



Pacific Salmon
Strategy Initiative

Initiative de la Stratégie
relative au saumon du Pacifique



Photo credit: Maxime Veilleux



Mark-Selective Fisheries Update

April 2024

Approved Chinook MSFs

Portions of Areas 12, 13, and 15 (mainland inlets):

- One (1) Chinook per day, maximum 80 cm on unmarked Chinook (no maximum size on hatchery-marked Chinook), from April 1 to July 14.

Portions of Area 16 (mainland inlets):

- One (1) Chinook per day, **hatchery-marked only**, from April 1 to July 14.

Portion of Area 20 (Beecher Bay):

- One (1) Chinook per day, **hatchery-marked only**, from April 1 to July 31.

Portions of Area 17, 18, and 19 (Saanich-Gulf Islands):

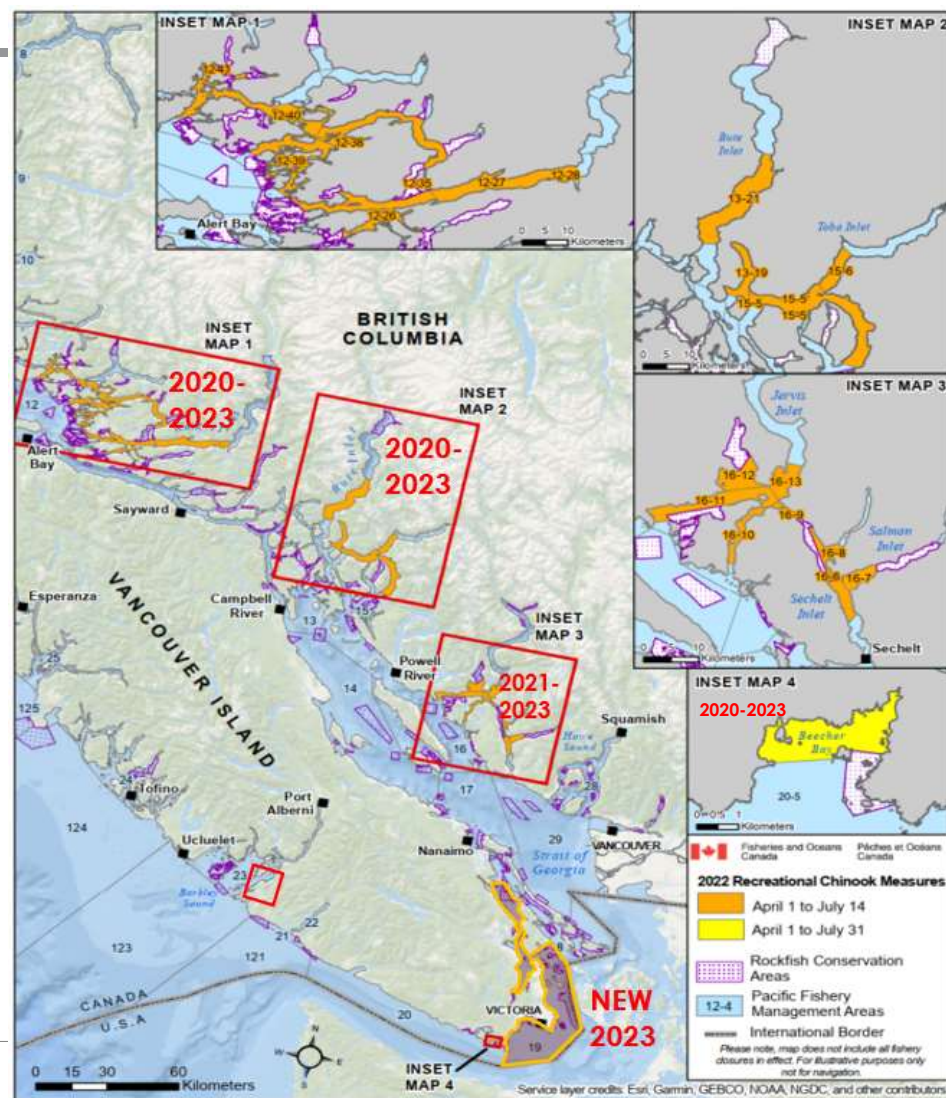
- One (1) Chinook per day, **hatchery-marked only**, from April 1 to July 14 (A17) or July 31 (A18/19).

