Photos by: Shane Kalyn

# 2023 Fraser River Stock Assessment and Fishery Summary

## Chinook, Coho, and Chum

# Outline

Background & Stock Assessment

- Chinook
- Coho
- Chum

2023 Fraser River Fisheries

- First Nations
- Recreational
- Commercial

Questions

Photo by: Shane Kalyn

# Background and Stock Assessment

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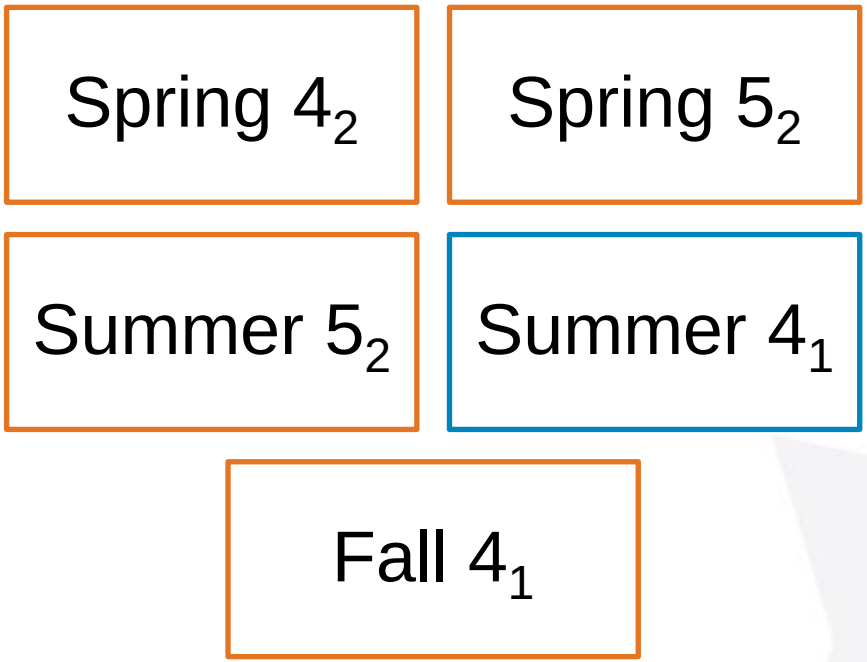
# Fraser River Chinook - Background

- Spawning occurs throughout the Fraser watershed
- Currently managed as five Management Units (MUs):



# 2023 Fraser Chinook Stock Assessment

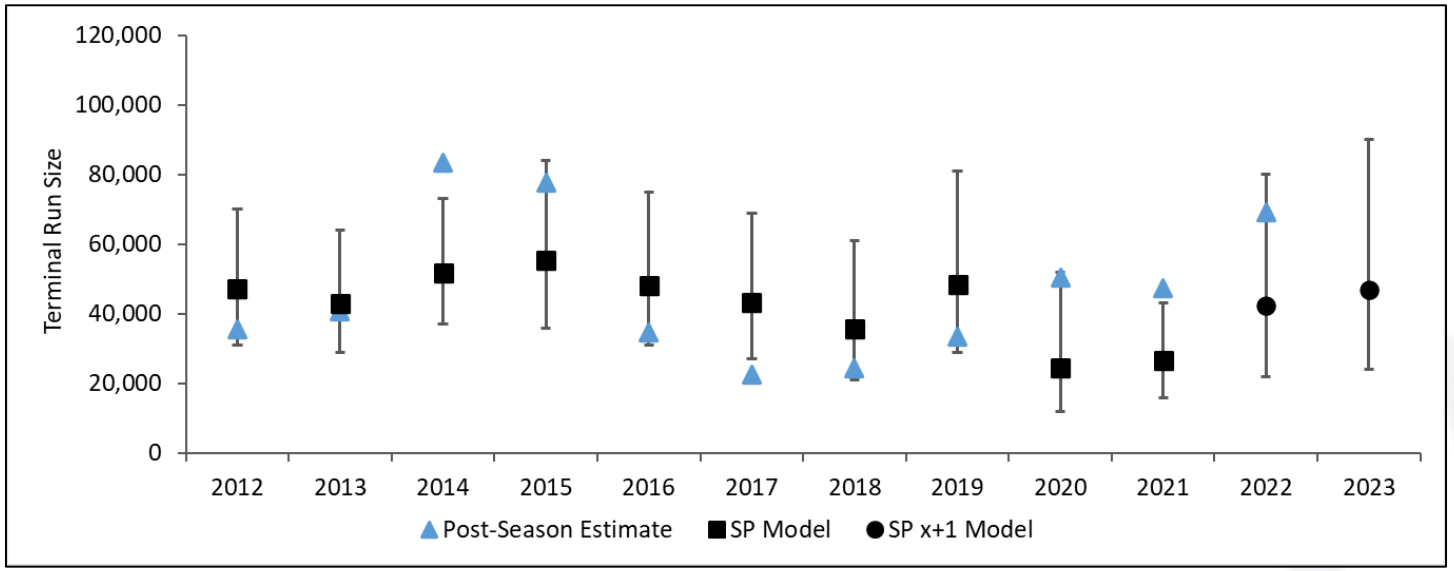
Photo by: Shane Kalyn

## In-season Assessment:

- Objective for Spring $4_2$, Spring $5_2$, and Summer $5_2$ Chinook: allow as many fish to pass through to the spawning grounds as possible.
- In-season run size estimate for Spring/Summer $5_2$ Chinook did not affect management

# Spring $5_2$ and Summer $5_2$ Chinook Run Size Model Outputs for 2023

2023 prediction using standard (8”) gill net Albion data:
median = 46,789 (range 24,000 – 90,000)




- In 2022 and 2023, due to below average cumulative catch per unit effort (CPUE) values at the Albion test fishery, an alternative approach was explored using transformed CPUE inputs by adding one (1) to each value. These model outputs are included in the plot above and denoted with a circle.
- See FN0604 for more details.
- The post-season run size estimate for 2023 will be available in spring of 2024.

# 2023 Fraser Chinook Stock Assessment

Post-season Assessment:

- Spawner abundance is estimated using several methods:
  - Mark-recapture studies – Nicola, Harrison, Lower Shuswap, and Chilko.
  - Electronic counters – Bonaparte and Deadman.
  - Fence counts at Salmon River (Salmon Arm).
  - Remaining assessments are through visual surveys (aerial, foot or float).
- Enumeration of 2023 Chinook escapement is still ongoing; estimates will be available in the spring of 2024.

# 2023 Fraser Chinook Stock Assessment

Coming up:

- Time series of escapement for each Chinook MU
  - 2023 escapement estimates are preliminary and subject to change.
    - DFO Stock Assessment is currently working to infill and finalize the estimates.
  - Highlighting brood year escapement.

- Comparison against $S_{MSY}$ or escapement goal and long-term average.

