Pacific Salmon Commission

2020/2021 Thirty-Sixth Annual Report

Pacific Salmon Commission

Established by Treaty between Canada and the United States March 18, 1985 for the conservation, management and optimum production of Pacific salmon

Thirty-Sixth Annual Report 2020/2021

Vancouver, B.C.
Canada

December 2021

PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

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Letter of Transmittal

In compliance with Article II, Paragraph 14 of the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific salmon (the Treaty), it is my pleasure as Executive Secretary of the Pacific Salmon Commission to present my compliments to the Parties and to transmit the Thirty-Sixth Annual Report of the Commission.

This report summarizes the activities of the Commission for the fiscal year April 1, 2020 to March 31, 2021. It reports on the results of the 2020 fishing season and on meetings of the Commission and its subsidiary bodies. Also included are the annual reports of the Northern and Southern Fund Committees, and an independent auditor's report on financial activities of the Commission during the fiscal year April 1, 2020 to March 31, 2021.

Additional details about the Commission's activities and the Treaty are available at www.psc.org.

Sincerely,

Mr. John Field

Executive Secretary

PACIFIC SALMON COMMISSION

OFFICERS for 2020/2021

Chair Ms. Rebecca Reid

Vice-Chair Mr. Douglas Vincent-Lang

COMMISSIONERS

Canada	United States
Mr. John McCulloch	Mr. Phil Anderson
Mr. Murray Ned	Mr. W. Ron Allen
Mr. Bob Rezansoff	Mr. Scott M. Rumsey
Chief Russ Jones	Mr. William F. Auger
Dr. Brian E. Riddell	Mr. Rick Klumph
Mr. Andrew Thomson	Ms. Staci MacCorkle
	Mr. McCoy Oatman

SECRETARIAT STAFF

Executive Secretary	Mr. John Field
Administrative Officer	Ms. Ilinca Manisali
Chief, Fisheries Management Programs	Ms. Fiona Martens
Chief, Fisheries Management Science	Ms. Catherine Michielsens

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INTRODUCTION

Since the early 20th century, Canada and the United States have discussed and collaborated on Pacific salmon conservation and management. Interception of Pacific salmon bound for rivers of one country in fisheries of the other has been a particularly important issue over the years. Scientific research identified a number of intercepting fisheries on species and stocks originating from Alaska, British Columbia, Washington, Oregon and Idaho. This research indicated that Alaskan fishers were catching some of the salmon bound for British Columbia, Idaho, Oregon and Washington. Canadian fishers off the West Coast of Vancouver Island were capturing some of the salmon bound for rivers of Washington and Oregon, while fishers in northern British Columbia were intercepting certain fish returning to Alaska, Washington, Oregon and Idaho. U.S. fishers were catching Fraser River salmon as they traveled through the Strait of Juan de Fuca and the San Juan Islands towards the Fraser River.

Cooperative management of stocks subject to interception became a matter of common concern to Canada and the United States, and governments desired a mechanism to enable each country to reap the benefits of its respective management and enhancement efforts. That mechanism is now provided through the Treaty Between the Government of Canada and the Government of the United States of American Concerning Pacific Salmon (hereafter the "Pacific Salmon Treaty" or "the Treaty"), which entered into force upon the exchange of instruments of ratification by the President of the United States of America and the Prime Minister of Canada on March 18, 1985.

The treaty, *inter alia*, established a) a bilateral fishery management organization known as the Pacific Salmon Commission (the Commission), and b) bilateral fishery management regimes for conservation and harvest sharing of salmon stocks. Each country (Party) retains jurisdictional management authority but must manage its fisheries in a manner consistent with the provisions of the Treaty. The Treaty is intended to enable bilateral conservation and enhancement to prevent overfishing, increase production, and ensure that each country receives benefits equivalent to its own salmon production. The Commission also serves as a forum for consultation between the Parties on their salmonid enhancement operations and research programs.

The Commission comprises four Commissioners (and alternates) from each country as the principle deliberative body. The Commission has also established numerous subsidiary committees, and four geographically oriented panels. The Panels report to the Commission and provide advice on the conservation and management of selected stocks of concern, with certain exceptions as noted below:

Transboundary Panel: stocks originating from the Alsek, Stikine and Taku River systems.

Northern Panel: stocks originating in rivers situated between Cape Suckling in Alaska and Cape Caution in British Columbia.

Southern Panel: stocks originating in rivers located south of Cape Caution, other than Fraser River sockeye and pink salmon.

Fraser River Panel: has special in-season regulatory responsibilities for stocks of sockeye and pink salmon originating from the Fraser River.

Yukon River Panel: makes recommendations to authorities in Alaska and the Canadian government concerning the conservation and coordinated management of salmon originating in the Yukon River in Canada, but does not report to the Commission.

The panels review annual post-season reports, annual pre-season fishing plans and ongoing and planned salmonid enhancement programs of each country. They also provide recommendations to the Commission for development of fishery regimes in accordance with the objectives of the Treaty. These regimes, once

adopted by the Commission and accepted by the Parties, are implemented by the relevant fishery management agencies in each country.

The Parties accord the Fraser River Panel special responsibility for in-season regulation of Fraser River sockeye and pink fisheries of Canada and the United States in southern British Columbia and northern Puget Sound, in an area designated as Fraser River Panel Area Waters. Scientific and technical work is conducted for the Panel by the Fishery Management Division of the Commission's Secretariat staff.

With long-term fishery arrangements in place through periodic amendment of the Treaty, the meeting agendas for the Commission have concentrated on implementation that will improve fisheries management and aid the countries' efforts to recover weakened stocks. These provisions include establishment of two bilaterally-managed restoration and enhancement funds, provisions to enhance bilateral cooperation, and improvements to the scientific basis for salmon management.

The Commission generally meets three times annually and conducts its business between meetings through its permanent Secretariat located in Vancouver, British Columbia. In the period April 1, 2020 to March 31, 2021, the Commission met on three occasions:

1. Intersessional Meeting

   July 10, 2020

2. Fall Session

   October 9-22, 2020

3. Post-Season Meeting of the Commission and Panels

   January 11-15, 2021

4. Thirty-Sixth Annual Meeting of the Commission

   February 8-12, 2021

This, the Thirty-Sixth Annual Report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its thirty-sixth fiscal year of operation, April 1, 2020 to March 31, 2021.

Activities of the Commission

PART I
ACTIVITIES OF THE COMMISSION

A. INTERSESSIONAL MEETING
July 10, 2020, via Webinar

The Commission met virtually via webinar.

Representatives from the Parties delivered reports to the Commission on national policies and operations under COVID19 restrictions with respect to Treaty implementation, including field work.

The Commission discussed how to best conduct meetings under COVID19 restrictions and agreed to hold virtual meetings through February 2021.

At the February 2020 meeting, the Commission established a working group directed to resolve disagreements surrounding the Transboundary Panel's discussions about Taku River sockeye. The working group subsequently reached an agreement and transmitted its recommendations to the National Sections by email on May 15, 2020. The Parties concurred with the recommendations and confirmed bilateral approval on May 21, 2020. The Commission acknowledged agreement had been reached.

The Finance and Administration (F&A) Committee delivered a report to the Commission about its efforts to resolve outstanding test fishing issues surrounding financial regulations and the test-fishing revolving fund.

The Commission agreed to task a small working group consisting of the Executive Secretary and a subset of Commissioners from each section to develop a recommended course of action to resolve these issues for Commission consideration at the October 2020 Fall Meeting.

Mr. Field introduced Mr. Tom Alpe, who joined the Secretariat staff in March 2020 as Fund Manager.

Mr. Alpe presented the "Annual Report of the Southern Boundary Restoration and Enhancement Fund and the Northern Boundary and Transboundary Rivers Restoration and Enhancement Fund for the year 2019."

The Commission discussed the October 2020 reporting requirements for Panels and Committees, with an emphasis on the need to assess the impacts of COVID-19 on Annex IV implementation.

The Commission held a preliminary discussion about the terms of reference for the Coded Wire Tag and Recovery (CWT&R) work group, the Catch and Escapement Indicator program (CEII) work group and the Mark Selective Fishery (MSF) Fund process.

Ms. Reid updated the Commission about work being conducted by Fisheries and Oceans Canada at the Big Bar landslide on the Fraser River.

B. FALL SESSION
October 19-22, 2020, via Webinar

The meeting was held virtually in two sittings due to the COVID19 pandemic to ensure the safety of everyone involved in the Commission process.

The Commission welcomed newly appointed United States Commissioner Mr. Scott Rumsey to the Commission table.

The Commission adopted the final 2019 post-season reports as submitted by the Parties.

Mr. Gwil Roberts, Director of Fisheries and Oceans Canada's Big Bar Landslide Response delivered a presentation updating the Commission on progress made at the Big Bar landslide since February 2020.

The Commission received a report from the Test Fishing Working Group, which was tasked with addressing financial issues related to the Test Fishing program. The Working Group required more time to develop recommendations and further discussions were planned for winter 2020/21.

The Commission received and adopted the report of the Chinook Interface Group (CIG).

The report included information and recommendations about the Coded Wire Tag & Recovery (CWT&R) and Catch and Escapement Indicator Improvement (CEII) Work Group terms of reference, Mark Selective Fishery (MSF) Fund terms of reference, Chinook Technical Committee (CTC) work plan, Okanagan Chinook Workgroup work plan, and the Calendar Year Exploitation Rate (CYER) Workgroup work plan.

Panel and Committee Chairs presented annual work plans and COVID19 impact reports to the Commission for approval.

The Commission adopted the work plans and issued instructions to the Panels and Committees.

Mr. Steve Gotch, Transboundary Panel Vice Chair, acknowledged the loss of long-time Transboundary Panel member and Yukon River Panel member Dr. Peter Hagen, who passed away suddenly in August 2020. Dr. Hagen would be greatly missed by the PSC family.

The Commission accepted the slate of Officers for 2020/21

Mr. Bob Turner, who recently concluded his service as Commissioner representing the United States, joined the meeting. The Commissioners recognized Mr. Turner's contribution to the Commission, to the salmon resource along the Pacific coast, and thanked him for his many years of service.

C. POST SEASON MEETING OF THE COMMISSION AND PANELS
January 11-15, 2021, via Webinar

The Commission met in two sittings via webinar during the week.

Executive Secretary Field reported on a proposed Memorandum of Understanding (MOU) between the PSC and PICES, an international organization based in Victoria, B.C. created in 1992 to promote and coordinate research in the North Pacific focused on the environment, weather, climate, and living resources, including fisheries.

The Commission agreed that the Executive Secretary would liaise with the PICES Executive Secretary to further elaborate on the possible benefits of an MOU. The Commission would decide on the appropriate course of action at the February 2021 meeting.

The Commission adopted the preliminary national post-season fishing reports with a view to approve the finalized reports in October 2021.

The Commission received reports on 2020 Chinook fisheries prosecuted in Alaska, Canada, and the Southern United States.

The Chinook Interface Group (CIG) delivered a report to the Commission, which included information about COVID19 impacts on 2020 fisheries and assessment programs, implementation of the CYER metric, Chinook Technical Committee (CTC) work plan progress, membership on the MSF and CWT-R/CEII working groups, and schedules for CIG/CTC meetings in summer 2021.

The Commission discussed a process to follow-up with the management entities about the CYER metric. The Commission agreed that the Executive Secretary would lead a small working group to initiate the process, which would include developing an outline of the issues discussed with the management entities in February 2019. The Commission would consider the outline in February 2021 and provide guidance as required.

The Test Fishing Working Group delivered a progress report on its efforts to develop recommendations for Commission approval. The Commission agreed that the Working Group would report back to the Commission at the February 2021 annual meeting.

The Commission received an update from the Committee on Scientific Cooperation (CSC) and the CSC Steering Committee, which was formed to help the CSC develop its annual work plan.

The Commission agreed that the CSC would proceed to develop a 2021 draft work plan, which the Commission would review at the February 2021 meeting.

D. THIRTY SIXTH ANNUAL MEETING OF THE PACIFIC SALMON COMMISSION
February 8-12, 2021, via Webinar

The meeting was held in two sessions via webinar.

The Commission discussed the Mark Selective Fishery (MSF) Fund and agreed that the MSF Fund Committee would meet as soon as possible to share views on 2021 priorities and potential funding needs. The Commission would approve or adjust a spending limit as needed, and an RFP would be completed by May 31. The Commission would review the MSF Fund Committee recommended proposals at the October 2021 Fall PSC Meeting.

The Commission adopted the Test Fishing policy and the Test Fishing Financial regulations tabled by the Test Fishing Working Group. The Commission agreed that the Test Fishing Working Group was disbanded.

The Commission discussed the report on food/social/ceremonial use that was intended to capture and convey the unique value and importance of salmon to indigenous peoples on both sides of the border.

Ms. Olivia Molden of Earth Economics appeared before the Commission and delivered an overview of the project entitled “The Sociocultural Value of Salmon: Phase II Insights.” The presentation included information about Phase II of the study and about plans for the June 1, 2021, report launch.

The Commission received an update from the Executive Secretary and National Sections about the proposal to enter into an MOU with PICES and agreed that Mr. Field would communicate with the PICES Secretariat to approve the formation of a Joint Study Group to draft an MOU between the organizations.

Mr. Field delivered a progress report from the Working Group on Management Entities. The Commission agreed that the Management Entities Working Group would be authorized to explore options for engaging management entities and would make recommendations to the Commission in October 2021.

Restoration and Enhancement Funds Manager Mr. Tom Alpe presented the “2020 Report of the Restoration and Enhancement Funds”.

The Commission received a report from the Chinook Interface Group (CIG). The report included information about the Okanagan Chinook Work Group workplan, a proposed Data Sharing Protocol, the Chinook Technical Committee Work Plan, CYER Work Group progress, membership of the CWTR/CEII and MSF Fund Committees, and on the CIG Forward Agenda.

The Committee on Scientific Cooperation (CSC) presented a proposed CSC work plan for 2021/22 to the Commission for approval.

The Commission received and adopted the report of the Finance and Administration Committee, including the 2021/2022 budget.

The Commission received reports from the Northern Panel, Transboundary Panel, Southern Panel, Fraser River Panel, and the Selective Fishery Evaluation Committee.

It was announced that it was Ms. MacCorkle’s final meeting as a Commissioner.

The Commissioners and Mr. Field thanked Ms. MacCorkle for her contributions to the Commission process and wished her well in her future endeavors.

Mr. Field reminded the Commission that the Larry Rutter Award would be presented to Ms. Sue Farlinger at a virtual reception.

Activities of the Standing Committees

PART II
ACTIVITIES OF THE STANDING COMMITTEES

A. MEETINGS OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

The Standing Committee on Finance and Administration met by teleconference on March 26, May 20, June 16, July 2 and December 16, 2020, January 13, 2021, and February 10, 2021. The Committee addressed several issues and made recommendations for the Commission's consideration as noted below.

Budget proposal for FY 2021/2022

The Committee reviewed the proposed budget for FY 2021/2022 as presented on December 16, 2020 (Table I).

It was agreed that the proposed budget for FY 2021/2022 would incorporate the annual salary and benefits of the CTC Coordinator position. The Committee understood that funding applications totaling $389K for FY 2021/2022 were submitted by the Secretariat to the Northern and Southern Endowment Funds for some of these costs (including $104K to offset the salary and benefits cost of the CTC Coordinator). The potential grant revenue and related project expenses are not reflected in the proposed budget, as decisions on these grants will be known on or about February 24, 2021.

The Committee understood that should these grant applications not be successful, the Secretariat is projected to expend most of its carryover and end the year with a small cumulative surplus of $197,511.

Accordingly, the Committee recommends that the Commission adopt the proposed budget for FY 2021/2022 as shown in Table I.

Secretariat staffing - workforce strategy

The Committee reviewed the document "Secretariat workforce planning" dated November 30, 2020 prepared by the Secretariat and presented at the December F&A meeting (attached). The document outlined the Secretariat's proposed workforce strategy, as summarized below:

- The workforce strategy is currently focused on the technical support that the Secretariat offers to the Parties through its Fisheries Management Division (FMD);
- The Secretariat identified three goals of the FMD to guide its workforce strategy:
    1. Make data and information accessible and publicly available;
    2. Provide technical support to the PSC community;
    3. Achieve the above without compromising the services provided to the Fraser River Panel (FRP);
- To achieve these goals, the Secretariat is proposing a number of actions:
    1. The expansion of the current Fraser data management policy in collaboration with the Commission/Panels/ Technical Committees and the Secretariat's internal Data and Information Sharing Committee (DISCO), to facilitate the development of any desired non-Fraser databases and data apps;
    2. Expanding Secretariat support to the Parties through the implementation of Chinook Technical Committee (CTC) and Fraser River Panel (FRP) databases, the hiring of a CTC Coordinator to provide direct support to the CTC, and extending Secretariat assessment work to Fraser River Chinook and Chum through the development of an integrated multi-species Fraser River stock assessment model;

3. Implementing task-oriented versus department/species-only oriented job descriptions, managing succession planning, ensuring adequate cross-training amongst technical staff, and improving recruitment and retention of staff by making the PSC more competitive in the talent-recruitment market (through augmented pay scales).

The Committee agreed to consider the Secretariat's workforce strategy proposal and tasked the Secretariat with drafting a compensation analysis across various organizations (in Canada and the U.S.A.) that compete with the PSC for talent, for additional context. It was agreed that the Secretariat will submit the compensation analysis document to the F&A Committee by the October 2021 meeting, for review.

Test Fishing

Test fishing finances

Test fishing finances remained a significant issue for the Parties, after record-low return of Fraser River sockeye and pink salmon in 2015, 2016, 2017, 2019, and 2020. The low returns have precluded the capture and sale of adequate fish to recover test fishing costs in those years, and the Parties have made supplementary financial contributions to the Test Fishing Revolving Fund (TFRF) to help defray the test fishing costs.

Through a combination of supplementary contributions from the Parties, and a financial surplus generated in 2018 (an Adams-dominant year) due to better-than-projected per pound fish prices, the TFRF balance is projected to be $858K as of March 31, 2021, which would not be sufficient to cover the 2021 season test fishing program cost (even when taking into account projected sales of test fishery catch). The Committee recommends that the Parties consider supplementation of the TFRF ahead of the 2021 test fishing season.

Supplemental remuneration for idled test fishers

Ahead of the 2020 test fishing season, the Secretariat proposed the partial compensation of Fraser River sockeye and pink salmon test fishers in cases of delayed or cancelled test fisheries, unless such test fishers were (temporarily) released from their obligation to be on standby. Upon consultation with the Fraser River Panel, and in the interest of consistency across test fisheries, the Committee did not recommend the implementation of supplemental remuneration for idled test fishers. Instead, they authorized more flexibility for idled test fishers to pursue other business opportunities if their PSC start date is delayed unreasonably.

National dues and projected deficits

The Committee acknowledged that regular annual PSC dues have remained level since FY 2011/2012 at $1,879,636 CAD per Party, and that the Secretariat has been able to operate at level dues for the past ten years due to: a) budget savings from poor fish returns and low sampling intensity, b) having certain large equipment purchases funded by the Southern Endowment Fund (prior to the creation of the Capital Asset Replacement Reserve Fund), and c) certain unforeseen events.

The Committee recognizes that without a significant increase in annual dues, the PSC is poised to exhaust most of its carryover by the end of FY 2021/2022 and enter a cumulative deficit position thereafter. Without adequate cash flow, the Secretariat would be unable to continue supporting the Parties at current levels of service.

The Committee acknowledged that the Parties preferred different approaches to address budget deficits. The U.S. approach is to secure a one-time large increase in dues that would be maintained over the next 9 years and offset its share of the large cumulative deficit projected by FY2030/31. Canada's approach is to adjust its annual contribution to offset its share of the projected deficit in that year. The Committee understood that the two approaches could be implemented simultaneously, subject to appropriate invoicing to the Parties, as recommended by the PSC auditors.

Administrative fees for Mark-Selective Fisheries Fund

Chapter 3, paragraph 4(g)(v) of the Pacific Salmon Treaty requires the U.S. to establish, subject to the availability of funds, a Mark Selective Fishery Fund (Fund) to address equipment, operations, and other implementation funding needs associated with mass marking and mark-selective fisheries (MSF). The Terms of Reference dated October 22, 2020, and approved by the Commission via the CIG Report, describe the

process the Parties will use to implement Chapter 3, paragraph 4(g)(v) including the solicitation, evaluation, and selection of projects. The Terms of Reference allow the PSC Secretariat to assess an administrative fee of "up to 10% of the expended value of the contracts administered."

For the purpose of maximizing the funds available for grants, while ensuring that the Secretariat is fairly compensated for administering the Fund, the Commission tasked the Committee with recommending an appropriate administrative fee.

The Committee recommends that the Secretariat assesses an administrative fee equal to 7% of the total Fund to be applied proportionally as funds are expended.

B. MEETINGS OF THE STANDING COMMITTEE ON SCIENTIFIC COOPERATION

The CSC met several times during FY2020/2021 and marked its first year engaging with the newly formed CSC Liaison Group. The Commission created the Liaison Group in February 2020 to help the CSC digest and prioritize issues for the annual work plan process, and the group currently comprises four Commissioners (Auger, Klumph, Riddell, and Thomson).

For the current fiscal year, the CSC addressed two major items as summarized below.

Item 1: Templates for environmental indicator use across PST chapters (and documentation of the management frameworks).

In recent years, the Chinook Technical Committee and Southern Panel had advised the Commission to establish a multi-species forum under the PSC to address ongoing change in Pacific salmon ecosystems. Those bodies noted that past assumptions about salmon productivity and fishery susceptibility may be invalid, and such disconnects had the potential to affect modelling significantly under Annex IV structures.

As a first step to address this recommendation, the Commission agreed the CSC would inventory the assessment and management frameworks of each chapter of the PST to determine if/how they incorporate environmental indicators and/or account for changes in productivity. Once these inventories are complete, the CSC is expected to analyse results and develop recommendations for if and how PSC management approaches could be adapted to be more robust to environmental change.

The CSC made plans to populate ten templates (determined by geography and/or fisheries) to summarize the assessment and management frameworks noted above. The CSC and Liaison Group also agreed it would be best to have the relevant Technical Committees and Panels review and edit the pre-populated templates for accuracy and special notation. Table 1 summarizes the templates under development.

Table 1. Summary of each PST chapter inventory: species and fisheries, the CSC leads for developing them, PSC members that are expected to provide review, and current status.

Templates	**PSC reviewers***
Chapter 1 – Taku TBR Chinook, sockeye, coho	TC, P
Chapter 2 – Nass & Skeena River sockeye	TC, P
Chapter 3 – Chinook (all stocks & fisheries)	mgrs, CTC, CIG
Chapter 4 – Fraser sockeye (all stocks & fisheries)	mgrs, TC, P
Chapter 4 – Fraser pinks (all stocks & fisheries)	mgrs, TC, P
Chapter 5 – Southern Coho (all stocks & fisheries)	TC, P
Chapter 1 – Alsek TBR Chinook, sockeye, coho	TC, P
Chapter 1 – Stikine TBR Chinook, sockeye, coho	TC, P
Chapter 6 – Southern Chum	TC, P
Chapter 8 Yukon River (Chinook and Chum)	TC, P

* PSC reviewers key: mgr = managers and assessment staff, TC = technical committee, P = Panel

By spring 2022, the CSC plans to finalize inventories under review and/or near completion as well as complete drafts for the inventories that have not been started.

Item 2: Environmental indicators introductory workshop, co-hosted with the southern Coho Technical Committee.

The CSC in partnership with the Coho Technical Committee and Pacific Salmon Commission Secretariat, planned a virtual workshop for May 11, 2021, titled: "Introduction to using environmental indicators to inform salmon management".
The objectives of the workshop are (through a series of presentations, Q&As, and panel discussion):

1. share background information and perspectives on the use of environmental indicators to inform management, specifically:
    a. salmon marine distributions,
    b. data sources,
    c. future conditions, and
    d. using western science and traditional knowledge
2. illustrate the use of environmental indicators to inform salmon management with case studies from:
    a. NOAA salmon stoplight chart,
    b. Fraser River sockeye scorecard, and
    c. hypothesis testing for forecasting Salish Sea salmon

A workshop report will be published as a PSC Special Report along with a video recording of the proceedings.

C. MEETINGS OF THE NORTHERN AND SOUTHERN FUND COMMITTEES

This section summarizes the meetings and business of the Northern and Southern Fund Committees between April 1, 2020, and March 30, 2021. A more detailed account of the meetings held in 2020 is provided in the 2020 Annual Report of the Endowment Fund Committees to the Commission, available for download from the PSC website. A more detailed account of the meetings held in 2021 will also be published in due course as part of the Committees' 2021 report.

Joint Fund Committee and Investment Subcommittee meetings

The Northern and Southern Fund Committees have agreed that given the congruent nature of their agendas, their decision to combine the funds into a single master account for investment management purposes, and the efficiencies involved with respect to interaction with investment advisors and managers, it is appropriate to meet together as a Joint Fund Committee to conduct investment related business.

The Joint Fund Committee met four times during the period covered by this report: twice in May, once in September and once in November. In addition, a subcommittee struck by the Joint Fund Committee met a number of times in this period to conduct a review of the Endowment Fund's mix of assets and to develop recommendations regarding associated changes to the Committee's investment managers.

Asset mix review and investment manager search

At the November 2019 Joint Fund Committee meeting a decision was made to proceed with an asset mix review to determine whether the Endowment Funds' ('Funds') risk-return profile could be improved. The Fund Committee's Investment Advisor (George & Bell Consulting) was tasked with conducting this review. An Investment Subcommittee was struck to provide direction to the review and to present recommendations about the asset mix to the full Fund Committees. Mr. Steve Gotch, Mr. Doug Mecum, Mr. Larry Peck and Mr. Don Hall volunteered for the Subcommittee. The Subcommittee met with George & Bell a number of times in the first quarter of 2020.

On May 26, 2020, the Joint Fund Committee reviewed and endorsed the Subcommittee's recommendations to move towards a new long-term asset mix and to select a new infrastructure and a new global equity mandate manager as part of the transition. The Joint Fund Committee agreed to make a final decision about the exact long-term asset mix at the same time as making decisions about hiring new fund managers.

The Investment Subcommittee interviewed shortlisted managers on July 27 and July 29, 2020. The Subcommittee selected PH&N Institutional as their preferred candidate for the new global equity mandate, and Axium Infrastructure for the infrastructure mandate.

The Joint Fund Committee met again on September 25 to make final decisions about the asset mix composition and the selection of new managers. They agreed with the Subcommittee's recommendations to select Axium Infrastructure and PH&N Institutional. The Committee also made decisions to terminate LSV as a manager (a necessary part of this transition, and attributable to the performance of this mandate), and (b) select a new long-term asset mix for the funds.

Joint Fund Committee meetings

The following information provides a summary of remaining Joint Fund Committee (in this section, 'Committee') activities undertaken in this period.

On May 5, 2020, the Committee met by phone for one hour to discuss the potential recovery of US withholding tax associated with the Funds' return on investments generated through the Morgan Stanley portfolio between 2016 and 2019. George & Bell Consulting had identified an opportunity to attempt to

recover up to US $355,476 paid by Morgan Stanley over this period. The Committee discussed the engagement of Polaris Tax Counsel to attempt to recover these taxes. The Committee requested that Ms. Manisali (Pacific Salmon Commission Secretariat – Director of Finance) gather further information to inform the Committee's decision. Following subsequent correspondence, the Committee agreed to engage Polaris Tax Counsel.

On May 26, 2020, the Committee met virtually to review investment performance and to conduct related business. The main additional items discussed related to the recovery of withholding taxes; fund administration expenses in the prior fiscal year and approval of an administration budget for the coming fiscal year; the documentation of the Committees' procedures for soliciting and making decisions about project proposals; the possible impacts of COVID 19 on projects; a workplan for the Fund Manager, and a review of Secretariat staff support over the prior year.

On November 23 and 24, 2020, the Committee met virtually to review investment performance, to receive presentations from and interview investment managers (Axium Infrastructure, Invesco, and IFM), and to conduct related business. The main additional items discussed related to the ongoing recovery of withholding taxes; reviewing and updating the Committees' Statement of Investment Policies and Procedures; the Committee's procedures for considering requests from proponents to present their work to either Committee; the administration of honorarium payments; and the development of onboarding materials for new Committee members.

Northern Fund Committee meetings

The Northern Fund Committee met four times during this period.

1. On May 27, 2020, the Committee met to develop a Call for Proposals for projects due to start in 2021. The Committee also discussed the asset mix review which was ongoing at that time; the implications of COVID 19 for 2020 Northern Fund projects, the Committee's procedures for managing project change requests; and procedures for monitoring proponent's compliance with contractual reporting requirements.
2. On September 30 and October 1, 2020, the Committee met to review project concepts submitted in response to the 2021 Call for Proposals. The Committee also discussed / reviewed the administrative status of projects supported in 2020; their procedures for reviewing and selecting projects; their audited financial statements for FY 19/20; and Northern Fund communications.
3. On November 24, 2020, the Committee met briefly in the margins of the Joint Fund Committee fall meeting to discuss their protocols for communicating their decisions with proponents.
4. On February 23 and 24, 2021, the Committee met to make decisions about the projects to support in 2021. The Committee also discussed / reviewed the compliance of projects that were supported in the past with their reporting requirements and made decisions about how to address projects that had not submitted their reports on time.

There was a change in the membership of the Northern Fund Committee in 2021. Chief Russ Jones was appointed to the Canadian Section of the Committee on February 22, 2021, replacing Dr. Carmel Lowe.

Southern Fund Committee meetings

The Southern Fund Committee met four times during this period.

1. On April 20, 2020, the Committee met to develop a Call for Proposals for projects due to start in 2021. The Committee also discussed / reviewed their procedures for managing project change requests; the possible implications of COVID 19 for Southern Fund projects, and the status of their strategic plan.

2. On September 28, 2020, the Committee met to review project concepts submitted in response to their 2021 Call for Proposals. The Committee also discussed / reviewed the status of their strategic plan; their procedures for reviewing and selecting projects; their procedures for managing project change requests; the audited financial statements for the Southern Fund for FY 19/20, and other procedural matters.
3. On November 23, 2020, the Committee met for one hour in the margins of a Joint Fund Committee meeting to discuss the outcomes of the Salish Sea Marine Survival Program and to consider their procedures for assessing projects that are primarily focused on preserving and / or restoring salmon habitat.
4. On February 25, 2021, the Committee met to select projects to support in 2021

Activities of the Panels

PART III
ACTIVITIES OF THE PANELS

A. FRASER RIVER PANEL

At the January meeting the Panel received reports reviewing the 2020 fishing season, an overview of the Mission program and estimates, addressed Total Allowable Catch (TAC) calculations and allocation status, reviewed test fishing program expenses and revenues. At the February meeting the Panel received reports from Canada on 2020 escapements, and 2021 pre-season forecasts for Fraser River sockeye and pink salmon. Additional reports were provided regarding Washington sockeye and pink salmon pre-season forecast and historical returns. Canada also presented an update on the Big Bar landslide and discussed key management questions. The Panel also discussed test fishing options regarding the 2021 schedule and the 2021 updates to the PSC test fishing policy.

B. NORTHERN PANEL

The bilateral Northern Panel met at the PSC Post Season meeting via MS Teams from January 11–14, 2021. There were no bilateral Northern Panel meetings during the PSC Annual Meeting in February. During the January meeting, fishery managers from both parties presented information to the Panel on Northern Boundary Area fisheries for 2020 and discussed compliance with provisions of the PST Agreement. The Panel reviewed and bilaterally agreed with the Northern Boundary Technical Committee's (NBTC) final 2019 sockeye salmon The Panel reviewed and bilaterally agreed with the Northern Boundary Technical Committee's (NBTC) final 2019 sockeye salmon and 2020 pink salmon run reconstructions. The NBTC also presented the current status of allowable and actual harvests and cumulative allowable harvest sharing agreements of sockeye salmon, as specified in Annex IV, Chapter 2. The Panel received a final recommendation from the NBTC about the requirement in the new annex to review the Northern Boundary sockeye run reconstruction (NBSRR) model regarding the creation of a simpler model. The panel also received updates and status on the Nass/Skeena Sockeye Benchmark Analysis and District 104 Pink Fishery Analysis assignments, which are also requirements in the new annex. Lastly, the Panel received an update on the NBTC's 2017 assignment that will provide a state of knowledge on the status of northern coho salmon stocks, including information on productivity, harvest rates, assessment programs, and management actions.

C. SOUTHERN PANEL

During the period April 1, 2020, through March 31, 2021, the bilateral Southern Panel, Coho Technical Committee (CoTC) and Chum Technical Committee (ChumTC) conducted all meetings virtually to accomplish work plan objectives.

The Chum bilateral Technical Committee met on May 4-8, 2020, virtually. They worked to finalize their annual report, define and develop components of the Southern Chum Strategic Plan, and review status of all Southern Endowment Fund projects.

The bilateral Coho Working Group (a subset of CoTC and Southern Panel members) met virtually on July 7, 2020, to discuss work planning and the latest updates on CoTC assignments (particularly Periodic Report and Environmental Change), an update on Big Bar impacts on upstream salmon, including Interior Fraser Coho, and the Lower Fraser Coho escapement estimation project. The WG also discussed the logistics and administration for holding virtual meetings into the future and reviewed workplans for the CoTC, including the proposal to host a workshop on environmental indicators.

From January 11-15, 2021, the bilateral Southern Panel met virtually. The Panel received the following presentations: 1) Big Bar Progress Report; 2) ocean indicators report about predicted effects on Pacific Northwest salmon, presented by Laurie Weitkamp. Additionally, during the January meeting the Parties made progress on updating work plans for implementing the new aspects of Chapters 5 and 6 of the PST.

The bilateral Southern Panel met again virtually from February 8-12, 2021. The bilateral Panel received Coho and Chum Technical Committee updates, including the Southern Endowment Fund priorities of those technical committees. In addition, the CoTC provided its report on the post season coho assessment report for 2019 to the Southern Panel. The Panel received a follow up presentation on the PSC portal from John Son of the PSC Secretariat. This presentation described the PSC website portal for sharing documents, maintaining records of meetings, etc. The southern panel is working towards implementing use of the SharePoint site for the future. Also, the bilateral Panel continued to develop and refine the work plans for implementing the new Chapter 5 and 6 components. In addition, the Panel advanced plans for the mid-March information exchange.

On March 15, 2021, the U.S. and Canadian chairs, alternate chairs, as well as a subset of Coho and Chum Technical Committee representatives met for the annual manager-to-manager preseason information exchange meeting (virtually). The Parties exchanged preseason stock forecasts with status designations, as well as preliminary fishery plans.

D. TRANSBOUNDARY PANEL

The Transboundary Panel (Panel) held two series of bilateral sessions in conjunction with the Pacific Salmon Commissions meetings, the first being the 2020 Post-Season meeting (January 12-14, 2021) while the second was the 2021 Annual meeting (February 9-11, 2021). All Panel meeting sessions were held “virtually” as a result of travel restrictions associated with COVID-19 public health measures.

At its Post-Season meeting in January, the Panel received post-season reporting on Transboundary terminal and in-river fisheries, stock status of Stikine, Taku and Alsek salmon runs and associated harvest, enhancement and escapement results from the 2020 fishing season. As required in Chapter 1 (Paragraph 4), 2020 U.S. and Canadian fishery management measures and associated catch were evaluated to confirm if bilateral escapement goals and harvest shares were achieved. Minimum spawning escapement was not achieved for: Taku and Stikine River Chinook salmon; Stikine River sockeye salmon (both the Tahltan Lake and Mainstem stocks); and Alsek River (Klukshu River stock) sockeye salmon. Management actions are required by the Parties in 2021 for Taku and Stikine River stocks of Chinook salmon, which have not achieved minimum spawning escapement objectives in 5 of the past consecutive 5 years. In 2020 U.S. fisheries exceeded PST harvest share allocations for Taku River coho salmon (1 of 5 years) and Stikine River sockeye salmon (1 of 5 years) while Canadian fisheries exceeded the PST harvest share allocation for Stikine River sockeye salmon (3 of 5 years). The latter requires Canada to implement mitigative fishery management actions in 2021. In consideration of concerns over on-going production and survival of Transboundary River Chinook salmon stocks, the Panel requested the Transboundary Technical Committee to develop and provide presentations on Chinook salmon base-level catch rates in Transboundary terminal and in-river fisheries as well as information on incidental Chinook salmon mortality resulting from catch and release in non-directed fisheries at the February 2021 Annual meeting.

The Panel received reports on various sockeye salmon enhancement activities completed in 2020, which included egg take and fry stocking levels completed as part of the joint Stikine and Taku Sockeye Salmon Enhancement Programs (SEPP and TEPP). The results of the Final 2019 SEPP were reviewed, which prompted the Panel to request a presentation from the Transboundary Enhancement Sub-Committee on the “in-season protocol” for determining and implementing adjustments to sockeye enhancement production plans at its February 2021 Pre-Season meeting. Proposed SEPP and TEPP programs were presented to and reviewed by the Panel (with final decisions on approval deferred to the February 2021 Annual meeting.

The Panel also received technical presentations on: salmon passage at the Stikine River (Tahltan River) 2014 landslide site; the development of new Alsek River Chinook and sockeye salmon assessment programs; the status of the Stikine River sockeye escapement goal review; and he Taku River December 2020 landslide event which occurred in the Taku River valley upstream of the international border.

At the 2021 Annual meeting in February, the Panel received and reviewed forecasts for Stikine, Taku, and Alsek River Canadian-origin salmon stocks for the coming season. In general, the outlooks for Chinook salmon (all stocks) and Stikine sockeye salmon stocks were poor (i.e., near or below Total Allowable Catch and escapement thresholds) while allocations and associated fishery opportunities are anticipated for sockeye (Taku Alsek and minimal opportunity for Stikine) and coho salmon (Taku and Stikine). Primarily as a result of poor forecasts for a number of stocks, no bilaterally-recognized assessment fisheries that required direct fish mortality were recommended for 2021. The Transboundary Technical Committee presented information on proposed Chinook and coho salmon coded wire tagging programs to be delivered on the Taku and Stikine Rivers in 2021, while acknowledging the intent to proceed with project delivery in accordance with COVID-19 international travel protocols and requirements.

In preparation for the 2021 fishing season, the Panel received presentations on fishery management measures proposed for U.S. terminal and Canadian in-river fisheries (which included strategies intended to conserve Taku and Stikine River Chinook salmon as well as specific Canadian Stikine River sockeye salmon fishery management measures required in response to the 2020 Paragraph 4 fishery harvest trigger)). Recognizing the Panel's interest in Transboundary River Chinook salmon stocks, the Transboundary Technical Committee provided the Panel information on Chinook salmon base-level catch rates in Transboundary terminal and in-river fisheries and a summary of information on incidental Chinook salmon mortality resulting from non-directed fisheries. The presentation prompted the Panel to task the Transboundary Technical Committee with providing recommend incidental mortality rates for Transboundary terminal and in-river fisheries for consideration at the Panel's January 2022 bilateral meeting.

The Transboundary Enhancement Sub-Committee presented information on and recommendations regarding Sockeye Salmon Enhancement Program Plans. As a component of this process, the Panel approved the Final 2019 Stikine Enhancement Production Plan report as well as new Taku and Stikine River sockeye salmon enhancement production plans for the coming year (2021-22).

Finally, the Panel reviewed progress on items identified within the 2019-2028 Chapter 1 Implementation Plan and received updates on the key activities proposed for 2021.

Review of 2020 Fisheries and Treaty-Related Performance

PART IV
REVIEW OF 2020 FISHERIES AND TREATY-RELATED PERFORMANCE

A. FRASER RIVER SOCKEYE SALMON

The 2020 season saw a record low number of sockeye salmon return to the Fraser River. The final in-season run size estimate of 365,300 sockeye was 61% less than the median forecast (941,000) and 88% below the cycle line average (3,100,000). While low survival rates similar to previous years were expected, there is no clear explanation why survival rates turned out to be the lowest on record. This very low run size was further impacted by the Big Bar landslide of 2019, most notably early in the season when discharge levels were high. The overall low run size in combination with the Big Bar migration challenges resulted in the smallest spawning escapement in the Fraser River since the 1940's. The following paragraphs describe the planning of the 2020 season and the Panel management actions, including those taken in response to the low sockeye salmon run size and the Big Bar landslide.

Pre-season Planning

1. During the 2019/20 winter/spring season, substantial mitigation work had been undertaken to alleviate the impact of the Big Bar rockslide. The remediation work included breaking up and removing rock at the site to improve natural fish passage and the construction and deployment of alternative fish passage options including a concrete fishway and the WHOOOSH, a flexible, pressurized fish transport tube.

2. Pre-season, the median run size forecast (p50 level) was 941,000 Fraser River sockeye salmon and according to the quantitative forecast there was a one in two chance that the run size would be between 488,000 and 1,913,000.

3. Pre-season expectations of migration parameters included a 35% diversion rate for Fraser River sockeye through Johnstone Strait. The Panel adopted the following Area 20 50% migration dates: July 4 for Early Stuart, July 24 for Early Summer, July 31 for Summer, and August 6 for Late-run sockeye.

4. At median (p50) forecast abundance levels, pre-season spawning escapement goals were 13,000 Early Stuart, 150,300 Early Summer, 611,000 Summer and 99,000 Late-run sockeye for a total of 873,300 sockeye salmon. The goals for each sockeye management group were established by applying Canada's Spawning Escapement Plan to their median forecasted run sizes.

5. Management Adjustments (MAs) of 9,000 Early Stuart, 78,200 Early Summer, 97,800 Summer-run and 40,600 Late-run sockeye were added to the spawning escapement targets to increase the likelihood of achieving the targets.

6. There was no projected Total Allowable Catch (TAC) of Fraser River sockeye salmon based on the median forecasted abundances and agreed deductions.

7. Pre-season model runs at the p75 also projected no international TAC; however, Canada was able to model some Food, Social, Ceremonial fisheries targeting Early Summer run.

8. The Panel adopted the 2020 Management Plan Principles and Constraints and Regulations, the 2020 Regulations, and the 2020 Pre-season Agreement on Test Fishing Deductions.

In-season Management Considerations

9. The in-season marine migration timing was earlier than pre-season expectations for all sockeye management groups except for Early Stuart: 2 days later for Early Stuart run, 9 days earlier for Early Summer-run, 3 days earlier for Summer run and 4 days earlier for Late run.

10. The overall Johnstone Strait diversion rate for Fraser River sockeye was 25% compared to the pre-season forecast of 35%.

11. Returns for Fraser sockeye salmon were substantially below median pre-season forecasts with the exception of Early Stuart sockeye salmon. Early Stuart run: 30% above median forecast, Early Summer run: 59% below median forecast, Summer run: 60% below median forecast, Late run: 83% below median forecast. The number of returning Early Stuart sockeye fell between the p50 and p75 run size forecast, but for Early Summer, Summer and Late run, the number of returning sockeye were lower than the p25 run size forecasts.

12. The very low number of sockeye returning to the Fraser River resulted in the spawning escapement target to be equal to the run size for all management groups. Therefore, the adoption of management adjustments (MAs) for all run timing groups was unnecessary, as it would not impact achievement of the targets. Fraser River discharge was above historical average and river temperatures were below historical average in July and were near average through August and early September.

Implications of the Big Bar landslide

13. A Unified Command Incident Management Team, a collaboration between First Nations, Federal and Provincial governments, continued to lead the remediation response for the 2020 season which included: the natural fishway, radio tagging, sonar monitoring, fish transport by WHOOOSH and truck and the collection of Early Stuart and Bowron broodstock for emergency enhancement.

14. Despite the mitigation work, the Big Bar landslide continued to create migration challenges for salmon spawning above Big Bar, in particular for early migrating stocks like Early Stuart and Bowron sockeye that experience high discharge levels.

15. As discharge levels decreased over the summer and water levels declined, an increasing proportion of the run was able to make it past the slide naturally.

16. Of the stocks above Big Bar, the following proportions made it to the spawning grounds: 0.2% of the Early Stuart run, 147% of the Early Summer run and 94% of the Summer run stocks.

17. Post-season, additional remediation work was focused on the construction of permanent fishways.

Run Size, Catch, Escapement and Migration patterns

18. Returns of adult Fraser sockeye totaled 363,800 fish which was 59% below the escapement of 890,000 fish in the primary brood year (2016). This return was the smallest since records started in 1893. Divided into management groups, adult returns totaled 16,800 Early Stuart, 88,900 Early Summer-run, 241,500 Summer-run and 16,600 Late-run sockeye.

19. Due to the very poor sockeye return, all sockeye management groups were managed using a 10% low abundance exploitation rate (LAER).

20. Catches of Fraser River sockeye salmon in all fisheries totaled 25,300 fish, including 11,400 fish caught by Canada, 9,300 fish caught by the U.S. and 4,600 fish caught by test fisheries. Almost all the Canadian catch was from unsanctioned catch (11,300 fish). All of the catch by the U.S. was from pink directed fisheries in Alaska. The overall harvest rate was 7% of the run.

21. DFO's near-final estimates of spawning escapements to streams in the Fraser River watershed totaled 273,600 adult sockeye. This was 44% less than the brood year escapement of 484,500 adults and the lowest escapement on this cycle since the 1940's. By management group and for this cycle line, spawning escapements in 2020 were the lowest on record for Early Stuart and Late run, the second lowest for Summer run and for Early Summer run, the lowest since the mid-1970s. There were 157,300 effective female spawners in the Fraser watershed, representing an overall spawning success of 97%.

22. There was considerable evidence that the number of fish returning deviated from the accounted catch and escapement estimates, as the difference between estimates (DBEs) accounted for 18% of the run

size estimate. The DBEs, which are the differences between spawning escapements and potential spawning escapements (Mission escapement minus any in-river catch above Mission) will eventually be replaced by run size adjustments (RSAs) following further evaluations of the differences and associated en-route losses within the RSA process.

Achievement of Objectives

23. In order of descending priority, the goals of the Panel are to achieve the targets for spawning escapement, international sharing of the TAC, and domestic catch allocation.

24. In-season management decisions are based on targets for spawning escapement, which are represented in-season by potential spawning escapement targets (i.e., spawning escapement targets plus MAs). Due to the extremely low return in 2020, the spawning escapement targets for all management groups equaled their run sizes, and there was no need for the Panel to adopt MA estimates. Also, with the very low catches, the potential escapements (i.e., Mission escapement minus all catch above Mission) for each management group were very similar to the spawning escapement target: Early Stuart sockeye (4% above), Early Summer-run (4% under), Summer-run (9% under) and Late-run sockeye (14% over).

25. For all management groups, the spawning escapement target equaled the run size, so the escapement target could only be obtained in the absence of catches and any difference between estimates. Thus, even with the rigorous management approach that was applied in 2020, spawning escapement targets could not be met for any management group. Additionally, the Big Bar landslide also meant further reductions in escapement to upper river spawning areas for early migrating stocks like Early Stuart and Bowron.

26. Spawning ground estimates of Fraser sockeye abundance totaled 273,900 adults, which is 25% below the post-season target. Spawner abundance was severely below target for Early Stuart sockeye (98% under), below target for Early Summer-run (10% under), below target for Summer-run (23% under) and below target for Late-run sockeye (62% under). The exploitation rates for all management groups were less than their respective LAERs.

27. There was no International TAC (Total Allowable Catch) of Fraser sockeye, based on the calculation method set out in Annex IV, Chapter 4 of the Pacific Salmon Treaty. There was no sockeye catch in Washington. The total Canadian catch of 11,400 Fraser sockeye consisted almost entirely of unsanctioned catch in addition to 50 fish caught in the Charter test fishery (Albion). This Canadian catch was 100% more fish more than the Canadian share of TAC + AFE. In these calculations, the TAC is based on the TAC on the date of the last in-season Panel meeting (September 1, 2020), while catches are post-season estimates.

28. There was no by-catch of non-Fraser sockeye salmon as there were no commercial fisheries in 2020.

Allocation Status

29. No payback was generated in 2020, but by Panel agreement there is a U.S. payback of 470 Fraser River sockeye from the 2019 season that will be carried forward to 2021.

B. 2020 POST-SEASON REPORT UNITED STATES SALMON FISHERIES OF RELEVANCE TO THE PACIFIC SALMON TREATY

I. PRELIMINARY 2020 SOUTHEAST ALASKA FISHERIES

INTRODUCTION

This report describes the conduct of Alaska fisheries of interest to the Pacific Salmon Commission (PSC) that occurred during 2020 in the area south and east of Cape Suckling, Alaska and north of the U.S./Canada border. These fisheries were conducted under preseason management plans that were consistent with Annex IV of the Pacific Salmon Treaty (PST), including obligations defined within Chapter 3 for Chinook salmon aggregate abundance-based management regimes (AABM).

The 2020 season was challenging due to the broad impact of the COVID-19 pandemic on all aspects of society, including fisheries and fisheries management. In March, the State of Alaska designated fisheries as critical infrastructure to protect the food supply chain and the economy. The Commissioner of the Alaska Department of Fish and Game (ADF&G) immediately directed staff to develop action plans to safely implement field projects to the extent practicable so that fisheries could be prosecuted with the least amount of disruption. Alaska was successful in maintaining all its domestic projects necessary for fisheries management with no incidence of COVID-19, and fisheries occurred as planned with extra safety precautions in place for vessel operators, processors, and staff. We would like to recognize the numerous ADF&G staff who put in extraordinary efforts to ensure Alaska's fisheries continued uninterrupted during this difficult time.

Bilateral projects operating on the transboundary rivers (TBR) were particularly challenging this season, due to the varied mandates put in place by both countries to stop the spread of COVID-19 and the stricter rules regarding border crossings, which are inherent to bilateral operations. Despite the challenges, there was excellent bilateral communication between ADF&G, Canadian Department of Fisheries and Oceans (DFO), and Canadian First Nations that helped ensure that TBR projects operated as close to normal as possible and provided the data critical for management of fisheries harvesting salmon originating from the Stikine, Taku, and Alsek rivers. The enhancement programs on the Taku and Stikine rivers also faced unique challenges with the transport of eggs and fry across the border, but by close coordination between Alaska and Canada, fry transports were ultimately successful. Alaska would like to thank all the Canadian personnel that made extra effort to ensure these essential projects were able to operate.

Due to these extraordinary efforts, Alaska was able to meet all its PST obligations with respect to data collection inclusive of catch accounting, sampling, escapement monitoring, and hatchery marking and tagging. All programs generally proceeded as normal, with exception of the federally operated Little Port Walter research facility which suspended marking and tagging. The State of Alaska does not anticipate any implications for meeting annual Treaty commitments due to the COVID-19 pandemic.

All fisheries were managed consistent with the obligations outlined in the PST. Preliminary data suggest that the harvests of sockeye salmon in Alaska were very low in all fisheries and will be below annual allowable harvests in Northern Boundary and Taku River fisheries. The District 104 purse seine fishery was limited to a single 6-hour opening prior to statistical week 31 to reduce harvest of Nass and Skeena River sockeye salmon. For Chinook salmon, all fisheries were managed conservatively and monitored closely inseason to avoid exceeding the harvest level defined in the 2019 PST Agreement, and the 2020 all-gear Treaty harvest of 204,624 was below the CPUE-based catch limit of 205,165.

NORTHERN BOUNDARY AREA FISHERIES

District 104 Purse Seine Fishery

The 2019 revision of the Pacific Salmon Treaty (PST) Agreement calls for abundance-based management of the District 104 purse seine fishery. The Agreement allows the District 104 purse seine fishery to harvest 2.45 percent of the Annual Allowable Harvest (AAH) of Nass and Skeena sockeye salmon prior to ADF&G statistical week 31 (referred to as the Treaty period). The AAH is calculated as the total combined run of Nass and Skeena sockeye salmon minus either the escapement requirement of 1.1 million (200,000 Nass River and 900,000 Skeena River) or the actual in-river escapement, whichever is less.

The District 104 purse seine fishery opens by regulation on the first Sunday in July. In 2020, the first potential opening was July 5 (week 28). The pre-week 31 fishing plan for District 104 was based on the preseason DFO forecast runs of approximately 1.37 million Nass and Skeena sockeye salmon. In the 2020 Treaty period (Alaska statistical weeks 28–30), 6,923 sockeye salmon were harvested during a 6-hour opening in week 30 (Table 1). The fishery was closed in weeks 28 and 29 due to low Skeena River sockeye salmon abundance. A total of 13 purse seine vessels fished at some time in the district during the Treaty period. A preliminary estimate of 5,300 Nass and Skeena sockeye salmon were harvested in the District 104 purse seine fishery during the 2020 Treaty period. The final estimate of the number of Nass and Skeena sockeye salmon harvested during the Treaty period in District 104, will be determined at the January 2022 PSC post season meeting.

In 2020, a total of 1,453,277 pink salmon, 143,877 sockeye salmon, 84,027 chum salmon, 19,705 coho salmon, and 3,833 Chinook salmon were harvested in the District 104 purse seine fishery (Table 1). The number of days that the fishery was open, and the number of boats fishing were both below the 1985–2019 average (Figure 1 and 2). Purse seine fisheries were on non-retention for Chinook salmon throughout most of the salmon season, except for weeks 32 through 34. Sockeye salmon harvests were below average in all weeks (Figure 4) and the Treaty period (week 28–30) harvest of 6,923 fish was only 7% of the long-term average (1985–2019). The total sockeye salmon harvest of 143,877 fish was 32% of the long-term average of 453,000 fish. Harvests of coho salmon were also well below average in all weeks (Figures 5) and the overall harvest of 19,705 fish was 18% of average. The overall pink salmon harvest of 1,453,277 fish was only 19% of average (Figure 6) and the chum salmon harvest of 84,027 fish was 29% of average (Figure 7).

Since the PST was signed in 1985, the number of hours open, boats fished, and boat-days fished in the pre-week 31 annex period in District 104 are down 56%, 63% and 85% respectively compared to averages in the pre-Treaty 1980–1984 period (Table 2). The total pre-week 31 Treaty-period sockeye salmon harvest is also down 51%. The purse seine fleet moves freely between districts as various species are harvested, so seining opportunities elsewhere affect the effort and catch in District 104.

Table 1. Weekly salmon harvest and fishing effort in the Alaska District 104 purse seine fishery, 2020.

Week/ Opening	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
28	Closed	–	–	–	–	–	–	–
29	Closed	–	–	–	–	–	–	–
30	7/19	0	6,923	2,199	66,720	3,960	13	6
31	7/26	0	12,510	2,707	85,307	6,874	33	15
31B	7/30	0	41,647	4,166	509,164	19,872	71	15
32	8/2	771	26,546	2,195	191,282	15,571	68	15
32B	8/5	181	11,930	1,352	136,292	12,570	35	15
32C	8/8	103	10,158	1,085	111,983	7,812	23	15
33	Closed	–	–	–	–	–	–	–
33B	8/13	1,914	21,002	2,975	260,760	12,031	37	15
34	8/16	864	13,161	3,026	91,769	5,337	39	15
							Permits Fished	
Weeks 28–30		0	6,923	2,199	66,720	3,960	13	6
Weeks 31–34		3,833	136,954	17,506	1,386,557	80,067	98	105
Total		3,833	143,877	19,705	1,453,277	84,027	99	111

Table 2. Fishing opportunity, effort, and sockeye salmon harvest prior to week 31 in the Alaska District 104 purse seine fishery.

Year	Hours Fished	Individual Permits Fished	Days Fished (1d=15hrs)	Approximate Boat-Days	Sockeye Harvest	Sockeye Catch per Boat-Day
2020	6	13	0.4	5	6,923	1,385
Avg. 80–84	139	225	9	1,487	187,647	136
Avg. 85–19	61	84	4	222	92,873	454
% Change	-56%	-63%	-56%	-85%	-51%	235%

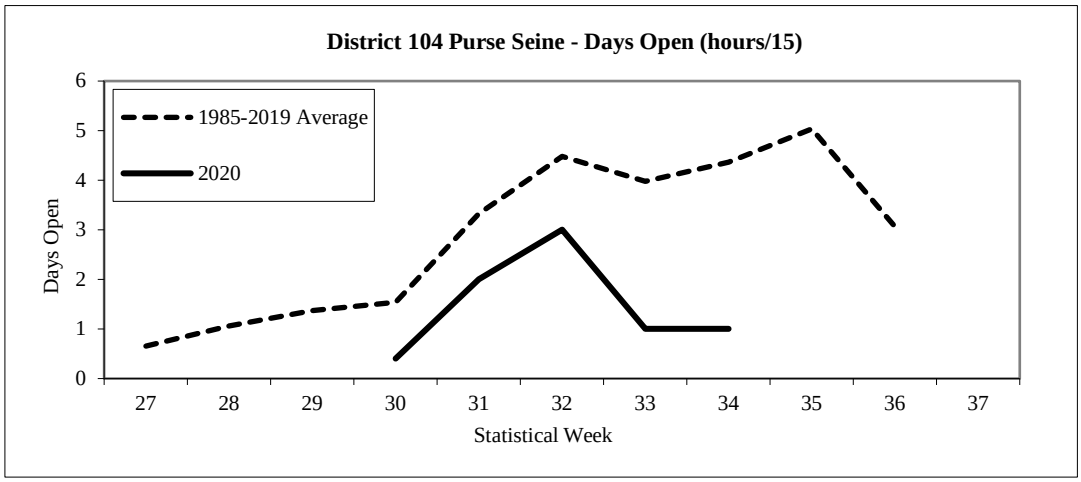

Figure 1. Days open by week in the District 104 purse seine fishery, 2020.

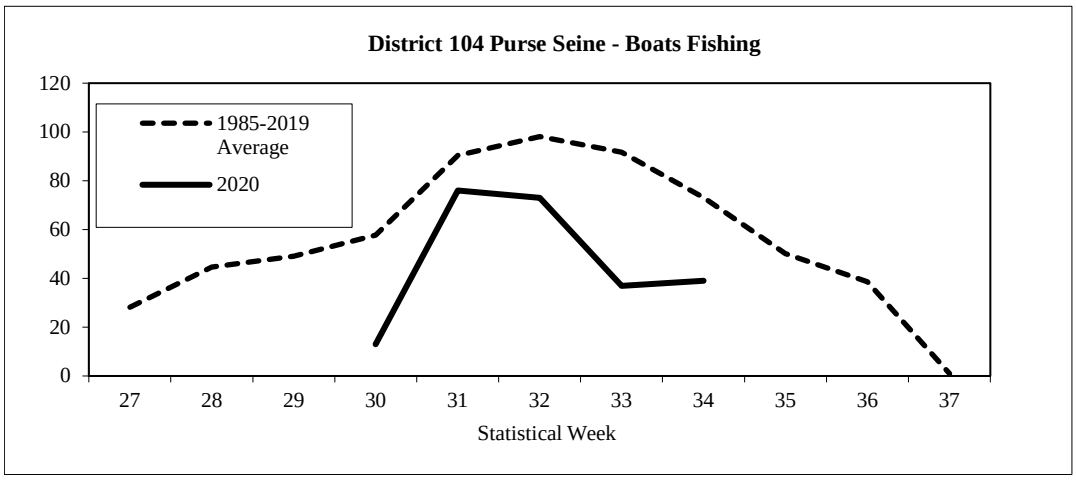

Figure 2. Number of boats fishing by week in the District 104 purse seine fishery, 2020.

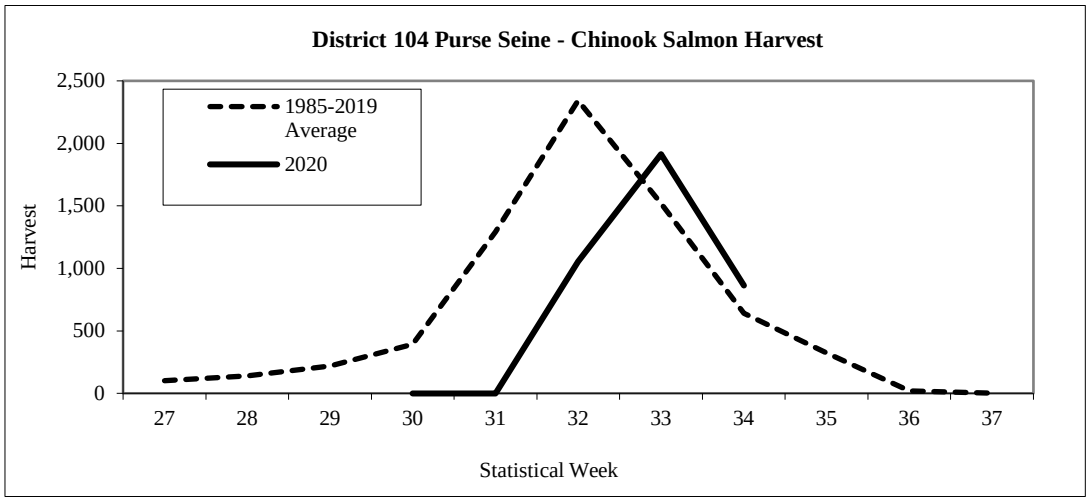

Figure 3. Chinook salmon harvest by week in the District 104 purse seine fishery, 2020.

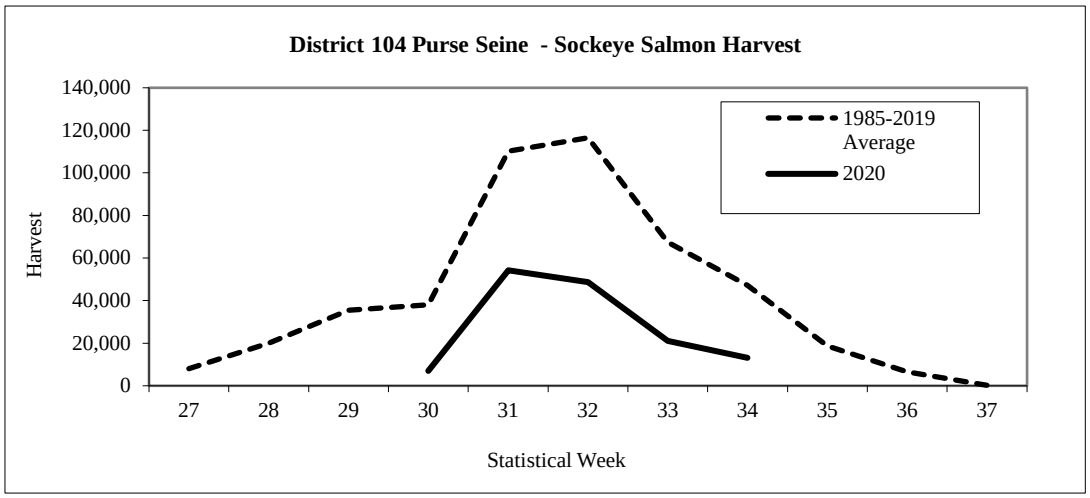

Figure 4. Sockeye salmon harvest by week in the District 104 purse seine fishery, 2020.

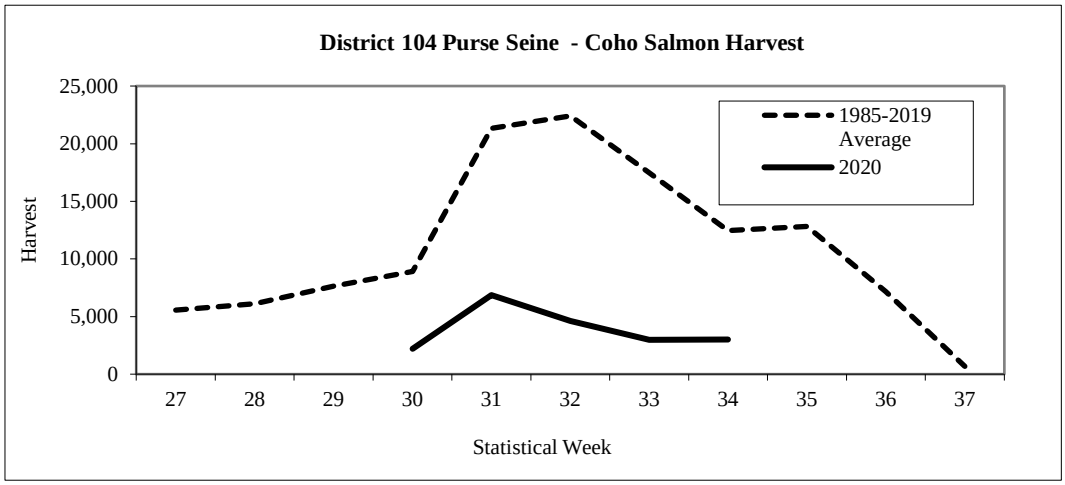

Figure 5. Coho salmon harvest by week in the District 104 purse seine fishery, 2020.

