Fraser Chinook Summer 5_2 Information Package

This summary was developed with the intent to be used to inform discussions of draft options for the 2025 Fraser Chinook fishery management regarding the Summer 5_2 stock management unit. These are summaries from the Fraser Salmon Management Board Joint Technical Committee on the best available information, uncertainties or data deficiencies, and current understanding of important aspects of fishery management.

Fraser Salmon Management Board Joint Technical Committee

Technical Memo 2025-01 v4

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1. Escapement data, trends, and conservation status

- All six Designatable Units (DUs) within the Summer 5_2 SMU have been assessed as Data Deficient, Red, or Amber by Fisheries and Oceans Canada's Wild Salmon Policy and as Threatened or Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (Table 1).

Table 1. A list of Conservation Units (CUs) within the Fraser Summer 5_2 Chinook Stock Management Unit (SMU) with corresponding Designatable Units (DUs) and statuses from the most recent status assessment processes. Maps showing CU locations and status are in Appendix A.CWT = Coded-Wire Tag.

CU name	CWT indicator	CU	DU	WSP Integrated Assessment (2016)	COSEWIC (2018/2020)
Lower Fraser - Upper Pitt SU 1.3	None	CK-05	DU4	DATA DEFICIENT	Endangered
Lower Fraser River SU 1.3	None	CK-06	DU5	DATA DEFICIENT	Threatened
Middle Fraser River-Portage FA 1.3	None	CK-09	DU8	RED	Endangered
Middle Fraser SU 1.3	Chilko River	CK-11	DU10	AMBER	Threatened
South Thompson SU 1.3	None	CK-14	DU13	RED/AMBER	Endangered
North Thompson SU 1.3	None	CK-19	DU17	RED	Endangered

- Based on the Fraser Chinook run reconstruction, escapement of the Summer 5_2 SMU generally increased until 2003, then declined relatively rapidly, reaching a minimum of 8,996 estimated individuals in 2018. Since 2018 spawner abundance has increased, reaching 38,931 estimated individuals in 2022 (Figure 1).
- The index of total escapement for Summer 5_2 Chinook from 2019-2023 appears to be increasing compared to the base period 2014-2018.
    - The escapement of component stocks of Summer 5_2 are not consistently trending with the SMU (Figure 2). For 2019-2023,the increases to estimated SMU escapement are driven by 4 component escapement inputs: Chilko, Chilliwack Summer (hatchery stock), Clearwater, and North Thompson. For the remaining 22 stocks, they are either maintaining similar escapement or decreasing compared to the 2014-2018 base period average reported in the Run Reconstruction (see Appendix D. The available habitat for each DU can differ immensely, which is reflected in the differences in relative escapement shown in Figure 2.

- Domestic fishery management changes in 2019-2023 may be a contributing factor to the observed changes in escapement. Natural variability, measurement error (catch and escapement inputs) and uncertainties present in the assessment tools (Fishery Mortality Index [FMI] methods and Run Reconstruction) could be confounding both the inputs (escapement, catch by species, genetic stock identification [GSI], release estimates) and the outputs (catch by stock, mortality by stock, run size) related to the FMIs that are being reviewed.
- Future marine conditions are uncertain, and variability in environmental conditions is expected to increase. More extremes in variability are expected in all environmental conditions in the short term. In the long term we expect a degrading trend in favorable environmental conditions for Fraser salmon as climate change progresses. Variations in salmon marine survival are affected by both freshwater and ocean conditions.
    - In addition to large scale environmental changes, the Chilko River Fraser Summer 5_2 CU was impacted by the 2019 Big Bar slide. The 2024 Tŝilhqox Slide (Chilcotin River) further impacted Chilko River Summer 5_2 CU which were previously impacted by the Big Bar slide. The Tŝilhqox Slide may remain active until the area stabilizes, which could take years. The extent and duration of these impacts on Chinook are still under investigation, and are examples of additional environmental impacts influenced by climate change.

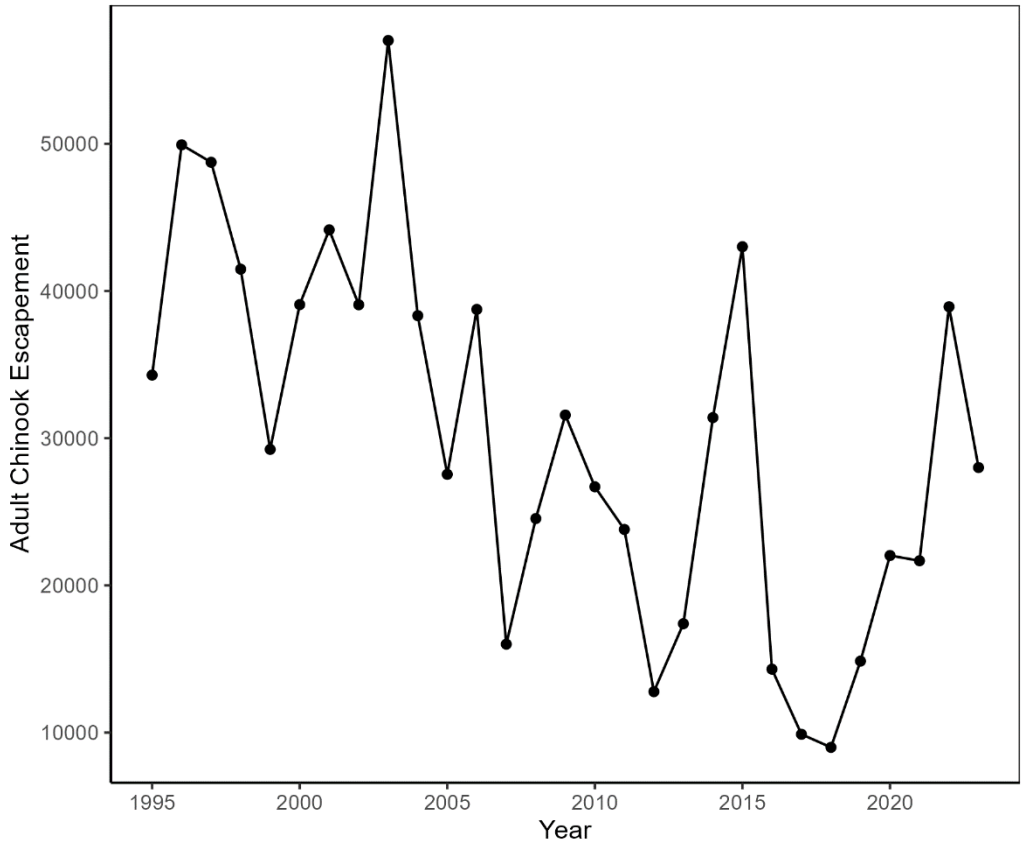

Figure 1. Time series of escapement for Fraser Summer 5_2 Chinook, 1995-2023. Based on Fraser Chinook Run Reconstruction outputs from March 2024. Note that the actual number of salmon that successfully spawn does not necessarily equal the escapement estimate.

- The recent Recovery Potential Assessment (RPA) completed in 2020 (Doutaz et al. 2021) for Fraser Chinook identified survival and recovery targets for each of the Summer 5_2 DUs (Table 2). A DU that reaches survival or recovery targets does not necessarily correspond with a change in the COSEWIC or WSP status of the DU, but these targets can provide guidance for fisheries management actions. Other factors are also considered as part of recovery (e.g., run size, expansion of distribution, productivity metrics, genetic diversity, and threat mitigation).
    - Additional science and technical advice lead by DFO Science is being reviewed through the Canadian Scientific Advisory Secretariat process, which should provide a Fisheries Science Advisory Report (FSAR) that updates stock status of Summer 5_2 Chinook. This work should be finalized in 2025. Terms of reference can be viewed here: https://www.dfo-mpo.gc.ca/csas-sccs/Schedule-Horraire/2024/04_29-05_03d-eng.html

Table 2. Survival and recovery targets for each of the Summer 5_2 Designatable Units (DUs) and recent escapement trends for each.

			Escapement	
Designatable Unit	**Survival Target (COSEWIC)**	**Recovery Target (COSEWIC/WSP)**	**2019-2023 Average**	**2023**
DU4 (LFR-Upper Pitt)	1,000	1,000	46	69
DU5 (LFR-Summer)	1,000	1,285	50	82
DU8 (MFR-Portage)	1,000	1,358	78	118
DU10 (MFR-Summer)	5,878	25,260	11,138	13,268
DU13 (STh-Stream-Summer)	1,326	5,257	1,494	1,180
DU17 (NTh-Summer)	1,824	7,773	3,929	4,593

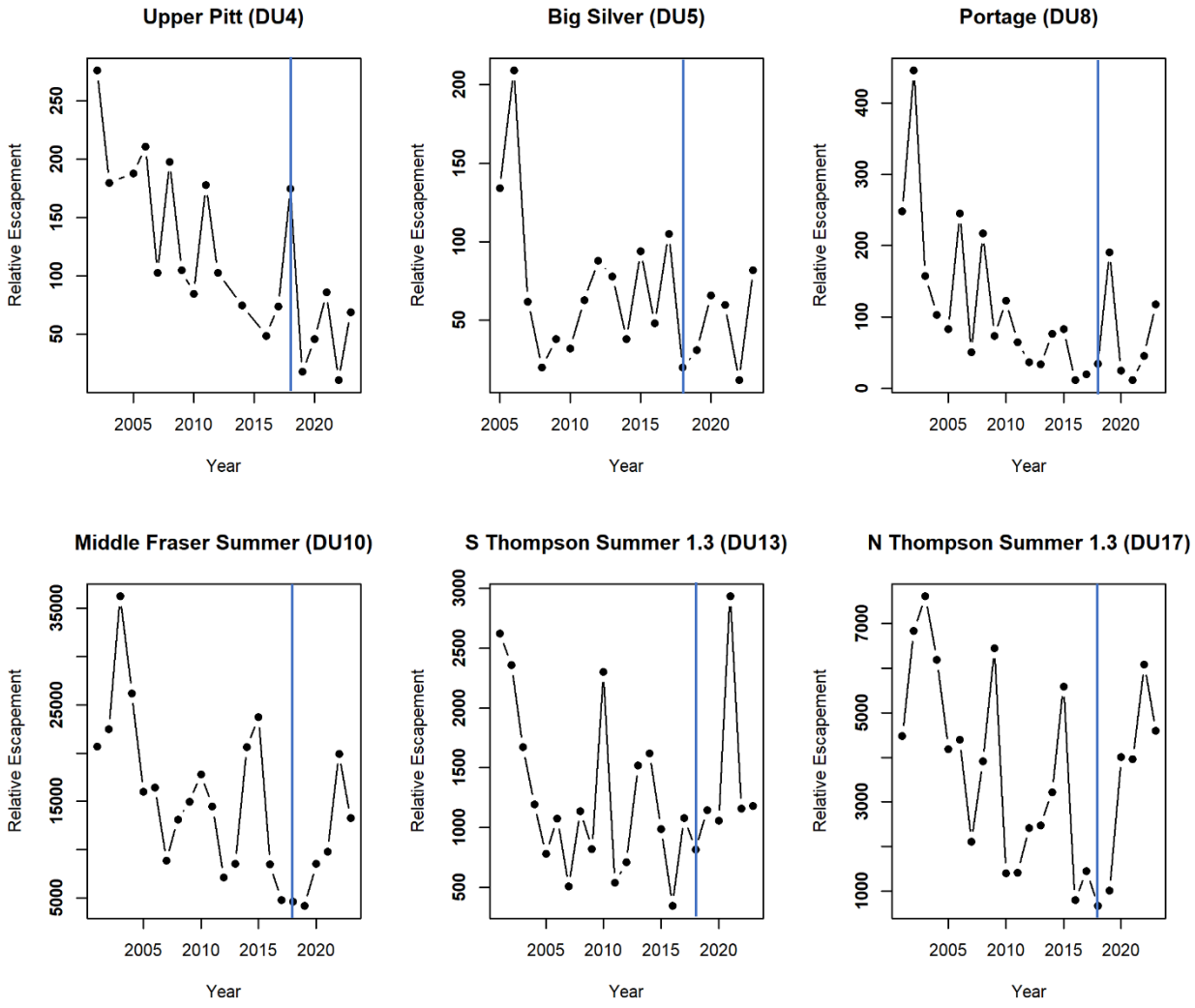

Figure 2. Time series of relative escapement for Fraser Summer 5_2 Chinook Designatable Units (DUs), 2002-2023. Blue lines delineate the two FMI review periods, pre-2018 and 2019-2023. Note the Y-axis scales are different among the DUs to enhance the visual interpretation of trends.

