outlooks for the coming year. These reports are available through Fisheries and Oceans Canada, the Alaska Department of Fish and Game or the YRP website (http://www.yukonriverpanel.com/publications/yukon-river-joint-technical-committee-reports).

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.

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 YSSC or in emergency situations as described within *Yukon First Nation Final Agreements*.

7.1.3 PROVIDE FOR THE BASIC NEEDS ALLOCATION FOR FIRST NATIONS

Although final Basic Needs Allocations (BNA) of Yukon River salmon for the majority of Yukon First Nations have yet to be finalized, progress on this initiative has been accomplished through engagement between Fisheries and Oceans Canada and First Nation government representatives. *Yukon First Nation Final Agreements* set out how the BNA is to be determined. As an initial step, the Yukon River Harvest Study was conducted 1996 through 2002. Subsequently, engagement and exploratory workshops were held in 2006, 2007, 2009 and 2018. In absence of the determination of the final BNA, an interim allocation of 10,000 Chinook salmon is reserved for Yukon First Nation fisheries within the current Canadian fishery management strategy. Fisheries and Oceans Canada remains committed to continuing dialogue with Yukon First Nation Governments to seek to establish the BNA for Yukon River salmon.

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 reduced 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.

8 RUN OUTLOOKS, DECISION GUIDELINES, AND MANAGEMENT MEASURES

A comprehensive overview of the pre-season run forecasts and outlooks can be found in section 10 of the Joint Technical Committee's *Yukon River Salmon 2019 Season Summary and 2020 Season Outlook* (http://www.yukonriverpanel.com/publications/yukon-river-joint-technical-committee-reports). Brief summaries of the outlooks are presented below for each stock.

The comprehensive decision guidelines detailed below outline the management responses to a range of circumstances and the general rationale applied when making management decisions. Decision guidelines are meant to capture general management approaches that contribute to multi-year management planning.

For Yukon River fisheries in Canada, the management regime at the beginning of the season is guided by the pre-season run outlooks. Pre-season outlooks provide initial indication of run size and are used to set expectations for the year (e.g., the run is unlikely to be large enough to support a commercial fishery in Canada). 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. Following consultations with Yukon First Nations, with commercial, domestic, and recreational fishery participants, and with members of the public, the YSSC provided five recommendations to the Minister of Fisheries and Oceans Canada in June 2020. These recommendations focused on providing priority to First Nation fisheries, using management measures to conserve Chinook salmon and providing liberal opportunities for Chum fisheries. In-season assessment of Canadian-origin Yukon River Chinook and fall Chum salmon occurs primarily in the lower Yukon River in Alaska (Pilot Station Sonar and the Lower Yukon Test Fishery) and at the Eagle Sonar assessment program located just downstream of the U.S./Canada border. As the season progresses, information from lower river assessments provides revised information on which Canadian management decisions may be made. This early-season information is often available in mid- to late-June and by mid to late July it and can provide improved certainty over pre-season information. 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. However, because of challenges in accurately assessing salmon abundance in the lower river, estimates of Canadian-origin salmon are not certainty. In-season assessment information available from the Eagle Sonar is highly representative however the timing that this information is available limits it's use to confirming performance against spawning escapement goals and YRSA harvest share arrangements post-season.

8.1 YUKON RIVER MAINSTEM CHINOOK SALMON MANAGEMENT

8.1.1 2020 PRE-SEASON CONSIDERATIONS

The pre-season outlook for Canadian-origin Yukon River Chinook salmon is for a weak run of 59,000 to 90,000, however this is a run that could support some fishery harvest in Canada. Runs of 150,000 fish were common in 1980s and 1990s. The 2020 spawning escapement goal for Canadian-origin Yukon River mainstem Chinook salmon is 42,500 to 55,000; this is the target number of Chinook salmon to reach the spawning grounds in the upper Yukon drainage in Canada. Following a series of years where the lower end of the escapement goal had not been achieved (2008, 2010, 2012, 2013 and 2019), 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 consideration that Chinook salmon are currently experiencing a period of reduced productivity. It is unlikely that there will be significant change in run sizes of Canadian-origin Chinook salmon in the near future.

Based on the pre-season outlook, the anticipated Total Allowable Catch (TAC) for Canadian-origin Yukon River mainstem Chinook salmon is 16,500 to 47,500 (U.S. and Canada combined). Based on the spawning escapement goal range of 42,500 to 55,000 and the mid-point of the catch share established by the *Yukon River Salmon Agreement* (YRSA) Canada's harvest share is approximately 3,795 to 10,925 Chinook salmon. This will support a First Nation fishery, however, the total Canadian run size necessary to provide for a fully allocated First Nation fishery (10,000 Chinook) while achieving the top end of the escapement goal (55,000 Chinook) would need to exceed 141,000 Chinook salmon. At the low end of total Canadian-origin Chinook run size range there would be an opportunity limited harvest in First Nation subsistence fisheries.

Table 1. Potential status of fisheries based on pre-season outlook range for Yukon River mainstem Chinook salmon.

Outlook (Run Size)	Canadian Fisheries			
	First Nation	Public Angling	Commercial	Domestic
59,000	Conservative Fishery	Closed (Non-retention)	Closed	Closed
74,500	Liberalized Fishery	Closed (Non-retention)	Closed	Closed
90,000	Full Fishery	Closed (Non-retention)	Closed	Closed

The considerations for the development of the 2020 Chinook salmon management strategy were:

1. A pre-season outlook for a below-average run (59,000 to 90,000)
2. In 4 of the past 10 years minimum spawning escapement was not achieved resulting in concern over the sustainability of the run and potentially affected brood years.
3. The productivity of the run has been low over the last decade when compared to the long-term average.
4. The run is comprised of fewer large, older fish than there were historically present.
5. Significant fishery conservation measures have been implemented in both Yukon and Alaska in recent years to support rebuilding and future recovery of the stock
6. There is an interest within some First Nations in having an opportunity to fish early in the run, based on traditional practices and knowledge and in consideration of food security concerns in 2020 (resulting from potentially disruption of food supply distribution due to the COVID-19 pandemic).
7. The importance of considering the 2020 management approach in the context of a long-term stock sustainability objective.
8. The following management recommendations from the Yukon River Panel for the 2020 season:
    a. The Canadian-origin Chinook salmon run should be managed to ensure escapement falls within the 2020 IMEG range (42,500 – 55,000) and provide for agreed harvest shares in both countries as outlined within the Yukon River Salmon Agreement.
    b. To provide for Canadian-origin Chinook salmon conservation, limit use of gill nets to 6" mesh or smaller upstream of the Tanana River / Yukon River Mainstem confluence for the duration of the Chinook salmon migration consistent with the regulatory structures in both countries.

c. Environmental conditions, in particular extreme events, should be considered in-season to inform fishery management measures implemented and resulting harvest opportunities.
d. In the event that in-season assessment programs are unable to operate in 2020 due to circumstances beyond Agency control, fishery harvest opportunities should be provided conservatively based on 2020 pre-season outlooks and associated Total Allowable Catch and harvest share allocations.

