



2022/23 Draft Salmon IFMP – Chinook Update

Forum on Conservation and Harvest Planning:
April 12-14, 2022



Outline:

1. Update on Preliminary 2021 Fishery Outcomes
2. 2022 Planning
3. Discussion



UPDATE ON 2021 FISHERY OUTCOMES



Fraser Chinook Management Objectives

Fraser Spring 4₂, Spring 5₂ and Summer 5₂

(Updated) For 2021, the management objective for Spring 4₂, Spring 5₂ and Summer 5₂ Chinook was to manage Canadian fisheries in a highly precautionary manner to allow as many fish to pass through to spawning grounds as possible.

- In 2019, this approach reduced overall Canadian fishery mortalities on these populations to very low levels of approximately 6-7% (Spring 4₂ and Spring 5₂) and 15% (Summer 5₂). In 2020, fishery mortalities were further reduced to <5% (Spring 4₂ and Spring 5₂) and 13% (Summer 5₂).

Fishery impacts are expected to include:

- Mortalities in Fraser River Chinook test fisheries (Albion)
- Incidental mortalities in Sockeye test fisheries
- Limited Chinook retention or bycatch retention in FN FSC fisheries
- Release mortalities and incidental mortalities during Chinook-directed fisheries targeting other stocks.
- All mortalities, including bycatch and incidental harvest, are factored into the calculation of exploitation rates on various stocks.
- Department considers a number of fishing plan options and attempts to address a range of objectives including provision of limited opportunities for FSC harvest and minimizing bycatch / incidental catch in commercial and recreational fisheries.



Fraser Chinook Management Objectives

Summer 4₁ Chinook

- PST escapement goal for Lower Shuswap Chinook (12,500)
- Conservation concern (COSEWIC status *Endangered*) for Maria Slough Chinook (Lower Fraser)
- Run timing overlap with Summer 5₂ and Fall 4₁ Chinook will require consideration of lower fishery mortalities
- In 2019 and 2020, restrictions to commercial fisheries and some recreational fisheries were implemented to support increased availability of Summer 4₁ Chinook for Chinook-directed First Nations FSC fisheries. These included:
 - a delay to August 20 (2019), August 15 (2020) and August 12 (2021; also combined with closure of directed Coho fishery) of the Northern Troll fishery
 - Closure of Kamloops Lake demonstration fishery
 - reduced limits (1 per day) in the southern BC recreational fishery
 - a closure to the in-river recreational salmon fishery

Fall 4₁ Chinook

- Spawner abundance has not achieved the PST escapement goal (75,100) in 9 of the last 10 years (2012-2021). Harrison Chinook continues to experience low productivity.
- 2020 and 2021 management measures also intended to further reduce exploitation rates



2021 Chinook Management

- Provision of priority access for First Nations FSC harvests in South Coast and Fraser River.
 - South Coast FSC fisheries opportunities on mixed stocks were permitted in marine areas with the exception of the approaches to Fraser River (Subareas 29-6, 29-7, 29-9 and 29-10).
 - Very limited Fraser River FSC fisheries opportunities were permitted from April to July to limit impacts on at-risk Fraser Chinook, with opportunities to target healthy Summer 4₁ Chinook in August.
 - Commercial troll fisheries delayed into August to avoid Fraser Chinook encounters.
 - Area F (Northern BC) – Chinook fishery opening on August 12 (directed Coho fishery closed in 2021 – PSSI closure); additional objective to pass additional Summer 4₁ Chinook to Fraser River
 - Area G (WCVI) – Delayed start until August 1
- Recreational measures are [summarized in Appendix](#)
 - Chinook non-retention beginning April 1 in most South Coast waters with exception of WCVI waters inside 1nm from the surfline; No fishing for Chinook beginning April 1 in marine approaches to Fraser River; and, no fishing for salmon at mouth of Fraser and within Fraser in effect beginning January 1
 - In addition, number of MSF fishery opportunities opened in portions of Areas 12, 13, 15, 16 and 20 (Beecher Bay);
 - Maps also attached in background slides



What were 2021 Fishery Mortalities?

Results from 2 approaches compared:

1. **Coded Wire Tags (CWT)**

- method used to assess fishery mortalities for Chinook indicator stocks under Pacific Salmon Treaty using CWTs recovered from CDN and US fisheries.
- Incorporates incidental mortalities.
- Gap: No current indicators for Spring 5₂ and Summer 5₂ Chinook.

2. **Fishery Mortality Index**

- alternate method that combines data from run reconstruction for Fraser River fisheries with catch and genetic stock ID (GSI) from DNA samples taken in marine fisheries to generate a *fishery mortality index*.
- DNA sample results from northern (troll, recreational) and key southern marine fisheries (JDF, Strait of Georgia).
- Status of DNA for marine fisheries? Samples collected and submitted to DNA lab for processing, including commercial troll, recreational and First Nations FSC fisheries.
- Standard release mortality assumptions applied to recreational fishery in southern BC
- Gaps: DNA samples still being analyzed; Big Bar mortality estimates, Fishery Related Incidental Mortality (FRIM), including release mortality, for all fisheries
- Expect data for 2021 fisheries to be analyzed and shared in Fall 2022.