- Escapement survey methods for Summer 5_2 are focused on mark-recapture and visual surveys. Since 2010 the escapement estimation methods on average are: 37% mark-recapture, 8% high effort visual survey (5+ surveys), 40% moderate effort visual survey (1-4 surveys), 7% infilled or opportunistic and 7% hatchery count. Mark-recapture and high-effort visual survey (fence/fishway) methods provide total population estimates that are generally considered reasonably precise; however, there is uncertainty in the estimates that are not propagated through the run reconstruction/FMI process.
- Escapement infilling is a routine part of the annual stock assessment process for Summer 5_2 component stocks, and done when escapement estimates from individual streams are unavailable. The amount of infilling varies depending on the year. For Summer 5_2, since 2002 an average of 17% (range 4%-40%) of the streams had escapements infilled, and 15% (range

0.2%-31%) of total escapement was infilled. Some of the initial infilling procedures are documented in English et al. 2007, but not most of those used in recent years.

2. Fishery Mortality Index outputs and trends

- The Fishery Mortality Index combines mortality data from the Fraser River Chinook run reconstruction model with GSI applied to catch estimates from marine mixed-stock fisheries. The basis of the FMI method (described in Dobson et al. 2020) is an alternative method for attributing impacts to the Chinook Technical Committee's Exploitation Rate Analysis (CTC ERA). The CTC ERA based on CWTs of Summer 5_2 SMU is currently not available.
    - The coded-wire tag (CWT) indicator stock program in place for Fraser Summer 5_2 Chinook is still in development (Chilko River) and not available for this review, so the annual data available that accounts for most Canadian Chinook fishery impacts is the FMI.
- Data inputs to the analysis (FMI and Run Reconstruction) include escapement estimates (some infilled), kept catch, legal-size released catch mortalities (in Southern BC recreational fisheries), and GSI sample results from marine mixed-stock fisheries. Fishery catch data not currently included in the analysis due to data limitations are: US fisheries, North and Central Coast Individual Stock Based Management fisheries, and inside marine Southern BC First Nations FSC fisheries.
    - Additional details on the methodology and uncertainties are documented in a technical memo (DFO 2023). Note that the values presented in Table 3 will differ from those in the technical memo because updated information has since become available and corrections to errors were made. These will be documented in a Technical Report expected to be available in spring of 2025.
- The Fishery Mortality Index appears to have decreased in 2019-2023 compared to the base period 2014-2018 (Table 3).
- Mean run size index from 2014-2018 was 28,667 and 2019-2023 was 28,821 (absolute change +154).
- High variability in escapement and run size has been observed in the past 3 cycles (Figure 3). 2015 and 2022 run sizes were relatively strong, contrasted with poor run sizes in 2012-2013 and 2016-2018).
- Based on the RPA recovery targets and the escapement and run size estimates of many Summer 5_2 SMU component stocks, the JTC does not recommend changing the overall fishery management objectives, which are intended to prioritize conservation and recovery.

Table 3. Summary Fishery Mortality Indices (FMIs) for the Summer 5_2 Chinook SMU. Refer to Known Uncertainties section of the Fraser Chinook Fishery Mortality Index Summary, 2014 - 2022 memo, which details sources of uncertainty and analysis assumptions that affect mortality estimates.

	AVERAGE 2014-2018	2019	2020	2021	2022	2023	AVERAGE 2019-2023
RECREATIONAL							
In-river	2.5%	1.7%	2.3%	1.7%	1.3%	1.6%	1.7%
Marine	8.7%	8.5%	2.3%	5.4%	3.4%	4.8%	4.5%
Total	**11.2%**	**10.1%**	**4.7%**	**7.1%**	**4.8%**	**6.5%**	**6.2%**
COMMERCIAL/EO							
In-river	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marine	4.2%	0.7%	0.1%	0.4%	0.3%	0.3%	0.3%
Total	**4.6%**	**0.7%**	**0.1%**	**0.4%**	**0.3%**	**0.3%**	**0.3%**
TEST							
In-river	1.0%	0.9%	1.2%	1.4%	0.9%	1.0%	1.1%
Marine	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**1.0%**	**0.9%**	**1.2%**	**1.4%**	**0.9%**	**1.0%**	**1.1%**
FIRST NATIONS							
In-river	7.1%	6.2%	7.0%	5.0%	4.7%	2.3%	4.8%
Marine	1.0%	0.7%	0.0%	0.7%	0.3%	0.7%	0.5%
Total	**8.1%**	**6.9%**	**7.0%**	**5.6%**	**5.1%**	**3.0%**	**5.3%**
Total CDN Fishing Mortality Index	**24.9%**	**18.6%**	**13.0%**	**14.6%**	**11.0%**	**10.9%**	**12.9%**
Run Size Index	28,667	18,255	25,312	25,370	43,740	31,426	28,821

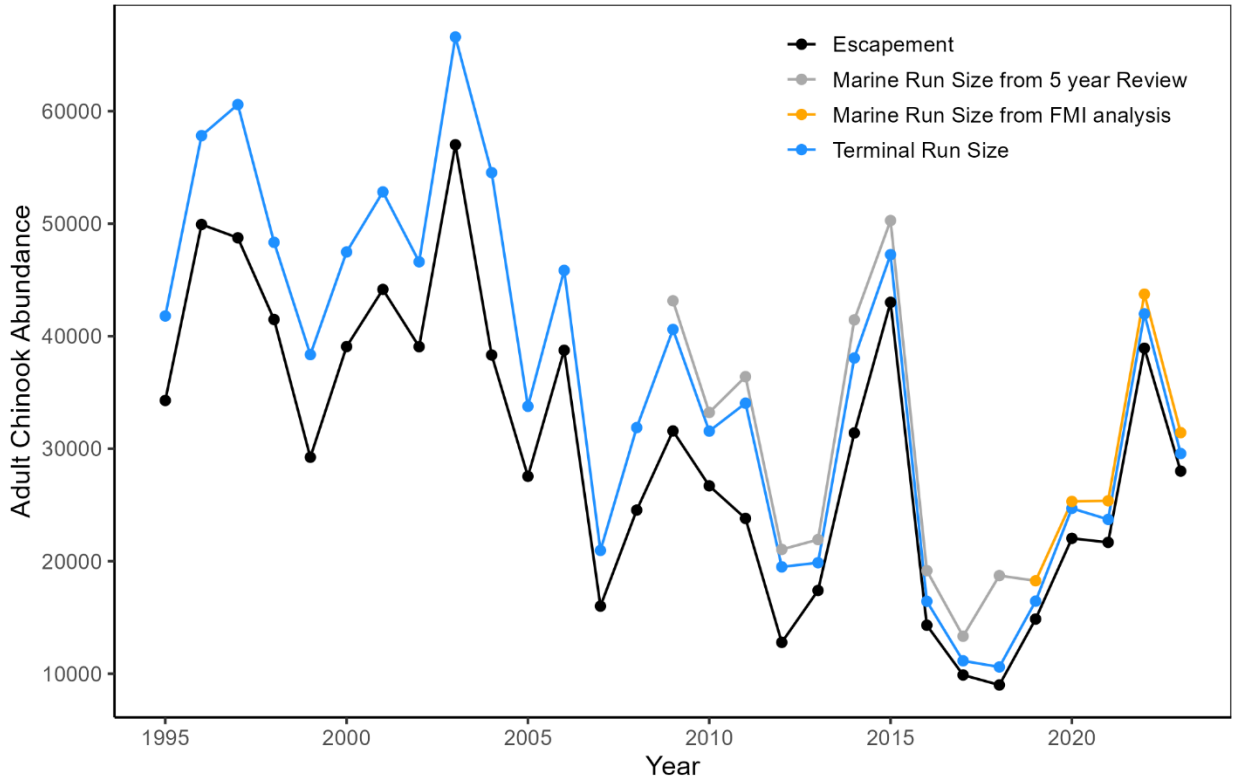

Figure 3. Escapement and run size (escapement plus fishery removals) of Summer 5_2 Chinook, 1995-2023. Based on Fraser Chinook Run Reconstruction outputs from March 2024 (escapement and terminal run size at the Fraser River mouth), back-calculated from exploitation rate indices (marine run size 2008-2018, Dobson et al. 2020), and Fishery Mortality Index analysis run size estimates (marine run size 2019-2023). Note that the actual number of salmon that successfully spawn does not necessarily equal the escapement estimate.

2.1 First Nations Fisheries (FSC)

- FMI in First Nations FSC fisheries averaged 8.1% from 2014-2018 and 5.3% (range 3.0% - 7.0%) from 2019-2023, for a reduction of the average between periods of 2.8% (32% of the base period).
- Proportion of all mortality on Summer 5_2 has varied annually, averaging 33% from 2014-2018 and 41% (range 28% - 54%) from 2019-2023.
- Marine catch information has been included where available, but data for some fisheries are unavailable. Without biological samples from marine First Nations fisheries, there is uncertainty introduced when using approximations (i.e. proxies) from neighboring fisheries.
- First Nations catch monitoring records serve as inputs for in-river FSC catch in the FMI methods. Stock composition assumptions of First Nations catch in-river are based on aggregated assumed run timings, some of which are based on genetic analysis of Chinook encountered at the Albion test fishery.
- The Five Nations rights-based sales fishery is included in this section, but could not be separated from other First Nations marine fisheries for this distribution. This is intended to be completed for a future iteration of the FMI analysis.