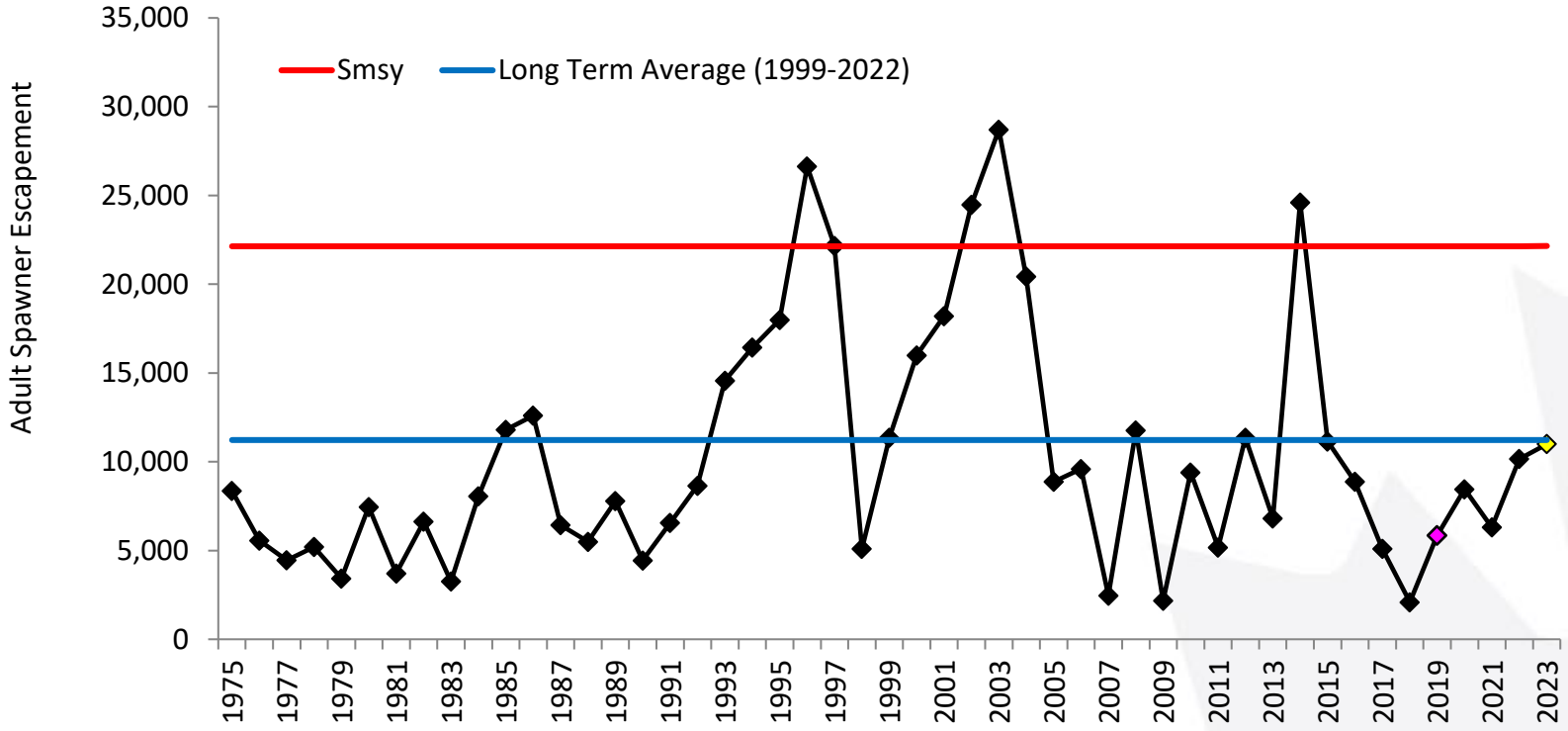
- $S_{MSY}$ = the number of spawners needed to maintain Maximum Sustainable Yield (MSY)

- MSY = highest possible annual catch that can be sustained over time

- For each MU with reference to Smsy, these values were developed using an approach relating productive capacity to freshwater habitat area (Parken et al. 2006)
  - Harrison (Fall $4_1$) escapement goal is based on Ricker stock-recruit approach (CTC 2002)

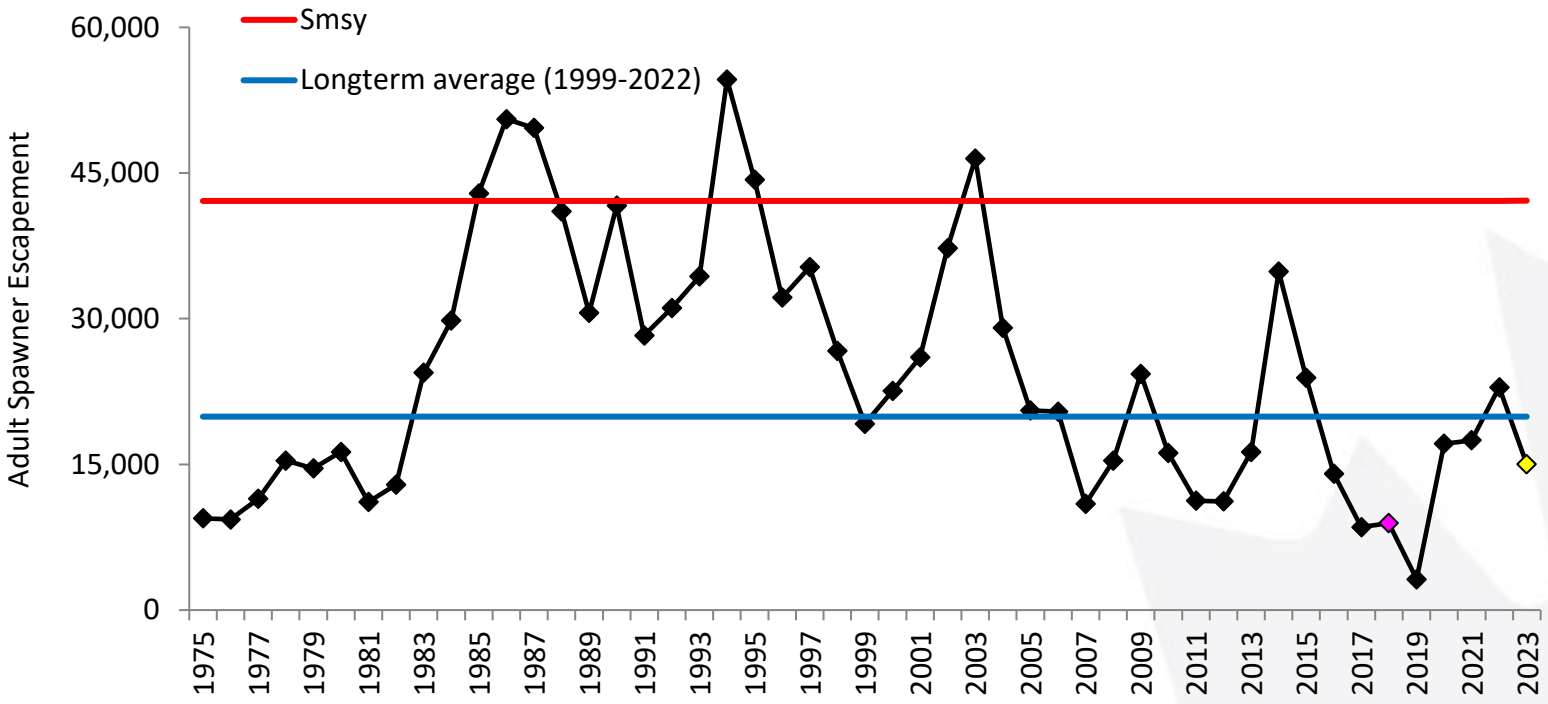
# Escapement - Fraser Spring $4_2$ Chinook

- Brood year escapement (2019) was below the recent average.
- The 2023 preliminary escapement estimate is ~11,000.



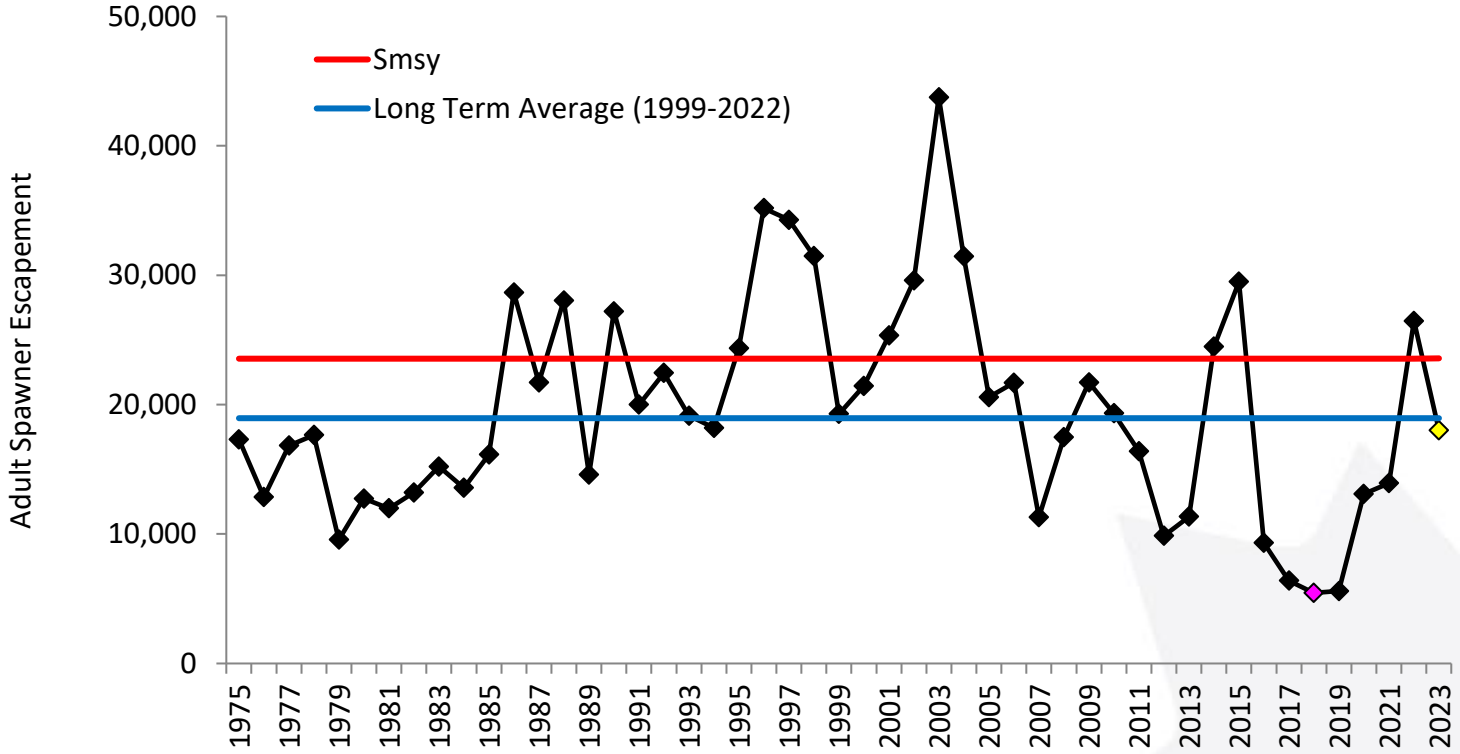
# Escapement - Fraser Spring $5_2$ Chinook