Fraser Chinook 2019 and 2020 Results

– Fishery Mortalities

Management Unit (indicator)	2014-2018 Avg. CDN Fishery Mortalities (CWT)	2019 CDN Fishery Mortalities (CWT)	2019 CDN Fishery Mortality Index (Recon + GSI)*	2020 CDN Fishery Mortalities (CWT)	2020 CDN Fishery Mortality Index (Recon + GSI)*	Preliminary 2021 CDN Fishery Mortalities (CWT)
Spring 4 ₂ (Nicola)	16.7%	2.1%	6.0%	27.5%	4.5%	5.2%
Spring 5 ₂	n/a	n/a	6.6%	n/a	2.6%	n/a
Summer 5 ₂	n/a	n/a	14.9%	n/a	12.8%	n/a
Summer 4 ₁ (L. Shuswap)	27.7%	13.8%	32.3%	20.2%	23.9%	14.7%
Fall 4 ₁ (Harrison)	22.4%	22.5%	18.3%	16.0%	19.4%	17.6%

- *A memo is available with detailed results.
- Preliminary CWT mortality data for 2022. Values for past years also revised based on preliminary CWT mortality tables. Detailed fishery breakdown still in progress.



Fishery Mortality Observations

- **Spring 4₂** fishery mortalities very low (5.2% in 2021) with most fish reaching spawning areas
 - Note: Higher impact in 2020 related to evidence that migration was delayed/longer holding of fish in Fraser main stem and Thompson River due to high water, and increased fishery catch (most recoveries in Thompson River in August)
- **Spring 5₂** and **Summer 5₂** Chinook fishery mortality indices in Fall 2022 pending completion of DNA analysis.
- **Summer 4₁** fishery mortality reduced on average by approx. 40% below 2014-2018 average (27.7%) over last 3 years.
 - Primarily due to reductions in Commercial Troll (Northern BC and WCVI) fisheries where mortality reduced from 7.7% average (2014-2018) to 0.6% avg. in last 3 years (from CWT mortality tables); and
 - Southern BC recreational fishery reduced from 8% average (2014-2018) to 3.2% avg. in last 3 years (from CWT mortality tables).
- **Fall 4₁** fishery mortality decreased approx. 25% in 2020 and 2021 vs. 2014-18 avg.
 - Main impact in southern BC recreational fishery



Fishery Objectives

- **Summer 4₁** – Northern BC Troll fishery Chinook retention start date was Aug. 12 (2021) vs. delay to Aug. 15 (2020) and Aug. 20 (2019) to allow more Chinook to reach Fraser River (salmon allocation priority objective)
 - NBC AABM Troll (Area F) Chinook harvest was approx. 1/2 of TAC (64,470 of 122,200 TAC). DNA samples collected from 1,575 Chinook.
 - 12,095 Chinook releases in 2021 vs. 10,401 (2020) and 40,097 (2019)
 - Fraser Watershed FSC fishery 2021 harvest of 27,257 Chinook. 33,381 (2020) and 29,238 (2019); increased harvest in last 3 years relative to 2014-2018 avg. of 17,305 Chinook. Aggregate harvests still below communal licence harvest targets. Increased importance of Chinook given poor Fraser sockeye returns and limited harvest opportunities and constraints on harvest due to number of stocks of conservation concern.



2022 PLANNING AND IFMP FEEDBACK



What management measures are currently anticipated for 2022?

The following measures are anticipated to be in effect but may be modified based on consultations to develop the 2022/23 salmon IFMPs.

First Nations fisheries*: Provision of priority access for First Nations FSC harvests in South Coast and Fraser River.

- Fraser River First Nations FSC fisheries opportunities limited to unplanned events or first fish ceremonies into July followed by opportunities to target healthy Summer 4₁ Chinook primarily in August.
- South Coast FSC fisheries opportunities for mixed Chinook stocks will be permitted in marine areas with the exception of the approaches to the Fraser River (Subareas 29-6, 29-7, 29-9 and 29-10).
- Five Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht) rights-based commercial fishery in 2021 was delayed until July 15 in areas seaward of 1 nautical mile from the surfline on the West Coast of Vancouver Island. A maximum 80cm size limit was in effect from July 16 to July 31. Fishing may be authorized in areas shoreward of 1 nautical mile from the surfline.



What management measures are currently anticipated for 2022? (cont.)

Recreational fisheries*: Chinook restrictions will be implemented in most South Coast areas to address conservation concerns for Fraser River Chinook salmon. See maps with specific details attached in background slides.

- Chinook non-retention beginning April 1 in most South Coast waters with exception of WCVI waters inside 1nm from the surfline;
- No fishing for Chinook beginning April 1 in marine approaches to Fraser River; and,
- No fishing for salmon at mouth of Fraser and within Fraser in effect beginning January 1

*MSF fisheries – see next slide

Commercial troll fisheries*:

- Area F (Northern BC) – Chinook non-retention until [mid-August – date TBC](#); (additional objective to pass additional Summer 4₁ Chinook to Fraser River); proposal submitted to consider Coho opening beginning Aug. 1 and earlier Chinook opening sometime Aug 1 to 12.
- Area G (WCVI) – Delayed start until August 1; Area G demonstration fishery proposal for 3,000 Chinook harvest in April-May 2023 in areas within 1nm from the surfline (page 556 in SC IFMP).

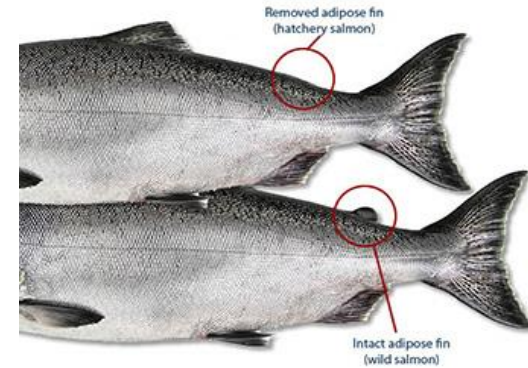


MSF Fisheries

- 2021/22 IFMP included several MSF pilots in portions of Areas 12, 13, 15, 16 and Beecher Bay (Area 20) starting April 1 pending post-season review of 2021 information (page 267 of 2021/22 IFMP)
- Post-season review information observations:
 - Information on catch, effort and stock composition reviewed for each area (See separate technical presentation (*2021 Chinook Pilot MSF Monitoring Summary*) for further data).
 - Stock composition information indicates mixture of stocks including majority from ECVI Fall, Fraser Fall, US stocks, Mainland Inlets.
 - 3 Fraser Stream-type Chinook (Spring 5₂ and Summer 5₂) in samples.
 - Fraser Fall (Harrison, Chilliwack, Capilano) most common Fraser stocks.
 - Fishery risks consistent with 2021 evaluation.
- Detailed maps of areas are in the Appendix
- Fisheries were re-opened April 1; FN0288 provides specific opening details