2.2 Recreational Fisheries

- FMI in Recreational fisheries averaged 11.2% from 2014-2018 and 6.2% (range 4.7% - 10.1%) from 2019-2023, for a reduction of the averages between periods of 5.0% (41% of the base period).
    - In-river Recreational FMI from 2019-2023 is from tributary fisheries for Chehalis and Chilliwack Chinook; no other in-river recreational fisheries were licenced for Summer 5_2 SMU stocks during that period.
    - The Summer 5_2 FMI for Recreational fisheries includes marine, in-river Fraser mainstem and tributary fisheries. One of the input tributary fisheries is the Chilliwack river recreational fishery targeting Chilliwack hatchery Chinook; more details on the Chilliwack fishery input are included in section 4.
- The proportion of all mortality on Summer 5_2 due to recreational fishing varies annually, averaging 45% from 2014-2018 and 48% (range 36% - 59%) from 2019-2023.
- On average from 2019-2023, 86% of the estimated impacts in the Southern BC recreational fisheries were attributed to kept legal-sized catch. There is a noticeable difference compared to the base period 2014-2018 (96%); however, overall legal-sized mortalities also appear to have been reduced.
    - In recent years, sub-legal fish make up a large proportion of the released Chinook. Since 2019, over 60% of released Chinook are sub-legal fish. 2021 (79%), 2022 (77%), and 2023 (69%). These impacts are not currently included in the FMI analysis due to a lack of stock composition information for sub-legal catch.

2.3 Commercial Fisheries

- Since 2019, commercial fisheries impact has been reduced substantially.
- FMI in Commercial fisheries averaged 4.6% from 2014-2018 and 0.4% (range 0.1% - 0.4%) from 2019-2023, for a reduction of the average between periods of 4.2% (92% of the base period).
- The proportion of all mortality on Summer 5_2 has remained low since 2019, averaging 19% from 2014-2018 and 3% (range 0% - 4%) from 2019-2023.
- The Area G springtime (April/May) inshore demonstration fishery (which extends to 1 nautical mile beyond the surf line) is new since 2023. The previous springtime fishery was closed from 2019-2022 as part of the fishery restrictions to reduce impacts to Fraser Chinook stocks of concern. Previously the fishery operated predominantly offshore, but the new demo for 2023 was designed to occur only inshore in PFMAs 23 to 27. Results from the stock composition sampling program identified traces of Summer 5_2 Chinook (<1 encounter, uncertainty in GSI results). The sampling rate was 40% in 2023; further work is needed to determine how much sampling is required to detect Fraser stocks of concern with confidence and to estimate their proportion of the catch. The 2024 genetic results are not yet available, but the full demo allocation (3,000 pieces) was caught in 2024, unlike the 2023 fishery (1,363 pieces).

2.4 Test Fisheries

- Test fisheries typically account for about 0.9% to 1.4% of the total FMI percentage points annually. The average FMI from the test fisheries is 1.0% from 2014-2018 and 1.1% from 2019-2023. No changes were implemented to the test fishery programs as part of the 2019 Chinook management changes.
- The majority of these impacts occur in the Albion test fishery within the Fraser River, which is targeting Chinook, with the remaining impact coming from Fraser Panel Sockeye test fisheries in the Fraser River (Whonnock, Cottonwood and Brownsville Bar gillnet test fisheries) and a very small amount (<10 fish annually) from Johnstone Strait and Strait of Juan de Fuca test fisheries.
- Data collected from test fisheries provide a consistent time series that can support technical processes to inform fishery management if alternative management plans are developed. Additional benefits include being an important collection source for CWT data and bio-samples for GSI analyses that can serve to estimate escapement in terminal systems and calibrate the RR procedure. At this time, based on the multitude of useful information collected, we do not recommend prioritizing changes to test fisheries to meet management objectives.

3. Reference fishery and marine GSI results

- The reference fishery program initiated in 2023 (DFO 2024) is a survey using recreational fishing gear and sampling all encountered Chinook to gain a better understanding of the marine recreational fishery, in particular to improve sampling rates on released salmon and collect data to assess the impact of the Chinook-directed MSFs. In its first year the reference fishery operated a total of 153 boat days across four MSF areas. The reference fishery sampled a total of 1,084 Chinook (318 legal size and 766 sub-legal size). Three legal and six sub-legal samples were identified to the Fraser Summer 5_2 SMU in 3 MSF areas.
- Marine GSI samples from the recreational fishery have been routinely obtained by the DFO scientific programs conducted by non-government organizations (e.g., University of BC), citizen scientists (including Avid Angler program), and lodge guides. The stock composition estimates derived from analyzing these samples are used as inputs for the FMI process.
- Commercial fishery GSI samples used for the FMI analysis are collected as part of the routine catch monitoring program (primarily dockside).
- The 2023 reference fishery (DFO 2024) and GSI samples from marine fisheries (recreational and commercial) since 2015 indicate widespread presence of Fraser Summer 5_2 in most/all marine Chinook-directed salmon fisheries. Trends in stock proportion between regions or areas are hard to identify with the available data (due to sample size and relative abundances), but there does appear to be a greater proportion of Summer 5_2 in marine areas in Southern BC than Northern BC.
- Due to their widespread presence, there will likely be impacts identified to every marine Chinook fishery operating during the Summer 5_2 migratory period (and potentially outside the migratory period). Fishery management changes should prioritize actions on fisheries with the largest impacts, including those with relatively large releases of sub-legal sized salmon.

4. Chilliwack Summer Hatchery Influence

- The Chilliwack Summer 5_2 Chinook are a component of the Summer 5_2 SMU and primarily hatchery-origin salmon, although some natural production has been identified. The Summer run component of the hatchery enhancement began in 1985 for recreational fishery access and is ongoing. Broodstock was taken from Upper Fraser stocks (from component stocks in the Spring 5_2 and Summer 5_2 SMU) to seed this hatchery production, and they continue to be used.
- The recreational catch attributed to the Chilliwack River fishery is produced from a harvest rate estimated in Schubert 1992. Since then the estimated 11.99% exploitation rate (ER) has been used in the Fraser Chinook Run Reconstruction model. Consequently, this implies a fixed correlation between hatchery escapement (the only metric used to monitor Summer 5_2 Chilliwack Chinook) and the recreational fishery ER. There are no catch monitoring programs in place to monitor the recreational fishery on the Chilliwack River for Summer 5_2 Chinook.
    - Actual reported catch from interviews was 15 Chinook during the study. Estimated catch was expanded to 117 Chinook for the entire Summer Chilliwack Chinook fishery in the study period.
    - The proportion of Chilliwack Summer 5_2 Chinook comprising the total Summer 5_2 FMI in the marine fisheries cannot be determined at this time. For the FMI analysis, Chilliwack Summer 5_2 Chinook could not be genetically distinguished from Upper Fraser wild Chinook because Upper Fraser broodstock were originally used to establish the Chilliwack hatchery stock. This issue is being investigated further and may be resolved in the near future through improved genetic techniques, Parental-Based Tagging, and/or new CWT programs.
- Given the uncertainty in the available data and many instances of missing information, we do not have the information to distinguish the Chilliwack Summer 5_2 component of impacts from the total impacts to the Summer 5_2 MU in the FMI analysis.
    - FMI on the other 5 CUs that comprise Summer 5_2 wild stocks are unlikely subject to tributary fishery impacts that target Chilliwack hatchery Chinook.
- Other hatchery operations (Chehalis River) that produce Summer 5_2 Chinook and have directed fisheries in tributary access streams further compound the issues identified with the FMI method and the Chilliwack hatchery production of Summer 5_2.

5. Mark-Selective Fishery (MSF) information

- Post-season data summaries for Chinook MSFs are available for 2021 and 2022. The 2023 results are pending. It is difficult to fully assess the impacts of the MSF implementation on Summer 5_2 for 2021 and 2022.
    - 764 GSI samples were taken in 2021. Area 13 and 15 (n = 689), Area 16 (n = 59), Area 20 (n = 10) and Area 12 (n = 7).
    - 502 GSI samples were taken in 2022. Area 13 and 15 (n = 448), Area 16 (n = 40), Area 20 (n = 14) and Area 12 (n = 0).
    - Summer 5_2 SMU samples were detected in the 2021-2022 MSF catch monitoring program.

  - Concerns with fishery monitoring and robust catch sampling of the MSF resulted in the development of the Reference Fishery program, which was implemented in 2023 and 2024.
- The MSFs in PFMAs 12 (Broughton Archipelago), 13 (Bute Inlet/Ramsay Arm), 15 (Homfray Channel/Toba Inlet), 16 (Sechelt/Jervis inlets), 17 to 19 (Gulf Islands/Saanich Inlet), 19 (Haro Strait), and 20-5 (Beecher Bay), are new fisheries since the 2019 Chinook management actions were implemented.
- The MSF results for 2021-2022 show Fraser Chinook SoC are present in the fisheries in PFMAs 13, 15, and 20-5 (21 Spring 4_2 and 13 Summer 5_2 mortalities estimated across these areas). Given the low abundance of Fraser SoC (including Summer 5_2) compared to the other stocks in the fishery and high uncertainty in estimated impacts on Summer 5_2, even more precautionary management actions should be considered in all fishing areas where SoC are encountered.
- Rationale for approving some of the MSFs included the assumption that the fishing areas were off the main migratory route of Fraser Chinook SoC, though it has not been verified whether stock composition in those areas is different than in assumed migratory route areas. It is well-known that Chinook don't follow a consistent migratory path and may hold or travel through other peripheral areas before reaching the Fraser River.

6. Creel survey trends

- From the months of May to September, during periods of Summer 5_2 migration, the total number of Chinook kept in Southern BC recreational fisheries in recent years was lower than pre-2019 levels, but even with a hypothesized 20% mortality applied to released fish, the total mortalities exceeded pre-2019 levels. See Appendix C for a summary of 2014-2023 South Coast Creel survey Chinook catch results.
- A finer look at Summer 5_2 Chinook FMI in Southern BC recreational fisheries by Pacific Fishery Management Area (PFMA) groupings (Table 4) shows that the greatest impacts occur in northern Strait of Georgia (nGST) PFMAs 13 to 16 and eastern Strait of Juan de Fuca (JDFeast) PFMAs 19 to 20. These impacts primarily occurred in July and August, though the magnitude of the impacts appears to have decreased since the base period.
- According to creel survey results presented in Appendix C and summarized in Table 4 below, the total number of Chinook kept in June through August in nGST PFMAs 13 to 16 and Juan de Fuca East (PFMAs 19cde, 20cd) declined slightly from the period of 2019-2024 compared to the base period (2014-2018).
- However, the total Chinook released (both legal and sub-legal) in these areas increased substantially from 2019-2024 compared to the base period.

Table 4. BC Recreational Fishery Mortality Index for Summer 5_2 Chinook by broad coastal fishing area, 2014-2023. Central Coast recreational fisheries are assumed terminal, meaning they are assumed to not impact Fraser Chinook. PFMA = Pacific Fishery Management Area.

Fishing Area	PFMA	2014-2018	2019	2020	2021	2022	2023
North Coast	1 to 5	1.1%	2.3%	0.0%	1.6%	1.5%	1.1%
Central Coast	6 to 10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
South Coast	11 to 29, 111, 121 to 127	7.7%	6.2%	2.3%	3.7%	1.9%	3.8%
Total		**8.8%**	**8.5%**	**2.3%**	**5.3%**	**3.4%**	**4.9%**

Table 5. Summary of creel survey data presented in Appendix C for Fishing Areas with the highest impact, as measured with FMI.