- Brood year escapement (2018) was below the long-term average.
- The 2023 preliminary escapement estimate is ~15,000.



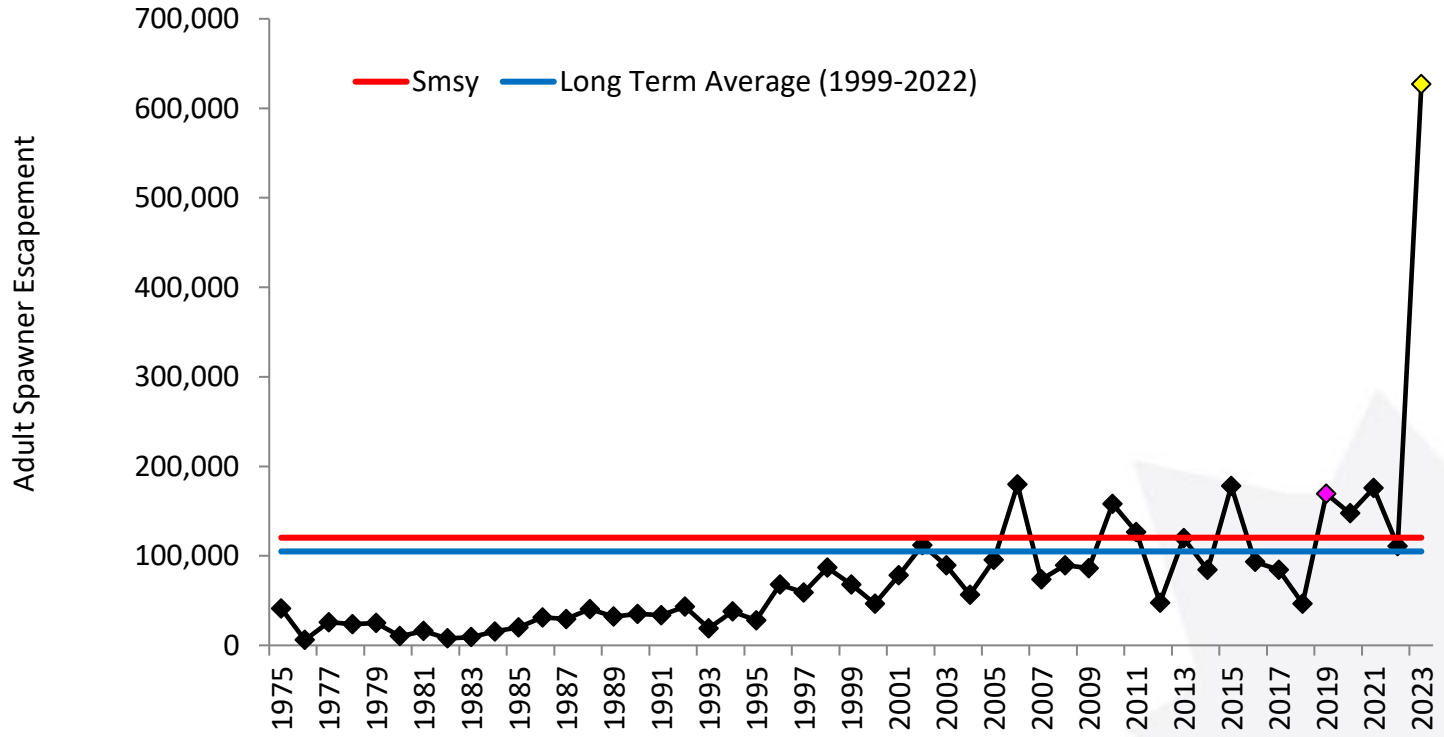
# Escapement - Fraser Summer $5_2$ Chinook

- Brood year escapement (2018) was below the long-term average.
- The 2023 preliminary escapement estimate is ~18,000.



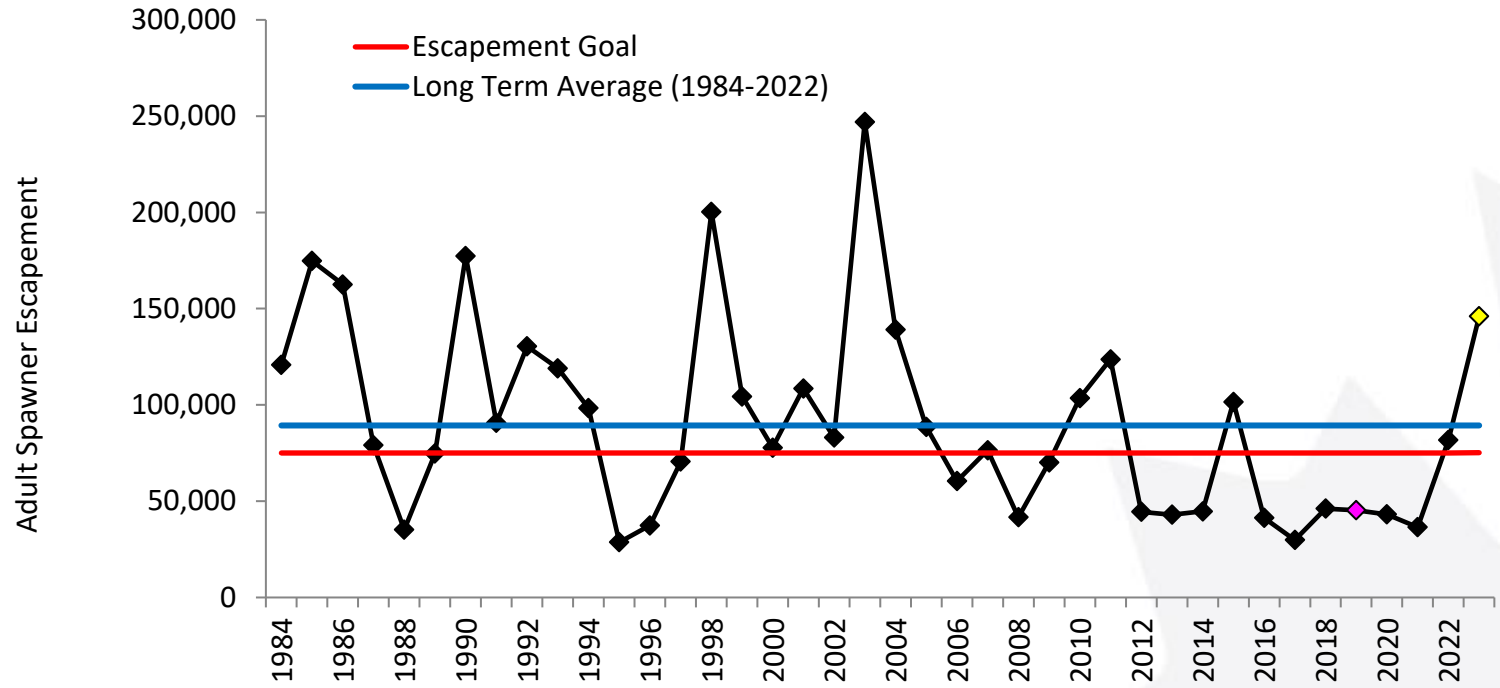
# Escapement - Fraser Summer $4_1$ Chinook

- Brood year escapement (2019) was above $S_{msy}$ and the long-term average.
- The 2023 preliminary escapement estimate is ~627,000.