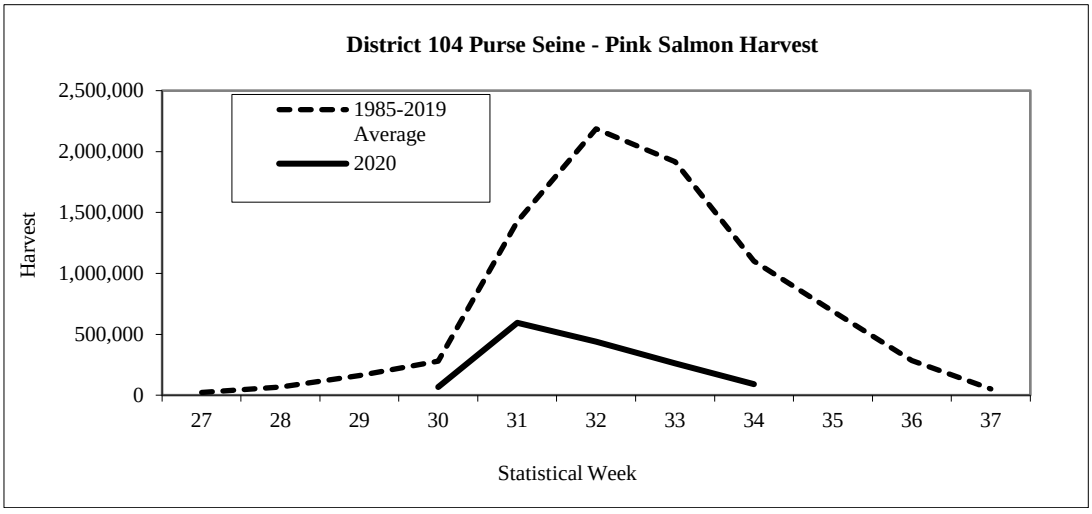

Figure 6. Pink salmon harvest by week in the District 104 purse seine fishery, 2020.

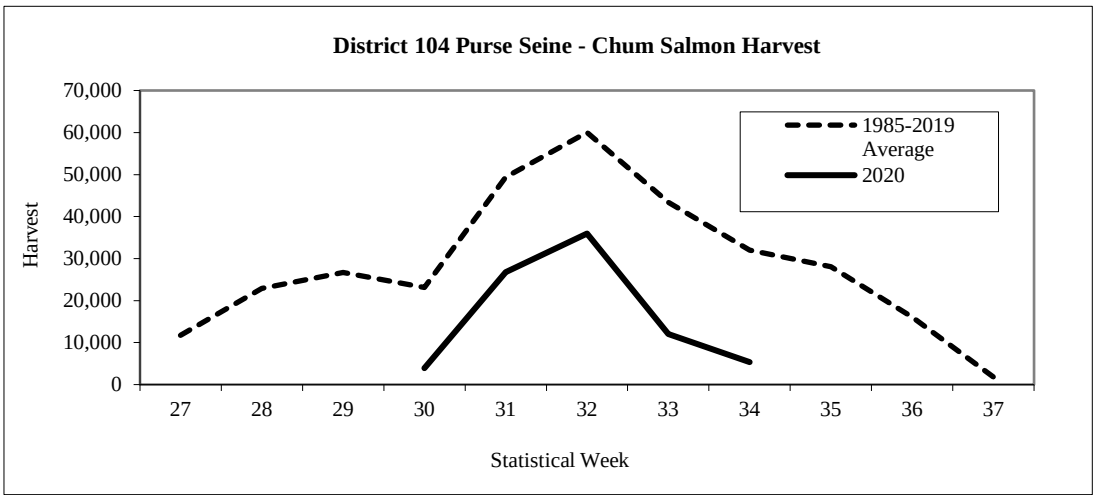

Figure 7. Chum salmon harvest by week in the District 104 purse seine fishery, 2020.

District 101 Drift Gillnet Fishery

The 2019 PST agreement calls for abundance-based management of the District 101 (Tree Point) drift gillnet fishery. The agreement specifies that the U.S. manage for a harvest of 13.8 percent of the AAH of the Nass River sockeye salmon run. The AAH is calculated as the total run of Nass River sockeye salmon minus either the escapement requirement of 200,000 fish or the actual in-river escapement, whichever is less. The run of Nass River sockeye salmon was forecasted at 494,000 fish in 2020 which, minus an escapement goal of 200,000 fish, would result in an AAH of about 294,000 fish. Using this forecast, the 2020 allowable harvest in the District 101 drift gillnet fishery was approximately 41,000 Nass River sockeye salmon.

The District 101 drift gillnet fishery opens by regulation on the third Sunday in June, which was June 21 (week 26) in 2020. During the early weeks of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the run strength of Nass River sockeye salmon. Beginning in the third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. By regulation, the District 101 Pink Salmon Management Plan (PSMP) begins the third Sunday in July and sets drift gillnet fishing time in this district in relation to the District 101 purse seine fishing time. Beginning in Week 35 (August 23) management was based on the strength of wild stock fall chum and coho salmon.

The number of days the fishery opened was near average most of the season (Figure 8), but the number of boats fishing during weekly openings was below average throughout the season (Figure 9). The total number of individual boats fishing during the season was 50, which was approximately 48% of the long-term (1985–2019) average of 105 boats. A total of 9,348 sockeye salmon were harvested, which was just 9% of the 1985–2019 average of 109,130 fish and the lowest harvest since the inception of the PST (Table 3). Harvests of sockeye salmon were well below average throughout the season (Figure 10). The cumulative sockeye salmon harvest prior to the initiation of the PSMP in Week 30 was 4,783 fish, or about 51% of the season's total sockeye salmon harvest. The preliminary estimate of the number of Nass River sockeye salmon harvested at Tree Point is 7,528 fish for the 2020 season. The final estimate of the number of Nass River sockeye salmon harvested in District 101, will be determined at the January 2022 PSC post season meeting.

Coho salmon harvests were below average throughout the season and the total harvest of 20,277 fish was 42% of average (Table 3; Figure 11). Pink salmon harvests were below average most of the season and the total harvest of 186,278 fish was 39% of average (Figure 12). Chum salmon harvests were also below average in most weeks of the fishery and the total harvest of 136,083 fish was 46% of average (Figure 13). Chinook salmon harvests were above average in most weeks of the season (Figure 14).

Table 3. Weekly salmon harvest and fishing effort in the Alaska District 101 commercial drift gillnet fishery, 2020.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
26	6/21	348	1,469	221	228	7,862	25	96
27	6/28	519	1,940	574	2,405	11,083	26	96
28	7/5	304	705	821	8,635	12,684	31	96
29	7/12	200	669	1,253	15,887	20,041	33	96
30	7/19	297	1,866	1,324	36,136	33,555	36	96
31	7/26	87	1,421	932	73,002	23,760	39	96
32	8/2	14	319	1,255	21,559	8,195	32	120
33	8/9	10	146	554	6,943	4,531	21	48
34	8/16	6	292	1,038	10,422	5,146	26	48
35	8/23	8	340	3,232	9,490	6,144	29	96
36	8/30	6	170	4,382	1,543	2,203	23	96
37	9/6	7	8	2,637	23	574	22	96
38	9/13	6	3	2,054	5	305	19	96
Total		1,812	9,348	20,277	186,278	136,083	50	1,176
1985–2019 Avg.		1,479	109,130	48,042	481,877	294,895	105	1,377

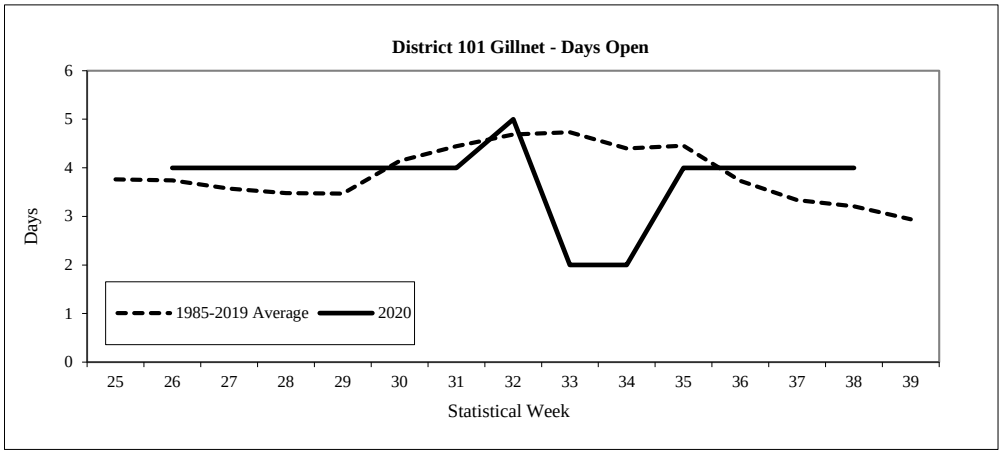

Figure 8. Days open by week in the District 101 drift gillnet fishery, 2020.

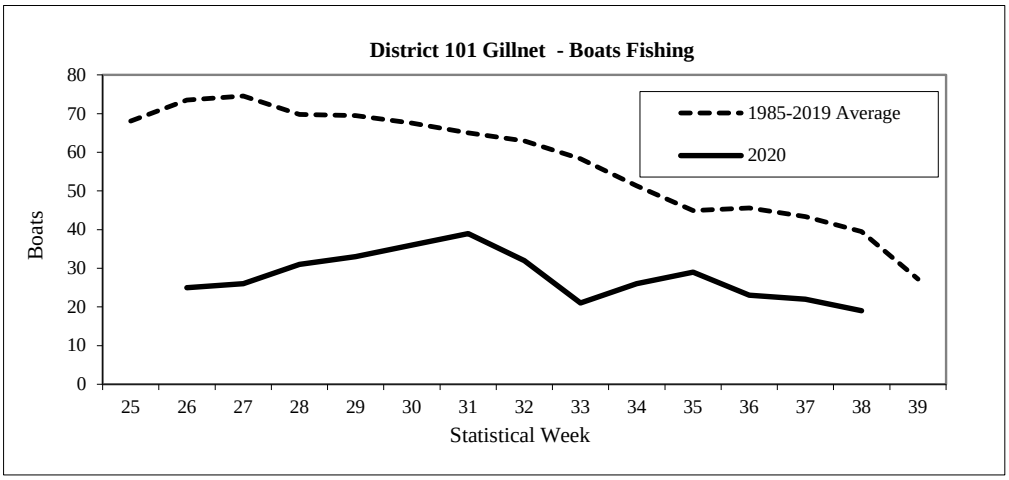

Figure 9. Number of boats fishing by week in the District 101 drift gillnet fishery, 2020.

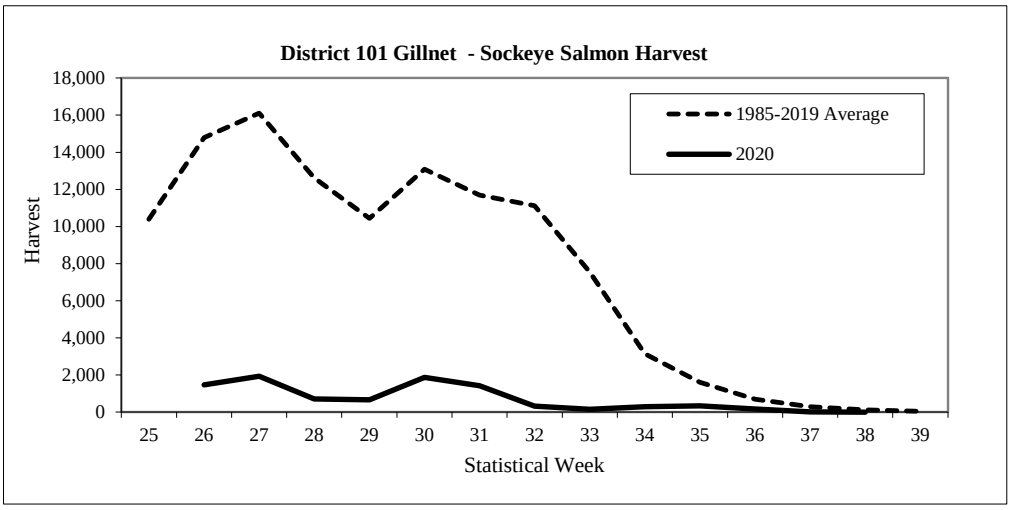

Figure 10. Sockeye salmon harvest by week in the District 101 drift gillnet fishery, 2020.

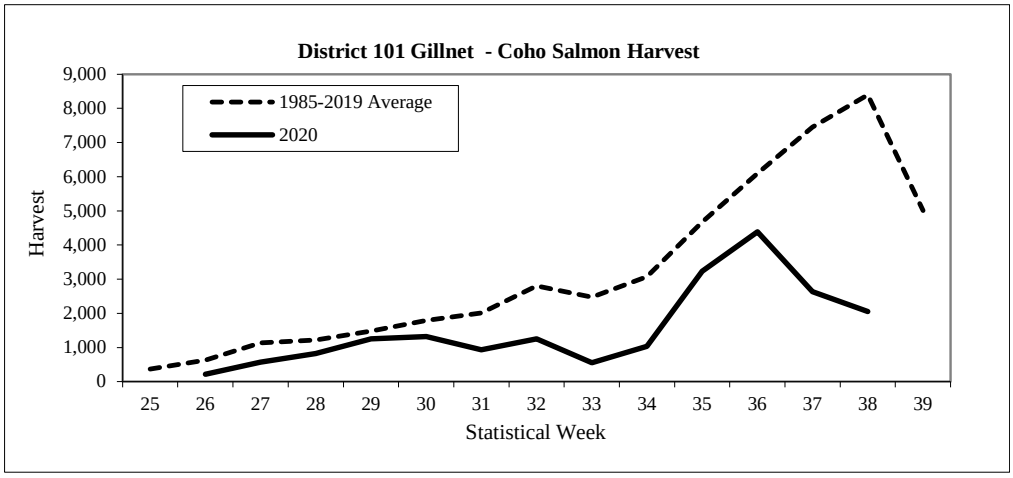

Figure 11. Coho salmon harvest by week in the District 101 drift gillnet fishery, 2020.

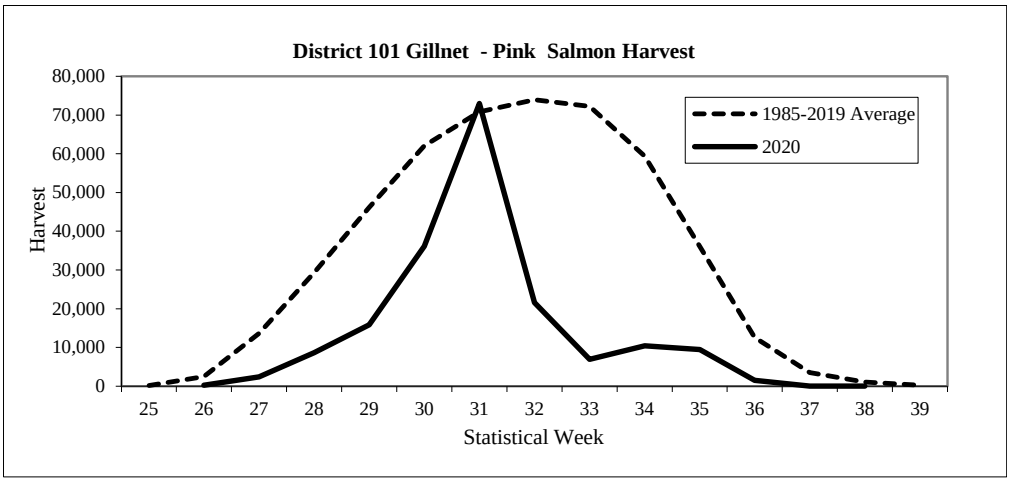

Figure 12. Pink salmon harvest by week in the District 101 drift gillnet fishery, 2020.

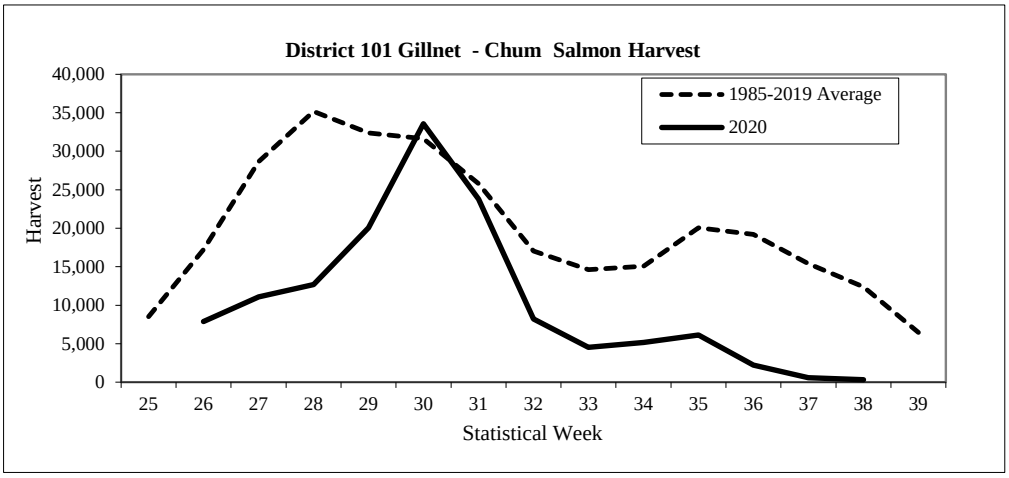

Figure 13. Chum salmon harvest by week in the District 101 drift gillnet fishery, 2020.

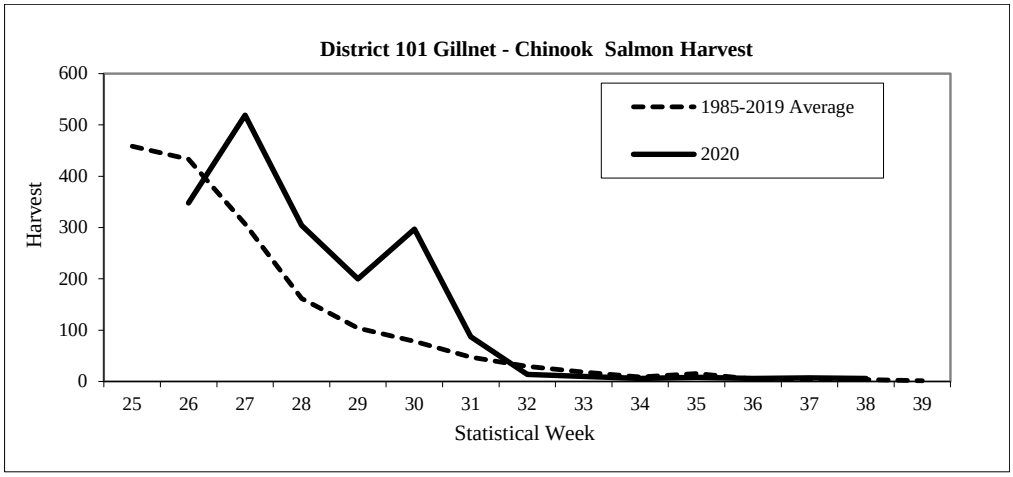

Figure 14. Chinook salmon harvest by week in the District 101 drift gillnet fishery, 2020.

Pink, Sockeye, and Chum Salmon Escapements

Escapements of pink salmon were generally good in southern Southeast Alaska (SEAK) and along the outer coast of northern SEAK, but poor to average throughout northern inside waters. The total 2020 SEAK pink salmon escapement index of 9.73 million index fish ranked 32nd since 1960. Biological escapement goals were met in the Southern Southeast and Northern Southeast Outside subregions, but escapement to the Northern Southeast Inside Subregion was below goal in 2020 (Table 4). On a finer scale, escapements were within management targets for 10 of 15 districts in the region and for 30 of the 46 pink salmon stock groups in SEAK. The Southern Southeast Subregion includes all of the area from Sumner Strait south to Dixon Entrance (Districts 101–108). The escapement index value of 5.7 million was within the escapement goal range of 3.0 to 8.0 million index fish.

Table 4. Southeast Alaska 2020 pink salmon escapement indices and biological escapement goals by subregion (in millions).

Subregion	2020 Pink Salmon Index	Biological Escapement Goal	
		Lower Bound	Upper Bound
Southern Southeast	5.66	3.00	8.00
Northern Southeast Inside	2.29	2.50	6.00
Northern Southeast Outside	1.79	0.75	2.50
Total	9.73		

Sockeye salmon escapement levels throughout SEAK were mixed in 2020, and escapement lower bounds were met for 6 of the 12 sockeye salmon systems with formal escapement goals. The Hugh Smith Lake adult sockeye salmon escapement was 3,860 fish, which was well below the optimal escapement goal range of 8,000 to 18,000 adult sockeye salmon. Based on the expanded peak foot survey count, the escapement of sockeye salmon into McDonald Lake was only 8,200 fish, which was below the sustainable escapement goal range of 55,000 to 120,000 fish.

For summer-run chum salmon, lower bound sustainable escapement goals were not met for two of the three subregions in SEAK. Runs are divided into summer and fall stocks. The Southern Southeast summer-run chum salmon stock group is composed of an aggregate of 15 summer-run chum salmon streams on the inner islands and mainland of southern SEAK, from Sumner Strait south to Dixon entrance, with a sustainable escapement goal of 62,000 index spawners (based on the aggregate peak survey to all 15 streams). Summer chum salmon escapements were below average at many index streams in southern SEAK, but the index of 70,000 in 2020 met the escapement goal (Figure 15).

Cholmondeley Sound is the only area in southern SEAK with a formal escapement goal for fall chum salmon. Fall chum salmon runs are monitored in Cholmondeley Sound through aerial surveys at Disappearance and Lagoon creeks. The escapement index of 30,000 fish was right at the lower bound of the sustainable escapement goal range of 30,000 to 48,000 index spawners (based on the aggregate peak survey to both streams; Figure 16).

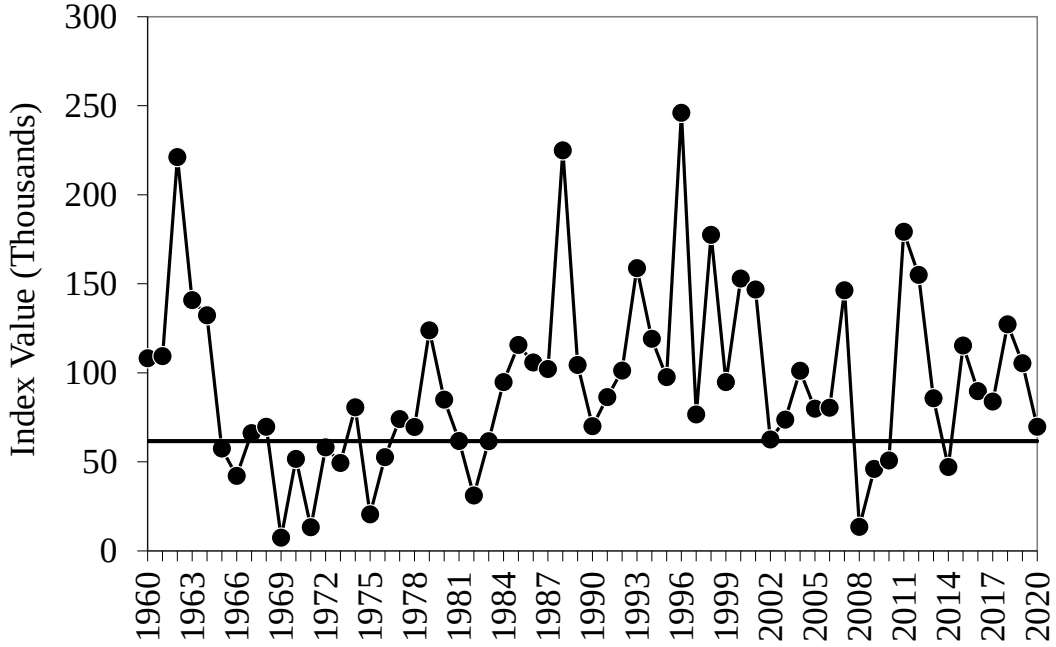

Figure 15. Observed escapement index value by year (solid circles) and the sustainable escapement goal threshold of 62,000 index spawners (horizontal line) for wild summer-run chum salmon in the Southern Southeast Subregion, 1960–2020.

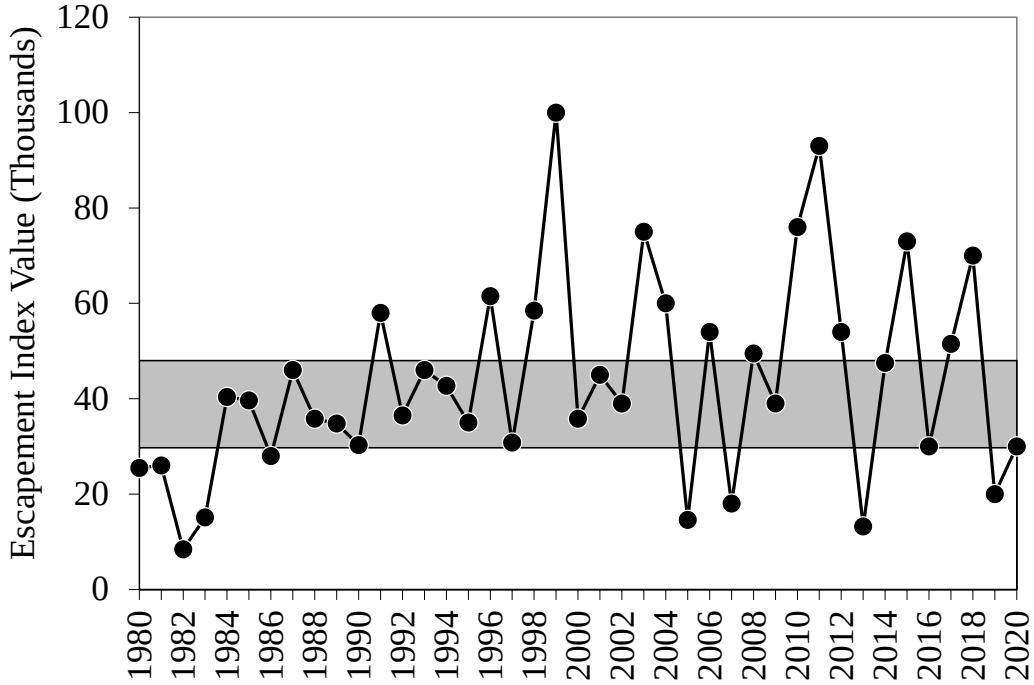

Figure 16. Observed escapement index value by year (solid circles) and the sustainable escapement goal range of 30,000 to 48,000 index spawners (shaded area) for Cholmondeley Sound fall-run chum salmon, 1980–2020.

TRANSBOUNDARY AREA FISHERIES

Stikine River Area Fisheries

The 2020 preseason forecast for large Chinook salmon (≥660 mm mid eye to tail fork length) returning to the Stikine River was approximately 13,400 fish, which did not allow for directed Chinook salmon fisheries in District 108. The standard mark-recapture program was not operated this year due to the low forecasted run and the desire by both countries to reduce mortality associated with the program. Inseason estimates produced by the Stikine Chinook Management Model (SCMM) indicated an escapement of 12,000 fish, which was below the lower end of the goal range of 14,000 to 28,000 fish. The preliminary escapement estimate of Stikine River large Chinook salmon is 9,753 fish, which is below the lower end of the goal range of 14,000 to 28,000 fish.

The 2020 preseason forecast for sockeye salmon returning to the Stikine River was 103,400 fish, which was below the 2010–2019 average of 114,700 fish. The 2020 forecast included approximately 30,000 wild Tahltan (29%), 34,500 enhanced Tahltan (33%), and 38,900 mainstem (38%) sockeye salmon. During the first half of the sockeye salmon management period, fishing periods in District 108, and to a lesser extent in District 106, were determined by the inseason abundance estimate of the Tahltan Lake run. Management actions during the second half of the sockeye salmon fishery became focused on the mainstem component of the Stikine River run in District 108, while returns to local area systems were the focus in District 106. Typically, Tahltan Lake sockeye salmon stocks exhibit peak run timing in District 106 and 108 fisheries during statistical week 26 (June 21–June 27). During an average Tahltan Lake run, significant numbers of sockeye salmon could be present as early as statistical week 24 (June 7–13) and as late as statistical week 31 (July 26–August 1). The 2020 runs of local area sockeye salmon stocks were below average.

Due to the poor performance of Chinook salmon stocks in SE Alaska, restrictions were implemented in the Districts 106 and 108 drift gillnet fisheries to conserve Chinook salmon. In District 106, the initial opening was delayed by one week and a six-inch maximum mesh restriction was in place for the first two openings. In District 108, the initial opening was delayed until week 27. Additionally, time, area, and mesh restrictions were implemented through statistical week 29 (July 12–July 18). Estimated harvest of Stikine River large Chinook salmon by the District 108 drift gillnet fishery during the sockeye salmon directed fishery period (weeks 27–29) was 62 fish based on genetic stock identification (GSI). The District 108 Spring Troll hatchery access fishery was closed for 2020. Commercial trolling remained closed to Chinook salmon retention in District 108 until the second opening of the summer troll fishery. The U.S. harvest of Stikine River large Chinook salmon in all District 108 fisheries was estimated to be 161 fish; well below the U.S. base level catch (BLC) of 3,400 fish.

The District 106 drift gillnet sockeye salmon fishery opened Sunday, June 21 (week 26) and the District 108 drift gillnet fishery opened Sunday, June 28 (week 27). Given the below average forecast of sockeye salmon runs returning to the Stikine River and local area stocks, fishing time was limited to two or three days throughout the season. Mesh and area restrictions were in place through week 29. The mesh restriction was lifted from District 106 in week 28, but mesh and area restrictions continued to be in place for District 108. By week 28, it became apparent that the mainstem portion of the Stikine River sockeye salmon run was coming in below average and open time in District 108 was limited to two days in weeks 28 and 29 before closing for two weeks during weeks 30 and 31. A total of seven days of fishing were allowed in District 108 during the 2020 sockeye salmon season. Open time in District 106 also experienced weekly reductions and was limited to two days per week in weeks 29 through 31 for McDonald Lake sockeye salmon conservation (Table 5and Table 6). The preliminary postseason assessment for Stikine River sockeye salmon was 35,500 fish and included 11,600 wild Tahltan (23%), 15,100 enhanced Tahltan (24%), and 8,800 Mainstem (41%) fish.

Districts 106 and 108 were managed based on pink salmon abundance during the month of August, and in late August management focus switched to coho salmon and the fisheries continued to be open for two to

three days weekly through the remainder of the season. The number of boats participating in the District 106 fishery was above average during July and below average in August and September (Figure 18). The seasonal number of permits fished was 82% of average (Table 5). The number of boats participating in the District 108 fishery was below average early in the season and near or above average from August through late September (Figure 25). The 82 permits fished was 67% of the average of 123 permits (Figure 25; Table 7).

During the 2020 season, 127,583 pink salmon, 11,314 sockeye salmon, 143,577 chum salmon, 43,850 coho salmon, and 1,182 Chinook salmon were harvested in the District 106 drift gillnet fishery (Table 5). Chinook salmon harvests were below average in most weeks from late June through late August (Figure 19); the harvest was comprised of 75% Alaska hatchery origin fish. Sockeye salmon harvests were well below average all season (Figure 20), and the total sockeye salmon harvest of 11,314 fish was 15% of the 2010–2019 average; 1,900 were estimated to be of Stikine River origin. Harvests of coho salmon were also below average throughout the season and the overall harvest of 43,850 coho salmon was 32% of the 2010–2019 average of 136,800 fish (Figure 21). Pink salmon harvests were also below average throughout the season (Figure 22), and the overall harvest of 127,583 fish was 38% of the 2010–2019 average. Chum salmon harvests were near average throughout the season and the overall harvest of 143,577 fish was 99% of average (Figure 23).

During the 2020 season, 11,799 pink salmon, 2,781 sockeye salmon, 53,678 chum salmon, 21,069 coho salmon, and 2,617 Chinook salmon were harvested in the District 108 drift gillnet fishery (Table 6). The harvest of Chinook salmon was below average in the first week of the fishery in week 27, and was near average for the reminder of the season in weeks the fishery was open (Figure 26). An estimated 161 Stikine River large Chinook salmon were harvested in District 108 from weeks 25 through 29 by subsistence, sport, troll, and drift gillnet fisheries. District 108 gillnet sockeye salmon harvests were below average throughout the season (Figure 27) and the harvest of 2,781 fish was only 10% of the 2010–2019 average. An estimated 2,300 fish, or 81% of the harvest, were Stikine River sockeye salmon. The overall coho salmon harvest of 21,069 fish was also just below the recent 2010–2019 average of 24,200 fish (Table 6, Figure 28). Pink salmon harvests were below average throughout the season and the overall harvest was 27% of the 2010–2019 average (Figure 29). The overall harvest of 53,678 chum salmon was 40% of the 2010–2019 average (Figure 30).

Table 5. Weekly salmon harvest and fishing effort in the Alaskan District 106 commercial drift gillnet fisheries, 2020.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
26	21-Jun	91	449	190	109	2,594	32	2	64
27	28-Jun	575	2,045	1,006	3,824	15,388	45	3	135
28	5-Jun	156	1,732	1,161	4,174	11,787	54	2	108
29	12-Jul	159	1,268	1,511	7,858	26,872	58	2	116
30	19-Jul	60	1,573	1,391	9,993	15,597	71	2	142
31	26-Jul	76	1,740	2,068	33,461	24,892	78	2	156
32	2-Aug	14	643	890	15,083	7,205	51	2	102
33	9-Aug	9	679	2,001	24,430	11,804	40	3	120
34	16-Aug	12	759	2,878	20,310	7,279	53	2	106
35	23-Aug	5	327	3,573	6,981	2,950	45	2	90
36	30-Aug	2	74	7,393	1,199	5,190	39	3	117
37	6-Sep	14	21	11,892	158	6,989	50	3	150
38	13-Sep	5	4	6,996	3	4,558	48	3	144
39	20-Sep	4	0	900	0	472	19	2	38
Total		1,182	11,314	43,850	127,583	143,577	120	33	1,588
2010–2019 Average		2,229	73,426	136,756	332,448	144,769	147	47	2,648
2020 as % of Average		53%	15%	32%	38%	99%	82%	70%	60%

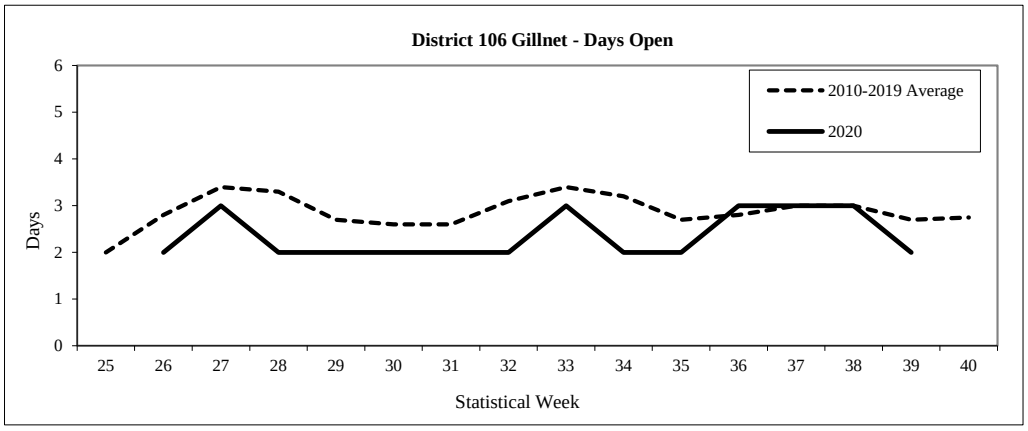

Figure 17. Days open by week in the District 106 drift gillnet fishery, 2020.

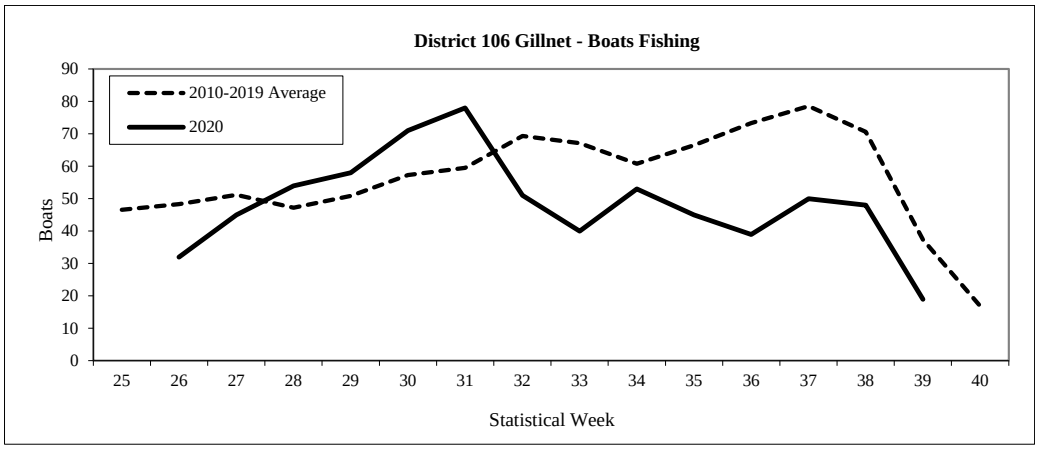

Figure 18. Number of boats fishing by week in the District 106 drift gillnet fishery, 2020.

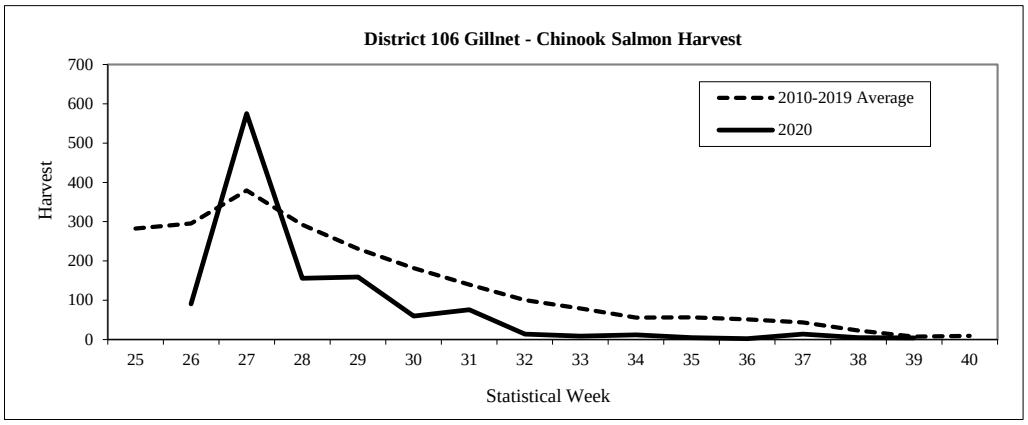

Figure 19. Chinook salmon harvest by week in the District 106 drift gillnet fishery, 2020.

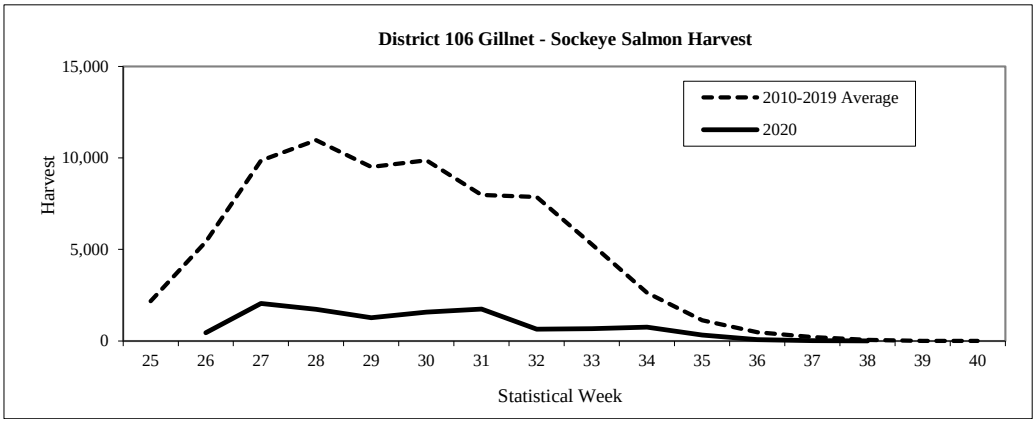

Figure 20. Sockeye salmon harvest by week in the District 106 drift gillnet fishery, 2020.

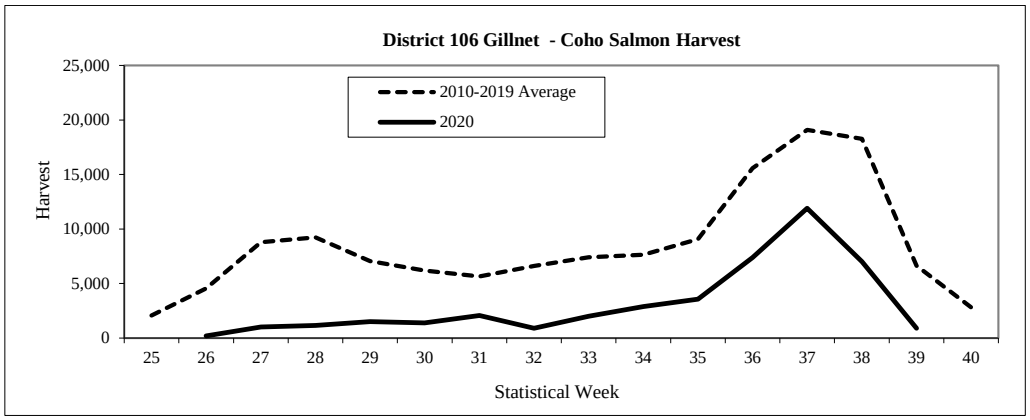

Figure 21. Coho salmon harvest by week in the District 106 drift gillnet fishery, 2020.

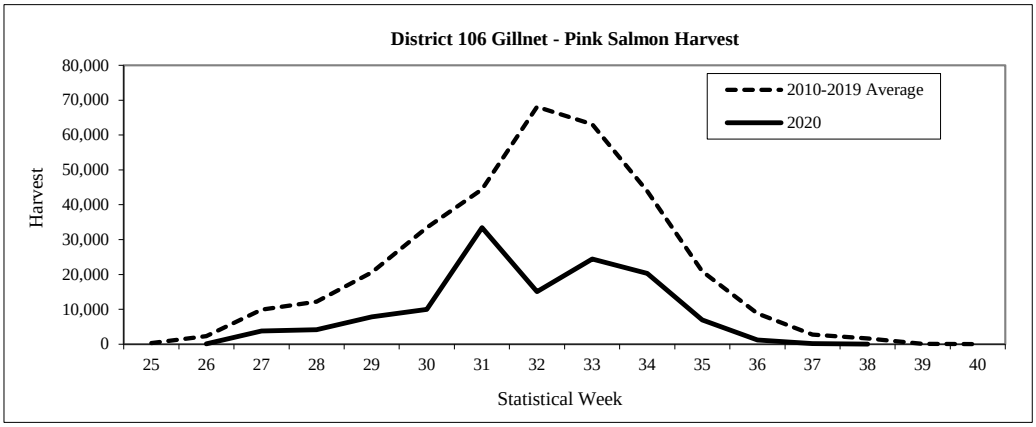

Figure 22. Pink salmon harvest by week in the District 106 drift gillnet fishery, 2020.

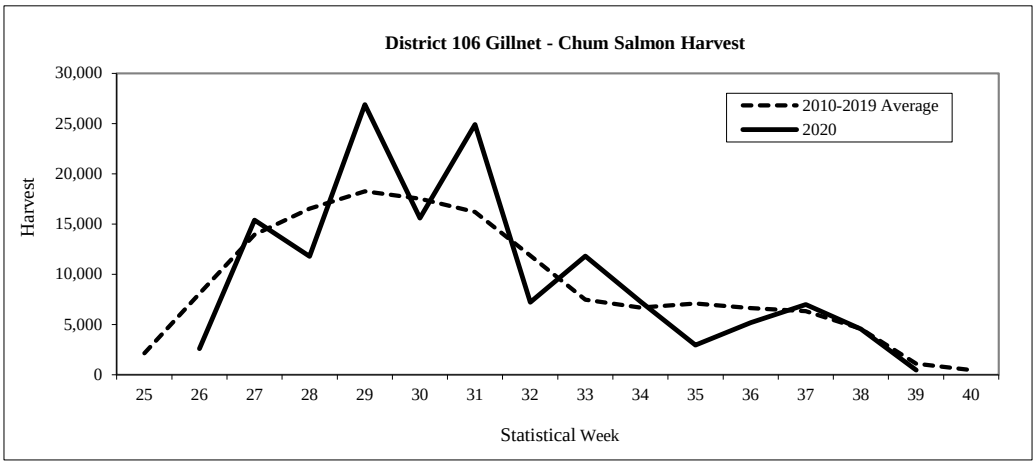

Figure 23. Chum salmon harvest by week in the District 106 drift gillnet fishery, 2020.

Table 6. Weekly salmon harvest and fishing effort in the Alaskan District 108 commercial drift gillnet fishery, 2020.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
27	28-Jun	770	877	26	72	1,658	24	3	72
28	5-Jul	1,028	761	13	214	1,725	28	2	56
29	12-Jul	656	717	22	1,157	3,553	18	2	36
30	Closed								
31	Closed								
32	2-Aug	92	143	270	4,252	22,277	42	2	84
33	9-Aug	20	162	631	4,552	17,036	47	3	141
34	16-Aug	4	44	631	906	3,207	24	2	48
35	23-Aug	17	44	1,100	505	1,508	23	2	46
36	30-Aug	4	31	4,716	131	1,368	35	3	105
37	6-Sep	10	2	8,484	7	757	37	3	111
38	13-Sep	16	0	4,544	3	528	34	3	102
39	20-Sep	0	0	632	0	61	17	2	34
Total		2,617	2,781	21,069	11,799	53,678	82	27	835
2010–2019 Average		6,914	26,627	24,154	43,659	135,016	123	48	1,622
2020 as % of Average		38%	10%	87%	27%	40%	67%	56%	51%

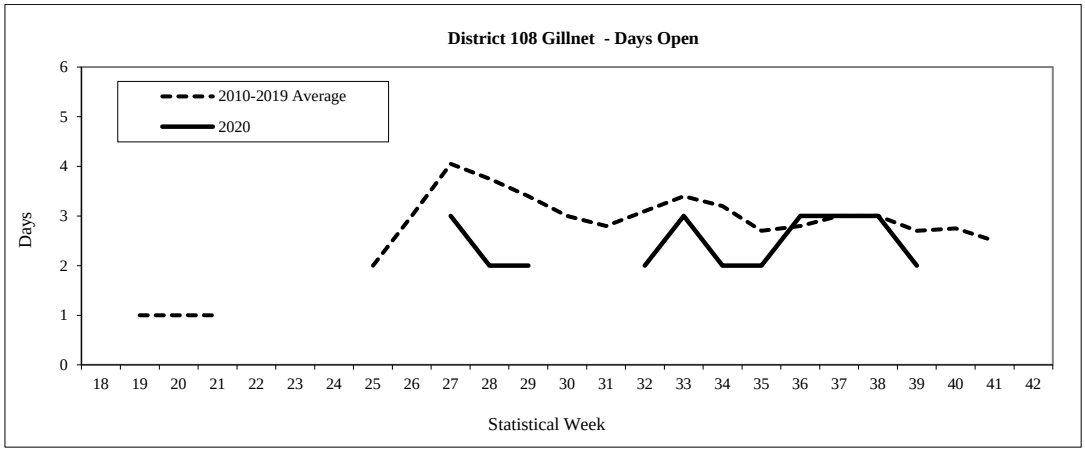

Figure 24. Days open by week in the District 108 drift gillnet fishery, 2020.

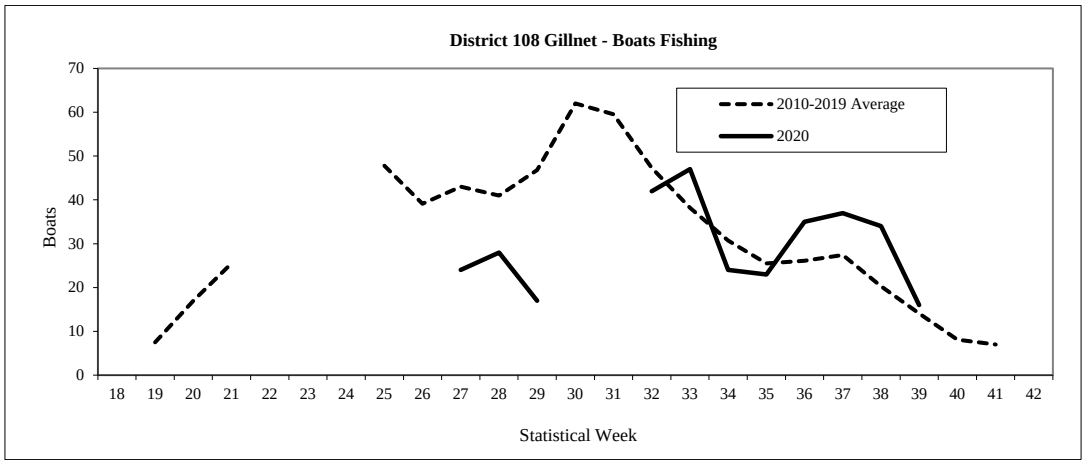

Figure 25. Number of boats fishing by week in the District 108 drift gillnet fishery, 2020.

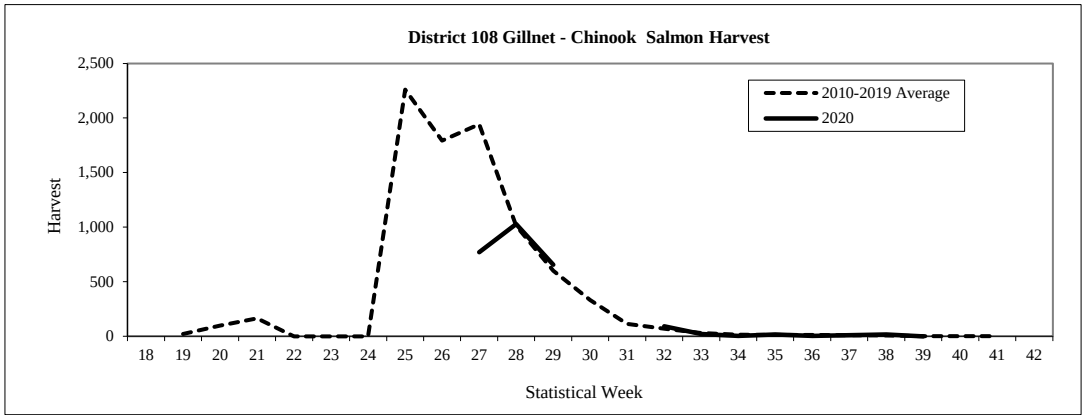

Figure 26. Chinook salmon harvest by week in the District 108 drift gillnet fishery, 2020.

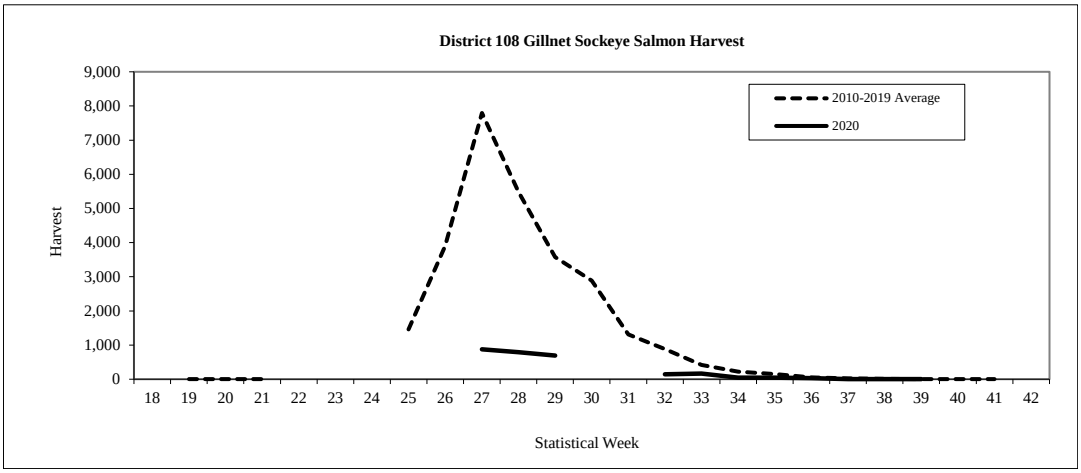

Figure 27. Sockeye salmon harvest by week in the District 108 drift gillnet fishery, 2020.

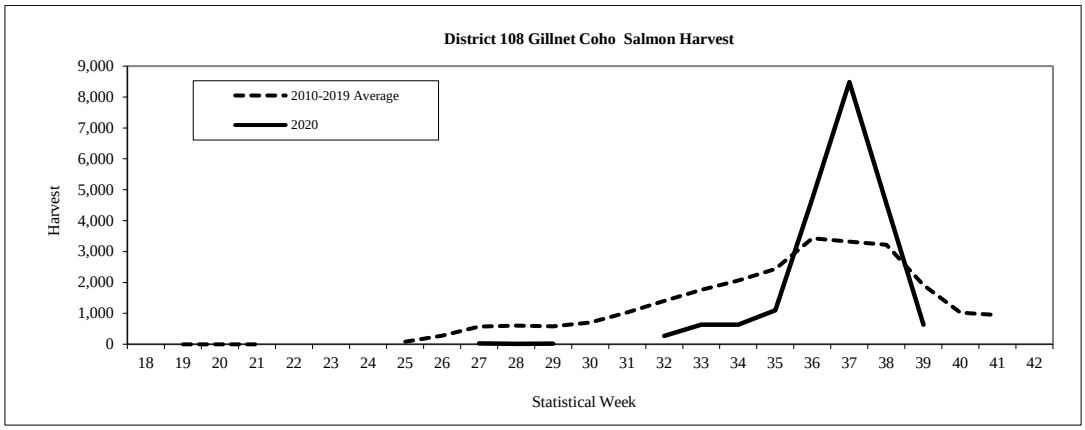

Figure 28. Coho salmon harvest by week in the District 108 drift gillnet fishery, 2020.

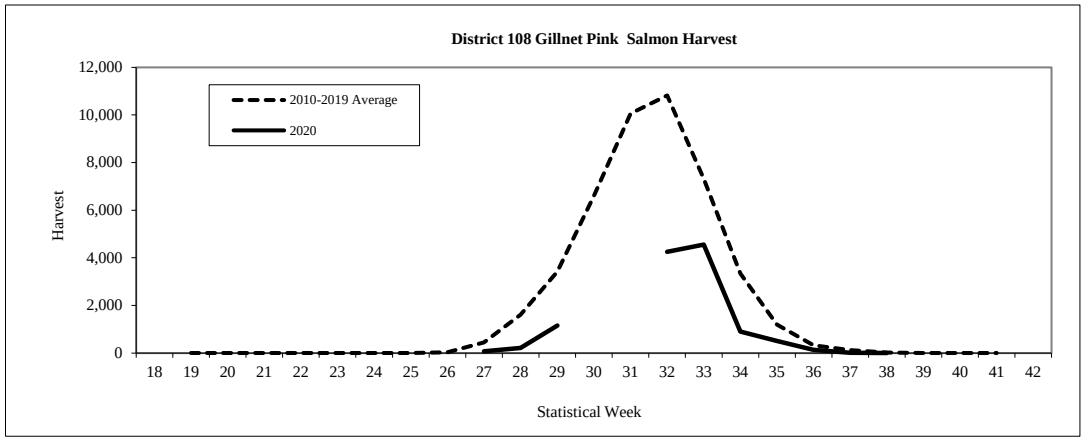

Figure 29. Pink salmon harvest by week in the District 108 drift gillnet fishery, 2020.

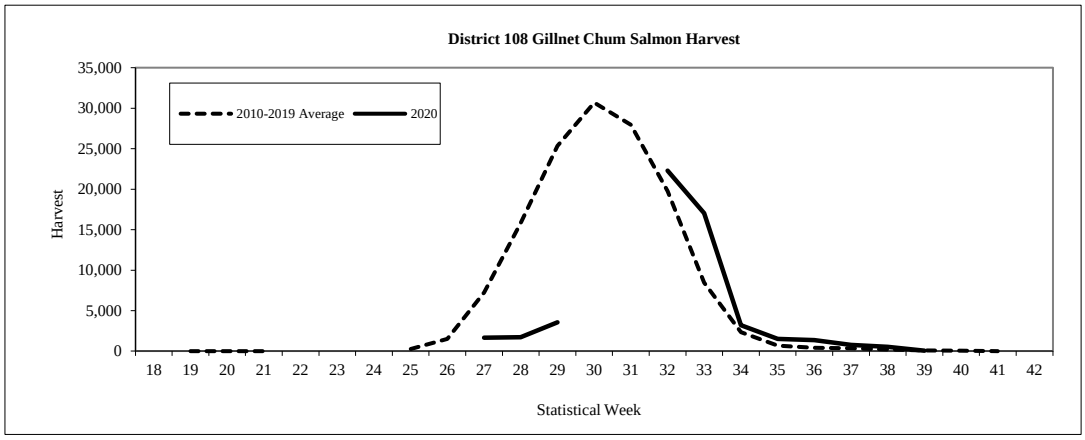

Figure 30. Chum salmon harvest by week in the District 108 drift gillnet fishery, 2020.

Taku River Area Fisheries

The traditional drift gillnet fishery in District 111 targets salmon stocks bound for the trans-boundary Taku River. This fishery is managed for Chinook salmon from weeks 18 through 24 when there are sufficient fish surplus to escapement needs to provide for a fishery. From weeks 25 through 33 the fishery is managed for

Taku River sockeye salmon, and from weeks 34 through 42 for Taku River coho salmon. Also harvested in this fishery are salmon bound for Stephens Passage and Port Snettisham streams as well as enhanced Chinook, sockeye, coho and chum salmon from Douglas Island Pink and Chum, Inc. (DIPAC) hatchery releases. The traditional fishery does not include harvests from the Speel Arm Special Harvest Area (SHA) inside Port Snettisham.

The escapement goal range for Taku River large Chinook salmon is 19,000 to 36,000 fish with a management objective of 25,500 fish. In years of high abundance, directed Chinook salmon fisheries can be implemented to harvest fish in excess of escapement needs. The 2020 preseason terminal run forecast for the Taku River of 12,400 large Chinook salmon did not allow for any directed Chinook salmon fisheries in District 111 and significant restrictions in time, area, and gear were implemented in the first three directed sockeye salmon openings (weeks 26–28) to minimize Chinook salmon harvest.

The original escapement goal range for Taku River sockeye salmon was 71,000 to 80,000 fish, with a management objective of 75,000 fish. This was established in 1985 based on the professional judgement of U.S. and Canadian biologists during initial PST negotiations to be used until a scientifically based goal was developed. Historically, the total allowable catch associated with this goal has been based on an inriver run size estimate inflated by not accounting for tag dropout rates that more recent radio telemetry studies have documented in the mark-recapture experiment. Concurrent with the adoption of an adjusted inriver run estimate to account for these dropouts, an interim escapement goal range and management objective was agreed to by the TBR Panel in February of 2019. This arrangement incorporated a 22% adjustment to the inseason inriver run estimates, and a corresponding interim escapement goal range of 55,000 to 62,000 fish with a management objective of 59,000 fish. A bilaterally approved MSY escapement goal range of 40,000 to 75,000 Taku River sockeye salmon with a management objective of 58,000 wild fish was adopted for the 2020 fishing season and the remainder of the Annex period. The 2020 Taku River wild sockeye salmon terminal run forecast of 139,000 fish, based on Canadian stock-recruit and sibling forecasts, was near the 2010–2019 average of 137,000 wild fish. DIPAC forecasted 226,000 enhanced sockeye salmon returning through District 111 waters to Snettisham Hatchery.

An escapement goal range of 50,000 to 90,000 Taku River coho salmon with a management objective of 70,000 fish was adopted in early 2015. New harvest sharing provisions between the U.S. District 111 drift gillnet fishery and the Canadian inriver fisheries are in place, specified in the PST, and the U.S. management intent in 2020 was to achieve the U.S. AC and management objective. The 2020 preseason Taku River forecast was for an above average terminal run of 122,000 coho salmon, and DIPAC forecast a run of 40,000 enhanced coho salmon from releases in Gastineau Channel. DIPAC forecasted runs totalling 650,000 enhanced chum salmon returning to Gastineau Channel and Limestone Inlet, which was below the recent average.

The traditional drift gillnet fishery in District 111 began on Sunday, June 21, 2020 (week 26). The first three drift gillnet openings of the season in District 111 were for two days, and included combinations of significant area restriction, 6-inch maximum mesh size restriction, and night closures, intended to minimize harvest of Taku River Chinook salmon. The number of boats fishing was less than half of average in each of the first three weeks. A minimal 1,678 sockeye salmon were harvested during these initial openings, and the chum salmon harvest of 24,666 fish was 11% of the average week 26–28 harvest for the district (Figures 34 and 37). A total of 736 Chinook salmon were harvested, which was near the average for those weeks (Figure 33).

Effort in the District 111 drift gillnet fishery remained below average throughout the season, with a peak of 92 boats fishing in week 30 (Figure 32). Harvests of sockeye salmon were below average throughout the season and the total harvest of 28,233 fish was 28% of average (Figure 34) and the lowest district total since 1968. Weekly chum salmon harvests were well below average and approximately 109,000 fish were harvested from mid-June to mid-August (Figure 37). The vast majority of the summer-run chum salmon harvest in District 111 consists of DIPAC hatchery fish returning to release sites in Gastineau Channel and Limestone Inlet. The Chinook salmon harvest of 1,094 fish was just below average (excluding pre-week 25 directed

Chinook fisheries; Figure 33). Pink salmon harvests were below average throughout the season and the harvest of 65,353 fish was only 44% of average (Figure 36). The overall coho salmon harvest of 15,863 fish was well below average and the peak weekly harvest of 4,141 fish occurred in week 36 (Figure 35). Fall chum salmon harvests were also well below average from week 34 through 38 (Figure 37).

A number of Chinook salmon stocks are known to contribute to the Juneau area sport fishery, including those from the Taku, Chilkat, and King Salmon rivers, and local hatchery stocks, but the major contributor of mature wild fish is believed to be the Taku River. Non-retention of Chinook salmon in Districts 111, 112, 115, and parts of Districts 113 and 114, from April 1 through June 14, resulted in minimal harvest of wild fish in the sport fishery. The GSI-based District 111 harvest estimates of Taku River large Chinook salmon during the accounting period is 189 fish in the drift gillnet fishery, 112 fish in the sport fishery, and an estimated 15 fish in the personal use fishery, for a total of 316 fish. Harvests of Taku River large Chinook salmon in these fisheries from week 30 onwards were minimal and resulted in a total harvest well below the U.S. base level catch of 3,500 fish. The preliminary escapement estimate of Taku River large Chinook salmon is approximately 15,593 fish, which is below the escapement goal range of 19,000 to 36,000 fish.

Peak harvests of sockeye salmon occurred in weeks 29 through 31 (mid-July to early August; Figure 34). The Speel Arm SHA was not opened in 2020 and the entrance to Port Snettisham was only opened late in the season for increased opportunity on coho salmon returns. The Speel Lake weir was not operated this season due to staffing concerns during the COVID-19 health emergency, so accurate enumeration of fish passing into Speel Lake was not possible although stream counts were conducted by DIPAC staff generally every three days. The minimum mesh size restriction south of Circle Point was not put in place this season due to a small fleet size and very little chance for a fishery to occur inside the Speel Arm SHA. DIPAC sockeye salmon returning to the Snettisham Hatchery contributed a minimum of 16,000 fish to the traditional District 111 harvest. The preliminary escapement estimate of Taku River sockeye salmon is 100,900 fish, which is above the escapement goal range of 40,000 to 75,000 fish.

The 2020 traditional District 111 coho salmon harvest was 45% of average (Figure 35). Approximately 53% of the coho salmon were harvested in Taku Inlet, which was well below the average of 82%, and 47% were harvested from Stephens Passage and Port Snettisham. Coho salmon stocks harvested in District 111 include returns to the Taku River, Port Snettisham, Stephens Passage, and local Juneau area streams as well as Alaska hatcheries. This was the sixth year of full production for DIPAC's revitalized enhanced coho salmon program. Alaska hatchery (nearly entirely DIPAC) coho salmon first appeared in the District 111 harvest in week 33, and comprised substantial proportions of the harvest each remaining week of the fishery. Alaska hatchery coho salmon contributed 26% of the 2020 District 111 traditional drift gillnet harvest. The preliminary escapement estimate of Taku River coho salmon is 52,000 fish, which is near the lower end of the escapement goal range of 50,000 to 90,000 fish.

Pink salmon escapements were poor in the Northern Southeast Inside subregion of SEAK and the District 111 escapement index was approximately 54% of the lower end of the management target range. The 2020 District 111 traditional fishery chum salmon harvest of 109,516 fish was 21% of average and comprised almost entirely of summer run fish (Figure 37). The summer chum salmon run continues through mid-August (week 33) and is mostly comprised of domestic hatchery fish and small numbers of wild stocks. Chum salmon returning to DIPAC release sites in Gastineau Channel and Limestone Inlet contributed a major portion of the harvest, but quantitative contribution estimates are not available. Approximately 49% of the District 111 chum harvest was taken in Taku Inlet, and 51% in Stephens Passage. The harvest of 547 fall-run chum salmon (i.e., chum salmon caught after week 33) was 21% of average. Most of these fall-run chum salmon are probably wild fish of Taku and Whiting rivers origin.