Subareas 19-1, 19-3 to 19-6 (Victoria):

- One (1) Chinook per day, **hatchery-marked only**, from April 1 to May 31

Sarita River and terminal approach

- First Nations MSF, **hatchery-marked only**





2023 Results

- IFMP indicated approved MSF would re-open **subject to post season review** of available information and some adjustments may be made
- DFO is working on a **formal report** to share the post-season results of the 2023 MSFs
- Once complete report will be shared with all groups
- Preliminary data indicates **pre-season estimates aligned with results**
 - Mark-rate consistent with expectations
 - Reference fishery preliminary GSI were consistent with forecast, but analysis has not been finalized (data entry verification and sample matching, processing and checking of creel and avid angler samples, catch expansion, etc.)
- **MSF impacts** from 2023 fisheries will be **incorporated into the FMI memo** outlining impacts on Fraser Chinook stocks that will be completed in **Fall 2024**.
- Appendices provide additional technical information from DFOs presentation at the last Forum



Objectives for MM and MSF

- 1. Conservation** – Support the sustainability of major fish stocks, particularly those of conservation concern, by limiting fishery impacts on unmarked wild stocks to acceptable levels. An MSF could provide a **more precautionary fishery option** than a non-selective approach under certain conditions identified in the draft implementation framework.
- 2. Sustainable Use** – Provide harvest opportunities where limited harvest impacts might not affect the sustainability of wild stocks of conservation concern and/or their rebuilding potential. MSFs could provide **harvest benefits to First Nations, recreational and commercial harvesters**.
- 3. Hatchery Genetic Management** – To the extent practicable, hatchery produced fish should not adversely impact the genetic make-up or biodiversity of wild origin stocks in natural spawning environments, or in some cases when fish are selected for hatchery brood stock for rebuilding purposes. A key objective of MSFs is the **selective removal of marked hatchery fish**, before they return to these locations.



MSF Implementation Framework - Technical workshop process

Commencing in December 2022, DFO hosted **series of MM/MSF technical workshops** with external groups to discuss the key issues and technical challenges of MM/MSF implementation.

Key issues discussed:

- Enhanced monitoring plans including assessment of stock composition for releases, and mark-rate in areas open to MSF
- Risk evaluation and how to improve transparency
- Post-season data review and reporting
 - Shared 2021/22 MSF data summary
- MM for genetic management objectives
- **Decision Tree Concept**
 - Some elements considered (mark rates, release mortalities, etc.) and used to inform briefing process
 - Briefing material also includes First Nation and stakeholder feedback
 - Consistent with other fisheries, final decision is within Ministers Authority



MSF Implementation Framework

- Outlines the **regulatory and policy context** for Pacific Salmon Management along with the operational context for MSF.
- A set of key criteria based on the MSF objectives and context have been developed to assist in MSF decision making and to evaluate risk to stocks.
- Considerations included:
 - **Conservation** – stocks of concern, local stocks, and ecosystem concerns (e.g., SRKW)
 - **Salmon Allocation Priority** - consistency with policy and priority for FN FSC after conservation
 - **Pacific Salmon Treaty (PST)** obligations
 - Estimated recreational effort, impacts on stocks of concern and other target stock(s)
 - Mark-rate, stock composition and abundance of target stock(s)
- **Catch Monitoring** – Framework identifies enhanced monitoring to meet our Pacific Salmon Treaty and other fishery monitoring / catch reporting obligations.



Draft IFMP

MSF Framework

- Feedback from participants in technical workshop process was used to inform DFOs development of a **draft MSF Implementation Framework**.
- Draft Framework included in draft 2024/25 Southern Salmon IFMP for consultation
- Feedback period closes **April 15, 2024**
 - Limited feedback to date on MSF Framework other than from technical workshop participants
 - DFO will review feedback received and additional edits to the draft MSF Framework may occur as a result

New MSFs

- Anticipate SFAB to submit proposals for MSF similar to previous years (offshore WCVI, Juan de Fuca Strait, etc.)
- DFO exploring MSF in Area 25 (moving from NSF)
- MSF may be proposed by any First Nation, stakeholder advisory process, or DFO.

Timeline

2020 to 2023
New Chinook MSF pilots approved on trial basis, subject to post-season review each year.

Dec. 2022 – Present
MM/MSF technical workshop process to discuss the key issues and technical challenges of implementation.

Spring 2024
Implement MSF in current 2023/24 IFMP subject to review of 2023 data (e.g., CWT and other information).

Summer 2024
Final MSF Implementation Framework in final IFMP (TBC)

Spring 2025
Potential new MM of existing Chinook production for MSF

2019
Broad changes to fishery regulations to protect Fraser River Chinook stocks of concern.

June 2022
Discussion paper on MM and MSF released for feedback and consultation.

Winter 2023 – Spring 2024
Release MSF Implementation Framework and consult as part of 2024/25 IFMP planning.

Spring 2024
New MM of some Chinook production for hatchery-genetic management

Winter 2024 and beyond
Post-season review of MSF and modifications as needed for the next year's draft IFMP.



We are here



Appendices

(Data previously shared at Forum)



2021/2022 MSF Report

V1.0 released April 2023

V2.0 released November 2023

V3.0 early in 2024 (near final)

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2021 and 2022 Southern BC Chinook Pilot Mark Selective Fisheries Post-Season Data Summary

Edits from V1.0:

Table 5 – Fraser Fall total missing; updated

Table 2 – Lower; grand total % missing; added

References: added hyperlinks, Beacham et al. Chinook GSI methods

Tables 2-9: broke out DNA stock composition by size category including legal, super legal and sub legal. Added all samples for areas 12 and 20.

Tables 5 and 9: Updated Fraser SOC run size and time series averages to 2022.