Further information may be found in the *Yukon River Salmon 2019 Season Summary and 2020 Season Outlook* at: https://www.yukonriverpanel.com/publications/yukon-river-joint-technical-committee-reports/

8.1.2 PRE-SEASON MANAGEMENT

Based on the pre-season forecast, to begin the 2020 season an allocation will be made available to First Nations while the public angling (recreational) will be prohibited from retaining Chinook salmon and commercial and domestic fisheries will be closed (no allocation). In light of the biological and salmon stock considerations listed above, several recommendations around conservation measures are proposed for early fishing opportunities in the First Nation fisheries before early-season and in-season assessment information provide greater certainty about the number of returning Chinook salmon and biological composition of the run. These include: 1) First Nations who participate in early-season fisheries are requested to initiate their harvest activities in a conservative manner; 2) harvest of Chinook salmon should be directed at smaller (younger) fish - this can be achieved through the continued use of smaller-mesh gill nets (i.e., 6" or less) or selective release of larger (older) fish from fish wheels and/or hook and line fisheries.

As confidence in in-season abundance improves, fishery management actions would proceed according to the *In-season fishery management decision matrix*.

8.1.3 EARLY-SEASON MANAGEMENT

The pre-season management approach and recommendations to the First Nation fisheries may be modified based on early-season information available from the lower river Pilot Station Sonar and information from the Eagle Sonar. If early season information does not suggest to a high degree of likelihood either a stronger or weaker run than anticipated then no changes to management measures will be made. Early-season management decisions and recommendations would occur between early and mid-July.

8.1.4 IN-SEASON MANAGEMENT

In-season management decisions in Canada are based on zones defined by the Canadian Allowable Harvest (CAH). Decisions proceed according to the *In-season fishery management decision matrix for Yukon River mainstem Chinook salmon in Canada* (Table 2) in which the management zones are defined by the midpoint of Canada's harvest share (23%) as set out in the *Yukon River Salmon Agreement* and may incorporate any additional domestic conservation measures Canada may have. Canada's harvest share is calculated as 20 to 26 percent of the Total Allowable Catch (TAC) and is managed in-season to the midpoint (23%). TAC is calculated as the total run size minus the spawning escapement goal (42,500 – 55,000). The total Canadian run size is estimated as the number of Canadian–origin Chinook salmon passing the Pilot Station sonar. The component of Canadian-origin Chinook salmon is determined by applying in-season genetic composition to the total estimated number of Chinook passing by the sonar. Because final / official harvest estimates from U.S. fisheries are not available until post-season, in-season harvest is estimated based on interpretation and projection of the effect of fishery management actions on harvest levels. Consequently, in-season estimates of total run size, TAC, and CAH are made using imperfect information.

The *In-season fishery management decision matrix for Yukon River mainstem Chinook salmon in Canada* summarizes the management reference points, general allocation plans and anticipated management responses under different allowable harvests. Within each fishery, the Red Allowable Harvest Zone indicates there are no harvestable salmon available to that fishery. In the Yellow Allowable Harvest Zone there are some salmon available to harvest but restrictions or conservation measures are necessary to limit harvest within that fishery. In the Green Allowable Harvest Zone there are sufficient salmon available to support normal or full harvest opportunities.

The Canadian Allowable Harvest zones within each fishery are based on the premise that First Nation harvest opportunities are second only to conservation and other fishery opportunities (Public Angling, Commercial and Domestic) are only considered after First Nation allocations and conservation objectives are projected to be met. Additionally, consideration of the precision to which regulatory instruments and management tools can facilitate the orderly administration of a specific fishery are also factored into the CAH zones.

Opportunity for harvest in public, commercial or domestic fisheries may only be provided if there is sufficient confidence that the abundance of Chinook salmon will meet the upper end of the International Yukon River Panel's Interim Management Escapement Goal; and Canada's *Pacific Salmon Treaty* harvest allocation exceeds the number required for a full allocation to the First Nation Fishery.

With respect to commercial and domestic fisheries, unless in-season abundance estimates confirm escapement and First Nation fishery allocation objectives will be achieved, all Chinook incidentally caught in a commercial or domestic fishery must be released. In addition, the maximum allowable gillnet mesh size in domestic and commercial fisheries will be restricted to 6-inch mesh or smaller to reduce the potential for incidental interception of Chinook salmon.

The *In-season fishery management decision matrix for Yukon River mainstem Chinook salmon in Canada* must be interpreted with the following considerations in mind:

- **Consistent with Yukon River Panel Recommendations.** In-season management will continue to incorporate the recommendations of the Yukon River Panel as stated above.

- **The Canadian Management Objective is established to support Canadian-origin Chinook rebuilding**. Canada's management target for spawning escapement is 55,000 (upper-end of the spawning escapement goal range). Management of fishery harvest to facilitate a spawning escapement of 55,000 is intended to support re-building and long-term recovery of Canadian-origin Yukon River Chinook salmon. Canadian harvest of Chinook salmon will be limited to First Nation fisheries when the spawning escapement is likely to be fall below 55,000. Should the expected spawning escapement be between 42,500 and 48,750 First Nations fisheries would be limited to a reduced level of allocation.

- **Sex ratio informs management actions.** Management of Yukon River Chinook salmon is based on the premise that not all Chinook salmon contribute equally to reproduction. The long-term historical ratio of males to females is approximately 55% males to 45% females. The sex ratio is also a proxy for the size and age of fish with smaller 4 year old fish being ~90% male and larger 7 year old fish being ~25% male. Sex ratio is determined in-season by the data collected in the test netting associated with the Eagle Sonar. Size of Chinook salmon serves as a strong proxy for both age and sex.