Fishing Area	PFMA/creel subareas	Disposition	2014-2018 (June, July, August)	2019-2024 (June, July, August)
Northern Strait of Georgia	13 to 16	Kept Legal	33,325	32,198
		Released (legal & sub-legal)	35,088	89,704
Juan de Fuca East	19cde, 20cd	Kept Legal	14,976	10,165
		Released (legal & sub-legal)	16,781	28,877
Total combined		Kept Legal	48,301	42,363
		Released (legal & sub-legal)	51,869	118,581

Table 6. Southern BC Recreational Fishery Mortality Index for Summer 5_2 Chinook by Pacific Fishery Management Area (PFMA) grouping, 2014-2023. A detailed breakdown by month is available in Appendix B.

Fishery Area (PFMAs)	2014-2018	2019	2020	2021	2022	2023
upperQCS(11,111)	0.1%	0.2%	0.1%	0.2%	0.1%	0.1%
nJST(12)	0.7%	0.4%	0.3%	0.2%	0.1%	0.1%
nGST(13,14,15,16)	2.4%	2.8%	1.1%	1.2%	0.9%	1.2%
sGST(17,18,19ab,28,29)	0.3%	0.3%	0.1%	0.2%	0.2%	0.3%
JDFeast(19cde,20cd)	2.4%	1.6%	0.3%	0.5%	0.3%	1.3%
JDFwest(Renfrew 20abe)	0.9%	0.3%	0.1%	0.6%	0.2%	0.0%
Inshore NWVI	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%
Inshore SWVI	0.1%	0.3%	0.2%	0.2%	0.2%	0.0%
NWVI >1nm offshore(125-127	0.5%	0.2%	0.0%	0.1%	0.0%	0.4%
SWVI >1nm offshore(121-124)	0.2%	0.0%	0.0%	0.5%	0.1%	0.2%
Grand Total	**7.7%**	**6.2%**	**2.3%**	**3.7%**	**1.9%**	**3.8%**

7. Release Mortality Studies

- Fishery Related Incidental Mortality (FRIM) is not included universally in the FMI analysis. Only the Southern BC recreational fisheries include a FRIM component for post-season analysis. For hook-and-line fisheries the currently hypothesized average FRIM rate used is 20%, and serves to account for mortality impacts from catch and release events in the FMI analysis.
- This FRIM rate is at the lower end of the range of mortality rates estimated in the available literature (15-40%). Depending on type and extent of injury and other factors (e.g., fish size, water temperature, handling, air exposure, etc.), FRIM rates estimated in recent studies using recreational gear can exceed the DFO hypothesized rate of 20% (reviewed in Patterson et al. 2017, Hinch et al. 2024). We acknowledge the challenges of estimating FRIM, but note that the divergence between recently published rates and those assumed for fishery management should be accounted for when setting precautionary fishery management measures.
- Understanding the influence of underestimating FRIM rates in the context of the FMI analysis is critical to inform decision-making on fisheries where those rates are used to justify fishery management.
    - Preliminary sensitivity analysis results from changing FRIM rates (e.g., 20% to 40%) used in fishery management planning for recreational fisheries affects the FMI outputs, including potentially increasing the marine recreational FMI and subsequently shifting the distribution of mortalities so more impacts occur in the recreational fisheries. Details of this analysis are available upon request to the JTC.
- Some recommendations for reducing FRIM rates include effort restriction (limiting overall effort), gear restrictions (maximum hook size, bait restrictions), and landing, handling, and release recommendations (best practices guidelines). We cannot quantify the impacts of most of these recommendations on the FMI. Other management actions to address kept catch are more likely to result in meaningful reductions in FMI, a shift in the distribution of impacts, and potentially more fish on the spawning grounds.

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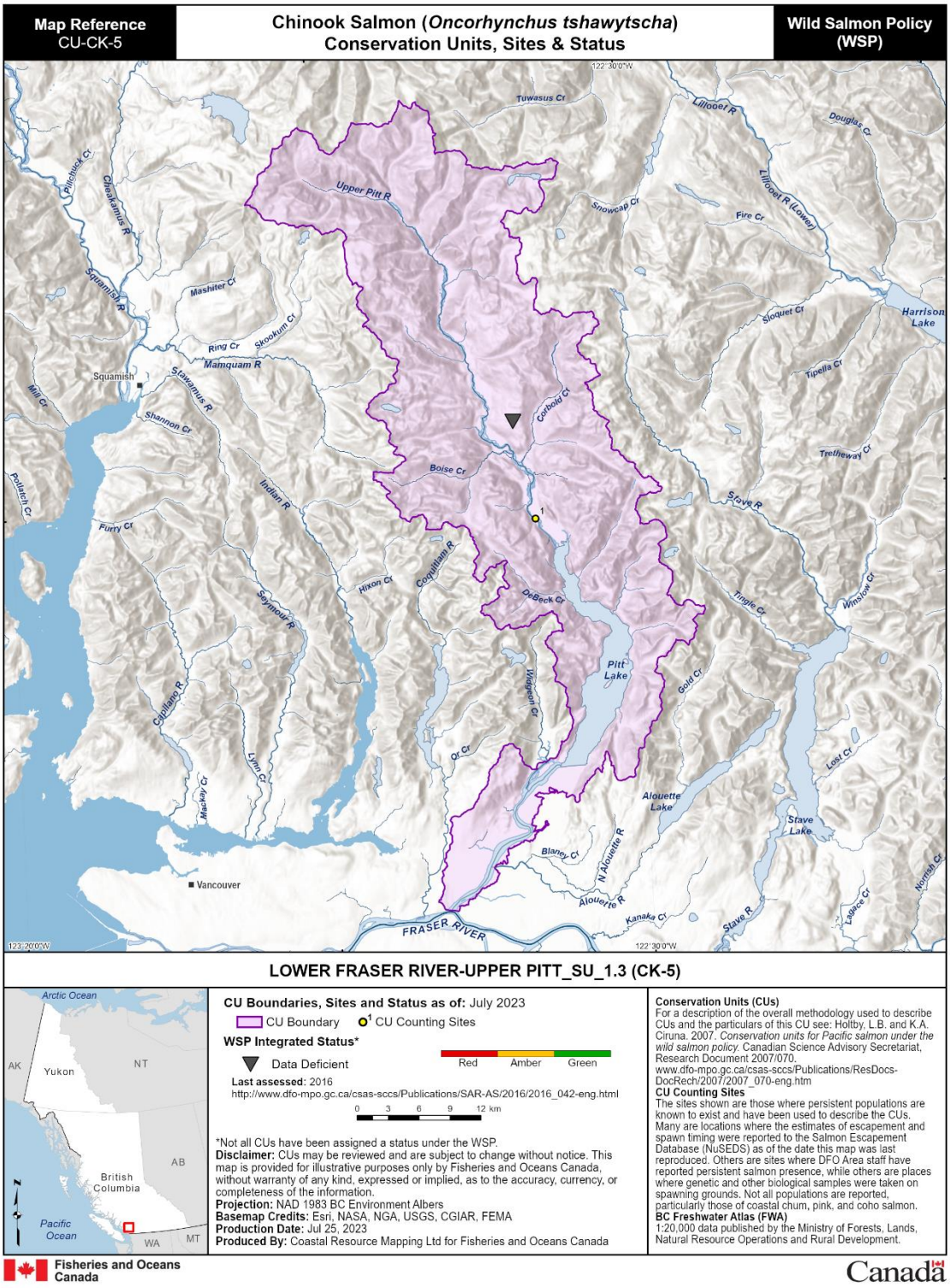
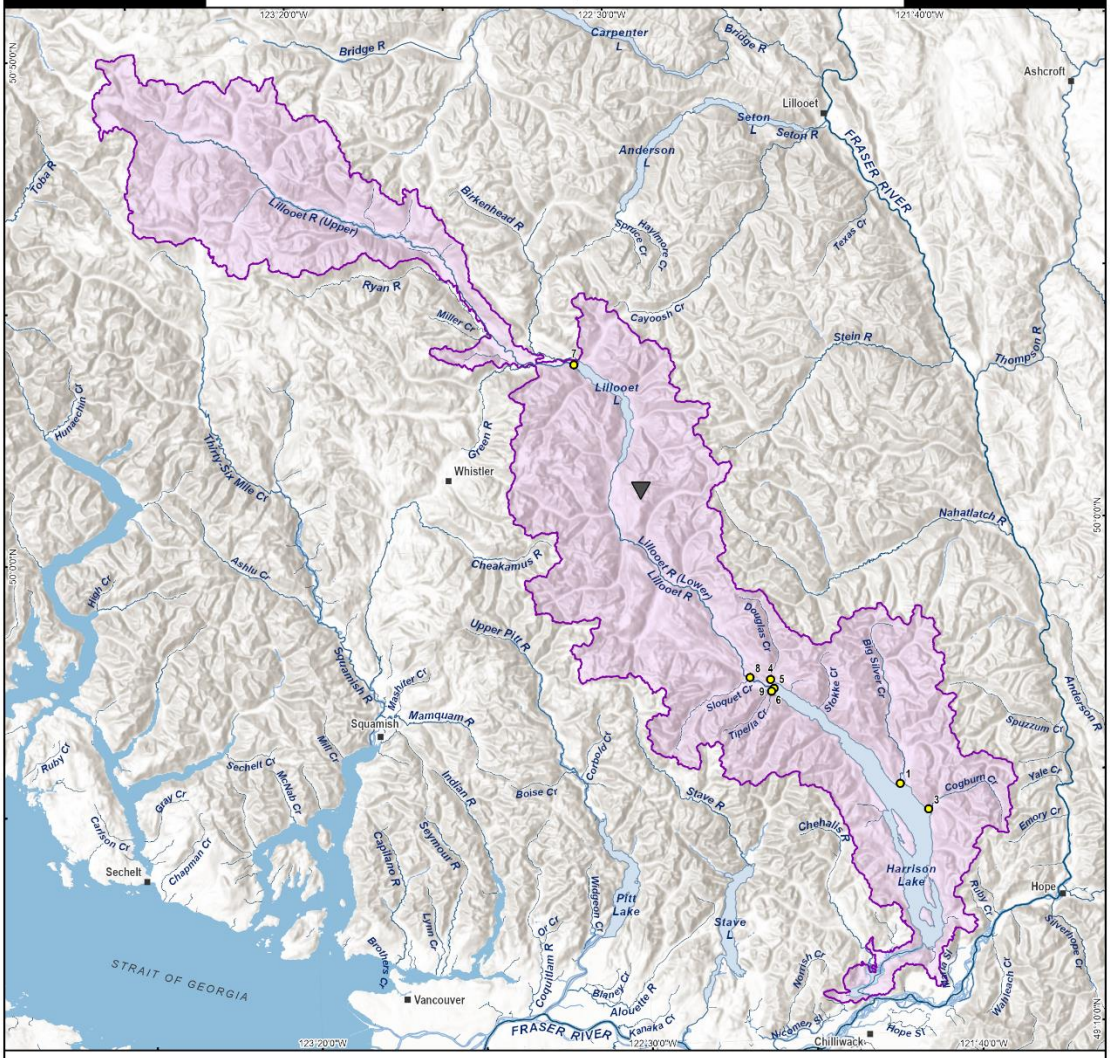
Appendix A. Maps of each Conservation Unit included in the Summer 5_2 Chinook Stock Management Unit.