Appendix 1, Tables 15-28: added monthly sample summaries and stock composition data for legal, super legal and sub legal categories; 2021 and 2022. Included monthly summaries of direct (kept) mortalities by stock group and year (FRIM included in Tables 5 and 9).

Table 13 - Updated values in sub-legal release catch estimates to correct errors

Appendix 1; added Figures 14-17; monthly estimates of effort, catch, releases by MSF

Updated text for annual summaries of stock composition, conclusions and recommendations

Prepared by Fisheries and Oceans Canada
South Coast Stock Assessment,
Nanaimo BC
November 27, 2023



How many DNA samples do we have?

2021
n=764

DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2021 - OBSERVED LEGAL SAMPLES														
Pilot MSF Area/Creel Sub Area	Fraser Summer 5.2	Fraser Spring 5.2	Fraser Spring 4.2	Fraser Summer 4.1	Fraser Fall	S Mainland Inlets	ECVI Fall	ECVI Summer	Puget Sound	NEVI	North/Central BC	Columbia River	US Juan de Fuca	Grand Total
Area 12	0	0	0	0	0	1	1	0	3	0	0	1	0	6
Area 13	0	0	0	1	7	39	138	7	14	6	0	0	0	212
Area 15	1	0	0	2	32	22	195	4	37	1	1	1	1	297
Area 16	0	0	0	0	11	3	20	0	15	0	0	0	0	49
Area 20	0	0	0	0	0	0	0	0	8	0	0	0	0	8
Total	1	0	0	3	50	65	354	11	77	7	1	2	1	572

DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2021 - OBSERVED SUPER LEGAL SAMPLES														
Pilot MSF Area/Creel Sub Area	Fraser Summer 5.2	Fraser Spring 5.2	Fraser Spring 4.2	Fraser Summer 4.1	Fraser Fall	S Mainland Inlets	ECVI Fall	ECVI Summer	Puget Sound	NEVI	North/Central BC	Columbia River	US Juan de Fuca	Grand Total
Area 12	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Area 13	1	0	0	0	8	23	9	0	3	5	0	0	0	49
Area 15	0	1	0	0	6	7	17	1	7	3	0	0	0	42
Area 16	0	0	0	0	1	1	0	0	0	0	0	0	0	2
Area 20	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	1	1	0	0	15	31	26	1	11	9	0	0	0	95

Super legal >80 cm, All Areas ("extra legal")

DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2021 - OBSERVED SUB LEGAL SAMPLES														
Pilot MSF Area/Creel Sub Area	Fraser Summer 5.2	Fraser Spring 5.2	Fraser Spring 4.2	Fraser Summer 4.1	Fraser Fall	S Mainland Inlets	ECVI Fall	ECVI Summer	Puget Sound	NEVI	North/Central BC	Columbia River	US Juan de Fuca	Grand Total
Area 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Area 13	0	0	0	0	0	13	10	0	2	0	0	0	0	25
Area 15	0	0	0	1	6	14	24	1	16	0	0	2	0	64
Area 16	0	0	0	0	4	1	1	0	2	0	0	0	0	8
Area 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	10	28	35	1	20	0	0	2	0	97

V2.0 based on monthly time intervals, rolled up by MSF

How many DNA samples do we have?

Pilot MSF Area/Creel Sub Area	DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2022 - OBSERVED LEGAL SAMPLES														Grand Total
	Fraser Summer 5.2	Fraser Spring 5.2	Fraser Spring 4.2	Fraser Summer 4.1	Fraser Fall	S Mainland Inlets	ECVI Fall	ECVI Summer	Puget Sound	NEVI	North/Central BC	Columbia River	US Juan de Fuca		
Area 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Area 13	0	0	0	0	24	19	71	1	13	0	0	0	0	0	
Area 15	0	0	0	1	34	23	96	0	15	0	0	0	0	0	
Area 16	0	0	0	0	6	3	6	0	15	0	0	0	0	0	
Area 20	0	0	1	1	0	0	0	0	11	0	0	1	0	0	
Total	0	0	1	2	64	45	173	1	54	0	0	1	0	341	

Pilot MSF Area/Creel Sub Area	DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2022 - OBSERVED SUPER LEGAL SAMPLES														Grand Total
	Fraser Summer 5.2	Fraser Spring 5.2	Fraser Spring 4.2	Fraser Summer 4.1	Fraser Fall	S Mainland Inlets	ECVI Fall	ECVI Summer	Puget Sound	NEVI	North/Central BC	Columbia River	US Juan de Fuca		
Area 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Area 13	0	0	0	0	2	11	8	0	3	1	0	0	0	25	
Area 15	0	0	0	0	7	6	9	0	2	0	0	0	0	24	
Area 16	0	0	0	0	0	2	1	0	2	0	1	0	0	6	
Area 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	9	19	18	0	7	1	1	0	0	55	