- **Canadian Allowable Harvest Zone is determined by YRSA harvest shares (determined from Pilot Station) and Canadian Conservation objectives, not Eagle Sonar estimates**. Border Passage estimates are one component of Canadian fishery management considerations. Run Size "zones" within the Canadian fishery management matrix assume that a full U.S. harvest of downstream of the international border sonar assessment program has occurred. In the case where U.S. fisheries catch less than the U.S. Allowable Harvest, a portion of the salmon that cross the border are not available for allocation to Canadian fisheries. In the case where U.S. fisheries catch more than the U.S. Allowable

Harvest, Eagle Sonar passage may incorrectly indicate a lower Allowable Harvest Zone. Actual determination of the Allowable Harvest Zone is made based on applying the *Yukon River Salmon Agreement* harvest shares to the *total* run size estimate (i.e. prior to any harvest occurring).

- **Priority to First Nation fisheries**. Allocations to the public angling, domestic, and commercial fisheries are considered after there is a full allocation to the First Nations fishery and the upper end of the escapement goal is expected to be achieved.
- **Allocation between fisheries are not transferable.** Once an allocation is made to a fishery, unharvested salmon are not reallocated to other fisheries. Fish not harvested by the respective fishery to which they are allocated contribute to overall spawning escapement and future production. It is important to recognize that forgoing allocated harvest within one fishery does not preclude allocation of additional fish to other (lower priority) fisheries.

Table 2. In-season fishery management decision matrix for Yukon River mainstem Chinook salmon in Canada.

				Fishery Allocations[4]		
CDN Total Run Size	Border Passage Projection[1]	CDN Allowable Harvest (CAH)[2]	Projected Escapement[2]	First Nation	Public Angling	Com. & Dom.
0 - 42,500	0 - 42,500	0	0 - 42,500	0	0	0
42,501 - 96,848	42,501 - 55,000	1 - 6,250	42,500 - 48,750	1 - 6,250	0	0
96,849 - 141,196	55,001 - 65,200	6,251 - 10,200	48,750 - 55,000	6,251 - 10,000	0 – 200[3]	0
141,197 - 143,804	65,201 - 65,800	10,201 - 10,800	55,000	10,000	201 - 800	0
143,805 - 150,761	65,801 - 67,400	10,801 - 12,400	55,000	10,000	801 - 1,260	0 - 1,140[3]
150,762 - 259,891	67,401 - 92,500	12,401 - 37,500	55,000	10,000	1,260 - 2,515	1,141 - 24,985
259,892 - 292,500	92,501 - 100,000	37,501 - 45,000	55,000	10,000	2,515 - 2,890	24,986 - 32,110

= No Fishery Opportunity

= Limited Fishery Opportunities

= Extensive Fishery Opportunities

[1]Border Passage Projection is Eagle Sonar estimate plus estimated US harvest between sonar and US/Canada border.

[2]Canadian Allowable Harvest and Projected Escapement levels may vary within the First Nation fishery depending on the trade-offs between the two; this is influenced by the priority that First Nations may place on escapement or harvest in any given year.

[3]This fishery allocation represents the level of management precision for that fishery and is the threshold required before considering harvest opportunities.

[4]The red, yellow, and green colours reflect the Canada Allowable Harvest Zone and the notion to which a specific fishery may be restricted or liberalized in accordance to the colour.

8.2 YUKON RIVER MAINSTEM FALL CHUM SALMON MANAGEMENT

8.2.1 PRE-SEASON CONSIDERATIONS AND DECISIONS

The pre-season outlook for Canadian-origin Yukon River mainstem fall Chum salmon is for an above-average run of 207,000 to 261,000. The 2020 spawning escapement goal for Canadian-origin Yukon River mainstem fall Chum salmon is 70,000 to 104,000; this is the target number of Chum salmon intended to reach the spawning grounds in the upper Yukon drainage in Canada.

Based on the pre-season outlook, the Total Allowable Harvest for Canadian-origin Yukon River mainstem fall Chum salmon is 103,000 to 191,000 (U.S. and Canada combined). The harvest share for fall Chum salmon in the *Yukon River Salmon Agreement* is as follows: when the Total Allowable Catch (TAC) is between 0 and 120,000 Chum salmon, the guideline harvest range for Canada shall be between 29% and 35% of TAC; when the TAC is above 120,000 Chum salmon, the guideline harvest range shall be between 29% and 35% of 120,000 plus 50% of the portion of the TAC greater than 120,000 Chum salmon. Based on mid-point spawning escapement goal and harvest share, Canada's harvest share could be 32,960 to 73,900 mainstem Chum salmon (Table 3), suggesting opportunities will be available in all fisheries.

Table 3. Canadian harvest shares and potential status of fisheries based on pre-season outlook range for Yukon River mainstem fall Chum salmon.

Outlook (Run Size)	Canadian Harvest Share[1]	Canadian Fisheries			
		First Nation	Public Angling	Commercial	Domestic
103,000	32,960	Unrestricted	Retention Permitted	Open	Open
147,000	51,900	Unrestricted	Retention Permitted	Open	Open
191,000	73,900	Unrestricted	Retention Permitted	Open	Open

[1] The Canadian harvest share uses a mid-point management spawning escapement goal of 70,000 to 104,00 and a 32% (mid-point) Canadian harvest share from 0 to 120,000 and 50% above 120,000.

To begin the season, the public angling, commercial, domestic, and First Nation fisheries will be open. This pre-season management approach will be modified based on early-season and in-season information. Early-season information (based on the Pilot Station Sonar) will be used to modify and update these recommendations. If early season information does not suggest to a high degree of likelihood either a stronger or weaker run than anticipated then no changes to management will be made. In-season assessment of run strength (based on the Pilot Station Sonar) will be used to inform management decisions in Canada.

8.2.2 IN-SEASON MANAGEMENT

In-season fishery management decisions are based on the *In-season fishery management decision matrix for Yukon River mainstem fall Chum salmon in Canada* (Table 4). The current matrix requires revision as it does not align with the current spawning escapement goal range established by the Yukon River Panel and relies primarily on international border passage as opposed to the total run size. In the near future, this matrix will be updated and presented to the Yukon Salmon Sub-Committee, First Nation governments, stakeholders, and the public for consideration. In the meantime, the matrix remains unchanged from 2015. The matrix summarizes the management reference points, general allocation plans and anticipated management responses under different run size scenarios (as indicated by border passage):

RED ZONE < 40,000
No harvest – removal of all Chum salmon harvest allocations. Run sizes this low represent a high conservation risk.