Map Reference CU-CK-6

Chinook Salmon (*Oncorhynchus tshawytscha*) Conservation Units, Sites & Status

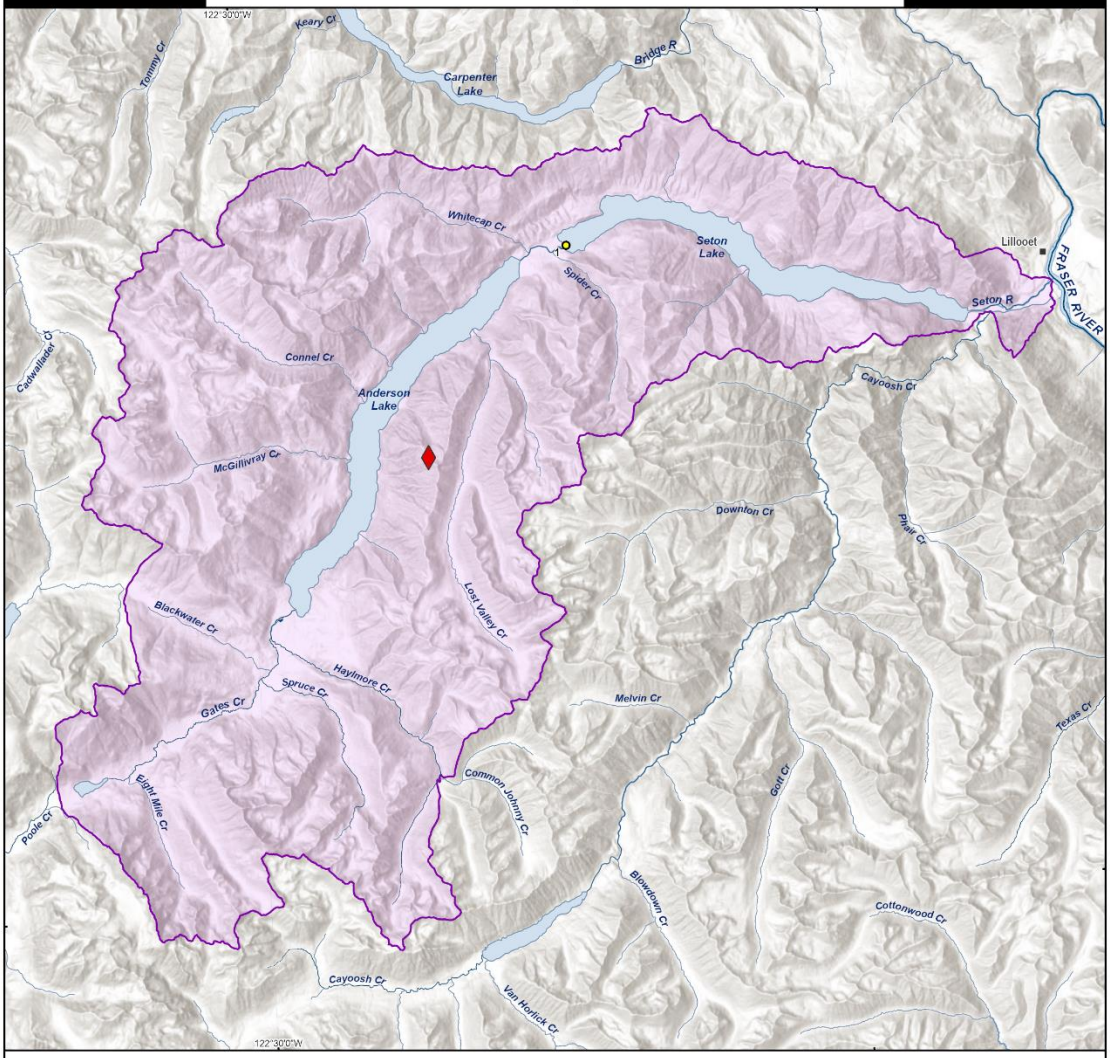
Wild Salmon Policy (WSP)



Map Reference CU-CK-9

Chinook Salmon (*Oncorhynchus tshawytscha*) Conservation Units, Sites & Status

Wild Salmon Policy (WSP)



MIDDLE FRASER RIVER-PORTAGE_FA_1.3 (CK-9)

CU Boundaries, Sites and Status as of: July 2023

CU Boundary 1 CU Counting Sites

WSP Integrated Status*

Red Red Amber Green

Last assessed: 2016

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016_042-eng.html

0 1.5 3 4.5 6 km

*Not all CUs have been assigned a status under the WSP.

Disclaimer: CUs may be reviewed and are subject to change without notice. This map is provided for illustrative purposes only by Fisheries and Oceans Canada, without warranty of any kind, expressed or implied, as to the accuracy, currency, or completeness of the information.

Projection: NAD 1983 BC Environment Albers

Basemap Credits: Esri, NASA, NGA, USGS, CGIAR, FEMA

Production Date: Jul 25, 2023

Produced By: Coastal Resource Mapping Ltd for Fisheries and Oceans Canada

Conservation Units (CUs)

For a description of the overall methodology used to describe CUs and the particulars of this CU see: Holtby, L.B. and K.A. Ciruna. 2007. *Conservation units for Pacific salmon under the wild salmon policy.* Canadian Science Advisory Secretariat, Research Document 2007/070. www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2007/2007_070-eng.htm

CU Counting Sites

The sites shown are those where persistent populations are known to exist and have been used to describe the CUs. Many are locations where the estimates of escapement and spawn timing were reported to the Salmon Escapement Database (NuSEDS) as of the date this map was last reproduced. Others are sites where DFO Area staff have reported persistent salmon presence, while others are places where genetic and other biological samples were taken on spawning grounds. Not all populations are reported, particularly those of coastal chum, pink, and coho salmon.

BC Freshwater Atlas (FWA)

1:20,000 data published by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

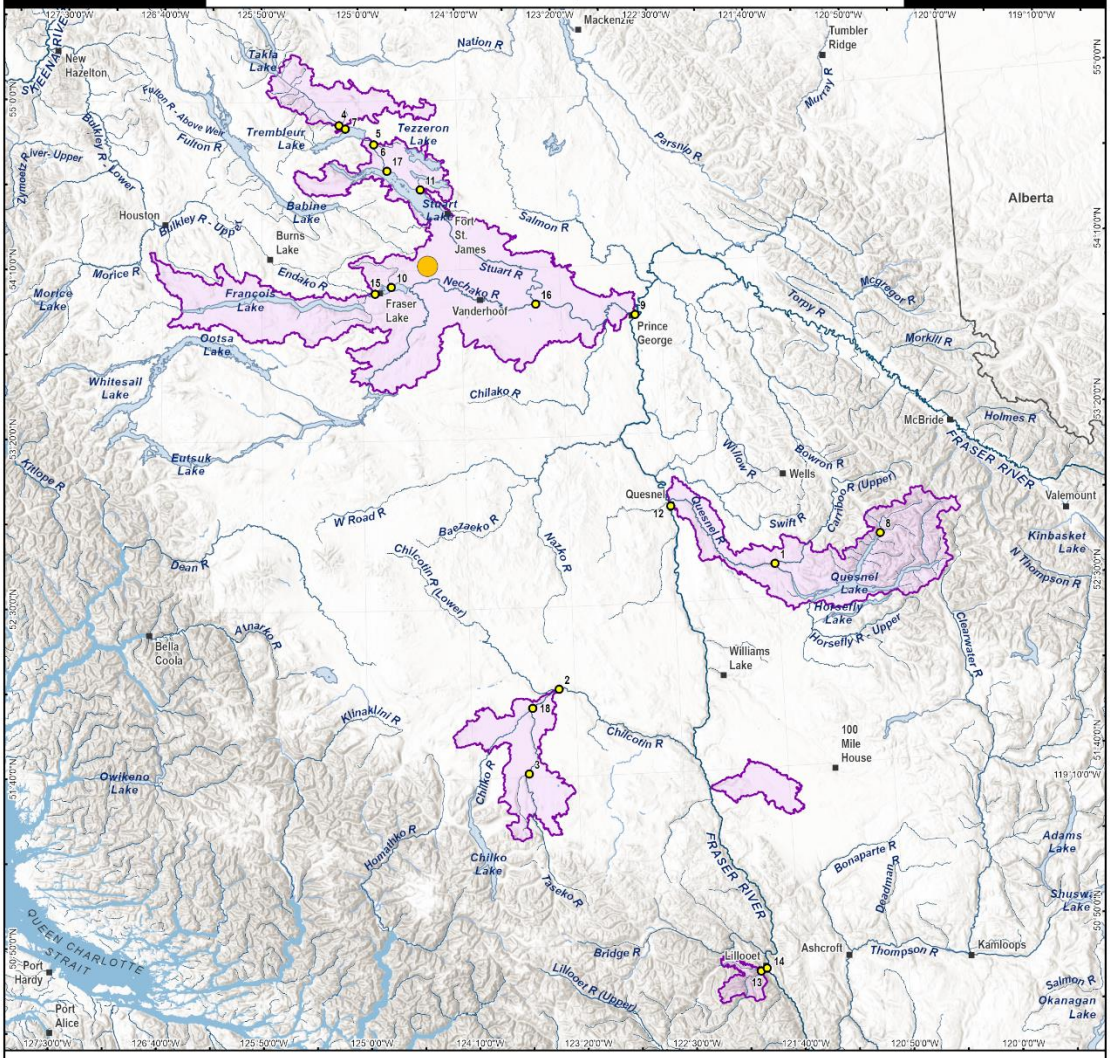
Fisheries and Oceans Canada

Canada

Map Reference CU-CK-11

Chinook Salmon (*Oncorhynchus tshawytscha*) Conservation Units, Sites & Status

Wild Salmon Policy (WSP)



MIDDLE FRASER RIVER_SU_1.3 (CK-11)

CU Boundaries, Sites and Status as of: July 2023

CU Boundary ^{1} CU Counting Sites

WSP Integrated Status*

Amber

Red Amber Green

Last assessed: 2016

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016_042-eng.html

0 20 40 60 80 km

*Not all CUs have been assigned a status under the WSP.

Disclaimer: CUs may be reviewed and are subject to change without notice. This map is provided for illustrative purposes only by Fisheries and Oceans Canada, without warranty of any kind, expressed or implied, as to the accuracy, currency, or completeness of the information.