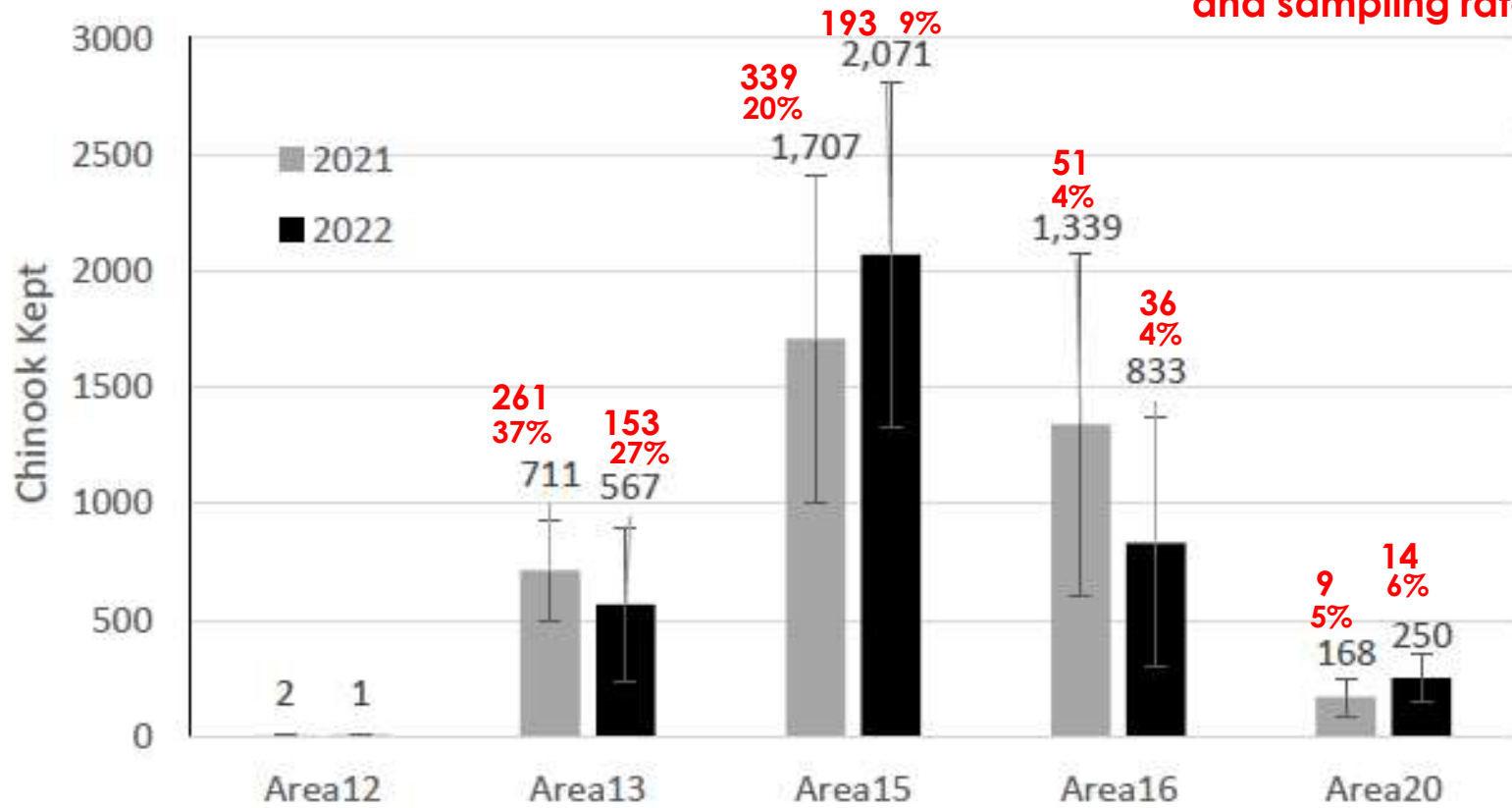
Pilot MSF Area/Creel Sub Area	DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2022 - OBSERVED SUB LEGAL SAMPLES														Grand Total
	Fraser Summer 5.2	Fraser Spring 5.2	Fraser Spring 4.2	Fraser Summer 4.1	Fraser Fall	S Mainland Inlets	ECVI Fall	ECVI Summer	Puget Sound	NEVI	North/Central BC	Columbia River	US Juan de Fuca		
Area 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Area 13	0	0	0	0	1	4	28	0	3	0	0	0	0	36	
Area 15	0	0	0	0	4	12	40	1	7	2	0	0	0	66	
Area 16	0	0	0	0	0	1	2	0	1	0	0	0	0	4	
Area 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	5	17	70	1	11	2	0	0	0	106	