YELLOW ZONE 40,000 to 73,000

Run supports some First Nation subsistence fishing. The harvest target varies in accordance with projected run abundance. Harvest targets are met using voluntary harvest reductions in each First Nation.

GREEN ZONE > 73,000
Opportunity for normal (full) First Nation subsistence harvest (i.e., no voluntary harvest reductions sought). Harvest opportunities (and allocation) for recreational, commercial, and domestic fisheries are provided in proportion to run abundance and are considered only when opportunities for First Nation harvests have not been restricted.

It should be noted that while the Eagle Sonar passage estimates are helpful in confirming the migration of salmon across the international border, Fisheries and Oceans Canada primarily relies on: the total run size forecasts generated by the Pilot Station Sonar, information on the proportion of Canadian-origin chum salmon returning to the mouth of the Yukon River watershed; and, corresponding harvest shares defined within the *Yukon River Salmon Agreement* to inform fishery allocation and management decisions.

Table 4. In-season fishery management decision matrix for Yukon River mainstem fall Chum salmon in Canada.

International Border Passage (*based on Eagle Sonar estimate*)	Fishery			
	First Nation	Public Angling	Commercial	Domestic
< 40,000	**Closed** Removal of allocation for conservation purposes.	**Closed** No retention permitted.	**Closed**	**Closed**
40,000 to 73,000	**Varies**[1] Harvest target to vary with abundance within zone.	**Closed** No retention permitted.	**Closed**	**Closed**
> 73,000	**Open** Unrestricted	**Open**[1] Retention permitted. No harvest anticipated.	**Open**[1] Allocation varies with run size	**Open**[1] Allocation varies with run size

[1] Allocations (harvest opportunities) are subject to run abundance and international harvest sharing provisions (*Yukon River Salmon Agreement*).

8.3 PORCUPINE RIVER CHINOOK SALMON MANAGEMENT

8.3.1 PRE-SEASON CONSIDERATIONS AND DECISIONS

Currently, the limited availability of reliable data precludes the development of a formal (stock-specific) forecast or outlook for Chinook salmon returning to the Porcupine River in Canada. In the absence of stock specific information, the general outlook for Porcupine River Chinook salmon is based on an extension of the Yukon River mainstem Chinook salmon outlook. Given this, up to 4,000 Chinook salmon are anticipated to return to the Porcupine River in 2020. Over the past 10 years the average Vuntut Gwitchin annual harvest has been approximately 275 Chinook salmon while the BNA identified in the *Vuntut Gwitchin First Nation Final Agreement* is 750 Chinook salmon.

To begin the season, a harvest allocation for First Nation fishery will be provided with a recommendation to initiate the fishery in a conservative manner. This pre-season management approach will be modified based on early-season and in-season information. Early-season information (based on the Pilot Station Sonar) will be used to modify and update these recommendations. If early season information does not suggest to a high degree of likelihood either a stronger or weaker run than anticipated then no changes to management strategy will be made. In-season assessment of run strength (based on the Old Crow Sonar) will be used to inform management decisions in Canada. For the 2020 season, no public angling harvest opportunities are anticipated for Porcupine River Chinook salmon.

8.3.2 IN-SEASON MANAGEMENT

In-season fishery management decisions are based on information from the Old Crow Sonar. The Old Crow Sonar passage projection is the main indicator used to inform in-season management decisions, however harvest in Alaska before the fish reach Canada is also considered when making management decisions.

If in-season information suggests that fishery restrictions may be required to achieve conservation objectives, DFO, the YSSC, and the Vuntut Gwitchin Government (VGG) will discuss potential fishery management options in advance of implementation.

8.4 PORCUPINE (FISHING BRANCH) RIVER FALL CHUM SALMON MANAGEMENT

8.4.1 PRE-SEASON CONSIDERATIONS AND DECISIONS

Based on the 2019 stock composition, approximately 66% of the fall Chum salmon that migrate past Old Crow are comprised of the Fishing Branch River stock, with the remainder originating from other spawning areas in the upper Porcupine River watershed. The 2020 spawning escapement goal Fishing Branch River fall Chum salmon, established pursuant to the Yukon River Salmon Agreement, is 22,000 to 49,000. This is the internationally recognized target for the number of Chum salmon intended reach the spawning grounds in the Fishing Branch River.

Harvest sharing provisions for Canadian-origin Porcupine River fall Chum salmon stocks are not yet specified within the *YRSA*. Based on the pre-season outlook, between 3,500 to 6,400 Fishing Branch origin fall Chum salmon may be available for harvest in Canada. As 66% of the fall Chum salmon that migrate past Old Crow are comprised of the Fishing Branch River stock, the recommended (total) Porcupine River chum salmon Canadian fishery guideline harvest range is between 5,300 to 9,700.

Over the past decade the average Vuntut Gwitchin harvest is approximately 3,000 fall Chum salmon while the BNA identified in the *Vuntut Gwitchin First Nation Final Agreement* is 6,000 fall Chum salmon.

The considerations for the development of the 2020 management strategy were:

1. The escapement goal for Fishing Branch River Chum salmon has not been achieved in 7 of the last 10 years.
2. Alaskan Commercial and subsistence fisheries harvest Fishing Branch River Chum salmon co-migrating with all other U.S. and Canadian-origin fall Chum salmon stocks.
3. The variability in productivity of Fishing Branch Chum salmon is not well understood.
4. The outlook for Fishing Branch fall Chum salmon is highly uncertain.

Table 5. Canadian harvest targets and potential status of fisheries based on pre-season outlook range for Fishing Branch fall Chum salmon

Outlook (Run Size)	Canadian Harvest Guideline[1]	Canadian Fisheries			
		First Nation	Public Angling	Commercial	Domestic
33,000	5,300	Near Full Allocation	Closed	n/a	n/a
37,500	7,500	Full Allocation Available	Closed	n/a	n/a
42,000	9,700	Full Allocation Available	Closed	n/a	n/a

[1] Assumes a minimum spawning target of 22,000 and uses a 32% Canadian harvest guideline.