# Escapement - Fraser Fall $4_1$ Chinook

- Harrison brood year escapement (2019) below escapement goal and long-term average.
- The escapement goal (75,100) has been met three times in the last 10 years.
- The 2023 preliminary escapement estimate is ~146,000.



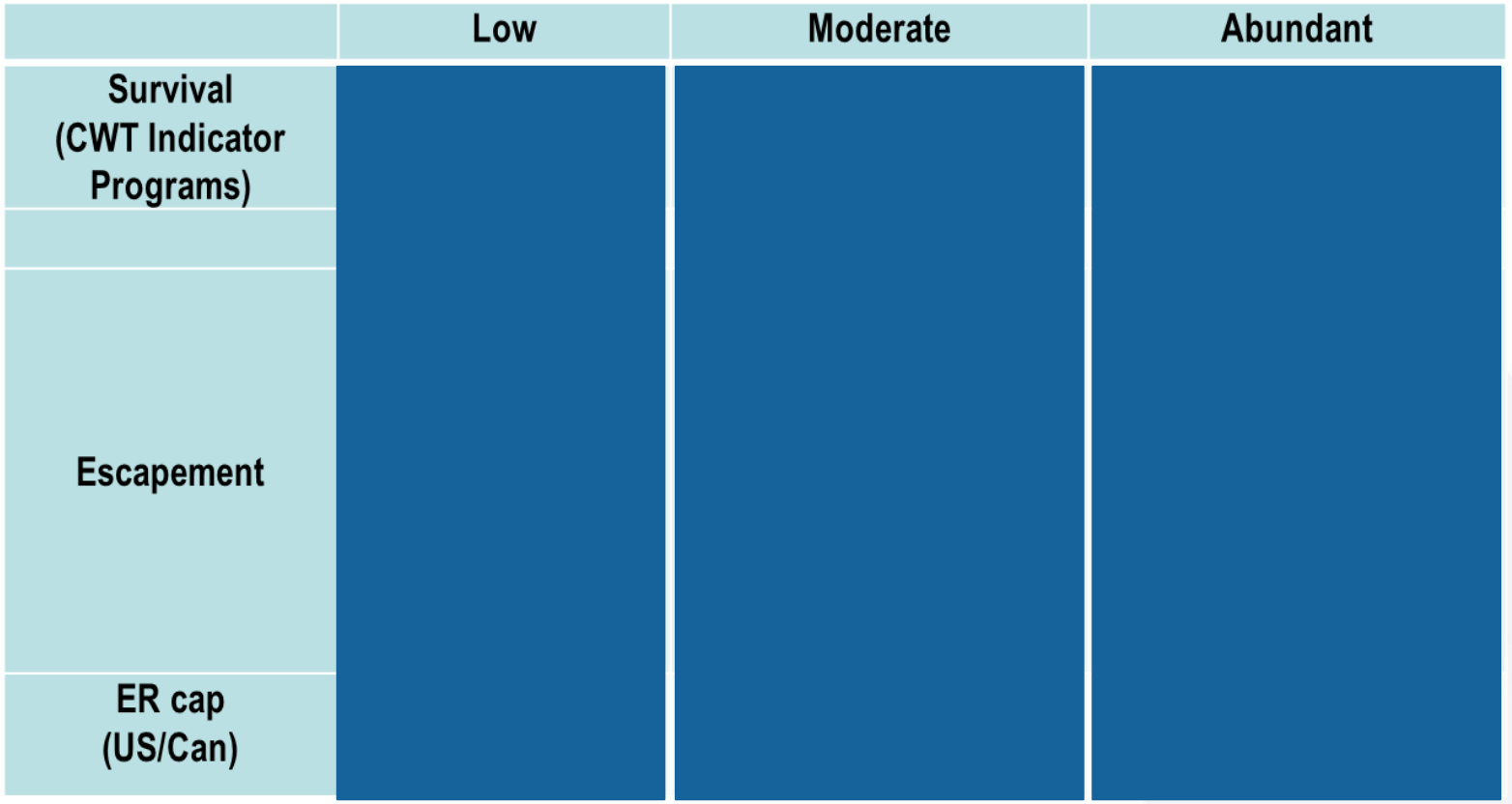
# Fraser River Coho - Background

- Two populations of Coho in the Fraser River:
  - Lower Fraser River - Many spawning sites in lower Fraser River.
  - Interior Fraser Coho (IFC) - Return to the Upper Fraser and Thompson Rivers.

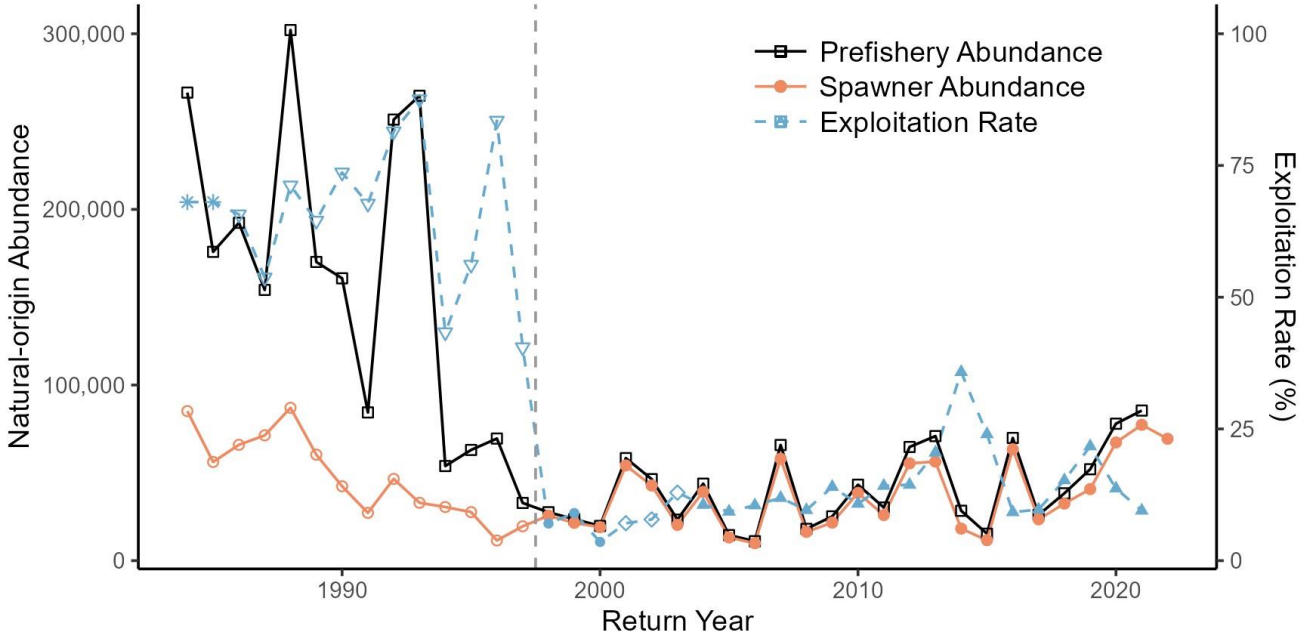
- Fraser Migration occurs August through November.
- IFC populations have declined dramatically from peak abundances observed in the 1980s.
- Escapement programs and management objectives mostly focused on IFC, but new programs in development for Lower Fraser Coho.