Table 7. Weekly salmon harvest and fishing effort in the Alaskan District 111 traditional commercial drift gillnet fishery, 2020.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
26	21-Jun	268	201	2	6	689	23	2	46
27	28-Jun	284	808	4	65	11,245	33	2	66
28	5-Jul	184	669	13	744	12,732	42	2	84
29	12-Jul	192	6,529	138	10,991	46,702	62	4	248
30	19-Jul	88	10,170	564	18,333	22,050	92	3	276
31	26-Jul	29	4,617	742	12,849	7,979	55	2	110
32	2-Aug	31	2,282	528	13,053	6,342	53	2	106
33	9-Aug	3	1,168	510	5,833	1,230	20	3	60
34	17-Aug	5	1,353	1,863	3,018	398	25	3	75
35	23-Aug	2	394	3,200	452	75	33	3	99
36	30-Aug	6	38	4,141	9	59	22	4	88
37	6-Sep	0	4	3,176	0	12	25	2	50
38	13-Sep	2	0	982	0	3	13	1	13
Total		1,094	28,233	15,863	65,353	109,516	124	33	1,321
2010–2019 Average		1,258	101,668	35,080	147,140	531,140	194	52	2,895
2020 as % of Average		87%	28%	45%	44%	21%	64%	63%	46%

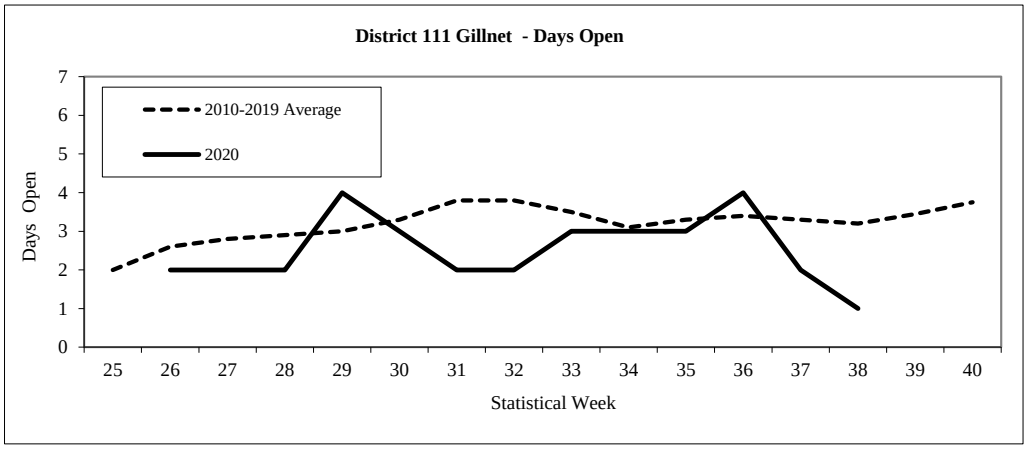

Figure 31. Days open by week in the District 111 drift gillnet fishery, 2020.

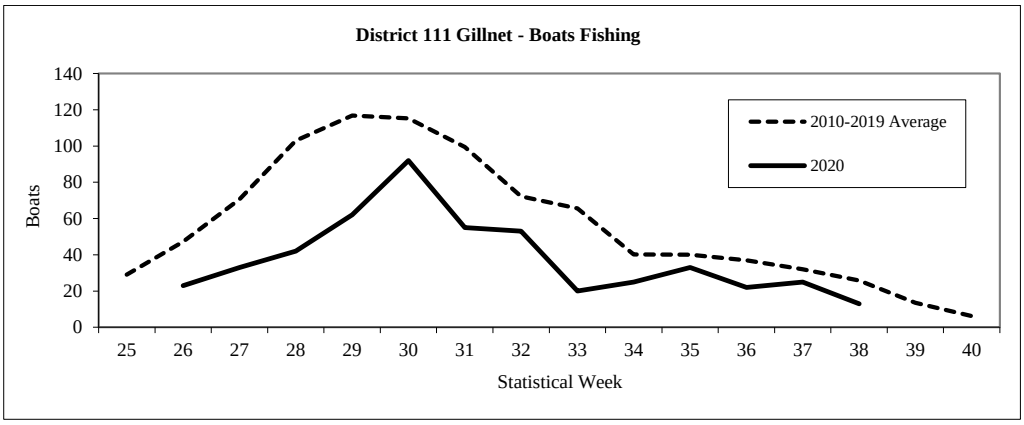

Figure 32. Number of boats fishing by week in the District 111 drift gillnet fishery, 2020.

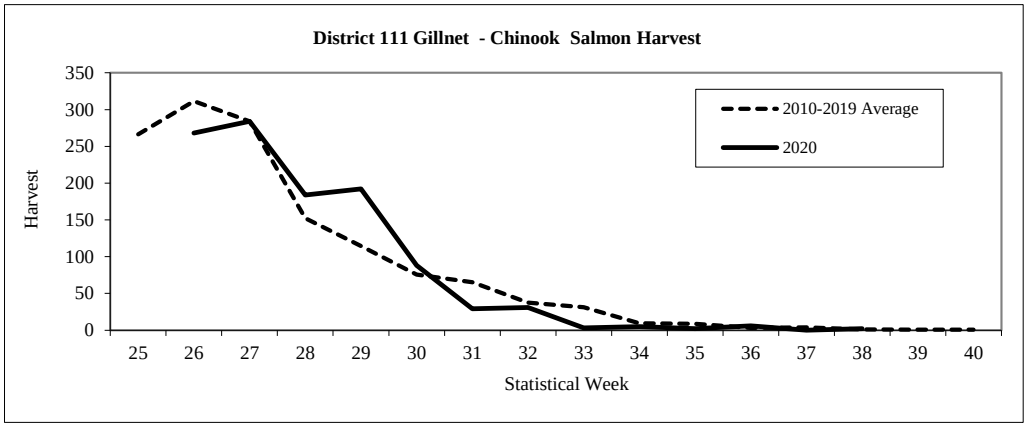

Figure 33. Chinook salmon harvest by week in the District 111 drift gillnet fishery, 2020.

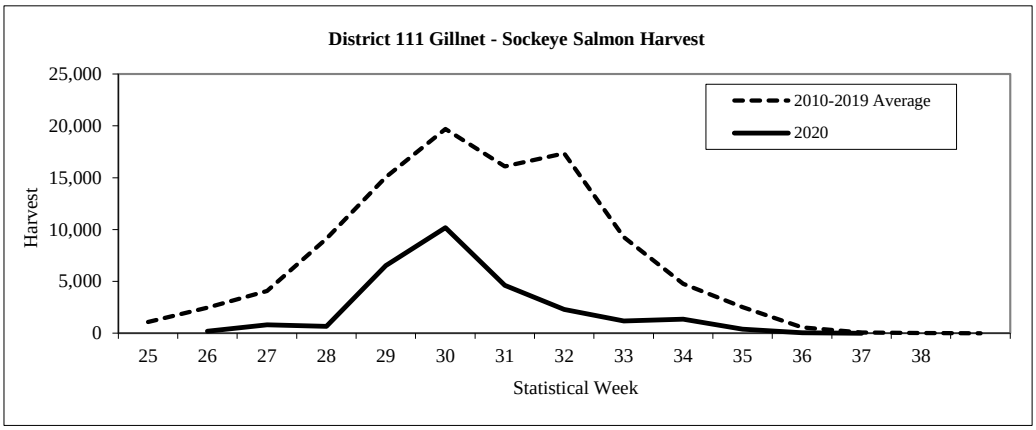

Figure 34. Sockeye salmon harvest by week in the District 111 drift gillnet fishery, 2020.

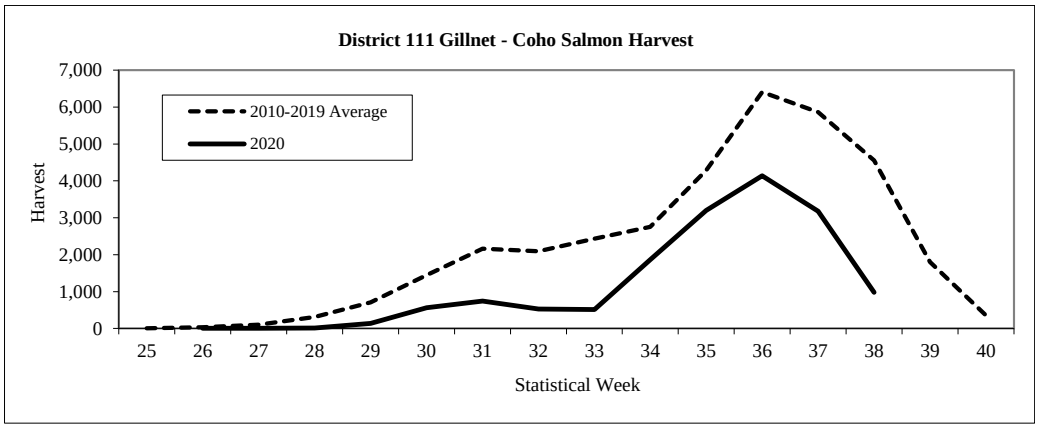

Figure 35. Coho salmon harvest by week in the District 111 drift gillnet fishery, 2020.

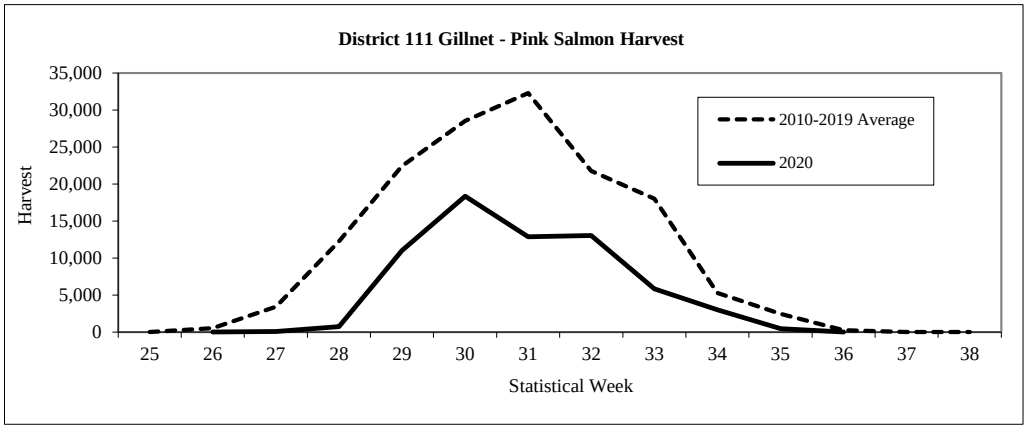

Figure 36. Pink salmon harvest by week in the District 111 drift gillnet fishery, 2020.

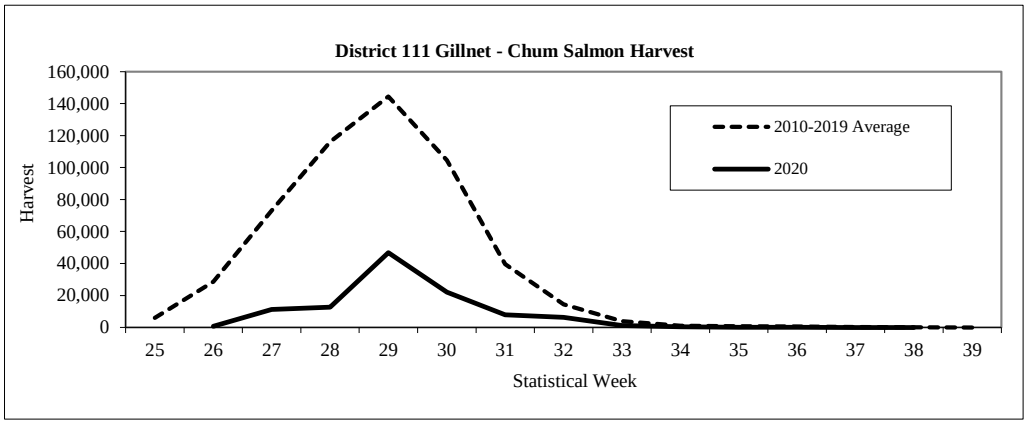

Figure 37. Chum salmon harvest by week in the District 111 drift gillnet fishery, 2020.

Transboundary River Joint Enhancement

The transport of sockeye salmon fry from the Snettisham Hatchery facility back to Canadian lakes was completed on June 11, 2020. Approximately 4.57 million fry were released in Tahltan, Tatsamenie, and Trapper lakes in Canada. The overall green egg to fry survival for brood year (BY) 2019 releases was 78% (Table 8). After transporting BY19 fry back to their respective lakes, all TBR modules, incubators, and short-

term fry rearing containers were broken down, cleaned, and disinfected prior to receiving green eggs from BY20 egg takes.

Brood year 2020 egg takes began on September 4 at Trapper Lake, September 10 at Tahltan Lake, and September 18 at Tatsamenie Lake. An estimated total of 3.1 million green eggs were collected from the three donor lakes. Tahltan Lake egg takes were completed on September 12 after collecting an estimated 502,200 eggs in 2 lots. Tatsamenie Lake egg takes were completed on October 7 after collecting 2.1 million eggs in 5 lots. Trapper Lake egg takes were completed on September 15th after collecting 537,000 eggs in 3 lots. DFO contractors collected adult sockeye salmon tissue samples on the spawning grounds and shipped them to the ADF&G Juneau Fish Pathology laboratory via Snettisham Hatchery per the 2019 PST Agreement.

Table 8. Summary of numbers and survival rates of brood year 2019 sockeye salmon fry released May and June 2020.

Brood stock	Release site	Number of trips	Survival rate to eyed stage	Survival rate to release	Number released
Tahltan	Tahltan Lk	6	80.1%	61.0%	2,685,000
Tatsamenie	Upper Tatsamenie Lk	3	73.6%	67.9%	1,411,600
Tatsamenie	Upper Tatsamenie Lk Extended Rearing	2	86.3%	85.1%	210,100
Trapper	Trapper Lake	1	68.6	64.7	263,200
	Average/Totals	12	77.7%	64.1%	4,569,000

During the 2020 season, the ADF&G Thermal Mark Lab processed 7,456 sockeye salmon otoliths collected by ADF&G and DFO staff as part of the U.S./Canada fry-planting evaluation program. These collections came from commercial and test fisheries in both U.S. and Canadian waters on the Taku and Stikine rivers over a 12-week period. The laboratory provided estimates on hatchery contributions for 54 distinct sample collections. Estimates of the percentage contribution of hatchery fish to commercial catches were provided to ADF&G and DFO fishery managers 24 to 48 hours after samples arrived at the lab.

Alsek River Area Fisheries

Although harvest sharing arrangements of Alsek River salmon stocks between Canada and the U.S. have not been specified, the 2019 PST Agreement calls for the development and implementation of cooperative abundance-based management plans and programs for Alsek River Chinook and sockeye salmon. Escapement goals are in place for Alsek River Chinook salmon and for sockeye salmon spawning at the Klukshu River, a tributary that flows into the Tatshenshini River, approximately 80 km northeast of its junction with the Alsek River. The principal escapement-monitoring tool for Chinook, sockeye, and coho salmon on the Alsek River is the Klukshu River weir, operated by DFO in cooperation with the Champagne-Aishihik First Nation since 1976. In 2013, Canadian and U.S. biologists adopted a new biological escapement goal range of 7,500 to 11,000 sockeye salmon through the Klukshu River weir. The current biological escapement goal range for Alsek River Chinook salmon, adopted in January 2018, is a range of 3,500 to 5,300 fish.

ADF&G manages the Alsek River commercial set gillnet fishery to achieve the agreed upon escapement goal ranges. Time and area openings are adjusted by monitoring fishery performance data and comparing it to historical CPUE. The duration of weekly fishing periods is based on fishery performance data (CPUE). Historically, gillnets have often been restricted to a maximum mesh size of 6 inches through July 1 to minimize Chinook salmon harvest. The U.S. commercial set gillnet sockeye salmon fishery commenced on June 8 with a 12-hour opener in 2020 and a 6-inch maximum mesh restriction was in effect through July 20 as a Chinook salmon conservation measure.

Preseason expectations were for below average Chinook and sockeye salmon runs in 2020. The overall Alsek River drainage sockeye salmon run was expected to be approximately 65,000 fish; which was below the 2010–2019 average run size of approximately 89,000 sockeye salmon. The preseason outlook for 2020 was based on a predicted run of 15,000 Klukshu River sockeye salmon derived from a Klukshu River stock-recruitment model and an assumed Klukshu River contribution rate of 23% to the total run (based on mark-recapture results from 2000–2004 and run size estimates using GSI from 2005–2006 and 2011–2014). Principal contributing brood years for the 2020 run were 2015 and 2016. The Klukshu River escapements in 2015 and 2016 were 11,400 and 7,400 sockeye salmon respectively, which were both below the 2010–2019 average of 12,100 fish.

The 2020 Alsek River set gillnet fishery opened Sunday June 8 (week 24). The total number of individual permits fished during the season was 13, which was below the 2010–2019 average of 15 permits. The commercial fishery was opened for a total of 38 days which was below the 10-year average of 46 days. The overall effort in boat-days was 44% of the average due to low or no effort in many weeks late in the season (Table 9). Harvests of Chinook salmon through late June were below the 2010–2019 average. Harvests of sockeye salmon were below average throughout the season, and the total harvest of 2,518 fish was 19% of the 2010–2019 average of 13,509 fish (Table 9). There was no effort after late July. In the past several years there has been reduced fishing effort during the coho salmon season due to economic struggles and lack of pilots to transport fish to town. In 2020, no coho salmon were harvested (Table 9).

The Klukshu River weir count of 4,396 sockeye salmon was below the lower bound of the 7,500 to 11,000 fish escapement goal range. The Alsek River drainage estimate of 28,000 fish is within the escapement goal of 24,000 to 33,500 sockeye salmon. The Alsek River drainage escapement estimate of 5,330 Chinook salmon was above the escapement goal range of 3,500 to 5,300 fish.

Table 9. Weekly salmon harvest and fishing effort for the Alaska Alsek River commercial set gillnet fishery, 2020.

								Effort	
Statistical	Start	Catch							Boat
Week	Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Days
24	8-Jun	83	163	0	0	0	11	0.5	6
25	14-Jun	57	306	0	0	0	10	1.0	10
26	21-Jun	31	406	0	0	0	11	1.0	11
27	28-Jun	11	686	0	0	0	10	1.0	10
28	5-Jul	0	567	0	0	0	10	1.0	10
29	12-Jul	0	247	0	0	0	10	1.0	10
30	19-Jul	0	109	0	0	0	8	1.0	8
31	26-Jul	0	34	0	0	0	4	1.0	4
32-42[a]	2-Aug	0	0	0	0	0	0	31.0	0
Total		182	2,518	0	0	0	13	38	68
2010-2019 Average		354	13,509	829	0	4	15	46	154
2020 as % of Average		51%	19%	0%		0%	87%	83%	44%

[a]. Weeks 32-42 opened to fishing but not fished.

SOUTHEAST ALASKA CHINOOK SALMON FISHERY

All Gear Harvest

The SEAK Chinook salmon fishery is managed to stay within the annual all-gear PST total allowable catch limit determined by the SEAK early winter District 113 Troll fishery CPUE metric estimated from data collected in statistical weeks 41–48 and to meet escapement goals for 6 SEAK and TBR stocks. Management of the 2020 SEAK Chinook salmon fishery was configured based on a preseason winter power troll CPUE metric of 4.83 for the 2020 fishing season. This CPUE translated into an all-gear PST allowable catch limit of 205,165 Treaty Chinook salmon. Management plans established by the Alaska Board of Fisheries allocate the CPUE-based Treaty catch limit among gear types and prescribe management measures for both commercial and sport fisheries [5AAC 29.060(b) and 47.055].

Under provisions of regulatory actions plans to conserve Chilkat, King Salmon, and Unuk River stocks, as well as other SEAK and TBR wild Chinook salmon stocks, ADF&G was given direction by the Alaska Board of Fisheries, through emergency order authority, to take management actions necessary to reduce exploitation rates and pass as many SEAK and TBR Chinook salmon stocks to the spawning grounds for escapement as possible. The conservation measures for all gear types that were implemented during 2018 and 2019 continued for the 2020 season. The winter troll fishery closed early on March 15, spring troll fisheries were restricted to near terminal areas or areas on the outside coast, and in the summer troll fishery the primary corridors and waters directly adjacent to the terminus of the Unuk, Chilkat and Stikine rivers were closed to the retention of Chinook salmon. Retention of Chinook salmon in the purse seine fishery outside designated terminal harvest areas was delayed until August 2. Drift gillnet fisheries in Districts 106 and 108 (near the mouth of the Stikine River) were delayed to the latter part of June. Drift gillnet fisheries in Districts 111 and 115 (near the mouths of the Taku and Chilkat Rivers) were subject to time and area restrictions through mid-July, with gear restrictions in place through early July. Openings in terminal harvest areas were delayed into June. Similarly, sport fisheries outside of terminal areas were delayed until mid-June or early July and were closed to nonresidents during the first half of August. In addition to these conservation measures, all fisheries were managed conservatively and monitored closely inseason to avoid exceeding the harvest level defined in the 2019 PST Agreement.

The total Chinook salmon harvest by all SEAK commercial fisheries was 199,688 fish and the sport fish harvest was 35,100 fish, for a total all-gear harvest of 234,788 fish (Table 10 and Table 11). This includes an all-gear harvest of 620 in the Annette Island Metlakatla Indian Community tribal fishery that is not directly managed by the State of Alaska. The all-gear harvest of Treaty Chinook salmon was 204,624 fish including 523 fish from the Metlakatla Indian Community tribal fishery. The 2020 all-gear Treaty harvest of 204,624 fish was below the CPUE-based harvest limit of 205,165 fish.

Table 10. Estimated all-gear Chinook salmon catch in 2020.

Gear	Total Harvest	AK Hatchery Harvest	Wild Terminal Exclusion	Alaska Hatchery Addon	Treaty Harvest
Troll	169,916	7,769	0	4,510	165,406
Sport	35,100	6,300	0	4,539	30,561
Drift Gillnet	12,629	10,613	0	9,671	2,958
Purse Seine	16,892	11,830	0	11,444	5,448
Set Gillnet	251	0	0	0	251
Total Net	29,772	22,443	0	21,115	8,657
Total All Gear	***234,788***	***36,512***	***0***	***30,164***	***204,624***

Note: Annette Island Metlakatla Indian Community tribal harvest of 623 Chinook salmon are included of which 523 were Treaty fish. This includes a total tribal harvest of 91 troll, 288 drift gillnet, 241 purse seine fish, of which 91 troll, 191 drift gillnet, and 241 purse seine Treaty fish.

Note: Terminal area harvests are included.

Table 11. Southeast Alaska Chinook salmon landed catch for aggregate abundance-based management fisheries of interest to the Pacific Salmon Commission (2013–2020). Values are in thousands of fish.

Year	Total Catch	Add-on and Exclusion Catch	Treaty Catch Limit[1]	Treaty Catch	Treaty Incidental Mortality	Treaty Total Mortality
2013	257.3	65.9	176.0	191.4	59.4	250.8
2014	492.5	57.3	439.4	435.2	50.9	486.1
2015	403.3	68.3	237.0	335.0	49.1	384.1
2016	387.0	36.1	355.6	350.9	51.0	401.9
2017	207.1	31.6	209.7	175.4	46.6	222.0
2018	164.7	37.0	144.5	127.8	31.2	159.0
2019[1]	175.1	34.8	140.3	140.3	56.7	197.0
2020	234.8	30.2	205.2	204.6	39.1	243.7

[1] 2009–2018 Treaty Harvest Limit determined by pre-season PSC Chinook Model AI
2019–Present Treaty Harvest Limit determined by CPUE Model

Troll Fishery

The accounting of Chinook salmon harvested by trollers begins with the winter fishery in October and ends with the summer fishery in September. The winter troll fishery is managed for a guideline harvest level (GHL) of 45,000 non-Alaska hatchery-produced Chinook salmon, with a guideline harvest range of 43,000−47,000 non-Alaska hatchery-produced fish, plus the number of Alaska hatchery-produced Chinook salmon harvested during the winter fishery. The 2019–2020 winter troll fishery was open from October 11, 2019 through March 15, 2020. To help reduce encounters of wild SEAK and TBR Chinook salmon, the winter season fishery closed from March 16 through April 30, prior to reaching the GHL. A total of 15,810 Chinook salmon were harvested. Of these, 1,167 fish (7%) were of Alaska hatchery origin, of which 689 fish counted toward the Alaska hatchery add-on, resulting in a Treaty harvest of 15,121 fish (Table 12).

The spring troll fisheries target Alaska hatchery-produced Chinook salmon and are conducted along migration routes or close to hatchery release sites. Terminal area fisheries, which begin during the spring, occur directly in front of hatcheries or at remote release sites. While there is no ceiling on the number of Chinook salmon harvested in the spring fisheries, the take of Treaty Chinook salmon is limited according to the percentage of

the Alaska hatchery fish taken in the fishery. Non-Alaska hatchery fish are counted towards the annual Treaty catch limit of Chinook salmon, while most of the Alaska hatchery (add-on) fish are not.

In 2020, spring troll fisheries occurred between May 1 and June 30. To help reduce encounters of wild SEAK and TBR Chinook salmon during May and June, spring troll fisheries located in known wild Chinook salmon migration corridors did not open. A total of 17 spring troll fisheries opened, which is a 66% reduction from the number of areas opened prior to 2018 (when SEAK and TBR conservation measures began). The combined harvest for spring troll fisheries was 13,600 Chinook salmon, of which 3,414 fish (25%) were of Alaska hatchery origin and 1,939 fish counted toward the Alaska hatchery add-on, resulting in a Treaty harvest of 11,661 fish.

The 2020 summer troll fishery included two Chinook salmon retention periods, from July 1–6 and August 15 to September 8. On August 30, prior to the completion of the second retention period target harvest, ADF&G estimated 13,370 Chinook salmon remained on the SEAK annual all-gear Treaty catch limit. On August 31, a re-allocation of the remaining all-gear SEAK Treaty Chinook salmon to the troll fishery was authorized. The remaining Treaty allocation included unharvested fish from the commercial net fisheries and most notably the sport fishery, which was under its allocation largely due to travel restrictions associated with COVID-19. The additional fish provided another eight days of Chinook salmon retention and contributed to a total fishery length of 25 days. A total of 140,415 Chinook salmon were harvested during the summer fishery, of which 3,188 fish (2%) were of Alaska hatchery origin and 1,882 fish counted toward the Alaska hatchery add-on. The resulting Treaty Chinook salmon harvest was 138,533 fish.

The total harvest for all troll fisheries in the 2020 accounting year was 169,916 Chinook salmon, of which 165,406 fish were Treaty Chinook salmon. This includes a total harvest of 91 fish in the Annette Island Metlakatla Indian Community tribal troll fishery; all 91 were Treaty Chinook salmon.

Table 12. Troll fishery Chinook salmon harvest by season, 2020.

Gear/Fishery	Total Harvest	Alaska Hatchery Harvest	Alaska Hatchery Add-on	Terminal Exclusion Harvest	Total Term. Exclusion/ Alaska Hatchery Add-on	Treaty Harvest
Winter Troll	15,810	1,167	689	0	689	15,121
Spring Troll[a]	13,600	3,414	1,939	0	1,939	11,661
Summer Troll						
First Period[b]	71,494	763	450	0	450	71,044
Second Period	68,893	2,425	1,432	0	1,432	67,461
Total Summer	140,415	3,188	1,882	0	1,882	138,533
Total Traditional Troll	169,825	7,769	4,510	0	4,510	165,315
Annette Is. Troll	91	0	0	0	0	91
Total Troll Harvest	**169,916**	**7,769**	**4,510**	**0**	**4,510**	**165,406**

[a] Spring troll harvest includes all terminal and wild terminal exclusion harvests for year.
[b] Total summer harvest includes confiscated harvest for the year.

Net Fisheries

A total of 12,629 Chinook salmon were harvested in the drift gillnet fisheries in 2020, of which 10,613 fish (84%) were of Alaska hatchery origin and 9,671 fish counted toward the Alaska hatchery add-on, resulting in a Treaty harvest of 2,958 fish (Table 10). This includes a harvest of 288 fish in the Metlakatla Indian

Community tribal drift gillnet fishery of which 191 fish were Treaty Chinook salmon. A total of 16,892 Chinook salmon were harvested in the purse seine fisheries, of which 11,830 fish (70%) were of Alaska hatchery origin and 11,444 fish counted toward the Alaska hatchery add-on, resulting in a Treaty harvest of 5,448 fish. This includes a harvest of 241 fish in the Metlakatla Indian Community tribal purse seine fishery; all 241 fish were Treaty Chinook salmon. A total of 251 Chinook salmon were harvested in the set gillnet fisheries, none of which were of Alaska hatchery origin, resulting in a Treaty harvest of 251 fish (Table 10).

With the exception of directed gillnet harvests of Chinook salmon in SEAK terminal area regulatory Districts 108 and 111, as provided in the Transboundary Rivers chapter of the PST (Chapter 1), harvests of Chinook salmon in net fisheries are primarily incidental to the harvest of other species, and in 2020 only constituted a small fraction (<1.0%) of the total net harvest of all species.

Sport Fishery

The SEAK Chinook salmon sport fishery is managed under the directives of the Southeast Alaska King Salmon Management Plan [5 AAC 47.055]. This plan prescribes management measures based upon the SEAK early winter troll CPUE metric and the harvest management plan adopted by the Alaska Board of Fisheries. In 2020, 37,879 Treaty Chinook salmon were allocated to the sport fishery. As directed by the Southeast Alaska King Salmon Management Plan, if restrictions are necessary to keep the sport fishery within its harvest allocation, nonresident anglers will be restricted first, and ADF&G shall only restrict resident anglers if nonresident angler restrictions are insufficient to keep the sport harvest within the sport harvest allocation.

The following regulations applied during the 2020 sport fishery as prescribed by the *Southeast Alaska King Salmon Management Plan:*

Alaska Resident

- The resident bag and possession limit was one Chinook salmon, 28 inches or greater in length.
- In those inside waters where the sport fishery for Chinook salmon was closed to retention during the spring and early summer (Juneau area, Petersburg/Wrangell area, Ketchikan area), when those waters reopened the resident bag and possession limit was two Chinook salmon 28 inches or greater in length through December 31, 2020.

Nonresident

- The nonresident bag and possession limit was one Chinook salmon, 28 inches or greater in length.
- From January 1 through June 30, a nonresident's annual catch limit was three Chinook salmon, 28 inches or greater in length.
- From July 1 through July 7, a nonresident's annual catch limit was two Chinook salmon, 28 inches or greater in length.
- From July 1 through December 31, a nonresident's annual catch limit was one Chinook salmon, 28 inches or greater in length, and any Chinook salmon 28 inches or greater in length harvested by a nonresident from January 1 through June 30 applied toward the one fish annual catch limit.

The sport fishery was monitored closely throughout the season to ensure it stayed below the Treaty catch limit. In early June, COVID-19 impacts were observed to significantly reduce Chinook salmon harvest levels, due to a reduction in nonresident angler effort. While continuing to closely monitor the sport fishery, including participation levels, ADF&G initiated a series of progressively liberalized regionwide regulations beginning in mid-June in an effort to achieve the sport harvest allocation. These more liberalized regulations included increases of bag and possession limits for resident anglers as well as increases in bag, possession and annual limits for nonresident anglers. Liberalized regionwide regulations were rescinded effective September 30, 2020. The 2020 sport fishery had an estimated total harvest of 35,100 Chinook salmon, of which 30,561 fish counted as Treaty harvest (Table 10).

SOUTHEAST ALASKA COHO SALMON FISHERIES

Attachment B of the 1999 PST specifies provisions for inseason conservation and information sharing for northern boundary coho salmon. In 2020, troll CPUE in Area 6 in the early weeks of the fishery averaged 14 coho/day, which was within the boundary area conservation trigger range of 15–22 coho/day. Notwithstanding the provisions for a boundary area closure, following an Alaska/Canada bilateral review of the Area 6 CPUE data, it was determined there was an insufficient number of landings sampled to provide an adequate indicator of abundance. Alternatively, other inseason sources of abundance were considered in the determination of the necessity of a boundary area closure. Given the above average coho salmon CPUE in the NBC A-B line troll pink salmon fishery and the Alaska District 101 Tree Point drift gillnet fishery during the time of the assessment, and considering the delay of the NBC directed troll coho salmon fishery from July 1 to August 1 and the reduced sport coho salmon harvest resulting from decreased guided angler trips following restrictive COVID-19 mandates, it was determined that additional boundary area restrictions were not warranted. The mid-July projection of regionwide total commercial harvest of 1.37 million was greater than the 1.1 million trigger for an early regionwide troll closure, specified in Alaska Board of Fisheries regulations and in Attachment B.

The 2020 regionwide summer troll coho salmon fishery began by regulation on June 1 and continued in all waters of SEAK through September 20. The 2020 all-gear catch of coho salmon totalled 1.25 million fish, of which 1.04 million fish (87%) were taken in commercial fisheries (Table 13). The troll harvest of 750,700 coho salmon was 51% below the 2010–2019 average of 1.52 million fish and accounted for 72% of the commercial catch. Power troll wild coho salmon CPUEs were below the 2000–2019 average for the duration of the summer season. The overall wild stock abundance (wild troll catch divided by an index of the troll exploitation rate) was estimated at 2.91 million fish, 28% below the 20-year average. With pink salmon abundance down throughout much of SEAK in 2020, purse seine opportunities were reduced. Consequently, the purse seine coho salmon harvest of 78,700 fish was 74% below the 2010–2019 average, while the drift gillnet harvest of 130,500 fish was 77% below the 2010–2019 average. The set gillnet harvest of 81,700 fish in the Yakutat area was 40% below the 2010–2019 average, with 81% of the catch taken in the Situk-Ahrnklin Lagoon. A preliminary estimate of the SEAK sport catch (140,770 fish) is 45% below the 2010–2019 average (257,600 fish).

Wild production accounted for 787,000 fish (76%) in the commercial catch compared with a recent 2010–2019 average of 1.74 million fish (75% wild). The hatchery percentage of the commercial catch was 24%. Of the estimated hatchery contribution of 254,600 fish, over 99% originated from facilities in SEAK, with facilities on or near the outer coast accounting for an estimated 51% of the run while inside hatchery runs contributed to the remaining 49%.

Preliminary all-fishery coho salmon exploitation rate estimates were low for all three wild indicator stocks, at 20% for Auke Creek, 24% for Berners River, and 42% for Hugh Smith Lake. The all-fishery exploitation rate for the Hugh Smith Lake stock was below the long-term average of 61%. Most of the reduction in the all-fishery exploitation rate was driven by decreases in the troll fleet exploitation rate. The troll fishery exploitation rate on the Hugh Smith Lake stock (24%) was below the 25-year (1995–2019) average of 29%. Troll fishery exploitation rates on northern inside stocks were record lows, estimated at only 0% for Auke Creek and 5% for the Berners River compared with 25-year averages of 24% and 24%, respectively. While troll exploitation rates were well below average, drift gillnet exploitation rates were within ranges of previously observed values. Compared with 25-year averages, drift gillnet fisheries accounted for an estimated 19% of the Auke Creek return (average 8%), 19% of the Berners River return (average 21%), and 8% of the Hugh Smith Lake return (average 12%).

Escapement counts and estimates were below or within goals for most coho salmon stocks. The total escapement of 634 adult coho salmon to Hugh Smith Lake was within the biological escapement goal of 500–1,600 spawners. Coho salmon escapements were within the respective goal ranges for two northern Southeast

inside stocks (Taku River and Montana Creek), and below the goal for Chilkat River, Berners River, Auke Creek, and Peterson Creek. The combined peak count of 8,610 coho salmon in the 14 surveyed streams in the Ketchikan area was below the 1987–2019 average (10,495) yet above the goal of 4,250–8,500 spawners. The combined peak count of spawners in five streams in the Sitka area (630 spawners) was approximately half of the long-term average yet within the escapement goal of 400–800 spawners.

Coho salmon stocks monitored for CWTs all experienced a decline in total adult production. For example, at Hugh Smith Lake the estimated total run size of 1,097 adults was the lowest on record, approximately 73% below the 1992–2019 average (4,042). This occurred despite a 2019 coho salmon smolt migration from Hugh Smith Lake that was only 5% below the long-term average. Overall production decline was caused by a preliminary Hugh Smith Lake coho salmon marine survival rate (3.5%) that was greatly below the long-term average (12.3%). The Hugh Smith Lake marine survival of coho salmon is the second lowest observed, similar to the record low of 2018 (3.0%).

Similar to Hugh Smith Lake, coho salmon marine survival (and associated adult total run estimates) for the northern inside stocks was below the long-term average. Smolt-to-adult survival rates of 5.7% for the Berners River and 6.8% for Auke Creek were much lower than the long-term (1990–2019) mean survival rates of 15% (Berners River) and 19% (Auke Creek). The 2020 total estimated adult coho salmon run size in the Berners River was 5,355, 80% below the 1992–2019 average (26,499). Marine survival for Northern inside coho salmon stocks has been trending lower in recent years: four of the lowest five years for marine survival have occurred in the past five years.

Table 13. Coho salmon harvest in Southeast Alaska by gear type (preliminary), 2020.

Gear Type	Harvest
Troll	750,700
Purse Seine	78,700
Drift Gillnet	130,500
Set Gillnet	81,700
Sport (marine and freshwater)	140,770
Total	1,182,370

III. PRELIMINARY 2020 CHINOOK AND COHO SALMON FISHERIES IN WASHINGTON AND OREGON

INTRODUCTION

This report describes the conduct of United States (U.S.) fisheries of interest to the Pacific Salmon Commission (PSC) that occurred during 2020 in the area north of Cape Falcon, Oregon and south of the U.S./Canada border. These fisheries were conducted under pre-season management plans that were consistent with Annex IV of the Pacific Salmon Treaty (PST 2019) including obligations defined within Chapter 3 for Chinook individual stock based management regimes (ISBM) and Chapter 5 for Southern Coho Management.

An overview of the Chinook (Oncorhynchus tshawytscha) and Coho (Oncorhynchus kisutch) salmon conservation challenges facing managers during the 2020 pre-season planning process in this region is provided in the following section. The conduct of major fisheries is described, and estimates of landed catch, where available, are compared to pre-season catch limits or expectations for Chinook (Table 14) and Coho (Table 15). For perspective, landed catches for those fisheries since 2015 are also presented. Where available, preliminary estimates of the number of Chinook or Coho salmon released by anglers in 2020 mark-selective fisheries are also presented (Table 16). All estimates for the 2020 fisheries are preliminary and subject to

change. Estimates of spawning escapements and abundance of Coho and Chinook stocks are not available at this time.

PRE-SEASON PLANNING

Pre-season planning for southern U.S. fisheries of interest to the PSC is a coordinated activity involving Tribal, State and Federal management entities, with the involvement of conservation and fishing interests. The Pacific Fishery Management Council (PFMC) conducted a series of public meetings to consider options for ocean fishery season structures while the Tribes and States conducted government-to-government and public, open meetings throughout the region to develop and analyse alternative season structures for fisheries in the inside waters of the Columbia River, coastal Washington and Puget Sound. Participants in these various planning sessions evaluated the biological and socio-economic consequences of the alternative season structures for the outside (ocean) and inside (marine and freshwater) fisheries (Figure 38) including the anticipated impacts on U.S. southern origin stocks in fisheries conducted under the PST in Canada and Southeast Alaska. Agreement was reached on season structures expected to achieve conservation goals, domestic fishery objectives and legal obligations, including the PST, assuming fisheries are conducted as planned and pre-season abundance estimates are accurate.

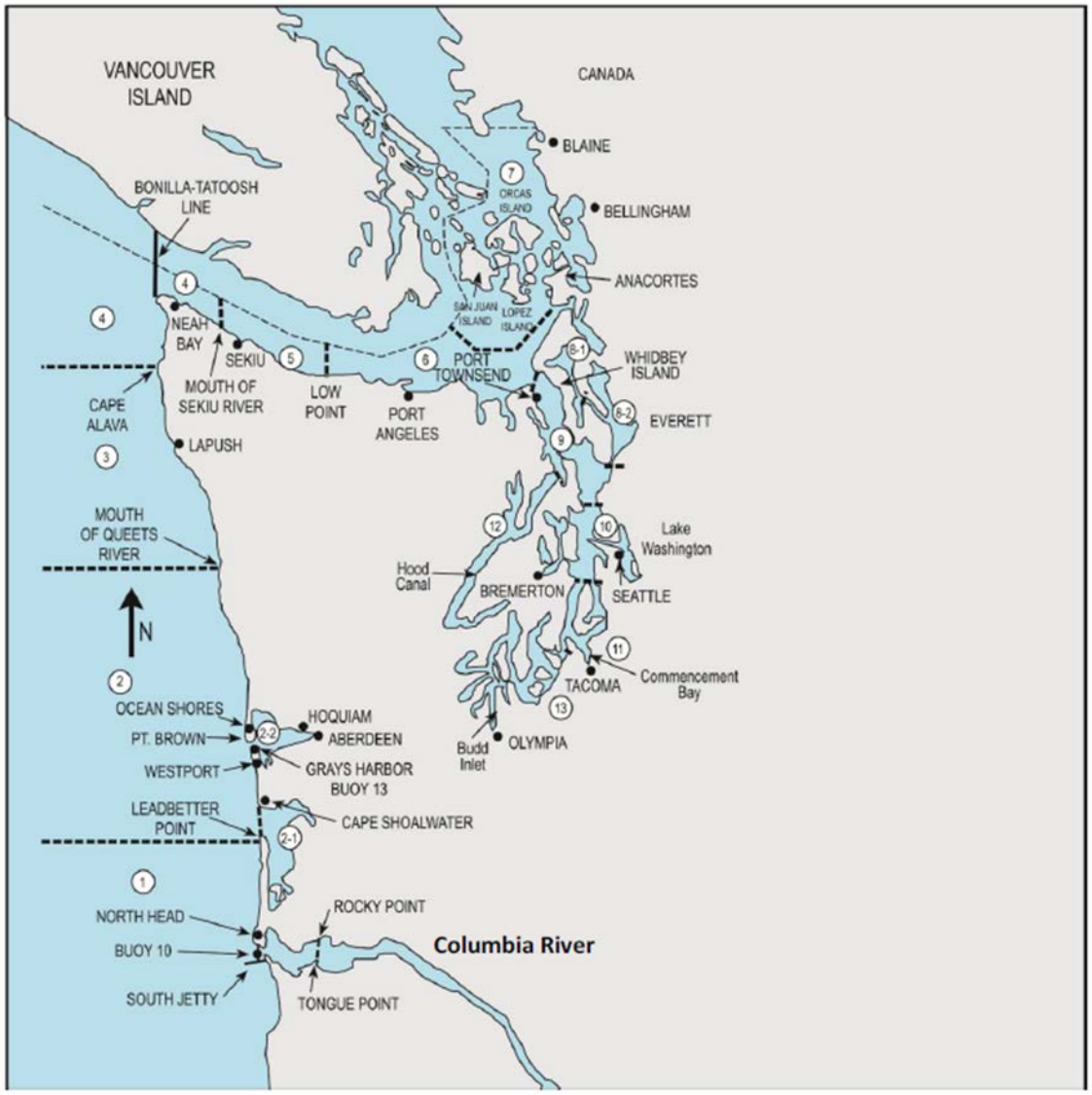

Figure 38. Map of Western Washington marine catch areas of the Washington coast (Areas 1 through 4) and Puget Sound (Areas 5 through 13) (WAC 220-22-030). Inside (Columbia River) fisheries reported in this document extend beyond the scope of this map.

Chinook Salmon Management

Under the 2019 Pacific Salmon Treaty Agreement, southern U.S. fisheries are subject to the Individual Stock Based Management provisions of Annex IV, Chapter 3. These provisions require that Southern U.S. fisheries on Chinook stocks shall be managed to limit the total adult equivalent mortality to the limits listed in Attachment I of Chapter 3.

Conservation obligations associated with the U.S. Endangered Species Act (ESA) for threatened and endangered Chinook salmon stocks originating from Puget Sound and the Columbia River have been more constraining to southern U.S. fisheries than PST obligations. Catch quotas for the 2020 U.S. ocean fisheries in the area north of Cape Falcon, Oregon, were defined by the impact limits on ESA-listed lower Columbia River natural tule fall Chinook stocks, ESA-listed Puget Sound Chinook stocks, and the abundance of other healthy, harvestable Chinook salmon stocks contributing to fisheries in this area. Puget Sound fishing seasons were structured to provide fishing opportunity on healthy salmon species or stocks within the impact limits defined for ESA-listed Puget Sound Chinook.

Coho Salmon Management

During the pre-season fishery planning process of 2020, Canadian fishery managers informed the U.S. that the Interior Fraser management unit was again expected to be in the low categorical abundance status, and U.S. fisheries were constrained to ensure that the exploitation rate on this management unit did not exceed 10.0% as defined by the PST Southern Coho Management Plan. Of the U.S. natural spawning Coho management units (MUs) managed under the PST, the Snohomish and Strait of Juan de Fuca MUs were forecasted to be in low abundance status. The Skagit, Stillaguamish, Hood Canal, Quillayute, Queets and Grays Harbor Coho MUs were predicted to be in moderate status, while the Hoh MU was forecasted to be in abundant status.

The impacts of planned Southern U.S. fisheries on natural Coho stocks, seasons, and catch limits were predicted using the Fisheries Regulation Assessment Model (FRAM). The total exploitation rate on the Interior Fraser Coho management unit was predicted to be 7.4% in Southern U.S. fisheries. Seasons and Coho quota levels for U.S. ocean fisheries were closed or severely constrained by the management objectives of Washington coastal and Puget Sound natural Coho and ESA-listed lower Columbia River natural Coho. Limits to fisheries in marine areas within northern Puget Sound and the Strait of Juan de Fuca were likewise constrained by management objectives reflecting very low forecasted returns for some Puget Sound natural Coho stocks.

NORTH OF CAPE FALCON OCEAN FISHERIES

Details regarding North of Cape Falcon ocean salmon fishing plans were reported in Preseason Report III, published by the Pacific Fishery Management Council in April 2020.
https://www.pcouncil.org/documents/2020/04/2020-preseason-report-iii.pdf/
Fisheries in this area are managed to meet conservation objectives for ESA-listed stocks, natural stocks and brood stock goals for hatchery stocks. Within these stock management objectives, ocean fishing seasons are defined that meet legal requirements of Tribal treaties and allocations between Non-Tribal troll and sport fisheries. Ocean fishery seasons are also constructed to ensure a balance of opportunity for harvest with the inside fisheries. Lower Columbia River hatchery Coho and Columbia River fall Chinook have historically been the major stocks contributing to catches of ocean fisheries in the North of Cape Falcon area.

Chinook and Coho salmon catch quotas were established for the 2020 ocean Tribal, Non-Tribal troll and sport fisheries. Ocean fishery quotas for Chinook salmon were defined by exploitation rate limits on several ESA-listed Puget Sound Chinook stocks as well as the total exploitation rate limit of 38% on ESA-listed lower Columbia River natural tule fall Chinook stocks in all fisheries.

Non-Tribal Troll Fishery

Pre-season quota levels for the non-Tribal troll fisheries were 27,640 Chinook and 2,000 Coho with a clipped adipose fin, hereinafter referred to as marked. The preliminary estimate of non-Tribal harvest in the 2020 North of Falcon troll fishery is 12,000 Chinook (43% of the coast-wide quota) and 700 Coho (35% of the coast-wide non-Tribal troll quota). Trollers harvested 2,000 Chinook in the May 1 – June 30 fishery, and the remaining 10,000 Chinook were harvested in the summer all-species fishery between July 1 and September 30. All Coho were harvested during the summer all-species fishery.

Tribal Troll Fishery

The Quinault, Quileute and Hoh Tribes opened their May-June Chinook Tribal Troll fisheries on May 1. The Makah Tribe did not open a Chinook fishery during this time period due to tribe-specific COVID-19 restrictions. The May-June Chinook Tribal Troll catch (31 fish) was the lowest harvest on record. The May-June fishery harvested 0.2% of the 17,500 Chinook sub-quota.

The Quinault, Quileute and Hoh Tribes opened their all-species Tribal Troll fisheries on July 1. Due to tribe-specific COVID-19 restrictions, the Makah Tribe had a delayed opening on July 24. The all-species portion of the fishery ran from July 1 through September 15. The fishery harvested 13.7% of the 17,500 Chinook sub-quota and 87% of the 16,500 Coho quota. Coho landings were highest in August accounting for 75% of the overall catch, followed by September at 20%. Chinook effort was highest in August, which accounted for approximately 70% of the Chinook landings during this time period. There were 182 landings during the all-species portion of the fishery.

Overall, the Tribal Troll fishery harvested 7% of the 35,000 Chinook quota and 87% of the 16,500 Coho quota. The total ocean salmon harvest for the 2020 Tribal Troll fishery was 2,437 Chinook and 14,391 Coho across 185 total landings. The majority of the Tribal Troll catch was taken in Area 4, with smaller amounts taken in Areas 2, 3 and 4b.

Ocean Sport Fisheries

Pre-season quotas for the Washington coastal sport fishery (Ocean Areas 1 through 4) were 26,360 Chinook and 26,500 marked Coho. Preliminary total catch estimates for the ocean sport fisheries north of Cape Falcon were 7,600 Chinook (29% of the pre-season coast-wide quota) and 24,300 Coho (92% of the pre-season coast-wide sport quota). A description of the season structure and catches by management area follows.

Columbia Ocean Area (including Oregon)

All-species salmon sport fishing opened in Ocean Area 1 (Columbia Ocean Area) on June 20 with a pre-season quota of 13,250 marked Coho and a guideline of 7,000 Chinook. The fishery closed on July 26 upon attainment of the Coho quota. The catch estimates for Area 1 were 800 Chinook (12% of the guideline) and 12,900 Coho (97% of the quota). The Chinook minimum size limit was 22 inches and the Coho minimum size limit was 16 inches with a sub-area closure in the Columbia Control Zone. A preliminary overall legal-sized Coho mark rate of 67% was calculated from on-water data collection in this area.

Preliminary estimates of Coho encounters (retained and released) and mark rate in the Area 1 Coho mark-selective sport fishery, June 20 – July 26, 2020.

Coho retained	Coho released	Total encounters	Mark %
12,900	6,400	19,300	67%

Westport, Washington

Ocean Area 2 (Westport, WA) opened for all-species salmon sport fishing on June 20 with a pre-season quota of 9,800 marked Coho and a guideline of 12,700 Chinook. The fishery closed on its automatic closure date, September 30. The catch estimates for Area 2 were 4,800 Chinook (39% of the guideline) and 8,200 Coho (84% of the quota). The Chinook minimum size limit was 22 inches and the Coho minimum size limit was 16 inches with a sub-area closure in the Grays Harbor Control Zone beginning August 12. A preliminary overall legal-sized Coho mark rate of 43% was calculated from on-water data collection in this area.

Preliminary estimates of Coho encounters (retained and released) and mark rate in the Area 2 Coho non-retention sport fishery, June 20 – September 30, 2020.

Coho retained	Coho released	Total encounters	Mark %
8,200	10,900	19,100	43%

La Push, Washington

Ocean Area 3 (La Push, WA) opened for all-species salmon sport fishing on June 20 with a pre-season quota of 690 marked Coho and a guideline of 1,300 Chinook. The fishery closed on its automatic closure date,

September 30. The port of La Push was closed to public access throughout the season due to health concerns associated with COVID-19; anglers could access Ocean Area 3 from the ports of Westport or Sekiu, but effort was minimal. The catch estimates for Area 3 were 20 Chinook (2% of the overall guideline of 1,200) and 200 Coho (46% of the revised quota of 462, after an in-season transfer of quota to Ocean Area 4). The Chinook minimum size limit was 24 inches, and the Coho minimum size limit was 16 inches. With low Coho encounters in Ocean Area 3, encounter data from dockside interviews were combined with those from Ocean Area 4, indicating a preliminary overall legal-sized Coho mark rate of 48%.

Preliminary estimates of Coho encounters (retained and released) and mark rate in the Area 3 Coho non-retention sport fishery, June 20 – September 30, 2020.			
Coho retained	Coho released	Total encounters	Mark %
200	200	400	48%

Neah Bay, Washington

Ocean Area 4 (Neah Bay, WA) opened for all-species salmon sport fishing on June 20 with a pre-season quota of 2,760 marked Coho and a guideline of 5,600 Chinook. The fishery closed on August 7 upon attainment of the Coho quota. The port of Neah Bay was closed to public access throughout the season due to health concerns associated with COVID-19; anglers could access Ocean Area 4 from the port of Sekiu. The catch estimates for Area 4 were 1,900 Chinook (34% of the guideline) and 3,000 Coho (100% of the revised quota of 2988, after an in-season transfer of quota from Ocean Area 3). The Chinook minimum size limit was 24 inches, and the Coho minimum size limit was 16 inches. A preliminary overall legal-sized Coho mark rate of 48% was calculated from dockside interview data collection from this area and Ocean Area 3.

Preliminary estimates of Coho encounters (retained and released), in the Area 4 Coho non-retention sport fishery, June 20 – August 7, 2020.			
Coho retained	Coho released	Total encounters	Mark %
3,000	3,300	6,300	48%

NORTH OF CAPE FALCON INSIDE FISHERIES

WASHINGTON COASTAL RIVER FISHERIES

North Washington Coastal Rivers

Net and sport fisheries directed at salmon in this region were implemented based upon pre-season, Tribal-State agreements and subject to in-season adjustments. Tribal net harvest includes non-selective catch from the Sooes, Quillayute, Hoh, Queets, and Quinault Rivers. The 2020 Tribal net fisheries in north coastal rivers harvested an estimated 20,600 Chinook salmon and 38,300 Coho salmon through November 17, 2020.

Recreational fisheries conducted during 2020 in the Quillayute, Hoh and Queets River systems included mark-selective fisheries targeting hatchery Chinook and Coho in the Quillayute and Queets systems. The Hoh River was closed to fishing May 1 through September 15 and was non-selective when the fishery reopened from September 16 through November. Harvest or impact estimates for these fisheries are unavailable at this time.

Grays Harbor, Washington

Harvest numbers reported for Grays Harbor include catch from both the Humptulips and Chehalis Rivers through November 17, 2020. The non-selective Tribal net fisheries in Grays Harbor, and including fisheries in the Humptulips and Chehalis Rivers, harvested an estimated 3,700 Chinook salmon and 6,300 coho salmon.

The non-Tribal commercial fishery in the northern portion of Grays Harbor near the Humptulips River (Area 2C) was not scheduled in 2020. There were 4 Chinook salmon (mark-selective) and 1,014 Coho harvested in the Non-Tribal commercial gillnet fishery in Areas 2A and 2D. Sport fisheries conducted in the Chehalis and Humptulips Rivers included mark-selective components for Chinook and Coho salmon. Harvest data for these fisheries are not available at this time.

COLUMBIA RIVER FISHERIES

Tribal and non-Tribal net and sport salmon fisheries were implemented in the winter/spring (January-June 15), summer (June 16-July) and fall (August-December) periods. All fisheries were constrained by impacts on ESA-listed stocks. Winter/spring fisheries were primarily constrained by impacts on ESA-listed upper Columbia River spring Chinook, Snake River spring/summer Chinook, and Cowlitz spring Chinook. Summer season fisheries were constrained by impacts to upper Columbia summer Chinook and ESA-listed sockeye. Fall fisheries were mainly constrained by impacts to ESA-listed Snake River fall Chinook and upriver summer steelhead. Additionally, careful in-season management to limit the fishery impacts on ESA-listed lower Columbia tule fall Chinook further limited Columbia River fall fisheries.

Columbia River salmon fisheries are developed and regulated to meet conservation standards. Fisheries are managed to operate within the impact limits set for ESA-listed stocks, meet the objectives for healthy Columbia River natural stocks, and ensure broodstock needs are met for hatchery salmon. Mainstem Columbia River fisheries are also developed and managed to remain within the requirements of the 2018 – 2027 US v. Oregon Management Agreement (MA), which includes Tribal/Non-Tribal sharing agreements. All data are preliminary and subject to change; some fisheries are still ongoing at the time of this report. The following section includes harvest numbers from Columbia River fisheries that are considered to be of the interest to PSC; therefore, the data may not match other reports that include total harvest.

Winter-Spring Fisheries

Non-Tribal Net

The mainstem winter/spring commercial fishery operated under mark-selective fishery (MSF) regulations during 2002-16. As a result of guidance from the Oregon and Washington Fish and Wildlife commissions, winter/spring non-Tribal commercial salmon seasons have not occurred in the mainstem Columbia River since 2016. Commercial fisheries during the winter/spring timeframe did occur in off-channel areas (Select Areas) in the Columbia River estuary but are not reported in this document.

Sport

Mainstem Columbia River mark-selective sport fisheries for spring Chinook began in 2001. In 2020, fisheries were closed March 28 through May 4 due to COVID-19 concerns. The area below Bonneville Dam was open from January 1 – March 27, May 5, 7, 9, 13, May 15-17, and May 20 for hatchery Chinook retention. The area downstream of the Lewis River was closed to angling beginning March 1 due to Cowlitz/Lewis broodstock concerns. Catch estimates for this area totalled 1,462 hatchery adult spring Chinook kept and 743 non-adipose fin clipped Chinook released. From Bonneville Dam to the Washington-Oregon state line, Chinook retention was open May 5, 7, 9, 13, May 15-17, and May 20, with 529 hatchery adult spring Chinook kept and 162 non-adipose fin clipped Chinook released. The Snake River fishery structure included two specific catch areas open on a days-per-week rotation during May 5-22. Catch in the Snake River fishery totalled 326 hatchery adult spring Chinook and 59 non-adipose fin clipped released. Fisheries also occurred in tributaries but are not reported in this document.

Preliminary estimated encounters of adult Spring Chinook in the Winter/Spring Columbia River mark-selective sport fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below Bonneville Dam	1,462	743	2,680	66%
Columbia River	Bonneville Dam to WA-OR state line	529	162	691	77%
Snake River	Washington waters	326	59	385	85%

Tribal

Tribal mainstem winter/spring fisheries typically occur from January 1 through June 15. Tribal mainstem fisheries are not mark-selective. Tribal fisheries are primarily conducted in the mainstem Columbia River from Bonneville Dam upstream to McNary Dam (Zone 6). Some additional harvest occurs just downstream of Bonneville Dam in platform and hook-and-line fisheries. Spring season fisheries may include three fishery sectors, a ceremonial permit gillnet fishery, a platform and hook and line fishery and a commercial gillnet fishery (during winter and periodically in the spring, after ceremonial needs have been met).

During 2020, the platform and hook-and-line fishery was open for subsistence fishing throughout the winter/spring period. Commercial sales did not occur in 2020 Tribal fisheries during the spring management period. Harvest estimates from the combined ceremonial and subsistence fisheries totalled 4,368 upriver spring Chinook (includes harvest below Bonneville Dam). Tribal harvest in tributaries is not included in this report.

Summer Fisheries

Non-Tribal Net

As a result of guidance from the Oregon and Washington Fish and Wildlife commissions, non-Tribal commercial fisheries did not occur in the summer management timeframe. Commercial fisheries during the summer timeframe did occur in off-channel areas (Select Areas) in the Columbia River estuary but are not reported in this document.

Sport

Summer season mark-selective Chinook recreational fisheries were open July 4-31 from the Tongue Point-Rocky Point line near the mouth of the Columbia River upstream to Priest Rapids Dam. An estimated 1,191 and 140 summer Chinook were harvested, and 995 and 167 were released below and above Bonneville Dam, respectively. The fishery (mark-selective) above Priest Rapids Dam opened on July 4 and resulted in 4,686 Chinook kept and 1,695 released. In-river allocation agreements dictate that a substantial share of the non-treaty catch be provided for fisheries upstream of Priest Rapids Dam.

Preliminary estimated encounters of adult Summer Chinook in the Upper Columbia River mark-selective sport fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below Bonneville Dam	1,191	995	2,186	54%
Columbia River	Bonneville to Priest Rapids Dam	140	167	307	46%
Upper Columbia River	Above Priest Rapids Dam	4,686	1,695	6,381	73%

Tribal
Summer season Tribal fisheries occurred from June 16 through July 31. Tribal mainstem fisheries are not mark-selective. Tribal fisheries are primarily conducted in the mainstem Columbia River from Bonneville Dam upstream to McNary Dam (Zone 6). Some additional harvest occurs just downstream of Bonneville Dam in platform and hook-and-line fisheries. There was a brief period of permit gillnet fisheries followed by five weekly commercial gillnet fishing periods conducted from June 22 – July 23. Platform and hook-and-line fisheries also occurred throughout the season, and fish were sold commercially or retained for subsistence use. Tribal fisheries within the mainstem harvested a total of 7,929 Upper Columbia summer Chinook.

Fall Fisheries

Non-Tribal Net
Fall season mainstem fisheries are typically categorized into early and late fall seasons. The early fall season generally encompasses the month of August and in some years, early September, whereas the late fall season generally begins in mid-September and may continue through October. Time, area, and gear restrictions were in place for fall season commercial gillnet fisheries. Fall gillnet fisheries are non-MSF. No seine or pound net fisheries occurred due to ESA constraints. The early fall season consisted of six fishing periods during August 10-27 in commercial Zones 4-5 (Warrior Rock to Beacon Rock) and resulted in 16,612 Chinook and 348 Coho harvested. The late fall season consisted of 9 fishing period during September 15 through October 22 in the same area and resulted in 15,951 Chinook and 2,466 Coho harvested. Tangle net fisheries occurred during September 30-October 30 (14 periods) in commercial Zones 1-3 (mouth to Warrior Rock) and are MSF for Coho and non-MSF for Chinook and resulted in 911 Chinook and 4,992 marked Coho (1,576 unmarked Coho Salmon were released) being harvested; approximately 32% of the Coho catch in the tangle net fishery were jacks. Commercial fisheries during the fall timeframe did occur in off-channel areas (Select Areas) in the Columbia River estuary but are not reported in this document.

Sport
Fall season recreational fisheries are mark-selective for Coho, and occasionally include some mark-selective periods for Chinook in the Buoy 10 area and in the 69-mile stretch of the lower Columbia River from the Tongue Point line upstream to Warrior Rock, which is near the mouth of the Willamette River. There were no mark-selective periods for Chinook in the mainstem Columbia River in 2020.

The Buoy 10 fishery opened August 14 and continued through December 31; Chinook retention was allowed August 14-27, September 5-6, September 11-13, and September 19 through December 31. Additional regulations for the Buoy 10 fishery included minimum size limits for Chinook (24-inches) and Coho (16-inches). Released Chinook typically consisted of fish that did not meet the minimum size requirement, fish released during non-retention periods, and any voluntary releases of legal-sized Chinook throughout the season. Buoy 10 catches included 14,633 Chinook and 7,064 hatchery Coho kept. Released fish included 5,360 Chinook and 7,252 Coho.

The lower Columbia River (LCR) mainstem sport fishery from the West Puget Island line upstream to Bonneville Dam opened August 1-31, September 11-13, and September 19 – December 31. The area from the Rocky Point – Tongue Point line upstream West Puget Island was open August 14-27, September 11-13, and September 19 through December 31. Chinook retention from the Lewis River upstream to Bonneville Dam was allowed August 1-September 6 on a three days-per-week rotation, and September 11-13 and September 19-December 31. Unlike the Buoy 10 fishery, the LCR was not open to angling when Chinook retention was closed. The kept catch estimate for the LCR sport fishery included 19,677 adult Chinook (752 released) and 1,537 hatchery Coho (775 released).

The mainstem sport fishery from Bonneville Dam to the Highway 395 Bridge (near Pasco, Washington) was open August 1-September 8, September 11-13, and September 19-December 31. Adult catch estimates for the Bonneville to McNary area totalled 5,547 fall Chinook and 827 Coho Salmon. Additional fisheries

occurred on the Columbia River upstream of McNary Dam, Hanford Reach area (downstream of Priest Rapids Dam), in tributaries and in the Snake River, but are not reported in this document.

Adult Fall Chinook and Coho Salmon Handle in the Columbia River Fall Sport Fisheries					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Buoy 10	14,633	5,360	19,993	73%
Columbia River	LCR Sport	19,677	752	20,429	96%
Columbia River	Bonneville-McNary	5,547	315	5,862	95%
System	Area	Coho Kept	Coho Released	Total Handle	% Kept
Columbia River	Buoy 10	7,064	7,252	14,316	49%
Columbia River	LCR Sport	1,537	775	2,312	66%
Columbia River	Bonneville-McNary	827	209	1,036	80%

Tribal

Fall season Tribal fisheries occur from August 1 through December 31. Tribal fisheries are not mark-selective. Tribal fisheries are primarily conducted in the mainstem Columbia River from Bonneville Dam upstream to McNary Dam (Zone 6). Some additional harvest occurs just downstream of Bonneville Dam in platform and hook-and-line fisheries. Platform and hook and line fisheries will remain open through December 31.

The Tribal commercial gillnet fishery consisted of seven weekly fishing periods from August 24 through October 7. Preliminary harvest estimates for all fall season fisheries total 96,880 adult fall Chinook and 13,365 adult Coho; however, some additional fish may be landed in the ongoing platform fisheries. Harvest estimates reported herein do not include catch from tributary fisheries.

PUGET SOUND FISHERIES

Puget Sound marine fisheries of interest to the Pacific Salmon Commission were regulated to meet conservation and allocation objectives for Chinook, Coho, Chum, and Sockeye salmon stocks, per Tribal-State agreement. For Puget Sound Chinook listed under the ESA, fisheries were managed according to the Puget Sound Chinook Harvest Management Plan (PSIT and WDFW 2010). This management plan defines limits to total exploitation rates for natural stocks and was determined by the National Marine Fisheries Service (NMFS) to be consistent with requirements specified under the ESA 4(d) Rule.