MM/MSF Discussion Paper



- As part of the Pacific Salmon Strategy Initiative, DFO is developing a discussion paper to help inform future decision making and implementation around the use of mass marking (MM) and mark-selective fisheries (MSF).
- **Purpose of discussion paper:** to inform and seek feedback from First Nations, commercial and recreational harvesters, and other interested parties on key technical considerations, including the potential benefits and challenges, associated with the implementation of hatchery mass marking (MM) and mark-selective fisheries (MSFs) for southern British Columbia Chinook salmon.
- Input from engagement on the discussion paper will help to inform further analysis of implementation opportunities and challenges.
- Technical workshops are anticipated on the development and implementation of improved monitoring programs, tools to support decision making on hatchery production, fishery management strategies, and other areas that may be identified.



Proposed Timelines

Timeline	Activity
April 2022	MM/MSF Discussion paper distributed for comment to First Nations and stakeholders
May/June 2022	Opportunities for engagement and provision of written feedback on Discussion Paper. Proposed feedback deadline: June 10
Summer 2022	Development of “What We Heard Report” on Discussion Paper
Fall 2022	Hold technical workshops to address key issues and support implementation planning in key areas.
Winter 2022	Development of initial implementation plans based on input received and additional technical analysis.
2023 Fishing Season and beyond	Implementation Period. Further consultation on proposed plans through existing processes (e.g., IFMP and production planning processes), implementation in 2023, post-season review and consideration of further changes.



Fraser Chinook – 2022 Outlook

Fraser Spring 4₂, Spring 5₂ and Summer 5₂

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	Management Target	WSP / COSEWIC STATUS	2022 Forecast
SPRING RUN 4₂	Aggregate includes 2 CUs	10,352 CTC Esc. (1975-2020)	22,146 Escapement Target (S _{MSY})	Refer to doc.	8,293 Terminal Run
SPRING RUN 5₂	Aggregate includes 5 CUs	24,219 CTC Esc. (1975-2020)	42,165 Escapement Target (S _{MSY})	Refer to doc.	16,876 Terminal Run
SUMMER RUN 5₂	Aggregate includes 6 CUs	19,534 CTC Esc. (1975-2020)	23,567 Escapement Target (S _{MSY})	Refer to doc.	15,398 Terminal Run



Fraser Chinook – 2022 Outlook

Fraser Summer 4₁ and Fall 4₁ (Harrison)

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	Management Target	WSP / COSEWIC STATUS	2022 Forecast
SUMMER RUN 4₁	Aggregate includes 3 CUs	64,777 CTC Esc. (1975-2020)	120,322 Escapement Target (S _{MSY})	Refer to doc.	128,800 Escapement
FALL RUN 4₁ (Harrison)	CK::Lower Fraser River-fall timing (white) - Harrison	90,890 (ESC 1984-2020) 41,042 (Last Gen)	75,100 Escapement Target (S _{MSY})	Refer to doc.	68,388 Escapement



2022 AABM Chinook – Abundance Indices

2022 pre-season CPUE and AIs and associated ACs for the 2022 AABM Fisheries

	SEAK	NBC	WCVI
Abundance Index	7.02 (CPUE) ¹	1.17	0.88
Allowable Catch	266,585 (Tier 5)	142,800	100,700

¹ The CLB 2203 2022 pre-season AI for SEAK is 1.16 which would yield a non-tiered AC of 146,400 if the PSC Chinook Model was being used.

2021 pre-season AIs and associated ACs, observed catches, post season AIs and associated ACs for the 2021 AABM Fisheries

Preseason			
	SEAK	NBC	WCVI
Abundance Index	3.85 (CPUE) ¹	1.27	0.76
Allowable Catch	205,165 (Tier 4)	153,800	88,000
Actual			
Observed Catch	202,082	90,987	75,776
Post-Season			
Abundance Index	1.23(AI)	1.21	0.73
Allowable Catch	140,323 (Tier 3)	147,200	84,800

¹ The CLB 2104 2021 pre-season AI for SEAK was 1.28 which would yield a non-tiered AC of 190,000 if the PSC Chinook Model was being used.