# Interior Fraser River Coho - Status

Pacific Salmon Treaty reference points and exploitation rate caps:



# Interior Fraser River Coho – Total Abundance




- Interior Fraser Coho natural-origin spawner abundance (orange line series, 1984-2022) and pre-fishery abundance (black line series, 1984-2021) uses the left axis and total Canadian and US exploitation rate (blue dashed line series, 1984-2021) uses the right axis. Escapement methodology quality changed starting in 1998 (dashed vertical line), which resulted in an increase in the number of systems being surveyed and a more rigorous methodology.
- 2022 Natural-origin escapement still under review
- 2023 Pre-fishery Abundance forecast: 87,000 (80% interval 74,538-130,525)

# Interior Fraser River Coho - Status

Escapement:

| Return Year | Short Term Sub Pop Goal* | | Short Term Escapement Proxy Goal | Natural Origin Escapement | Goal Met in Three Consecutive Years |
|---|---|---|---|---|---|
| 2015 | No | | 26,224 | 11,817 | No |
| 2016 | Yes | or | 32,041 | 63,876 | No |
| 2017 | No | | 36,977 | 23,837 | No |
| 2018 | Yes | | 35,701 | 33,138 | No |
| 2019 | Yes | | 34,625 | 41,255 | No |
| 2020 | Yes | | 34,207 | 68,612 | Yes |
| 2021 | Yes | | 34,127 | 78,920 | Yes |
| 2022 | Yes | | TBD | **70,300 | Yes |

*three consecutive years of greater than 1,000 in half the sub populations within a CU in each of the 5 CUs.
**2022 Natural-origin escapement still under review

.

2023 assessment for Interior Fraser River Coho is not yet available

# Interior Fraser River Coho - Status

Smolt-to-adult survival:

| Return Year | CWT Survival | Moderate PST Survival Goal Met in 3 Years? |
|---|---|---|
| 2015 | 0.7% | No |
| 2016 | 1.3% | No |
| 2017 | 1.0% | No |
| 2018 | 1.4% | No |
| 2019 | 1.6% | No |
| 2020 | 1.8% | No |
| 2021 | 3.2% | No |
| 2022 | *1.7% | No |

**2022 survival still under review*

2023 assessment for Interior Fraser River Coho is not yet available

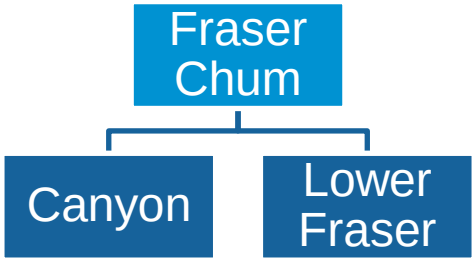
# Interior Fraser River Coho - Status

Status for 2023:

| | Low | Moderate | Abundant |
|---|---|---|---|
| **Survival (CWT Indicator Programs)** | S <= 0.03 | Three consecutive years 0.03 < S <= 0.06 | Three consecutive years S > 0.06 |
| | | and | and |
| **Escapement** | Monitored in CU's and subpops but no thresholds | Three consecutive years:<br>· Half of subpops in each CU > 1000; or<br>· Moderate Aggregate MU esc. objective | Three consecutive years:<br>· All IFR subpops in each CU > 1000; or<br>· Abundant Aggregate MU esc. objective |
| **ER cap (US/Can)** | **0.20** (0.10/0.10) | **0.30** (0.12/0.18) | **0.45** (0.15/0.30) |

# Fraser River Chum - Background

- Largest Chum population in BC.




2 Conservation Units grouped under one Management Unit

- Majority of spawning occurs below Hope.
- Escapement goal set at 800,000.
- Peak return through Albion is mid- to late October.

# 2023 Fraser River Chum

- Managed based on in-season information derived from the Albion test fishery

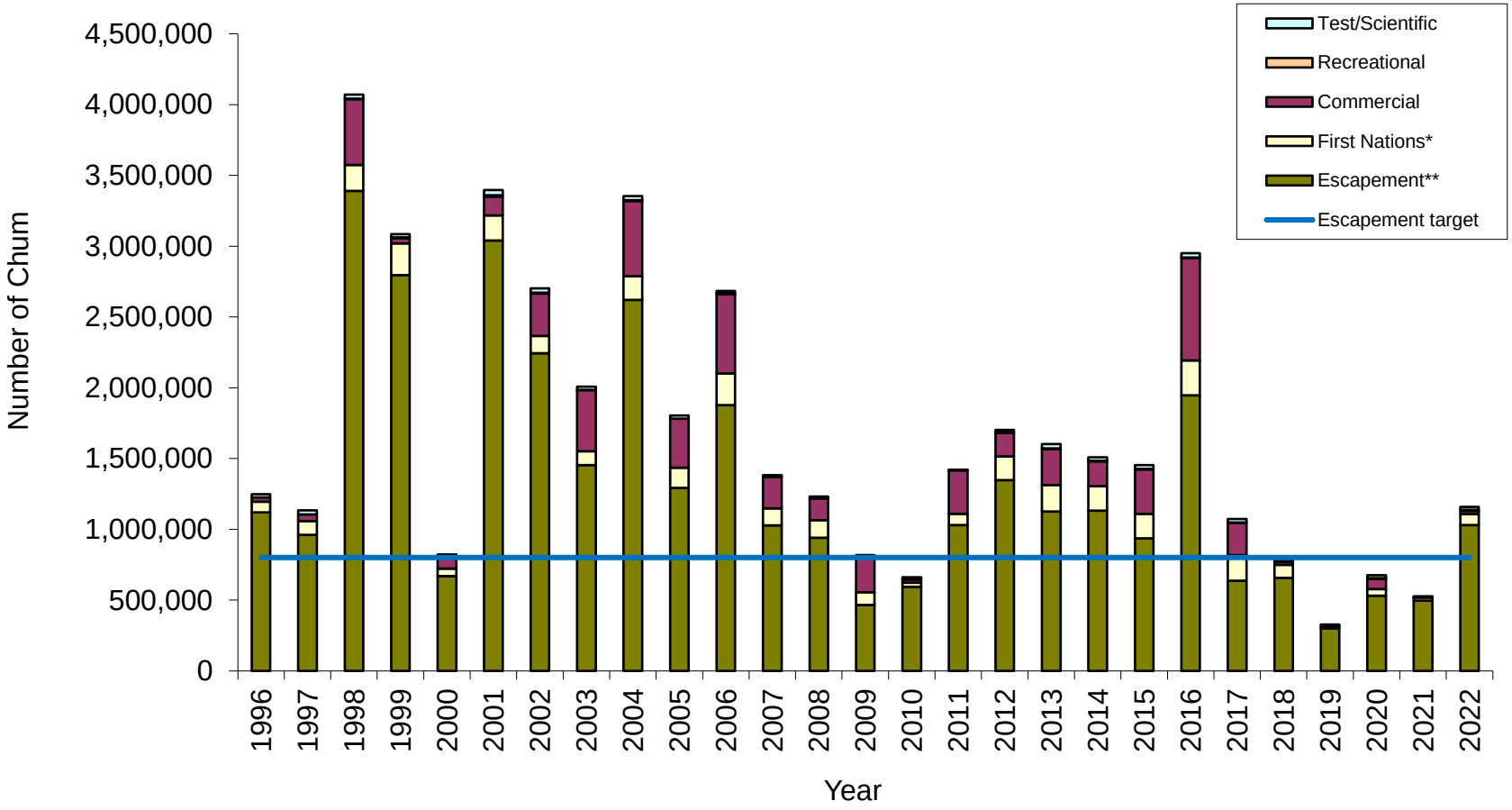
**In-season Run Size Estimates**

- October 13 preliminary:
  - **403,000** (27,000 - 600,000) (FN1109)
- October 20 final run:
  - **470,000** (326,000 - 677,000) (FN1150)

**Post-season Assessment**

- 2023 escapement assessments are still underway.

# Preliminary Reconstructed Fraser Chum Pre-terminal Run Size



# 2023 Fraser River Fishery Summary

Photo by: Shane Kalyn

# 2023 Albion Test Fishery Summary

## Dates

Chinook-directed single panel (8”): Apr. 23 – Oct. 20

Chinook-directed multi-panel (6-9”): Apr. 24 – Aug. 30

Chum-directed single panel (6.75”): Sep. 1 – Nov. 23

## Catch

Chinook: 2,307

Chum: 1,468

Coho: 66

Sockeye: 736

Pink: 696

Steelhead: 11

# 2023 Fraser River Fisheries - First Nations

## Management Objectives

- Direct harvest toward Summer $4_1$ Chinook and Fraser Chum.
- Avoid at-risk stocks:
  - Chinook (Spring $4_2$, Spring $5_2$, Summer $5_2$)
  - Sockeye (Early Stuart, Early Summer, Cultus Lake)
  - Interior Fraser Coho
  - Interior Fraser Steelhead

## Management Actions

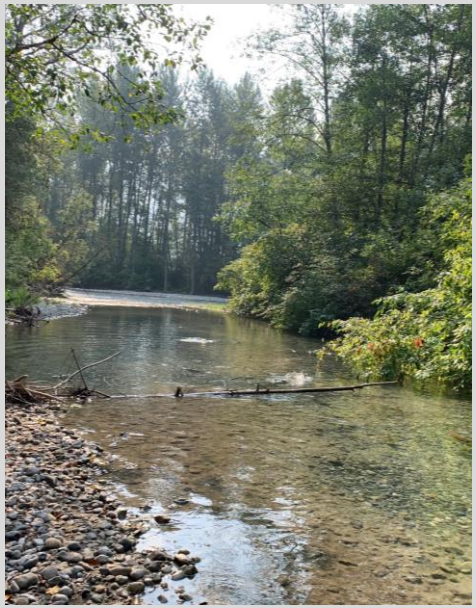
- Communal gill net openings in August to September (min 8” mesh) directed on Chinook and October to November (min. 6 ¼” mesh) directed on Chum.
- Longer-duration openings for fish wheel, rod & reel and dip net
- Window closures for Early-timed Sockeye, Interior Fraser Coho, and Interior Fraser Steelhead.