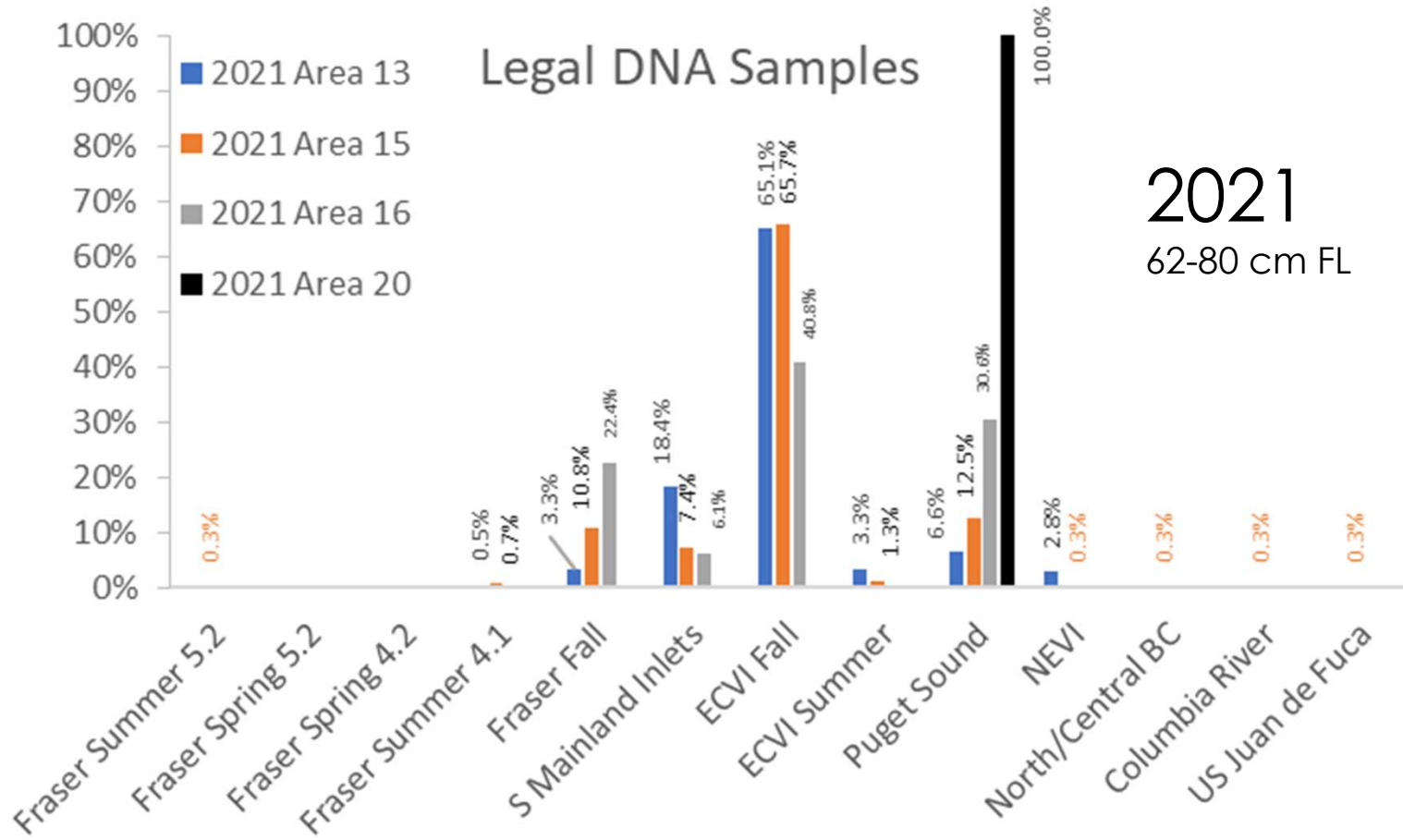
2022
n=502

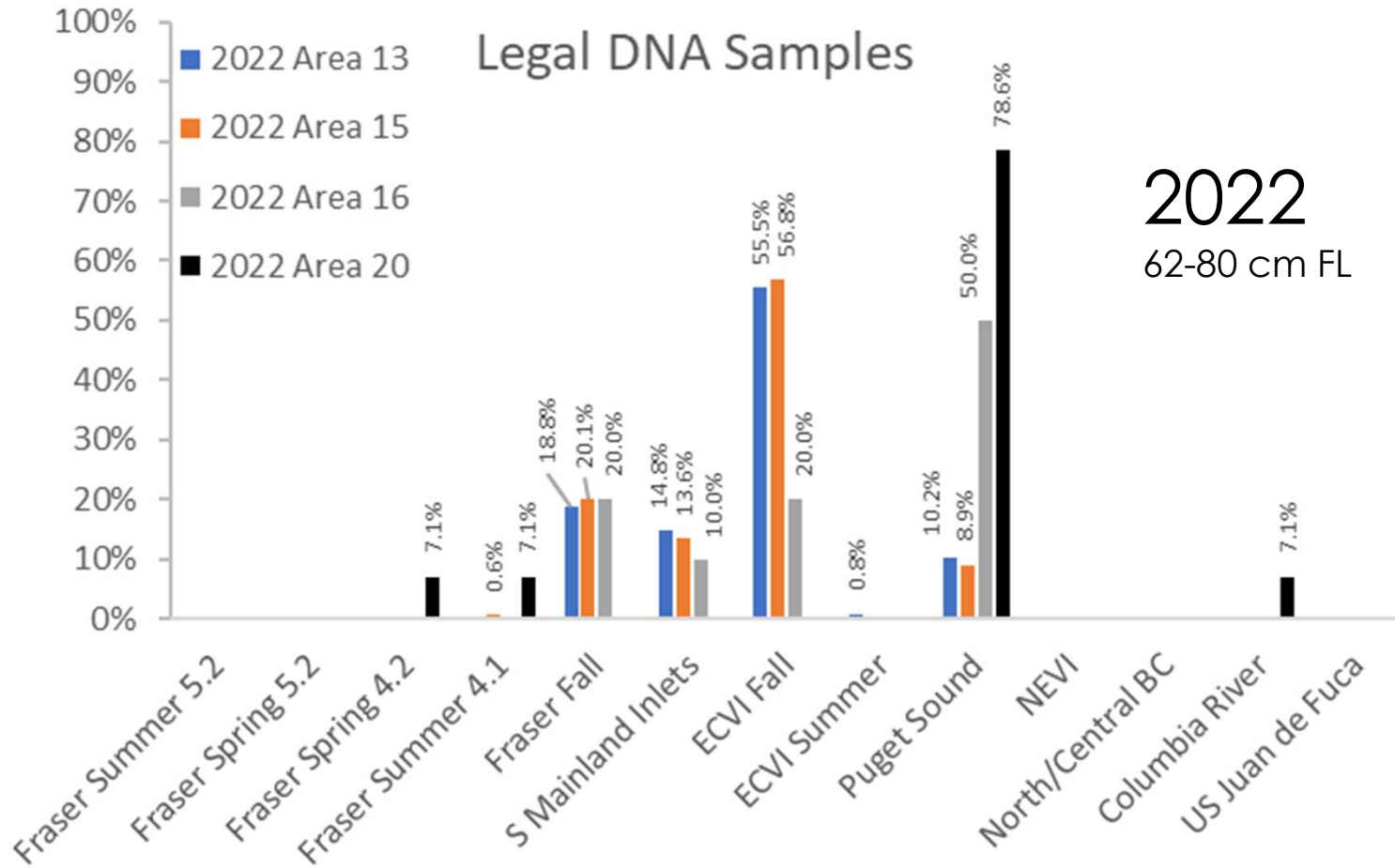