To begin the season, the First Nation fishery will be open with a recommendation to harvest conservatively. This approach is intended to provide an opportunity for a modest level of subsistence harvest during the early part of the run until such time as a more robust in-season estimate may be derived from information collected through the Old Crow sonar. As confidence in the run abundance is gained, fishery management actions would proceed accordance with abundance. For the 2020 season, no public angling harvest opportunities are anticipated for Porcupine River fall Chum salmon.

This pre-season management approach will be modified based on early-season and in-season information. Early-season information (based on Pilot Station Sonar) will be used to modify and update these recommendations. If early season information does not suggest to a high degree of likelihood either a stronger or weaker run than anticipated then no changes to management will be made. In-season assessment of run strength (based on the Old Crow sonar) will be used to inform management decisions in Canada.

8.4.2 IN-SEASON MANAGEMENT

In-season fishery management decisions are based on information from the Old Crow sonar. Projection of the fall Chum run size at Old Crow will be combined with estimates of the proportional return of Porcupine River Chum salmon to the Fishing Branch River (approximately 66%) to develop a projection for return of fall Chum salmon to the Fishing Branch River. This will be compared to the spawning escapement goal.

The Old Crow sonar passage projection is the main indicator used to inform in-season management decisions. Harvest in Alaska before the fish reach Canada is also considered when making management decisions.

8.5 PORCUPINE RIVER COHO SALMON MANAGEMENT

8.5.1 PRE-SEASON CONSIDERATIONS AND DECISIONS

Currently, limits on information preclude the development of a formal forecast or outlook for Coho salmon returning to the Porcupine River in Canada. In the absence of stock specific information, the general outlook for Porcupine River Coho salmon is based on the drainage-wide outlook which projects an average return in 2020. The BNA identified in the *Vuntut Gwitchin First Nation Final Agreement* is 900 Coho salmon.

To begin the season, the First Nation fishery will be open. This approach is intended to provide an opportunity for subsistence harvest in accordance with the pre-season run size information. As information on the run abundance is gained, fishery management actions would proceed accordance with abundance.

8.5.2 IN-SEASON MANAGEMENT

In-season fishery management decisions are based on information from the Pilot Station Sonar in the lower Yukon River. Assessment information may provide in-season modifications to the estimated run strength of Yukon River Coho salmon that can be used to modify management recommendations for Porcupine River Coho salmon fisheries.

8.6 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 size and age 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.

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 year

8.7 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 or 1 (or 2) winters rearing in fresh water, depending on the species. Information on stock origin from tag recoveries and genetic analysis indicate that Yukon River salmon are present throughout the Bering Sea, and occasionally 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 (BSAI) (BSAI) and the Gulf of Alaska (GOA) groundfish fisheries rose significantly in the late 1990s and early 2000s, 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 2009 it is estimated that fewer than 1,000 adult equivalent 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 concern 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 BASI and GOA groundfish fisheries is imperative in ensuring that interception of Yukon River stocks continues to be minimized.

9. SHARED STEWARDSHIP ARRANGEMENTS

Stewardship refers to the care, supervision or management of something, especially the careful and responsible management of something entrusted to one's care.[4] 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

[4] As defined in the Atlantic Fisheries Policy Review (AFPR)

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 YSSC. In the Yukon, consultative processes have been established for some time, particularly through implementation of First Nation Final Agreements. International consultation 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 YSSC is a public advisory body established under Chapter 16 of the UFA. The mandate of the YSSC 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 YSSC 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. YSSC 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.

The YSSC 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 YSSC and technical staff from Fisheries and Oceans Canada. Additionally, community and public meetings are convened annually by the YSSC 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 YSSC to the Minister of Fisheries and Oceans Canada 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 *Yukon First Nation Final Agreements*.

9.1.2 YUKON RIVER PANEL

The Yukon River Panel (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*, YSSC 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 its Joint Technical Committee (the JTC) which prepares and reviews post-season summaries, stock status, escapement goal analyses, research project reports including Chinook size trend analyses, research planning initiatives, and restoration and enhancement proposals.

9.1.3 FIRST NATION ABORIGINAL FISHERIES STRATEGY CONSULTATIONS

Engagement relating to the AFS occur throughout the year with Yukon First Nations that have not yet concluded Final Agreements. These meetings help to inform the content of 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.

10 COMPLIANCE PLAN

10.1 COMPLIANCE AND ENFORCEMENT OBJECTIVES

CONSERVATION AND PROTECTION PROGRAM DESCRIPTION

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

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

I. Voluntary **compliance promotion** through education, shared stewardship and user engagement;

II. Intelligence-led **monitoring, control and surveillance** activities;

III. Management of **major cases /special investigations** in relation to complex compliance issues.

10.2 REGIONAL COMPLIANCE PROGRAM DELIVERY

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

- Prioritizing compliance and enforcement measures that support DFO management objectives which aim to sustain the salmon stocks and fisheries;
- Developing and maintaining positive relationships with First Nations communities, recreational groups and commercial interests through dialogue, education and shared stewardship;
- Ensuring the development and supporting of a fishery officer complement that is skilled, well-equipped, well-informed, safe and effective;

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

10.3 CONSULTATION

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

C&P works closely with the Fisheries and Aquaculture Management sector to ensure that fishery management measures are enforceable and implemented in a controlled and fair manner. Fishery officers participate in local fishery management roundtables, sport fishery recreational advisory committees and participate at Sport Fishery Advisory Board meetings.

On a day-to-day basis, fishery officers are often the most visible faces of the Department. When the fishing community and general public provide comments, they are shared with C&P managers, fisheries managers and fisheries protection staff. Public feedback is critical in identifying issues of concern and providing accurate feedback on emerging issues. C&P encourages the timely reporting of suspicious behaviour and violations to a local office or the Observe, Record, Report hotline.

10.4 COMPLIANCE STRATEGY

Specific objectives for the salmon fishery will focus compliance management efforts on:

- Supporting the development and implementation of the Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries;
- Monitoring in-river and in-marine approach waters utilizing intelligence to target priority fisheries and compliance issues;
- Working with resource users to improve voluntary compliance.