# 2023 Fraser River Catch - First Nations

| | Chinook | | Coho | | Chum | | Steelhead | |
|---|---|---|---|---|---|---|---|---|
| | rel | kept | rel | kept | rel | kept | rel | kept |
| **FSC** | | | | | | | | |
| *Lower Fraser* | 37 | 26,095 | 129 | 110 | 11 | 21,377 | 5 | - |
| *BC Interior* | 149 | 3,786 | 0 | 59 | - | - | 0 | 0 |
| ***FSC Total*** | **186** | **29,881** | **129** | **169** | **11** | **21,377** | **5** | **0** |
| **Economic Opportunity** | | | | | | | | |
| *Lower Fraser* | - | 135 | 30 | - | - | - | 1 | - |
| *BC Interior* | - | - | - | - | - | - | - | - |
| ***Ec Opp Total*** | **0** | **135** | **30** | **0** | **0** | **0** | **1** | **0** |
| **ESSR.** | | | | | | | | |
| *Lower Fraser* | - | 20,230 | - | 27,848 | - | 13,195 | - | - |
| *BC Interior* | - | - | - | - | - | - | - | - |
| ***ESSR Total*** | **0** | **20,230** | **0** | **27,848** | **0** | **13,195** | **0** | **0** |
| **All Catch** | | | | | | | | |
| *Lower Fraser* | 37 | 46,460 | 159 | 27,958 | 11 | 34,572 | - | - |
| *BC Interior* | 149 | 3,786 | - | 59 | - | - | - | - |
| ***All Catch Total*** | **186** | **50,246** | **159** | **28,017** | **11** | **34,572** | **6** | **0** |

- **Estimates are preliminary and subject to change**
- ESSR catch is from Inch Creek, Chilliwack River, and Chehalis River.
- Chinook catch includes Jacks.
- All Steelhead were released.

# 2023 Recreational Fishery Management



*Additional information can be found in the DFO [fishery notice database](#).*

## Approaches to Fraser River - Subareas 29-6, 29-7, 29-9 and 29-10:

- Closed to fishing for salmon.

## Tidal Fraser River:

- Mission to the Mouth Sep. 1 to 18 – retention of Pink.

## Non-tidal waters of the Fraser River from Mission Bridge to Hope:

- Mission to Hope Sep. 1 to 21 – retention of Pink.
- Hope to Alexandra Bridge Sep. 13 to 25 – retention of Pink.

## Freshwater Regions 3, 5, 7, & 8:

- Region 3: Kamloops Lake - Chinook (Aug. 28-Sep. 22) and Pink (Sep. 1-22); South Thompson - Chinook (Aug. 16-Sep. 22) and Pink (Sep. 1-22); Thompson River - Chinook Jack (Aug. 28-Sep. 22) and Pink (Sep. 1-22)
- Region 5A: Quesnel River – Pink (Sep. 16-26)
- Region 7: No fishing for salmon
- Region 8: Lower Shuswap and Mabel Lake – Chinook (Aug.16-Sep.22)

# 2023 Fraser River Catch - Recreational

| | Chinook | | Coho | | Chum | |
|---|---|---|---|---|---|---|
| | rel | kept | rel | kept | rel | kept |
| Lower Fraser | NA | NA | NA | NA | NA | NA |
| BC Interior | 4,940 | 11,311 | 48 | 0 | - | - |
| **Totals** | **4,940** | **11,311** | **48** | **0** | **0** | **0** |

- **Estimates are preliminary and subject to change.**
- **Lower Fraser catch estimates will be available early 2024.**
- Information on catch in marine waters can be found by searching "South Coast Assessment Bulletin Creel" at: http://science-libraries.canada.ca/eng/home/

# 2023 Fraser River Fisheries - Commercial

- No commercial Chum-directed fisheries were licensed in 2023 in Area 29.

## Area E – Gill Net

- The Area E gill net Fraser Chum commercial fishery in Area 29 was identified as a longer-term commercial closure and therefore was closed in 2023.

## Area B - Seine

- At terminal run sizes less than 916,000, no commercial Chum TAC is available.

# Fraser Chinook 2019 to 2022 Results – Run Reconstruction + Genetic Stock ID

| Run Reconstruction + Genetic Stock ID | | | | | | |
|---|---|---|---|---|---|---|
| Management Unit | 2014-2018 Avg. CDN Fishery Mortality | 2019 CDN Fishery Mortality | 2020 CDN Fishery Mortality | 2021 CDN Fishery Mortality | 2022 CDN Fishery Mortality | 2019-2022 Avg. CDN Fishery Mortality |
| Spring $4_2$ | 25.1% | 5.1% | 4.5% | 3.6% | 2.8% | 3.9% |
| Spring $5_2$ | 24.2% | 10.3% | 2.6% | 5.7% | 2.7% | 4.9% |
| Summer $5_2$ | 25.0% | 18.2% | 13.0% | 14.8% | 10.2% | 13.1% |
| Summer $4_1$ | 43.0% | 32.0% | 25.2% | 24.1% | 26.8% | 27.1% |
| Fall $4_1$ | 23.8% | 18.1% | 19.5% | 23.3% | 31.4% | 24.5% |

# Fraser Chinook 2019 to 2022 Results – Exploitation Rate Analysis

| Exploitation Rate Analysis | | | | | | |
|---|---|---|---|---|---|---|
| Management Unit (indicator) | 2014-2018 Avg. CDN Fishery Mortality | 2019 CDN Fishery Mortality | 2020 CDN Fishery Mortality | 2021 CDN Fishery Mortality | 2022 CDN Fishery Mortality | 2019-2022 Avg. CDN Fishery Mortality |
| Spring $4_2$ (Nicola) | 16.6% | 2.1% | 27.7% | 5.1% | 2.0% | 9.2% |
| Spring $5_2$ (No Indicator) | n/a | n/a | n/a | n/a | n/a | n/a |
| Summer $5_2$ (No Indicator) | n/a | n/a | n/a | n/a | n/a | n/a |
| Summer $4_1$ (Lower Shuswap) | 27.6% | 13.8% | 20.3% | 17.2% | 22.6% | 18.5% |
| Fall $4_1$ (Harrison) | 22.6% (HAR) 25.1% (CHI) | 22.0% (HAR) 18.1% (CHI) | 16.5% (HAR) 31.1% (CHI) | 17.0% (HAR) 23.3% (CHI) | 5.0% (HAR) 43.1% (CHI) | 15.1% (HAR) 28.9% (CHI) |

# Questions?

# References


- CTC. 2002. Catch and escapement of Chinook salmon under Pacific Salmon Commission jurisdiction 2001. Pacific Salmon Commission, Report TCCHINOOK (02)–1. Vancouver, BC.
- Parken, C. K., R. E. McNicol, and J. R. Irvine. 2006. Habitat-based methods to estimate escapement goals for data limited Chinook salmon stocks in British Columbia, 2004. Department of Fisheries and Oceans Canada, Canadian Science Advisory Secretariat Research Document 2006/083.