2022 Chinook Management Initial Planning Considerations

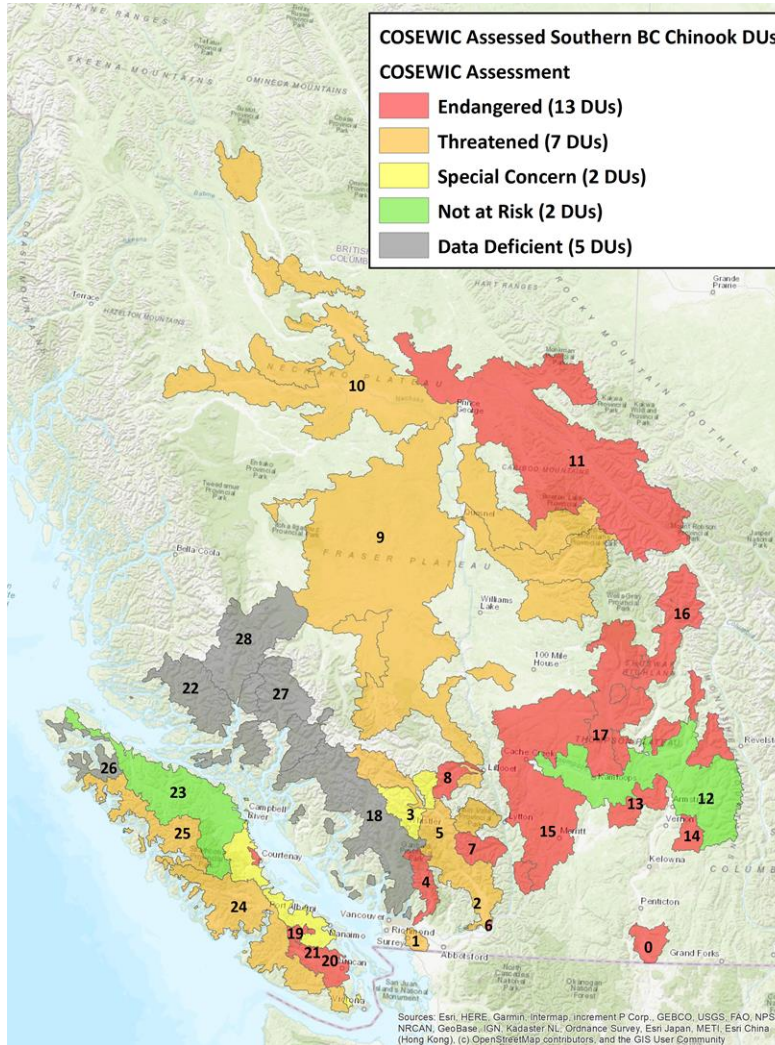
1. Are there additional opportunities to further reduce impacts on Fraser Summer 5₂ and Harrison (Fall 4₁) Chinook?
2. Additional measures for other southern BC Chinook stocks?
 - E.g. Puntledge Summer Chinook (Area 14)
3. Potential opportunities to target terminal surpluses of enhanced or abundant wild Chinook?
4. How should DFO consider potential MM/MSF in 2022/23 IFMP (i.e., plans for Spring 2023) subject to completion of consultations on discussion paper and implementation plans in 2022? (e.g. Updated fishery evaluation framework)
5. Key priorities for longer term (>1 year) planning horizon (e.g., management strategy evaluation process)?
6. Other considerations?



APPENDIX: BACKGROUND INFORMATION



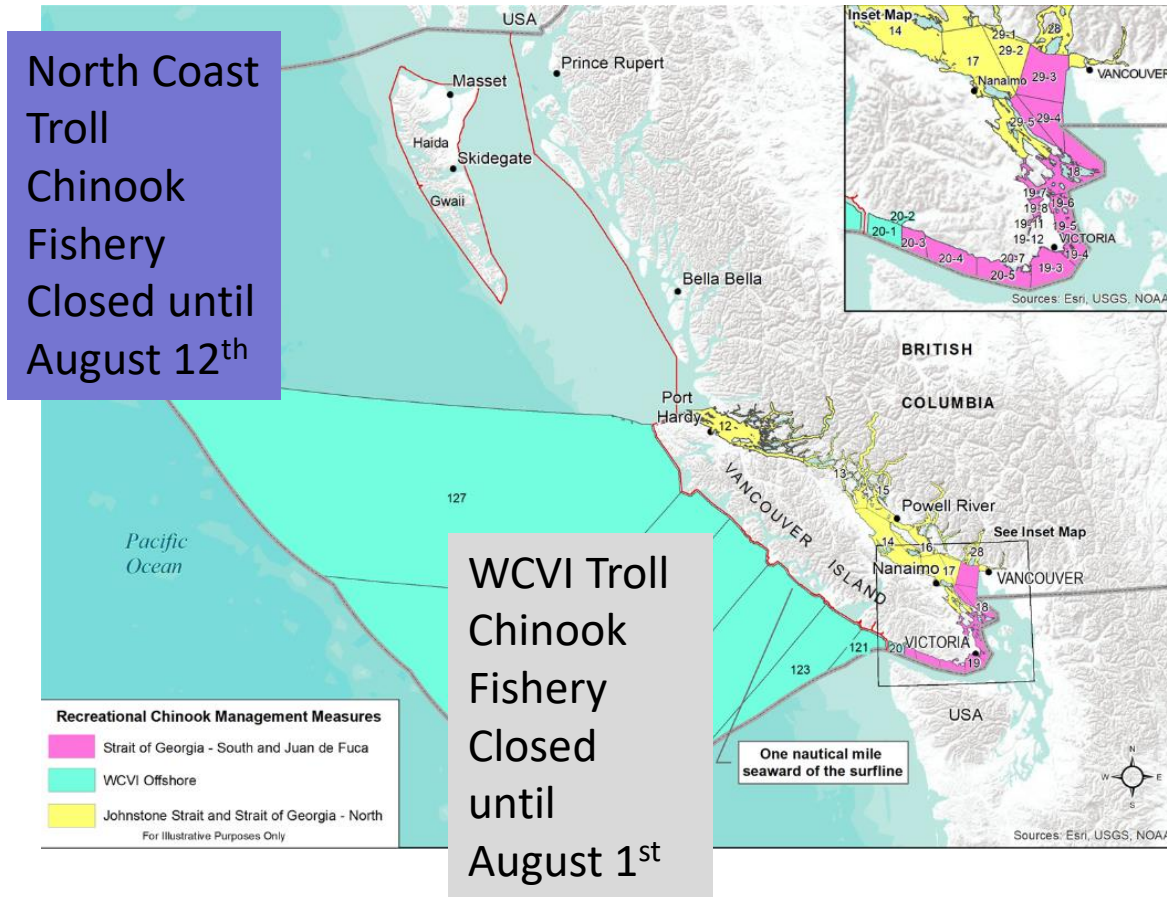
COSEWIC Status of Southern BC Chinook DUs