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

11 APPENDIX 1: 2019 SEASON REVIEW AND STOCK STATUS

11.1 2019 Season Review

At the conclusion of each season, the Yukon River Panel's Joint Technical Committee 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 *Yukon River Salmon Agreement* (YRSA). The "*Yukon River Salmon 2019 Season Review and 2020 Outlook*" is available through the Yukon River Panel's website: http://www.yukonriverpanel.com/publications/yukon-river-joint-technical-committee-reports/

Performance of 2019 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. Domestic and commercial catches are evaluated through mandatory harvest reporting.

Appendix B of the U.S. / Canada Joint Technical Committee (JTC) report contains a 'report card' that outlines escapement goals, run size, allowable and actual catches in the U.S. and Canada, and the spawning escapement for Canadian-origin Chinook and Chum salmon. This report is the best sources of data on the 2019 (and previous) Yukon River salmon runs.

11.2 Historic and Current Stock Status - Chinook Salmon

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 Yukon River 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). In 2010, an escapement range was established (42,500 to 55,000 Canadian-origin Chinook salmon) and this range has been renewed annually by the Yukon River Panel.

11.3 HISTORIC AND CURRENT STOCK STATUS – 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, 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. As per 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. Currently, the Interim Spawning Escapement Goals for these stocks are 70,000 to 104,000 for mainstem Yukon River and 22,000 to 49,000 for Fishing Branch River fall Chum salmon.

12 APPENDIX 2: LANDINGS AND MARKETS

12.1 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 1.

Harvest of fall Chum salmon in Canadian Yukon River fisheries since 1993 are summarized in Appendix Table 2. Although abundance and resulting harvest levels have fluctuated in recent years, market conditions have had the greatest effect on commercial harvest.

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 (U.S. waters) were Canadian-origin fish.

12.2 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. (Appendix Tables 1 and 2).

Appendix Table 1. Canadian harvest of Yukon River Chinook salmon: 1993 to 2019.

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[a]	Closed	Closed	Closed		100	3	103
2015	1,000	Closed	Closed	Closed		1,000	204	1,204
2016	2,768	Closed	Closed	Closed		2,769*	177	2,946
2017	3,500	Closed	Closed	Closed		3,500	131	3,631
2018	2,789	Closed	Closed	Closed		2,789	308	3,097
2019	2,764	Closed	Closed	Closed		2,764	340	3,104

* Totals include any incidental harvest. [a] Data are preliminary.

Appendix Table 2. Canadian harvest of Yukon River fall Chum salmon: 1993 to 2019.

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[a]	2,485[a]	19	3,050	1,983[a]	5,033
2015	1,000	2,862	35	3,897	556	4,453
2016	1,000	1,745	0	2,745	3,005	5,750
2017	1,000	2,404	0	3,404	2,312	5,716
2018	1,000	1,957	0	2,957	1,874	4,831
2019	1,000	1,728	31	2,759	1,000	3,759

[a] Data are preliminary.

13 APPENDIX 3: FISHERY PLANS

Plans for each fishery will be based on the in-season fishery management decision matrices (see section 9) and in-season assessments of run strength.

13.1 FIRST NATION FISHERY PLAN

Once conservation (spawning) requirements are achieved, constitutionally protected First Nation subsistence fisheries (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. The allocation of salmon to First Nation subsistence fisheries can only be removed on either the recommendation of the Yukon Salmon Sub-Committee or in an emergency as specified in *Yukon First Nation Final Agreements*.

Chinook salmon – the opportunity for First Nation harvest of Chinook salmon is anticipated in 2019. If the run abundance is near the low end of the pre-season forecast range, conservation measures will be required. If the run abundance is near the high end of the pre-season forecast range, an opportunity for a full (normal) subsistence fishery will be available. To ensure that recommendations about harvest level in the First Nation subsistence fisheries are implemented only to the extent reasonably necessary to achieve the conservation objective, DFO will closely monitor the return of Chinook salmon into Canada via in-river assessment programs to determine a run projection as early as possible.

Chum salmon – for mainstem fisheries, opportunities for full First Nation subsistence fisheries are anticipated. For Porcupine fisheries, conservation measures may be recommended if the run comes at the low end or below the pre-season forecast

Coho salmon – opportunities for the First Nation subsistence fishery in the Porcupine River are anticipated.

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.

13.2 PUBLIC ANGLING FISHERY PLAN

Chinook salmon – Based on the pre-season forecast for Yukon River Chinook salmon, an allocation to the public angling fishery is unlikely in 2020. Given this, a precautionary approach will be taken to managing harvest with the permitted retention of Chinook salmon varied to 0 (zero). Area-specific or regional angling closures may also be implemented to provide protection for spawning salmon during sensitive periods.

The last time a public angling fishery was permitted to retain Chinook salmon in the Yukon River in Canada was in 2006 (with a small opportunity in 2009). Since then there have been significant conservation measures - both required and voluntary – in the priority First Nation fisheries (and full closures in the commercial and domestic fisheries). Many First Nations have made considerable voluntarily restrictions in their fisheries and demonstrated leadership and commitment to the long term recovery and sustainability of Yukon River Chinook.

Given the intermittent nature of fishery opportunities, and in order to ensure that the fishery is administered and conduced in an orderly manner, Fisheries and Oceans Canada intends to work with the YSSC, Yukon First Nations and the public to develop a framework to guide public angling for Chinook salmon before harvest opportunities are provided. In general, the strategy is anticipated to include a structured approach that will identify periods of time (windows), specific locations, and specific controls under which Chinook salmon angling and retention could be permitted. It will also likely include consideration for communication and angler engagement as well as on-the-ground monitoring of harvest and provision of education when angling is occurring. The overarching objective of the framework will be to provide public opportunity to participate in the Yukon River salmon fishery, when abundance permits, in a manner that respects conservation objectives and minimize the likelihood of conflict between fisheries. The goal is to develop a public angling fishery framework that will facilitate a structured and transparent approach to administering a public angling fishery in future years.

Chum salmon – Although an abundance of fall Chum salmon is anticipated, public participation in this fishery has been limited due to timing (late in the year) and difficulty in accessing angling sites.

DFO fishery officers will conduct in-season monitoring of the public angling fisheries through enforcement patrols. All anglers fishing for salmon must have a valid Yukon Angling Licence as

well as a Salmon Conservation 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 salmon anglers are reminded that the completed Salmon Catch Card must be returned to Fisheries and Oceans Canada by November 30.