Release requirements were applied to many sport and net fisheries for Chinook, Coho, and Chum salmon -- the latter to protect ESA-listed Hood Canal and Strait of Juan de Fuca summer Chum.

Puget Sound marine fisheries were constrained by the need to meet management objectives for ESA-listed Puget Sound Chinook and due to conservation concerns for some Puget Sound Coho stocks. The primary constraining Puget Sound Chinook stocks during 2020 pre-season planning included Mid-Hood Canal, Stillaguamish, and Nooksack Chinook. Strait of Juan de Fuca and Snohomish Coho were the primary Coho management units of concern for developing fisheries in the Strait of Juan de Fuca, San Juan Islands, and Puget Sound.

<u>Strait of Juan de Fuca Sport</u>

Marked Chinook retention was allowed for sport fishing in salmon management Area 5 and 6 from March 1 through March 25 when all fishing was closed due to COVID-19. Sport fishing regulations allowed retention of marked Chinook and marked Coho from July 1 through August 15 in Areas 5 and 6, with marked Coho retention also permitted through September 30 in those areas. Dungeness Bay was open for marked Coho

retention during the month of October. Preliminary estimates of Chinook encounters and the legal-size mark rate in the Area 5 sport mark-selective fishery are presented in the following table.

Preliminary estimates of Chinook retained, released (legal and sub-legal size), and the legal-size mark rate in the Area 5 sport mark-selective fishery, July 1 – August 15, 2020.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
3,511	11,040	14,551	56.0%

A detailed report of this summer period sport fishery, including estimated catch, effort and other results of sampling and monitoring programs, will be available from the Washington Department of Fish and Wildlife in early 2021.

Strait of Juan de Fuca Tribal Troll (Area 4B, 5, and 6C)

During the winter Tribal troll fishery in Areas 4B, 5, and 6C (November 1, 2019 – April 15, 2020), 700 Chinook and zero Coho were caught. In the summer Tribal troll fishery in Areas 5 and 6C only (June 1 – September 30, 2020), 100 Chinook and 100 Coho were caught. The Tribal catch estimates from this area do not include catch from Area 4B during the May-September PFMC management period, which have been included in the North of Cape Falcon Tribal ocean troll summary.

Strait of Juan de Fuca Tribal Net

Preliminary estimates of the 2020 catch in the Strait of Juan de Fuca Tribal net fisheries (no non-Tribal net fisheries in the Strait of Juan de Fuca) are 8 Chinook and 1,400 Coho salmon.

San Juan Islands Net (Areas 6, 7, and 7A)

Preliminary estimates of the 2020 catch in the San Juan Island net fishery directed at Sockeye, or Chum salmon totalled 2 Chinook and 715 Coho salmon in the non-Tribal fishery. Tribal fishery landings from this area for all gear types totalled 100 Chinook and 3,300 Coho.

San Juan Islands (Area 7) Sport

Marked Chinook retention was allowed in the entire Area 7 during the winter/spring season from February 1, 2020, through March 25, 2020, when all fisheries were closed due to COVID-19. Preliminary estimates of Chinook retained and released by anglers during this fishery were produced via an intensive sampling program and are presented in the table below. A detailed report of this fishery, including estimates of catch, effort and other results of sampling and monitoring programs, is available from the Washington Department of Fish and Wildlife.

Estimated Chinook retained, released (legal and sub-legal size) and the legal size mark rate in the Area 7 sport mark-selective fishery, February 1 through March 25, 2020.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
1,760	2,416	4,176	90.2%

During the summer season in Area 7, recreational anglers were allowed to retain Chinook from July 1 through July 31 and August 22-31. The southern Rosario Strait and eastern portions of Area 7 were closed from July 1 – September 30 to protect Puget Sound Chinook salmon. Additional sub-area closures are described in the 2019-20 Washington State Sport Fishing Rules Pamphlet. The table below presents estimated Chinook encounters (retained and released) and the legal-size mark rate in the Area 7 sport mark-selective fishery, from July 1-31 and August 22-31, 2020.

Estimated Chinook retained, released (legal and sub-legal size) and the legal size mark rate in the Area 7 sport mark-selective fishery, July 1-31, and August 22-31, 2020.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
1,604	3,574	5,178	82.1%

Inside Puget Sound (Areas 8-13) Sport

Mark-selective sport fisheries (MSFs) targeting adipose fin-clipped (marked) hatchery Chinook were conducted in Area 8.1 (Deception Pass, Hope Island, and Skagit Bay), Area 8.2 (Port Susan & Port Gardner), Area 9 (Admiralty Inlet), Area 10 (Seattle-Bremerton), Area 11 (Tacoma-Vashon Island), Area 12 (Hood Canal), and Area 13 (South Puget Sound) during the winter (October 2019 – March 25, 2020) period, and in Areas 9, 10, 11, 12, and 13 during the summer (May – September 2020) period. Additionally, marked and unmarked Chinook retention was permitted in the Tulalip Bay (Area 8-2) from June 1 through September 2 (Fridays through noon Mondays), and from September 7 through September 29 (Saturdays and Sundays), and in Elliot Bay (Area 10) from August 2 through noon August 5.

Puget Sound Chinook mark-selective sport fisheries conducted in marine areas during 2019-2020.

Areas	Season
8.1 & 8.2	Winter: February 1 – March 25, 2020.
9	Winter: February 1, 2020 – March 25, 2020. Summer: July 16 – August 15, 2020.
10	Winter: January 1, 2020 – March 25, 2020. Summer: July 16 – August 31, 2020; Sinclair Inlet: July 1 – September 30, 2020.
11	Winter: January 1, 2020 – March 25, 2020. Summer: July 1 – September 30, 2020.
12	Winter: October 1, 2019 – March 25, 2020. Summer: July 1 – September 30, 2020 (South of Ayock Point).
13	Year round: January 1 – December 31

Post-season reports detailing results of these Chinook MSFs, including estimates of retained and released encounters, effort and mark rates from sampling and monitoring programs, will be available from the Washington Department of Fish and Wildlife in the spring of 2021.

Mark-selective sport fisheries during 2020 directed at marked Coho were conducted in the following marine catch areas: Areas 5 and 6 from July 1 – September 30, Area 9 from July 16 – September 30 and in Area 13 from January 1 – December 31. Marked and unmarked Coho retention was permitted in Area 7 during the months of July through September, ,Tulalip Bay from June 1 – September 2 (on Fridays through noon, Mondays only) as well as from September 7 – September 29 (Saturdays, Sundays), in Area 11 from July 1 – October 31; and in Area 12 from January 1 – March 25, 2020 in the whole area, as well as from August 1 – December 31, 2019 in the areas North of Ayock Point and from July 1 – October 31, 2020 in the area South of Ayock Point.

Puget Sound Marine Net (Areas 8-13 & 7B-D)

To achieve conservation objectives for natural Puget Sound Chinook, limited marine net fishing opportunities directed at returns of hatchery Chinook and both hatchery and natural Coho were planned for 2020. Chinook and Coho were also intercepted in fisheries directed at Chum salmon. A total of 25,700 Chinook and 104,000 Coho were landed in the Tribal marine net fisheries in Puget Sound (Areas 8-13 & 7B-D) during 2020. Non-Tribal net fishery landings from these areas totalled 9,286 Chinook and 2,785 Coho. Chinook landed in the non-Tribal net fishery occurred during Chinook-directed fisheries in Areas 7B, 7C, and 12C.

Puget Sound Rivers Fisheries

Tribal net and non-Tribal sport fisheries were implemented in freshwater systems based upon pre-season, Tribal-State agreements and subject in part to in-season adjustment. Harvest of Chinook and Coho in the Tribal in-river net fisheries (includes catch from river systems in the Strait of Juan de Fuca, Hood Canal, and Puget Sound) totalled 16,600 Chinook and 51,700 Coho during 2020.

Also, recreational fisheries targeting Chinook salmon were conducted in nine Puget Sound Rivers that have PSC Chinook coded wire tag (CWT) exploitation rate indicator stocks or double index tag (DIT) groups, as

listed in the table below. Of these, seven rivers had mark-selective fisheries and two rivers had non-selective fisheries, as follows:

Chinook mark-selective sport fisheries conducted in Puget Sound rivers during 2020.	
River	Season
Nooksack River	June 1 – 30, and September 1 - 30
Cascade River	June 1 – July 15
Skagit River	May 1 – May 31 from the highway 536 bridge; June 1 – July 15
Skykomish River	May 23 – July 31
Carbon River	September 1 – October 15
Puyallup River	August 15 – September 30
Nisqually River	July 1 – November 15
Chinook non-selective sport fisheries conducted in Puget Sound rivers during 2020.	
River	Season
Samish River	August 1 – September 13
Green River	September 1 – December 31

During the 2020 season there were mark-selective sport fisheries targeting hatchery Coho in the rivers of Puget Sound that have PSC Coho CWT exploitation rate indicator stocks or DIT groups on the Wallace River (Skykomish tributary) September 16 through November 30. A mark selective fishery was open on the Dungeness October 16 through November 30 and the Nisqually River from July 1 – November 15. Recreational non-selective Coho fisheries were conducted on the Nooksack River, Skagit River, Green River, Carbon River, Puyallup River, and Quilcene River.

REFERENCES

Pacific Salmon Treaty (PST) Act of 1985. 2008 Agreement. U.S.-Canada. Public Law 99-5, 16 U.S.C. 3631.

Puget Sound Indian Tribes and Washington Department of Fish & Wildlife (PSIT and WDFW). 2010. Comprehensive Management Plan for Puget Sound Chinook: Harvest Management Component. Northwest Indian Fisheries Commission, Olympia, Washington. 237 p.

Pacific Fishery Management Council (PFMC). 2008. Fishery Regulation Assessment Model (FRAM): An Overview for Coho and Chinook v3.0. Pacific Fishery Management Council, Portland, Oregon. 43 p.

Table 14. Preliminary 2020 Landed Chinook Catch for Washington and Oregon Fisheries of Interest to the Pacific Salmon Commission. Values are presented in number of fish rounded to the nearest 100. [9/]

	2020			Landed						
	Preseason [5/]									
Fisheries	Total Mortality [1/]	Landed [2/]	Preliminary Landed	2019	2018	2017	2016	2015	2014	2013
OCEAN FISHERIES										
Commercial Troll										
Neah Bay and La Push (areas 3,4,4B) [3/]	53,800	47,200	7,600	39,100	33,700	35,200	28,100	73,600	77,100	63,700
Columbia Ocean Area and Westport (area 1,2) [4/]	25,200	15,500	6,800	3,400	13,900	24,700	14,200	50,900	39,100	28,300
Sport (see text for quota information)										
Neah Bay (area 4)	6,300	5,600	1,900	3,900	3,000	7,300	3,300	8,500	5,900	6,200
La Push (area 3)	1,500	1,300	20	600	400	500	300	2,400	1,600	2,400
Westport (area 2)	13,800	12,500	4,800	2,400	4,900	6,600	8,400	19,100	23,500	13,700
Columbia Ocean Area (area 1)[13/]	8,000	7,000	800	4,000	2,300	7,600	6,000	12,200	11,300	8,500
INSIDE FISHERIES										
Sport [10/]										
Strait of Juan de Fuca (area 5,6)	17,200	9,300	-	13,100	14,300	9,900	9,700	11,800	11,100	14,900
San Juan Islands (area 7)	2,900	1,600	-	6,400	7,300	11,300	6,200	8,600	9,200	9,500
Puget Sound Marine (area 8-13)	30,000	20,100	-	19,300	29,900	22,800	14,400	8,800	12,100	16,600
Puget Sound Rivers [12/]	13,100	12,600	-	9,800	13,300	18,500	8,600	11,100	11,800	19,600
North WA Coastal Rivers	-	-	-	1,900	1,600	1,600	600	2,200	1,200	2,700

Grays Harbor [7/]	2,400	2,000	-	1,700	3,700	2,700	2,800	3,400	1,200	3,800
Columbia River (Spring) [6/]	-	-	2,000	2,000	8,100	9,100	14,100	21,300	19,900	8,000
Columbia River (Summer) [6/]	-	-	1,200	-	1,100	3,800	3,600	5,000	2,300	2,100
Columbia River (Fall) (incl. Buoy 10) [6/]	-	-	39,700	22,000	22,400	60,400	48,700	91,300	63,000	74,500
Commercial[11/]										
Strait of Juan de Fuca net and troll (area 4B,5,6C)	6,000	4,000	800	1,500	3,100	1,900	700	5,900	6,100	4,000
San Juan Islands (area 6,7, 7A)	8,300	8,300	100	3,600	3,900	2,600	100	4,800	6,900	3,800
Puget Sound Marine (8-13,7B-D)	39,000	38,300	34,900	72,700	70,600	90,600	55,800	33,100	28,400	70,100
Puget Sound Rivers[12/]	33,700	33,700	16,600	38,400	41,600	53,900	23,300	21,200	19,900	26,800
North WA Coastal Rivers	-	-	20,600	12,200	11,400	14,400	9,400	17,200	20,100	14,300
Grays Harbor (area 2A-2D) [7/]	1,100	1,000	3,700	2,400	2,700	3,700	2,100	10,500	5,100	2,900
Columbia River Net (Winter/Spring) [8/]	-	-	4,400	4,700	10,900	8,100	20,700	38,400	28,700	11,500
Columbia River Net (Summer) [8/]	-	-	7,900	5,600	9,500	16,300	23,500	41,700	22,100	15,300
Columbia River Net (Fall) [8/]	-	-	129,400	71,600	63,000	136,900	190,100	340,200	363,600	312,600

[1/] Estimates of total mortality (not adjusted for adult equivalents) include non-retention mortality. Total Mortality is estimated by Fishery Regulation Assessment Model (FRAM) as catch + incidental mortality, where incidental mortality = drop off + non-retention mortality (PFMC 2008).
[2/] For the ocean fisheries, this column shows the Chinook troll and recreational quotas used for 2020 pre-season fishery planning as distributed by ocean area (Landing Quotas = Landed). See text for any in-season adjustments.
[3/] Includes Area 4B catch during the PFMC management period (May 1 – September 15); Area 4B Tribal troll catch outside PFMC period included under Strait of Juan de Fuca net and troll (October-April).

[4/] Includes Oregon troll catch in Area 1.

[5/] FRAM modeled pre-season fishery impacts cover the current fishery planning year, for Chinook defined as May 1 through April 30.

[6/] Mainstem retained adult sport catch only (upstream to McNary Dam for spring, Priest Rapids Dam for summer and to Hwy 395 for fall). See tables 5, 8, 24-25 in the current Joint Staff Report regarding spring and summer Chinook and tables 25-27 in the annual fall report. https://wdfw.wa.gov/fishing/management/columbia-river/reports.

[7/] Includes Grays Harbor catch, as well as catch from the Chehalis and Humptulips Rivers and their tributaries for sport and Chehalis and Humptulips Rivers for net estimates.

[8/] Mainstem retained catch only, includes tribal C&S and Commercial from all gear types and non-tribal (Columbia River mouth upstream to McNary Dam). Excludes Non-tribal Select Area commercial catches. Fall season does not include seine catch. Catch data from annual Joint Staff Reports. Winter and spring catch Tables 5 (Tribal) and 17 (non-Tribal). Summer catch is in Table 8 and 18. Fall catch from annual fall report Tables 21, 22, 23 and 29. https://wdfw.wa.gov/fishing/management/columbia-river/reports.

[9/] Includes catch from mark-selective fisheries as shown in table 3.

[10/] Sport data for the most recent two years are preliminary. All data subject to change.

[11/] Includes non-tribal & tribal commercial, as well as tribal C&S for all gear types.

[12/] Chinook fisheries in Puget Sound Rivers are modeled using the Terminal Area Management Module (TAMM), based upon FRAM output of terminal run sizes. Total Mortality is estimated in TAMM as catch + non-retention mortality (PFMC 2008).

Table 15. Preliminary 2020 Landed Coho Catch for Washington and Oregon Fisheries of Interest to the Pacific Salmon Commission. Values are presented in number of fish rounded to the nearest 100. [6/]

	2020			Landed						
	Preseason [9/]									
Fisheries	Total Mortality [1/]	Landed [2/]	Preliminary Landed	2019	2018	2017	2016	2015	2014	2013
OCEAN FISHERIES										
Commercial Troll										
Neah Bay and La Push (area 3,4,4B) [3/]	18,900	17,000	14300	55,100	11,400	13,300	-	4,100	60,100	48,500
Columbia Ocean Area and Westport (area 1,2) [10/]	3,900	1,500	800	5,900	1,300	1,800	-	4,800	19,000	5,400
Sport (see text for quota information)										
Neah Bay (area 4)	3,500	2,800	3,000	6,200	4,900	3,500	100	7,800	5,600	6,500
La Push (area 3)	900	700	200	1,800	1,000	1,750	-	600	4,600	2,800
Westport (area 2)	12,200	9,800	8,200	20,200	15,400	15,750	-	30,700	54,500	20,400
Columbia Ocean Area (area 1)[12/]	16,300	13,300	12,900	53,500	20,600	21,600	18,600	44,600	75,100	20,500
INSIDE FISHERIES										
Sport [7/]										
Strait of Juan de Fuca (area 5,6)	19,300	16,200	-	29,600	28,000	4,800	100	62,000	63,000	41,300
San Juan Islands (area 7)	2,200	2,100	-	5,800	4,800	100	100	3,800	2,000	2,600
Puget Sound Marine (area 8-13)	52,200	46,100	-	44,600	50,100	31,400	4,900	76,900	59,200	72,100
Puget Sound Rivers	14,900	14,000	-	25,100	18,300	9,000	11,300	18,600	17,900	70,000
North WA Coastal Rivers	2,800	2,700	-	5,300	2,000	4,900	1,600	3,600	8,800	7,200

Grays Harbor [5/]	7,800	7,500	-	13,500	4,000	9,200	3,700	8,200	27,300	21,200
Columbia River Buoy 10[4/,11/]	20,100	16,300	6500	22,800	6,800	18,800	9,200	36,900	57,700	7,600
Commercial [8/]										
Strait of Juan de Fuca net and troll (area 4B,5,6C)	2,500	2,400	1,500	600	5,000	1,200	700	1,700	2,300	2,700
San Juan Islands (area 6,7,7A)	7,900	5,200	4,000	1,900	3,900	3,400	4,100	4,000	19,800	19,400
Puget Sound Marine (area 8-13,7B-D)	87,900	86,000	106,800	47,400	124,600	134,400	210,900	28,800	108,400	168,500
Puget Sound Rivers	58,400	57,300	54,800	43,400	114,600	63,200	65,400	17,800	73,400	136,000
North WA Coastal Rivers	32,300	31,700	38,300	13,400	22,300	63,700	57,800	18,400	101,400	44,800
Grays Harbor (area 2A-2D) [5/]	13,700	13,500	7,300	10,200	9,800	12,700	3,200	14,700	80,100	30,400

1/ Estimates of total mortality include non-retention mortality. Total Mortality is estimated by Fishery Regulation Assessment Model (FRAM) as catch + incidental mortality, where incidental mortality = drop off + non-retention mortality (PFMC 2008).

2/ For ocean fisheries this column shows the Coho troll and recreational quotas used for 2020 pre-season fishery planning as distributed by ocean area (Landing Quotas = Landed). See text for any in-season adjustments.

3/ Includes area 4B catch during the PFMC management period (May 1 – September 15); area 4B Tribal troll catch outside the PFMC period included under Strait Juan de Fuca net and troll (October-April).

4/ Retained catch only. See table 26 in the current Fall Joint Staff report available online at http://wdfw.wa.gov/fishing/crc/staff_reports.html.

5/ Includes Grays Harbor catch, as well as catch from the Chehalis and Humptulips Rivers; their tributaries are included in sport estimates only.

6/ Includes catch from mark-selective fisheries where estimates are available.

7/ Sport data for the most recent two years are preliminary. All data subject to change.

8/ Includes Non-Tribal and Tribal commercial and take home, as well as Tribal ceremonial and subsistence (C&S) for all gear types. Starting in 2012, the Copalis, Moclips, and Ozette Rivers have been removed from landed catch.

9/ FRAM modeled pre-season fishery impacts cover the current fishery planning year, for Coho defined as January 1 through December 31.

10/ Includes Oregon troll catch in Area 1.

11/ For Buoy 10, see tables 25 in the annual fall report.

Table 16. Mark-Selective Chinook and Coho Fisheries by Area and Year. "Yes" denotes that a mark selective fishery occurred, even if it only occurred in a subset of the fishing area, season, gear type, or user group.

Selective Coho	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Ocean Troll												
Cape Flattery & Quillayute (Areas 3/4)	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
Columbia R & Grays Harbor (Areas 1 & 2)	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
Ocean Sport												
Neah Bay (Area 4)	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
La Push (Area 3)	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Area 2)	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
Col. R. (Leadbetter Pt. to Cape Falcon)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Inside Fisheries												
Sport												
Juan de Fuca (Areas 5 & 6)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
San Juan Islands (7)	no	no	no	no	no	yes	yes	yes	yes	yes	yes	yes
Puget Sound Sport (Areas 8-13 all year)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Rivers	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
North WA Coastal Rivers	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Areas 2-2)	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes
Willapa Bay (Area 2-1)	no	no	no	yes	no	yes	no	no	no	no	yes	no
Columbia River Buoy 10	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Commercial												
North WA Coastal Rivers	no	no	no	no	no	no	no	no	no	no	no	no
Grays Harbor (Areas 2A-2D)	no	no	no	no	no	no	no	no	no	yes	yes	yes
Willapa Bay (Area 2-1)	no	no	no	no	no	no	no	no	no	no	yes	no
Columbia River Net/ - Fall	yes	yes	no	no	no	yes	yes	yes	no	no	no	no
Strait of Juan de Fuca (Areas 4B/5/6C) Net & Troll	no	no	no	no	no	no	no	no	no	no	no	no
San Juan Islands (Areas 6, 7 & 7A)	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Puget Sound Marine (Areas 8 - 13)	no	no	no	no	yes	no	no	no	no	no	no	no
Puget Sound Rivers	no	no	no	no	no	no	no	no	no	no	no	no
Selective Chinook	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Ocean Troll												
Cape Flattery & Quillayute (Areas 3/4/4B)	no	no	no	no	no	no	no	no	no	no	no	no
Columbia. R & Grays Harbor (Areas 1&2)	no	no	no	no	no	no	no	no	no	no	no	no
Ocean Sport												
Neah Bay (Area 4)	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no
La Push (Area 3)	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no
Grays Harbor/Westport (Area 2)	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	no
Col. R./Ilwaco (Leadbetter Pt. to Cape Falcon)	no	no	no	no	no	yes	yes	yes	yes	yes	yes	no
Inside Fisheries												
Sport												
Juan de Fuca (Area 5&6)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
San Juan Islands (Area 7)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Sport (Areas 8-13)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Rivers	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
North WA Coastal Rivers	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Areas 2-2)	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no
Columbia River Sport - Winter/Spring	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Columbia River Sport - Summer	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
Columbia River Sport - Fall	yes	yes	no	yes	yes	yes	yes	yes	yes	no	no	no
Willapa Bay (Area 2-1)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Commercial												
North WA Coastal Rivers	no	no	no	no	no	no	no	no	no	no	no	no
Grays Harbor (Areas 2A-2D)	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no
Willapa Bay (Area 2-1)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Columbia River Net-Winter/Spring	no	no	no	na	yes	yes	yes	yes	yes	yes	yes	yes
Columbia River Net - Summer	no	no	no	na	no	no	no	no	no	no	no	no
Columbia River Net - Fall	no	no	no	no	yes	yes	yes	yes	no	no	no	no
Strait of Juan de Fuca(4B/5/6C) Net & Troll	no	no	no	no	no	no	no	no	no	no	no	no
San Juan Islands (Areas 6, 7 & 7A)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Marine (Areas 8 - 13)	no	no	no	no	no	yes	no	no	no	yes	yes	no
Puget Sound Rivers	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	no

IV. PRELIMINARY REVIEW OF THE 2020 WASHINGTON CHUM SALMON FISHERIES OF INTEREST TO THE PACIFIC SALMON COMMISSION

This summary report provides a preliminary review of the 2020 U.S. Chum salmon (Oncorhynchus keta) fisheries conducted by Puget Sound salmon co-managers (Puget Sound Treaty fishing tribes and the State of Washington) in the Strait of Juan de Fuca (Salmon Management and Catch Reporting Areas 4B, 5 and 6C), the San Juan Islands and the Point Roberts area (Areas 7 and 7A) (Figure 39), conducted in compliance with provisions of Chapter 6 of Annex IV of the Pacific Salmon Treaty (PST 2019). The harvest and abundance information provided are based on preliminary data reported through November 17, 2020. These preliminary data are subject to correction and revision as additional information becomes available.

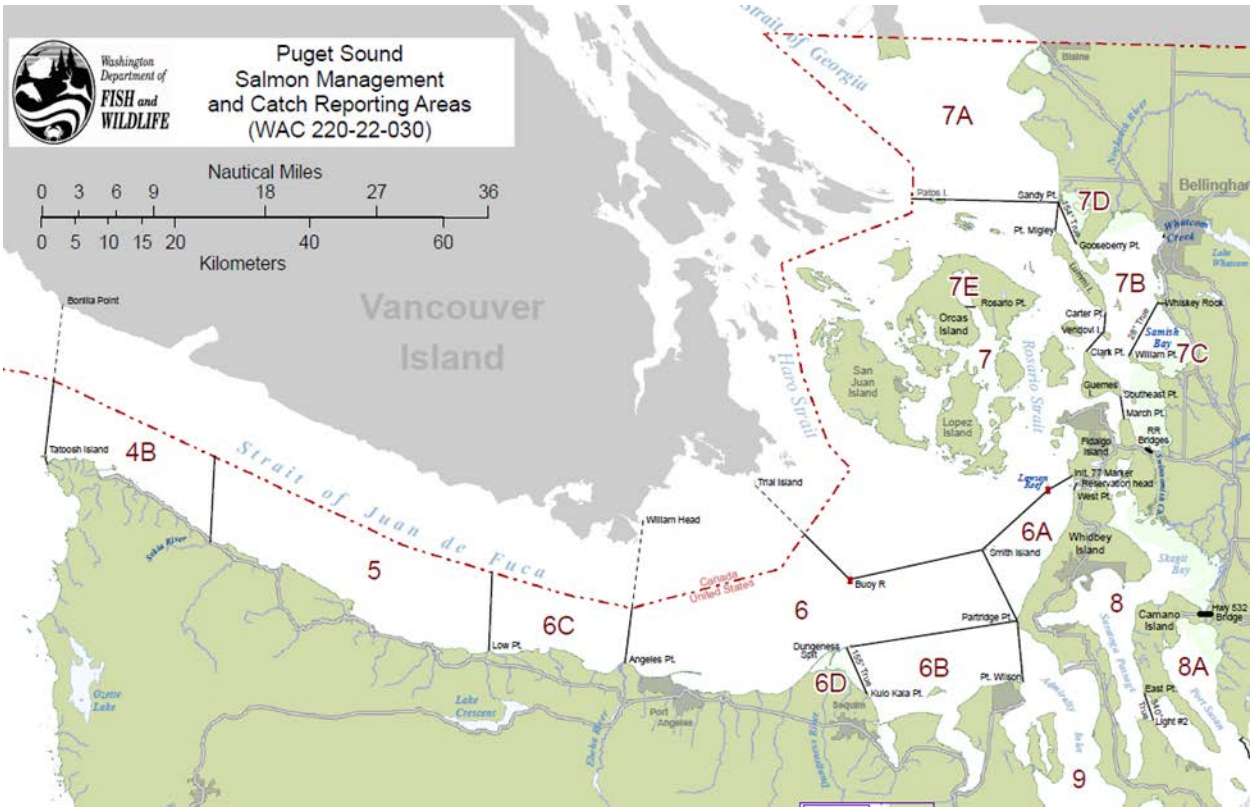

Figure 39. Puget Sound Salmon Management and Catch Reporting Areas with Chum salmon fisheries of interest to the Pacific Salmon Commission.

MIXED STOCK FISHERIES

Areas 4B, 5 and 6C

As in recent years, the 2020 Chum salmon fishery in Areas 4B, 5 and 6C was restricted to very limited effort by Tribal fishers using gillnets. The fall Chum-directed salmon fishery opened the week of October 11, with a schedule of six days per week and continued through November 14. A total of 195 Chum salmon were harvested during this period (Table 17). During the fall Chum fisheries in Areas 4B, 5, and 6C, there was a reported by-catch of 1,399 Coho, 4 Chinook, and zero Steelhead.

Table 17. Preliminary 2020 Chum salmon harvest report for Washington Salmon Catch Reporting Areas 4B, 5, and 6C.

Areas 4B, 5, 6C	
Tribal Gill Net Only	
Time Periods	GN
Through 9/19	0
9/20-9/26	0
9/27-10/3	0
10/4-10/10	0
10/11-10/17	48
10/18-10/24	59
10/25-10/31	36
11/1-11/7	40
11/8-11/14	12
Total	195

Areas 7 and 7A

Chum salmon fisheries in Areas 7 and 7A are regulated to comply with a base harvest ceiling of 125,000 Chum salmon unless Canada estimates chum stocks migrating through Johnstone Strait ("Inside Southern Chum salmon") are below the critical threshold of 1.0 million (PST 2019). Chapter 6 of Annex IV specifies that U.S. commercial fisheries for Chum salmon in Areas 7 and 7A will not occur prior to October 10. For Inside Southern Chum run sizes below the critical threshold, Paragraph 10 (b) states the U.S. catch of Chum salmon in Areas 7 and 7A will be limited to those taken incidentally to other species and in other minor fisheries, and shall not exceed 20,000.

On October 7, 2020, Canada notified the U.S. that the Inside Southern Chum aggregate was estimated to be above the critical threshold of 1.0 million. Following this notification, the U.S. initiated Area 7 and 7A commercial chum fisheries on October 10, which continued through November 10.

Paragraph 9 (d) states that Canada will provide an in-season estimate of Fraser River Chum salmon run size no later than October 22. If that estimate is below 1,050,000, then the U.S. will limit its fishery in Areas 7 and 7A to not exceed a catch of 20,000 additional Chum salmon from the day following notification. If the Fraser River chum run size estimate is between 1,050,000 and 1,600,000, the U.S catch ceiling remains at 125,000. If the Fraser River run size estimate is above 1,600,000, the U.S. catch ceiling is revised to 160,000.

On October 22, 2020, Canada notified the U.S. that the Fraser River chum run size was estimated to be 1,084,000. This estimate was above the 1,050,000 fish threshold but below the 1,600,000 fish threshold, allowing U.S. chum fisheries in Areas 7 and 7A to continue up to the catch ceiling of 125,000 fish. Areas 7 and 7A therefore remained open to commercial chum fisheries through the remainder of the Chum management period.

Non-Tribal reef net fisheries targeting Coho salmon were conducted following the end of Fraser Panel control on September 13 with chum and unmarked Chinook retention prohibited prior to October 1. Retention of unmarked Coho prior to October 1 was capped at 500 fish, per the NOF List of Agreed to Fisheries.

The total 2020 Chum salmon catch by all gears in Areas 6, 7, and 7A (reported through November 17) was 84,726 fish (Table 18). During the fall Chum salmon-directed fisheries in Areas 6, 7 and 7A, there was a reported by-catch of 3,778 Coho, 48 Chinook, and zero Steelhead (Table 18).

Table 18. Preliminary 2020 Chum salmon harvest report for Puget Sound Salmon Catch Reporting Areas 6, 7 and 7A. Bycatch numbers include both landed and estimated non-landed fish.

	Area 6	Area 7				Area 7A		Area 6,7,7A	
Time Periods	GN	PS	GN	RN	Area Total	PS	GN	Area Total	Total
Through 9/19					0			0	0
9/20-9/26					0			0	0
9/27-10/3				37	37			0	37
10/4-10/10				93	93			0	0
10/11-10/17		13,807	3,778	664	17,585	9,111	5,208	14,319	31,904
10/18-10/24		7,749	624		8,373	7,312	11,234	18,546	26,919
10/25-10/31		4,579	1,515		6,094	4,398	13,572	17,970	24,064
11/1-11/7		240	26		266	904	604	1,508	1,774
11/8-11/14							28	28	28
Total	0	26,375	5,943	37	32,355	21,725	30,646	52,371	84,726
Gear Type Abbreviations: GN=Gill Net; PS=Purse Seine; RN=Reef Net									
10/10- 11/17 By-catch		Coho: 3,778		Chinook: 48	Steelhead: 0				

PUGET SOUND TERMINAL AREA FISHERIES AND RUN STRENGTH

Pre-season forecasts for Chum salmon returns to Puget Sound in 2020 predicted a fall Chum run size totalling approximately 1,066,000 fish, with 528,208 Chum predicted to return to Hood Canal and 309,573 predicted to return to South Puget Sound. As of the date of this report, in-season estimates indicate that Chum returns to Puget Sound are below forecast. In-season run size estimates from the 2020 fall Chum fisheries in South Puget Sound and Hood Canal indicate that South Sound fall Chum is expected to return at around 87% of the pre-season forecast, while the in-season Hood Canal run size estimate is about two-thirds of that forecast. Terminal fisheries in mixed-stock marine areas were significantly restricted in 2020, particularly in Central and South Puget Sound. As of the date of this report, spawning escapement surveys are in progress for most Puget Sound stocks and therefore escapement estimates are not yet available. Early indications from these surveys suggest that some natural chum stocks may fail to meet escapement goals again this year. It is also now evident that a number of fall Chum hatchery programs throughout Puget Sound will likely not achieve their egg-take objectives for 2020.

REFERENCES

Pacific Salmon Treaty (PST) Act of 1985. 2019 Agreement. U.S.-Canada. Public Law 99-5, 16 U.S.C. 3631.

III. Preliminary Review of 2019 United States Fraser River Sockeye Fisheries

INTRODUCTION

The 2020 Fraser River Panel fishing season was implemented under Annex IV of the Pacific Salmon Treaty (PST), and guidelines provided by the Pacific Salmon Commission to the Fraser River Panel. The Treaty establishes a bilateral (U.S. and Canada) Fraser River Panel (Panel) that develops a pre-season management plan and approves in-season fisheries within Panel Area waters directed at sockeye and pink salmon bound for the Fraser River (Figure 40). In partial fulfilment of Article IV, paragraph 1 of the PST, this document provides a season review of the 2020 U.S. Fraser River salmon fisheries as authorized by the Panel. Catch and abundance information presented is considered preliminary.

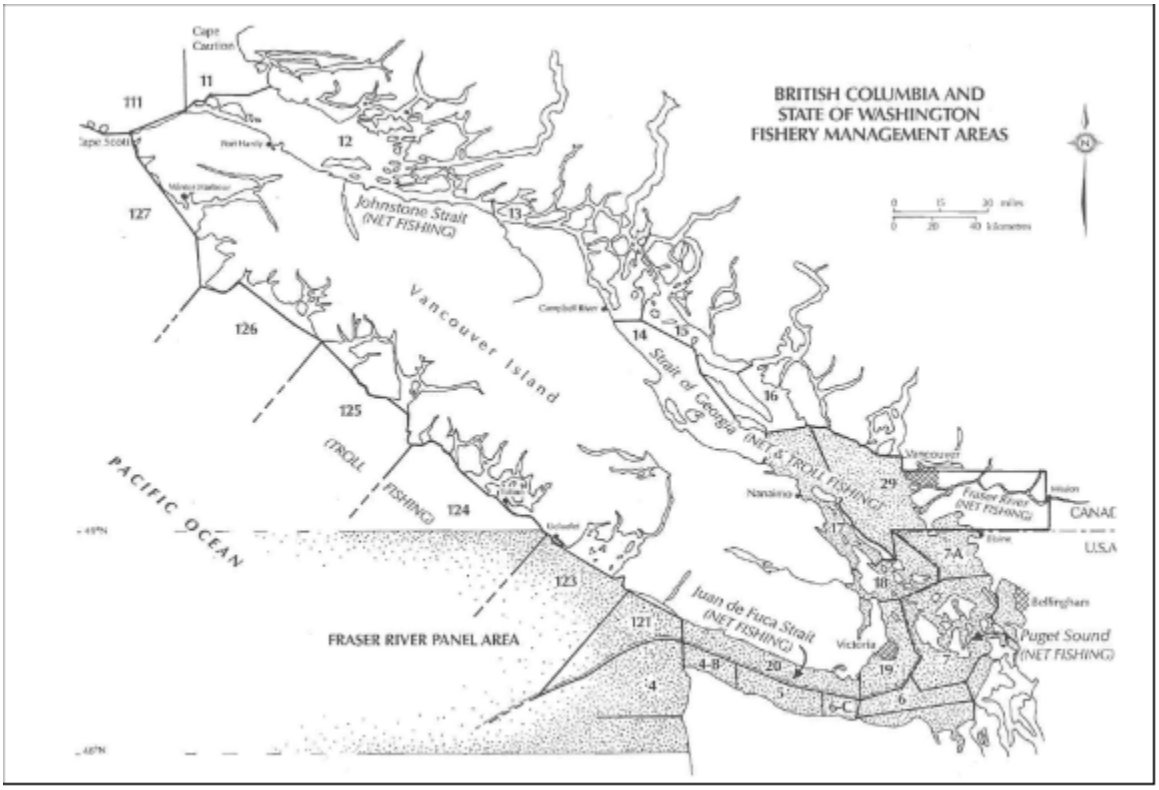

Figure 40. British Columbia and State of Washington Fishery Management Areas, 2020. The shaded area in the figure represents the marine waters managed by the Fraser River Panel.

PRE-SEASON EXPECTATIONS AND PLANS

Forecasts and Escapement Goals

Pre-season run size forecasts and escapement goals by run timing group (run) at various probability levels were provided to the Panel by the Department of Fisheries and Oceans, Canada (DFO). Table 19 shows the 2020 pre-season sockeye forecasts based on the 50 percent probability level, which represent the mid-point of the range of possible run sizes for all runs. This is the lowest pre-season forecast in the Fraser River sockeye recorded history. Table 19 also provides the escapement goals for the sockeye run timing groups based on the pre-season forecasted abundance. The escapement goals for all runs can change in-season as the run size estimates are updated.

Table 19. 2020 pre-season Fraser River sockeye forecasts and escapement goals by run timing group.

	Early Stuart	**Early Summer**	**Summer**	**Lates**	**Total**
Forecast of Abundance	13,000	218,000	611,000	99,000	941,000
Escapement Goal	13,000	150,300	611,000	99,000	873,000

Northern Diversion Rate

Northern diversion rate is defined as the percentage of Fraser sockeye migrating through Johnstone Strait (rather than the Strait of Juan de Fuca) in their approach to the Fraser River. The preseason forecast for diversion was 35%.

Management Adjustment (MA) and Environmental Conditions

Management adjustments (MA) for sockeye salmon reflect the anticipated difference between escapement estimates at Mission (minus catch above Mission) and actual spawning escapements. Adjustments adopted by the Panel are added to the gross escapement goal, effectively increasing the spawner escapement goal for that run timing group. MAs are modelled using forecasts of environmental conditions and return timing or median historical differences between estimates. Table 20 provides the pre-season projected MAs that were used for planning fisheries in 2020. In-season management adjustments use MA models that are based on both measured and forecasted temperatures and discharges or, for Late-run sockeye, upstream migration timing.

Table 20. 2020 pre-season proportional management adjustment (pMA) and corresponding proportional difference between estimates (pDBE1) for each run timing group.

Early Stuart		**Early Summer**		**Summer**		**Lates**	
pMA	pDBE	pMA	pDBE	pMA	pDBE	pMA	pDBE
0.69	-41%	0.52	-34%	0.16	-14%	0.41	-29%

[1] The aggregate Early Summer, Summer, and Late-Run pDBE is calculated using the component pDBEs weighted by the p50 run size forecasts.

Run Timing

Run timing is temporal information about the presence of a salmon stock in a specific time and area. Run timing is an important variable when planning fisheries and predicting run size in-season. The following Area 20 50% dates (the dates when 50% of the run is forecasted to have passed through Area 20) were predicted pre-season for the major Fraser River sockeye run groups.

Table 21. 2020 Area 20 Projected 50% run timing dates.

Run Timing Group	**Area 20 50% Run Timing Date**
Early Stuart	July 4
Early Summer	July 24
Summer	July 31
Lates	August 6

U.S. Total Allowable Catch (TAC)

Pre-season, there was no US TAC. The TAC available by sockeye run timing group is shown in Table 22.

Table 22. 2020 total U.S. total allowable catch (TAC) by run timing group[1].

Run Timing Group	**Pre-season U.S. TAC**
Early Stuart	0
Early Summer	0
Summer	0
Lates	0
Total	0

[1] Based on Panel-approved final pre-season model run on July 19, 2016.

Pre-season Management Plans

During the pre-season planning process the Panel evaluates and adopts management approaches for Fraser sockeye that address conservation and harvest objectives for each major run timing group. The Panel develops fishing plans and in-season decision rules with the objective of meeting management goals. Managing Fraser

River sockeye salmon involves a trade-off between catching abundant runs and meeting escapement objectives for less abundant run groups.

In 2020, the pre-season forecast of ~941,000 sockeye resulted in no available U.S. TAC.

IN-SEASON MANAGEMENT

In-season, the Pacific Salmon Commission staff analyses a variety of information to produce best estimates of northern diversion, management adjustments, timing, abundance, and harvest by run timing group. Stock identification information (both genetic data and scales), age data, test fishing data, escapement counts past Mission, harvest data, and environmental information are all used to provide these in-season estimates that are critical to Fraser Panel management.

Run Assessment

The final in-season total abundance estimate for sockeye in 2020 (Table 23) was 288,000, which was 31% of the pre-season forecast. This represents the lowest sockeye return to the Fraser River since record keeping began in 1893. Across the four run timing groups, three groups returned well below their preseason forecasts while one returned higher than forecast. The Early Stuart sockeye exceeded expectations and returned at 123% of preseason forecast but Early Summer run sockeye performed poorly with an in-season run size estimate at 32% of their pre-season forecast. The return of Summer-run sockeye was only 31% of the preseason forecast while Late-run sockeye performed even more poorly at 16% of forecast.

The 2020 Fraser sockeye run timing varied across run timing groups with Early Summer, Summer run and Late run sockeye arriving 9, 3, and 2 days early (July 15, 28, and Aug. 4 respectively; Table 24). Early Stuart run sockeye were two days later relative to preseason expectations.

Table 23. Comparison of 2020 pre-season vs. in-season abundance estimates for Fraser River sockeye salmon by run timing group.

Run Timing Group	Pre-Season 50% Probability Forecast	In-Season Run Size Estimate	Comparison: In-Season / Pre-Season Forecast
Early Stuart	13,000	16,000	123%
Early Summer	218,000	69,000	32%
Summer	611,000	187,000	31%
Lates	99,000	16,000	16%
Total Sockeye	941,000	288,000	31%

[1] As of September 21, 2020.

Table 24. Comparison of 2020 preliminary 50% run timing dates through Area 20 to in-season estimates.

Run Timing Group	Pre-season 50% Run Timing Date	In-season 50% Run Timing Date
Early Stuart	July 4	July 6
Early Summer	July 24	July 15
Summer	July 31	July 28
Lates	August 6	August 4

Season Description

The Fraser Panel met on every Tuesday and Friday between July 10 and September 1 to receive updates on the abundance and timing of the sockeye return from PSC staff and to review migration conditions in the Fraser River watershed. In-season abundance estimates did not match pre-season expectations, so U.S. fisheries did not occur. In-river environmental conditions, including the Big Bar rockslide, were a major factor affecting management decisions in 2020.

U.S. fisheries remained closed for the season. Table 25 summarizes changes to run sizes made by the Fraser Panel during the 2020 season.

Table 25. Summary of changes to Fraser River sockeye run size estimates made by the Fraser Panel during the 2020 season.

Meeting Date	Run Timing Group	Change Made
July 28, 2020	Early Stuart	increased to 14,000
August 4, 2020	Early Summer	decreased to 72,000
	Summer	decreased to 311,000
August 7, 2020	Summer	decreased to 169,000
	Lates	decreased to 28,000
September 1, 2020	Early Stuart	increased to 16,000
	Summer	decreased to 191,000
	Lates	decreased to 14,000

Harvest

U.S. harvest opportunities in 2020 were expected to be nil going into the season and in-season abundances estimates were continually downgraded from preseason expectations throughout the season with no sockeye available for U.S. TAC.

Table 26. Preliminary estimate of 2020 U.S. catches of Fraser River sockeye salmon in Panel area waters.

	Treaty Indian	All Citizens
Ceremonial and Subsistence (all areas)	NA	NA
Commercial Catch in Areas 4B/5/6C	NA	NA
Commercial Catch in Areas 6/7/7A	0	0
Total Catch	0	0
% of U.S. Catch		

The 2020 Fraser sockeye season presented management and conservation challenges:

- Due to the Big Bar rockslide, in-river migration of Early Stuart and some Early Summer run stocks were impacted due to higher than average water discharge (46-62% greater than average during mid to late July).
- Approximately 100% of the Early Stuart, 32% of the Early Summer, and 66% of the Summer runs were expected to migrate past the Big Bar rockslide to reach spawning grounds
- By July 31st, sockeye started to arrive at the Big Bar slide area and passed with the assistance of the Whoosh system but little to none used the natural fishway passage.

- By August 7th, only 10% of the tagged sockeye in the slide area were observed passing Churn Creek, but still impacted by a discharge 38% greater than average.
- By August 19th, water discharge levels decreased and allowed sockeye to pass above the Big Bar slide area.
- The total sockeye salmon return was approximately 30% of the pre-season forecast, 91% below the historical cycle-line, and the lowest on record (~288,000), making the last 3 out of 5 years record breaking low returns.
- Over the last two decades, there has been a decline in Fraser sockeye survival (smolt to age 4 survival rate of less than 0.17% compared to long-term average of 7% in Chilko).

C. 2020 POST-SEASON REPORT FOR CANADIAN TREATY LIMIT FISHERIES

INTRODUCTION

The chapters in Annex IV of the Pacific Salmon Treaty outline the joint conservation and harvest sharing arrangements between Canada and the United States of America (U.S.) for key stocks and fisheries subject to the Treaty. In August 2018, the PSC recommended new provisions, under Annex IV of the PST, to the Governments of Canada and the U.S. for review and ratification. Both governments agreed to the provisional application of the new agreements as of January 1, 2019, while the ratification process was completed. Effective May 3, 2019, the Annex IV amendments came fully into force through the exchange of diplomatic notes between Canada and the U.S. and will remain in place for 10 years. Chapter 4 (Fraser River Sockeye and Pink) expired on December 31, 2019. In February 2019, agreement-in-principle was reached, and the proposed amendments were referred to the Governments of Canada and the U.S. for review and ratification. Both governments agreed to the provisional application of the amendments as of January 1, 2020, while the ratification process is completed. The new amendments came into force in Spring 2020 and will remain in place for 9 years, bringing Chapter 4 into alignment with the five other fishing Chapters under the PST.

Annex fisheries are reported in the order of the Chapters of Annex IV. Fishery summaries include expectations and management objectives, escapements (where available and appropriate) and catch results by species. The focus is on those stocks and fisheries covered by the Pacific Salmon Treaty, and not all Canadian domestic salmon fisheries are covered in this document.

Annually, DFO releases a Salmon Outlook document which is referenced in various sections of this report; this document provides a categorical indication of salmon production (using a 4 point rating scale), and associated fishing opportunities by geographic area and species stock groups called an Outlook Unit for the coming season. Pre-season quantitative forecasts are documented where they are produced.

The catch information reported in this document provides the best information available at this time. The catches are based on in-season estimates (hailed statistics); on-grounds counts by DFO, logbooks, dockside tallies, landing slips (First Nation fisheries), fish slip data (commercial troll and net), creel surveys and observers (recreational and commercial). Table 36 summarizes catches from years 2004 to 2020 in Canadian fisheries that have at some time been under limits imposed by the Pacific Salmon Treaty. More detailed catch data is provided for the current year for commercial, recreational, First Nations, Excess Salmon to Spawning Requirements (ESSR) and test fisheries in Appendices 2 to 7.

TRANSBOUNDARY RIVERS

STIKINE RIVER

Following the 2020 pre-season meeting of the Transboundary Panel, Canada developed its fishing strategy for Stikine River salmon fisheries based on the catch sharing and management arrangements outlined in PST

Annex IV, Chapter 1. Canada's intent was to achieve the following objectives: 1) to harvest 47% of the total allowable catch (TAC) of Stikine River Sockeye Salmon in existing fisheries; 2) to allow additional harvesting opportunities for Sockeye Salmon that were surplus to spawning requirements; and 3) to harvest up to 5,000 Coho Salmon through a directed fishery. The pre-season forecast of 13,400 Chinook Salmon was well-below the Chapter 1 fishery forecast run size threshold of 24,500 and did not allow for a directed Canadian Chinook Salmon fishery. The 2020 Chinook salmon pre-forecast also resulted in the cancellation of the 2020 assessment fishery.

The 2020 Canadian Stikine River commercial fishing season opened on June 23 (statistical week 26) and ended September 12 (statistical week 37). The directed Sockeye Salmon fishery occurred between statistical weeks 26 through 33 while the directed Coho Salmon fishery occurred between statistical week 35 and 37. The exception to 2020 directed fishing periods was statistical week 34, during which no directed commercial fishery opportunity was provided due to low abundance of non-Tahltan Lake origin Sockeye Salmon.

Commercial fishing gear permitted for the 2020 season was limited to one 135-metre (443 ft.) gill net per licence holder. The maximum mesh size permitted was 140 mm (5.5") through August 9, followed by a maximum mesh size of 204 mm (8") beginning August 25. The lower Stikine commercial fishing zone covered the area from the international (U.S./Canada) border upstream to near the confluence of the Porcupine and Stikine Rivers, and also included the lower 10 km (6 mi.) reach of the Iskut River.

In the upper Stikine River commercial fishery, located upstream from the Chutine River, fishing periods generally mirrored those in the lower Stikine River commercial fishery, but lagged by one week. Each commercial fishery licence holder was permitted the use of one net. As in past years, the commercial fishing area was located upstream of the Chutine River to the mouth of the Tuya River. The Canadian First Nation Food, Social and Ceremonial (FSC) fishery located near the community of Telegraph Creek, British Columbia (BC) was active from June to the first week of August, with no time or gear restrictions imposed in 2020. To facilitate Chinook Salmon conservation, efforts were implemented within the First Nation FSC to minimize Chinook Salmon catch.

Canadian recreational fishery effort was effectively absent in 2020 due to area, retention, and size restrictions for the duration of the Chinook Salmon season. Recreational fishery effort for Coho Salmon was below average as a result of COVID-19 domestic and international travel restrictions.

CHINOOK SALMON

The pre-season forecast of 13,400 large Chinook Salmon developed by the Transboundary Technical Committee (TTC) did not provide for a total allowable catch allocation in 2020. The current, bilaterally recognized fishery management strategy specifies that a pre-season forecast run size of <24,500 precludes either Party from administering directed Chinook Salmon fisheries. As a result, specific fishery management measures were implemented within all Canadian fisheries to minimize the likelihood of interception of Chinook Salmon in 2020.

The 2020 total Canadian fishery catch of Chinook salmon was 389 large Chinook salmon and 642 jacks (all of which occurred exclusively within the First Nation FSC fishery). This was well below the 10-year average of 2,100 large Chinook salmon and 900 jacks. No Chinook Salmon were harvested within the 2020 recreational or commercial fisheries as retention was prohibited.

The post-season estimate of the 2020 Stikine River Chinook Salmon terminal run was approximately 10,300 large Chinook Salmon. Accounting for the total Canadian catch of Chinook Salmon, the spawning escapement was estimated at approximately 9,800 large Chinook Salmon. The Chinook Salmon escapement estimate of 9,800 is 44% below the management objective of 17,400 large Chinook Salmon and did not achieve the lower end of the escapement goal range of 14,000.

SOCKEYE SALMON

The forecast for Stikine River Sockeye Salmon as developed by the TTC was for a terminal run size[1] of 103,000 fish which was comprised of 64,000 Tahltan Lake origin Sockeye Salmon (30,000 wild and 34,000 enhanced) and 39,000 non-Tahltan wild Sockeye Salmon. The 2020 Stikine River Sockeye Salmon terminal run size forecast was below the 10-year average terminal run size of approximately 115,000 fish.

The total 2020 Canadian fishery harvest of Stikine River Sockeye Salmon was 11,872, well below the 10-year average of 44,000 fish. The lower Stikine River commercial fishery harvested 6,153 Sockeye Salmon while the upper Stikine River commercial and First Nation FSC fisheries harvested a total of 296 and 5,423 Sockeye Salmon respectively. The estimated portion of Canadian fishery Sockeye Salmon harvest originating from the Stikine Enhancement Production Program was approximately 6,400 fish (or 54% of the total harvest). The Sockeye Salmon assessment fishery accounted for an additional 1,497 Sockeye Salmon harvested.

A total of 11,158 Sockeye Salmon returned to Tahltan Lake in 2020. The Tahltan Lake Sockeye Salmon escapement goal range is 18,000 to 30,000 while the most recent 10-year average return is 26,500. An estimated 6,500 (58%) of Sockeye Salmon returning to Tahltan Lake in 2020 originated from the Stikine Enhancement Production Program. A total of 384 adult Sockeye Salmon were removed from Tahltan Lake as part of the 2020 Stikine Sockeye Enhancement Production Plan. No fish were removed for stock identification purposes and it is estimated that approximately 10,800 Sockeye Salmon spawned in Tahltan Lake 2020. The total estimated run size of 26,700 Tahltan Lake Sockeye Salmon was approximately 58% below the pre-season forecast of 64,000.

The spawning escapement for the non-Tahltan Lake Sockeye Salmon stock group is calculated using stock identification, test fishery and in-river commercial catch and effort data. The escapement estimate for 2020 was approximately 5,000 non-Tahltan Lake Sockeye Salmon. The non-Tahltan spawning escapement estimate was below the escapement goal range of 20,000 to 40,000 and below the 10 year average of 23,000 fish.

Based on the in-river run reconstruction of the Tahltan Lake Sockeye Salmon run expanded by run timing, along with stock identification data from lower river assessment projects and estimated harvests of Stikine River Sockeye Salmon in U.S. terminal gill net fisheries, the post-season estimate of the terminal Sockeye Salmon run size is approximately 35,500 fish. This estimate includes 26,700 Tahltan Lake origin fish and 8,800 Sockeye Salmon of the non-Tahltan stock group. The 2020 Stikine River Sockeye Salmon run was below the 10-year average terminal run size of ~116,000 Sockeye Salmon and the preseason forecast of 103,000 fish.

Based on the post-season run size estimate, there was no allowable catch for Stikine River Sockeye Salmon in 2020. The total Canadian fishery harvest of Stikine River Sockeye Salmon in 2020 was 13,369.

COHO SALMON

The total Canadian fishery harvest of Coho Salmon in 2020 was 5,103. Of the total harvest, 5,098 Coho Salmon were harvested during the directed fishery period between statistical weeks 35 to 37. The total Canadian fishery harvest was below the recent 10-year average of 5,500 fish.

A Coho Salmon test fishery was not conducted in 2020. The catch per unit effort (CPUE) observed in the targeted Coho Salmon fishery was near average for statistical weeks 35 to 37. Aerial surveys of the index spawning sites for Coho Salmon were not completed due to poor weather and viewing conditions.

[1] Terminal run excludes U.S. interceptions that occur outside Districts 108 and 106.

JOINT SOCKEYE SALMON ENHANCEMENT PROGRAM

4.4 million Sockeye Salmon eggs collected from Tahltan Lake, British Columbia in the fall of 2019 were hatched and reared at Snettisham Hatchery (Alaska) during the 2019/20 winter period. All fry were mass-marked at the Snettisham hatchery with thermally induced otolith marks. Green egg to released fry survival was approximately 75%. Approximately 500,000 fry reared at the Snettisham hatchery were culled due to Infectious Hematopoietic Necrosis virus (IHNv). Between May 27 and June 9, 2020, approximately 2.7 million emergent Sockeye Salmon fry were transported to Tahltan Lake for release.

For 2020, the agreed bilateral Stikine River Enhancement Production Plan (SEPP) identified an egg collection objective of 5.0 million Sockeye Salmon eggs from Tahltan Lake. In-season the 2020 Sockeye Salmon egg collection target was revised to 0.5 million eggs as a result of extremely low adult Sockeye Salmon escapement to Tahltan Lake and recently observed declines in wild egg to smolt survival. A total of 0.5 million Sockeye Salmon eggs were collected from Tahltan Lake.

TAKU RIVER

Following the 2020 pre-season meeting of the Transboundary Panel and the Pacific Salmon Commission (PSC) Commissioner's bilateral agreement on Taku River Sockeye Salmon harvest sharing arrangement (May 2020), Canada developed its fishing strategy for Taku River salmon fisheries based on the catch sharing and management arrangements outlined in Annex IV, Chapter 1 of the PST. Accordingly, the Canadian fishery strategy incorporated specific conservation considerations and contained the following harvest objectives: 1) to harvest 23% of the TAC of Taku River Sockeye Salmon (adjusted as necessary according to projections of the number of enhanced Sockeye), plus harvest any salmon in excess of spawning and brood stock needs; 2) to harvest enhanced Taku River Sockeye Salmon incidentally to wild Sockeye Salmon; and, 3) to harvest 5,000 Coho Salmon plus Canada's share of the TAC and any salmon surplus to spawning needs in a directed Coho Salmon fishery.

The 2020 commercial fishing season on the Taku River opened on June 30 (statistical week 27) and closed on September 23 (statistical week 39). Fishing area and gear restrictions were as per recent years, and incorporated the maximum gill net length of 36.6 metres, established in 2008 for drift gill nets and in 2009 for set gill nets.

The Taku River commercial fishing area in Canada consists of the mainstem of the river from the international border upstream approximately 18 km (11 mi.), to a geological feature known locally as Yellow Bluff. Nearly all commercial fishing activity takes place in the lower half of this area, downstream of the Tulsequah River / Taku River confluence.

The First Nation Taku River FSC fishery is primarily located in the lower Taku River in the same area as the Canadian commercial. Small numbers of fish are also harvested on the lower Nakina River and at the outlet of Kuthai and King Salmon lakes.

Canadian recreational fishery effort was largely absent in 2020 due to area, retention and size restrictions for the duration of the Chinook Salmon season. Restrictions were implemented within the recreational fishery to prohibit the harvest of Taku River Chinook Salmon as abundance was well below the minimum spawning escapement requirement. Recreational fishery effort for Coho Salmon was also minimal due to COVID-19 domestic and international travel restrictions.

CHINOOK SALMON

The bilateral pre-season forecast was for a terminal run of 12,400 large Chinook Salmon, approximately 36% below the previous 10-year average of 19,400 fish. A run size of 12,400 fish was well below the management

objective of 25,500 fish (below the lower end of the escapement goal range of 19,000 to 36,000), and as a result, there was no allowable catch (AC) for either the U.S. or Canada. In response, Canada did not prosecute a directed commercial Chinook Salmon fishery. Additionally, significant efforts were made in all other fisheries to avoid the incidental harvest of Chinook Salmon. For 2020, the in-river Chinook assessment fishery was not conducted to allow for the maximum number of Chinook Salmon to pass to the spawning grounds.

The catches of large Chinook Salmon in the Canadian fisheries were: 0 large Chinook Salmon harvested in the directed commercial Sockeye and Coho salmon fisheries; 94 large Chinook Salmon in the First Nation FSC fishery; and 0 large Chinook Salmon in the recreational fishery. The total base level and test/assessment fishery harvest of 94 large Chinook Salmon was well below the Chapter 1 Canadian fishery allowance of 2,900 fish.

The Taku River large Chinook Salmon spawning escapement estimate for 2020 was approximately 15,600 fish, which was below the management objective of 25,500 and the lower end of the escapement goal range (19,000). The most recent 10-year average spawning escapement was 16,600 large Chinook Salmon.
The total Canadian catch of large Chinook Salmon was 94, which was well below the 10-year average of approximately 1,900 fish (excluding test/assessment fisheries).

SOCKEYE SALMON

The Canadian pre-season run outlook for wild Sockeye Salmon was 139,000 fish, approximately 6% below the most recent 10-year average total run size of 148,000 fish. In addition, approximately 10,000 adult Sockeye Salmon of Tatsamenie Lake origin and a small number of Trapper Lake origin Sockeye Salmon were expected to return from fry outplants associated with the Canada/U.S. joint Taku Sockeye Salmon enhancement program. The forecasted return of enhanced Tatsamenie Lake origin Sockeye Salmon was anticipated to be above average.

The total Canadian fishery catch of Sockeye Salmon was 11,793 fish, of which 11,556 were taken within the commercial fishery, 237 in the First Nation FSC fishery, and 0 in assessment/test fisheries. This harvest was 52% below the 10-year average total of 24,400 fish. Canadian fisheries harvested an estimated 406 enhanced Sockeye Salmon produced through the bilateral Taku Enhancement Production Plan (3% of the total Canadian catch).

To reduce the likelihood of incidental harvest of Chinook Salmon, the directed Canadian Sockeye Salmon fishery commenced on June 30 (statistical week 27) which is 2 weeks later from what would have otherwise occurred. Additionally, the use of set nets within the commercial fishery was not permitted for the first opening while retention of incidentally-caught Chinook Salmon in the directed commercial Sockeye Salmon fishery was prohibited. The maximum permissible mesh size in the first four weeks of the directed Sockeye Salmon fishery was reduced to 140 mm (5.5”), which was intended to reduce likelihood of entanglement of large Chinook Salmon and to facilitate live release. Projected estimates of the total wild Sockeye Salmon run size, TAC and total escapement were made weekly throughout the fishing season. As in past years, projections were based on the joint mark-recapture program, the estimated catch of Taku River Sockeye Salmon in U.S. fisheries, the catch in the Canadian fishery and historical run timing information. The post-season run size estimate is 122,000 fish (comprising 120,000 wild and 2,000 enhanced Sockeye Salmon). Subtracting the management objective of 58,000 from the wild run of 122,000 fish resulted in a TAC of approximately 64,000 wild fish. The 2020 Canadian allowable catch, based on a 20% harvest share (associated with an enhanced Sockeye Salmon return range of 1 to 5,000 fish), was 12,800 wild fish. The total 2020 Canadian Sockeye Salmon fishery harvest was 11,373, below the allowable catch limit. The estimated total spawning escapement of Canadian-origin wild Sockeye Salmon was 98,000, which is above both the management objective (58,000) and the as well as the upper end of the spawning escapement goal range of 75,000 fish.

COHO SALMON

The 2020 total Canadian fishery catch of 7,036 Coho Salmon (6,970 commercial and 66 First Nation FSC) was 31% below the 10-year average of 10,200 fish. The catch during the directed commercial/assessment Coho Salmon fishery (after statistical week 33) was 5,143 fish. The bilateral estimate of 2020 total Canadian-origin Coho Salmon terminal abundance is 59,000 fish. In accordance with PST provisions a run size of this abundance provides Canada an allocation of 5,000 Coho Salmon for assessment purposes. The 2020 post-season spawning escapement estimate is 52,000 Coho Salmon which is below the management target of 70,000 but within the escapement goal range of 50,000 to 90,000 fish.

JOINT SOCKEYE SALMON ENHANCEMENT PROGRAM

2.3 million Sockeye Salmon eggs collected from Tatsamenie Lake, British Columbia in the fall of 2019 were hatched and reared at Snettisham Hatchery (Alaska) during the 2019/20 winter period. All fry were mass-marked at the Snettisham hatchery with thermally induced otolith marks. Between June 6 and June 10, 2020 approximately 1.6 million emergent Sockeye Salmon fry were transported to Tatsamenie Lake for release. No Infectious Hematopoietic Necrosis virus (IHNv) was observed in the Tatsamenie Lake Sockeye Salmon fry in 2020. Of the 1.6 million fry transported to Tatsamenie Lake approximately 210,000 fry were released into net pens for rearing between June 10 and June 30 as part of an extended rearing evaluation project while the remaining 1.4 million fry were released directly into the lake. Fry held within the extended rearing evaluation project were released into Tatsamenie Lake at approximately 1.6 grams on June 30, 2020. A sub-sample of Tatsamenie Lake Sockeye Salmon smolts outmigrating in 2020 was assessed to evaluate both enhanced contribution and survival. The results of this analysis will be used to inform future release strategies and enhancement programs.

For 2020, the agreed bilateral Taku River Enhancement Production Plan (TEPP) identified collection of up to 3.0 million Sockeye Salmon eggs from Tatsamenie Lake and 1,000,000 eggs from Little Trapper Lake for transport to Snettisham Hatchery in Alaska for incubation and thermal marking. Approximately 2.1 million Sockeye Salmon eggs were collected from Tatsamenie Lake and approximately 530,000 Sockeye Salmon eggs were collected from Little Trapper. Egg take collections were adjusted in-season based on female abundance.