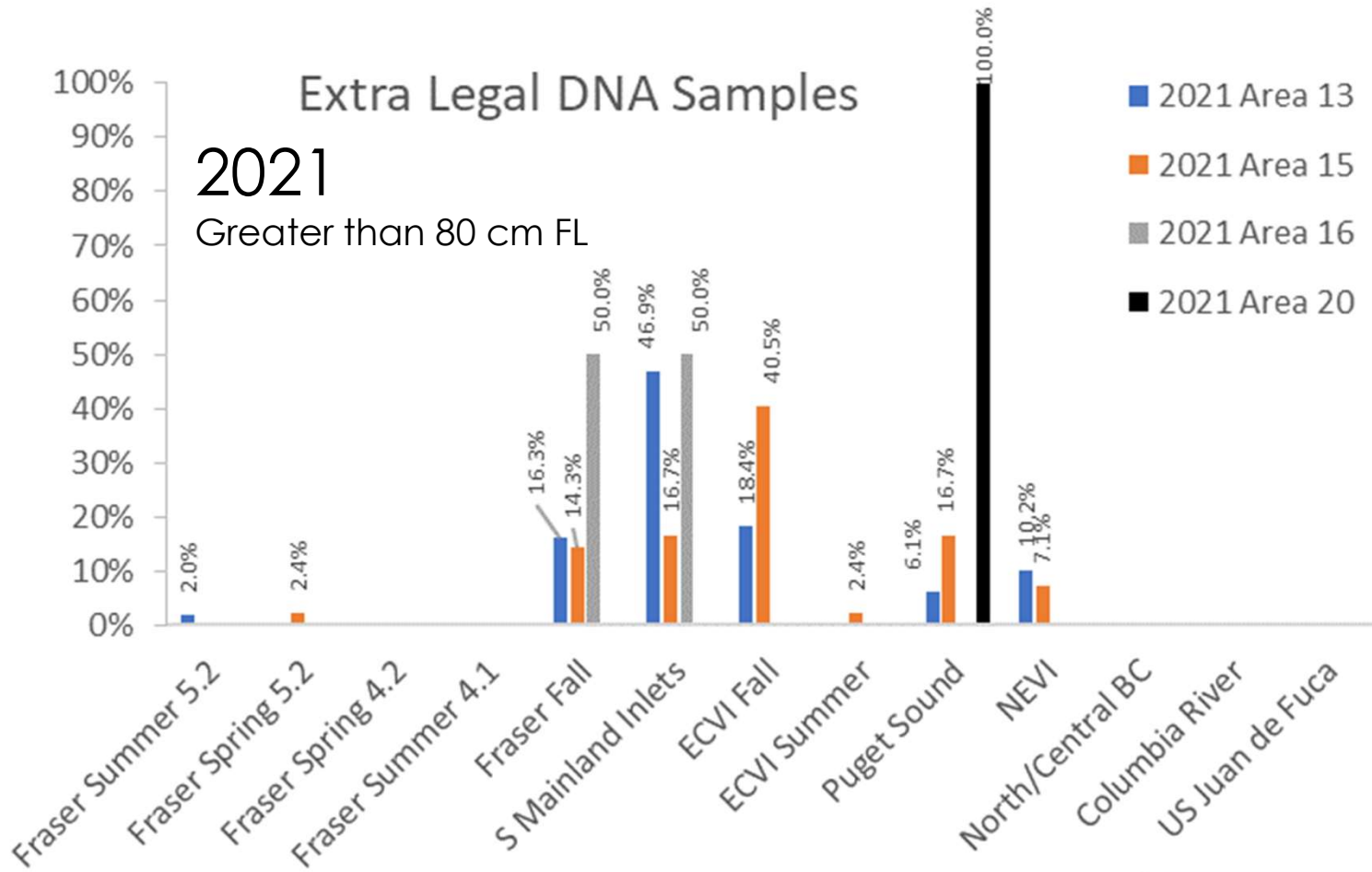
MSF Catch – 2021 and 2022

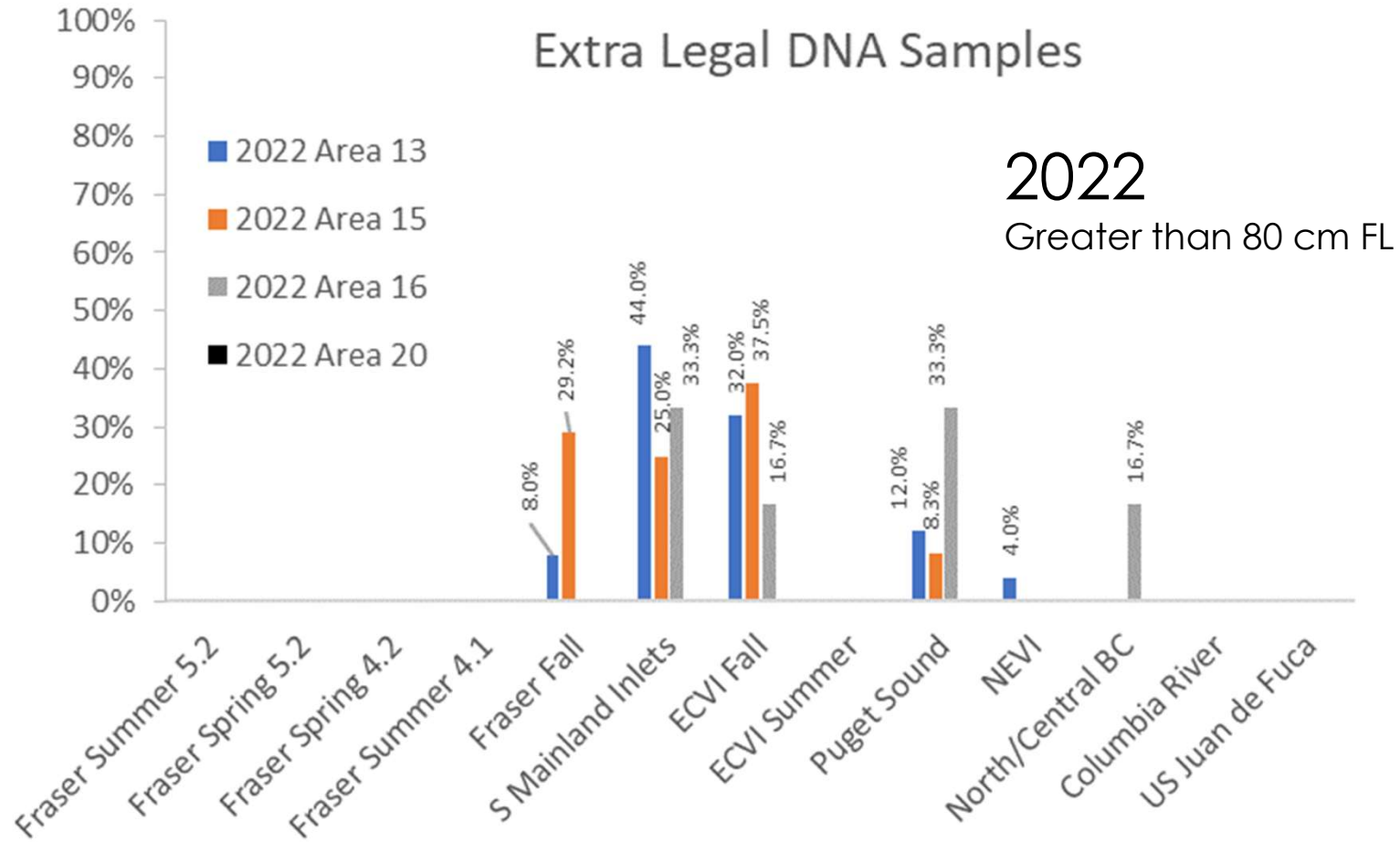
Legal (>62 cm) DNA samples
and sampling rate (%) in red













Fraser SOC – Which Stocks?