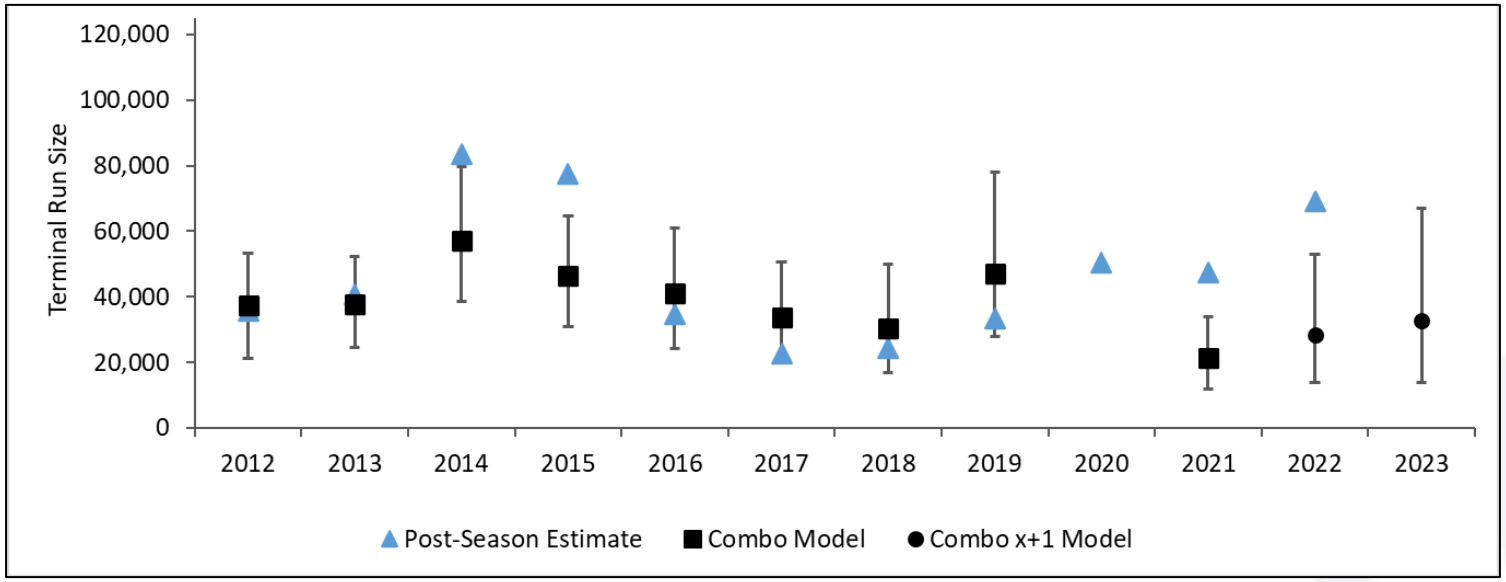
# Additional Slides

Photo by: Shane Kalyn

# Spring $5_2$ and Summer $5_2$ Alternative Albion Model Outputs

Prediction using both multi-panel and standard net Albion data:

16,000 – 61,000 (median = 32,460)




- For 2020, there was no catch in the multipanel net up to week 06/2, so the model could not be run unless a placeholder CPUE input of 0.01 was used. This was considered an unreliable estimate so is not included in comparisons with other years.
- In 2022 and 2023, due to below average cumulative catch per unit effort (CPUE) values at the Albion test fishery, an alternative approach was explored using transformed CPUE inputs by adding one (1) to each value. These model outputs are included in the plot above and denoted with a circle.
- The post-season estimate for 2023 will be available in spring of 2024

# 2019-2022 Fraser Chinook Impact Assessment: Preliminary results

Catch amounts used to calculate Fishing Mortality Index for the run reconstruction plus genetic stock identification method (RR+GSI). Exploitation Rate Analysis (ERA) results provided for comparison (note: methods are different, and results not expected to align precisely).

| | STOCK MANAGEMENT UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spring $4_2$ | | | | | | Spring $5_2$ | | | | | | Summer $5_2$ | | | | | | Summer $4_1$ | | | | | | Fall $4_1$ | | | | | |
| | AVERAGE 2014-2018 | 2019 | 2020 | 2021 | 2022 | AVERAGE 2019-2022 | AVERAGE 2014-2018 | 2019 | 2020 | 2021 | 2022 | AVERAGE 2019-2022 | AVERAGE 2014-2018 | 2019 | 2020 | 2021 | 2022 | AVERAGE 2019-2022 | AVERAGE 2014-2018 | 2019 | 2020 | 2021 | 2022 | AVERAGE 2019-2022 | AVERAGE 2014-2018 | 2019 | 2020 | 2021 | 2022 | AVERAGE 2019-2022 |
| **Spawners** | 10,720 | 6,154 | 8,886 | 6,613 | 10,479 | 8,033 | 20,393 | 4,894 | 20,054 | 22,537 | 26,833 | 18,580 | 21,518 | 9,069 | 22,028 | 21,669 | 38,884 | 22,913 | 106,883 | 173,431 | 168,240 | 200,039 | | 180,570 | 90,977 | 120,000 | 82,982 | 95,809 | 161,461 | 115,063 |
| **Big Bar Mortality** | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 11,399 | 5,140 | 0 | 0 | 4,135 | n/a | 5,798 | 0 | 0 | 0 | 1,450 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| **Fraser First Nations FSC** | 2,547 | 89 | 303 | 116 | 172 | 170 | 2,959 | 666 | 368 | 475 | 336 | 461 | 2,060 | 1,131 | 1,786 | 1,271 | 2,071 | 1,565 | 9,463 | 26,630 | 29,968 | 24,824 | 19,126 | 25,137 | 1,103 | 480 | 256 | 128 | 1,655 | 630 |
| **Fraser Recreational** | 63 | 0 | 0 | 0 | 1 | 0 | 210 | 0 | 4 | 177 | 81 | 66 | 716 | 255[3] | 593[3] | 581[3] | 415[3] | 461 | 6,337 | 3,715 | 3,616 | 3,720 | 3,343 | 3,599 | 5,055 | 7,735 | 5,469 | 8,153 | 27,734 | 12,273 |
| **Fraser Test** | 120 | 72 | 67 | 75 | 48 | 66 | 258 | 178 | 221 | 255 | 160 | 204 | 291 | 157 | 305 | 360 | 396 | 305 | 1,381 | 2,759 | 2,152 | 2,638 | 2,128 | 2,419 | 323 | 503 | 234 | 155 | 642 | 384 |
| **Fraser Commercial/EO** | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 125 | 0 | 0 | 0 | 0 | 0 | 3,467 | 1 | 0 | 0 | 9 | 3 | 194 | 1 | 0 | 0 | 15 | 4 |
| **Total In-River Fishing Mortality** | 2,735 | 161 | 370 | 191 | 221 | 236 | 3,428 | 844 | 593 | 907 | 577 | 730 | 3,191 | 1,543 | 2,684 | 2,212 | 2,882 | 2,330 | 20,649 | 33,105 | 35,736 | 31,182 | 24,606 | 31,157 | 6,674 | 8,719 | 5,959 | 8,436 | 30,046 | 13,290 |
| **Total Return to River** | **13,455** | **6,315** | **9,256** | **6,804** | **10,700** | **8,269** | **23,821** | **17,137** | **25,787** | **23,444** | **27,410** | **23,445** | **24,709** | **16,410** | **24,712** | **23,881** | **41,766** | **26,692** | **127,532** | **206,536** | **203,976** | **231,221** | **24,606** | **211,727** | **97,651** | **128,719** | **88,941** | **104,245** | **191,507** | **128,353** |
| **NBC Commercial** [1] | 136 | 0 | 0 | 0 | 0 | 0 | 977 | 96 | 0 | 145 | 96 | 84 | 1,011 | 40 | 16 | 60 | 40 | 39 | 24,339 | 3,613 | 1,487 | 5,442 | 3,613 | 3,539 | 351 | 81 | 16 | 122 | 81 | 75 |
| **NBC First Nations** [1] | 13 | 0 | 0 | 0 | 0 | 0 | 95 | 3 | 4 | 3 | 2 | 3 | 98 | 2 | 2 | 2 | 1 | 2 | 2,358 | 263 | 319 | 257 | 187 | 256 | 34 | 16 | 19 | 15 | 11 | 15 |
| **NBC Recreational** [1] | 72 | 15 | 1 | 0 | 1 | 4 | 307 | 67 | 12 | 100 | 5 | 46 | 307 | 420 | 8 | 415 | 487 | 332 | 7,726 | 10,865 | 1,592 | 4,286 | 1,305 | 4,512 | 73 | 282 | 63 | 64 | 58 | 117 |
| **SBC Commercial** [2] | 218 | 90 | 0 | 0 | 0 | 22 | 240 | 100 | 0 | 1 | 2 | 26 | 211 | 89 | 1 | 57 | 84 | 58 | 2,612 | 1,163 | 2,194 | 4,496 | 3,412 | 2,816 | 1,799 | 753 | 107 | 621 | 1,256 | 684 |
| **SBC First Nations** [2] | 0 | 0 | 6 | 35 | 0 | 10 | 0 | 0 | 0 | 19 | 11 | 8 | 179 | 121 | 23 | 62 | 117 | 81 | 2,685 | 1,821 | 1,112 | 1,911 | 2,683 | 1,882 | 179 | 121 | 1,171 | 312 | 1,068 | 668 |
| **SBC Recreational** [6] | 422 | 61 | 51 | 24 | 77 | 53 | 1,460 | 755 | 71 | 192 | 61 | 270 | 2,175 | 1,091 | 572 | 954 | 806 | 855 | 20,238 | 30,688 | 14,563 | 16,386 | 10,593 | 18,058 | 19,276 | 16,511 | 13,989 | 19,650 | 42,127 | 23,069 |
| **Total CDN Marine Fishing Mortality** [4,5] | **861** | **167** | **59** | **59** | **78** | **91** | **3,078** | **1,021** | **86** | **460** | **177** | **436** | **3,981** | **1,762** | **623** | **1,549** | **1,535** | **1,367** | **59,957** | **48,413** | **21,267** | **32,778** | **21,793** | **31,063** | **21,712** | **17,764** | **15,366** | **20,785** | **44,601** | **24,629** |
| **Total CDN Fishing Mortality** | **3,596** | **328** | **429** | **250** | **299** | **326** | **6,506** | **1,865** | **679** | **1,367** | **754** | **1,166** | **7,172** | **3,305** | **3,307** | **3,761** | **4,417** | **3,698** | **80,605** | **81,518** | **57,003** | **63,960** | **46,399** | **62,220** | **28,386** | **26,483** | **21,325** | **29,221** | **74,647** | **37,919** |
| **Run Size Index** | **14,316** | **6,482** | **9,315** | **6,863** | **10,778** | **8,359** | **26,899** | **18,158** | **25,874** | **23,903** | **27,587** | **19,746** | **28,690** | **18,172** | **25,335** | **25,430** | **43,302** | **26,610** | **187,489** | **254,949** | **225,243** | **263,999** | **46,399** | **242,790** | **119,363** | **146,483** | **104,307** | **125,030** | **236,109** | **152,982** |
| **RR+GSI Fishing Mortality Index** | **25.1%** | **5.1%** | **4.6%** | **3.6%** | **2.8%** | **3.9%** | **24.2%** | **10.3%** | **2.6%** | **5.7%** | **2.7%** | **5.9%** | **25.0%** | **18.2%** | **13.1%** | **14.8%** | **10.2%** | **13.9%** | **43.0%** | **32.0%** | **25.3%** | **24.2%** | **100.0%** | **25.6%** | **23.8%** | **18.1%** | **20.4%** | **23.4%** | **31.6%** | **24.8%** |
| **Exploitation Rate Analysis Fishing Mortality Index*** | **16.6%** | **2.1%** | **27.7%** | **5.1%** | **2.0%** | **9.2%** | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | **27.6%** | **13.8%** | **20.3%** | **17.2%** | **22.6%** | **18.5%** | **22.6% (HAR) 25.1% (CHI)** | **22.0% (HAR) 18.1% (CHI)** | **16.5% (HAR) 31.1% (CHI)** | **17.0% (HAR) 23.3% (CHI)** | **5.0% (HAR) 43.1% (CHI)** | **15.1% (HAR) 28.9% (CHI)** |