ALSEK RIVER

Although abundance-based catch sharing provisions for Alsek River salmon stocks have not yet been established, Annex IV, Chapter 1 of the PST obligates Canada and the U.S. to cooperatively develop and implement abundance-based management plans and programs for Alsek River Chinook and Sockeye Salmon. In 2013, biological escapement goal ranges for Alsek River Chinook and Sockeye Salmon were bilaterally recommended by the Transboundary Panel and adopted by the Parties (3,500 to 5,300 for Canadian-origin Chinook Salmon and 24,000 to 33,500 for Canadian-origin Sockeye Salmon). Additionally, the escapement targets were revised for Klukshu River Chinook and Sockeye salmon; these are: 800 to 1,200 Chinook and 7,500 to 11,000 Sockeye. The principal escapement-monitoring tool for Canadian-origin Chinook, Sockeye and Coho salmon stocks on the Alsek River is the Klukshu weir, which has been operated DFO in collaboration with the Champagne and Aishihik First Nations (CAFN) since 1976.

In 2020 the Parties initiated the exploration and design of basin-wide stock assessment programs to support the development of abundance-based management and more accurately assess annual Chinook and Sockeye salmon returns to the watershed. At this time, there are no programs in place to estimate Alsek River Coho Salmon returns or spawning escapement. Current abundance assessment and spawning escapement monitoring programs include: the Klukshu River multi-species video enumeration system; the Village Creek Sockeye Salmon video enumeration; and genetic stock identification of samples collected from U.S. terminal fisheries. The long-term comparative escapement index for Alsek River drainage salmon stocks is the Klukshu River count. A feasibility evaluation of new Chinook Salmon abundance assessment programs on

the Blanchard and Takhanne Rivers has been initiated in order to seek to develop an improved understanding of Alsek River Chinook Salmon production. The Blanchard River feasibility project was not conducted in 2020 as a result of COVID-19 restrictions and associated operational challenges.

The 2020 Canadian Alsek River First Nation FSC fishery harvest was 22 Chinook, 218 Sockeye and 6 Coho salmon. The Champagne and Aishihik First Nations requested Citizens to reduce salmon fishing effort during the 2020 season in response to the poor pre-season forecasts for both Chinook and Sockeye salmon. The 10-year average harvest in the Canadian First Nation FSC fishery on the Alsek River is 54 Chinook, 1,027 Sockeye and 15 Coho salmon (noting that this most recent 10-year period has experienced several years of very low Chinook and Sockeye salmon returns and associated fishery harvests). Retention of Chinook and sockeye salmon within the 2020 Alsek River recreational fishery was prohibited due to low pre-season and in-season abundance estimates and, as a result, none were retained. Although the abundance of Alsek River Coho salmon was estimated to be at or above average and recreational possession limits were liberalized, reported Coho Salmon harvest was 6 fish.

The total return of Sockeye Salmon to the Klukshu River in 2020 was 4,396 while the spawning escapement was 4,287 fish. Both the return and spawning escapement were below the most recent 10-year average of 12,400 and 12,100 respectively and lower end of the escapement goal range (7,500) was not achieved. The 2020 total Sockeye salmon count at Village Creek was 65 fish, which represents the lowest recorded abundance since 1986 (compared to the most recent 10-year average of 700 fish).

The total return of Chinook Salmon to the Klukshu River in 2020 was 1,327 while the spawning escapement was 1,316 fish. Both the return and spawning escapement were slightly above the most recent 10-year average of 1,200 and 1,180 respectively while the upper end of the escapement goal range (1,200) was exceeded.

The 2020 Klukshu River Coho Salmon count was 3,869. The Klukshu River enumeration program is not operated for the full duration of the Coho Salmon run and as a result the annual count does not represent total abundance. When used as a partial indicator of run strength, the 2020 Coho Salmon count was well-above the most recent 10 year average of ~2,100.

NORTHERN BC

NORTHERN BC CHINOOK AGGREGATE ABUNDANCE-BASED MANAGEMENT (AABM) FISHERIES

OBJECTIVES AND OVERVIEW

Escapements of Northern Chinook Salmon have declined in recent years. Reduced survival rates and reduced productivity have been observed across British Columbia and South East Alaska. Conservation measures were implemented in 2020 Salmon fisheries in response to declines in Fraser River Chinook Salmon abundance. Chinook Salmon fisheries implemented in Northern BC under the PST AABM management regime include the Northern British Columbia troll and Haida Gwaii recreational fisheries.

These fisheries are managed to an annual total allowable catch (TAC) based on the forecast abundance of the aggregate of stocks that contribute to each fishery. In Canada, conservation is the first priority in fisheries management. Once conservation obligations are met, priority access is given to First Nations for food, social, ceremonial and treaty requirements. Once those obligations are met, priority access to Chinook salmon is provided to the recreational fishery, with commercial fisheries next in priority. Management constraints to the fishery include management for stocks of conservation concern, minimizing encounters of undersized Chinook Salmon and non-target species and minimizing fisheries where legal and sublegal-sized Chinook Salmon have to be released.

STOCK STATUS

The pre-season distribution of the NBC AABM TAC by fishery is shown in Table 27 below. The total Chinook catch in the Area F Troll fishery and recreational fishery can be found in Table 38.

Table 27: Pre-Season Total Allowable Catch Estimate for NC AABM Chinook

	Pre-Season	In-Season
NC BC Troll AABM and Haida Gwaii Sport Abundance Index	1.08	-
NC BC Troll AABM and Haida Gwaii Sport Chinook TAC	133,000	-
NC BC Troll AABM Chinook TAC	92,600	Actual catch: 30,096
Haida Gwaii Sport Chinook TAC	40,400	Actual catch 6,087
Total NBC AABM	133,000	Actual catch: 36,903

RECREATIONAL FISHERIES

Due to the ongoing global COVID-19 pandemic, recreational fishing effort was markedly different than in other years. Border closures and travel restrictions significantly reduced AABM tidal sport effort, as most lodges were not in operation for much of 2020. Catch estimates are subsequently significantly lower than anticipated pre-season, but will be updated should more data become available.

Estimates of AABM tidal sport catches near the mainland coast of Northern BC were obtained from creel surveys and lodge catch reports from lodges operating on Haida Gwaii. The recreational fishery maintained full daily limits of two daily and four possession. A minimum size limit of 45 cm was in effect and barbless hooks were mandatory in the sport fishery. Virtually all sport releases in AABM areas are legal sized.

In Area 1, the recreational salmon fishery primarily occurs between Masset and Langara Island along the north shore of Graham Island. In Area 2W, the recreational salmon fishery primarily occurs between Englefield Sound and Port Louis. The Chinook Salmon fishery in east Skidegate during late winter and early spring was reported to be average. While the harvest of Chinook in Area 2E is unknown, it is assumed to be fewer than 500 pieces and a small proportion of the recreational catch in Areas 1 and 2W. Recreational effort (>99%) primarily occurs in Area 1 and 2W. The majority of the fishery normally occurs between mid-May and mid-September with little effort in the winter.

COMMERCIAL FISHERIES

The North Coast BC troll fishery opening for Chinook fishing was delayed and opened from August 15 to September 30 as part of fishery restrictions designed to pass through Fraser Summer 41 (South Thompson) Chinook to Fraser River fisheries. The entire 2020 Northern BC troll fishery was conducted under a system of individual transferable quotas. The minimum size limit was 67 cm and barbless hooks and revival boxes were mandatory. No troll test fisheries were conducted in the North Coast of BC in 2020.

NORTHERN BC CHINOOK INDIVIDUAL STOCK-BASED MANAGEMENT (ISBM) FISHERIES

OBJECTIVES AND OVERVIEW

Northern BC Chinook Individual Stock-Based Management (ISBM) Fisheries include commercial net fisheries throughout north and central BC, marine sport fisheries along the mainland coast and in freshwater, and First Nations fisheries in marine and freshwater areas. The PST obligations in these fisheries are for a

general harvest rate reduction (estimated in aggregate across fisheries) for ocean mixed stock fisheries and for stock-specific objectives (i.e., achieving the escapement goal) in terminal areas.

STOCK STATUS

Since assessments of the ISBM fisheries are relative to the escapements achieved in the Chinook indicator stocks, a brief overview of the 2020 returns is provided. Chinook escapements to the upper Nass River were 12,868 (based on mark-recapture data). The estimated 2020 escapement for the Skeena River aggregate was 13,386 Chinook and is based on a Kitsumkalum River estimate of 4,500 fish. The estimated total escapement in the Bella Coola/Atnarko River in 2020 was 19,176 large Chinook and is based on the maximum likelihood estimate. These estimates will be refined by the Chinook Technical Committee.

The total Chinook catch in the Tyee Test fishery on the Skeena River was 550 (392 Large Chinook and 158 Jack Chinook). ISBM catch data can be found in Table 38.

FIRST NATIONS FSC FISHERIES

A total of 4,482 large Chinook were reported caught by First Nations in the Skeena watershed. In addition, Nisga'a Treaty catch was reported at 5,577 Chinook (all in Area 3/Nass River). First Nations' catches in marine waters of Areas 4 to 6 were reported as 819 Chinook. First Nations Chinook catch in Areas 1 to 3 were not reported at the time of this document. A total of 2,628 Chinook were reported caught in Areas 6, 7, 8 and 9. No Chinook catches were reported by First Nations in Smith Inlet (Area 10).

RECREATIONAL FISHERIES

TIDAL WATERS

Estimates for tidal sport catches near the mainland coast of Northern BC were obtained from a creel survey conducted in Areas 3 and 4 in 2020. Chinook daily limits started at 2 per day, but were reduced in Area 3, 4, and 5 to 1 (one) Chinook per day from June 1, 2020 to July 14, 2020. This reduction was planned pre-season, and was designed to address concerns to forecast weak returns of Skeena Chinook, and to provide for FSC priority access.

Area 6 had a daily limit of 2 per day for the 2020 season.

Tidal sport catch from lodges operating in the Smiths Inlet, Rivers Inlet, Hakai Pass and Bella Bella areas were estimated using log books.

For 2020, recreational fishing lodge operations were significantly reduced by the restrictions in place due to COVID-19. Most lodges did not operate, while others operated at a significantly reduced capacity.

NON-TIDAL WATERS

The Skeena River watershed started with normal daily limits and opening times for Chinook, Coho, and Pink Salmon in 2020. Sockeye started closed on the Skeena River.
From May 21, 2020 to July 14, 2020, the Department closed the entire Skeena River watershed to fishing for Chinook salmon. This closure was planned pre-season, and was designed to address concerns to forecast weak returns of Skeena Chinook, and to provide for FSC priority access.

The Nass River watershed started with normal daily limits and opening times for Chinook; however, closed to all fishing for salmon on July 1, 2020 in reaction to poor Sockeye escapements in order to provide for FSC priority access. The Nass River remained closed to fishing for Chinook for the remainder of the 2020 season.

COMMERCIAL FISHERIES

Chinook commercial fisheries were closed in the North Coast (Areas 3-10), except for limited opportunities Area 8. In Area 8, the gillnet fishery opened for 24 hours on June 15, 2020. Due to concerns related to COVID-19, this was the only targeted Chinook opening in Area 8. Chinook retention was allowed during Chum targeted opportunities in July. Due to poor escapements of Chum Salmon, there were only three targeted Chum fisheries in Area 8. In total, there were 4 openings in Area 8, with a total effort of 436 boat days.

Refer to Table 38 for Chinook catch totals.

NORTHERN BC PINK SALMON FISHERIES

OBJECTIVES AND OVERVIEW

In 2020, Canada was to manage the Area 3-1 to 3-4 net fisheries to achieve an annual catch share of 2.49% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 Pink Salmon. The total return of Pink Salmon to Alaskan Districts 101, 102 and 103 was not available at the time of publication.

Canada was also to manage the Area F (NBC) troll fishery to achieve an annual catch share of 2.57% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 Pink Salmon.

COMMERCIAL FISHERIES

Areas 3-1 to 3-4 Pink Net Catch

In the Canadian Northern Boundary Area, Pink Salmon returns were anticipated to be below average for Areas 3 and 4, based on brood year return strength. Actual returns to Area 3 were higher than anticipated, while the Area 4 returns were below average. One seine opening occurred in Area 3-3 in 2020 on July 6. Effort was minimal and total catch was 1,816 Pink Salmon.

Area F (NBC) Pink Troll Catch

The Canadian commercial troll fishery targeting Pink Salmon with retention of Coho Salmon was open in the northern portion of Area 101 (Dixon Entrance AB Line) from July 1 to August 1, and then expanded to the rest of Area 1 until it the fishery closed on September 30. Pink retention was also permitted during the Chinook directed fishery in parts of Area 1 which opened from August 15 to September 30. Area 1 and 101 Pink Salmon directed effort was minimal and the total Pink catch in the Area F Troll fishery and recreational fishery can be found in Table 38. Area F retained catch of 136,890 Pink Salmon was improved over recent years averages.

SOUTHERN BC CHINOOK SALMON

SOUTHERN BC AGGREGATE ABUNDANCE-BASED MANAGEMENT (AABM) CHINOOK

OBJECTIVES AND OVERVIEW

Chinook fisheries are managed by either an aggregate abundance-based management (AABM) or individual stock-based management (ISBM) regime. Allowable harvest impacts in AABM areas are determined by provisions in the PST and subject to domestic considerations, such as conservation and allocation. In Southern BC, all AABM Chinook fisheries are located off the West Coast Vancouver Island (WCVI), including components of the recreational fishery, First Nations fisheries and the Area G troll fishery.

For the period of October 2019 through September 2020, the forecast Chinook abundance index was 0.75 of the PST base period; therefore, under Treaty provisions, the maximum allowable catch was 87,000 Chinook

for WCVI AABM fisheries, which includes a 12.5% reduction consistent with the treaty provisions that came into effect in January 2019.

Domestic considerations for managing Chinook catch in WCVI AABM fisheries are driven by concerns regarding the low status of natural WCVI, Lower Strait of Georgia (LGS) and Fraser River Chinook, as well as Interior Fraser Coho and Interior Fraser River (IFR) Steelhead populations. Management measures in AABM Chinook fisheries to limit impacts to these domestic stocks of concern are summarized in the fishery subsections.

To protect returning Fraser Chinook stocks of concern, the Area G troll fishery was closed until August 1, 2020. Additionally, a 27-day rolling window closure was applied in portions of September/October to protect IFR Steelhead.

The pre-season planning distribution of the total WCVI AABM TAC by fishery is shown in Table 28 below.

AABM Chinook catch and release information from all fisheries can be found in Table 39.

Table 28 Pre-Season Total Allowable Catch Estimate for October 2019 to September 2020 WCVI AABM Chinook

	Pre-Season	In-Season
WCVI AABM Abundance Index	0.75	0.75
WCVI AABM Chinook TAC	87,000	
AABM Recreational Harvest Projection	40,000	Actual catch: 19,393
First Nations Harvest Projection (FSC)	5,000	Actual catch: 1,758
Maa-nulth First Nations Domestic Allocation (FSC)	3,424	Actual catch: 1,951
Five Nations Allocation	7,724	Actual catch: 4,170
Area G Troll Allocation	30,852	Actual catch: 11,350
Total AABM	87,000	32,970

FIRST NATIONS DOMESTIC AND FSC FISHERIES

The 2020 WCVI AABM FSC Chinook reported catch (to date) can be found in Table 39. Catch from Maa-nulth Nations Domestic fisheries can also be found in Table 39.

FIRST NATIONS COMMERCIAL HARVEST

Five Nations Communal Sale Fishery

In 2020, the Department provided communal sale fishery opportunities for the Five Nations (five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht and Tla-o-qui-aht) that included AABM Chinook. These opportunities were categorized as Offshore Integrated Hook and Line communal sale fisheries.

The AABM Chinook allocation was 7,724 pieces. The fishery was carried out in portions of Areas 24, 25, 26, 124, 125 and 126 on the west coast of Vancouver Island over several openings from May to November. A 100% independent dockside monitoring program was in place for the entire season. Sale of Chum, Pink and marked Coho was also permitted, as well as several groundfish species. Total salmon catches from this fishery can be found in Table 39.

COMMERCIAL FISHERIES

For the 2019/2020 Chinook year (October 1, 2019 to September 30, 2020), fisheries were shaped by conservation concerns for the following domestic stocks: Fraser River Spring 42 Chinook, Fraser River Spring 52 and Summer 52 Chinook, WCVI wild Chinook, LGS Chinook, IFR Coho and IFR Steelhead. The distribution of the WCVI AABM TAC between fisheries is shown above in Table 28.

Area G Troll

The Area G troll annual management plan is designed to maintain exploitation rates (ERs) on domestic stocks of concern within established limits through the use of fishing time and area closures in conjunction with fishing effort limits. The management plan is subject to change when required to address specific conservation concerns. For the 2020 fishing season, the following changes to the annual fishing plan were implemented similar to 2019:

- Additional conservation measures to further protect low returns of Fraser River Chinook were implemented. For Area G troll this was addressed by implementing a fishery closure that remained in place until August 1, 2020.
- A 27-day rolling window closure starting in September was applied to protect IFR Steelhead.

The Area G catch in 2020 occurred in one opening from August 1 to September 15. Catch is summarized in Table 39.

RECREATIONAL FISHERIES

The WCVI AABM recreational Chinook fishery primarily takes place in offshore Areas 121 to 127 from June to September. Chinook catch from inshore Areas 21 to 27 in June and Areas 21 to 24 in July are also included in the AABM estimate. Catch and effort are largely driven by abundance and weather, and together both have impacts on annual harvest. Previous sampling has indicated that there is minimal AABM catch and effort outside of this period. In 2020 the Creel Survey was not conducted in the month of June due to the impacts of Covid-19, so total catch estimates do not include catch from June 2020.

Domestic Chinook management measures are in place in the near-shore AABM areas to protect migrating WCVI-origin Chinook. In 2020, management measures continued to include finfish closures in several areas, increasing terminal Chinook non-retention areas, and focussing recreational opportunities in areas where DNA samples indicated that WCVI Chinook presence is lower.

The domestic management actions that were implemented in 2019 continued in 2020 designed to further protect Fraser River Chinook populations. This includes a Chinook non-retention area in effect from April 1 to July 14 (inclusive) in Areas 121 to 127 seaward of a 1 nm surfline boundary and a maximum size to 80 cm for Chinook from July 15 – to July 31.

Chinook catch in the AABM recreational fishery is estimated through several catch monitoring programs, including a creel survey, a logbook program and DFO's electronic survey information (iREC). The creel survey continues to be the most utilized catch monitoring program in this area particularly because it collects effort (number of boat trips), and catch per unit effort data. Catch for any given species within a defined time-area stratum is estimated by multiplying effort estimates by CPUE. Total effort is estimated through vessel counts, gathered through either aerial or on-water boat surveys of the fishing area. CPUE is estimated from interviews with anglers at specific landing sites and from trip logbooks and manifests submitted by lodges and guides through a voluntary monitoring program. Logbook effort is removed from effort estimates where there is overlap. Data regarding the daily activity profile of the fishery, fishing locations, and the proportion of guided versus un-guided effort are also gathered from angler interviews.

The Chinook recreational catch estimate from the creel survey for the 2020 WCVI AABM fishery is provided in Table 39.

See Figure 41 below which illustrates catch and effort from 2000 through 2020.

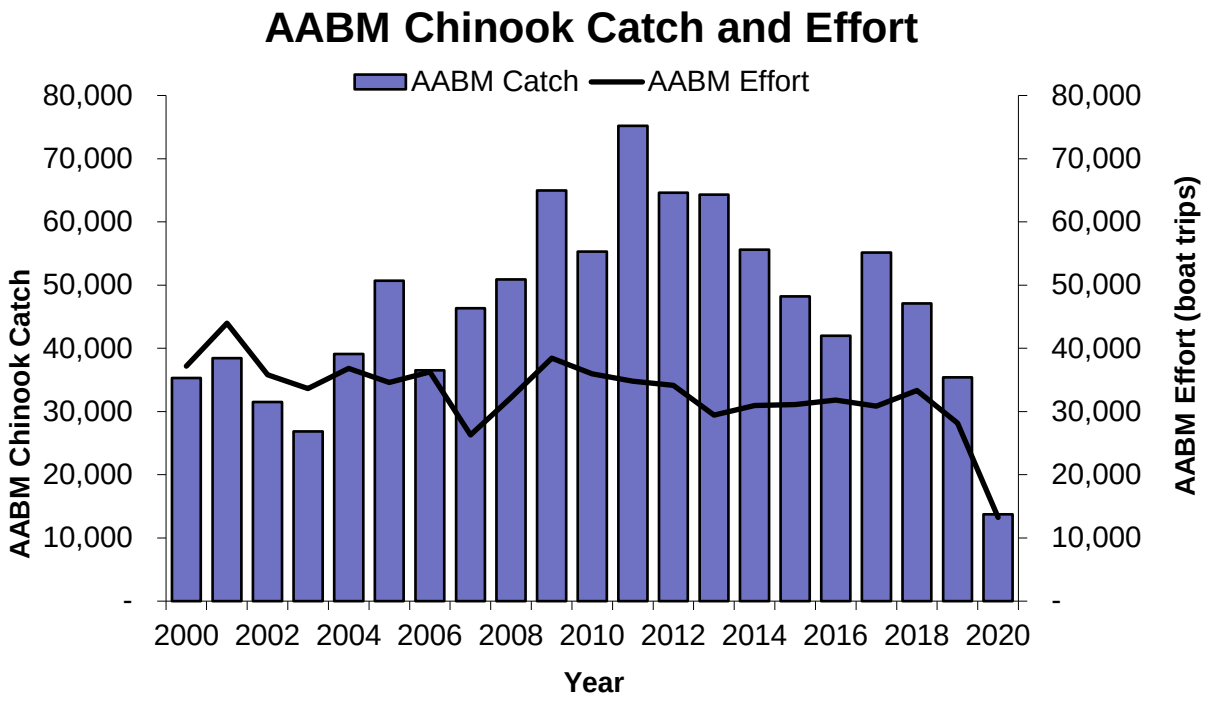

Figure 41. WCVI Recreational AABM Catch and Effort- Chinook, 2000-2020

SOUTHERN BC CHINOOK INDIVIDUAL STOCK BASED MANAGEMENT (ISBM) FISHERIES

OBJECTIVES AND OVERVIEW

In addition to the PST regime, Canada implemented management actions as required to ensure conservation of Canadian-origin Chinook and to meet domestic allocation requirements. These Chinook fisheries were managed to harvest rates on an individual stock basis (ISBM).

Measures were taken in 2020 in First Nations FSC, recreational and commercial Chinook fisheries to protect West Coast Vancouver Island (WCVI), Southern Strait of Georgia and Fraser River Chinook stocks of concern.

Specific management actions were taken to protect WCVI-origin Chinook in Canadian ocean fisheries (not including enhanced terminal areas), the harvest of which is managed to an ER of 10%. Fisheries to which this limit applies are the northern troll, Haida Gwaii recreational, WCVI troll and WCVI recreational. Most Southern BC fisheries were managed such that impacts on WCVI wild Chinook stocks were minimized, with the exception of terminal fisheries focussed on enhanced stocks.

Southern Strait of Georgia Chinook stocks are improving from historic lows seen in 2009 and are stable or rebuilding. Significant management measures in recreational and commercial fisheries continued to be in place to protect these stocks. Some LGS Chinook stocks are seeing a gradual increase in terminal returns, particularly in the Cowichan River.

A suite of precautionary fishery restrictions were intended to provide a high degree of protection to at-risk Fraser Spring 42, Spring 52 and Summer 52 Chinook returning in 2020. This approach was expected to reduce overall Canadian fishery mortalities on these populations to very low levels (e.g., approaching 5%). Expected fishery mortalities were not intended to be a management target and the objective was to allow as many fish to pass through to the spawning grounds as possible.

First Nations FSC management actions in the Fraser River included time and area closures, and reduced fishing times. Specifically, Fraser River First Nations food, social and ceremonial fisheries were restricted to unplanned events (e.g., funerals) or First Fish ceremonies until July 15 followed by opportunities to target healthy Summer 41 Chinook primarily in August.

South Coast FSC fisheries opportunities on mixed stocks over the period of April 1 to June 18 were permitted with approved fishing plans and using selective gear. Commencing June 19 fisheries were unrestricted in marine areas with the exception of the approaches to the Fraser River (Subareas 29-6, 29-7, 29-9 and 29-10).

Recreational fisheries in Johnstone Strait, Strait of Georgia, Juan de Fuca Strait, and the approach waters to the Fraser River were managed to Chinook non-retention between April 1 and varying dates between July 14 and August 31, with a maximum size limit of 80 cm in effect where Chinook retention was permitted before August 31. In 2020, commercial fisheries in Barkley Sound and Nootka Sound targeted ISBM Chinook. Chinook non-retention was in place for other southern BC commercial fisheries (excluding AABM Chinook).

ISBM Chinook catch and release information from all fisheries can be found in Table 39.

STOCK STATUS

WEST COAST VANCOUVER ISLAND CHINOOK

Wild WCVI Chinook are a stock of concern. While stocks are low and stable, they are below target and have not rebuilt from low abundances that resulted from a decline in productivity observed during the early to mid-1990s. Of particular concern are those stocks that originate from the SWVI area conservation unit (i.e., Clayoquot Sound).

Hatchery production supports terminal fisheries directed at surplus production with extensive management measures in place to reduce impacts on wild origin stocks. For WCVI hatchery stocks, the terminal return is defined as total catch (First Nations FSC, sport and commercial) in the near approach areas of the hatchery plus escapement (brood collection plus natural spawners and ESSR if applicable). In these approach areas, catch is dominated by the hatchery stock (e.g., > 95%); therefore, higher ERs are permitted than in times and areas dominated by naturally produced WCVI Chinook stocks.

Due to Covid-19, the test fishery conducted near the Mquq^{W}in / Brooks Peninsula from 2016 to 2019, did not occur in 2020. The objective of the test fishery was to assess the ability to improve the precision and accuracy of annual WCVI Chinook return estimates.

STRAIT OF GEORGIA CHINOOK

Fall Season

Adult returns of fall Chinook to SEP facilities south of Campbell River were average to above average again in 2020. Puntledge River escapements were strong with 8,580 adults returning compared to the 10 year average of 6,834. Further south, the Big Qualicum River escapement was well above the 4 year average of 6,980 with 11,175 fish. Swim counts in the Little Qualicum River were also above average at 8,958 after an area under the curve (AUC) expansion.

Chinook escapements to mid-island streams were average to above average in 2020. The AUC expanded estimate of 781 adults in the Englishman River was similar to the 12 year average of 870. Nanaimo River abundance was near the four year average with a return of 4,046 adults and 2,970 jacks. Cowichan River escapement estimates were above the target of 6,500 naturally spawning adults for the fifth year in a row with a final estimate of 10,129 fish. Age 2 jack returns to Cowichan were exceptional at 14,597. A similar abundance was observed in 2017 which produced large escapements of subsequent age classes in 2018 and 2019 from the 2016 ocean entry cohort.

On the mainland side of the northern Strait of Georgia, Sliammon and Lang hatcheries continue to have variable returns; however, in the last five years the returns to Lang Creek have been stronger than in previous years with 1,739 adults in 2019. 2020 returns were close to the 4 year average at 1,276 adults of which 416 were retained for brood stock. Adult Chinook returns to Sliammon Creek were very low in 2020 with only 12 fish observed compared to the 12 year average of 110.

There are a few very small, wild populations remaining in the Theodosia and Skwakwa rivers, and those rivers entering Jervis Inlet, where assessment data are poor or not available. Historically, a large proportion of the Chinook stock aggregate originating from rivers north of Nanaimo migrate into central and northern BC and Alaska. ERs on this stock aggregate have gradually been reduced over the last 15 years, thus the stable trend in annual returns to rivers over this period suggests a reduction in marine survival.

Spring/Summer Season

The Puntledge, Nanaimo and more recently the Cowichan systems have identified early runs of Chinook in the Strait of Georgia. Efforts to recover Puntledge summers to viable levels have resulted in improved returns to the river since 1999. The 2020 escapement estimate for Puntledge was 489 fish including 37 jacks, which is less than the four year average of 750 adults. This was not unexpected due to reduced hatchery releases in contributing brood years. Monitoring of Nanaimo spring/summer Chinook escapement was improved in 2020 with a series of swims from May through September. Several surveys of the reach upstream of second lake where spring run fish are believed to reside produced a peak count of three jacks. A total of 634 summer run adults for 2020 was near the 4 year average of 670. The Chemainus River was not surveyed in 2020. Recent counts in this system have been very low but the rockslide in the lower canyon was cleared naturally in winter 2018/2019, restoring access to a significant portion of the system.

JOHNSTONE STRAIT MAINLAND INLET CHINOOK

Currently only three systems are monitored consistently. In Area 12, the Nimpkish River is assessed using standardized swim surveys by hatchery staff. In Area 13, the Campbell/Quinsam and Phillips rivers are assessed by intensive mark-recapture programs. The Campbell/Quinsam is a long-term Chinook indicator, assessed yearly since 1984 (program carried out by Quinsam Hatchery). Survey coverage was also increased on systems like the Adam/Eve and Salmon rivers on Vancouver Island. Mainland Pink coverage timing also overlaps some of the Chinook populations in the mainland inlets of Area 12. Other systems are covered using intermittent visual surveys.

Nimpkish River

In 2020, observations of Chinook abundance were up relative to both the 2019 and 2016 (BY) returns. The estimate of 3,000 Chinook (peak count 915) is double the 5-year average (1,474) and approximately 50% larger than the dominant 2016 parental brood year (1,996). Hatchery broodstock targets were met.

Campbell/Quinsam System

The 2020 program has the combined system Chinook escapement estimate at approximately 10,000 adults; the last return at this level occurred in 2004. Similar, but slightly lower abundances (~9,500) returned in 2006

and 2017. The 2020 Chinook escapement is above the 5- and 10-year averages for this system, as well as the long term (1984-2019) average (6,991). The 2016 parental brood year for the returning age-4s was approximately 7,550. The 2020 broodstock target was attained by the hatchery.

Phillips River

Results from the 2020 Phillips River program indicate an above average Chinook escapement estimate of 3,330 adults. The 5-year historic average for this system is approximately 2,100. The 2019 brood was the final enhanced release of Phillips Chinook; the mark-recapture program will continue.

FRASER RIVER CHINOOK

Fraser River Chinook are assessed as five naturally spawning stock groups for PSC management under the 2019 PST agreement including Fraser Spring 42, Fraser Spring 52, Fraser Summer 52, Fraser Summer 41 and the Harrison River (Fall 41).

Within the Fraser, there are four active and one discontinued CWT-indicator stocks: Nicola River (Fraser Spring 42), Lower Shuswap (Fraser Summer 41), Harrison River and Chilliwack River (Fraser Fall 41) and Dome Creek (Fraser Spring 52) that was discontinued in 2005. Two new CWT-indicator stocks are under development: Lower Chilcotin River (Fraser Spring 52) to replace Dome Creek and Chilko River (Fraser Summer 52).

Escapements to the Fraser Summer 41 stock group increased during the 1990s and remained abundant until 2011; followed by lower years in 2012, 2014 and 2016-2018. The spawning escapement in 2020 based on the CTC index for the aggregate was 147,504, which is higher than the long-term average (1999-2018) of 95,726 and above the parental brood from 2016 (93,247). One exception is Maria Slough where abundance was extremely low (47). The 2020 Lower Shuswap River escapement estimate was 25,528, which exceeded the escapement goal of 12,300.

In 2019, the Big Bar Landslide on the Fraser Mainstem obstructed migration of some populations in the Fraser Spring 52 and Fraser Summer 52 stock groups. For Chinook returning to rivers upstream of the landslide, 13% of the Spring and 48% of the Summer Chinook were estimated to be able to pass the landslide and return to their spawning grounds in 2019. Since there are populations within these stock groups that are downstream of the slide, the overall mortality relative to the terminal runs were 81% for the Spring 52 stock group and 39% for the Summer stock group. Passage of Chinook Salmon through Big Bar Landslide occurred at higher flows in 2020 compared to 2019; however, prolonged high water levels delayed passage in 2020. Big Bar Landslide passage and mortality rates are not yet available for 2020.

The 2020 Spring 52 stock group spawning escapement estimate based on the CTC index for the aggregate was 17,136, which is lower than the long-term average (1999-2018) of 20,140 but greater than the parental brood from 2016 (13,498). However, there is considerable variation amongst the populations in the stock group.

The 2020 Summer 52 stock group spawning escapement estimate based on the CTC index for the aggregate was 13,166, which is lower than the long-term average (1999-2018) of 19,697 but greater than the parental brood from 2016 (9,522). However, there is considerable variation amongst the populations in the stock group.

The Fraser Spring 42 stock group spawning escapement for 2020 based on the CTC index for the aggregate was 8,463, which is lower than the long-term average (1999-2018) of 11,668 and 95% of the parental brood from 2016 (8,908). The Nicola River escapement estimate was 3,955, is lower than the long-term (1999-2018) average of 5,394 but greater than the parental brood from 2017 of 1,702.

The Harrison River (Fraser wild Fall 41 stock group) escapement estimate for 2020 was 43,087, which is lower than the long-term average (1999-2018) of 93,562 but greater than the parental brood from 2017 of 29,799 and lower than escapement goal of 75,100. The Harrison River escapement estimate has only met the escapement goal once in the past nine years.

There have been five consecutive years (2016-2020) of low escapements to the three Fraser stock groups with yearling smolt life history (Spring 42, Spring 52; and Summer 52) and also to the Harrison (Fall 41). These four stock groups are of continuing conservation concern. Canadian marine and Fraser River fisheries were further restricted in 2020 to continue to address these conservation concerns.

FIRST NATIONS DOMESTIC AND FSC FISHERIES

WCVI FSC Fisheries and Treaty Domestic Fisheries

Somass First Nations (Tseshaht and Hupacasath First Nations) caught Chinook by gill net, rod and reel, and as bycatch during other salmon fisheries in Area 23. Catch reports for Maa-nulth Treaty harvest and WCVI Nuu-chah-nulth FSC harvest can be found in Table 36.

Strait of Georgia FSC Fisheries and Treaty Domestic Fisheries

Chinook Salmon FSC and Treaty Domestic fisheries were very limited in the Strait of Georgia from April 1 to June 18, 2020 to protect Fraser River-bound Chinook Salmon stocks of concern. Over this period, very limited harvests took place using hook and line gear by approved fishing plan. Terminal harvests of Chinook took place in Puntledge and Qualicum Rivers in September and October, using hatchery brailing and hand-picking/sorting methods. Chinook Salmon were also harvested in hook and line and gill net fisheries in Cowichan and Nanaimo Rivers from late September through October. Tla'amin Treaty and other First Nations catch reports in the Strait of Georgia can be found in Table 39.

Johnstone Strait FSC Fisheries

Chinook Salmon FSC Fisheries were very limited in most of Johnstone Strait from April 1 to June 18 in 2020 to protect Fraser River-bound Chinook Salmon stocks of concern. Over this period, very limited harvests took place using hook and line gear by approved fishing plan. First Nations catch summaries from Johnstone Strait can be found in Table 39.

Fraser River FSC Fisheries

FSC fisheries took place in the Lower Fraser River (LFR) between the mouth and Sawmill Creek from April through November 2020. The total number of Chinook harvested from Chinook-directed fisheries and Chum-directed FSC openings or limited participation openings, can be found in Table 39. No Sockeye-directed fisheries were authorized in 2020. Sockeye, Pink, Coho, and Chum bycatch that occurred during Chinook-targeted FSC openings is also listed in those appendices.

Chinook-directed FSC fisheries took place in the Fraser River and tributaries above Sawmill Creek from June through early October 2020. The total of Chinook harvested, as well as bycatch estimates can be found in those appendices.

FIRST NATIONS COMMERCIAL HARVEST

Somass Economic Opportunity

In 2020, agreements were reached with the Hupacasath and Tseshaht First Nations for Economic Opportunity (EO) fisheries; however, Hupacasath was the first with an agreement and had some EO openings before

Tseshaht signed an EO agreement. The fisheries occurred in portions of Subareas 23-1 and 23-2, in upper Alberni Inlet, including the tidal portion of the Somass River. The target species was Chinook with bycatch Coho and Chum allowed to be retained for FSC. There were several EO Chinook openings from August 23 to September 30. The initial EO TAC for Chinook was 20,355 in 2020 and was raised with run size upgrades to 27,481. The total EO Chinook catch and Coho bycatch can be found in Table 39.

Five Nations Communal Sale Fishery

In 2020, the Department provided communal sale fishery opportunities for the Five Nations (five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht and Tla-o-qui-aht) that included ISBM Chinook. These opportunities were categorized as Nearshore Integrated Hook and Line, Terminal salmon fisheries and a Surplus to Escapement Salmon fishery.

The Nearshore Integrated Hook and Line fisheries occurred in Area 25 and targeted Conuma River enhanced Chinook using troll and gillnet gear and Coho using troll gear. Fishery openings for Conuma Chinook occurred between July 10 and August 31. The initial in-season TAC was 2,629 Chinook.

The Terminal fishery targeted Burman and Gold River enhanced Chinook returns in Muchalat Inlet using troll gear. Fishery openings occurred between August 8 and September 25. The initial in-season TAC was 250 Chinook.

The Surplus to Escapement Salmon fishery targeted Conuma River enhanced Chinook in the approach waters and tidal portions of the Conuma River using gillnet and beach seine gear to harvest excess salmon to spawning requirements. Fishery openings occurred between September 4 and September 14. Surpluses to escapement were identified in-season based on Conuma Hatchery and stock assessment information.

The total Chinook catch from the Five Nations communal sale fisheries targeting Conuma, Burman and Gold River Chinook can be found in Table 39. Coho caught in Chinook directed fisheries were also permitted to be sold.

Fraser River Economic Opportunity and Inland Demonstration Fisheries

EO or inland demonstration fisheries did not occur in 2020 for ISBM Chinook in either the upper or lower reaches of the Fraser River as part of additional management actions to provide protection for Fraser Chinook stocks.

In 2020, no EO or demonstration fisheries occurred for Fraser Sockeye due to extremely low returns and no available Canadian Commercial TAC (CCTAC). There is currently one Inland Commercial Fishing Enterprise (CFE) operating in the Lower Fraser: Harrison Fisheries Authority. This CFE was not authorized to conduct a demonstration fishery for Sockeye using gill nets in the Harrison River; as the run size for the Harrison River Sockeye return was not sufficient to support a fishery. Therefore, there were no incidental impacts on Chinook from these fisheries.

It was not a Pink year therefore no EO and or demonstration fisheries occurred for Fraser Pink in the LFR in 2020 by the Harrison Fisheries Authority and the 16 communities from the Port Mann Bridge to Sawmill Creek. Therefore, there were no incidental impacts on Chinook from these fisheries.

In 2020, there was an EO/ Demonstration fishery for Fraser Chum occurring in the lower reaches of the Fraser River. The total Chinook catch from the Fraser Chum EO/Demonstration fishery can be found in Table 30.

There are three Inland CFEs that have operated in the BC Interior: Okanagan Nation Alliance, Upper Fraser Commercial Fishing Enterprise and Riverfresh (Secwepemc Fisheries Commission). In 2020, ONA was the only inland CFE fisheries that conducted commercial fisheries operations.

COMMERCIAL FISHERIES

Area B Seine

Due to a relatively large pre-season forecast of 91,000 Chinook for Robertson Creek Hatchery, Area B seine fisheries were provided in Area 23. The fisheries occurred in portions of Subarea 23-1 and 23-2, upper Alberni Inlet, targeting Chinook. Due to low WCVI Coho forecasted returns retention was not permitted in any commercial fisheries. The fisheries were operated using a pool system with only designated vessels permitted to fish. The fishery opened daily from August 26-27, September 9-11 and Sept 13-16. The Area B in-season TAC was 6,425 Chinook. The seine Chinook catch can be found in Table 39.

Area D Gill Net

Area D gill net fisheries were provided in Area 23. The fisheries occurred in portions of Subarea 23-1 and 23-2, in upper Alberni Inlet, targeting Chinook with no bycatch of Coho allowed. The fisheries were opened one night a week in the last two weeks of August. Due to the success of the August 30 opening in particular there was only one opening in mid-September. The fisheries occurred on August 25, 30 and September 18. The Area D in-season TAC was 11,930 Chinook. The total gillnet Chinook catch can be found in Table 39

In 2020, a gill net fishery occurred in Tlupana Inlet (Area 25) targeting Conuma River Chinook. The Area D in-season TAC for Conuma Chinook was 6,121. There was one opening on August 12. The total gillnet catch during the Chinook-directed fishery can be found in Table 39.

Area E Gill Net

There were no Area E gill net fisheries for ISBM Chinook on WCVI in 2020.

There were three Area E gill net commercial Chum openings in the Fraser River (Area 29) in 2020 during the week of November 2. The number of Chinook released can be found in Table 39. There was mandatory non-retention of Chinook in place.

RECREATIONAL FISHERIES

ISBM Chinook catch and release information from all fisheries can be found in Table 39.

West Coast Vancouver Island

In 2020, a strong return of Chinook was expected to the Robertson Creek hatchery and a moderate return to the Conuma River hatchery. Actual returns were above forecast for Robertson Creek and around forecast for Conuma River, and provided recreational fishing opportunities in terminal areas supported by these enhanced stocks.

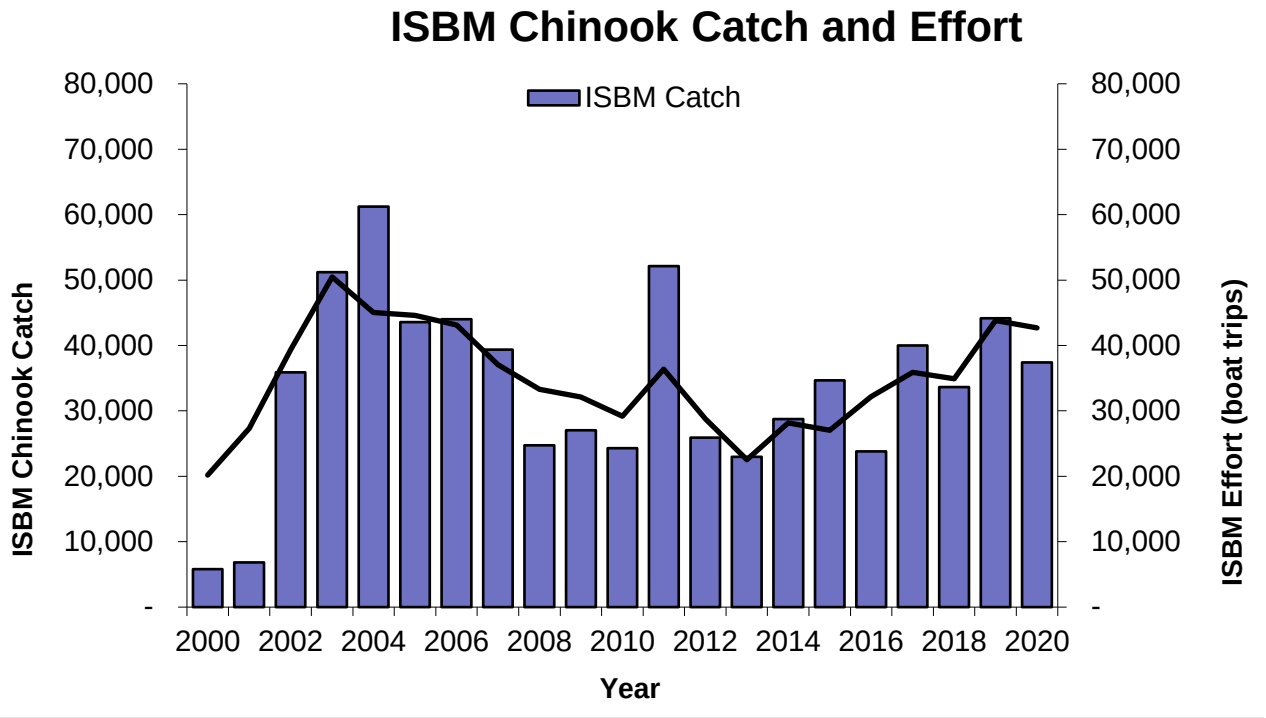

Figure 42. Recreational WCVI Chinook ISBM Catch and Effort, 2000 to 2020.

Inside Areas: Johnstone Strait, Strait of Georgia and Juan de Fuca Strait

The 2020 recreational fisheries in the Inside Areas Recreational fisheries in Johnstone Strait, Strait of Georgia, Juan de Fuca Strait, and the approach waters to the Fraser River were managed to Chinook non-retention between April 1 and varying dates between July 14 and August 31, with a maximum size limit of 80 cm in effect where Chinook retention was permitted before August 31 to minimize impacts on returning Fraser River Chinook stocks of concern. Salmon closures and Chinook non-retention areas were also implemented in portions of the Fraser River approach waters, Southern Gulf Islands and Juan de Fuca Strait to support the recovery of Southern Resident Killer Whales.

The following regulations were in place for the inside areas for 2020:

Queen Charlotte and Johnstone Straits (Subareas 12-1 to 12-13, 12-15 to 12-48):

- 00:01 hours January 1 to 23:59 hours March 31, two (2) Chinook per day;
- 00:01 hours April 1 to 23:59 hours July 14, Chinook non-retention;
- 00:01 hours July 15 to 23:59 hours August 16, one (1) Chinook per day with a maximum size limit of 80 cm;
- 00:01 hours August 17 to 23:59 hours August 31, one (1) Chinook per day;
- 00:01 hours September 1 to 23:59 hours December 31, two (2) Chinook per day.

Strait of Georgia - North - Areas 13 to 17, Area 28 and Subareas 29-1 and 29-2:

- 00:01 hours January 1 to 23:59 hours March 31, two (2) Chinook per day;
- 00:01 hours April 1 to 23:59 hours July 14, Chinook non-retention;
- 00:01 hours July 15 to 23:59 hours August 31, one (1) Chinook per day with a maximum size limit of 80 cm;
- 00:01 hours September 1 to 23:59 hours December 31, two (2) Chinook per day.

Queen Charlotte and Johnstone Straits (Subareas 12-1 to 12-13, 12-15 to 12-48):

- 00:01 hours January 1 to 23:59 hours March 31, two (2) Chinook per day;
- 00:01 hours April 1 to 23:59 hours July 14, Chinook non-retention;
- 00:01 hours July 15 to 23:59 hours August 16, one (1) Chinook per day with a maximum size limit of 80 cm;
- 00:01 hours August 17 to 23:59 hours August 31, one (1) Chinook per day;
- 00:01 hours September 1 to 23:59 hours December 31, two (2) Chinook per day.

Strait of Georgia - North - Areas 13 to 17, Area 28 and Subareas 29-1 and 29-2:

- 00:01 hours January 1 to 23:59 hours March 31, two (2) Chinook per day;
- 00:01 hours April 1 to 23:59 hours July 14, Chinook non-retention;
- 00:01 hours July 15 to 23:59 hours August 31, one (1) Chinook per day with a maximum size limit of 80 cm;
- 00:01 hours September 1 to 23:59 hours December 31, two (2) Chinook per day.

In 2020 pilot opportunities in near-shore and terminal areas were as follows:
Subareas 12-27, 12-28, 12-35, 12-38, 12-40, 12-43 and portions of Subareas 12-26 and 12-39; Portions of Subareas 13-19 and 13-21; Portions of Subareas 15-5 and 15-6:

- 00:01 hours July 1 to 23:59 hours July 14, one (1) Chinook per day. Unmarked Chinook maximum size limit of 80 cm.

Portions of Subarea 20-5:

- 00:01 hours July 1 to 23:59 hours July 31, one (1) Chinook per day, hatchery-marked only.

Portions of Subarea 20-6:

- 00:01 hours August 15 until 23:59 hours August 31, one (1) Chinook per day, with a maximum size limit of 80 cm on marked and unmarked Chinook.
- 00:01 hours September 1 until 23:59 hours October 15, two (2) Chinook per day, no maximum size limit.

In consideration of the increased management measures for Fraser Chinook implemented in the Strait of Georgia and other mixed-stock areas, the previous annual finfish closure near Cape Mudge on Quadra Island and the Chinook non-retention closures near Sentry Shoals, Harwood Island, Denman Island-Hornby Island and Kitty Coleman were no longer in effect as of the 2019 season and was continued in 2020. Reductions to the annual limit to 10 Chinook salmon per year first implemented in 2019 in BC tidal waters, including the inside areas listed above, were continued in 2020. Chinook management measures also include a minimum size limit of 62 cm in the Johnstone Strait/Queen Charlotte Strait and Strait of Georgia, and Areas South to Cadboro Point (Subarea 19-5). For the Canadian portion of Juan de Fuca Strait south of Cadboro Point, the minimum size limit is 45 cm.

Salmon fishing closures were also implemented from August 1 to October 31 in the following portions of the Southern Gulf Islands and Juan de Fuca to support Southern Resident Killer Whales (SRKW):

- Subareas 18-9 and portions of 18-2, 18-4 and 18-5.
- Subareas 20-3 and 20-4.
- Subareas 29-7, 29-9 and 29-10.
- Subarea 29-6 was closed to salmon fishing from June 1 to July 31 and was Chinook non-retention from August 1 to September 30.

In 2020, marine sport fisheries were monitored by creel surveys in three main areas: 1) Juan de Fuca including Victoria (south of Cadboro Point) and Juan de Fuca Strait through Subarea 20-1; 2) Portions of the Strait of Georgia including Areas 14 through 18, that portion of Area 19 north of Cadboro Point, Areas 28 and 29; and 3) Johnstone Strait including Areas 11 to 13. Creel survey monitoring of these fisheries includes using an

access point (landing site) survey for collecting catch, CPUE and biological information combined with an aerial survey for effort counts. In addition, logbook programs, directed at estimating the sport catch by fishing guides during guided trips, were conducted in the Campbell River and intermittently throughout other areas in the South Coast. The Avid Angler program and the Area 13 remote lodges around Stuart Island typically provide the majority of logbook program data. However, this was reduced due to lodge closures as a result of the COVID-19 pandemic. Electronic survey estimates from the iREC program will also be used to produce catch estimates for those areas where creel surveys did not take place.

The Johnstone Strait creel survey for Areas 11 and 12 was conducted from mid-June through August.

The Strait of Georgia creel survey for Areas 13 and 14 was conducted from mid-June to October, for Area 15 from mid-June to August, for Area 16 from mid-June to September, for Areas 17 and 18 from mid-June to September and for Areas 19 and the Strait of Georgia portion of Area 20 from June to October.

Effort, catch and release information from marine fisheries are summarized in Figure 4 2.

Region 1 Vancouver Island Tributaries

River conditions in most tributaries on Vancouver Island were improved in 2020 compared to previous years due to an adequate snowpack, cooler temperatures over the summer and more precipitation during portions of the summer months. All systems in Region 1 that are typically open remained open in 2020, with the exception of Regions 1-1 to 1-6 that are managed using seasonal closures between July 15 to August 31. Many Chinook systems on the east and west coasts of Vancouver Island saw strong Chinook returns in 2020; particularly those from enhanced systems. These returns provided early and productive opportunities for recreational freshwater fisheries. The Campbell River, Qualicum River, Little Qualicum River, Puntledge River, Nitinat River, Somass River and Conuma River all provided some recreational opportunities to harvest Chinook stocks during this time period.

Fraser River and Tributaries

Fraser River Chinook stocks required additional management measures in 2020 due to continued concerns about poor stock status.

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

- January 1 to December 31, fishing for salmon was closed in this area.

Tidal Fraser River:

In the tidal waters of the Fraser River the following regulations were in place for 2020:

- January 1 to November 1, fishing for salmon was not permitted.
- November 2 to December 31, fishing for salmon was permitted but Chinook Salmon could not be retained.
-

Non-Tidal Fraser River:

Region 2:

- January 1 to November 2, fishing for salmon was not permitted.
- November 3 to December 31, fishing for salmon was permitted but Chinook Salmon could not be retained.

Region 3: January 1 to December 31, fishing for salmon was not permitted on the Fraser River.

Region 5: January 1 to December 31, fishing for salmon was not permitted on the Fraser River.

Region 7: January 1 to December 31, fishing for salmon was not permitted on the Fraser River.

Fraser River Tributaries:

Fraser River Tributaries - Region 2

There were several tributaries to the Fraser River in which Chinook retention was permitted. These included:

- Alouette River: daily limit of one Chinook from September 1 to November 30;
- Chehalis River: daily limit of four Chinook with only one over 50 cm from August 7 until August 31 and a daily limit of four Chinook with only one over 62 cm from September 1 until December 31;
- Chilliwack/Vedder River: daily limit of one from July 1 until August 31, daily limit of four with two over 62 cm from September 1 to December 31; Coquitlam River: fishing for salmon was permitted but Chinook Salmon could not be retained from September 1 to December 31;
- Harrison River downstream of the Highway No. 7 Bridge, fishing for salmon was permitted but Chinook Salmon could not be retained from September 1 to December 31.

The Chilliwack/Vedder River recreational fishery was assessed from September 1 to November 15 in 2019. Catch estimates can be found in Table 42.

Fraser River Tributaries - Region 3

Thompson River: That portion of the Thompson River from the white triangular fishing boundary (WTFB) signs just downstream of Gold Pan Provincial Park to the easterly border of the Skihist Ecological reserve along the Thompson River located at 50°15'N, 121°31'W; this is approximately 5 km northeast of Lytton at Skihist Park.

- August 28 to September 22, daily limit of four Chinook, zero over 50 cm.

Kamloops Lake: In the waters of Kamloops lake upstream of the fishing boundary signs at the outlet of Kamloops Lake.

- August 28 to September 22, 2020 daily limit of four Chinook, only one over 50 cm.

South Thompson River: That portion of the South Thompson River from the green can buoy near outlet of Little River, including Little Shuswap Lake, to the fishing boundary sign approximately 100 m downstream of Campbell Creek.

- August 16 to September 22, daily limit of four Chinook, only two greater than 50 cm. There is a monthly quota of six Chinook over 50cm from the South Thompson River.

Fraser River Tributaries - Region 5

January 1 to December 31, fishing for salmon was not permitted in any portion of the Fraser watershed in Region 5.

Fraser River Tributaries - Region 7

January 1 to December 31, fishing for salmon was not permitted in any portion of the Fraser watershed in Region 7.

Fraser River Tributaries - Region 8

Note: there is a monthly limit of four Chinook in Region 8.

Mabel Lake: That portion of Mabel Lake that is both northerly of a line drawn from a white triangular fishing boundary sign situated at the northern edge of Mabel Lake Provincial Park to the prominent point of land on the western shore; and southerly of a line drawn between two white triangular fishing boundary signs located on opposite shores approximately 1 km from Wap Creek.

- August 16 to September 12, daily limit of four Chinook, only two over 50 cm.

Middle Shuswap River: No fishing for salmon.

Lower Shuswap River: That portion of the Lower Shuswap River upstream from white triangular fishing boundary signs upstream of the Mara Bridge to Mable Lake, except no fishing in those waters 50 metres upstream and downstream of the Trinity Valley Road Bridge.

- August 16 to September 12, daily limit of four Chinook, only two over 50 cm.

EXCESS SALMON TO SPAWNING REQUIREMENTS (ESSR) FISHERIES

The Tseshaht and Hupacasath First Nations were issued a joint Excess Salmon to Spawning Requirements (ESSR) Licence for Chinook and Coho at the Robertson Creek Hatchery facility.

The Ditidaht First Nation was issued an ESSR Licence for Chinook, Coho and Chum at Nitinat Lake and Nitinat hatchery.

The Mowachaht/Muchalaht First Nation was issued an ESSR licence to harvest Chinook, hatchery-marked Coho and Chum from the Conuma River and hatchery.

A Chinook Salmon ESSR fishery for the Qualicum First Nation took place at the Big Qualicum Hatchery early September 2020 to present, and at Little Qualicum Hatchery mid- to late-October, 2020.

The K’ómoks First Nation ESSR fishery on Fall Chinook Salmon took place in early November, 2020.

There were ESSR fisheries at the Capilano hatchery in 2020 that harvested Chinook Salmon.

There were ESSR fisheries at the Chilliwack hatchery in 2020 that harvested Chinook Salmon.

No Johnstone Strait ESSR opportunities on Chinook occurred in 2020.

There were no Interior BC ESSR opportunities on Chinook in 2020

There were no ESSR fisheries opportunities for either the Maa-nulth or the Tla’amin treaty nations.

All ESSR harvest information can be found in Table 42.

FRASER RIVER

SOCKEYE SALMON

OBJECTIVES AND OVERVIEW

In 2020 the Fraser River Panel (FRP) adopted the p50 probability run size forecast for all run timing groups (941,000 Fraser Sockeye) for pre-season planning purposes (note that there was an update to the forecast in June 2020 that reduced the run size to 924,000). There was no TAC available for international sharing until Early Summer run sizes reached the p75 or higher. The Early Stuart and Late runs did not have International TAC at any predicted run size. Pre-season plans took this into consideration; all fishery planning focused on

staying within constraints to minimize impacts on less abundant stock groups and species of concern. Actual in-season harvest opportunities were dependent on in-season stock assessments.

Fishing plans incorporate provisions to meet escapement and conservation objectives for stocks of concern while considering other international and domestic objectives. Fishing plans include the following assumptions and guiding principles in no particular order:

The Fraser River Panel (FRP) operated in accordance with Chapter 4, Annex IV of the PST;

- The U.S. share of the annual Fraser River Sockeye Salmon total allowable catch (TAC), harvested in the waters of Washington State, was set at 16.5% of the aggregate. To the extent practicable, the FRP shall manage the United States fishery to implement a fishing plan that concentrates harvest on the most abundant management group or groups;
- It is understood that the U.S. harvest may exceed 16.5% of the TAC for one or more of the less abundant management groups by a small but acceptable amount despite concentrating the harvest in this manner;
- For computing TAC by stock management groupings, the Aboriginal Fishery Exemption (AFE) of 400,000 Fraser River Sockeye, shall be allocated to management groups as follows: The Early Stuart Sockeye exemption shall be up to 20% (maximum 80,000) of the Fraser River AFE, and the remaining balance of the latter exemption shall be based on the average proportional distribution of First Nations Food, Social and Ceremonial catch for the most recent three cycles and modified annually as required to address concerns for Fraser River Sockeye stocks and other species, and as otherwise agreed to by the Fraser River Panel;
- It was anticipated that an in-season run size estimate for Cultus Lake Sockeye would not be possible due to low abundance relative to co-migrating Sockeye stocks. As a result the Cultus ER is assumed to be the same as the ER from the similarly timed Late run stocks (excluding the Birkenhead and Birkenhead-type miscellaneous stocks), caught seaward of the confluence of the Fraser and the Harrison Rivers;
- The four run timing aggregates identified under the PST Annex generally contain stocks with similar timing in the marine area;
- Canada's escapement plan specified escapement requirements that varied with run size for each of the run timing aggregates;
- The Total Allowable Mortality (TAM) cap describes the upper range of the total mortality (including management adjustments and ER). The TAM cap was reduced to 50% for all run timing/management groups in 2020;
- At low abundances, low abundance exploitation rates (LAERs) are implemented to protect 80-90% of the run timing aggregate (10-20% LAER) while allowing for fisheries on more abundant co-migrating run timing groups and/or other species. In 2020 Canada's escapement plan permitted up to a 10% LAER for all stock groups. If the overall return was greater than the p75 forecast a maximum 20% LAER for Late Run would be considered.
- The allowable harvest in a LAER situation is not a target; the objective is to allow as many fish as possible to pass to the spawning grounds. In most circumstances harvests under a LAER scenario would be considered incidental harvest or bycatch only; however, in some circumstances limited directed harvest in terminal areas may be considered. All fishery impacts are to be accounted for under the LAER;
- In 2020, the Early Stuart Sockeye window closure and other fishing restrictions were planned for commercial, recreational and First Nations fisheries to protect a significant proportion (90%) of the Early Stuart return. These measures included a 3-week rolling window closure based on the run timing of the Early Stuart Sockeye migration through the various fishing areas. The 2020 closure was extended by one week (4 weeks total) to protect the earliest of the Early Summer Sockeye that have conservation concerns (Bowron, Taseko); and
- Conservation concerns for other Sockeye stocks and species continued to impact the planning of Sockeye fisheries. The stocks and species of concern in 2020 included: Cultus Lake Sockeye,

Nimpkish River Sockeye, Sakinaw Lake Sockeye, IFR Coho, Southern BC Chinook including Fraser River Chinook and IFR Steelhead.

STOCK STATUS

Please Note: Tables 30 and 32 are adapted from or courtesy of the PSC.

PRE-SEASON ASSESSMENT

Pre-season expectations were for a median run size (p50 level) of 941,000 Fraser River Sockeye Salmon with a one-in-two chance that the run size would be between 488,000 (p25 level) and 1,558,000 (p75 level).

Table 29. 2020 pre-season run size abundance forecast range by management group for Fraser Sockeye

Run timing group	Probability that return will be at/or below specified run size				
	10%	**25%**	**50%**	**75%**	**90%**
Early Stuart	5,000	8,000	13,000	23,000	33,000
Early Summer	72,000	116,000	218,000	469,000	1,098,000
Summer	169,000	311,000	611,000	1,231,000	2,376,000
Late	28,000	53,000	99,000	190,000	374,000
Total	274,000	488,000	941,000	1,913,000	3,881,000

The pre-season diversion rate forecast for Fraser River Sockeye through Johnstone Strait was 35%. Expected Area 20 50% migration timing dates were July 4th for Early Stuart, July 24th for Early Summer, July 31st for Summer and August 6th for Late-run Sockeye.

As all management units were forecast to be very low, pre-season spawning escapement goals at the p50 run size were equal to the forecast; 13,000 Early Stuart, 218,000 Early Summer, 611,000 Summer and 99,000 Late-run Sockeye for a total of 941,000 Sockeye spawners (Table 30).

Table 30. Fraser Sockeye 2020 Pre-season (top) and Final In-season (bottom) Values for Total Allowable Catch (TAC) and Other Management Parameters.

Date		Management Group	Total Abundance	Spawning Escapement Target	TAM	pMA	Manage-ment Adjust.	Test Fishing	Aboriginal Fishery Exemption	Total Deductions	*Total Allowable Catch	**Allowable Catch	50% Migration Date Area 20	Diversion Rate To-date
June 24	Pre-season	Early Stuart	13,000	13,000	0.00	0.69	9,000	200	1,100	13,000	0	1,300	4-Jul	
		Early Summer	218,000	150,300	0.31	0.52	78,200	2,400	19,400	218,000	0	21,800	24-Jul	
		Summer	611,000	611,000	0.00	0.16	97,800	5,100	56,000	611,000	0	61,100	31-Jul	
		Late	99,000	99,000	0.00	0.41	40,600	600	9,300	99,000	0	9,900	6-Aug	
		Sockeye	**941,000**	**873,300**			**225,600**	**8,300**	**85,800**	**941,000**	**0**	**94,100**		**35%**
Septmeber 23	Post-season	Early Stuart	16,000	16,000	0.00	0.69	11,000	118	1,482	16,000	0	1,600	6-Jul	
		Early Summer	72,000	72,000	0.00	0.52	37,400	1,270	5,930	72,000	0	7,200	15-Jul	
		Summer	191,000	191,000	0.00	0.16	30,600	3,150	15,950	191,000	0	19,100	28-Jul	
		Late	14,000	14,000	0.00	0.41	5,700	125	1,275	14,000	0	1,400	2-Aug	
		Sockeye	**293,000**	**293,000**			**84,700**	**4,663**	**24,637**	**293,000**	**0**	**29,300**		**25%**

*The TAC is determined by the run sizes and TAC deucutions (spawning escapement targets, management adjustments, projected test fishing catches and AFE Exemptions) that were in effect when the Fraser River Panel control of the last U.S. fishery area was relinquished

**In a no TAC situation, the allowable harvest is the maximum harvest allowed under LAER management as identified in Canada's Escapement Plan. However the LAER is not a target and is usually by-catch in fisheries directed on the other stocks or species with some limited directed terminal harvest. All impacts from all fisheries count towards the LAER.

The goals for each Sockeye management group were established by applying Canada's Spawning Escapement Plan to the forecasted pre-season run size. For pre-season planning purposes, the harvest rule for

Early Stuart, Early Summer, Summer and Late Sockeye was constrained by a LAER limit of up to 10% at the p50 run size. If the overall in-season return of Fraser Sockeye reached the p75 level a Late Run LAER increase to 20% would be considered. Harvest rules were further constrained by a 50% TAM rate for all management groups (Table 31).