DU #	Name	Status
0	Okanagan Chinook	EN
1	Mainland Boundary Bay, Ocean, Fall	TH
2	Lower Fraser, Ocean, Fall	TH
3	Lower Fraser, Stream, Spring	SC
4	Lower Fraser, Stream, Summer (U.Pitt)	EN
5	Lower Fraser, Stream, Summer	TH
6	Lower Fraser, Ocean, Summer	EN
7	Mid Fraser, Stream, Spring	EN
8	Mid Fraser, Stream, Fall	EN
9	Mid Fraser, Stream, Spring (MFR+GStr)	TH
10	Mid Fraser, Stream, Summer	TH
11	Upper Fraser, Stream, Spring	EN
12	South Thompson, Ocean, Summer	NAR
13	South Thompson, Stream, Summer 1.3	EN
14	South Thompson, Stream, Summer 1.2	EN
15	Lower Thompson, Stream, Spring	EN
16	North Thompson, Stream, Spring	EN
17	North Thompson, Stream, Summer	EN
18	SC - Georgia Strait, Ocean, Fall	DD
19	East Vancouver Island, Stream, Spring	EN
20	East Vancouver Island, Ocean, Summer	EN
21	East Vancouver Island, Ocean, Fall	SC
22	SC – Southern Fjords, Ocean, Fall	DD
23	East Van. I., Ocean, Fall (EVI + SFj)	NAR
24	West Van. I., Ocean, Fall (South)	TH
25	West Van. I., Ocean, Fall (Nootka & Kyuc)	TH
26	West Van. I., Ocean, Fall (WVI + WQCI)	DD
27	Southern Mainland, Ocean, Summer	DD
28	Southern Mainland, Stream, Summer	DD