13.3 Domestic Fishery Plan

Chinook salmon – Due to the poor pre-season forecast abundance of Yukon River Chinook salmon, no domestic fishery opportunities for Chinook salmon are anticipated in 2020.

Chum salmon – 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.

13.4 Commercial Fishery Plan

Should commercial fisheries opportunities exist in 2020 in either the Chinook or Chum fisheries, gill net mesh size will be restricted to 152.4 mm (6-inch) mesh or smaller to reduce the interception of larger, older (often female) Chinook salmon.

Chinook salmon – Due to the poor pre-season forecast abundance of Yukon River Chinook salmon, no directed commercial harvest opportunities for Yukon River Chinook salmon are anticipated in 2020.

Chum salmon – 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 endeavour 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.

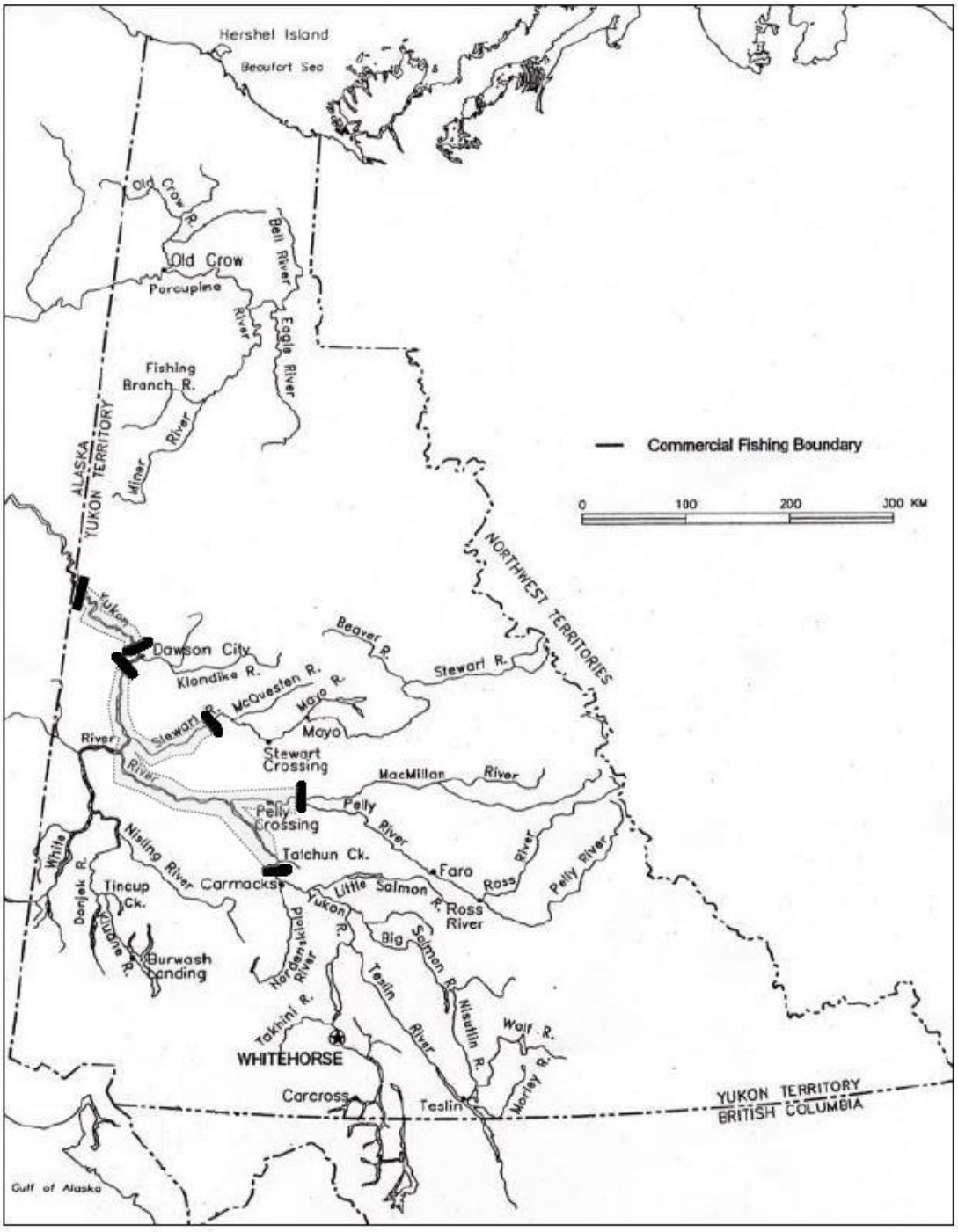
Announcements of openings/closures will be made via Fisheries and Oceans Canada's fishery notification system (http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm).

DFO fishery officers and stock assessment personnel will conduct monitoring of commercial Chum salmon fishing activities in 2020. There is an increasing responsibility for commercial fishers to accurately document catches and report this information weekly. These responsibilities will be outlined in conditions attached to commercial licences. Gear allowances will remain unchanged from previous years and as described in the *Yukon Territory Fishery Regulations*.