Projection: NAD 1983 BC Environment Albers

Basemap Credits: Esri, NASA, NGA, USGS, CGIAR, FEMA

Production Date: Jul 25, 2023

Produced By: Coastal Resource Mapping Ltd for Fisheries and Oceans Canada

Conservation Units (CUs)

For a description of the overall methodology used to describe CUs and the particulars of this CU see: Holtby, L.B. and K.A. Ciruna. 2007. *Conservation units for Pacific salmon under the wild salmon policy.* Canadian Science Advisory Secretariat, Research Document 2007/070. www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2007/2007_070-eng.htm

CU Counting Sites

The sites shown are those where persistent populations are known to exist and have been used to describe the CUs. Many are locations where the estimates of escapement and spawn timing were reported to the Salmon Escapement Database (NuSEDS) as of the date this map was last reproduced. Others are sites where DFO Area staff have reported persistent salmon presence, while others are places where genetic and other biological samples were taken on spawning grounds. Not all populations are reported, particularly those of coastal chum, pink, and coho salmon.

BC Freshwater Atlas (FWA)

1:20,000 data published by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

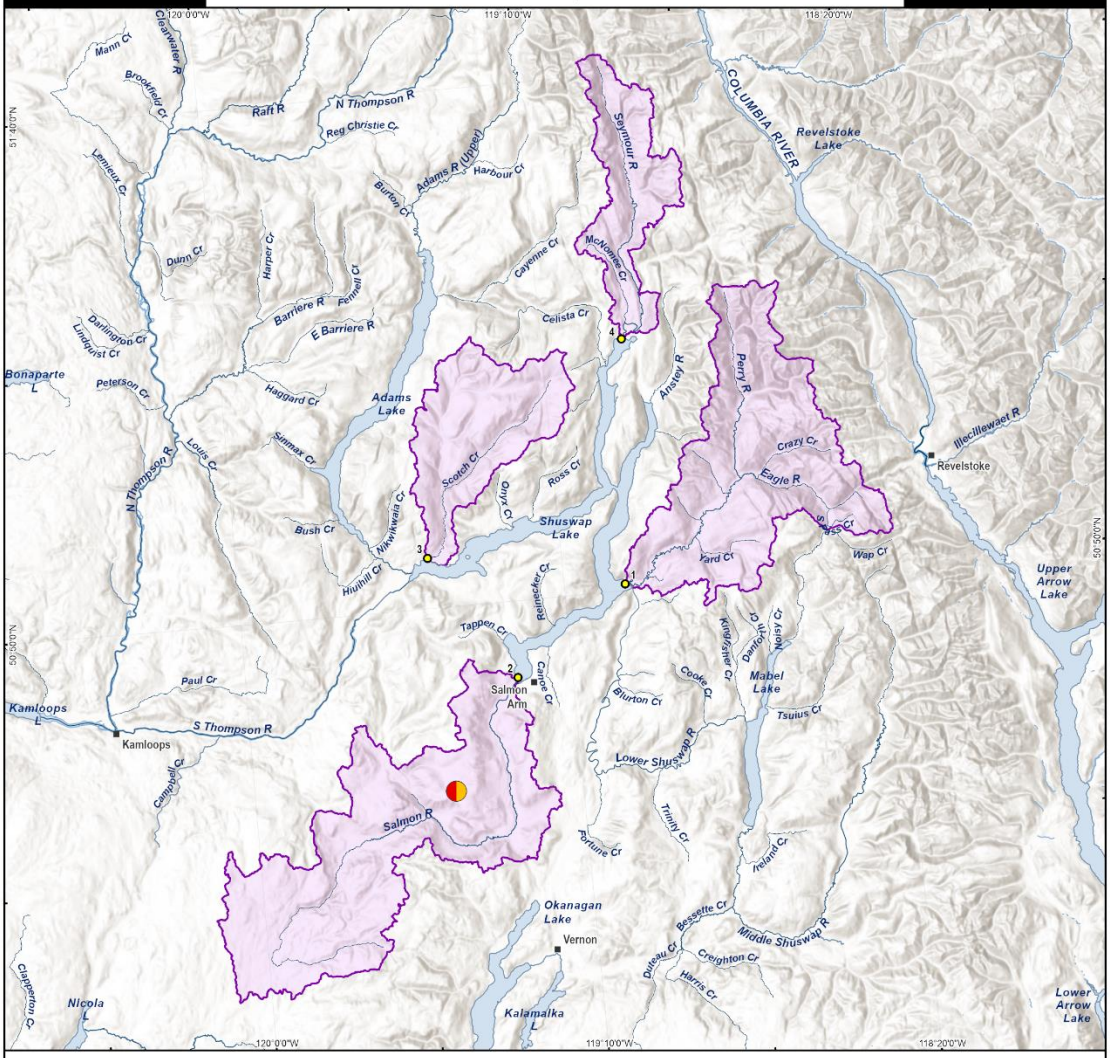
Fisheries and Oceans Canada

Canada

Map Reference CU-CK-14

Chinook Salmon (*Oncorhynchus tshawytscha*) Conservation Units, Sites & Status

Wild Salmon Policy (WSP)



SOUTH THOMPSON_SU_1.3 (CK-14)

CU Boundaries, Sites and Status as of: July 2023

CU Boundary ^{1} CU Counting Sites

WSP Integrated Status*

Red/Amber

Red | Amber | Green

Last assessed: 2016

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016_042-eng.html

0 6.5 13 19.5 26 km

*Not all CUs have been assigned a status under the WSP.

Disclaimer: CUs may be reviewed and are subject to change without notice. This map is provided for illustrative purposes only by Fisheries and Oceans Canada, without warranty of any kind, expressed or implied, as to the accuracy, currency, or completeness of the information.

Projection: NAD 1983 BC Environment Albers

Basemap Credits: Esri, NASA, NGA, USGS, CGIAR, FEMA

Production Date: Jul 25, 2023

Produced By: Coastal Resource Mapping Ltd for Fisheries and Oceans Canada

Conservation Units (CUs)

For a description of the overall methodology used to describe CUs and the particulars of this CU see: Holtby, L.B. and K.A. Ciruna. 2007. *Conservation units for Pacific salmon under the wild salmon policy.* Canadian Science Advisory Secretariat, Research Document 2007/070. www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2007/2007_070-eng.htm

CU Counting Sites

The sites shown are those where persistent populations are known to exist and have been used to describe the CUs. Many are locations where the estimates of escapement and spawn timing were reported to the Salmon Escapement Database (NuSEDS) as of the date this map was last reproduced. Others are sites where DFO Area staff have reported persistent salmon presence, while others are places where genetic and other biological samples were taken on spawning grounds. Not all populations are reported, particularly those of coastal chum, pink, and coho salmon.

BC Freshwater Atlas (FWA)

1:20,000 data published by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

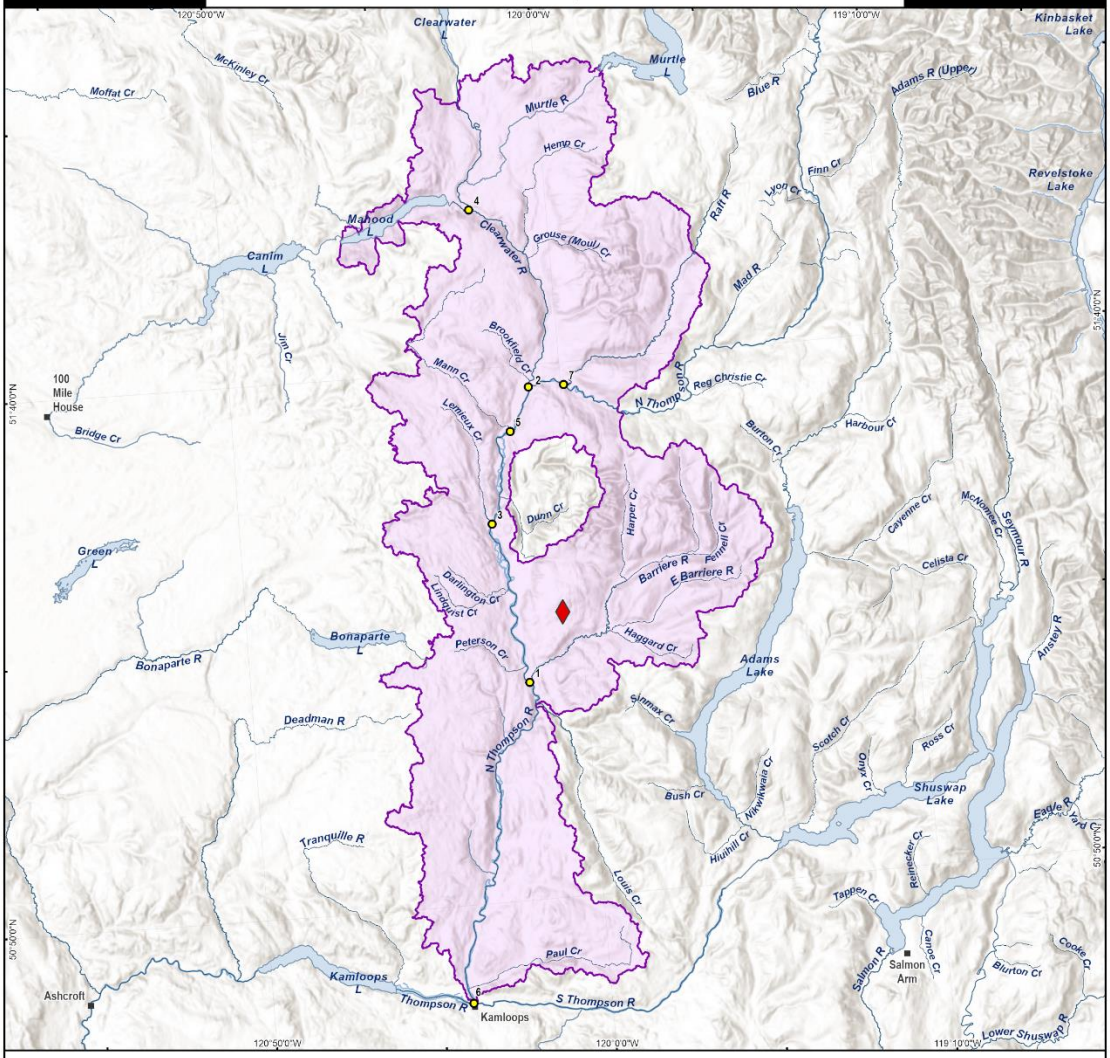
Fisheries and Oceans Canada

Canada

Map Reference CU-CK-19

Chinook Salmon (*Oncorhynchus tshawytscha*) Conservation Units, Sites & Status

Wild Salmon Policy (WSP)



NORTH THOMPSON_SU_1.3 (CK-19)

CU Boundaries, Sites and Status as of: July 2023

CU Boundary 1 CU Counting Sites

WSP Integrated Status*

Red (Red / Amber / Green)

Last assessed: 2016
http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016_042-eng.html

0 6.5 13 19.5 26 km

*Not all CUs have been assigned a status under the WSP.