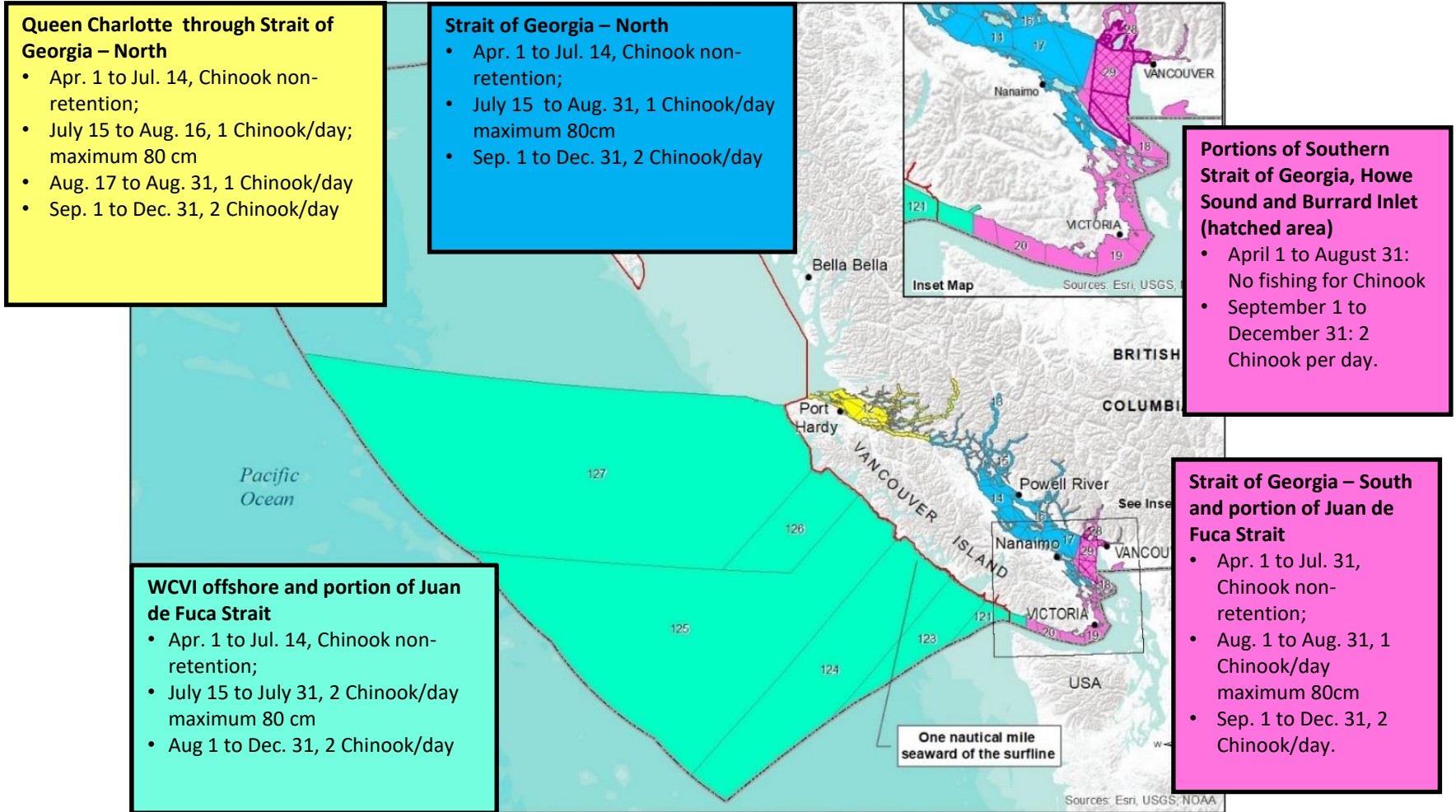


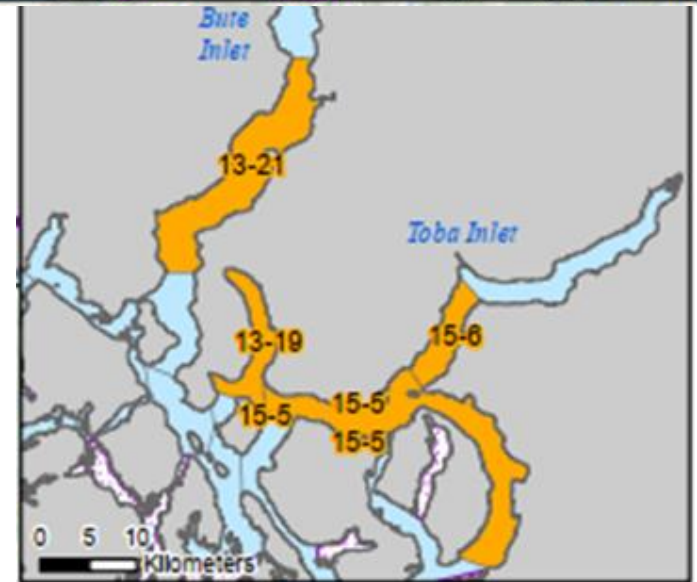
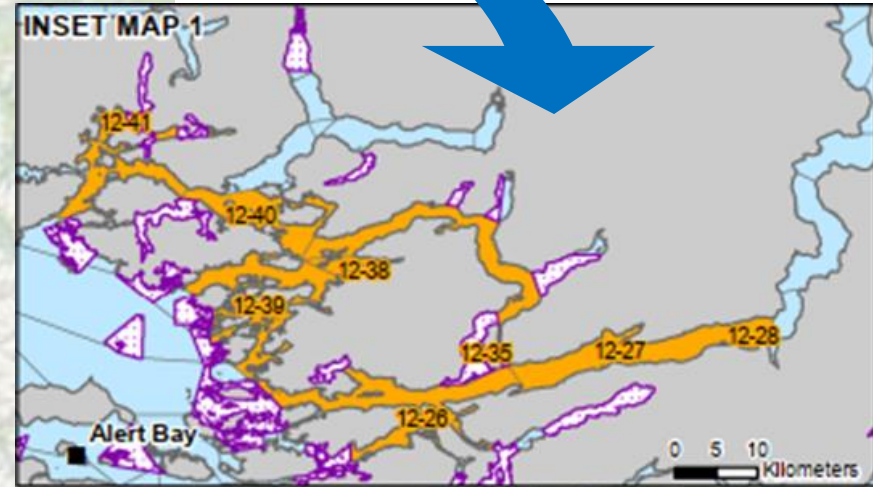
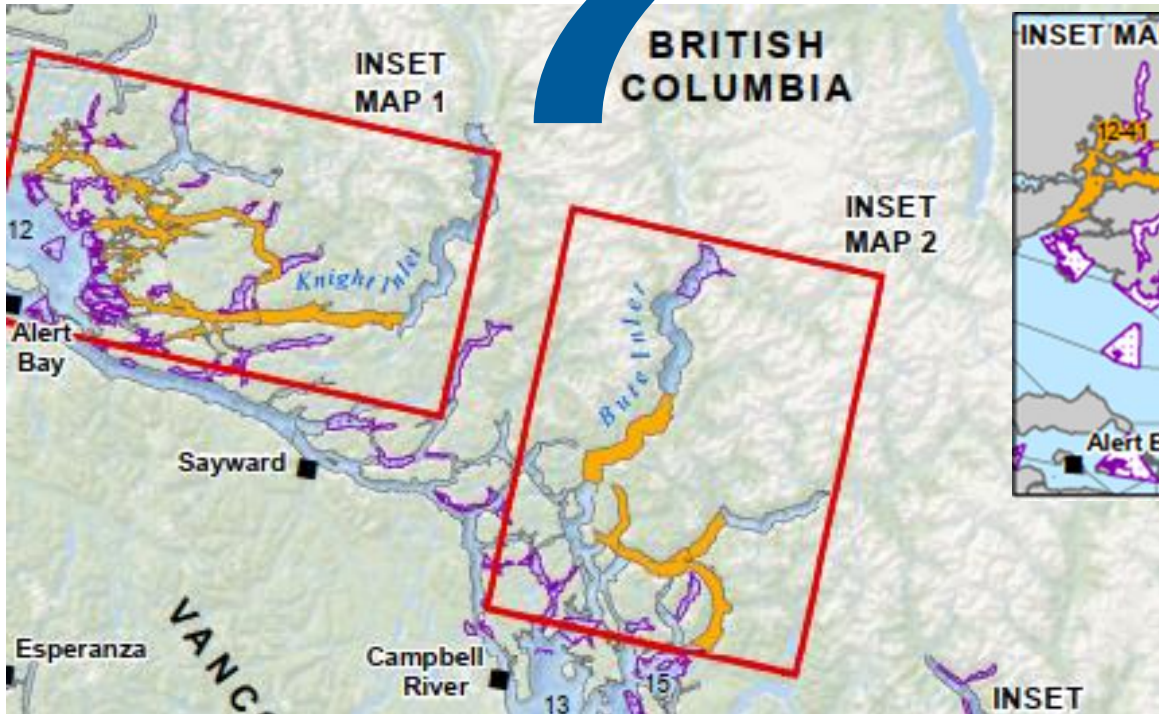
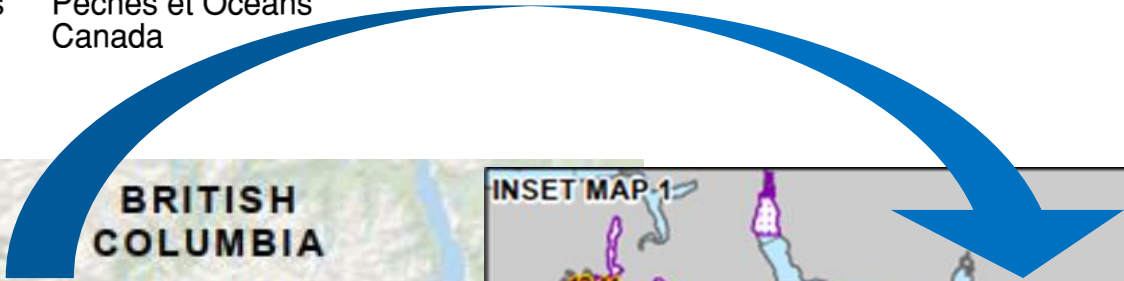
2021 Commercial Chinook Management Measures