Table 31. Fraser River Sockeye Salmon 2020 Escapement Plan and Application of the Plan to each Management Group across a Range of Forecast Abundances

	Harvest Rule Parameters			
Management Unit	**Low Abundance ER (LAER)**	**TAM Cap**	**Lower Fishery Reference Point**	**Upper Fishery Reference Point**
Early Stuart	10%	50%	108,000	216,000
Early Summer (w/o misc)	10%	50%	100,000	200,000
Summer (w/o misc)	10%	50%	640,000	1,280,000
Late (w/o misc)	10-20%	50%	300,000	600,000

Management Unit		Pre-season Forecast Return				
		p10	p25	p50	p75	p90
Early Summer (w/o RNT)	*lower ref. pt. (w misc)*	112,800	125,300	**150,300**	188,400	252,400
	upper ref. pt. (w misc)	225,500	250,600	**300,600**	376,700	504,800
	forecast (incl. misc)	72,500	116,400	**217,900**	469,000	1,098,000
	TAM Rule (%)	0%	0%	**31%**	50%	50%
	Escapement Target	72,500	116,400	**150,300**	234,500	549,000
	MA	29,700	52,400	**78,200**	131,300	334,900
	Esc. Target + MA	102,200	168,800	**228,500**	365,800	883,900
	LAER	10%	10%	**10%**	10%	10%
	Available ER at Return	0%	0%	**0%**	22%	19%
	Allowable ER	10%	10%	**10%**	22%	19%
	Allowable Harvest	7,300	11,600	**21,800**	103,200	214,100
	2020 Performance					
	Projected S (after MA)	46,600	72,300	**130,200**	234,500	550,200
	BY Spawners	156,520	156,520	**156,520**	156,520	156,520
	Proj. S as % BY S	30%	46%	**83%**	150%	352%
	cycle avg S	155,761	155,761	**155,761**	155,761	155,761
	Proj. S as % cycle S	30%	46%	**84%**	151%	353%

Management Unit		Pre-season Forecast Return				
		p10	p25	p50	p75	p90
	lower ref. pt. (w misc)	108,000	108,000	**108,000**	108,000	108,000
	upper ref. pt. (w misc)	216,000	216,000	**216,000**	216,000	216,000
Early Stuart	forecast	5,000	8,000	13,000	23,000	33,000
	TAM Rule (%)	0%	0%	0%	0%	0%
	Escapement Target	5,000	8,000	**13,000**	23,000	33,000
	MA	3,500	5,500	**9,000**	15,900	22,800
	Esc. Target + MA	8,500	13,500	**22,000**	38,900	55,800
	LAER	10%	10%	**10%**	10%	10%
	Available ER at Return	0%	0%	**0%**	0%	0%
	Allowable ER	10%	10%	**10%**	10%	10%
	Allowable Harvest	500	800	**1,300**	2,300	3,300
	2020 Performance					
	Projected S (after MA)	2,700	4,200	**6,900**	12,200	17,500
	BY Spawners	8,612	8,612	**8,612**	8,612	8,612
	Proj. S as % BY S	31%	49%	**80%**	142%	203%
	cycle avg S	35,354	35,354	**35,354**	35,354	35,354
	Proj. S as % cycle S	8%	12%	**20%**	35%	49%

Management Unit		Pre-season Forecast Return				
		p10	p25	p50	p75	p90
Late (w/o Har)	*lower ref. pt. (w misc)*	349,600	398,000	**418,300**	413,200	400,700
	upper ref. pt. (w misc)	699,300	796,000	**836,600**	826,400	801,400
	forecast	28,180	52,800	**99,000**	189,800	374,000
	TAM Rule (%)	0%	0%	**0%**	0%	0%
	Escapement Target	28,180	52,800	**99,000**	189,800	374,000
	MA	12,700	22,700	**42,600**	81,600	160,800
	Esc. Target + MA	40,880	75,500	**141,600**	271,400	534,800
	LAER	10%	10%	**10%**	20%	20%
	Available ER at Return	0%	0%	**0%**	0%	0%
	Allowable ER	10%	10%	**10%**	20%	20%
	Allowable Harvest	2,818	5,280	**9,900**	37,960	74,800
	2020 Performance					
	Projected S (after MA)	17,600	33,200	**62,400**	105,800	208,300
	BY Spawners	45,091	45,091	**45,091**	45,091	45,091
	Proj. S as % BY S	39%	74%	**138%**	235%	462%
	cycle avg S	435,329	435,329	**435,329**	435,329	435,329
	Proj. S as % cycle S	4%	8%	**14%**	24%	48%
Allowable Harvest (TF, US, CDN)		27,557	48,810	**94,070**	266,560	1,253,100
Total projected spawners		202,700	356,500	**676,300**	1,299,900	1,973,100

Management Unit		Pre-season Forecast Return				
		p10	p25	p50	p75	p90
Summer (w. RNT & Har)	*lower ref. pt. (w misc)*	**804,200**	**881,600**	**967,400**	**1,080,700**	**1,199,200**
	upper ref. pt. (w misc)	**1,608,500**	**1,763,100**	**1,934,900**	**2,161,400**	**2,398,500**
	forecast	169,390	311,300	**610,700**	1,231,000	2,376,000
	TAM Rule (%)	0%	0%	**0%**	12%	50%
	Escapement Target	169,390	311,300	**610,700**	1,080,700	1,199,200
	MA	20,300	43,600	**91,600**	172,900	215,900
	Esc. Target + MA	189,690	354,900	**702,300**	1,253,600	1,415,100
	LAER	10%	10%	**10%**	10%	10%
	Available ER at Return	0%	0%	**0%**	0%	40%
	Allowable ER	10%	10%	**10%**	10%	40%
	Allowable Harvest	16,939	31,130	**61,070**	123,100	960,900
	2020 Performance					
	Projected S (after MA)	135,800	246,800	**476,800**	947,400	1,197,100
	BY Spawners	277,805	277,805	**277,805**	277,805	277,805
	Proj. S as % BY S	49%	89%	**172%**	341%	431%
	cycle avg S	653,758	653,758	**653,758**	653,758	653,758
	Proj. S as % cycle S	21%	38%	**73%**	145%	183%

Pre-season Management Adjustments (MAs) of 9,000 Early Stuart, 78,200 Early Summer, 97,700 Summer-run and 40,600 Late-run Sockeye were added to the spawning escapement targets to increase the likelihood of achieving the escapement targets. The application of a LAER for any management group indicates that spawning escapement targets are unlikely to be reached and therefore obviates the need for MAs. In 2020 this was the case pre-season for Early Stuart and Late Run Sockeye as it was apparent that for the entire range of pre-season run size forecasts LAER management was necessary. Early Summer Sockeye would be in a LAER scenario around run sizes less than p75, Summer Sockeye would be in a LAER at an abundance less than p90.

The pre-season MAs were derived from historical proportional differences between estimates (pDBEs) as follows: Early Stuart - all years median; Early Summer - weighted all years median (-0.36) for Early Summer excluding Pitt and Chilliwack (-0.15 for Pitt and -0.42 for Chilliwack); Summer - weighted all years median (-0.08) for Summers excluding Harrison and -0.28 for Harrison; Lates - weighted 2020 cycle year median for Lates excluding Birkenhead (-0.92) and -0.27 for Birkenhead using p50 forecast abundance.

There was no projected TAC of Fraser River Sockeye for international sharing based on the median forecasted abundances.

Pre-season model runs indicated that there would be no international TAC unless the Early Summer Sockeye returned at the p75 or greater or the Summer Sockeye returned at the p90 or greater. In Canada, at the p50 forecast, no TAC would be available for directed commercial, recreational or FSC fisheries. Expected timing indicated access to one stock group without incidentally impacting another would be difficult.

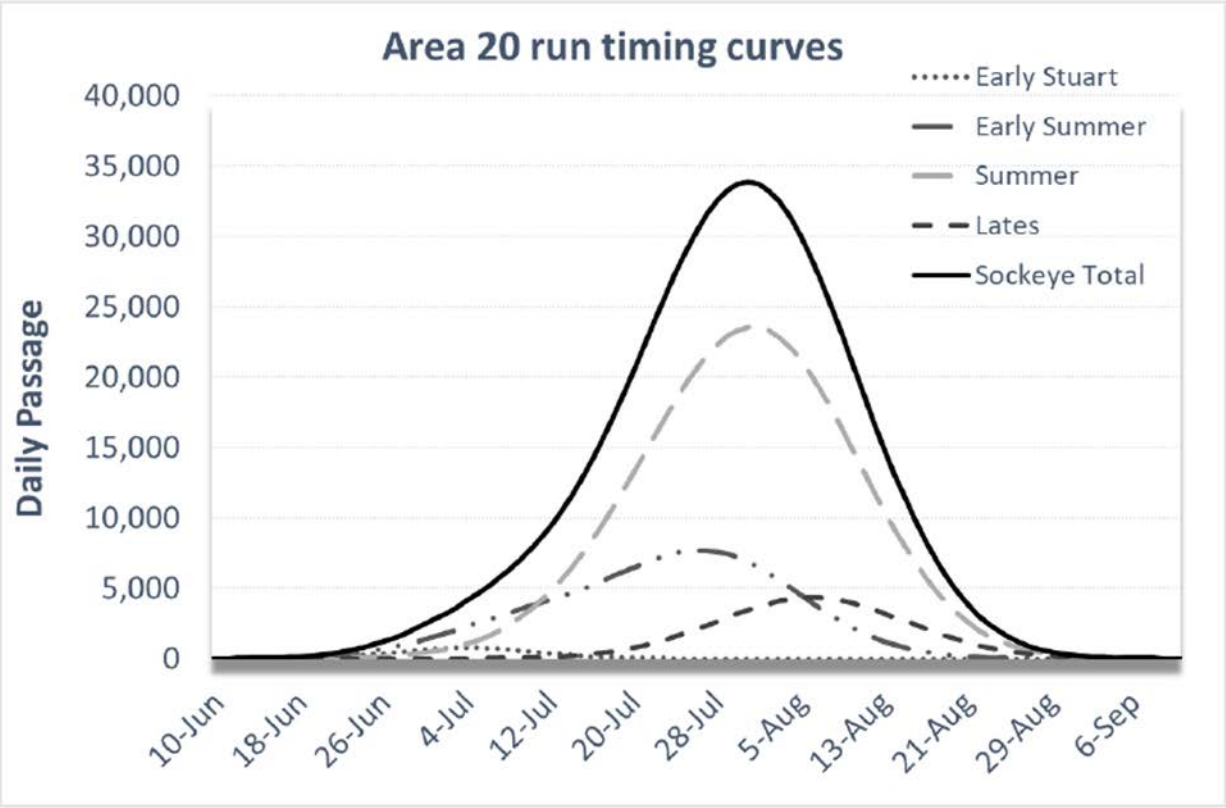

Figure 43. Pre-Season Projections of Daily Fraser River Sockeye Salmon Abundance by Management Group

IN-SEASON ASSESSMENT

Overall, the marine migration timing was earlier than pre-season expectations for all management groups with the exception of the Early Stuart run which was slightly later than anticipated: 2 days later for Early Stuart, 9 days earlier for Early Summer, 3 days earlier for Summer and 4 days earlier for Late-run Sockeye.

The Johnstone Strait post-season diversion rate was 25% compared to a pre-season adopted value of 35%.
Returns for all management groups were well below median pre-season forecast levels:

- The return of Early Stuarts was low, but near expected values: 16,000 or 23% higher than the pre-season 50% probability level (p50) forecast (13,000).
- The return of Early Summers was very low: 72,000 or 68% lower than the pre-season p50 forecast (218,000), i.e., at the p10 forecast overall (72,000).
- The return of Summers was very low: 191,000 or 69% lower than the pre-season p50 forecast of 611,000. i.e., slightly higher than the p10 forecast of 169,000.
- The return of Lates was also very low: 14,000 or 84% lower than the pre-season p50 forecast of 99,000. This was also notably lower than the p10 forecast (28,000).

A landslide in the Big Bar area on the Fraser River upstream of Lillooet was discovered on June 23, 2019, and is thought to have occurred sometime between October and November 2018. It created a 5-metre-high waterfall/cascade that posed a migration passage challenge to salmon migrating to rivers and streams upstream of the slide. The Big Bar landslide had notable impacts to Sockeye passage to the spawning grounds

in 2019, especially prior to August 28, 2019 when water flow was too high for natural Sockeye migration above the slide.

Over the winter in 2019/2020 substantial work was undertaken by a Unified Command Team consisting of representatives from First Nations, the Department of Fisheries and Oceans and the Province of British Columbia. This work improved passage at Big Bar but did not completely resolve the impacts to migrating salmon. Mitigation measures included the installation of a Whoosh Passage PortalTM, the construction of a nature-like fishway along the west bank of the river, construction of a road for truck transport of captured fish upstream of the slide site, and the implementation of emergency conservation enhancement programs for salmon populations most heavily affected by migration barriers (e.g., Early Stuarts). Estimates of survival past the slide site in 2020 are not yet available, though preliminary analysis has indicated it has likely improved from estimates of survival in 2019.

Post-season estimates of survival in 2019 indicated less than 1% survival for July and Early August Sockeye migrants (Early Stuart, some Early Summer), approximately 50% survival for late July to early September migrants (Early Summer, some Summer) and approximately 80% survival for mid-August through September migrants (mostly Summer). Current estimates of survival past Big Bar in 2020 are less than 5% survival for July and Early August Sockeye migrants (Early Stuart, some Early Summer), approximately 80-100% survival for late July to early September migrants (Early Summer, some Summer) and approximately 100% survival for mid-August through September migrants (mostly Summer). Some of the impact in 2020 can be attributed to the cumulative impact of Big Bar and Hells Gate which was also an area of passage difficulties due to the very high freshet conditions in June and July.

Due to uncertainty surrounding the mitigations efforts at the Big Bar landslide and the low in-season return estimates, the Department decided to: (i) delay and not licence Sockeye-directed fisheries as no in-season TAC was identified, and (ii) plan fisheries directed on other species in a way that allowed as many Sockeye to reach the spawning grounds as possible by minimizing bycatch impacts to levels well below the LAER limits identified in the escapement plan. Management Adjustments had no management implications in-season, but post-season, the Big Bar landslide will likely impact the Difference Between Estimates (DBEs) for Early Stuart, Early Summer and Summer runs.

Fraser River discharge was well above the mean discharge (1981-2010) throughout the watershed for most of the 2020 season. In July, salmon were observed being pushed downstream and holding at Mission, Qualark and within some smaller tributaries. Reduced migration speeds were observed especially early in the season and may have contributed to increased en-route migration mortality. For most of the season, the Fraser River daily water temperatures fluctuated a few degrees below the historical mean; in the middle of August this trend reversed, with daily temperatures fluctuating by a few degrees above the historical mean.

POST-SEASON ASSESSMENT

The post-season return of adult Fraser Sockeye of 292,000 was estimated to be ~69% below the pre-season median forecast and the lowest return on record (1893 to 2020) (Table 30). The run size was ~69% below the brood year run size (0.89M) and ~91% below the 2020 cycle line average of (3.1M).

Even though there were no licenced Sockeye-directed fisheries in 2020, there were fisheries licenced for other species where Fraser Sockeye were encountered, notably Chinook Salmon-directed fisheries (e.g., in Canada, FSC for Chinook). Fishery-induced mortality estimates were considered in fishery planning. There was no Fraser Sockeye TAC for international sharing, based on the calculation method set out in Annex IV, Chapter 4 of the PST.

The total Canadian Fraser Sockeye catch can be found in Table 40 as well as Appendices 1 and 2. The post-season ER is estimated to be 5.5%. See Table 32 for projected post-season ERs relative to allowable ERs.

Table 32. 2020 Post-Season Exploitation Rate Estimates for All Fraser Sockeye Catch by Management Group

Management Group	Early Stuart	Early Summer	Summer	Late	Total
Preliminary Exploitation Rate	0.9%	2.3%	7.4%	0.9%	5.5%
Allowable Exploitation Rate*	10.0%	10.0%	10.0%	10.0%	10.0%
LAER?*	Yes	Yes	Yes	Yes	Yes

*The Low Abundance Exploitation Rate (LAER) is not a target. Due to the very low returns, as well as challenges and uncertainties surrounding the Big Bar landslide in 2020, all efforts were made to minimize fisheries impacts to Fraser Sockeye.

DFO Near Final estimates of spawning escapement data from 2020 for Early Stuart, Early Summer, Summer and Late-run groups are provided in Table 33.

Table 33. Near Final 2020 Fraser Sockeye Salmon Escapement Summary by Management Unit.

Management Unit	Spawning Escapement	Spawning Success	% high precision
Early Stuart	30	100%[1]	0%
Early Summer	80,334	98.9%	77%
Summer	186,916	97.8%	95%
Late	6,563	65.5%	97%
Total	273,843		

[1] Assumed spawning success.

Ongoing post-season work continues on the following topics that were highlighted during the 2020 season:

1. Impacts of the Big Bar landslide: The effect of the Big Bar landslide on 2020 passage and escapement in the Fraser River is still being evaluated. Work to mitigate the effects of the Big Bar slide are ongoing, and potential implications for passage in 2021 or in the future are still uncertain and will require ongoing evaluation.
2. Low productivity: In recent years there has been declining productivity, climate change and the increased variability that accompanies it, as well as low Sockeye abundances (the three lowest on record occurred in 2016, 2019 and 2020). As part of adaptive management, DFO will be reviewing potential adjustments/improvements to current harvest control rules, alternative strategies that take into account changing conditions and key uncertainties, and what implications there may be for future advice. Initial work began in 2019 through the Fraser River Sockeye Spawning Initiative (FRSSI) and is anticipated to be ongoing in 2021. Forecast model methods may also be reviewed.
3. Estimation of species composition and passage at Mission hydroacoustic site: There are a variety of methods used to determine the number of Sockeye, Pink and Chinook salmon that pass by Mission. The Mission estimates are critical to in-season estimates of run size and migration timing. For example, Sockeye escapement estimates are typically based on total salmon past Mission minus Pink and Chinook. Later in the season when Pink proportions increase, an alternate method is used instead (i.e., Sockeye CPUE at Whonnock multiplied by the expansion line). Species proportions are also derived from hydroacoustic-based length data and the previous year's species-specific average lengths. These methods and others have been reviewed by the Fraser River Panel Technical Committee but remain a considerable source of uncertainty. If numbers of one species are inaccurately or imprecisely estimated it may affect in-season estimates and expectations of catch of the other species in all fisheries.
4. Species and stocks of concern: In 2017, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) determined that of the 24 Fraser Sockeye designatable units (DUs), 8 were endangered, 2 were threatened and 5 were of special concern. In 2020, one Recovery Potential

Assessment was completed, the first part of a second was completed and part two of the second is in progress and should be completed by the end of 2021.

The two completed Recovery Potential Assessments can be found here:

Cultus Lake Sockeye https://cat.fsl-bsf.scitech.gc.ca/record=b4087614~S1

Nine Designatable Units –Part 1 https://cat.fsl-bsf.scitech.gc.ca/record=b4087615~S1

FIRST NATIONS FSC AND TREATY DOMESTIC FISHERIES

Due to extremely low returns and uncertainty surrounding the impacts of the Big Bar rockslide, there were no licenced Sockeye-directed fisheries in 2020. There were fisheries in both marine and in-river areas directed at other species where Fraser Sockeye were encountered (notably Chinook Salmon-directed FSC fisheries). In these fisheries the retention of Sockeye was not authorized.

For catch estimates, see Table 40.

COMMERCIAL FISHERIES

There were no directed commercial fisheries on Fraser River Sockeye in Canada or the United States in 2020.

RECREATIONAL FISHERIES

TIDAL RECREATIONAL FISHERIES

In southern BC in all areas except Area 23 (Barkley Sound), the marine recreational fishery was not permitted to retain Sockeye Salmon in 2020. However, the creel survey reported a small number of Sockeye kept in areas closed to Sockeye retention.

The tidal waters of the Fraser River remained closed to fishing for Sockeye Salmon in 2020.

NON-TIDAL RECREATIONAL FISHERIES

The non-tidal waters of the Fraser River remained closed to fishing for Sockeye Salmon in 2020.
For catch estimates, see Table 40.

EXCESS SALMON-TO-SPAWNING REQUIREMENTS (ESSR) FISHERIES

There were no ESSR opportunities directed on Fraser River Sockeye in 2020.

PINK SALMON

OBJECTIVES AND OVERVIEW

Pink Salmon return to the Fraser River in significant numbers in odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020.

STOCK STATUS

Pink Salmon return to the Fraser River in significant numbers in odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020.

FIRST NATIONS DOMESTIC AND FSC FISHERIES

Pink Salmon return to the Fraser River in significant numbers on odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020, therefore there were no directed fisheries.

FIRST NATIONS COMMERCIAL HARVEST

Pink Salmon return to the Fraser River in significant numbers in odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020, therefore there were no directed fisheries.

COMMERCIAL FISHERIES

Pink Salmon return to the Fraser River in significant numbers on odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020, therefore there were no directed fisheries.

RECREATIONAL FISHERIES

TIDAL RECREATIONAL FISHERIES

Pink Salmon return to the Fraser River in significant numbers on odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020, therefore there were no directed fisheries.

NON-TIDAL RECREATIONAL FISHERIES

Pink Salmon return to the Fraser River in significant numbers on odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020, therefore there were no directed fisheries.

EXCESS SALMON-TO-SPAWNING REQUIREMENTS (ESSR) FISHERIES

Pink Salmon return to the Fraser River in significant numbers on odd years only; negligible numbers of Pink Salmon returned to the Fraser River in 2020, therefore there were no directed fisheries.

SOUTHERN BC COHO

OBJECTIVES AND OVERVIEW

Management of Southern BC Coho stocks is subject to Abundance Based Management provisions outlined in Chapter 5 of the Pacific Salmon Treaty, which defines allowable exploitation rates (ERs) for Canada and the US based on the status of Coho Management Units (MUs). There are three Canadian Coho MUs identified within the Southern Coho Management Plan section of Chapter 5. These are: Interior Fraser River Coho, Lower Fraser River Coho, and Strait of Georgia Coho.

Given the limited stock assessment data available for Strait of Georgia and Lower Fraser River Coho MUs, Canada's management approach is currently driven by the status of the Interior Fraser River (IFR) Coho MU. IFR Coho status determination is based on an integration of marine survival rates and spawner abundance. Under this approach, bilateral ER caps are set at 20%, 30% and 45% for Low, Moderate and Abundant status. The Canadian ER caps are 10%, 12%, and 15% for those same status levels. Canada is required to confirm the status of Interior Fraser River Coho MU to the US in March of each year.

IFR Coho have been in a low productivity regime since the mid 1990's and were assessed to be within the Low status level in 2020, which limits the Canadian ER on IFR Coho to 10%. However, given the ongoing low productivity of this MU, Canada has opted to manage domestic fisheries to achieve an exploitation rate cap of 3%-5% for this Management Unit in recent years.

While Chapter 5 includes three Canadian Management Units under the provisions of the PST, domestically, Southern BC Coho management includes two additional MUs: Johnstone Strait and West Coast Vancouver Island (WCVI). For completeness in reporting and understanding of Canadian Coho fisheries management and stock status, details for these additional MUs are contained within this report.

STOCK STATUS

STOCK STATUS - INTERIOR FRASER RIVER

The 2020 escapement estimate for Interior Fraser River Coho was 74,662.

STOCK STATUS – LOWER FRASER RIVER

Currently there is no whole system escapement estimate available for Lower Fraser River Coho. A pilot mark-recapture program was initiated in 2020 to provide an escapement estimate for this system, funded in part by PST. If successful, this program will provide annual escapement estimates for LFR Coho in the near future, although published estimates are not expected in this pilot year. Further details of the LFR Coho escapement program can be obtained through the PST Coho Technical Committee.

A hatchery Coho indicator stock at Inch Creek hatchery provides estimated rates of survival and minimum estimates of exploitation on marked LFR Coho. Catch monitoring and escapement work in support of the Inch Creek indicator program produces data for survival information. Survival estimates for coded-wire-tag marked LFR Coho from the 2017 brood year for fish that return in 2020 are yet not available but will be provided in the final report.

STOCK STATUS - STRAIT OF GEORGIA

Coho Salmon production within the Strait of Georgia has declined dramatically since the early 1990s. Marine survivals have been fluctuating in the 1 to 4% range. 2020 escapement estimates were average to above average while forecasts based on recent returns and ocean conditions throughout the Strait of Georgia were conservative in some systems.

Hatchery stocks

Coho returns to most hatcheries north of Nanaimo were above average in 2020. Escapement to the Puntledge River was above the 12-year average at 7,804. The Big Qualicum River experienced a strong return with 24,742 fish compared to the 12-year average of 10,340. Swim surveys of the Little Qualicum River indicated abundance for this system was modest at 2,969 fish compared to the recent 4 year average of 4,750. Nanaimo River returns out-paced the 4-year average of 6,430 at 8,887 following an AUC expansion.

Wild stocks

Area Under the Curve (AUC) expanded counts on the Englishman River have averaged 4,705 in the last 4 years. The 2020 peak count was 1,750 adults which expanded to a below average return of 2,918. Returns to the Colquitz River (near Victoria) were low with 176 adults compared to the 4-year average of 500 fish. Returns to Craigflower Creek (249) and Shawnigan Creek (746) were approximately half of the long-term average.

New Coho escapement and survival indicators are currently under development in several systems with PST funding. A camera and PIT tag system operated at the Sakinaw Lake fence for the first time in 2019 producing a count of 570 adults and 270 jacks. 2020 returns were lower with 143 jacks and 184 adults returning to the lake. 17 jacks were also carrying PIT tags from a deployment of 1,100 tags in spring 2020.

A camera was also operated in the Skutz Falls fishway at Cowichan River for the first time in 2019 producing a count of 8,271 adult Coho. A PIT tag program was used to expand the count to a population estimate of 16,534 fish. 2020 Skutz Falls counts were 6,371 adults and 664 jacks while 249 PIT tagged adults returned across the lower river array. The smolt to adult return rate for fish tagged in the lower river in spring 2019 was 6.1% while tag detections at Skutz Falls produced an escapement estimate of 17,699 adults; 1,165 more than in 2019.

Black Creek is the primary wild stock indicator in the Strait of Georgia. So far environmental conditions have been favourable for enumeration activities in fall 2020 without the fence being over-topped by high flows. The return of 1,991 adults was an improvement over the 976 estimated in 2019. Jack abundance was moderate at 1,7431 compared to 2,909 last season. The parental brood year (2017) estimate was 1,333 adults.

The smolt production contributing to 2020 return was 46,469. This was below the 24-year average smolt production of 51,109 smolts.

STOCK STATUS - WEST COAST VANCOUVER ISLAND

Until recently, spawning abundances for wild WCVI Coho populations have been near historic levels. However, it appears that productivity of wild WCVI Coho has likely fallen from historic highs given observed decreases in spawning abundances despite reductions in harvest of these stocks. In addition, there have been decreases in hatchery production. Expected declines in marine survival of Robertson Creek Hatchery (RCH) (42% projected decrease from 2019) and Carnation Creek wild Coho (23% projected decrease from 2019) indicators led to a low 2020 pre-season expectation for WCVI Coho stocks. With a low categorical return, marine survival is forecasted in the second quartile (25-50%) of survival data from brood years 1996-2016 for RCH and Carnation Creek Coho. 2020 escapement is below recent-year averages in most WCVI systems, with higher than recent-year average returns in a few Area 24 and 25 systems.

Management measures in place for WCVI Coho provided opportunities for recreational harvest in WCVI areas where IFR Coho are not considered to be impacted. No commercial harvests of WCVI Coho are permitted with the exception of the Five Nations communal sale fishery. In times and areas where IFR Coho are known to be prevalent, non-retention of unmarked Coho remained in effect.

STOCK STATUS - JOHNSTONE STRAIT AND MAINLAND INLETS

The Keogh River plays an important role as the wild Coho indicator stock for the upper Johnstone Strait area. Historically, the Keogh River adult Coho Salmon return has averaged 2,586 (range: 230 to 9,465), while the juvenile abundance has averaged 62,213 (range 26,940 to 110,565). Following a peak in adult abundance in 2014 (9,465), annual escapement decreased to reach its lowest level in 2016 (230). Returns have increased each year, and the final estimate of adult Keogh River Coho Salmon in 2020 was 3030 fish. The 2021 enumeration program is ongoing and estimates will be provided as they become available, but early indications suggest similar abundance to 2020. The number of migrant Coho smolts in 2021 (129,400), is the highest smolt count since the project started in 1977, suggesting continuation of high freshwater productivity that first began in 2011. Coho tend to be extremely productive at low abundance, and individual productivity has increased dramatically in recent years, peaking with the 2016 brood year at 270 smolts per spawner (average 38 smolts per spawner, brood years 1998 to 2015). Expectations for escapement in 2021 will likely approach the average, which would signal continued improvement over recent years of low abundance.

Quinsam River Hatchery is the Coho marine survival indicator for Area 13. In 2020, the Quinsam Coho return of 8,355 adults is well above the 4-year average (4,998) and also exceeds the 12-year average of 7,540. The 2020 return is more than double the 2017 parental return of 3,650; in 2019 a substantially higher than normal

jack return (~8,100) was also observed from the 2017 brood. In 2020, 4,366 jacks are estimated to have returned to the Quinsam.

In 2020, Village Bay Creek on Quadra Island continued with video monitoring of returning Coho. A total of 468 adults were counted through the fence; more than triple the 2017 adult escapement. The 2020 return was higher than expected, and exceeds the 4-year average and similar to the 12-year escapement average. This magnitude of improvement is similar to 2019, demonstrating an improving trend in this population.

Heydon Bay Creek in Loughborough Inlet is in the process of being developed into a mainland inlet Coho indicator system. A total of 232 Coho (142 adults and 90 jacks) were counted through the fence in 2020, which is an improvement over 2019 (88 adults and 50 jacks) but still well below the historical average (as determined during the period the fence was in operation prior to 2013).

Extensive escapement reports for Coho in many systems are indicating large variation in escapements for 2020. As anticipated, Coho marine survivals continue to be low with some improvement evident in the consistently monitored populations. Similar conditions are expected through 2021; consequently, a continued trend of low escapement is anticipated next year.

FIRST NATIONS DOMESTIC AND FSC FISHERIES

WCVI FSC and Treaty Fisheries

First Nations Coho catch reports are preliminary at this time. Estimates based on catch reports from Maa-nulth Treaty harvest and WCVI Nuu-chah-nulth FSC harvest can be found in Table 39.
Lower Fraser FSC Fisheries

There were no Coho-directed fisheries in the Lower Fraser in 2020. Both hatchery-marked and wild Coho were authorized to be retained in FSC fisheries before and after the Interior Fraser Coho window closure. During the window closure, harvest was limited to hatchery-marked Coho. The total hatchery-marked and wild Coho harvested and released during Chinook, Pink and Chum FSC fisheries can be found in Table 40.

Interior Fraser FSC Fisheries

Most FSC fisheries in the area target Sockeye, Chinook or Pink salmon. In 2020, First Nations harvesters were requested to release unharmed any incidentally caught Coho.

Directed opportunities on Coho are permitted in terminal areas subject to abundance. In 2020, small fisheries occurred at Dunn Creek, Bonaparte River and McKinley Creek fish enumeration fences. Dunn Creek is a tributary to the North Thompson River. The Bonaparte River is a tributary to the Thompson River and McKinley Creek is a tributary to the Horsefly River in the Quesnel watershed. The total Coho catch (either directed or bycatch) in First Nations fisheries can be found in Table 40.

Strait of Georgia FSC Fisheries and Treaty Domestic Fisheries

Coho Salmon FSC fisheries of very limited effort occurred in the Strait of Georgia from late July to early October using primarily hook and line in 2020. Coho Salmon were harvested terminally in the Puntledge and Qualicum Rivers using hatchery brailing and hand-picking/sorting methods. Estimates based on catch reports from Tla'amin Treaty harvest and non-treaty First Nations harvest can be found in Table 39.

Johnstone Strait FSC Fisheries

Small numbers of Coho Salmon were harvested in Johnstone Strait by hook and line and gill net between July and late September. Estimates for the Johnstone Strait are found in Table 39.

FIRST NATIONS COMMERCIAL HARVEST

WCVI Economic Opportunity Fisheries

In 2020, Economic Opportunity agreements were in place with Hupacasath and Tseshaht First Nations during the Coho season; however, abundance did not permit a targeted opportunity.

Five Nations Communal Sale Fishery

In 2020, communal sale fishery opportunities for the Five Nations (five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht and Tla-o-qui-aht) included southern BC Coho. These opportunities are categorized as: offshore integrated hook-and-line communal sale fisheries; nearshore integrated hook-and-line communal sale fisheries; or terminal communal sale fisheries. The TAC for the offshore fishery was 2,000 Coho (hatchery-marked only until September 15, after which both hatchery-marked and unmarked Coho were permitted to be retained for sale). Additionally, hatchery-marked and unmarked Coho were permitted for sale in the Nearshore hook and line fishery targeting Conuma Chinook and the terminal fishery targeting Burman and Gold River Chinook. Hatchery-marked Coho were also permitted to be retained for sale in the Surplus to Escapement fishery for Conuma Chinook. The directed Coho Five Nations communal sale fishery in Area 25 was open between September 26 and October 16 with a TAC of 2,000 including both hatchery-marked and unmarked Coho. This fishery had no participation in 2020. Total Coho catch in these fisheries can be found in Table 39.

Lower Fraser First Nations Commercial Fisheries

There were no directed Coho fisheries authorized in the Lower Fraser in 2020.

Interior Fraser First Nations Commercial Fisheries

There were no EO or demonstration fisheries in the BC Interior (Fraser River above Sawmill Creek) targeting Coho in 2020.

COMMERCIAL FISHERIES

Southern BC commercial fisheries are regulated so that impacts on Coho, in particular Interior Fraser River Coho stocks, are minimized. Retention of Coho bycatch was not permitted in most of these fisheries, including the Fraser River. Some limited opportunities for Coho retention occurred in terminal fisheries targeting Chinook and Sockeye in areas where IFR Coho were not present.

WCVI Offshore Area Commercial Coho Fisheries

Coho retention was not permitted in the 2020 Area G WCVI AABM Chinook troll fishery.

WCVI Terminal Area Commercial Coho Fisheries

In 2020, Chinook-targeted commercial gill net and seine fisheries occurred in Area 23 (Alberni Inlet). Retention of Coho was not permitted.

A Chinook targeted fishery in Area 25 (Tlupana Inlet) and Chum targeted fisheries in Area 25 and 26 also occurred. Coho retention was not permitted in these fisheries in 2020. The total WCVI Coho bycatch in commercial terminal fisheries can be found in Table 39.

RECREATIONAL FISHERIES

TIDAL RECREATIONAL FISHERIES

Tidal recreational fisheries can be categorized as occurring in either mixed-stock areas, where multiple stocks are found concurrently in the same fishing area, or in terminal areas where local stocks dominate the catch. Areas where mixed stocks occur typically have more restrictive management measures in place that are designed to protect Interior Fraser River Coho stocks. In terminal areas, opportunities may be permitted based on expectations of wild abundance and production from local Coho enhancement programs. The table below outlines the areas in Southern BC and the general Coho regulations pertaining to them.

Table 34. Southern BC Coho Fishery Regulations in 2020

Mixed stock fishing area	Daily limit (marked or unmarked)	Minimum size limit (cm)	Coho Season
Johnstone Strait	2, 1 may be unmarked	30	June 1 – July 31
Johnstone Strait	2 marked	30	Aug – Dec 31
Strait of Georgia - north	2 marked	30	June 1 – Dec 31
Strait of Georgia - south	2 marked	30	June 1 – Dec 31
Strait of Georgia (19)	2, 1 may be unmarked	30	Oct 1 – Dec 31
Juan de Fuca Strait	2 marked	30	June 1 – Dec 31
Juan de Fuca Strait (20-5 to 20-7)	4, 1 may be unmarked	30	Oct 1 – Dec 31
WCVI – Inshore	2, 1 may be unmarked	30	June 1 – Dec 31
WCVI- Offshore	2 marked	30	June 1 – Dec 31

*for in-season management measures in specific areas refer to the information provided in the Fishery Notices
**some terminal portions of Areas 23 and 25 had higher daily limits of hatchery Coho (4) from August 1 – Dec 31 (portions of Area 23) and from July 15 – Dec 31 (portions of Area 25).

Catch and release information for Coho from these fisheries can be found in Table 39.

WCVI – Inshore Recreational Fisheries

In 2020, hatchery-marked Coho retention was reduced to 2 per day (with unmarked retention remaining 1 per day) in Areas 23 to 27. Some terminal areas in portions of Area 23 (23-1 to 23-3) and 25 (25-4 to 25-5) had daily limits of 4 per day, with unmarked retention remaining at 1 to target hatchery stocks.

Fraser River – Tidal Water Recreational Fisheries

In the tidal waters of the Fraser River downstream of the Canadian Pacific Railway (CPR) Bridge at Mission, BC, from November 2 to December 31 the retention of two hatchery-marked Coho per day was permitted.

This recreational fishery was assessed from November 2 to November 30, 2020. Catch estimates can be found in Table 40.

NON-TIDAL RECREATIONAL FISHERIES

Vancouver Island Tributary Recreational Fisheries

Fresh water conditions continued to remain favourable in 2020 compared to past years and no additional restrictions were in effect on Vancouver Island due to drought-like conditions.

Northern Vancouver Island Tributary Recreational Fisheries

Typical non-tidal openings for Coho were available on:

- Campbell/Quinsam River from October 1 to December 31 for four per day, two of which could be marked over 35 cm;
- Cayeghle River (including the Colonial River) from April 1 to March 31 for one per day;
- Cluxewe River from April 1 to March 31 for two per day, hatchery-marked only;
- Kokisilah River from April 1 to March 31 for one per day, maximum size limit of 35 cm;
- Nahwitti River from April 1 to March 31 for one per day; and
- Quatse River from June 15 to March 31 for two per day, hatchery-marked only.

Anglers were restricted to the use of barbless hooks. Catch is not estimated in these freshwater fisheries.

Strait of Georgia Tributary Recreational Fisheries

In 2020 Coho openings were provided on:

- Cowichan River from November 1 to December 31 for one Coho per day, minimum size limit of 25 cm;
- Nanaimo River from November 1 to December 31 for 2 hatchery-marked only Coho per day, minimum size limit of 25 cm;
- Puntledge River from October 1 to November 30 for 1 hatchery-marked only Coho per day, minimum size limit of 25 cm; and
- Chemainus River from October 15 to March 31 for one per day, maximum size limit of 35 cm.

Catch is not estimated in these freshwater fisheries.

WCVI Tributary Recreational Fisheries

Typical non-tidal openings for Coho were available on:

- Somass/Stamp River from August 25 to December 31 the daily limit was two, hatchery-marked or unmarked. A single, barbless hook restriction is in effect all year and there was a bait restriction in the Upper Somass and Stamp rivers from May 1 to October 31.
- Nitinat River from October 15 to December 31 the daily limit for Coho was two, hatchery-marked or unmarked. A two-week closure occurred between October 1 and October 14 to protect Chinook Salmon during their peak spawning period. The area above Parker Creek is closed to fishing. A single barbless hook restriction and bait restriction is in effect all year.
- Conuma River from August 25 to December 31with a daily limit of two Coho, hatchery-marked or unmarked.
- Washlawlis River and Waukwass River and other west coast rivers are open year-round with a daily limit of one Coho, hatchery-marked or unmarked. Barbless hooks are required. No creel survey information is collected. Other rivers receiving some directed catch and release effort for Coho stocks are the Wakeman, Artlish, Zeballos, Tahsis, Burman, Ash, Taylor, Pacheena, Toquart and Leiner. The quota for all west coast streams, unless identified above, is zero (0).

Catch is not estimated in these freshwater fisheries.

Fraser River and Tributaries – Non-tidal Recreational Fisheries

Region 2: The retention of two hatchery-marked Coho per day was permitted once the majority of the Interior Fraser wild Coho population was through the area and following the Steelhead window closure in the following area:

- From the CPR Bridge at Mission, BC upstream to the Highway #1 Bridge at Hope - November 3 to December 31.

In 2020, this Fraser River recreational fishery in Region 2 was assessed from November 3 to November 30. Catch estimates can be found in Table 40.

There are no directed Coho openings in the Fraser River or tributaries upstream of the Highway #1 Bridge at Hope, BC. This includes all of Regions 3, 5, 7 and 8.

The following tributaries to the Fraser River in Region 2 were open during the dates stated below:

- Alouette River and De Boville Slough from October 1 to December 31 for one hatchery-marked Coho per day.
- Coquitlam River from September 1 to December 31 for one hatchery-marked Coho per day.
- Kanaka Creek from November 1 to November 30 for one hatchery-marked Coho per day.
- Chilliwack River/Vedder for four hatchery-marked Coho per day from September 1 to December 31.
- Chehalis River from September 1 to December 31 for four hatchery-marked Coho per day.
- Harrison River for four hatchery-marked Coho per day from September 1 to December 31.
- Nicomen Slough, Norrish Creek and the Stave River for four hatchery-marked Coho per day from September 1 to December 31, with only two over 35 cm.

In 2020, the Chilliwack/Vedder recreational fishery was assessed from September 15 to November 30 and the Nicomen/Norrish fishery was assessed from October 1 to December 15. Catch estimates can be found in Table 40. No assessments were conducted on the recreational fisheries occurring on the remaining rivers listed above.

During 2019, there were limited non-tidal openings for hatchery-marked Coho on the following systems which enter Boundary Bay:

- Little Campbell River, Nicomekl River and the Serpentine River one hatchery-marked Coho per day from September 1 to December 31.
- These recreational fisheries were not assessed in 2020.

EXCESS SALMON-TO-SPAWNING REQUIREMENTS (ESSR) FISHERIES

WCVI ESSR Fisheries

The Somass First Nations were issued an ESSR licence at the Robertson Creek Hatchery in 2020 that included Coho and Chinook salmon.

The Ditidaht First Nation was issued an ESSR Licence for Chinook, Coho and Chum at Nitinat Lake and Nitinat hatchery.

All ESSR harvest information can be found in Table 42.

Lower Fraser ESSR Fisheries

In 2020, there were ESSR fisheries at the Capilano, Chilliwack and Inch Creek hatcheries; harvest of Coho Salmon was permitted. All ESSR harvest information can be found in Table 42.

Strait of Georgia ESSR Fisheries

A Coho Salmon ESSR fishery for Qualicum First Nation took place at Big Qualicum Hatchery from late September to Mid-October.

An ESSR fishery for the Snuneymuxw First Nation for Chum Salmon and hatchery-marked Coho Salmon took place in Early November.

All ESSR harvest information can be found in Table 42.

Johnstone Strait ESSR Fisheries

For 2020, there were no ESSR opportunities on Coho in Johnstone Strait.

SOUTHERN BC CHUM

JOHNSTONE STRAIT CHUM SALMON

OBJECTIVES AND OVERVIEW

The Johnstone Strait Chum Salmon fishery targets Southern BC Chum that spawn primarily in the Fraser River and in tributaries of Johnstone Strait and the Strait of Georgia. This fishery also intercepts a small proportion of Puget Sound Chum. Since 2002, the Johnstone Strait Chum fishery has been managed using a 20% fixed ER strategy. This approach has provided predictable harvest opportunities for the commercial sector and has increased the probability of meeting escapement goals across the many populations contributing to this fishery. Of the 20% ER, 15% is allocated to commercial fisheries and the remaining 5% is set aside for test fisheries, First Nations FSC, sport harvesters and to also provide a buffer to commercial exploitation. Since the implementation of this management strategy, annual fisheries have been planned well in advance of the Chum return.

On July 11th 2019, the Government of Canada and the Province of British Columbia announced a joint Steelhead Action Plan identifying new conservation measures for Thompson and Chilcotin Steelhead Trout (two population components of the Interior Fraser River (IFR) Steelhead aggregate). Based on our current understanding, there is considerable overlap in the timing and location of the return migration of IFR Steelhead and several South Coast salmon fisheries. The timing of this stock of concern is particularly overlapped with that of Fraser River Chum. Given the potential for salmon fisheries to incidentally harvest co-migrating IFR Steelhead, the Department of Fisheries and Oceans implemented a series of window closures for fisheries occurring in times and areas that overlap with the IFR Steelhead migration, in both marine and freshwater fishing areas.

The announcement of these closures precipitated significant changes to the 20% fixed ER strategy for the Johnstone Strait Chum fishery. In 2020, the pre-season commercial fishing plan was modified to maintain opportunity in Johnstone Strait, while ensuring that fishing did not occur within the outlined IFR Steelhead closure times and areas. With the window closures reducing access to the earlier timed components of the Inside Southern Chum (ISC) run, fisheries were planned at a reduced ER (below the typical 20% ER).

As outlined in Chapter 6 of the PST, commercial Chum fisheries in Johnstone Strait are suspended when an abundance estimate of less than 1 million Chum Salmon migrating through Johnstone Strait is expected. As numbers exceeded 1 million Chum in 2020, all fisheries proceeded as scheduled.

This year, the Area B (seine) and Area D (gill net) were competitive (derby style) fisheries, and the Area H (troll) fleet was managed using an effort-based individual transferable effort (ITE) demonstration fishery.

STOCK STATUS

Johnstone Strait In-season Assessment

In 2020, the main components of the Inside Southern Chum (ISC) return assessed by the Johnstone Strait test fishery were expected to be both Fraser and non-Fraser stocks. These stocks are typically dominated by four-year-old fish, and the abundance of the 2016 brood return that out-migrated in 2017 was well above average. Other salmon species that out-migrated in 2017 had encountered poor survival conditions (i.e., local Pink and Coho returns in 2018 were poor). The pre-season expectation for ISC was therefore for below to near target returns to the area. Based on the very strong 2016 brood year, it was expected that the age 41 component would contribute more than average to the 2020 Chum return.

The Johnstone Strait test fishery, which ran from September 21st through October 28th, provided timing and abundance information for the 2020 return, which is important in assessing the performance of the 20% fixed ER strategy. It also provided an index of abundance, used to determine the likelihood of the number of returning Chum being over the 1.0 million critical level (requirement for commercial openings). From the onset of the program, the Chum CPUE in the test fishery was tracking much lower than the 2016 brood year but better than the low returns encountered in 2010 and 2019. On October 7th it was determined that the ISC index of abundance was likely above the 1.0 million critical level (Figure 44) and any planned Johnstone Strait commercial mixed stock fisheries would continue as planned with a focus on the later portion of October due to Steelhead conservation measures. The Chum CPUE from the test fishery continued to track above the 2010 and 2019 return years but well below the 2016 brood indicating a continued trend of reduced productivity since 2016 (Figure 44). The age composition derived from the test fishery samples exhibited a much higher than average contribution of 4-year-olds throughout the season with extremely low contribution of 5-year-olds from the 2015 brood.

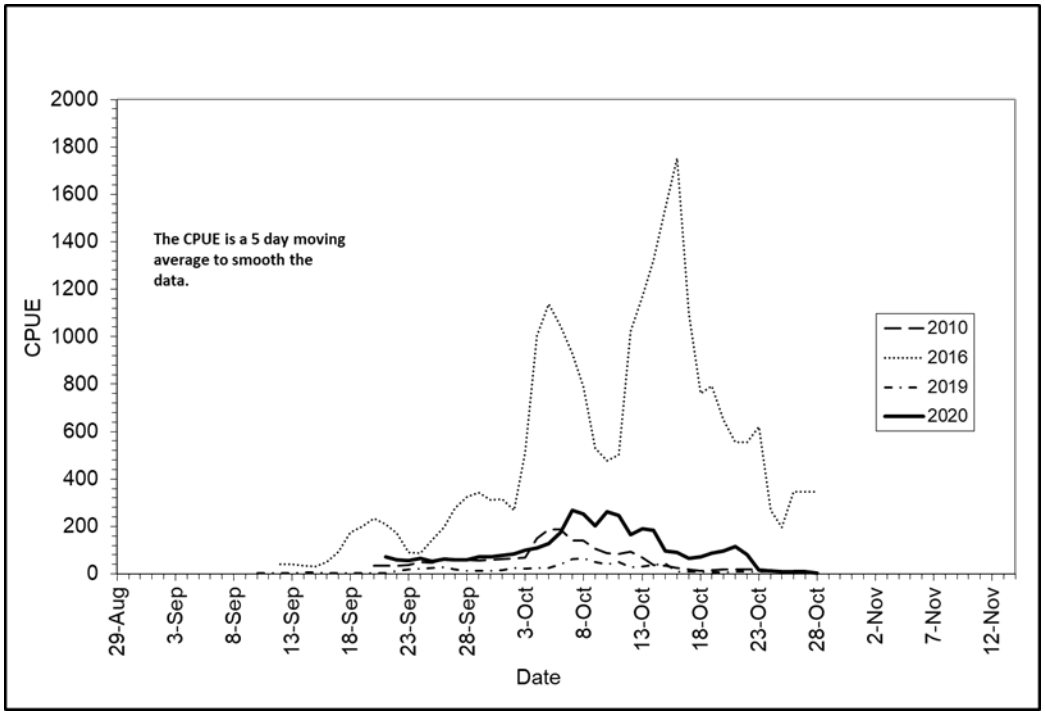

Figure 44. 2020 Johnstone Strait Chum Test Fishery CPUE compared to 2016 (dominant brood year), 2010 and 2019(two of the lowest returns in recent years).

Terminal returns

Although escapement monitoring is limited, Summer Chum returns tended to be well below average.

Escapements to ISC aggregate populations (Johnstone Strait, Strait of Georgia and Fraser combined) were below average and many populations were below their respective escapement goals throughout the ISC area. Stocks in the Southern portion of Vancouver Island and the Fraser performed much better than to the north on Vancouver Island and over on the mainland portions of the Strait of Georgia. Nanaimo River Chum achieved escapement goal and terminal fisheries were initiated. Cowichan was near target in 2020 and Goldstream Chum less than 1,900 fish over the target following AUC expansions.

FIRST NATIONS DOMESTIC AND FSC FISHERIES

Johnstone Strait's First Nations fisheries for Chum Salmon were not subject to IFR Steelhead restrictions in 2020. Chum Salmon harvests took place using hook and line, gill nets and seine nets in Johnstone Strait in mid-September, with most of the effort throughout October. The total Chum Salmon catch in the Johnstone Strait FSC fishery can be found in Table 39.

FIRST NATIONS COMMERCIAL HARVEST

There was no First Nations commercial harvest of Johnstone Strait Chum in 2020.

COMMERCIAL FISHERIES

Commercial Chum fisheries in 2020 were planned as per the PST, however a modified approach was taken to maintain opportunity in Johnstone Strait while aligning with the intent of the Interior Fraser Steelhead rolling window closure. Fisheries are usually scheduled to achieve a 20% fixed ER on ISC stocks passing through Johnstone Strait with 15% ER for commercial and 5% ER for test, FSC, recreational and a commercial buffer. Shares of the 15% commercial ER are usually shared among the Area B seine (11.55%),

Area D gill net (2.55%) and Area H troll fleets (0.9%). With the Steelhead window closure reducing access to a portion of the ISC, the 2020 fisheries were planned pre-season to a reduced commercial ER of 9.83%, shared between the Area B seine (6.67%), Area D gill net (2.29%) and Area H troll (1.09%) fleets.

Area B Seine Fisheries

In 2020 the pre-season plan for seines was to have one 10-hour opening, followed by one 3 hour opening for Chum Salmon in portions of Areas 12 and 13. The openings were scheduled pre-season to occur October 21st and 22nd. Due to weather impacting the fishery, and lower than expected effort on the October 21st, a 5-hour extension was given on October 22nd.

The estimated catches from the 2020 Area B Seine Johnstone Strait Chum directed fisheries can be found in Table 39. The peak effort in the fishery was 68 vessels.

Area D Gill Net Fisheries

In 2020 the pre-season fishing plan consisted of two Area D gill net openings planned for 41 hours in duration each and subject to change based on in-season assessment, effort information and weather events. The first gill net opening was for 41 hours from 16:00 hours on October 18 to 09:00 hours on October 20 in Area 12 only The second opening was lengthened in response to lower than predicted effort during the October 18 to 20; opening to 65 hours from 16:00 hours on October 23 to 09:00 hours on October 26 in both Areas 12 and 13. The estimated catches from the 2020 Area D gill net Johnstone Strait Chum directed fisheries can be found in Table 39. The peak effort on the October 18 to 20 opening was 104 vessels and 132 vessels on the October 23 to 26 opening.

Area H Troll Fisheries

In 2020 the pre-season plan for Area H troll Individual Transferrable Effort (ITE) demonstration fishery was to have only one fishing period which was to occur from October 12 to October 31 with a one-day closure during the first day of the Area B Seine fishery. Each licence was allocated five boat days during fishing period. Boat days could be transferred between vessels and could be fished at any time within the fishing period. Total effort for the Johnstone strait fishery was 142 boat days. The estimated catches from the 2020 Area H troll (ITE) Johnstone Strait Chum directed fisheries can be found in Table 39.

RECREATIONAL FISHERIES

TIDAL RECREATIONAL FISHERIES

The marine recreational daily limits for Chum are four (4) with a possession limit of eight (8) salmon. Chum opportunities are typically opened at full limits in the Johnstone Strait area, but may be reduced if Chum returns are low. Peak participation in the recreational Chum fishery typically occurs over the Thanksgiving weekend in mid-October and activity is usually driven by abundance. The Strait of Georgia creel survey for Areas 13 and 14 was conducted from July to October. Recreational catches were reported as very low, as Chum abundance in the marine area was below average in 2020. The majority of the recreational Chum Salmon fishing effort occurs in Area 13, which is included in the Strait of Georgia catch estimate.

NON-TIDAL RECREATIONAL FISHERIES

There are no Chum-retention fisheries in non-tidal waters in the Johnstone Strait area. Some catch-and-release fisheries do take place and are considered to be very minimal.

EXCESS SALMON-TO-SPAWNING REQUIREMENTS (ESSR) FISHERIES

There were no ESSR opportunities for Johnstone Strait Chum in 2020.

FRASER RIVER CHUM

OBJECTIVES AND OVERVIEW

Chum Salmon return to the Fraser River from September through December, with the typical peak of migration through the lower river occurring from mid to late October. Spawning locations are predominately located in the Fraser Valley downstream of Hope, BC, with major spawning aggregations occurring within the Harrison River (including Weaver Creek and Chehalis River), the Stave River and the Chilliwack River. No spawning locations have been identified upstream of Hell's Gate.

The escapement objective for Fraser River Chum is 800,000. Since 2001, this objective has been achieved in all but five years; escapement to spawning grounds in 2009, 2010, 2017, 2018 and 2019 did not meet the escapement goal, with approximately 460,000, 590,000, 620,000, 650,000 and 190,000 returning to spawn in those years, respectively.

Fraser River Chum are typically harvested in Johnstone Strait, the Strait of Georgia, U.S. waters of Area 7 and 7A and in the Fraser River.

Within the Fraser River, Chum-directed fisheries include First Nations FSC fisheries, recreational fisheries and commercial fisheries. In recent years, significant conservation measures have been implemented in-river during the Fraser River Chum migration period to protect co-migrating stocks of concern (including IFR Coho and IFR Steelhead). Depending on the fishery, these measures have included both time and area closures and gear restrictions. These conservation measures have restricted Fraser River commercial Chum fishing opportunities in recent years.

In 2020, the Department implemented management measures to reduce the incidental impacts of Chum fisheries on co-migrating IFR Steelhead (including Thomson and Chilcotin River populations). Measures that were implemented in 2020 were the same as those introduced in 2019, with additional restrictions for set gillnet fisheries in the Fraser River. Moving window closures 42 days in duration were put in place for commercial gillnet and seine salmon fisheries located along the migratory route of IFR Steelhead, including Southern BC marine waters and the Fraser River and tributaries downstream of Thompson and Chilcotin River Steelhead spawning areas. This 42-day rolling window closure also applied to recreational salmon fisheries within the Fraser River and tributaries (including areas immediately off the Fraser River mouth). Commercial troll fisheries in the marine area and First Nations' FSC salmon fisheries occurring within the Fraser River and tributaries downstream of Thompson and Chilcotin River Steelhead spawning areas were subjected to a 27-day moving window closure. Following the closure window (and new for 2020), set gillnet gear was further restricted to operate during daylight hours only, while attended by a harvester.

STOCK STATUS

The number of adult Chum Salmon arriving at the mouth of the Fraser River each fall (terminal return) is estimated in-season with a Bayesian model based on Albion test fishery catch.

The Fraser River Chum test fishery at Albion operated every other day from September 1 until October 19, alternating days with the Albion Chinook test fishery. From October 21 until November 9, the Chum net fished every day and then every other day from November 11 until November 23. Total Chum catch for the Albion test fishery can be found in Table 37.

DFO provided an in-season terminal return estimate on October 15 of 1,082,000 Chum Salmon. The estimated 50% migration date of the run was October 22.

A subsequent estimate of Fraser River Chum terminal return was provided on October 21. The estimated terminal return on that date was 1,084,000 (80% probability that the run is between 702,000 to 1,697,000), with a 50% migration date through the lower river of October 20. This peak date is slightly later than that observed in recent years (average peak date from 1997-2019 is October 18). It was estimated it was very likely that the run would exceed the escapement goal of 800,000.

Additional in-season terminal return estimates were not provided, as subsequent test fishing information was consistent with a terminal return run size of 1,084,000.

Fraser River Chum Salmon return to numerous spawning locations in the Lower Fraser River and its tributaries. Spawning escapement for Fraser River Chum Salmon is currently assessed for five of the largest Chum producing systems, as well as for a number of smaller tributaries. The largest observed escapement of Fraser River Chum (greater than 3 million fish), was seen in 1998. From 1999 to 2010, Fraser Chum Salmon escapement (for the annually assessed systems) trended downward. The escapement decline was then halted and reversed with an estimated 1.1 million spawners reported in 2011. Spawning escapement had remained stable through 2016 and achieved the escapement goal in each year (2011-2016 estimated escapement averaged 1.3 million spawners). However, spawning escapements in 2017 (660,000), 2018 (690,000) and most notably 2019 (300,300) were estimated to be below the escapement goal of 800,000 Chum Salmon spawners. The preliminary escapement estimate for 2020 is 614,052.

FIRST NATIONS DOMESTIC AND FSC FISHERIES

First Nations Food, Social and Ceremonial (FSC) Chum-directed gill net fisheries commenced October 24 (below Port Mann Bridge), October 25 (Port Mann Bridge to Mission Bridge) and October 26 (Mission Bridge to Hope Bridge), following closures to protect co-migrating IFR Coho and IFR Steelhead.

The total Fraser River Chum catch (either directed or bycatch) in First Nations FSC fisheries can be found in Table 40.

FIRST NATIONS COMMERCIAL HARVEST

In 2020, there were Chum-directed EO or demonstration fisheries in the LFR:

- Musqueam and Tsawwassen: November 1, 2020.
- Harrison Fisheries Authority: November 3-6, 2020

Hatchery Coho caught in Chum-directed fisheries were also permitted to be sold.

The total Fraser River Chum catch (either directed or bycatch) in First Nations Commercial fisheries can be found in Table 40.

COMMERCIAL FISHERIES

Area B Seine Fisheries

There were no Area B fisheries in Area 29 for Sockeye or Chum salmon in 2020 and, therefore, no catch of Chum Salmon to report.

Area E Gill Net Fisheries

Commercial salmon fisheries in the Lower Fraser River (below Mission) were closed during the IFR Coho window closure, and closures remained in place through until November 1, 2020 to meet the IFR Steelhead management objectives. Following the IFR Steelhead window closure, there were three (3) Area E fishery openings in the Fraser River, with a total estimated harvest of 33,339 Chum.

Area H Troll Fisheries

There were no Area H fisheries in Area 29 for Sockeye or Chum salmon in 2020 and, therefore, no catch of Chum Salmon to report.

RECREATIONAL FISHERIES

TIDAL RECREATIONAL FISHERIES

In most southern BC tidal waters, the daily limit for Chum Salmon was four (4) in 2020.

Fraser River – Tidal Recreational Fisheries

January 1 to November 1, 2020, this area was closed to fishing for salmon.

November 2 to December 31, 2020, open to the retention of Chum Salmon with a daily limit of four (4).

An assessment of the in-river tidal Fraser River recreational fishery occurred from November 2 to November 30. Catch estimates can be found in Table 40.

NON-TIDAL RECREATIONAL FISHERIES

Chum Salmon fishery assessments only occur in Region 2 of the Fraser River between Mission and Hope, BC. Above Hope the number of Chum Salmon likely to be encountered is very low. Chum Salmon are not known to migrate into Regions 3, 5, 7 or 8.

Fraser River – Non-Tidal Recreational Fisheries

January 1 to November 2, 2020, area closed to fishing for salmon.

November 3 to December 31, the Region 2 non-tidal Fraser River from the CPR Bridge at Mission, BC to the Highway No. 1 Bridge at Hope, BC was open to retention of Chum Salmon with a daily limit of two (2).

An assessment of the non-tidal Fraser River recreational fishery occurred from November 3 to November 30. Catch estimates can be found in Table 40.

Fraser River Tributaries Recreational Fisheries

The following Fraser River tributaries were open to Chum Salmon retention during the dates noted in 2020.

- Alouette River – October 1 to December 31, daily limit of one (1) Chum Salmon.
- Chilliwack and Vedder Rivers – October 1 to December 31, daily limit of one (1) Chum Salmon.
- Harrison River – October 1 to December 31, daily limit of two (2) Chum Salmon.
- Nicomen Slough – October 1 to December 31, daily limit of two (2) Chum Salmon.
- Stave River – October 1 to December 31, daily limit of two (2) Chum Salmon.

The Chilliwack and Vedder rivers recreational fishery was assessed from September 15 to November 30 in 2020. Catch estimates can be found in Table 40. In 2020, no assessment was conducted on the fisheries in the Alouette, Harrison and Stave rivers; however, the Nicomen Slough/Norrish Creek fishery was assessed from October 1 to December 15, 2020. Catch estimates can be found in Table 40.

The following systems that flow into Boundary Bay were open to Chum Salmon retention during the dates noted.

- Serpentine River – October 1 to October 31, 2020, daily limit of one (1) Chum Salmon.

This recreational fishery was not assessed.

EXCESS-TO-SPAWNING REQUIREMENT (ESSR) FISHERIES

There were ESSR fisheries in 2020 that harvested Chum Salmon at:

- Chilliwack Hatchery;
- Inch Creek Hatchery; and,
- Chehalis Hatchery.

All ESSR harvest information can be found in Table 42.

STRAIT OF GEORGIA CHUM

OBJECTIVES AND OVERVIEW

Strait of Georgia Chum fisheries consist of terminal opportunities for Chum returning to their natal spawning streams. Many of the terminal fishing areas have enhancement facilities and/or spawning channels associated with adjacent river systems. Terminal fishery strategies consist of monitoring and assessing stocks (escapement and returning abundance), with the objective of ensuring adequate escapement and providing harvest opportunities where possible. Stock assessments may include test fisheries, escapement enumeration including swim surveys, stream walks, channel entry counts, fence counts, sonar (DIDSON) counts and over flights. In some areas where stocks receive considerable enhancement or where stocks have above average productivity, limited fishing may occur prior to escapement objectives being reached.

STOCK STATUS

In 2020 escapement was forecast to be above target in every system except for the Puntledge River, which was forecast to meet the escapement target of 60,000 on the normal run timing curve (Table 35). Nanaimo River reached escapement target of 40,000 at 47,556 Chum. This was well below the low-range forecast of 111,800 for 2020, but higher than the escapement of 21,905 in 2019. Cowichan River was close to reaching the escapement target at 153,570 Chum. This was above the 2019 escapement of 94,500, but below the low-range forecast of 186,900 for 2020. Goldstream River was above the escapement target of 15,000 at 16,843 based on AUC expansions. This is also above the 2020 forecast of 16,500, but below the 2019 escapement of 21,547.

Mid-Vancouver Island rivers, which include Puntledge, Big Qualicum and Little Qualicum with a combined escapement target of 230,000 had a low-range forecast of 284,800 for 2020. Returns to these mid-Vancouver Island systems were well below the escapement target and forecast at 62,481 Chum. Puntledge River had 27,675, Big Qualicum 11,868 and Little Qualicum had 22,938 Chum. However, escapement in 2020 was an improvement over 2019, which was only 18,217 for all three systems combined.

Combined escapement estimates for Jervis/Narrows Inlet rivers were 28,151 Chum in 2020. By system, there were 525 Chum counted in Vancouver River, 196 in Brittain River, 12,231 estimated from AUC in Skwakwa River, 10,479 estimated from AUC in Deserted River and 4,720 estimated from AUC in Tzoonie River. The

escapement total for all of the systems is substantially below the target of 85,000 and the low-range forecast of 99,200. The combined escapement for 2020, however, is an improvement compared to the low return of 6,612 fish in 2019.

Escapement in Sliammon Creek exceeded the low count of 1,036 Chum in 2019 at 6,822, which included fish counted at the fence, in the spawning channel, brood stock and an estimate of fish below the fence. While escapement was higher than 2019, the 2020 count was significantly below the target of 11,000 and the 2020 low-range forecast of 25,000. In Theodosia, 19,396 Chum returned in 2020 which is considerably higher than 2,654 in 2019 and close to the escapement target of 21,000. Okeover Creek abundance was estimated at 2,832 fish which is near the 4 year average but below the escapement target and low-range forecast of 6,000 and 6,400, respectively.2,364 Chum returned to Lang Creek in 2020 which was below the 4 year average of 3,710 and escapement target of 2,500.

Table 35. 2020 escapement of Chum in Strait of Georgia Rivers along with the low and high forecast values for 2020, the 2019 escapement and the 2020 escapement targets.

Forecast Area	2020 Forecast		2019 Escapement	2020 Escapement Target	2020 Escapement
	Low	High			
Mid-Vancouver Island	284,800	427,200	18,217	230,000	62,481
- Puntledge	48,600	73,000	6,531	60,000	27,675
- Big Qualicum	145,300	217,900	2,020	85,000	11,868
- Little Qualicum	90,900	136,300	9,666	85,000	22,938
Jervis/Narrows Inlets	99,200	148,800	6,612	85,000	28,151
Nanaimo River	111,800	167,600	21,905	40,000	47,556
Cowichan River	186,900	280,300	94,500	160,000	153,570
Goldstream River	16,500	24,800	21,547	15,000	16,843
Sliammon Creek	25,000	37,400	1,822	11,000	6,822
Theodosia River	29,400	44,200	2,654	21,000	19,396
Okeover Creek	6,400	9,600	117	6,000	2,832
Lang Creek	4,500	6,700	1,036	2,500	2,364

FIRST NATIONS DOMESTIC AND FSC FISHERIES

Strait of Georgia First Nations FSC fisheries for Chum Salmon were not restricted in 2020. Seine net and gill net fisheries targeting Chum Salmon in the marine mixed stock areas began in early October, with effort increasing towards late October and early November. Chum Salmon catch summaries from Tla'amin Treaty and non-Treaty First Nations FSC fisheries in the Strait of Georgia can be found in Table 39.