Disclaimer: CUs may be reviewed and are subject to change without notice. This map is provided for illustrative purposes only by Fisheries and Oceans Canada, without warranty of any kind, expressed or implied, as to the accuracy, currency, or completeness of the information.
Projection: NAD 1983 BC Environment Albers
Basemap Credits: Esri, NASA, NGA, USGS, CGIAR, FEMA
Production Date: Jul 25, 2023
Produced By: Coastal Resource Mapping Ltd for Fisheries and Oceans Canada

Conservation Units (CUs)
For a description of the overall methodology used to describe CUs and the particulars of this CU see: Holtby, L.B. and K.A. Ciruna. 2007. *Conservation units for Pacific salmon under the wild salmon policy.* Canadian Science Advisory Secretariat, Research Document 2007/070. www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2007/2007_070-eng.htm

CU Counting Sites
The sites shown are those where persistent populations are known to exist and have been used to describe the CUs. Many are locations where the estimates of escapement and spawn timing were reported to the Salmon Escapement Database (NuSEDS) as of the date this map was last reproduced. Others are sites where DFO Area staff have reported persistent salmon presence, while others are places where genetic and other biological samples were taken on spawning grounds. Not all populations are reported, particularly those of coastal chum, pink, and coho salmon.

BC Freshwater Atlas (FWA)
1:20,000 data published by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

Fisheries and Oceans Canada

Canada

Appendix B. Southern BC Recreational Fishery Mortality Index for Summer 5_2 Chinook by Pacific Fishery Management Area (PFMA) grouping and by month (May to September), 2014-2023.

2014-2018

Fishery Area	May	Jun	Jul	Aug	Sep	TOTAL
upperQCS(11,111)	0.0%	0.1%	0.0%	0.0%	ns	0.1%
nJST(12)	0.0%	0.2%	0.4%	0.1%	ns	0.7%
nGST(13,14,15,16)	0.0%	0.4%	1.3%	0.6%	0.1%	2.4%
sGST(17,18,19ab,28,29)	0.0%	0.0%	0.0%	0.2%	0.1%	0.3%
JDFeast(19cde,20cd)	0.0%	0.5%	1.1%	0.7%	0.0%	2.4%
JDFwest(Renfrew 20abe)	ns	0.0%	0.6%	0.3%	0.0%	0.9%
Inshore NWVI	ns	0.0%	0.0%	0.0%	0.0%	0.1%
Inshore SWVI	ns	0.0%	0.1%	0.0%	0.0%	0.1%
NWVI >1nm offshore(125-127)	ns	0.2%	0.2%	0.0%	0.0%	0.5%
SWVI >1nm offshore(121-124)	0.0%	0.0%	0.2%	0.1%	0.0%	0.2%
Grand Total	**0.0%**	**1.5%**	**3.9%**	**2.0%**	**0.2%**	**7.7%**

2019

Fishery Area	May	Jun	Jul	Aug	Sep	TOTAL
upperQCS(11,111)	ns	0.1%	0.0%	0.0%	ns	0.2%
nJST(12)	ns	0.0%	0.2%	0.2%	0.0%	0.4%
nGST(13,14,15,16)	0.0%	0.0%	2.5%	0.2%	0.0%	2.8%
sGST(17,18,19ab,28,29)	0.0%	0.0%	0.1%	0.2%	0.0%	0.3%
JDFeast(19cde,20cd)	ns	ns	1.0%	0.6%	0.0%	1.6%
JDFwest(Renfrew 20abe)	ns	ns	0.1%	0.1%	0.0%	0.3%
Inshore NWVI	ns	0.0%	0.1%	0.0%	0.0%	0.1%
Inshore SWVI	ns	0.0%	0.3%	0.0%	0.0%	0.3%
NWVI >1nm offshore(125-127)	ns	0.0%	0.0%	0.2%	ns	0.2%
SWVI >1nm offshore(121-124)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grand Total	**0.0%**	**0.3%**	**4.3%**	**1.6%**	**0.0%**	**6.2%**

2020

Fishery Area	May	Jun	Jul	Aug	Sep	TOTAL
upperQCS(11,111)	0.0%	0.0%	0.0%	0.0%	ns	0.1%
nJST(12)	ns	0.0%	0.2%	0.1%	ns	0.3%
nGST(13,14,15,16)	0.0%	0.0%	0.6%	0.3%	0.1%	1.1%
sGST(17,18,19ab,28,29)	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
JDFeast(19cde,20cd)	ns	0.0%	0.0%	0.3%	0.0%	0.3%
JDFwest(Renfrew 20abe)	ns	0.0%	0.1%	0.0%	0.0%	0.1%
Inshore NWVI	ns	0.0%	0.1%	0.0%	ns	0.1%
Inshore SWVI	ns	0.1%	0.2%	0.0%	0.0%	0.2%
NWVI >1nm offshore(125-127)	ns	0.0%	0.0%	0.0%	ns	0.0%
SWVI >1nm offshore(121-124)	ns	0.0%	0.0%	0.0%	0.0%	0.0%
Grand Total	**0.0%**	**0.2%**	**1.2%**	**0.8%**	**0.1%**	**2.3%**

2021

Fishery Area	May	Jun	Jul	Aug	Sep	TOTAL
upperQCS(11,111)	ns	0.1%	0.0%	0.0%	ns	0.2%
nJST(12)	ns	0.0%	0.2%	0.0%	0.0%	0.2%
nGST(13,14,15,16)	0.0%	0.0%	0.8%	0.3%	0.1%	1.2%
sGST(17,18,19ab,28,29)	0.0%	0.0%	0.1%	0.1%	0.0%	0.2%
JDFeast(19cde,20cd)	ns	ns	0.0%	0.5%	0.0%	0.5%
JDFwest(Renfrew 20abe)	ns	ns	0.3%	0.2%	0.1%	0.6%
Inshore NWVI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Inshore SWVI	0.0%	0.1%	0.0%	0.1%	0.0%	0.2%
NWVI >1nm offshore(125-127)	ns	0.1%	0.0%	0.0%	ns	0.1%
SWVI >1nm offshore(121-124)	ns	0.0%	0.4%	0.1%	0.0%	0.5%
Grand Total	**0.0%**	**0.3%**	**1.8%**	**1.4%**	**0.2%**	**3.7%**

2022

Fishery Area	May	Jun	Jul	Aug	Sep	TOTAL
upperQCS(11,111)	ns	0.0%	0.0%	0.0%	ns	0.1%
nJST(12)	ns	0.0%	0.0%	0.0%	ns	0.1%
nGST(13,14,15,16)	0.0%	0.0%	0.5%	0.2%	0.1%	0.9%
sGST(17,18,19ab,28,29)	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%
JDFeast(19cde,20cd)	ns	0.0%	0.0%	0.2%	0.1%	0.3%
JDFwest(Renfrew 20abe)	ns	ns	0.1%	0.1%	0.0%	0.2%
Inshore NWVI	ns	0.0%	0.0%	0.0%	0.0%	0.0%
Inshore SWVI	0.0%	0.0%	0.1%	0.1%	0.0%	0.2%
NWVI >1nm offshore(125-127)	ns	0.0%	0.0%	0.0%	ns	0.0%
SWVI >1nm offshore(121-124)	ns	0.0%	0.0%	0.1%	0.0%	0.1%
Grand Total	**0.0%**	**0.1%**	**0.9%**	**0.7%**	**0.2%**	**1.9%**

2023

Fishery Area	May	Jun	Jul	Aug	Sep	TOTAL
upperQCS(11,111)	ns	0.1%	0.0%	0.0%	ns	0.1%
nJST(12)	ns	0.0%	0.1%	0.0%	ns	0.1%
nGST(13,14,15,16)	0.0%	0.2%	0.5%	0.4%	0.1%	1.2%
sGST(17,18,19ab,28,29)	0.0%	0.0%	0.1%	0.2%	0.0%	0.3%
JDFeast(19cde,20cd)	0.0%	0.0%	0.2%	0.9%	0.1%	1.3%
JDFwest(Renfrew 20abe)	ns	ns	0.0%	0.0%	0.0%	0.0%
Inshore NWVI	ns	0.0%	0.1%	0.0%	ns	0.1%
Inshore SWVI	ns	0.0%	0.0%	0.0%	0.0%	0.0%
NWVI >1nm offshore(125-127)	ns	0.0%	0.3%	0.1%	ns	0.4%
SWVI >1nm offshore(121-124)	ns	0.0%	0.2%	0.0%	0.0%	0.2%
Grand Total	**0.0%**	**0.3%**	**1.6%**	**1.7%**	**0.2%**	**3.8%**

Appendix C. South Coast Creel survey Chinook results summary for June to August, 2014 to 2024. Catch numbers reported through dockside observers and guide lodge logbook program by month. These do not include expansions or infilling.