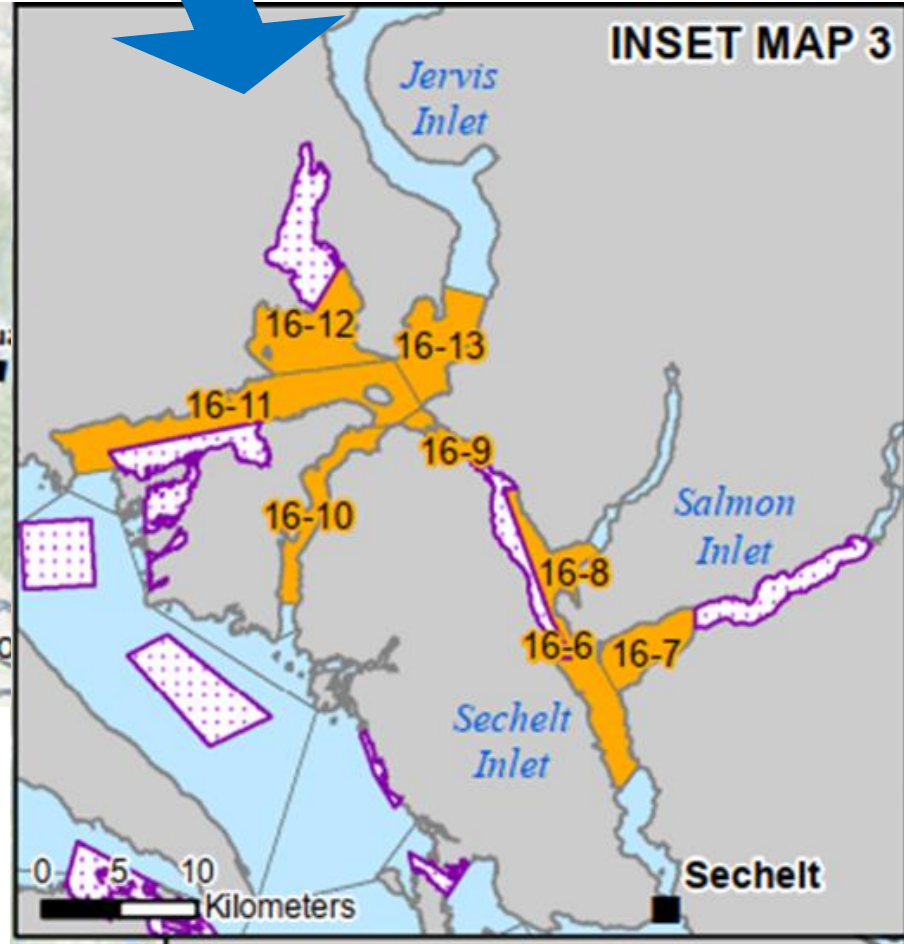
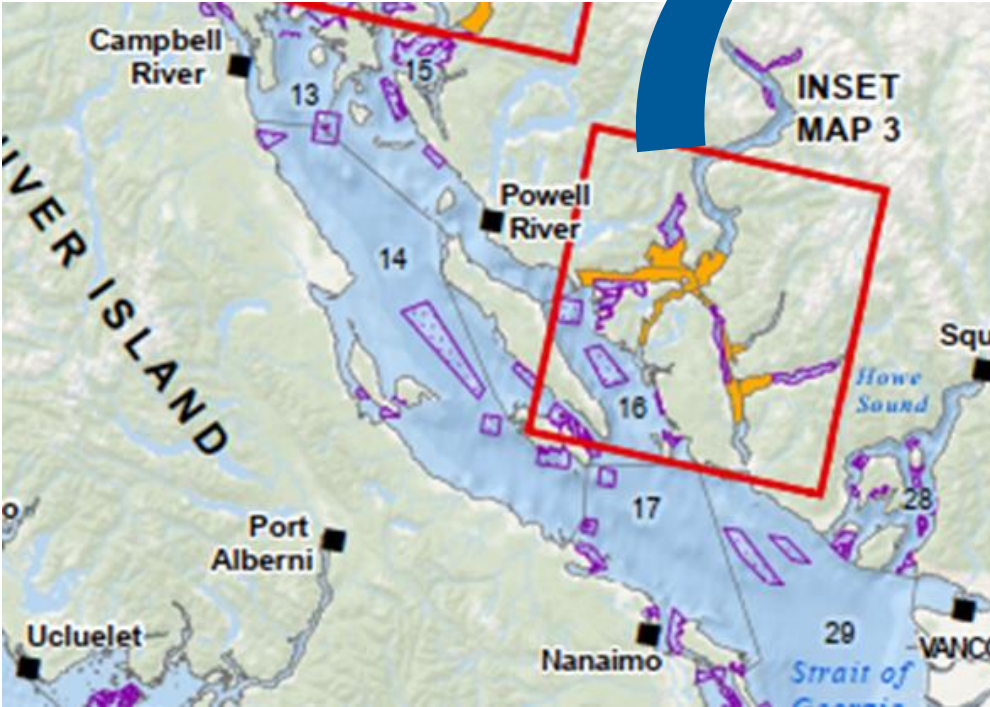
2021 Recreational Chinook Management Measures