FIRST NATIONS COMMERCIAL HARVEST

Area 14 First Nations Commercial Fisheries

Discussions with the K'omoks First Nation occurred around the harvest of surplus Chum for a Demonstration Fishery, however the Chum returns were poor and no commercial demonstration fisheries occurred.

Area 17 First Nations Commercial Fisheries

Pre-season discussions with the Nanaimo First Nation occurred to identify potential triggers and develop fishing plans to harvest surplus Nanaimo River Chum. During the season communication happened on a day to day basis to discuss stock status and potential fishing opportunities. In 2020 the Area 17 Demonstration fishery began October 14 for a TAC of 5,000 Chum. The fishery continued until October 24 when the initial

allowable harvest was achieved. The Demonstration fishery reopened November 5 when the Nanaimo River target escapement of 40,000 Chum was achieved. Chum catch can be found in Table 39.

Area 18 First Nations Commercial Fisheries

A bi-weekly conference call was held with the Cowichan Fisheries Harvest Roundtable to discuss stock status and potential fishing opportunities in Area 18. The Area 18 Demonstration Fishery was triggered when 60,000 Chum had been estimated passed the Didson counter on October 28. The fishery began October 29 for a TAC of 5,000 Chum. The fishery continued until November 7. Chum catch can be found in Table 39.

Area 19 First Nations Commercial Fisheries

Pre-season meetings occurred with Saanich Tribes to discuss potential triggers and fishing plans to harvest surplus Goldstream Chum. On November 23 the demonstration fishery was triggered but not activated as it was deemed unlikely to be successful. There was no Saanich Tribes Demonstration fishery in 2020 targeting Chum.

COMMERCIAL FISHERIES

Area 14 Commercial Fisheries

Chum returning to this area have been enhanced since the late 1960s and terminal fisheries have occurred in October and November since the 1970s. The returning Area 14 Chum abundance is forecasted pre-season using brood escapement, average survival and age composition. In-season run size is assessed by escapement counts to the three major river systems and DFO hatcheries contributing to the stock aggregate.

The Area 14 Chum fishery is directed at the enhanced stocks of three systems: Puntledge, Qualicum and Little Qualicum Rivers. The Qualicum River is often referred to as the 'Big' Qualicum River, to better distinguish it from the Little Qualicum River. The escapement goals for the three river systems are 60,000 for Puntledge River, 85,000 for Little Qualicum River and 85,000 for Qualicum River, adding up to an overall interim escapement goal of 230,000 Chum, not including enhancement facility requirements (about 10,000 Chum, bringing the total escapement goal to 240,000).

Area 14 commercial Chum fisheries are managed based on forecasted abundance. In-season, the management strategy for considering fishery openings falls under one of two categories depending on whether the pre-season forecast is greater than or less than 340,000 Chum. When the pre-season forecast is greater than 340,000, early Chum openings can target up to 65% of the anticipated surplus above 340,000. When pre-season forecast is less than 340,000, an early-timed limited effort gillnet fishery may be used to evaluate the mid-Vancouver Island aggregate abundance.

In 2020 the mid-Vancouver Island aggregate was managed based on the pre-season forecast of less than 340,000 Chum. An Area D gill net assessment fishery consisted of three (3) openings of 50 hours each, weekly, between October 14 and October 31. During the third opening scheduled October 28-30 there was a 30 hour pause due to weather, with the fishery resuming on October 30.

Chum catch for can be found in Table 39.

Area 16 Commercial Fisheries

This fishery targets wild Chum stocks returning to river systems in the Jervis Inlet area. The main systems are Tzoonie, Deserted and Skwawka Rivers. The overall escapement goal for rivers in Jervis/Narrows Inlet is 85,000. Terminal fisheries may occur in these areas when the individual or combined escapement goals

have been assured, but fishing opportunities do not occur on a regular basis. There were no fisheries in Area 16 in 2020.

Area 17 Commercial Fisheries

This fishery is a terminal fishery targeting Nanaimo River stocks. The Nanaimo River Chum stocks are supplemented by the Nanaimo River hatchery. Hatchery supplementation occurs is on a sliding scale, where increased enhancement occurs during poor escapement years. Escapements fluctuate annually and fishery openings are planned in-season based on escapement estimates. The overall escapement goal for the Nanaimo River is 40,000.

Nanaimo River assessments include swims by Nanaimo River Hatchery staff and a sonar counting system (DIDSON). The DIDSON was installed and operational on October 2. Early escapement information indicated potential surplus to the Nanaimo River and on October 14 a demonstration fishery was initiated for a TAC of 5,000 chum. In-season chum migration slowed and not until November 3 was there indications that the escapement goal was likely to be met. Terminal fisheries began November 4.

In 2020, terminal commercial fisheries for Nanaimo River Chum began with gill nets fishing November 4 and seines on November 5 & 6. Gear types fished separately until vessel count was low enough to avoid gear conflict. Chum catch can be found in Table 39. Area 17 closed for the balance of the season on November 16.

Area 18 Commercial Fisheries

This fishery is directed at Cowichan River stocks, with some incidental harvest of Goldstream-bound Chum. Fishery openings in early to mid November are limited to Satellite Channel, to minimize impacts on Goldstream stocks. Chemainus River stocks may also be impacted if fisheries occur earlier in November, but likely to a lesser extent.

Fishery openings are planned in-season based on escapement estimates from a DIDSON counter. Management is also guided by advice from the Cowichan Fisheries Roundtable and the Mid-Vancouver Island (MVI) Chum Subcommittee, and an in-season Chum Escapement Forecast Tool based on the DIDSON count and date. The overall escapement goal for the Cowichan River is currently 160,000 Chum passing by the DIDSON counter.
A bi-weekly conference call was held with the Cowichan Fisheries Roundtable to discuss stock status and potential fishing opportunities in Area 18. In 2020 there were no commercial fisheries for Cowichan River Chum except for the Cowichan Tribes Demonstration fishery.

Area 19 Commercial Fisheries

This fishery is directed primarily at Goldstream River stocks, although some Cowichan River Chum Salmon are also harvested. Fisheries are planned in-season based on escapement estimates. Area 19 falls under the same management regime as Area 18. The overall escapement goal for the Goldstream River is 15,000. Weekly stream walks are conducted on Goldstream River by Goldstream Hatchery staff to estimate Chum escapement. Enumeration began in the second week of October. In 2020, there were no commercial fisheries in Area 19.

RECREATIONAL FISHERIES

TIDAL RECREATIONAL FISHERIES

Marine recreational Chum fisheries are subject to the normal salmon daily and possession limits (limit of four per day and possession of eight) and are typically open throughout the area. The majority of the recreational

effort directed at Chum Salmon in the Strait of Georgia occurs in the upper portions of Discovery Passage between Seymour Narrows and Chatham Point, not far from Campbell River. The annual Brown's Bay Charity Chum derby was suspended in 2020 due to the Covid-19 pandemic but it is usually the most active Chum recreational fishery in the area. There was a creel survey during the month of October in the Strait of Georgia (Areas 13 and14).

Marine recreational Chum fisheries also occur in the approach waters of the Puntledge, Qualicum, Little Qualicum, Nanaimo and Cowichan Rivers on Vancouver Island, as well as in Howe Sound, with effort increasing with Chum abundance. Due to below average Chum abundances observed in the marine area north of Nanaimo and average abundances south of Nanaimo, recreational effort in 2020 was minimal. Catch estimates for Chum in the marine recreational fisheries can be found in Table 39.

NON-TIDAL RECREATIONAL FISHERIES

Chum retention fisheries in Region 1 (Vancouver Island) took place in 2020 on the Courtenay, Nanaimo and Puntledge Rivers on Vancouver Island commencing in October. Due to low returns on the Qualicum and Cowichan Rivers there were no in-river recreational Chum opportunities for 2020. Recreational freshwater retention opportunities are typically based on escapement estimates from hatchery operations, and where escapement goals are expected to be met, opportunities are provided.

EXCESS SALMON-TO-SPAWNING REQUIREMENTS (ESSR) FISHERIES

The Qualicum First Nation was issued an ESSR licence for Chum, Chinook, Coho and Pink salmon in 2020, however there were no surplus Chum Salmon in 2020.

An ESSR fishery for the Snuneymuxw First Nation for Chum Salmon and hatchery-marked Coho Salmon took place in Early November. In 2020, the Nanaimo River Chum ESSR was triggered November 4 when terminal escapement was assumed to be achieved. The fishery began November 5 and continued until November 12. Chum catch for the Nanaimo River ESSR fishery can be found in Table 42.

The K'ómoks First Nation was issued an ESSR licence to harvest Chum Salmon and fall Chinook Salmon at the DFO Puntledge River Hatchery in 2020. There were no surplus Chum Salmon available in 2020.

There were no ESSR fisheries at the Capilano hatchery in 2020 that included Chum Salmon.

WEST COAST VANCOUVER ISLAND CHUM

OBJECTIVES AND OVERVIEW

Commercial Chum Salmon fisheries normally occur in West Coast Vancouver Island (WCVI) from late September to early November in years of Chum abundance. The majority of Chum fishing on WCVI takes place adjacent to Nitinat Lake (Area 21). In some years there have been limited-effort gill net fisheries in Barkley Sound (Area 23), Clayoquot Sound (Area 24), Nootka Sound and Esperanza Inlet (Area 25) and Kyuquot Sound (Area 26).

Commercial fisheries for WCVI Chum employ a two-tiered strategy for managing harvest; either a constant harvest rate strategy or a surplus-to-escapement goal strategy.

Fixed Harvest Rate Strategy (fisheries targeting natural origin stocks, hatchery stocks at low abundance):

For those fisheries where a significant component of the target stock is from naturally spawning populations, a constant harvest rate strategy of 10 to 20% is implemented. The maximum harvest rate is set at a precautionary level relative to stock-recruit derived optimal ER for WCVI Chum; which are in the order of

30 to 40%. This approach allows limited harvest while protecting the biodiversity of Chum stocks and permitting rebuilding when the population is low. In areas of low quality data or only naturally spawning stocks, including Barkley (Area 23), Clayoquot Sound (Area 24), Esperanza Inlet (Area 25) and Kyuquot Sound (Area 26), the maximum allowable harvest rate is 10 to 15%. In Nootka Sound, up to 20% harvest is permitted given the prevalence of hatchery production in the area. The harvest rate is controlled by limiting effort (i.e., number and duration of openings and, in some areas, the number of permitted vessels) and limiting fishing areas to approach areas only (i.e., to those areas where fish are migrating not holding).

Since 2013, a fixed harvest rate strategy has also been used to harvest Nitinat Hatchery Chum when the stock abundance is considered above the lower fishery reference point but below the target fishery reference point. The maximum harvest rate for the Nitinat stock is 25% when it is below the target fishery reference point.

Surplus-to-Escapement Goal Strategy (fisheries targeting hatchery stocks at high abundance):

For fisheries that target primarily hatchery surpluses, the allowable harvest rate is determined by the escapement goal when it is determined the stock above the Upper Fishery Reference Point and broodstock capture targets have been or will be met. These fisheries occur only in 'terminal areas', defined as an area in close proximity to the origin watershed of the target stock where little or no interception of other stocks occurs. Surplus to escapement goal fisheries for Conuma Hatchery stock have occurred within the Tlupana Inlet portion of Area 25. Surplus to escapement goal fisheries for Nitinat Hatchery stock have occurred in Area 21 near the mouth of Nitinat Lake or in Area 22 in Nitinat Lake. All Nitinat and Conuma hatchery Chum are thermally marked, which allows for assessment of the hatchery contribution to fisheries and spawning.

STOCK STATUS

The recent stock status of wild WCVI Chum has generally been poor relative to historic levels, with spawning abundance for wild indicator stocks frequently below Lower Fishery Reference Points (LRPs) despite the implementation of a precautionary harvest regime (fixed harvest rate). In addition, hatchery production has declined in recent years, particularly at the Conuma Hatchery in Area 25 (Tluplana Inlet). In 2020, only two of the six WCVI Chum management areas had forecasted returns above the Lower Fishery Reference Points. In these two areas Stage 2 limited effort fisheries were implemented (Esperanza, Area 25 and Kyuquot, Area 26) and reported moderate to low CPUEs. Observed returns in 2020 suggest a continued low stock abundance.

FIRST NATIONS FSC AND TREATY FISHERIES

The 2020 WCVI FSC Chum reported catch (to date) can be found in Table 39 which includes fish retained for food, social and ceremonial purposes from Nuu-chah-nulth First Nations and Treaty harvests from Maa-nulth Nations.

FIRST NATIONS COMMERCIAL HARVEST

WCVI Economic Opportunity Fisheries

In 2020, EO agreements were in place with Hupacasath and Tseshaht First Nations during the Chum season however abundance did not permit a targeted opportunity.

Five Nations Communal Sale Fishery

In 2020, the Department provided communal sale fishery opportunities for the Five Nations (five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht and Tla-o-qui-aht).

Nearshore and terminal Chum fishery planning discussions occurred between the Five Nations and DFO during pre-season and in-season meetings. Implementation of nearshore Chum fisheries did not occur and no terminal harvest opportunities for Chum were identified in-season.

COMMERCIAL FISHERIES

Commercial fisheries on the WCVI targeted two Chum stocks in 2020: Esperanza (Area 25) and Kyuquot (Area 26).

Nitinat (Area 21/121) Commercial Fisheries

In 2020, the preseason forecast for Nitinat Chum was of 92,000. This is below the minimum forecast of 225,000) which allows Area E gill net and Area B seine fisheries. Due to ongoing declines in IFR Steelhead escapement, DFO implemented a precautionary approach to the management of those fisheries in Southern BC that are likely to impact this stock of concern. In Areas 21 and 121, a fishing window closure was in took place from September 11 to October 22 to address IFR Steelhead bycatch concerns. Following the window closure if in season abundance confirms that the return in Nitinat Lake is above the 225,000, fisheries would be permitted within a two mile boundary of the shoreline between Bonilla Point and Pachena Point. Due to low Chum return of 160,000, escapement goals to the Nitinat system were not met in season; therefore, no commercial fisheries were authorized in 2020.

Nootka Sound (Area 25) Commercial Fisheries

Based on pre-season forecasts no fisheries were planned in Nootka Sound.

Esperanza Inlet (Area 25) Commercial Fisheries

Based on pre-season forecasts, a limited effort gill net Chum fishery opened in Esperanza Inlet on September 28, 2020. Effort was limited to a maximum of five vessels. The fishery was open for 1.5 days per week during daylight hours for 4 weeks. The total catch for the Esperanza Inlet Area D gill net limited effort fishery can be found in Table 39.

Kyuquot Sound (Area 26) Commercial Fisheries

Based on pre-season forecasts, a limited effort gill net Chum fishery opened in Kyuquot Sound on September 28, 2020. Effort was limited to a maximum of four vessels. The fishery was open for 1.5 days per week during daylight hours for 3 weeks. The total catch for the Kyuquot Sound Area D gillnet limited effort fishery can be found in Table 39.

RECREATIONAL FISHERIES

TIDAL RECREATIONAL FISHERIES

Daily limits of Chum in the WCVI recreational fishery are dependent on pre-season abundance forecasts relative to biologically based targets. In areas where the forecast was above target reference points (Area 25, Esperanza and Area 26, Kyuquot), the daily limit was four (4). In areas where the forecast was below target reference points (Area 23, Barkley, Area 24, Clayoquot and Area 25, Nootka), the daily limit was zero (0). At Nitinat (Areas 21, 22), the daily limit was two (2). In 2020, due to conservation concerns for Southwest Vancouver Island Chum stocks, daily limits were reduced or closed as follows:

Areas 21 and 22 the daily limit was reduced to 2 per day from July 15 – Dec 31.

Areas 23, 24 and Subareas 25-1 to 25-8 and 25-15 the daily limit was reduced to zero.

The remaining portions of Areas 25, Area 26 and Area 27 were at daily limits of 4 per day.

Anglers are restricted to the use of barbless hooks and there is a minimum size limit of 30 cm.

EXCESS SALMON TO SPAWNING REQUIREMENTS (ESSR) FISHERIES

The Ditidaht First Nation was issued an ESSR Licence for Chinook, Coho and Chum at Nitinat Lake and Nitinat hatchery.

The total Chum ESSR catch can be found in Table 42.

There were no other Chum ESSR fisheries on the WCVI in 2020.

APPENDICES

TABLE 36: CATCHES IN CANADIAN TREATY LIMIT FISHERIES, 2004 TO 2020

Fisheries/Stocks	Species	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
Stikine River (all gears)	Sockeye	11,576	16,213	16,915	41,749	86,729	60,046	42,800	36,146	30,352	55,623	50,543	48,049	33,614	59,237	101,209	85,890	84,866
	Coho	5,103	5,228	3,685	5,502	5,346	5,619	4,992	4,835	5,748	4,703	4,952	5,061	2,398	47	72	276	275
	Chinook-lg	389	570	-	593	2,731	4,157	3,308	3,415	4,573	2,307	1,766	2,330	7,860	10,576	15,776	18,997	3,857
	Chinook-jk			-	788	794	1,537	759	1,594	1,213	1,165	1,001	714	1,067	1,735	2,078	2,177	2,574
Taku River (commercial gill net)	Sockeye	11,793	21,500	17,948	30,209	37,624	19,747	17,872	21,163	30,209	24,012	20,211	11,057	19,445	16,564	21,093	21,932	19,860
	Coho	7,036	12,252	9,503	7,726	9,513	7,886	14,568	10,374	8,689	6,102	10,349	5,649	4,866	5,399	9,180	6,860	5,954
	Chinook-lg	94	10	-	246	1,021	868	2,472	738	1,909	2,333	4,658	7,031	1,184	862	7,312	7,534	2,074
	Chinook-jk			-	88	205	-	657	N/A	478	514	697	1,183	330	337	198	821	334
Alsek River (all gear)	Sockeye	218	653	-	644	815	1,084	1,140	508	1,786	2,110	1,716	717	-	1,340	1,327	594	2,122
	Coho	6	10	-	-	-	-	-	29	N/A	29	7	3	34	1	-	71	127
	Chinook	22	37	-	74	10	87	39	73	85	214	294	125	7	41	19	114	185
Areas 3 (1-4)* (commercial net)****	Pink	1,816	-	101,267	704,450	430,435	80,266	450,671	1,249,570	118,164	160,757	30,686	404,460	8,330	1,740,270	228,378	878,552	402,459
Area 1 (commercial troll)****	Pink	136,890	60,003	266	38,763	32,343	41,551	31,775	84,216	57,013	52,221	19,948	60,402	29,295	61,276	34,854	39,430	27,751
North Coast** (troll + sport)	Chinook	38,104	88,001	106,976	143,330	190,180	158,903	221,001	115,914	120,305	122,660	136,613	109,470	95,647	144,235	215,985	243,606	241,508
		30,096+8,008	42,801+45,200	70,276 + 36,700	97,730 + 45,600	147,381+ 42,800	106,703 + 52,200	172,001 + 49,000	69,264 + 46650	80,256 + 40050	74,660 + 48000	90,213 + 46400	75,470 + 34,000	52,147 + 43500	83,235 + 61000	151,485 + 64500	174,806 + 68,800	167,508 + 74,000
West Coast Vancouver Island (troll + sport + FN)	Chinook	80,385	67,635	76,958	103,260	93,294	113,293	178,558	108,710	130,719	206,569	137,660	125,488	143,817	139,150	145,970	195,791	210,875
		11,350+ 56,539+ 12,676	23,195+ 35,867+ 8,573	28,840 + 45,233 + 2,885	54,411 + 46,707 + 2143	55,168 + 37,809 + 317	60,572 + 48,775 + 3,946	127,177 + 48,365 + 3,655	43,043 + 61,712 + 3955	62,573 + 61,822 + 4300	123,930 + 78,350 + 4289	79,123 + 52,698 + 5839	53,191 + 68,775 + 3381	89,704 + 50,319 + 3794	87,921 + 46,229 + 5,000	103,978 + 36,992 + 5,000	143,614 + 52,177	168,837 + 42,038
Fraser River Canadian Commercial Catch	Sockeye	-	-	3,682,561	-	-	-	7,945,474	2,124	-	443,000	9,305,104	-	16,942	-	4,633,623	137,000	1,993,800
	Pink	-	-	91,337	-	-	452	-	2,855,441	-	4,751,800	-	1,442,840	-	333,300	68,325	338,000	-
Fraser River U.S. Commercial Catch	Sockeye		-	989,459	-	-	44,100	691,000	4,609	105,100	266,000	1,970,000	-	49,800	3,900	701,300	-	192,200
	Pink		232,904	-	105,930	-	334,700	-	3,057,222	-	2,893,400	-	2,726,230	-	377,600	-	-	-
West Coast Vancouver Island (commercial troll)	Coho	5	-	-	331	774	18,126	32,992	5,499	1,988	-	458	-	369	1,424	2,399	5,989	-
Johnstone Strait (commercial catch)***	Chum	149,199	-	52,139	401,957	1,333,478	492,841	318,984	597,003	391,324	751,560	62,510	510,708	298,931	494,944	800,363	787,226	1,089,100

*AREA 5-11 CATCHES INCLUDED PRIOR TO 1995 AND EXCLUDED FROM 1995-1998 INCLUSIVE. NOT PART OF 1999 ANNEX IV PROVISIONS.

** NORTH COAST CATCH EXCLUDES TERMINAL EXCLUSION CATCHES OF 6,000 ('91), 6,100 ('92), 7,400 ('93), 6,400 ('94), 1,702 ('95), 16,000 ('96), 5,943 ('97), and 2,182 in 1998. NO TERMINAL EXCLUSION IN THE 1999 AGREEMENT COVERED UNDER T

*** CANADIAN CATCH INCLUDES COMMERCIAL, FSC AND TEST-FISH CATCHES IN AREAS 11-13 FOR 1991-94 INCLUSIVE, AND IN AREAS 12-13 FOR 1995 TO 2004 INCLUSIVE. 2002-PRESENT, CATCHES FROM FISHERIES MANAGED TO FI

****ALL PINK CATCHES FOR ALL YEARS (1995-2012) IN AREAS 3(1-4) AND AREA 1 HAVE BEEN UPDATED TO REFLECT FINAL ESTIMATES.

NOTE 1: WCVI CHINOOK CATCHES FROM 1995-1998 ARE REPORTED BY CALENDAR YEAR; CATCHES FROM 2008-1999 ARE REPORTED BY CHINOOK YEAR (OCT-SEPT)

NOTE 2: 1999 CATCHES ARE REPORTED ACCORDING TO FISHERIES/STOCKS UNDER THE 1999 ANNEX IV PROVISIONS.

TABLE 37: TRANSBOUNDARY CATCH TABLE

Licence Group	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook Kept	Chinook Released
First Nations FSC and Treaty											
	Stikine	5,423	-	2	-	-	-	-	-	389	-
	Taku	237	-	66	-	-	-	-	-	94	-
	Alsek	218	-	-	-	-	-	-	-	22	-
Total First Nations FSC Catch		**5,878**	**-**	**68**	**-**	**-**	**-**	**-**	**-**	**505**	**-**
Commercial											
	Stikine	6,153	-	5,101	-	-	-	-	-	-	749
	Taku	11,556	2	6,970	6	-	7,306	-	157	-	259
Total Commercial Catch		**17,709**	**2**	**12,071**	**6**	**-**	**7,306**	**-**	**157**	**-**	**1,008**
Recreational											
	Alsek	-	-	6		-	-	-	-	-	-
Total Recreational Catch		**-**	**-**	**6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
TOTALS		**23,587**	**2**	**12,145**	**6**	**-**	**7,306**	**-**	**157**	**505**	**1,008**

TABLE 38: NORTHERN BC CATCH TABLE

Licence Group	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook Kept	Chinook Released
First Nations FSC and Treaty											
	Skeena	110,685		3,081		2,148		56		4,482	
	Nass	39,390		897		6,606		80		5,577	
	Central Coast	608		13		125		173		1,621	
Total First Nations FSC Catch		**150,683**	**-**	**3,991**	**-**	**8,879**	**-**	**309**	**-**	**11,680**	**-**
Commercial											
Area C Gillnet	Central Coast	199	23	-	186	10,666	31	12,974	1	4,130	5
Demo	Central Coast	-	-	-	-	-	-	-	-	-	-
Area F Troll	Haida Gwaii AABM	-	280	11,802	36	10,441	6,175	25	1,825	30,096	3,250
Area F Troll	Haida Gwaii Pink/Coho	-	389	77,579	202	126,449	26,839	-	216	-	7,151
Area A Seine	Nass		212		94	1,816		1,751			161
Total Commercial Catch		**199**	**904**	**89,381**	**518**	**149,372**	**33,045**	**14,750**	**2,042**	**34,226**	**10,567**
Recreational											
	Skeena/Nass	1,737		583		167		-		534	
	Central Coast	-	-	3,055	20	110		10		1,387	355
	Haida Gwaii	7		3,198		787		173		6,087	
Total Recreational Catch		**1,744**	**-**	**6,836**	**20**	**1,064**	**-**	**183**	**-**	**8,008**	**355**
TOTALS		**152,626**	**904**	**100,208**	**538**	**159,315**	**33,045**	**15,242**	**2,042**	**53,914**	**10,922**

TABLE 39: SOUTHERN BC CATCH TABLE

Licence Group	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook Kept	Chinook Released
First Nations FSC and Treaty											
	WCVI - Inshore ISBM			2,467				2,080		8,608	
	WCVI - Offshore AABM			21,448	115			6		4,068	113
	Strait of Georgia			729				6,477		3,359	
	Johnstone Strait			514				19,686		896	38
Total First Nations FSC Catch		-	-	25,158	115	-	-	28,249	-	16,931	151
First Nations Commercial											
EO	WCVI - Inshore ISBM									29,829	-
Total First Nations Commercial Catch				-						29,829	
Taaq-wiihak											
	WCVI - Offshore AABM			65				2		4,170	
	WCVI - Inshore ISBM			45	132			19	13	6,174	
Total Taaq-wiihak Catch		-	-	110	132	-	-	21	13	10,344	-
Commercial											
Area B		-	1	2	761	10	3	80,884	23	7,984	939
Area D		-	1	-	240	2	5	71,296	6	34,899	12
Area E		-	-	-	-	-	-	18,510	-	-	-
Area G		-	2	5	3,272	-	18	-	-	11,350	762
Area H		-	1	-	18	3	4	12,771	-	-	31
Total Commercial Catch		-	5	7	4,291	15	30	183,461	29	54,233	1,744
Recreational											
	Johnstone Strait	-	6	3,076	5,033	3,161	3,586	36	10	6,592	9,133
	Strait of Georgia	-	150	6,798	20,451	2,235	966	2,219	277	33,285	108,013
	Juan de Fuca	16	57	17,038	37,074	116	78	82	-	7,358	22,838
	WCVI - Inshore ISBM	8	17	11,640	8,755	51	122	7	6	37,156	19,331
	WCVI - Inshore AABM	4,974	685	1,153	349			43	-	8,822	5,057
	WCVI - Offshore AABM	33	24	8,044	10,790	10	11	-	1	10,561	4,044
Total Recreational Catch		5,031	939	47,749	82,452	5,573	4,763	2,387	294	103,774	168,416
TOTALS		**5,031**	**944**	**73,024**	**86,990**	**5,588**	**4,793**	**214,118**	**336**	**215,111**	**170,311**

TABLE 40: FRASER RIVER CATCH TABLE

Licence Group	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook Kept	Chinook Released
First Nations FSC and Treaty											
	Fraser	12,576	4,077	372	1,909	-	1	28,482	48	33,381	1,374
Total First Nations FSC Catch		12,576	4,077	372	1,909	-	1	28,482	48	33,381	1,374
First Nations Commercial											
	Fraser	1		46	12			6,318		3	3
Total First Nations Commercial Catch		1	-	46	12	-	-	6,318	-	3	3
Commercial											
	Fraser	-	1	94	348	-	1	33,339	19	-	18
Total Commercial Catch		-	1	94	348	-	1	33,339	19	-	18
Recreational											
	Fraser	21	0	23,570	19,225	0	0	6,618	22,134	11,861	3,412
Total Recreational Catch		21	0	23,570	19,225	0	0	6,618	22,134	11,861	3,412
TOTALS		**12,598**	**4,078**	**24,082**	**21,494**	**-**	**2**	**74,757**	**22,201**	**45,245**	**4,807**

TABLE 41: TEST FISHING CATCH TABLE

Test-Fisheries	Start Date	End Date	Boat Days	Sockeye kept	Sockeye released	Coho kept	Coho released	Pink kept	Pink released	Chum kept	Chum released	Chinook kept	Chinook released	GRAND TOTAL
Albion Chinook Gillnet	19-Apr-20	20-Oct-20	158	48	-	41	-	-	-	977	-	1,287	-	**2,353**
Albion Chum Gillnet	1-Sep-20	23-Nov-20	50	2	-	545	-	-	-	6,152	-	450	-	**7,149**
* Mquqwin / Brooks Chinook Troll	N/A	N/A	N/A											**-**
Juan De Fuca Chum Seine	29-Sep-20	6-Nov-20	24	-	-	-	-	-	-	1,794	2,508	-	5	**4,307**
Area 12 Chum Seine	21-Sep-20	28/0ct/20	66	-	5	-	148	-	6	32,077	2,893	-	13	**35,142**
* Naka Creek Sockeye Gillnet	N/A	N/A	N/A											**-**
* Area 13 Sockeye Seine	N/A	N/A	N/A											**-**
Area 23 Sockeye Seine	7-Jun-20	20-Jul-20	16	6,447	2,431	-	-	-	-	-	-	-	85	**8,963**
Blinkhorn Sockeye Seine	20-Jul-20	5-Aug-20	17	865	719	-	89	-	17,513	-	142	-	142	**19,470**
Round Island Sockeye Gillnet	9-Jul-20	28-Jul-20	20	67	-	51	125	259	1	4	-	5	23	**535**
Round Island Sockeye Gillnet AT 90 Mesh Net Study	9-Jul-20	28-Jul-20	20	135	-	88	308	550	-	5	-	20	48	**1,154**
San Juan Sockeye Seine	21-Jul-20	6-Aug-20	17	1,044	220	-	507	-	31	-	8	-	853	**2,663**
San Juan Sockeye Gillnet	11-Jul-20	30-Jul-20	20	1,375	-	109	14	39	-	9	-	138	58	**1,742**
Whonnock Gillnet	23-Jun-20	8-Sep-20	78	333	22	20	4	-	-	6	-	709	94	**1,188**
Cottonwood Gillnet	8-Jul-20	4-Aug-20	28	22	4	-	-	-	-	-	-	2	6	**34**
Qualark Gillnet	11-Jul-20	4-Sep-20	55	926	-	-	1	-	-	-	-	827	97	**1,851**
Tyee														
** GST Troll Coho Sampling						44	15						161	**220**
Grand Total				**11,264**	**3,401**	**898**	**1,211**	**848**	**17,551**	**41,024**	**5,551**	**3,438**	**1,585**	**86,771**

All test fish catches include assessment and non-assessment sets

* Did not operate in 2020

** New for 2020

Note: Jacks are included in the above test fishing catches, if encountered

TABLE 42: ESSR CATCH TABLE

Hatcheries	Sockeye kept	Sockeye released	Coho kept	Coho released	Pink kept	Pink released	Chum kept	Chum released	Chinook kept	Chinook released	GRAND TOTAL
Robertson Creek	-	-	3,642		-	-	-	-	23,700		**27,342**
Quinsam River					160,667						**160,667**
Puntledge River									1,197		**1,197**
Nitinat River	-	-	92		-	-	32,288		15,922		**48,302**
Conuma River											**-**
Weaver Spawning Channel											**-**
Chehalis Hatchery							5,892	-		-	**5,892**
Inch Hatchery			7,324	-			4,841	-			**12,165**
Chilliwack Hatchery			28,615	-			649	-	3,302	-	**32,566**
Capilano Hatchery			2,285						1,018		**3,303**
Tenderfoot Hatchery											**-**
Big Qualicum River			15,223		10,269				8,285		**33,777**
Little Qualicum River									4,732		**4,732**
Cowichan River											
Nanaimo River			30				1,873				**1,903**
											-
Grand Total	**-**	**-**	**57,211**	**-**	**170,936**	**-**	**45,543**	**-**	**58,156**	**-**	**331,846**

D. 2020 UPDATE REPORTS FOR SALMONID ENHANCEMENT PROGRAMS IN THE UNITED STATES AND CANADA

The Pacific Salmon Treaty between Canada and the United States requires that information be exchanged annually regarding operation of and plans for existing enhancement projects, plans for new projects, and views concerning the other country's enhancement projects. In 1988, a committee was formed to develop recommendations for the pre- and post-season and enhancement report formats. In summary, the committee proposed that:

- detailed reports on existing enhancement facilities of the type produced in 1987 be prepared every four years;
- the Parties will annually update information on eggs taken, fry or smolt released and adults back to the facility; significant changes in facility mission or production will be highlighted in narratives; and
- the Parties will provide periodic reports through the appropriate panels on new enhancement plans.

2004 ANNUAL REPORT ON THE SALMON ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2005 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2006 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2007 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2008 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2009 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2010 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2011 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2012 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2013 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2014 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2015 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2016 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2017 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2018 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2019 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2020 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2021.

2006 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2007 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2008 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2009 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2010 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2011 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2012 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

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2014 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

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2015 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

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2016 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2017 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2018 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2019 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

2020 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2021.

Reports of the Joint Technical Committees

PART V
REPORTS OF THE JOINT TECHNICAL COMMITTEES

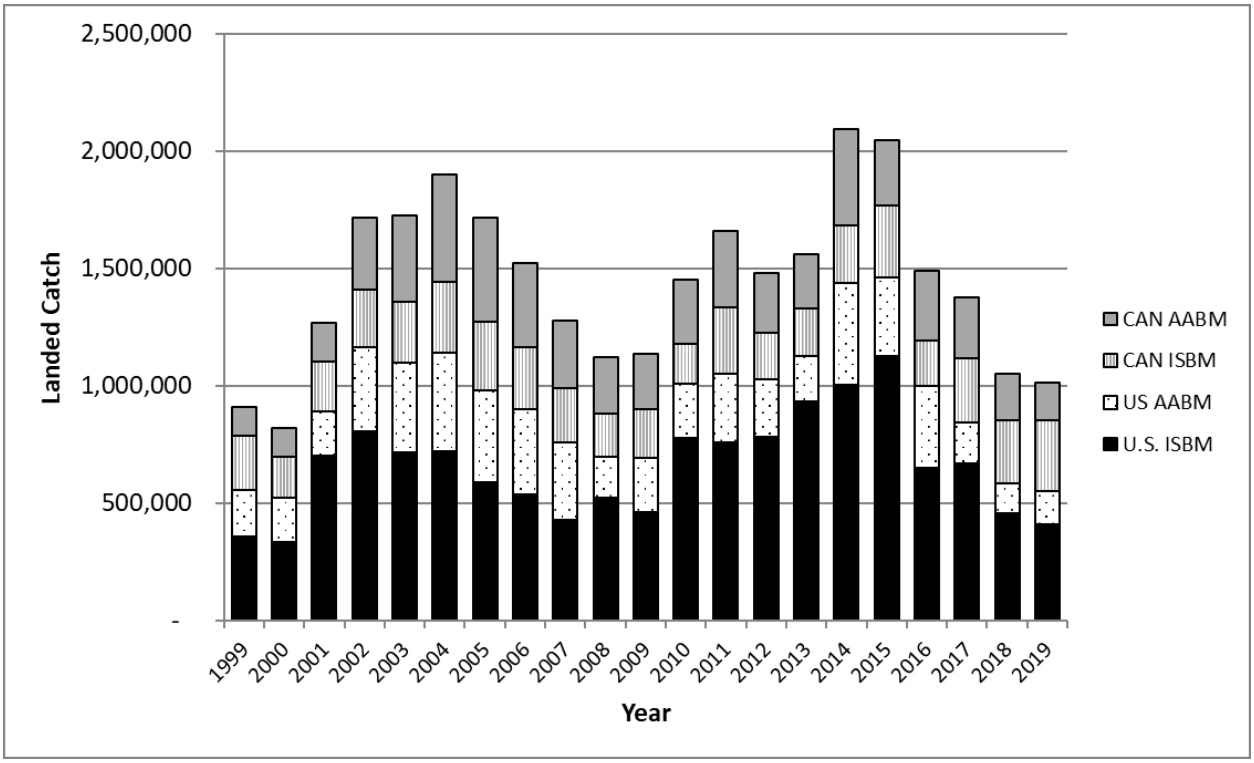
Executive summaries of reports submitted to the Commission by the joint technical committees during the period April 1, 2020 to March 31, 2021 are presented in this section. Copies of the complete reports are available from the library of the Pacific Salmon Commission.

A. JOINT CHINOOK TECHNICAL COMMITTEE

ANNUAL REPORT OF CATCH AND ESCAPEMENT FOR 2019
TCCHINOOK (20)-01, June 2020

The Pacific Salmon Treaty (PST) requires the Chinook Technical Committee (CTC) to provide the Pacific Salmon Commission (PSC)annual catch and escapement data for Chinook salmon stocks that are managed under the Treaty. This report contains three sections that indicate stock performance in the context of management objectives for 2019: Chinook salmon catches, escapements, and stock status.

Section 1 summarizes, for 2019, fishery catches by region and available estimates of incidental mortality (IM) by fishery, with accompanying commentary on the fisheries, management, and derivation of IM. Canada and the US compile annual catch data and estimates of IM for their respective jurisdictions within the PST area according to fishery regimes, regional locations, and gear type. Landed catch (LC) is fully reported in the appendices for each geographic area covered under the PST. A summary for all PSC Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries, from 1999 to 2019, is provided in the figure below. Time series of available IM estimates are provided in Appendix A for individual fisheries. Appendix A also includes a coastwide summary of the historical time series of LC, IM, and their sum, total mortality (TM), across all AABM and ISBM fisheries.

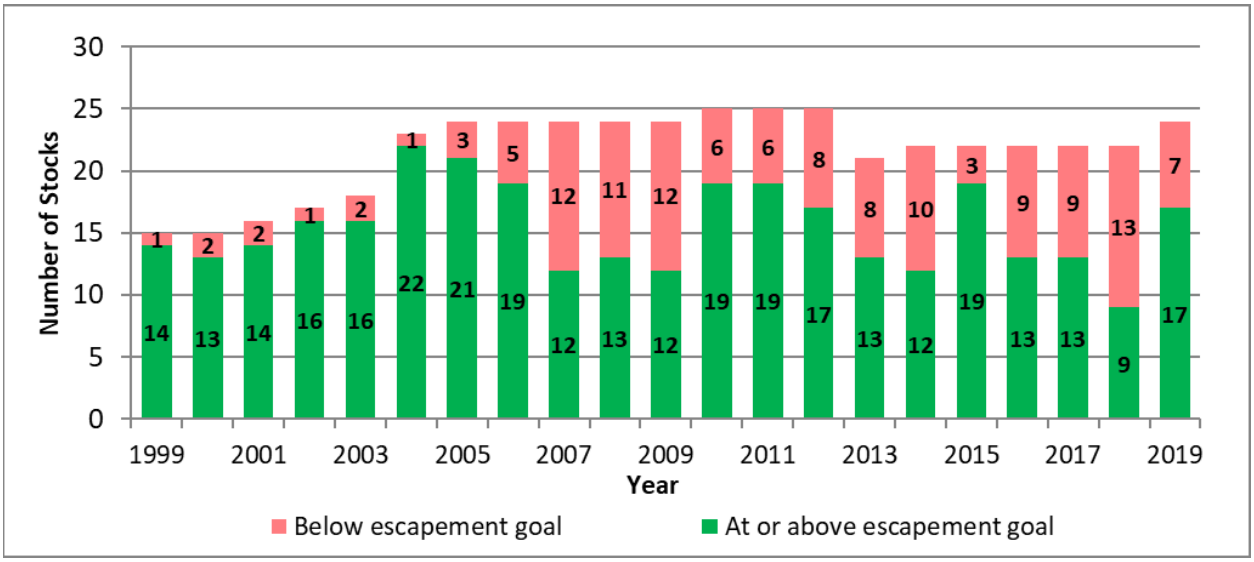


Estimates of landed catch for U.S. and Canada AABM and ISBM fisheries, 1999–2019.

The preliminary estimate of Treaty LC of Chinook salmon for all PST fisheries in 2019 is 1,015,517, of which 551,765 were taken in U.S. fisheries and 463,752 were taken in Canadian fisheries. Total estimated IM associated with this harvest is 215,587 (18% of the TM) in nominal fish. The TM for all PST fisheries in nominal fish was 1,231,104 Chinook salmon, which is approximately 8,100 less than estimated for 2018 (Table A25). Of the PSC TM estimated for 2019, 663,305 occurred in U.S. fisheries and 567,799 occurred in Canadian fisheries. For U.S. fisheries, 75% of the LC and 49% of IM occurred in ISBM fisheries; in Canada, 65% of the LC and 74% of IM occurred in ISBM fisheries. For some component sport fisheries, 2019 LC and IM estimates are not yet available. Data for calculating summary information for 2019 and previous years can be found in Table A23, Table A24, and Table A25.

Section 2 includes an assessment of escapement for 49 PST escapement indicator stocks. Some of the indicator stocks are stock aggregates. There are 24 stocks that currently have PSC-agreed biologically based goals, 6 of which have escapement goals defined as a range, and 18 having escapement goals that are the point estimate of SMSY (escapement producing maximum sustained yield). Annual escapements that are more than 15% below the lower end of the range or the SMSY point estimate are noted. The CTC will continue to review escapement goals for stocks as they are provided by respective agencies.

From 1999 to 2019, the percentage of stocks that met or exceeded escapement goals or goal ranges has varied from 41% to 96% (see figure below). In 2019, the percentage of stocks that met or exceeded goal was 71%. Of the 7 stocks below goal, 2 stocks (Stikine and Atnarko) were within 15% of the goal and 5 stocks were more than 15% below goal (Taku, Harrison, Queets spring/summer, Hoh spring/summer, and Siuslaw).

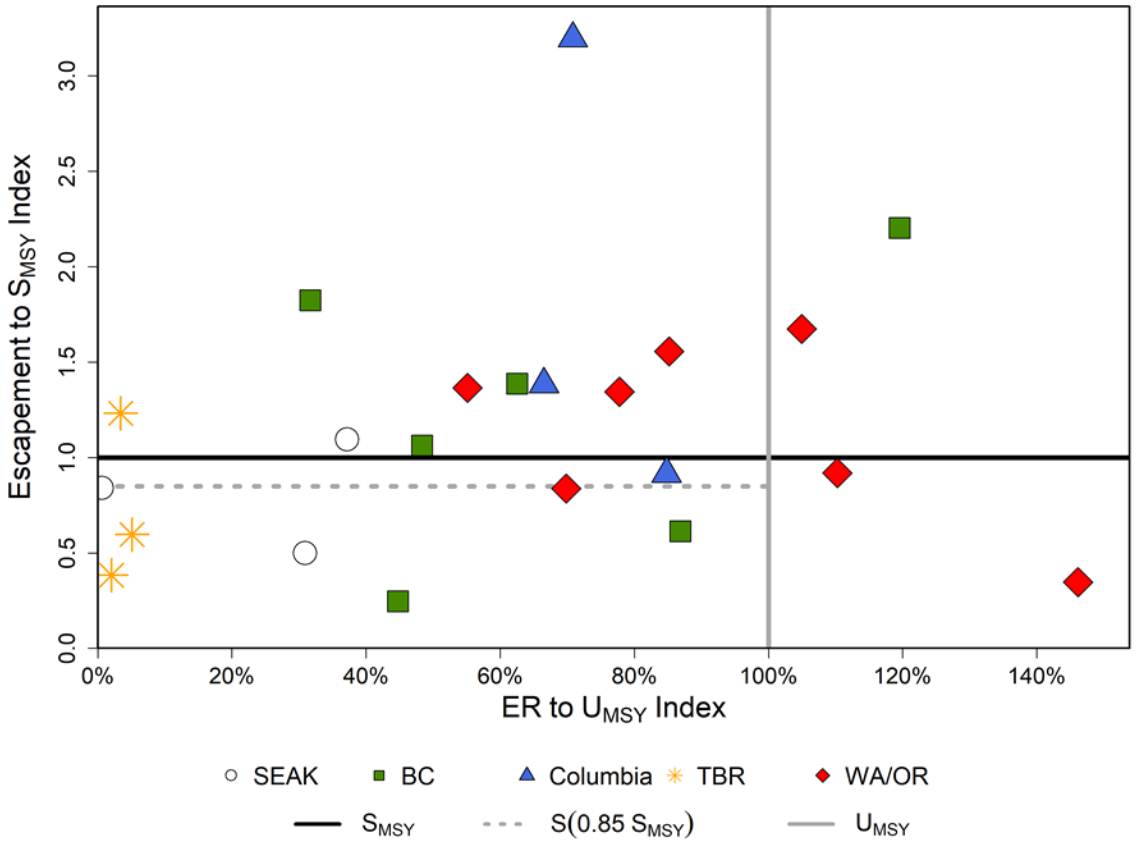


Number and status of stocks with PSC-agreed escapement goals, 1999–2019.

Note: The Keta, Blossom, and King Salmon rivers and Andrews Creek stocks were dropped as escapement indicator stocks in 2013 and Grays Harbor fall was added in 2014. In 2019, the Deschutes and Chickamin rivers stocks were dropped and the Atnarko, Lower Shuswap. Skagit spring, and Skagit summer/fall stocks were added bringing the total number of current indicator stocks with PSC-agreed escapement goals to 24.

Section 3 presents a synoptic evaluation of stock status that summarizes the performance of those stocks relative to established goals over time for many of the escapement indicator stocks. This evaluation draws upon catch information (Section 1), escapement information (Section 2), and exploitation rates to evaluate the status of stocks. Synoptic plots present both the current status of stocks and the history of the stocks relative to PST management objectives; this information summarizes the performance of fisheries management relative to stocks achieving established or potential goals. The synoptic summary figure below shows that, of the 22 stocks with 2018 data and biological reference points as indicated in Table 3.2, 10 of the stocks were in the safe zone (exploitation below UMSY and escapement above SMSY). Two stocks,

Siuslaw and Nehalem, were in the high-risk zone, with the Siuslaw displaying the extreme value to the far right. One stock, Lewis, was in the buffer zone. Two stocks, Cowichan and Siletz, experienced exploitation above UMSY with escapements exceeding SMSY. Seven stocks were in the low escapement and low exploitation zone: Situk, Chilkat, Taku, Stikine, Nicola, Harrison, and Queets Fall.



Synoptic summary by region of stock status for stocks with escapement and exploitation rate data in 2018 (escapement and exploitation rate data for each stock was standardized to the stock-specific escapement goal and UMSY reference points).

2019 EXPLOITATION RATE ANALYSIS AND MODEL CALIBRATION – VOLUME ONE TCCHINOOK (21)-01, February 2021

The 2019 Pacific Salmon Treaty (PST) Agreement requires the Chinook Technical Committee (CTC) to report annual catches, harvest rate indices, estimates of incidental mortality (IM) and exploitation rates for all Chinook salmon fisheries and stocks harvested within the Treaty area. The CTC provides an annual report to the Pacific Salmon Commission (PSC) to fulfill this obligation, as agreed by Canada and the United States (U.S.) under Chapter 3 of the Treaty. This report contains four sections: 1) an introduction and description of the Chinook model procedures, 2) a review of the results from the annual Exploitation Rate Analysis (ERA) based on coded wire tag (CWT) data, 3) a description of the calibration (CLB) procedure and results from the calibration of the PSC Chinook Model, and 4) CWT analyses for mark-selective fisheries (MSFs). This report includes the results of the 2019 annual exploitation rate assessment of CWT data through 2017 (Southern U.S. stocks) and 2018 (Alaskan and Canadian stocks), the preseason PSC Chinook Model calibration results for 2019 (CLB 1905), and post-season PSC Chinook Model calibration results through 2018 (CLB 1905). Model calibrations are named using the last two digits of the year (19) followed by the iteration number of the calibration (05). Results include the abundance indices (AIs) for the aggregate abundance-based management (AABM) fisheries and individual stock-based management (ISBM) indices

for each country. The 2019 PST Agreement applies to all analyses and model calibration results for 2019 fisheries. Assessment of 2018 fisheries, including post-season AIs, were conducted under the 2009 PST Agreement.

AABM Abundance Indices and Associated Catches

The pre- and post-season AIs for the three AABM fisheries—Southeast Alaska (SEAK), Northern British Columbia (NBC), and West Coast Vancouver Island (WCVI) are presented in Table 1. The 2019 PST Agreement also specifies an allowable catch associated with each AI for each AABM fishery. Each year, the final model calibration provides the post-season AIs for the previous year and the pre-season AIs for the current year. Pre-season AIs are used to estimate the total allowable catch (TAC) limits in the upcoming fishing season for the NBC and WCVI AABM fisheries. Beginning in 2019, the pre-season TAC limit for the SEAK AABM fishery is determined by the SEAK early winter District 113 troll fishery catch per unit effort (CPUE) metric. From 2009 to 2018, catch overages and underages were tracked relative to post-season AIs and their associated allowable catches, which are calculated by the first CTC-accepted post-season model calibration for a fishing year, per 2009 PST Agreement Chapter 3 subparagraph 11(a)(i). Beginning in 2019, catch overages and underages are tracked relative to pre-season and postseason AIs (or the CPUE metric) and their associated allowable catch limits. Any overages relative to the pre-season allowable catch limits must be paid back in the subsequent fishing year, per 2019 PST Chapter 3 subparagraph 6(h)(i). If overages are observed in two successive years relative to post-season allowable catch limits, then the affected AABM fishery must take steps to reduce the variance between the pre-season and post-season allowable catch limits per Chapter 3 subparagraph 7(b)(i) and the CTC must present a plan to the PSC to improve the pre-season, in-season and other management tools to reduce the discrepancies between the pre-season and post-season allowable catch limits to a maximum level of 10% per Chapter 3 subparagraph 7(b)(ii).

Table 1. Abundance Indices for 2009–2019 for the Southeast Alaska (SEAK), Northern British Columbia (NBC), and West Coast Vancouver Island (WCVI) aggregate abundance-based management (AABM) fisheries. Post-season indices for each year are from the first post-season calibration following the fishing year.

	SEAK		NBC		WCVI	
Year	Pre-season	Post-season	Pre-season	Post-season	Pre-season	Post-season
2009	1.33	1.20	1.10	1.07	0.72	0.61
2010	1.35	1.31	1.17	1.23	0.96	0.95
2011	1.69	1.62	1.38	1.41	1.15	0.90
2012	1.52	1.24[1]	1.32	1.15[1]	0.89	0.76[1]
2013	1.20[1]	1.63	1.10[1]	1.51	0.77[1]	1.04
2014[2]	2.57	2.20	1.99	1.80	1.20	1.12
2015[2]	1.45	1.95	1.23	1.69	0.85	1.05
2016	2.06	1.65	1.70	1.39	0.89	0.70
2017	1.27	1.31	1.15	1.14	0.77	0.64
2018	1.07	0.92	1.01	0.89	0.59	0.59
2019	3.38[3]		0.96		0.61	

[1] Due to changes in calibration procedures (reviewed in section 3.1.4), 2012 post-season (CLB 1309) and 2013 pre-season (CLB 1308) AIs are based on different calibrations; the procedures and assumptions CLB 1309 mirror those used during the 2012 pre-season calibration.
[2] Due to a disagreement over Model calibration 1503, the Commission agreed to use CLB 1602 to estimate the 2014 and 2015 post-season AIs and 2016 pre-season AI.
[3] Per paragraph 6(b) of the 2019 PST Agreement, this number represents a catch limit based on a CPUE statistic and corresponds to an AI of 1.07.

The maximum allowable pre-season and post-season Treaty catch by fishery for each year and the observed Treaty catches (total catch minus any hatchery add-on and exclusion catch) are shown for AABM fisheries for 2009–2019 in Table 2.

Table 2. Pacific Salmon Treaty (PST) pre-season allowable catches (2009–2019), and postseason allowable catches and observed catches (2009–2018) for Southeast Alaska (SEAK), Northern British Columbia (NBC), and West Coast Vancouver Island (WCVI) aggregate abundance-based management (AABM) fisheries. Post-season values for each year are from the first post-season calibration following the fishing year.
first post-season calibration following the fishing year.

Year	SEAK (Troll, Net, Sport)			NBC (Troll, Sport)			WCVI (Troll, Sport)		
	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch
2009	218,800	176,000	227,954	143,000	139,100	109,470	107,800	91,300	124,617
2010	221,800	215,800	230,611	152,100	160,400	136,613	143,700	142,300	139,047
2011	294,800	283,300	291,161	182,400	186,800	122,660	196,800	134,800	204,232
2012	266,800	205,100	242,821	173,600	149,500	120,306	133,300	113,800	135,210[2]
2013	176,000	284,900	191,388	143,000	220,300	115,914	115,300	178,000	116,871[2]
2014[1]	439,400	378,600	435,195	290,300	262,600	216,901	205,400	191,700	192,705[2]
2015[1]	237,000	337,500	335,026	160,400	246,600	158,903	127,300	179,700	118,974[2]
2016	355,600	288,200	350,704	248,000	183,900	190,181	133,300	104,800	103,093[2]
2017	209,700	215,800	175,414	149,500	148,200	143,330	115,300	95,800	117,416[2]
2018	144,500	118,700	127,776	131,300	115,700	108,976	88,300	88,300	85,330
2019	140,323			124,800			79,900		

[1] Due to a disagreement over Model calibration 1503, the Commission agreed to use output from CLB 1602 to estimate the catches associated with the 2014 and 2015 post-season AIs and 2016 pre-season AIs.
[2] WCVI observed catches have increased from previously reported values after a new electronic sport reporting system (internet recreational effort and catch; iREC) was implemented and approved for use.
[3] Per paragraph 6 (b) of the 2019 PST Agreement, this number represents a catch limit based on a CPUE statistic.

Overages and underages in AABM catches, relative to the first post-season calibration for a fishing year (Table 3), can arise due to the in-season management system, errors in the preseason calibration process (e.g., forecast error), or a combination of the two. The relative influence of each was evaluated by inspecting differences in actual landed catch and allowable catches from both pre-season and post-season calibrations (Table 3). In 2018, actual landed catch was less than pre-season allowable catch by 16,724 (12%) in SEAK, 22,324 (17%) in NBC, and 2,970 (3%) in WCVI due to in-season management. In terms of the post-season allowable catches for evaluation of the provisions of the PST (subparagraph 11(a)(i)), 2018 actual catches were less than the post-season allowable catches by 6,724 (6%) in NBC and 2,970 (3%) in WCVI, and greater than the post-season allowable catch by 9,076 (8%) in SEAK.

From 2009–2018, the SEAK AABM observed catch was greater than post-season allowable catch in 7 of 10 years, whereas in NBC observed catch was greater than post-season allowable catch in 1 of 10 years and WCVI observed catch was greater than post-season allowable catch in 5 of 10 years (Table 3).

Table 3. Summary of aggregate abundance-based management (AABM) fishery performance and deviations between pre- and post-season allowable catches and observed catches for Southern Alaska (SEAK), Northern British Columbia (NBC), and West Coast Vancouver Island (WCVI), 2009–2018.

Positive values indicate an overage and negative values indicate an underage. Colored cells indicate AABM fishery performance relative to Treaty obligations; cells shaded green indicate where a fishery met Treaty obligations and red cells indicate where a fishery exceeded Treaty obligations.

Year	Mgmt error Obs - Pre catches	Mgmt error Obs - Pre %	Model error Pre - Post catches	Model error Pre - Post %	Total error Obs - Post catches	Total error Obs - Post %
SEAK (Troll, Net, Sport)						
2009	9,154	4%	42,800	24%	51,954	30%
2010	8,811	4%	6,000	3%	14,811	7%
2011	-3,639	-1%	11,500	4%	7,861	3%
2012	-23,979	-9%	61,700	30%	37,721	18%
2013	15,388	9%	-108,900	-38%	-93,512	-33%
2014	-4,205	-1%	60,800	16%	56,595	15%
2015	98,026	41%	-100,500	-30%	-2,474	-1%
2016	-4,896	-1%	67,400	23%	62,504	22%
2017	-34,286	-16%	-6,100	-3%	-40,386	-19%
2018	-16,724	-12%	25,800	22%	9,076	8%
NBC (Troll, Sport)						
2009	-33,530	-23%	3,900	3%	-29,630	-21%
2010	-15,487	-10%	-8,300	-5%	-23,787	-15%
2011	-59,740	-33%	-4,400	-2%	-64,140	-34%
2012	-53,293	-31%	24,100	16%	-29,193	-20%
2013	-27,086	-19%	-77,300	-35%	-104,386	-47%
2014	-73,399	-25%	27,700	11%	-45,699	-17%
2015	-1,497	-1%	-86,200	-35%	-87,697	-36%
2016	-57,819	-23%	64,100	35%	6,281	3%
2017	-6,170	-4%	1,300	1%	-4,870	-3%
2018	-22,324	-17%	15,600	13%	-6,724	-6%
WCVI (Troll, Sport)						
2009	16,817	16%	16,500	18%	33,317	36%
2010	-4,653	-3%	1,400	1%	-3,253	-2%
2011	7,432	4%	62,000	46%	69,432	52%
2012	1,910	1%	19,500	17%	21,410	19%
2013	1,571	1%	-62,700	-35%	-61,129	-34%
2014	-12,695	-6%	13,700	7%	1,005	1%
2015	-8,326	-7%	-52,400	-29%	-60,726	-34%
2016	-30,207	-23%	28,500	27%	-1,707	-2%
2017	2,116	2%	19,500	20%	21,616	23%
2018	-2,970	-3%	0	0%	-2,970	-3%

Note: Due to a disagreement over Model calibration 1503, the Commission agreed to use output from CLB 1602 to estimate the catches associated with the 2014 and 2015 post-season AIs and 2016 pre-season AIs.

ISBM Indices

For ISBM fisheries, Paragraph 8 of the Chinook Chapter of the 2009 PST Agreement specifies that Canada and the U.S. will reduce base period exploitation rates on specified stocks by 36.5% (Canada) and 40% (U.S.), equivalent to ISBM indices of 63.5% (Canada) and 60% (U.S.). This requirement is referred to as the general obligation and does not apply to stocks that achieve their CTC-agreed escapement goal. The 2009 PST Agreement also specifies that for those stocks in which the general obligation is insufficient to meet the CTC-agreed escapement goal, the Party in whose waters the stock originates shall further constrain its fisheries to an extent that is not greater than the average ISBM exploitation rate which occurred in the years 1991 to 1996 (Paragraph 8(c)). This requirement is referred to as the additional obligation.

Post-season ISBM Indices

For 2017, five of the seven Canadian ISBM indices that could be calculated from CWT data were reduced more than required under the Agreement, WCVI Falls (0.629) exceeded the additional obligation rate (0.475), and Harrison (0.272) did not meet its escapement goal and exceeded its additional obligation rate (0.268, Table 4). For 2018, the computation of CWT-based ISBM indices was possible for four Canadian stocks, and all four were reduced more than required under the 2009 PST Agreement (Table 4).

Table 4. Review of performance in the Canadian individual stock-based management (ISBM) fisheries, 2009–2018.

Fisheries shaded in green or red indicate whether the Treaty obligation was met or not, respectively.

Stock (CTC agreed goal year)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Yakoun, Nass, Skeena, Atnarko, Dean (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Artlish, Burman, Kauok, Tahsis, Tashish, Marble, Gold (no goal)	0.489	0.207	0.633	0.625	0.333	0.313	0.610	0.409	0.629	0.430
Cowichan (2005)	0.469	0.372	0.181	0.409	0.387	0.431	0.297	0.456	0.281	0.806
Nanaimo (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Klinaklini, Kawkweikan, Wakeman, Kingcome, Nimpkish (no goal)	0.200	0.365	0.091	0.143	0.086	0.079	0.211	0.207	0.235	0.197
Harrison (2001)	0.062	0.083	0.069	0.125	0.138	0.185	0.142	0.182	0.272	0.235
Upper Fraser, Mid-Fraser, Thompson (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nooksack (no goal)	0.147	0.029	0.134	0.056	0.069	0.086	0.083	0.095	0.059	NA
Skagit Spring (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Skagit Fall (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stillaguamish (no goal)	0.211	0.139	0.209	0.241	0.170	0.449	0.263	0.193	0.160	NA
Snohomish (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lake Washington (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Green River (no goal)	0.275	0.135	0.275	0.310	0.301	0.412	1.023	0.730	0.441	NA

Notes: General obligation (0.635) or additional obligation (1991-1996 ISBM rate average for the Party in whose waters the stock not meeting escapement goal originates), whichever is lower, for stocks listed in Annex 4, Chapter 3, Attachment V.

NA = no data available. NC = not calculated.

In 2017, 13 of the 15 U.S. stocks for which CWT-based ISBM indices could be calculated in the U.S. ISBM fishery either met their escapement goals (12 stocks) or had an ISBM index below 0.600 (three stocks; Table 5). Only the Nehalem (2.134) and Siuslaw (2.559) exceeded the general obligation of 0.600; these stocks have a PSC-agreed escapement goal that was not met so the general obligation applies. Additionally, the US ISBM index for the Harrison stock (Fraser Late) was well below the general obligation (0.285).

Table 5. Review of performance in the U.S. individual stock-based management (ISBM) fisheries, 2009–2018.

Fisheries shaded in green or red indicate whether the Treaty obligation was met or not, respectively.

Stock Group	Stock (CTC agreed goal year)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fraser Late	Harrison (2001)	0.136	0.295	0.285	0.351	0.442	0.38	0.283	0.173	0.285	NC
Puget Sound Spring	Nooksack (no goal)	0.585	0.757	0.89	1.859	0.871	1.283	0.551	0.269	0.422	NC
	Skagit (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Puget Sound Fall	Skagit (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Stillaguamish (no goal)	0.212	0.196	0.199	0.164	0.236	0.749	0.28	0.169	0.144	NC
	Snohomish (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Lake Washington (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Green River (no goal)	0.486	0.289	0.417	0.521	0.301	0.408	0.62	0.312	0.352	NC
WA Coast Falls	Hoko (no goal)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Grays (2014)	0.689	0.624	0.741	0.943	0.781	0.75	0.984	0.643	0.556	NC
	Queets (2004)	0.662	0.482	0.701	1.03	0.926	0.518	0.278	0.419	0.758	NC
	Hoh (2004)	1.003	0.839	1.753	1.59	2.642	1.257	1.213	0.259	1.164	NC
	Quillayute (2004)	1.821	1.377	1.693	1.961	1.782	2.58	2.037	1.097	2.268	NC
Columbia Fall	Brights (2002)	2.67	1.678	2.706	2.711	2.223	1.938	1.604	1.632	1.819	NC
	Deschutes (2010)	0.82	0.696	0.771	0.774	0.794	0.758	0.698	0.782	1.021	NC
	Lewis (1999)	0.217	0.554	1.37	0.866	1.111	0.815	0.546	0.479	0.622	NC
Columbia Summers	Summers (1999)	4.947	6.898	10.978	6.13	7.774	8.152	7.504	8.972	8.253	NC
N. Oregon Coast	Nehalem (1999)	0.339	1.03	2.077	1.776	2.301	2.909	3.455	1.782	2.134	NC
	Siletz (1999)	1.344	0.636	3.061	1.682	1.783	1.807	3.557	1.797	2.656	NC
	Siuslaw (1999)	1.381	1.386	2.24	1.517	2.39	1.882	2.396	2.556	2.559	NC

Notes: General obligation (0.600) or additional obligation (1991-1996 ISBM rate average for the Party in whose waters the stock not meeting escapement goal originates), whichever is lower, for stocks listed in Annex 4, Chapter 3, Attachment V.

NA = no data available; NC = not calculated.

Mark-Selective Fisheries

Section 4 of this report contains harvest information by region from MSFs. In 2018, MSFs occurred in terminal areas along the Oregon and Washington coasts, and in the Columbia River, Puget Sound, and Canadian Strait of Juan de Fuca. The magnitude of impact of a MSF relative to the total exploitation of a stock can be measured using the percentage of the total landed catch in net, sport, and troll fisheries of tagged and marked PSC indicator stocks that occurs in MSFs. Traditionally, the CTC has used PSC indicator stocks that have been double index tagged (DIT) to evaluate the impact of MSFs on the unmarked stocks represented by the unmarked tag group in a DIT pair[2], however many CWT indicator stocks do not have a DIT pair (e.g., Canada and Alaska origin stocks). Accordingly, an approach was applied in 2018 to estimate mortality distributions for natural stocks that have single index tag (SIT) indicator stocks under conditions where the MSF impacts mainly occur on mature SIT fish proximal to their terminal area.

[2] A DIT group consists of at least two tag groups, one with the mass mark (or adipose fin clip) and one without the mark. These two tag groups are treated identically except for the mark, and differences in mortality should be due to the MSFs—assuming there is no mark mortality occurring prior to recruitment to the fisheries.