**Notes/Caveats**

[1] NBC GSI in base period is uncertain; based on microsatellite data from Area 1-5 Troll fisheries. Re-analysis with single-nucleotide polymorphisms (SNPs) is a planned in future. In 2021 and 2022, some infilling occurred due to low sample rates.

[2] WCVI GSI in base period is uncertain; using 2019 WCVI GSI as a proxy; have some data but not for all years, needs further work.

[3] Fraser recreational catch of Summer $5_2$ Chinook in 2019-2022 was all terminal catch in Chilliwack and Chehalis rivers. Very small amount of bycatch also from Pink-directed fishery in 2021.

[4] Central BC catch is assumed to not impact Fraser stocks based on limited GSI samples and area fished, so is not included here.

[5] Inside marine SBC First Nations catch is not currently included in the base period or 2019 due to lack of GSI data; could use a proxy as was done in 2021/2022

2020 impacts: 6 Fraser Sp 4(2), 23 Fraser Su 5(2), 371 Fraser Su 4(1), 1171 Fraser Fall

2021 impacts: 7 Fraser Su 5(2), 95 Fraser Su 4(1), 319 Fraser Fall, using JSt/NSoG Rec GSI as a proxy

2022 impacts: 1 Fraser Sp 5(2), 10 Fraser Su 5(2), 64 Fraser Su 4(1), 834 Fraser Fall; using JSt/NSoG Rec GSI as a proxy

[6] Recreational fishery impacts are infilled for May-Sep using iREC; Oct-Apr is catch info without infilling.

# Chum In-Season Run Size Estimates

| Year | In-season run size | Post-season run size | Escapement |
|---|---|---|---|
| 2012 | 2,326,000 | 1,594,731 | 1,333,993 |
| 2013 | 1,489,000 | 1,425,763 | 1,114,947 |
| 2014 | 1,329,000 | 1,385,372 | 1,122,392 |
| 2015 | 1,567,000 | 1,249,936 | 923,352 |
| 2016 | 2,000,000 | 2,383,505 | 1,930,695 |
| 2017 | 1,320,000 | 908,874 | 626,661 |
| 2018 | 769,000 | 762,588 | 647,251 |
| 2019 | 518,000 | 324,524 | 291,379 |
| 2020 | 1,084,000 | 624,354 | 521,050 |
| 2021 | 481,000 | 522,899 | 488,763 |
| 2022 | 879,000 | 1,120,887 | 1,021,484 |

# 2023 IFR Steelhead Window Closure

| Fishery Location | | 27-day window closure (commercial troll fisheries and FSC fisheries occurring in the Fraser River) | | 42-day window closure (commercial drift and set gillnet, purse seine, beach seine, and shallow seine fisheries and recreational fisheries occurring in the Fraser River) | |
|---|---|---|---|---|---|
| | | Start | End | Start | End |
| Fraser River | Area 29: 29-6, 29-7, 29-9, and 29-10 | 26-Sep | 22-Oct | 19-Sep | 30-Oct |
| | Mouth to Port Mann Bridge | 26-Sep | 22-Oct | 19-Sep | 30-Oct |
| | Port Mann Bridge to Mission | 28-Sep | 24-Oct | 21-Sep | 1-Nov |
| | Mission to Hope | 29-Sep | 25-Oct | 22-Sep | 2-Nov |
| | Hope to Sawmill Creek | 3-Oct | 29-Oct | 26-Sep | 6-Nov |
| | Sawmill Creek to Lytton (Thompson Confluence) | 5-Oct | 31-Oct | 28-Sep | 8-Nov |
| | Lytton to Texas Creek | 8-Oct | 3-Nov | 1-Oct | 11-Nov |
| | Texas Creek to Kelly Creek | 10-Oct | 5-Nov | 3-Oct | 13-Nov |
| | Kelly Creek to Deadman Creek | 13-Oct | 8-Nov | 6-Oct | 16-Nov |
| | Deadman Creek to Chilcotin River | 16-Oct | 11-Nov | 9-Oct | 19-Nov |
| | Chilcotin River | 19-Oct | 14-Nov | 12-Oct | 22-Nov |
| | Thompson River – Thompson Confluence to Bonaparte | 8-Oct | 3-Nov | 1-Oct | 11-Nov |
| | Thompson River – Bonaparte River to Kamloops Lake | 12-Oct | 7-Nov | 5-Oct | 15-Nov |

# First Nations Licence Types

| | |
|---|---|
| Communal | • Issued to communities to fish for Food, Social, and Ceremonial purposes |
| Communal – limited participation | • Issued to 1 or 2 communities at a time for a small number of fishers and/or to harvest a limited number of fish<br>• Often for fish used during ceremonies |
| Communal – allowance for sales | • Issued to communities when fish are intended to be sold<br>• Includes Economic Opportunity, Demonstration, and Harvest Agreement fisheries |
| ESSR | • Excess Salmon to Spawning Requirements licences are provided to local Nations to harvest all or part of a surplus in terminal area, and authorizes the sale of the surplus |