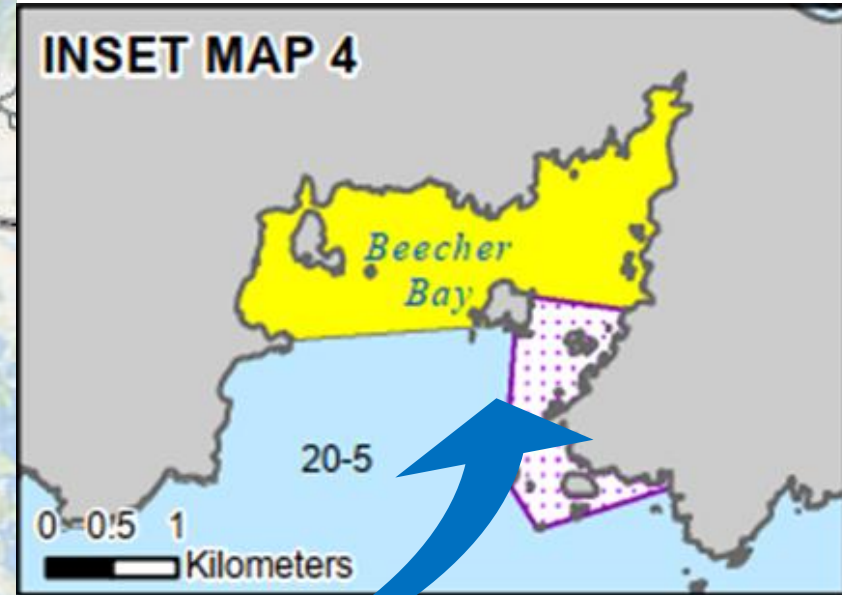
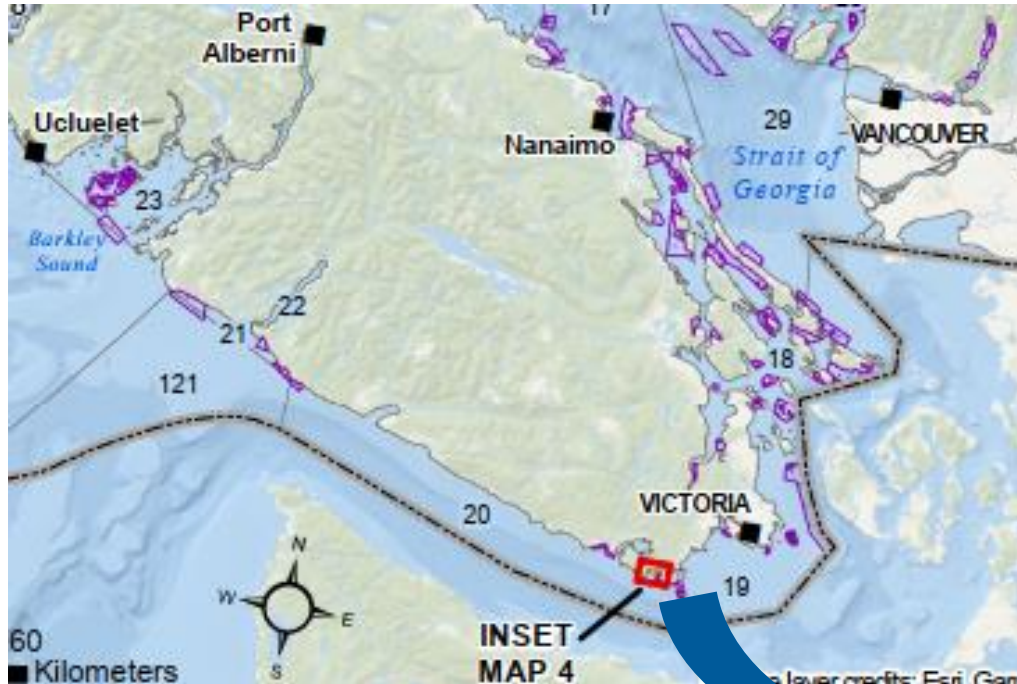
Areas 12, 13 & 15 (portions of Broughton Archipelago/Knight Inlet; portions of Bute Inlet & Ramsay Arm):

MSF: One (1) Chinook per day marked or unmarked, with maximum 80 cm size limit on unmarked Chinook.



Area 16 (portions of Sechelt & Jervis Inlets):

MSF: One (1) Chinook per day marked or unmarked, with maximum 80 cm size limit on unmarked Chinook.



Beecher Bay (portions of Subarea 20-5):

MSF: One (1) hatchery-marked Chinook per day.



2021 First Nations Food, Social and Ceremonial

Southern BC marine waters:

- Some fisheries opportunities on mixed stocks in marine areas (exception of the approaches to Fraser River).

Lower Fraser and BC Interior:

- Very limited access prior to July.
- Opportunities to target Summer 4₁ Chinook in August.