B. JOINT CHUM TECHNICAL COMMITTEE

2017 POST SEASON SUMMARY REPORT
TCCHUM (21)-01, January 2021

This Pacific Salmon Commission (PSC) Joint Chum Technical Committee report documents the information on Chum Salmon stocks and fisheries in southern British Columbia (B.C.) and Washington (WA) for the year 2017 to address the specific provisions and requirements of Chapter 6, Annex IV (Chum Annex) of the Pacific Salmon Treaty (PST or Treaty) (Appendix A). The Treaty between the governments of Canada and the United States of America (U.S.) concerning Pacific salmon is designed to facilitate co-operation in the management, research and enhancement of Pacific salmon stocks. The Chum Annex requires that Canada and the U.S. maintain a Joint Chum Technical Committee reporting to the Southern Panel and the Commission and that certain fisheries for Chum Salmon in southern B.C. and WA be managed in a specified manner (Appendix A). Certain fisheries of each country, while not specifically mentioned in the PST, are known to harvest Chum Salmon originating in the other country.

This report presents various aspects of Chum Salmon found in B.C. waters between Vancouver Island and the mainland, off the west coast of Vancouver Island, and in WA waters. This report also discusses the management actions of Canada and the U.S. in relation to the PST requirements for Chum Salmon and provides a summary of the last 10 years of catch and escapement information for Chum Salmon of concern to the Treaty. Returns in 2017 were below the recent 9-year average in B.C and above the recent 9-year average in WA. The Chum Technical Committee continued work on components of the strategic plan outlined in the 2010 report, which included collecting and exchanging tissue samples from mixed-stock fisheries and spawning escapements.

C. JOINT COHO TECHNICAL COMMITTEE

No reports were finalized for publication during this reporting period.

D. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

No reports were finalized for publication during this reporting period.

E. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

TRANSBOUNDARY PANEL STRATEGIC SALMON PLAN
TCTR (19)-04, May 2020

The Transboundary Panel Strategic Salmon Plan (Plan) was developed by the Transboundary Panel of the Pacific Salmon Commission to provide strategic guidance for addressing priority information needs/data gaps related to salmon stock assessment, enhancement, or habitat restoration in the transboundary Alsek, Taku and Stikine rivers (Figure 1). The Plan was first developed and implemented for the 2009 to 2018 period, followed by review and updating to maintain relevance for the 2019 to 2028 period.

The bilateral Transboundary Panel is chartered to provide information and make recommendations on Annex IV, Chapter 1 of the Pacific Salmon Treaty (PST) for stocks of salmon originating in the Alsek, Taku, and

Stikine Rivers[3]. The Transboundary Technical Committee (TTC) assists the Panel to achieve objectives outlined in Chapter 1.

Plan Purpose

The Transboundary Panel Strategic Salmon Plan identifies projects, programs or actions that are important to advancing and achieving the obligations set out within Transboundary Rivers Agreement (Annex IV, Chapter 1) for the period 2019–2028[4], or that are likely to conserve salmon and benefit salmon management on the transboundary rivers.

The Transboundary Panel anticipates that the Plan will also be considered by the Alaska Department of Fish and Game (ADF&G), the Fisheries and Oceans, Canada (DFO) and others in the allocation of resources to meet priority needs relevant to transboundary salmon stocks. The Plan is also intended to communicate priority themes pertaining to Transboundary salmon monitoring, enhancement and research to the Pacific Salmon Commission's Northern Fund Committee.

The plan includes goals and objectives relevant to salmon stock assessment, habitat restoration, enhancement and research on the Alsek, Taku and Stikine rivers.

SALMON MANAGEMENT AND ENHANCEMENT PLANS FOR THE STIKINE, TAKU AND ALSEK RIVERS, 2020
TCTR (20)-01, June 2020

Management of transboundary river salmon to achieve conservation, allocation and enhancement objectives, as stipulated by the PST, requires a cooperative approach by Canada and the United States. It is important that both Parties have a clear understanding of objectives and agree upon procedures to be used in managing fisheries, including criteria upon which modifications of fishing patterns will be based. This document is intended to facilitate cooperative salmon management, stock assessment, research and enhancement by ADF&G, CAFN, DFO, TFN, and TRTFN on transboundary stocks of salmon originating in the Canadian portions of the Stikine, Taku, and Alsek rivers.

This report contains, by river system (starting in the south and moving north) and species, the 2020 salmon run outlooks, spawning escapement goals, a summary of harvest sharing objectives, and an outline of management procedures to be used during the 2020 fisheries. Numerical forecasts are presented for Stikine River large Chinook (MEF > 659 mm; typically age 5–7) and sockeye salmon; Taku River large Chinook, sockeye and coho salmon; and Alsek River Chinook and sockeye salmon. Outlooks for other stocks are given qualitatively with reference to brood year escapement data where available. This report also contains plans for Stikine and Taku rivers sockeye salmon enhancement, as well as a detailed list of 2020 field projects that identify agency responsibility and contacts for various functions within each project. Information shown for 2018, 2019, and 2020 is preliminary. Unless otherwise defined, the 10-year average is 2010 to 2019 and the 5-year average is 2015 to 2019.

F. JOINT TECHNICAL COMMITTEE ON DATA SHARING

No reports were finalized for publication during this reporting period.

[3] The Transboundary Panel was established in Attachment A of the June 30, 1999 Pacific Salmon Treaty Agreement and authorized by Congress on December 15, 2000.

[4] Pacific Salmon Treaty, Annex IV, Chapter 1, Transboundary Rivers, 2019-2028.

G. JOINT SELECTIVE FISHERY EVALUATION COMMITTEE

No reports were finalized for publication during this reporting period.

Publications of the Pacific Salmon Commission

PART VI
PUBLICATIONS OF THE PACIFIC SALMON COMMISSION

Documents listed herein are available to domestic fishery agencies of Canada and the United States, research organizations, libraries, scientists and others interested in the activities of the Commission, through the offices of the Secretariat, 600 - 1155 Robson Street, Vancouver, B.C., V6E 1B5. Photocopying charges may be levied for documents which are out of print.

Reports published by the Pacific Salmon Commission after March 31, 2000 including Commission annual reports, annual reports of the Fraser River Panel, Joint Technical Committee reports and technical reports of the Pacific Salmon Commission are also available in full text format on the Commission's website at www.psc.org.

Documents listed here are those which were published during the period from 2020/21 inclusive. For previous publications, please refer to the Pacific Salmon Commission's website at www.psc.org/publications.

A. ANNUAL REPORTS

Pacific Salmon Commission *2019/2020 Thirty Fifth Annual Report.* December 2020

B. REPORTS OF JOINT TECHNICAL COMMITTEES

i. Joint Chinook Technical Committee

TCCHINOOK (20)-1 *Annual Report of Catch and Escapement for 2019.* June 2020.

TCCHINOOK (21)-1 *2019 Exploitation Rate Analysis and Model Calibration, Volume One.* February 2021.

ii. Joint Chum Technical Committee

TCCHUM (21)-1 *2017 Post Season Summary Report.* January 2021.

iii. Joint Coho Technical Committee

No reports were finalized for publication during this reporting period.

iv. Joint Data Sharing Technical Committee

No reports were finalized for publication during this reporting period.

v. Joint Northern Boundary Technical Committee

No reports were finalized for publication during this reporting period.

vi. Joint Transboundary Technical Committee

TCTR (19)-4 *Transboundary Panel Strategic Salmon Plan*. May 2020

TCTR (20)-1 *Salmon Management and Enhancement Plans for the Stikine, Taku and Alsek Rivers, 2020*. June 2020

vii. Selective Fishery Evaluation Committee

No reports were finalized for publication during this reporting period.

C. REPORTS OF THE FRASER RIVER PANEL

Report of the Fraser River Panel to the Pacific Salmon Commission on the 2018 Fraser River Sockeye Salmon Fishing Season. June 2020.

D. TECHNICAL REPORT SERIES OF THE PACIFIC SALMON COMMISSION

PSC Technical Report No. 43 – Supplementary Materials. *Supplementary materials and data for the PSC Technical Report No. 43 – Taku River Sockeye Salmon Assessment Review and Updated 1984-2018 Abundance Estimates.* February 2021.

E. PUBLICATIONS BY PACIFIC SALMON COMMISSION SECRETARIAT STAFF

Nowak, B.V.R., Bowen, W. D., Whoriskey, K., Lidgard, D. C., Mills Flemming, J. E., & Iverson, S. J. (2020) *Foraging behaviour of a continental shelf marine predator, the grey seal (Halichoerus grypus), is associated with in situ, subsurface oceanographic conditions.* Mov Ecol 8, 41. Available online. October 2020.

F. REPORTS OF THE INTERNATIONAL PACIFIC SALMON COMMISSION

Responsibility for maintenance of the library of the International Pacific Salmon Fisheries Commission, on its termination December 31, 1985, was transferred to the Pacific Salmon Commission. Documents in the Library include historical archival papers which are available to researchers and other interested parties through contact with the Pacific Salmon Commission's Librarian.

Publication of John F. Roos' History of the International Pacific Salmon Fisheries Commission, and P. Gilhousen's Estimation of Fraser River Sockeye Escapements ended all publication series of the International Pacific Salmon Fisheries Commission. Copies of all in-print Progress Reports and Bulletins of the International Pacific Salmon Fisheries Commission are available free of charge through the Library of the Pacific Salmon Commission. Copies of the History of the International Pacific Salmon Fisheries Commission may also be ordered through the Library of the Pacific Salmon Commission.

G. DOCUMENTS SUBMITTED BY THE PARTIES

In compliance with provisions of the Treaty, the Parties provide annual post-season fishery reports and updates on their respective salmonid enhancement programs to the Commission. Documents received during 2020/21 were:

1. *Post Season Report for 2019 Canadian Treaty Limit Fisheries*. Fisheries and Oceans Canada. October 2020.

2. *2019 Post Season Report United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section. October 2020.

Report of the Auditors for 2020/2021

PART VII
AUDITORS' REPORT AND FINANCIAL STATEMENTS FOR THE PERIOD APRIL 1, 2020 TO MARCH 31, 2021

Financial Statements
(Expressed in Canadian dollars)

PACIFIC SALMON COMMISSION

And Independent Auditors' Report thereon

Year ended March 31, 2021

KPMG LLP
PO Box 10426 777 Dunsmuir Street
Vancouver BC V7Y 1K3
Canada
Telephone (604) 691-3000
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INDEPENDENT AUDITORS' REPORT

To the Commissioners of the Pacific Salmon Commission

Opinion

We have audited the financial statements of Pacific Salmon Commission (the "Entity"), which comprise:

- the statement of financial position as at March 31, 2021
- the statement of operations and fund balances for the year then ended
- the statement of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements as at and for the year ended March 31, 2021, of the Entity are prepared, in all material respects, in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2021.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the ***"Auditors' Responsibilities for the Audit of the Financial Statements***" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of Matter – Basis of Accounting

We draw attention to Note 2(a) in the financial statements, which describes the applicable financial reporting framework and the purpose of the financial statements.

As a result, the financial statements may not be suitable for another purpose.

Our opinion is not modified in respect of this matter.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation of the financial statements in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2021; this includes determining that the applicable financial reporting framework is an acceptable basis for the preparation of the financial statements in the circumstances, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.

- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

KPMG LLP

Chartered Professional Accountants

Vancouver, Canada
October 13, 2021

PACIFIC SALMON COMMISSION

Statement of Financial Position
(Expressed in Canadian dollars)

March 31, 2021, with comparative information for 2020

	General Fund	Restricted: Working Capital Fund	Restricted: Test Fishing Fund	Restricted: Special Research and Project Fund	Capital Assets Fund	Restricted: Capital Asset Replacement Reserve Fund ("CARRF")	Total	2021	2020
Assets									
Current assets:									
Cash and cash equivalents	$ 1,049,336	$ -	$ 139,711	$ 2,431,414	$ -	$ 77,874	$ 2,648,999	$ 3,698,335	$ 344,373
Short-term investments	785,946	112,832	700,000	-	-	-	812,832	1,598,778	3,182,407
Accounts receivable	1,060,344	199	3,509	13,381	-	-	17,089	1,077,433	431,884
Prepaid expenses	407,873	-	-	-	-	-	-	407,873	398,881
Due from Yukon River Fund (note 6)	123	-	-	-	-	-	-	123	7,768
Due from Northern Fund (note 6)	582,928	-	-	-	-	-	-	582,928	412,302
Due from Southern Fund (note 6)	16,706	-	-	-	-	-	-	16,706	-
	3,903,256	113,031	843,220	2,444,795	-	77,874	3,478,920	7,382,176	4,777,615
Prepaid expenses	1,017,874	-	-	-	-	-	-	1,017,874	536,114
Capital assets (note 4)	-	-	-	-	633,562	-	633,562	633,562	542,081
	$ 4,921,130	$ 113,031	$ 843,220	$ 2,444,795	$ 633,562	$ 77,874	$ 4,112,482	$ 9,033,612	$ 5,855,810
Liabilities and Fund Balances									
Current liabilities:									
Accounts payable and accrued liabilities	$ 1,050,320	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,050,320	$ 869,617
Government remittances payable	37,088	-	-	-	-	-	-	37,088	38,197
Due to Southern Fund (note 6)	-	-	-	-	-	-	-	-	9,378
Deferred revenue (note 3)	2,360,902	-	-	-	-	-	-	2,360,902	1,513,511
	3,448,310	-	-	-	-	-	-	3,448,310	2,430,703
Accrued employee future benefits (note 5(ii))	533,636	-	-	-	-	-	-	533,636	499,938
	3,981,946	-	-	-	-	-	-	3,981,946	2,930,641
Fund balances:									
Unrestricted	939,184	-	-	-	-	-	-	939,184	777,106
Restricted	-	113,031	843,220	2,444,795	-	77,874	3,478,920	3,478,920	1,605,982
Invested in capital assets	-	-	-	-	633,562	-	633,562	633,562	542,081
	939,184	113,031	843,220	2,444,795	633,562	77,874	4,112,482	5,051,666	2,925,169
Contractual obligations (note 7)									
	$ 4,921,130	$ 113,031	$ 843,220	$2,444,795	$ 633,562	$ 77,874	$ 4,112,482	$ 9,033,612	$ 5,855,810

See accompanying notes to financial statements.

Approved on behalf of the Commission:

Reid, Rebecca Digitally signed by Reid, Rebecca Date: 2021.10.12 16:10:18 -07'00'

Chair, Standing Committee on Finance and Administration

W. Ron Allen

Vice-Chair, Standing Committee on Finance and Administration

PACIFIC SALMON COMMISSION

Statement of Operations and Fund Balances
(Expressed in Canadian dollars)

Year ended March 31, 2021, with comparative information for 2020

	General Fund	Restricted: Working Capital Fund	Restricted: Test Fishing Fund	Restricted: Special Research and Project Fund	Restricted: Capital Assets Fund	Restricted: Capital Asset Replacement Reserve Fund ("CARRF")	Restricted: Total	2021	2020
Revenue:									
Contributions from contracting parties (note 3)	$ 3,759,272	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,759,272	$ 3,759,272
Special contributions - pension	327,402	-	-	-	-	-	-	327,402	325,704
Grants	177,252	-	-	2,647,144	-	-	2,647,144	2,824,396	547,543
Interest	28,475	1,465	9,180	-	-	-	10,645	39,120	98,843
Administration fees	231,034	-	-	-	-	-	-	231,034	232,682
Test fishing	-	-	112,119	-	-	-	112,119	112,119	127,965
	4,523,435	1,465	121,299	2,647,144	-	-	2,769,908	7,293,343	5,092,009
Expenses:									
Amortization	-	-	-	-	179,110		179,110	179,110	211,166
Salaries and employee benefits	3,190,602						-	3,190,602	3,137,389
Unfunded pension liability payments	327,402	-	-	-	-	-	-	327,402	325,704
Travel and transportation	8,027	-	-	-	-	-	-	8,027	155,168
Rents and communication	43,319	-	-	-	-	-	-	43,319	206,817
Contract services	436,096	-	-	-	-	-	-	436,096	598,313
Materials and supplies	53,405	-	-	-	-	-	-	53,405	30,033
Test fishing		-	519,085	-	-	-	519,085	519,085	937,954
Consultations and workshops		-	-	321,940	-	-	321,940	321,940	300,166
Foreign exchange loss (gain)	71,750	-	16,110	-	-	-	16,110	87,860	(46,790)
Loss on disposal of capital assets	-	-	-	-	-	-	-	-	10,909
	4,130,601	-	535,195	321,940	179,110	-	1,036,245	5,166,846	5,866,829
Excess (deficiency) of revenue over expenses	392,834	1,465	(413,896)	2,325,204	(179,110)	-	1,733,663	2,126,497	(774,820)
Fund balance, beginning of year	777,106	111,566	1,257,116	119,591	542,081	117,709	2,148,063	2,925,169	3,699,989
Interfund transfers:									
Contribution to CARRF	(223,000)	-	-	-	-	223,000	223,000	-	-
Purchase of capital assets, net	-	-	-	-	262,835	(262,835)	-	-	-
Purchase of capital assets for Southern Boundary Restoration and Enhancement Trust Fund	(7,756)	-	-	-	7,756	-	7,756	-	-
Fund balance, end of year	$ 939,184	$ 113,031	$ 843,220	$ 2,444,795	$ 633,562	$ 77,874	$ 4,112,482	$ 5,051,666	$ 2,925,169

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Statement of Cash Flows
(Expressed in Canadian dollars)

Year ended March 31, 2021, with comparative information for 2020

	2021	2020
Cash provided by (used in):		
Operations:		
Excess (deficiency) of revenue over expenses	$ 2,126,497	$ (774,820)
Items not involving cash:		
Amortization	179,110	211,166
Loss on disposal of capital assets	-	10,909
Accrued employee benefits (recovery)	33,698	(42,790)
Changes in non-cash operating working capital:		
Accounts receivables	(645,549)	(329,581)
Prepaid expenses	(490,752)	152,775
Accounts payable and accrued liabilities	180,703	27,288
Government remittances payable	(1,109)	6,612
Due from Yukon River Fund, Northern Fund and Southern Fund	(189,065)	(338,879)
Deferred revenue	847,391	(1,553,932)
	2,040,924	(2,631,252)
Investing:		
Purchase of capital assets	(270,591)	(181,114)
Redemption of short-term investments	4,718,353	5,366,446
Purchase of short-term investments	(3,134,724)	(5,182,407)
	1,313,038	2,925
Increase (decrease) in cash and cash equivalents	3,353,962	(2,628,327)
Cash and cash equivalents, beginning of year	344,373	2,972,700
Cash and cash equivalents, end of year	$ 3,698,335	$ 344,373

See accompanying notes to financial statements.

1. Nature of organization:

Pacific Salmon Commission (the "Commission") was established by a Treaty between the Governments of Canada and the United States of America (the "Contracting Parties") to promote cooperation in the management, research, and enhancement of Pacific Salmon stocks. The Treaty was ratified on March 18, 1985 and amended most recently on January 1, 2019.

2. Significant accounting policies:

(a) Basis of accounting:

These financial statements have been prepared in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2021. The financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws require the financial statements to be prepared in a manner consistent with generally accepted accounting principles ("GAAP") with the following exceptions:

(*i*) Expenses are recognized at the time that the commitment for goods and services are made through purchase orders, rather than at the time the goods or services are received. This exception is to comply with Chapter IX, Section D, Rule 10 of the Bylaws.

(*ii*) The Commission uses the triennial pension valuation report provided by the International Fisheries Commissions Pension Society ("IFCPS") to determine the yearly pension expense. The pension expense consists of the employer portion of the current service pension contribution plus any additional yearly payments required by the IFCPS (as shown in the current valuation report) that are necessary to extinguish the unfunded portion of the pension obligation. Other post-employment benefits such as extended medical plans and life insurance are recorded as an expense in the fiscal year in which the respective invoice is dated. This exception is to comply with Chapter IX, Section D, Rule 11 of the Bylaws.

GAAP has been interpreted to mean Canadian Accounting Standards for Not-for-Profit Organizations in Part III of the CPA Canada Handbook ("Not-for-Profit Standards").

Certain comparative information has been amended to conform to current period presentation. These reclassifications had no impact on the Commission's excess (deficiency) of revenue over expenses.

(b) Cash and cash equivalents:

Cash and cash equivalents are comprised of cash on hand and short-term deposits with original maturities of three months or less.

2. Significant accounting policies (continued):

(c) Fund accounting and revenue recognition:

The Commission follows the restricted fund method of accounting for contributions.

Restricted contributions related to general operations are initially deferred and recognized as revenue of the General Fund in the year in which the related expenses are incurred. All other restricted contributions are recognized as revenue of the appropriate restricted fund.

Unrestricted contributions are recognized as revenue of the General Fund in the year they are received or receivable, if the amount to be received can be reasonably estimated and collection is reasonably assured.

The Fund classifications are as follows:

(*i*) The General Fund includes funds provided annually through contributions from the Contracting Parties. By agreement of the Contracting Parties, any unexpended balance remaining at the end of one fiscal year may be used to offset contributions in the following year or may be used to offset a shortfall between contributions and approved expenses in the following year. As a result, all amounts are recognized as revenue once received or receivable.

(*ii*) The Working Capital Fund represents monies contributed by the Contracting Parties to be used on a temporary basis to satisfy the capital requirements of the Commission until receipt of new contributions from the Contracting Parties at the beginning of a fiscal year, or for special programs not contained in the regular budget but approved during the fiscal year. Any surplus above a pre-determined fixed limit in the account at the end of the fiscal year is transferred to the general fund and is treated as unrestricted income.

(*iii*) The Test Fishing Fund is established as a revolving fund in which a portion of net test fishing revenues realized in years of high abundance are reserved, to be used to support test fishing programs in years of low abundance and when conservation concerns are an issue.

(*iv*) The Special Research and Project Fund represents monies set aside to fund additional programs as determined by the Contracting Parties, including, U.S. Section grant funds for contracts and U.S. Section travel and workshop, Chinook Sentinel Stocks Program, and Mark-Selective Fishery project.

(*v*) The Capital Assets Fund reflects the Commission's capital asset transactions. Amortization is charged to the Capital Assets Fund.

(*vi*) The Capital Asset Replacement Reserve Fund ("CARRF") was established to ensure regular availability of funds for lifecycle replacement of capital assets. On an annual basis, a fixed amount, as determined by the Commission, shall be transferred from the General Fund to the CARRF. The fund is to be used for the Commission's capital asset purchases.

Transfers between the funds are reviewed and approved by the Commissioners.

2. Significant accounting policies (continued):

(d) Financial instruments:

Financial instruments are recorded at fair value on initial recognition. Freestanding derivative instruments that are not in a qualifying hedging relationship and equity instruments that are quoted in an active market are subsequently measured at fair value. All other financial instruments are subsequently recorded at cost or amortized cost, unless management has elected to carry the instruments at fair value. The Commission has not elected to carry any such financial instruments at fair value.

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs, which are amortized using the straight-line method.

Financial assets are assessed for impairment on an annual basis at the end of the fiscal year if there are indicators of impairment. If there is an indicator of impairment, the Commission determines if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset. If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the highest of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount the Commission expects to realize by exercising its right to any collateral. If events and circumstances reverse in a future period, an impairment loss will be reversed to the extent of the improvement, not exceeding the initial carrying value.

(e) Capital assets:

Capital assets are stated at cost less accumulated amortization. Costs of repairs and replacements of a routine nature are charged as a current expense while those expenses which improve or extend the useful life of the assets are capitalized. Amortization is provided using the straight-line method as follows:

Asset	Rate
Automobiles	5 years
Boats	5 years
Computer equipment and software	3 years
Equipment	5 years
Furniture and fixtures	10 years
Leasehold improvements	Over life of lease

2. Significant accounting policies (continued):

(f) Income taxes:

The Commission is exempt from income taxes under the Foreign Missions and International Organizations Act (1991).

(g) Post-employment benefits:

(*i*) Pension plan:

The Commission has a defined benefit pension plan covering its employees. The benefits are based on years of service and highest average salary. The Commission also sponsors a defined benefit life insurance and health care plan for substantially all retirees and employees. In accordance with the basis of accounting (note 2(a)), the Commission recognizes, annually, an expense equal to the amount of the required payment set forth by the pension plan, which is based on a triennial pension valuation. The Commission does not recognize an unfunded obligation related to the defined benefit pension plan, as referenced in note 5(*i*).

(*ii*) Severance:

Severance is accrued based on employees' current salary and number of years of service.

(h) Foreign exchange translation:

Transactions originating in foreign currencies are translated at the exchange rate prevailing at the transaction dates. Assets and liabilities denominated in foreign currency at the year-end date are translated to equivalent Canadian amounts at the rate of exchange in effect at that date. Foreign exchange gains and losses resulting from translation are included in the determination of excess or deficiency of revenue over expenses.

(i) Measurement uncertainty:

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

2. Significant accounting policies (continued):

(j) Short-term investments:

The short-term investments, consisting of Guaranteed Investment Certificates with interest rates ranging from 0.10% to 0.75% (2020 - 1.65% to 1.98%), are due on dates between May 2021 and February 2022. These investments are managed by an external investment manager and are recorded at cost plus accrued interest.

(k) Life insurance and medical benefits:

The Commission recognizes, annually, an expense equal to the total amounts invoiced by health and life insurance benefit providers during the fiscal year.

3. Related party transactions and deferred revenue:

During the year ended March 31, 2021, the Commission recognized operating contributions from the Contracting Parties totaling $3,759,272 (2020 - $3,759,272). The Commission recognized $1,011,092 (2020 - $651,408) from the Government of Canada in special contributions relating to future payments to International Fisheries Commission Pension Society for the unfunded pension liability. This amount has been included in deferred revenue and will be recognized when the related expense has been incurred.

The Commission retains $6,576 (2020 - $189,690) of funding provided by Canada, to be used upon authorization from the Government of Canada to help fund test fishing operations administered by Fisheries and Oceans Canada and/or other parties in non-Panel-approved area waters.

The office and warehouse premises of the Commission are provided by the Government of Canada at no charge.

Deferred revenue consists of unspent funds provided by the Contracting Parties that are reserved for future operating and capital expenditures of the Fund.

	2021	2020
Balance, beginning of year	$ 1,513,511	$ 3,067,443
Special contributions	1,011,092	651,408
Recognized as revenue	(163,701)	(2,205,340)
Balance, end of year	$ 2,360,902	$ 1,513,511

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

4. Capital assets:

March 31, 2021	Cost	Accumulated amortization	Net book value
Automobiles	$ 231,607	$ 207,724	$ 23,883
Boats	133,227	111,579	21,648
Computer equipment	413,863	342,184	71,679
Computer software	279,167	248,271	30,896
Equipment	1,800,913	1,550,850	250,063
Furniture and fixtures	289,918	196,304	93,614
Leasehold improvements	301,690	159,911	141,779
	$ 3,450,385	$ 2,816,823	$ 633,562

March 31, 2020	Cost	Accumulated amortization	Net book value
Automobiles	$ 231,607	$ 201,992	$ 29,615
Boats	130,455	103,183	27,272
Computer equipment	357,221	318,101	39,120
Computer software	252,273	242,584	9,689
Equipment	1,675,546	1,464,858	210,688
Furniture and fixtures	290,679	177,566	113,113
Leasehold improvements	257,638	145,054	112,584
	$ 3,195,419	$ 2,653,338	$ 542,081

5. Employee future benefits:

(*i*) Pension plan:

The Commission and its employees contribute to the Pension Plan of the International Fisheries Commissions Pension Society for Employees of Participating Commissions, a multi-employer defined benefit plan, with Headquarters in Canada. The Plan covers 91 employees, of which 49 are current or past employees of the Commission.

The last actuarial valuation for the pension plan was performed as at January 1, 2020 and the next valuation is scheduled for January 1, 2023. Selected information about the Commission's defined benefit plan is as follows:

	January 1, 2020
Fair value of plan assets	$ 15,466,000
Benefit obligation	18,791,000
Funded status - plan deficit	$ (3,325,000)

5. Employee future benefits (continued):

(*i*) Pension plan (continued):

The funded status of the plan is not included in the statement of financial position.

A significant actuarial assumption adopted in measuring the Commission's benefit obligation is the use of a discount rate of 5.1% and expected rate of return on assets of 5.1%.

During the year ended March 31, 2021, the Commission made payments totaling $ 814,260 (2020 - $162,852) with respect to the unfunded pension obligation.

(*ii*) Severance, life insurance and medical benefits:

The Commission also provides employee future benefits including severance, life insurance and medical benefits. Employees are entitled to severance payments calculated based on the length of continuous service completed by the employee. The accrued liability associated with these benefits is included in the Statement of Financial Position.

6. Trust funds:

The Commission administers and holds, in trust, the following funds, which are not included in the Commission's financial statements:

(a) Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund and Southern Boundary and Transboundary River Restoration and Enhancement Trust Fund:

Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund ("Northern Fund") was created by the Governments of the United States of America and Canada to manage their interests in the Commission to promote cooperation in the management, research and enhancement of Pacific Salmon stocks. The Northern Fund is exempt from income taxes under the Foreign Missions and International Organizations Act (1991). The income earned on these contributions is distributed by the Commission staff as directed by the Northern Fund Committee.

Southern Boundary and Transboundary River Restoration and Enhancement Trust Fund ("Southern Fund") was created by the Governments of the United States of America and Canada to manage their interests in the Commission to promote cooperation in the management, research, and enhancement of Pacific Salmon stocks. The Southern Fund is exempt for income taxes under the Foreign Missions and International Organizations Act (1991). The income earned on these contributions is distributed by the Commission staff as directed by the Southern Fund Committee.

During the fiscal year ended March 31, 2021, the Commission received funding for projects from the Northern Fund and Southern Fund totaling $150,260 (2020 - $115,166). During the year, the Northern Fund and Southern Fund paid $348,984 (2020 - $345,853) to the Commission for allocated salaries and benefits, and administrative services. As at March 31, 2021, the Commission had a net receivable from the Northern Fund and Southern Fund of $599,634 (2020 - $402,924).

6. Trust funds (continued):

(b) Payroll Trust Funds:

The Commission administers and holds trust funds on behalf of the Government of the United States to distribute U.S. section salary under a Memorandum of Understanding. These amounts have been excluded from the Statement of Financial Position and Statement of Operations and Fund Balances of the Commission.

(c) U.S. Expenditures Trust Funds:

The Commission administers and holds trust funds on behalf of the Government of the United States of America. They are to be expended at the direction of the Government of the United States of America. These amounts have been excluded from the Statement of Financial Position and Statement of Operations and Fund Balances of the Commission.

(d) Yukon River Salmon Restoration and Enhancement Fund:

Under the terms of an interim Yukon River Salmon Agreement in 1995, the United States and Canada established the Yukon River Salmon Restoration and Enhancement ("R&E") Fund and the Commission created an account to hold associated monies. The R&E Fund and its governing Yukon River Panel were finalized in the 2002 Yukon River Salmon Agreement and associated treaty amendments. The Commission Secretariat administers and holds R&E trust funds on behalf of the Yukon River Panel. The Yukon River Panel provides direction on how the monies are to be disbursed from the Fund. These amounts have been excluded from the Statement of Financial Position and Statement of Operations and Fund Balances of the Commission.

During the year, the R&E Fund paid $92,000 (2020 - $92,000) to the Commission for administrative services. As at March 31, 2021, the Commission had a net receivable from the R&E Fund of $123 (2020 - $7,768) which represents the unspent project grant returned to the Fund and received by the Commission on behalf of the R&E Fund.

(e) Canadian Expenditures Trust Funds:

The Commission administers and holds trust funds on behalf of the Government of Canada. They are to be expended at the direction of the Government of Canada. These amounts have been excluded from the Statement of Financial Position and Statement of Operations and Fund Balances of the Commission.

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

6. Trust funds (continued):

(f) Summary of trust fund balances:

	Northern Fund	Southern Fund	Yukon River Fund	U.S. Payroll Trust Funds	U.S. Expenditure Trust Funds	Canadian Expenditure Trust Funds	Total 2021	Total 2020
Assets	$ 175,981,318	$ 149,803,534	$ 544,674	$ 44,270	$ 3,072,834	$ 128,332	$329,574,962	$ 295,158,490
Liabilities	$ 1,021,681	$ 158,210	$ 64,052	$ 44,270	$ 3,072,834	$ 128,332	$ 4,489,379	$ 2,086,596
Fund balances	174,959,637	149,645,324	480,622	-	-	-	325,085,583	293,071,894
	$ 175,981,318	$ 149,803,534	$ 544,674	$ 44,270	$ 3,072,834	$ 128,332	$329,574,962	$ 295,158,490

	Northern Fund	Southern Fund	Yukon River Fund	U.S. Payroll Trust Funds	U.S. Expenditure Trust Funds	Canadian Expenditure Trust Funds	Total 2021	Total 2020
Fund balance, beginning of year	$ 158,589,494	$ 133,936,116	$ 546,284	$ -	$ -	$ -	$293,071,894	$ 302,925,822
Revenue	22,805,346	19,544,502	1,679,530	-	-	-	44,029,378	2,893,010
Expenses	6,435,203	3,835,294	1,745,192	-	-	-	12,015,689	12,746,938
	16,370,143	15,709,208	(65,662)	-	-	-	32,013,689	(9,853,928)
Fund balance, end of year	$ 174,959,637	$ 149,645,324	$ 480,622	$ -	$ -	$	$325,085,583	$ 293,071,894

	Northern Fund	Southern Fund	Yukon River Fund	U.S. Payroll Trust Funds	U.S. Expenditure Trust Funds	Canadian Expenditure Trust Funds	Total 2021	Total 2020
Cash flow provided by (used in):								
Operations	$ (2,308,923)	$ (372,681)	$ (18,815)	$ -	$ -	$ -	$ (2,700,419)	$ (3,370,589)

7. Contractual obligations:

The Commission has entered into a number of project grant contracts as at March 31, 2021 for the future funding of research projects to be completed subsequent to the year-end.

These contractual obligations are funded in installments and payments are due based on conditions included in the contract being satisfied. As such, no liability has been accrued in the financial statements as the Commission is not liable until these conditions have been met.

As at March 31, 2021, the research project contractual obligations are $17,920 (2020 - $20,216).

8. Financial instruments and concentration of risks:

(a) Credit risk:

Credit risk is the risk that a third party to a financial instrument might fail to meet its obligations under the terms of the financial instrument. For cash and accounts receivable, the Commission's as deposited cash and restricted cash and made investments with reputable financial institutions, from which management believes the risk of loss to be remote.

(b) Liquidity risk:

Liquidity risk is the risk that an entity will not be able to meet its obligations associated with financial liabilities.

The Commission manages liquidity risk by maintaining adequate cash and available credit facilities with its banking provider. The Commission monitors the cash flow to ensure a sufficient continuity of funding from the Contracting Parties.

(c) Interest rate risk:

The Commission is not exposed to significant interest risk as it does not have amounts payable that are charged interest.

(d) Currency risk:

The Commission has some exposure to foreign exchange risk through fluctuation of the U.S. dollar. The Commission receives contributions from the Government of the United States of America and also funds various projects in the U.S.

(d) COVID-19 Pandemic:

In March 2020, the COVID-19 outbreak was declared a pandemic by the World Health Organization. This has resulted in governments worldwide enacting emergency measures to combat the spread of the virus. The current economic climate may have a direct impact on the Commission's operating results and financial position in the future. The situation is dynamic and the ultimate duration and magnitude of the impact on the economy and the financial effect on Commission is not known at this time. There have been no significant adverse impacts on the Commission's business to date.

Appendices

Appendix A
Northern Fund Projects for 2020/2021

#	Description	Proponent	Org * Acronym List	Species
	Enhancement			
1	Relaxed selection in salmon hatcheries, year 2	Adkison	UAF	Coho & Pink
2	Snettisham Central Incubation Facility (CIF) Water Chiller Upgrade for Transboundary River (TBR) Sockeye Enhancement Program	Harms	DIPAC	Sockeye
3	2021 Trapper Lake Sockeye Salmon Reintroduction and Enhancement Feasibility Investigation (Taku River)	Collins	DFO / ADFG	Sockeye
4	King Salmon Lake Sockeye enhancement project	Erhardt	TRTFN	Sockeye
5	Recovery Enhancement of Kilbella-Chuckwalla Chinook, 2021-24	Hwang	PSF	Chinook
	Information			
1	Alaska Coho Salmon Genetic Baseline: Phase II Sampling and Genetic Analysis	Catterson and Priest	ADFG	Coho
2	Northern Boundary Area Sockeye Salmon Genetic Stock Identification for 2021	Guthrie / Larson	NOAA	Sockeye
3	SEAK Chinook Salmon Stock Assessment	Jones	ADFG	Chinook
4	Second-generation consequences of hatchery enhancement of sockeye salmon in Auke Creek, Alaska.	McPhee / Gilk-Baumer / Shedd / Jalbert	UAF/ADFG	Sockeye
5	Southeast Alaska Coastal Monitoring	Murphy / Piston / Zaleski	NOAA / DIPAC / ADFG	all species
6	Productivity, migration timing, and survival of sockeye, coho, and pink salmon at Auke Creek	Vulstek	NOAA	Sockeye, Coho & Pink
7	Chum Salmon Hatchery Wild Interactions	Wagner	NSRAA	Chum
8	Taku River Sockeye Salmon Telemetry	Bednarski	ADFG	Sockeye
9	Stikine River Chinook Salmon Telemetry	Courtney	ADFG	Chinook
10	Taku River Juvenile Salmon Smolt Tagging	Foos Williams	DFO ADFG	Coho
11	Nass and Skeena Rivers Sockeye Salmon Escapement Goal Review and District 104 Fishery Review	Piston	ADFG	Sockeye
12	Boundary Area Coho Escapement	Priest Piston	ADFG	Coho
13	Taku River Chinook Salmon Telemetry	Richards	ADFG	Chinook
14	Alsek River Chinook and Sockeye Salmon Stock Assessment	Richards	ADFG	Chinook
15	Taku River Coho Salmon Adult Project Augmentation	Williams	ADFG	Coho
16	Taku River Sockeye Salmon Genetic Stock Identification Analysis for 2021 Commercial Samples	Foos	DFO	Sockeye
17	Transboundary Rivers Otolith Thermal Mark Recovery	Foos	DFO	Sockeye
18	Alsek River Sockeye Salmon Run Reconstruction Using GSI	Foos	DFO	Sockeye
19	Taku River - Little Trapper Sockeye Salmon Enumeration (Kowatua Chinook Sampling)	Foos	DFO	Sockeye
20	Taku River Canadian Fishery Sampling & Stock Assessment	Foos	DFO	Chinook & Sockeye
21	Taku River - Nahlin River Chinook Salmon Enumeration	Foos	DFO	Chinook
22	Stikine River Canadian Fishery Sampling & Stock Assessment	Sembsmoen	DFO	Chinook & Coho
23	Stikine River - Tahltan Lake Sockeye Salmon Smolt Enumeration and Sampling	Sembsmoen	DFO	Sockeye
24	Stikine River - Tahltan Lake Sockeye Salmon Adult Enumeration	Sembsmoen	DFO	Sockeye
25	Area 3 and 4 Creel Survey, 2021	Addison	NCSFNSS	Chinook
26	Tracking North Coast pink salmon escapement and development of single nucleotide polymorphism (SNP) baseline	Beach	DFO / NLG	Pink
27	Tracing the impacts of Canadian commercial fisheries and Alaskan hatchery strays on Northern BC chum stocks using DNA and otolith analysis	Beach	DFO / NLG	Chum
28	2021 estimation of stock composition of coho salmon in northern and central coastal fisheries in British Columbia	Beacham	DFO	Coho
29	Kitwanga River Salmon Enumeration, 2021	Cleveland	GFA	all species
30	Nass Area Coastal Chum Escapement project 2021	Desson / Alexander	NLG / LGL	Chum

31	Nass Sockeye Salmon Fishwheel DNA Analyses Project 2021	Desson / Alexander	NLG / LGL	Sockeye
32	Nass Chinook Salmon Mark-recapture Project 2021	Desson / Alexander	NLG / LGL	Chinook
33	Nass Sockeye Mark-Recapture Assessment Project 2021	Desson / Alexander	NLG / LGL	Sockeye
34	2021 North Coast Lakes Juvenile Sockeye Hydroacoustic Surveys	Doire	SFC	Sockeye
35	Skeena River Chum Salmon Radio Telemetry	Doire / Addison	SFC / NCSFNSS	Chum
36	Lower Skeena River Recreational Fishery Creel Survey, 2021	English	LGL	Chinook
37	Multi-species salmon assessment for the Waanukv (Wannock) River, 2021	English	LGL	Chinook
38	Yakoun River, Haida Gwaii, annual chinook & coho assessments	Fradette	HFP	Chinook & Coho
39	Production capacity and habitat status of Meziadin Lake	Oliver	SFC	Sockeye
40	Slamgeesh Salmon Project – Fence Sill Rebuild	Rabnett	WGLRMS	Sockeye & Coho
41	Genetic Analyses of samples collected in the Recreational Chinook Fisheries in Northern BC 2021	Whitmore	DFO	Chinook
42	Northern Boundary Coho Salmon Genetic Baseline Augmentation	Whitmore	DFO	Coho
43	Chinook salmon Escapement Estimation to the Skeena River using Genetic techniques 2021	Whitmore	DFO	Chinook
44	Skeena River Aggregate Coho Salmon Escapement Estimator (Year 3)	Whitmore	DFO	Coho
45	Genetic tools to inform sustainable fisheries and rebuild at-risk coho, chum and Chinook populations	Whitney	CCIRA	Coho, Chum & Chnook
46	2021 Babine Lake watershed sockeye smolt population estimation project - mark-recapture	McIntyre	LBFN	Sockeye
47	Improving CTC efficiency by coordinating reports and facilitating meetings and communications, pilot study	Field	PSC	Chinook

US projects

Canadian projects

Central Coast Indigenous Resource Alliance	CCIRA
Gitanyow Fisheries Authority	GFA
Haida Fisheries Program	HFP
Lake Babine First Nation	LBFN
North Coast - Skeena First Nations Stewardship Society	NCSFNSS
Nisga'a Lisims Government	NLG
Northern Southeast Regional Aquaculture Assoc.	NSRAA
Skeena Fisheries Commission	SFC
Taku River Tlingit First Nation	TRTFN
Terrace Salmonid Enhancement Society	TSES
Wilp Gwininitxw Land and Resource Management Society	WGLRMS

Appendix B
Southern Fund Projects for 2020/2021

1	Juan de Fuca Strait Chum Salmon Sampling program	Van Will & Patton	DFO & NWIFC	JDF	Chum
2	Improved estimates of escapement, survival and exploitation for Nicomen Slough Coho -Year 3	Arbeider & Dionne	DFO	FR	Coho
3	Chum Salmon Baseline and GSI in Southern Boundary Region	Small	WDFW	PS	Chum
4	Estimating Aggregate Coho Salmon Escapement to the Lower Fraser Management Unit	Arbeider	DFO	FR	Coho
5	Puget Sound Chum salmon GSI	Small & Patton	WDFW & NWIFC	PS	Chum
6	Increased CWT application in Southern B.C. coho indicator stocks	Lynn & Sawada	DFO	SoBC	Coho
7	Fraser River Chum Salmon Spawning Ground Survey Life Study, 2021	Tadey & Whitehouse	DFO	FR	Chum
8	Evaluating the use of FSC and commercial fishery catch data to inform in-season management of Pacific salmon fisheries	Ma	ESSA & PSC & Canadian Fishing Co. &	FR	Sockeye Pink
9	Understanding the impact of Big Bar Slide on salmon survival and relevance to management of Sockeye, Chinook, Coho, and Pink salmon in the Fraser River	Patterson & Martens	DFO & PSC	FR	Sockeye Chinook Coho Pink
10	Estimation of offshore fish passage at Mission by imaging sonar	Xie	PSC	FR	Sockeye
11	Lower Fraser River Gillnet test fishery site evaluation	Nowak & Hughes	Fraser River Panel	FR	Sockeye Pink
12	Increasing Chinook Technical Committee efficiency by coordinating reports and facilitating meetings and communications, pilot study	Field	PSC	PNW	Chinook
13	Skagit River Riparian Restoration Project	Clifton	Skagit River System Cooperative	PS	Chinook Coho Chum
14	Tranquil Creek Restoration 2021	Hutchison	Central Westcoast Forest Society	WCVI	Chinook
15	Independent Evaluation of Wild Coho Marine Survival Rates in the Strait of Georgia (Black Creek) – Year 4	Leboeuf Pereboom VanWill	A-Tlegay Fisheries Society & DFO	SoG	Coho
16	Coho salmon GSI: SNP baseline development	Seamons & Candy	WDFW & DFO	SoBC PS WC	Coho
17	Gillnet calibration study for the Round Island Test Fishery (60 mesh multi-strand to 90 mesh Alaska Twist)	Van Will & McConnell & Mortimer	DFO	FR	Sockeye
18	Burman River hydrology method validation project: indexing WCVI Chinook spawning area residence time in stopover and non-stopover type streams (Year 3 of 5)	Dunlop & Dick	Uu-a-thluk/ Nuu-chah-nulth Tribal Counc	WCVI	Chinook
19	Bedwell River Smolt Outmigration Assessment	Dick & Swan	Ahousaht First Nation	WCVI	Chinook
20	Okanagan River Summer Chinook Survival Study	Wright	Okanagan Nation Alliance Fisheries De	SoBC	Chinook
21	Similk Tidal Marsh Restoration Preliminary Design	Smith	Skagit River System Cooperative	PS	Chinook
22	Escapement monitoring of the Lillooet River Coho Salmon CU via Digital Imaging	Noble	LGL Ltd.	FR	Coho
23	Enumeration of Coho in the Lower Chilcotin River and Feasibility of Estimating Spring-run Chinook Salmon Escapement in a Fraser River Tributary	Trouton & Bylenga	DFO	FR	Coho Chinook
24	Monitoring the biological condition of juvenile Fraser sockeye in relation to stock-specific survival	Patterson & Moore & Hinch	DFO & U. California & UBC	FR	Sockeye
25	BC Fish Passage Restoration Initiative (Canton Creek Culvert Replacement Project)	Hillary	Canadian Wildlife Federation	WCVI	Chinook Coho
26	Trafton Floodplain Restoration - Final Design and Permitting	Scofield & Griffith	Stillaguamish Tribe of Indians	PS	Chinook Coho Chum Pink
27	Nanoose Area Coho and Chum Salmon Escapement Surveys 2021	Bob & Alexander	Nanoose FN & LGL Ltd	SoG	Coho Chum
28	Expanded Bilateral Chum Salmon SNP Genetic Baseline for Genetic Stock Identification: Southern Baseline Augmentation	Sutherland	DFO	SoBC PS WC	Chum
29	An investigation of Cowichan Coho run timing and marine survival	Damborg	BC Conservation Foundation	SoG	Coho
30	Cowichan Adult Chinook Enumeration methodology change	Damborg	BC Conservation Foundation & Cowicha	SoG	Chinook
31	Improvements to Fraser River Pink Salmon Run Reconstruction Models and In-Season Assessments	Hague	PSC	FR	Pink
32	Alternative estimation methods for salmon passage on fisheries opening days at Mission hydroacoustics site	Martens	PSC	FR	Sockeye Pink
33	Marking Maria Slough Chinook to evaluate representativeness of the exploitation rate indicator stock for the Fraser Summer Run age-0.3 stock group	Arbeider	DFO	FR	Chinook
34	Crescent Harbor Creek Restoration	Smith	Skagit River System Cooperative	PS	Chinook
35	UAV based enumerations of chum salmon in Clayoquot Sound Rivers	Bartlett	Cedar Coast Field Station Society	WCVI	Chum
36	Improving in-season pink salmon assessment through the collection of Fraser River pink salmon DNA baseline data	Phung	PSC	FR	Pink
37	Sockeye Salmon SNP Panel Genetic Baseline for the Fraser River	Sutherland & Candy & Beacham	DFO	FR	Sockeye
38	Englishman River Large Woody Debris Revitalization	Damborg	BC Conservation Foundation	SoG	Coho
39	Restoration of Juvenile Rearing Habitats in Support of Increased WCVI Chinook Production.	O'Regan	MC Wright	WCVI	Chinook
40	Investigating thermal windows of juvenile Sockeye Salmon populations in freshwater	Li	DFO	FR	Sockeye
41	Using Deep Image Segmentation Methods to Detect and Classify Salmon Species from ARIS Sonar Images	Ding	Vitech Innovative Research and Consult	FR	Sockeye

	Area Glossary
Columbia River watershed	CR
Fraser River watershed	FR
Juan de Fuca Strait	JDF
North Pacific	NP
Oregon	OR
Pacific Northwest (all SEF areas)	PNW
Puget Sound	PS
Southern BC	SoBC
Strait of Georgia	SoG
Washington Coast	WC
West Coast Vancouver Island	WCVI

Appendix C
Appointment of Officers for 2020/2021

Effective December 1, 2020 a new slate of officers for the Pacific Salmon Commission was identified as follows:

OFFICE	COUNTRY	REPRESENTATIVE
Commission Chair	Can	Ms. Rebecca Reid
Commission Vice-Chair	U.S.	Mr. Doug Vincent-Lang
Fraser River Panel Chair	Can	Ms. Jennifer Nener
Fraser River Panel Vice-Chair	U.S.	Ms. Lorraine Loomis
Northern Panel Chair	Can	Ms. Sandra Davies
Northern Panel Vice-Chair	U.S.	Mr. Lowell Fair
Southern Panel Chair	Can	Dr. Laura Brown
Southern Panel Vice-Chair	U.S.	Ms. Laurie Peterson
Transboundary Panel Chair	Can	Mr. Steve Gotch
Transboundary Panel Vice-Chair	U.S.	Mr. Troy Thynes
Stan. Comm. on F&A - Chair	Can	Mr. Andrew Thomson
Stan. Comm. on F&A - Vice-Chair	U.S.	Mr. W. Ron Allen
Stan. Comm. on Scientific Cooperation - Chair	Can.	Dr. Carmel Lowe
Stan. Comm. on Scientific Cooperation - Vice-Chair	U.S.	Mr. Scott McPherson
Technical Committee on Data Sharing - Co-Chair	Can	Mr. Nicholas Komick
Technical Committee on Data Sharing - Co-Chair	U.S.	Mr. George Nandor
Fraser River Panel Technical Committee - Co-Chair	Can	Mr. Jamie Scroggie
Fraser River Panel Technical Committee - Co-Chair	U.S.	Mr. Gordon Rose
Northern Boundary Technical Committee - Co-Chair	Can	Mr. Steve Cox-Rogers
Northern Boundary Technical Committee - Co-Chair	U.S.	Mr. Bo Meredith
Transboundary Technical Committee - Co-Chair	Can	Mr. Bill Waugh
Transboundary Technical Committee - Co-Chair	U.S.	Mr. Edgar Jones
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	Can	Mr. Corino Salomi
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	U.S.	Mr. Garold Pryor
Joint Chinook Interface Group Co-Chair	Can.	Mr. Andrew Thomson
Joint Chinook Interface Group Co-Chair	U.S.	Mr. Phil Anderson
Joint Technical Committee on Chinook - Co-Chair	Can	Dr. Antonio Velez-Espino
Joint Technical Committee on Chinook - Co-Chair	U.S.	Mr. John Carlile
Joint Technical Committee on Coho - Co-Chair	Can	Dr. John Holmes
Joint Technical Committee on Coho - Co-Chair	U.S.	Dr. Gary S. Morishima
Joint Technical Committee on Chum - Co-Chair	Can	Mr. Pieter Van Will
Joint Technical Committee on Chum - Co-Chair	U.S.	Mr. Bill Patton
Selective Fishery Evaluation Committee - Co-Chair	Can	Dr. Rob Houtman
Selective Fishery Evaluation Committee - Co-Chair	U.S.	Dr. Kristen Ryding

Appendix D
Approved Budget FY 2020/2021

	Forecast results 2019/2020	Proposed Budget 2020/2021
1 INCOME	(pink)	(none)
A. Contribution from Canada	1,879,636	1,879,636
B. Special contribution pension CA	162,852	162,852
C. Contribution from U.S.A.	1,879,636	1,879,636
D. Special contribution pension U.S.A.	162,852	162,852
Sub total	4,084,976	4,084,976
E. Interest	70,000	60,000
F. Other income	190,000	180,000
G. Carry-over from previous fiscal year	879,137	633,077
H. Total Income	5,224,113	4,958,053
2 EXPENDITURES		
A. 1. Permanent Salaries and Benefits	2,776,016	3,240,092
2. Unfunded pension liability payments	325,704	325,704
3. Temporary Salaries and Benefits	240,629	203,119
4. Total Salaries and Benefits	3,342,349	3,768,915
B. Travel	121,394	155,942
C. Rents, Communications, Utilities	257,220	262,073
D. Contractual Services	611,880	572,063
E. Supplies and Materials	35,193	58,141
F. Equipment	223,000	223,000
G. Total Expenditures	4,591,036	5,040,134
3 BALANCE (DEFICIT)	633,077	(82,081)
Carry-over generated (expended) in the year	($246,060)	($715,158)

Appendix E
Pacific Salmon Commission Secretariat Staff as of March 31, 2021

EXECUTIVE OFFICE

John Field
Executive Secretary

Teri Tarita
Records Administrator/Librarian

Kimberly Bartlett
Meeting Planner

Julie Ehrmantraut
Administrative Assistant

John Son
Information Technology Manager

FINANCE & ADMINISTRATION

Ilinca Manisali
Director of Finance

Tom Alpe
Fund Manager, Restoration & Enhancement Funds

Witty Lam
Senior Accountant

Victor Keong
Fund Assistant, Restoration & Enhancement Funds

Koey Lu
Accountant

Christina Langlois
Fund Assistant, Restoration & Enhancement Funds

FISHERIES MANAGEMENT

Catherine Michielsens
Chief, Fisheries Management Science

Fiona Martens
Chief, Fisheries Management Programs

Maxine Forrest
Manager, Scale Lab

Catherine Ball
Scale Lab Technician

Merran Hague
Quantitative Fisheries Biologist

Benia Nowak
Test Fishing Operations Manager

Fiona Martens
Director, Coordination and Stock Identification

Yunbo Xie
Hydroacoustics Scientist

Steve Latham
Manager, Stock Identification

Rachael Hornsby
Fisheries Biologist

Angela Phung
Stock Identification Biologist

Jacqueline Nelitz
Hydroacoustic Technician

Eric Taylor
Quantitative Biologist

Mike Bartel-Sawatzky
Hydroacoustic Technician

Julie Sellars
Scale Lab Analyst

Mark McMillan
Database Manager (term)

Serena Wong
Stock Assessment Assistant

Jessica Gill
CTC Coordinator

Chris Dailey
Assistant Quantitative Fisheries Biologist

Dejan Brkic
Salmon Data Technician

Appendix F
Membership Lists for Standing Committees, Panels, Joint Technical Committees, and other Appointments as of March 31, 2021

1. STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

Mr. Andrew Thomson (Chair)
Mr. Randy Atwal
Dr. Shannon Balfry
Mr. Gordon Moore
Ms. Sukhraj Sihota

Mr. W. Ron Allen (Vice-Chair)
Ms. Courtney Hann
Mr. William F. Auger
Ms. Staci MacCorkle
Ms. Christine Mallette
Mr. Mike Matylewich

Staff

Mr. John Field (ex. Officio)

Editorial Board

Dr. Shannon Balfry

Ms. Courtney Hann

2. FRASER RIVER PANEL

Ms. Jennifer Nener (Chair)
Mr. Chris Ashton
Mr. Mike Griswold
Chief Ken Malloway
Mr. Michael Frost
Mr. John Murray

Ms. Lorraine Loomis (Vice-Chair)
Mr. James Dixon
Mr. Kirt Hughes
Mr. Robert F. Kehoe

FRASER RIVER PANEL - ALTERNATES

Mr. Shaun Hollingsworth
Mr. Darrel McEachern
Mr. Lester Jantz
Mr. Tony Roberts Jr.
Mr. Marcel Shepert
Mr. Greg Witzky

Mr. Ronald G. Charles
Mr. Mark Baltzell
Mr. Jack R. Giard
Ms. Peggy Mundy

3. SOUTHERN PANEL

Dr. Laura Brown (Chair)
Dr. Don Hall
Mr. Jeremy Maynard
Mr. Richard Michelson
Mr. Laurie Milligan
Ms. Debra Toporowski
Ms. Laurie Peterson (Vice-Chair)
Mr. Joseph Oatman
Mr. Burnie Bohn
Mr. Jeromy Jording
Mr. Aldrich J. (Butch) Smith
Mr. Terry R. Williams

SOUTHERN PANEL - ALTERNATES

Mr. Rod Cootes
Mr. Michael Baird
Ms. Linda Higgins
Ms. Marilyn Murphy
Mr. Gordon Sterritt
Mr. Phil Young
Ms. Denise Hawkins
Mr. Vincent (Kyle) Adicks
Mr. Edward Johnstone
Mr. Chris Kern
Mr. Mark Newell
Mr. Joseph C. Peters

4. NORTHERN PANEL

Ms. Sandra Davies (Chair)
Mr. Chris Cue
Chief Harry Nyce Sr.
Mr. Tom Protheroe
Ms. Joy Thorkelson
Mr. Mike Wells
Mr. Lowell Fair (Vice-Chair)
Mr. Clay Bezenek
Ms. Deborah Lyons
Mr. Robert D. Mecum
Mr. Russel Thomas
Mr. Robert M. Thorstenson

NORTHERN PANEL - ALTERNATES

Dr. William Atlas
Mr. Stuart Barnes
Mr. Jeff Grout
Mr. Rick Haugan
Mr. Greg Knox
Mr. Urs Thomas
Mr. John Carle
Mr. Mitchell Eide
Mr. Andrew K. Gray
Mr. Andrew Piston
Mr. Dennis Watson
Mr. Cole Wilburn

5. TRANSBOUNDARY PANEL

Mr. Steve Gotch (Chair)
Mr. Kerry Carlick
Mr. Richard Erhardt
Ms. Cheri Frocklage
Ms. Jennifer Gould
Mr. Lawrence Joe
Mr. Chris Kendel
Mr. Wolfe Riedl
Mr. John Ward
Mr. Troy Thynes (Vice-Chair)
Mr. Brennon Eagle
Mr. Larry Edfelt
Mr. Jacob Miller
Mr. Patrick Robbins
Mr. Cole Wilburn

6. STANDING COMMITTEE ON SCIENTIFIC COOPERATION

Dr. Carmel Lowe (Chair)
Ms. Diana Dobson
Mr. Scott McPherson (Vice-Chair)
Dr. Brian Beckman

7. NORTHERN FUND COMMITTEE

Mr. Steve Gotch (Co-Chair)
Chief Russ Jones
Mr. John McCulloch
Mr. William F. Auger (Co-Chair)
Mr. Robert D. Mecum
Mr. Douglas S. Vincent-Lang

8. SOUTHERN FUND COMMITTEE

Dr. Laura Brown (Co-Chair)
Mr. Mike Griswold
Dr. Don Hall
Mr. Larry Peck (Co-Chair)
Mr. Peter Dygert
Mr. Joseph Oatman

9. JOINT TECHNICAL COMMITTEE ON CHINOOK

Dr. Antonio Velez-Espino (Co-Chair)
Ms. Sabrina Crowley
Mr. Michael Folkes
Mr. Nicolas Komick
Ms. Elinor McGrath
Mr. Chuck Parken
Dr. Teresa Ryan
Ms. Laura Tessier
Ms. Nicole Trouton
Mr. Ivan Winther
Dr. Catarina Wor
Ms. Maxime Veilleux
Mr. John Carlile (Co-Chair)
Mr. Jonathan Carey
Mr. Ethan Clemons
Mr. Tim Dalton
Dr. Derek Dapp
Mr. Brian Elliott
Ms. Danielle Evenson
Mr. Gary R. Freitag
Mr. Tommy Garrison
Mr. Steve Haeseker
Mr. Grant Hagerman
Dr. Oliver Miler
Ms. Galen Johnson
Mr. Edgar Jones
Ms. Christine Kozfkay
Mr. David Leonard
Ms. Marianne McClure
Dr. Gary S. Morishima
Mr. Jeff Nicols
Mr. Randy Peterson
Dr. Kristen Ryding
Mr. Martin Liermann
Mr. William Templin
Ms. Anne Reynolds
Dr. Charles Devans Waters

10. JOINT TECHNICAL COMMITTEE ON COHO

Dr. John Holmes (Co-Chair)
Mr. Michael Arbeider
Mr. Roger Dunlop
Mr. Peter Nicklin
Ms. Lynda Ritchie
Mr. Michael O'Brien
Mr. Joel Sawada

Dr. Gary S. Morishima (Co-Chair)
Ms. Marlene Bellman
Ms. Carrie Cook-Tabor
Ms. Angelika Hagen-Breaux
Mr. Craig Foster
Mr. Jeff Haymes
Dr. Diego Holmgren
Dr. Marisa Litz
Dr. Laurie Weitkamp

(NORTHERN COHO)

Mr. Grant Hagerman
Ms. Michele Masuda
Mr. Justin Priest

11. JOINT TECHNICAL COMMITTEE ON CHUM

Mr. Pieter Van Will (Co-Chair)
Mr. John R. Candy
Ms. Kim Charlie
Ms. Brittany Jenewein
Mr. Joe Tadey

Mr. Bill Patton (Co-Chair)
Mr. Scott Bass
Ms. Maureen Small
Mr. Ben Starkhouse
Dr. Gary Winans

12. TECHNICAL COMMITTEE ON DATA SHARING

Mr. Nicholas Komick (Co-Chair)
Ms. Kathryn Fraser
Ms. Cheryl Lynch

Mr. George Nandor (Co-Chair)
Mr. P. Brodie Cox
Mr. Timothy Frawley
Mr. Mike Matylewich
Dr. Gary S. Morishima
Ms. Amy Seiders

WORKING GROUP ON DATA STANDARDS

Ms. Kathryn Fraser (Co-Chair)
Mr. Nicholas Komick
Ms. Brenda Ridgway
Mr. Michael O-Brien

Mr. George Nandor (Co-Chair)
Mr. Gabriel T. Garza
Mr. Gilbert Lensegrav
Mr. Timothy Frawley
Mr. Ken Phillipson

13. FRASER RIVER PANEL TECHNICAL COMMITTEE

Mr. Jamie Scroggie (Co-Chair)
Ms. Kelsey Campbell
Mr. Matt Mortimer
Mr. Mike Staley

Mr. Gordon Rose (Co-Chair)
Dr. Mickey Agha
Ms. Peggy Mundy
Mr. Robert (Jake) Rice
Ms. Amy Seiders

14. NORTHERN BOUNDARY TECHNICAL COMMITTEE

Mr. Steve Cox-Rogers (Co-Chair)
Ms. Charmaine Carr-Harris
Mr. Mark Cleveland
Mr. Peter Katinic
Mr. Jeffrey Radford

Mr. Bo Meredith (Co-Chair)
Ms. Malika Brunette
Mr. Bob Chadwick
Mr. Chuck Guthrie
Mr. Grant Hagerman
Ms. Michele Masuda
Ms. Sara Miller
Ms. Anne Reynolds
Mr. Kyle Shedd

15. SELECTIVE FISHERY EVALUATION COMMITTEE

Dr. Rob Houtman (Co-Chair)
Ms Anne-Marie Huang
Ms. Cheryl Lynch
Dr. Catarina Wor

Dr. Kristen Ryding (Co-Chair)
Ms. Marlene Bellman
Ms. Jill Cady
Mr. Trevor R. Clark
Ms. Carrie Cook-Tabor
Ms. Danielle Evenson
Mr. Tyler Garber
Mr. Ryan Lothrop
Ms. Marianne McClure
Mr. Oliver Miler
Dr. Gary S. Morishima
Mr. George Nandor
Mr. Ron Olson
Ms. Michelle A. Varney
Ms. Lorraine Vercessi

16. TRANSBOUNDARY TECHNICAL COMMITTEE

Mr. Bill Waugh (Co-Chair)
Mr. Ian Boyce
Mr. Mark Connor
Mr. Aaron Foos
Ms. Jody Mackenzie-Grieve
Mr. Johnny Sembsmoen
Mr. Sean Stark
Dr. Paul Vecsei

Mr. Edgar Jones (Co-Chair)
Ms. Sara Gilk-Baumer
Ms. Julie Bednarski
Mr. Scott Forbes
Mr. David Harris
Mr. Rick Hoffman
Mr. Phil Richards
Mr. Salomone
Ms. Jeffrey Williams

ENHANCEMENT SUB-COMMITTEE

Mr. Corino Salomi (Co-Chair)
Mr. Adam Brennan
Mr. Jason Calvert
Mr. Sean Collins
Mr. Mark Connor
Ms. Cheri Frocklage
Mr. Alex Parker

Mr. Garold Pryor (Co-Chair)
Mr. Eric Prestegard
Mr. Lorraine Vercessi
Mr. Scott Vulstek

17. JOINT CHINOOK INTERFACE GROUP

Mr. Andrew Thomson (Co-Chair)
Chief Russ Jones
Mr. John McCulloch
Mr. Phil Anderson (Co-Chair)
Mr. McCoy Oatman
Mr. Douglas S. Vincent-Lang

18. NATIONAL CORRESPONDENTS

Dr. Shannon Balfry
Ms. Courtney Hann