			2014-2018*			2019			2020			2021		
Fishery Area	**Disposition**	**Size**	**June**	**July**	**August**	**June**	**July**	**August**	**June**	**July**	**August**	**June**	**July**	**August**
nJST(12)	Kept	Legal	1,638.2	3,104.4	2,819.4	2	1,274	2,697	450	960	1,400	2	1,478	1,257
nJST(12)	Released	Legal	250.0	490.2	313.0	564	897	932	178	602	726	57	630	278
nJST(12)	Released	Sublegal	2,407.6	3,327.8	2,745.0	557	4,988	4,383	NA	2,488	3,377	131	5,543	3,643
nwGST(13,14)	Kept	Legal	7,740.6	8,668.0	11,706.2	6	9,618	13,178	38	8,044	12,142	508	16,311	13,170
nwGST(13,14)	Released	Legal	1,381.4	1,410.4	1,265.2	8,275	16,423	3,093	2,221	6,599	4,101	14,031	15,395	3,204
nwGST(13,14)	Released	Sublegal	7,759.6	8,351.8	13,654.4	2,545	13,610	16,368	NA	10,472	21,386	14,430	28,904	35,192
neGST(15,16)	Kept	Legal	1,341.2	2,084.2	1,784.6	9	2,656	1,934	NA	2,202	1,075	1,896	6,496	2,291
neGST(15,16)	Released	Legal	128.4	311.8	259.4	2,209	2,314	266	546	3,523	87	889	939	57
neGST(15,16)	Released	Sublegal	565.0	NA	NA	186	811	7,437	NA	5,858	5,893	5,650	12,413	10,086
sGST(17,18,19ab,28,29)	Kept	Legal	1,514.4	1,305.8	3,217.8	24	1,193	9,356	30	740	857	0	1,692	1,441
sGST(17,18,19ab,28,29)	Released	Legal	417.6	451.8	382.4	3,901	9,187	3,711	1,967	2,040	325	5,132	1,702	872
sGST(17,18,19ab,28,29)	Released	Sublegal	1,708.6	1,877.8	2,343.8	1,873	11,271	9,675	NA	9,973	8,966	4,812	7,923	9,316
JDFeast(19cde,20cd)	Kept	Legal	2,406.4	4,444.2	8,125.8	2	0	10,131	13	121	5,585	110	195	7,094
JDFeast(19cde,20cd)	Released	Legal	821.2	1,042.2	1,804.4	1,980	4,393	2,388	263	2,697	1,952	1,160	2,172	2,407
JDFeast(19cde,20cd)	Released	Sublegal	697.8	5,871.2	6,544.0	0	846	5,866	NA	1,880	9,033	377	2,438	15,432
JDFwest(20abe)	Kept	Legal	479.8	1,571.0	4,418.0	0	870	6,740	17	840	4,708	0	1,049	5,074
JDFwest(20abe)	Released	Legal	185.4	476.6	698.6	636	839	982	NA	761	511	0	21	50
JDFwest(20abe)	Released	Sublegal	398.2	738.4	1,133.0	69	179	1,093	NA	1,294	1,059	201	1,162	2,031
Inshore NWVI	Kept	Legal	1,655.4	7,719.4	8,250.0	2,444	10,302	6,901	2,336	6,380	5,243	3,271	7,076	8,084
Inshore NWVI	Released	Legal	286.8	1,910.4	2,573.8	643	1,647	826	NA	733	641	806	1,387	1,424
Inshore NWVI	Released	Sublegal	198.8	3,956.4	2,595.6	603	4,648	4,222	NA	3,978	4,430	3,703	7,972	9,312
Inshore SWVI	Kept	Legal	2,815.8	2,574.2	8,436.6	5,172	5,149	13,167	2,226	2,558	11,968	3,950	5,050	18,061
Inshore SWVI	Released	Legal	1,194.2	711.8	936.8	3,299	2,613	2,315	NA	978	600	2,679	2,189	3,470
Inshore SWVI	Released	Sublegal	3,421.2	6,612.2	4,302.0	4,186	13,036	6,648	NA	3,591	3,171	10,919	17,704	15,133
NWVI offshore	Kept	Legal	1,819.6	6,338.8	4,057.8	760	4,671	2,905	110	1,996	540	1,026	1,278	456
NWVI offshore	Released	Legal	280.4	1,918.4	1,338.2	671	868	289	NA	401	29	679	499	33
NWVI offshore	Released	Sublegal	59.0	1,018.4	637.2	28	1,590	320	NA	328	34	4,262	1,030	163
SWVI offshore	Kept	Legal	5,470.8	15,953.0	11,800.4	1,197	11,109	12,756	192	4,519	9,635	423	7,180	8,499
SWVI offshore	Released	Legal	2,460.6	5,417.2	3,230.8	356	2,835	2,148	NA	637	566	151	775	1,309
SWVI offshore	Released	Sublegal	1,218.8	3,979.0	3,602.2	492	5,628	2,704	NA	1,275	2,179	550	6,683	3,730
QCS(11, 111)	Kept	Legal	1,475.0	1,580.6	770.2	3,496	2,691	820	862	1,573	886	1,482	2,457	1,510
QCS(11, 111)	Released	Legal	296.0	207.8	64.0	974	562	126	254	412	156	53	262	55
QCS(11, 111)	Released	Sublegal	252.2	197.8	184.8	159	369	120	NA	425	437	185	538	308
Total	**Kept**	**Legal**	**28,357**	**55,344**	**65,387**	**13,112**	**49,533**	**80,585**	**6,274**	**29,933**	**54,039**	**12,668**	**50,262**	**66,937**
	Released	**Legal**	**7,702**	**14,349**	**12,867**	**23,508**	**42,578**	**17,076**	**3,208**	**19,383**	**9,694**	**25,637**	**25,971**	**13,159**
	Released	**Sublegal**	**18,687**	**35,931**	**37,742**	**10,698**	**56,976**	**58,836**	**NA**	**41,562**	**59,965**	**45,220**	**92,310**	**104,346**

*2014-2018 Creel averages can be missing months during some years due to creel survey operations

Appendix C table continued

			2022			2023			2024			2019-2024		
Fishery Area	**Disposition**	**Size**	**June**	**July**	**August**	**June**	**July**	**August**	**June**	**July**	**August**	**June**	**July**	**August**
nJST(12)	Kept	Legal	271	771	792	256	1,430	1,768	303	1,458	1,563	214.0	1,228.5	1,579.5
nJST(12)	Released	Legal	150	782	148	602	1,345	756	342	1,244	584	315.5	916.7	570.7
nJST(12)	Released	Sublegal	163	4,168	1,635	252	2,920	2,166	84	2,533	2,555	237.4	3,773.3	2,959.8
nwGST(13,14)	Kept	Legal	434	13,023	17,523	1,750	9,217	11,980	224	13,762	12,045	493.3	11,662.5	13,339.7
nwGST(13,14)	Released	Legal	5,600	12,225	4,932	6,385	9,700	5,750	7,809	16,039	3,640	7,386.8	12,730.2	4,120.0
nwGST(13,14)	Released	Sublegal	2,936	21,752	33,742	3,208	11,190	17,169	2,618	13,690	13,319	5,147.4	16,603.0	22,862.7
neGST(15,16)	Kept	Legal	1,994	3,522	3,038	1,731	2,212	1,266	1,814	3,077	1,512	1,488.8	3,360.8	1,852.7
neGST(15,16)	Released	Legal	1,328	2,353	139	2,844	2,138	925	5,816	8,183	771	2,272.0	3,241.7	374.2
neGST(15,16)	Released	Sublegal	5,314	9,117	7,853	1,927	2,067	1,774	4,369	3,761	1,789	3,489.2	5,671.2	5,805.3
sGST(17,18,19ab,28,29)	Kept	Legal	7	2,548	2,332	26	1,274	4,401	286	703	3,954	62.2	1,358.3	3,723.5
sGST(17,18,19ab,28,29)	Released	Legal	3,909	3,326	1,237	3,933	2,407	1,069	6,871	2,418	2,037	4,285.5	3,513.3	1,541.8
sGST(17,18,19ab,28,29)	Released	Sublegal	1,346	14,798	18,220	2,906	10,719	9,726	2,262	3,538	11,543	2,639.8	9,703.7	11,241.0
JDFeast(19cde,20cd)	Kept	Legal	149	440	8,769	45	474	12,073	429	800	14,558	124.7	338.3	9,701.7
JDFeast(19cde,20cd)	Released	Legal	2,130	6,550	5,092	2,035	6,119	5,518	1,072	3,275	8,310	1,440.0	4,201.0	4,277.8
JDFeast(19cde,20cd)	Released	Sublegal	559	3,680	33,914	706	4,647	21,029	1,030	3,468	8,307	534.4	2,826.5	15,596.8
JDFwest(20abe)	Kept	Legal	0	680	3,089	0	555	6,184	0	762	5,808	2.8	792.7	5,267.2
JDFwest(20abe)	Released	Legal	44	48	275	0	133	1,234	97	752	1,156	155.4	425.7	701.3
JDFwest(20abe)	Released	Sublegal	171	1,449	3,147	26	656	4,725	0	420	895	93.4	860.0	2,158.3
Inshore NWVI	Kept	Legal	3,899	8,030	8,608	2,792	6,787	8,298	4,888	10,305	8,086	3,271.7	8,146.7	7,536.7
Inshore NWVI	Released	Legal	1,459	2,077	1,655	678	1,252	2,203	3,085	2,028	1,579	1,334.2	1,520.7	1,388.0
Inshore NWVI	Released	Sublegal	2,788	8,507	3,544	1,009	4,038	3,625	1,080	2,552	1,695	1,836.6	5,282.5	4,471.3
Inshore SWVI	Kept	Legal	4,165	5,630	15,688	4,748	3,366	20,393	5,015	6,756	12,526	4,212.7	4,751.5	15,300.5
Inshore SWVI	Released	Legal	1,831	2,089	2,457	1,328	920	6,269	2,907	2,836	2,157	2,408.8	1,937.5	2,878.0
Inshore SWVI	Released	Sublegal	7,759	19,814	10,176	8,046	8,131	12,905	12,492	13,970	15,286	8,680.4	12,707.7	10,553.2
NWVI offshore	Kept	Legal	934	2,787	1,222	2,764	4,189	4,202	1,731	3,604	3,711	1,220.8	3,087.5	2,172.7
NWVI offshore	Released	Legal	582	354	183	403	1,007	1,120	925	707	1,019	652.0	639.3	445.5
NWVI offshore	Released	Sublegal	1,324	1,633	896	2,150	470	77	196	545	174	1,592.0	932.7	277.3
SWVI offshore	Kept	Legal	928	7,112	13,196	850	6,934	11,469	902	6,744	12,691	748.7	7,266.3	11,374.3
SWVI offshore	Released	Legal	226	1,968	5,006	74	1,710	2,995	224	1,783	3,308	206.2	1,618.0	2,555.3
SWVI offshore	Released	Sublegal	392	5,034	4,958	126	2,592	2,182	423	1,492	3,916	396.6	3,784.0	3,278.2
QCS(11, 111)	Kept	Legal	973	893	559	1,590	2,215	1,533	3,471	2,165	1,685	1,979.0	1,999.0	1,165.5
QCS(11, 111)	Released	Legal	61	89	32	199	1,405	591	1,024	1,035	248	427.5	627.5	201.3
QCS(11, 111)	Released	Sublegal	117	291	140	75	208	335	140	156	214	135.2	331.2	259.0
Total	**Kept**	**Legal**	**13,754**	**45,436**	**74,816**	**16,552**	**38,653**	**83,567**	**19,063**	**50,136**	**78,139**	**13,819**	**43,992**	**73,014**
	Released	**Legal**	**17,320**	**31,861**	**21,156**	**18,481**	**28,136**	**28,430**	**30,172**	**40,300**	**24,809**	**20,884**	**31,372**	**19,054**
	Released	**Sublegal**	**22,869**	**90,243**	**118,225**	**20,431**	**47,638**	**75,713**	**24,694**	**46,125**	**59,693**	**24,782**	**62,476**	**79,463**

Appendix D. Escapement estimates for Summer 5_2 Chinook from the Fraser River Run Reconstruction. Green columns indicate populations that are included in the Conservation Units/Designatable Units shown in Table 1. Values in the 2014-2018 row are the average escapement for those years.

Year	Stuart	Nechako	Stellako	Quesnel	Cariboo	Chilko	Elkin	Taseko	Portage	Seton	Mahood	Clearwater
2014-2018	2,554	3,759	6	1,555	251	6,890	385	614	45	17	34	2,116
2019	2,174	2,900	0	342	58	5,086	290	522	229	18	26	783
2020	2,614	1,800	0	289	245	6,322	485	1,376	42	29	17	3,532
2021	2,572	2,770	2	1,560	160	5,473	118	212	28	29	35	3,780
2022	4,620	4,063	2	1,637	745	13,695	402	380	70	0	18	5,580
2023	3,324	3,929	2	1,343	948	7,260	449	274	115	37	22	4,419

Year	Raft	Barriere	North Thompson	Lemieux	Big Silver	Chilliwack Summer	Douglas	Kazchek	Kuzkwa	Pinchi	Sloquet	Tipella	Chehalis	Total
2014-2018	99	83	1,192	15	61	1,077	11	1	61	5	44	0	642	**21,519**
2019	106	89	211	11	31	1,443	0	0	22	4	12	0	501	**14,857**
2020	122	329	1,307	2	66	2,439	34	0	25	9	22	0	923	**22,030**
2021	106	29	1,791	11	60	2,353	8	2	51	9	35	0	479	**21,673**
2022	146	309	3,217	23	12	3,265	14	0	28	0	63	0	641	**38,931**
2023	83	40	2,314	29	82	2,309	3	4	18	15	52	0	934	**28,006**