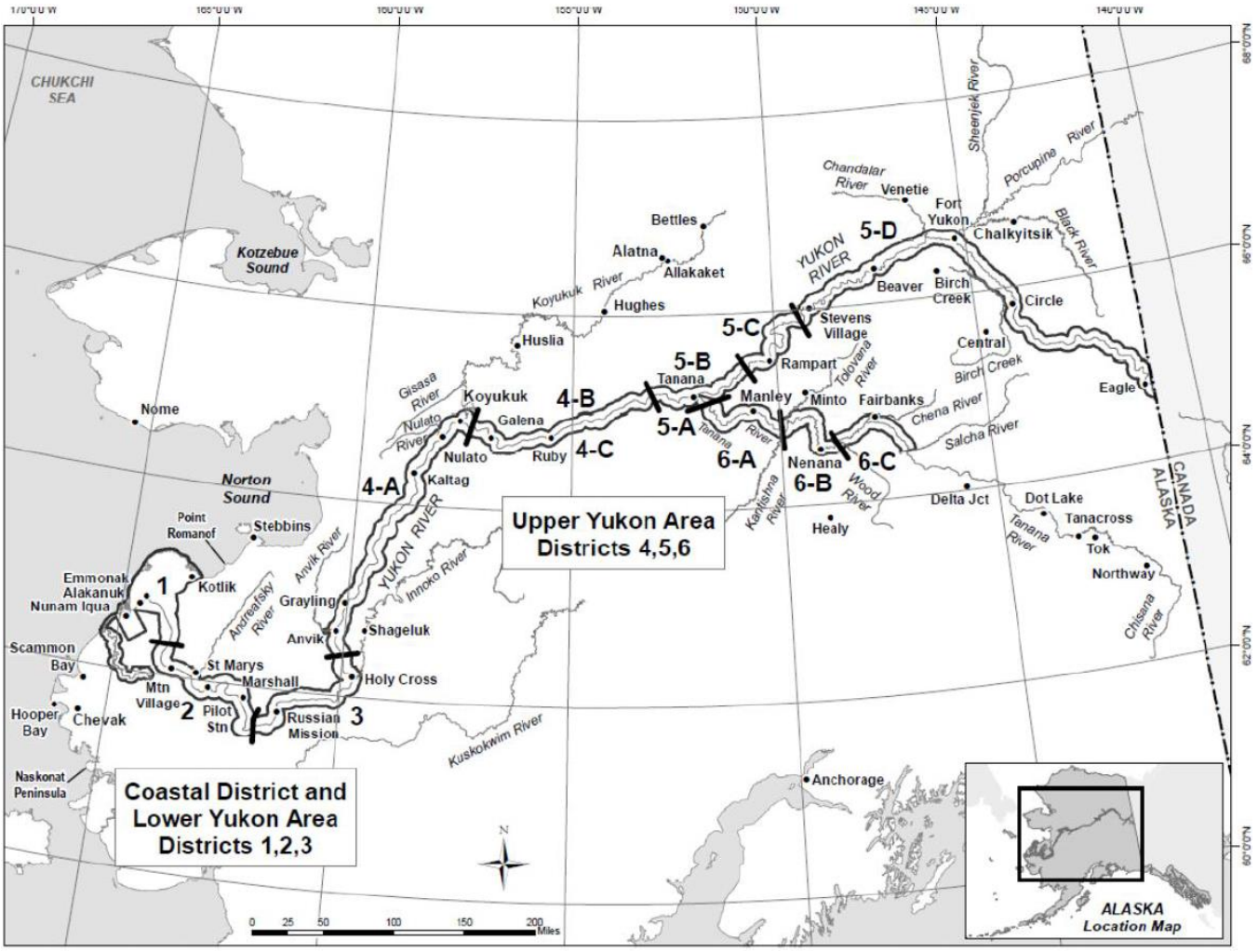
Commercial fishers must keep records of daily catch and tag recovery data, tabulated on forms provided by Fisheries and Oceans Canada. Within eight hours of the closure of each weekly fishing period, fishers will be required to report this information by:

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; and,
    - 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.

14 APPENDIX 4: MAPS OF FISHING AREAS



Appendix Figure 1. Yukon River Watershed (Canada) - Dark bars delineate commercial and domestic fishing boundaries (shaded grey areas are fishing zones).



Appendix Figure 2. Yukon River drainage in Alaska (dark bars and numbers delineate fishing districts).

15 APPENDIX 5: 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

16 APPENDIX 6: 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, usually at a certain point in time.

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. All Pacific salmon die after spawning.

ASL: Age, Sex, Length. A typical standard for information collected on any salmon handled in stock assessment projects. Genetic tissues samples are often also collected, typically from a small piece from a fin.

Border Passage: The number of adult, upstream migrating salmon that escape all U.S. fisheries and reach the Canada/U.S. border. Typically used in reference to the mainstem of the Yukon River.

Brood Year: The year to which a salmon was born. A returning run of salmon consists of salmon from multiple brood years.

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.

Coded Wire Tag (CWT): 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. Fish with a CWT are also adipose clipped before release.

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: A group or number of fish that pass (or escape) a threshold. (e.g. *Spawning Escapement)*.

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.

Genetic Stock Identification (GSI): Using genetics to determine which spawning population a salmon is from, usually applied in a mixed stock (many salmon in the river, migrating to different spawning locations) context.

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.

Mark-Recapture Program: A method of estimating fish abundance. Fish are first captured, marked, released, and allowed to mix with the unmarked population. In a second event (at a later date, or upstream location in the case of migrating salmon) fish are again captured. Knowing the number of fish released with marks, and ratio of marked to unmarked fish in the second capture event, scientists can estimate the total abundance of fish.

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 can be 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. In general, about being cautious when scientific information is uncertain, unreliable, or inadequate and not using the absence of adequate scientific information as a reason to postpone or fail to take action to avoid serious harm to the resource. (Source: https://dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm)

Productivity: The ability of a stock to rebuild itself when the numbers of spawners get very small. Not the same as recruitment or return per spawner.

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). The total number of salmon (production) produced from a single brood year.

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 hydro acoustic survey.

Return per spawner: the average number of mature adult salmon produced from one spawning salmon.

Run Size: All fish (by species) which are estimated to return to a drainage. This includes all fish which reach the spawning grounds, and fish which enter the river but do not reach spawning grounds due to harvest and other forms of mortality.

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.

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.

Sonar: Sonars emit high frequency sound waves into the water and produce images of swimming fish. Since sonars rely on sound instead of light, they can be used to count fish in murky water. Newer sonar units also record video and can be used to determine fish size and direction of travel. Sonar imaging enables technicians to monitor activity around the clock, and later count fish passage in recordings. Sonar provides robust estimates of salmon passage. Two applications in the Yukon River drainage are the Eagle Sonar and the Porcupine River Sonar.

Spawner: Sexually mature individual.

Spawning Escapement: All salmon by species which are estimated to have reached their spawning grounds.

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.

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

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.

Test Fishing: Stock assessment method that usually takes place as part of sonar enumeration projects. Different mesh sizes are typically fished (drift and or set netting, depending on the site and the species) in a daily rotation through the project. Salmon and freshwater fish captured are measured for relevant ASL data, and live released. This provides information both on species age, size, and length, as well as what species are passing.

Total Allowable Catch (TAC): The amount of catch that may be harvested from a stock or the amount of fish that can be harvested after accounting for a specified spawning escapement target and U.S. and Canadian harvest shares.

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".