Area 13/15

COLLECTION_DATE	AREA	SUBAREA	DISPOSITION	ADIPOSE_FIN_CLIPPED	LENGTH_MM	RESOLVED_STOCK_REGION	DNA_RESULTS_STOCK_1	PROB_1
6/9/2021	13	13-21	Released	N	910	Fraser Summer 5.2	BLUE_CREEK	100
7/8/2021	15	15E	Kept	N	770	Fraser Summer 5.2	PITT_RIVER-UPPER	0.999989
44358	15	15-5	Released	N	900	Fraser Spring 5.2	BIRKENHEAD_RIVER	92.36107

Area 20

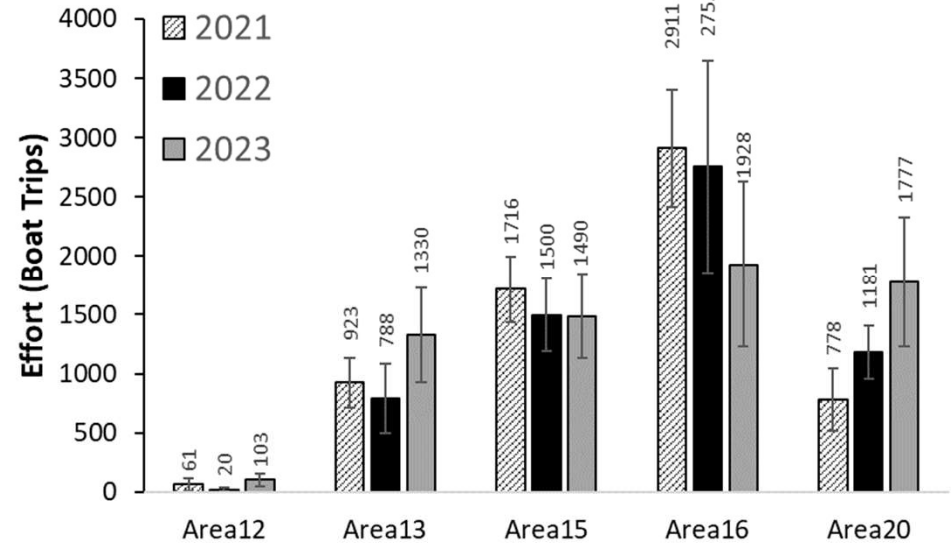
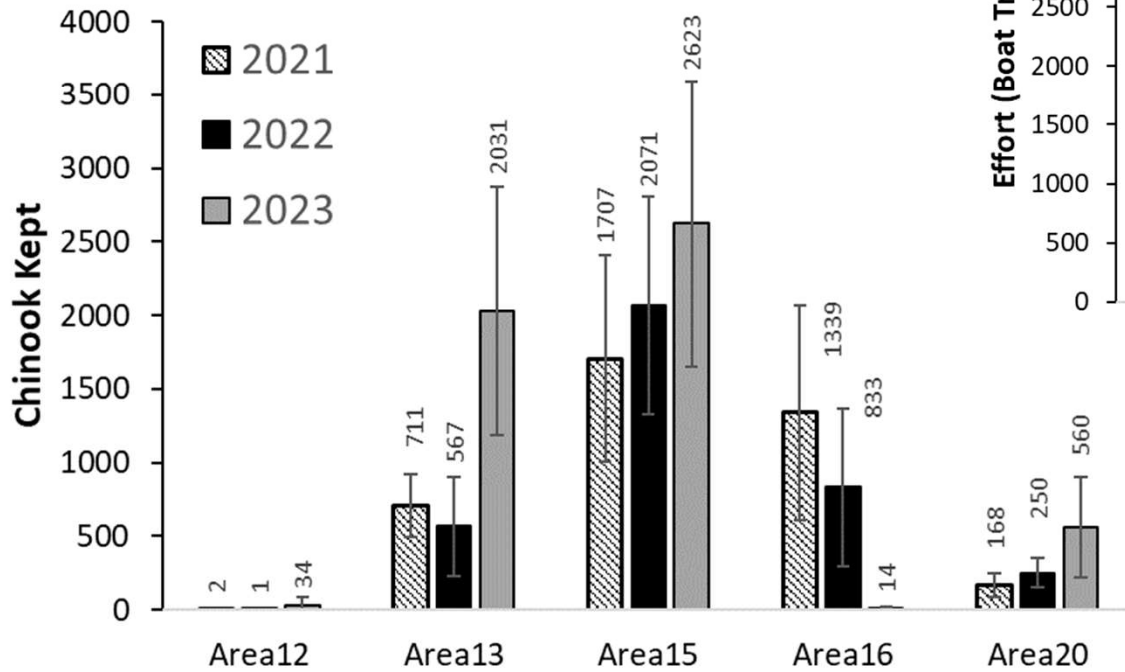
COLLECTION_DATE	AREA	SUBAREA	DISPOSITION	ADIPOSE_FIN_CLIPPED	LENGTH_MM	RESOLVED_STOCK_REGION	DNA_RESULTS_STOCK_1	PROB_1
6/25/2022	20	20DB	Kept	Y	690	Fraser Spring 4.2	NICOLA_RIVER	1



2023 Creel Results

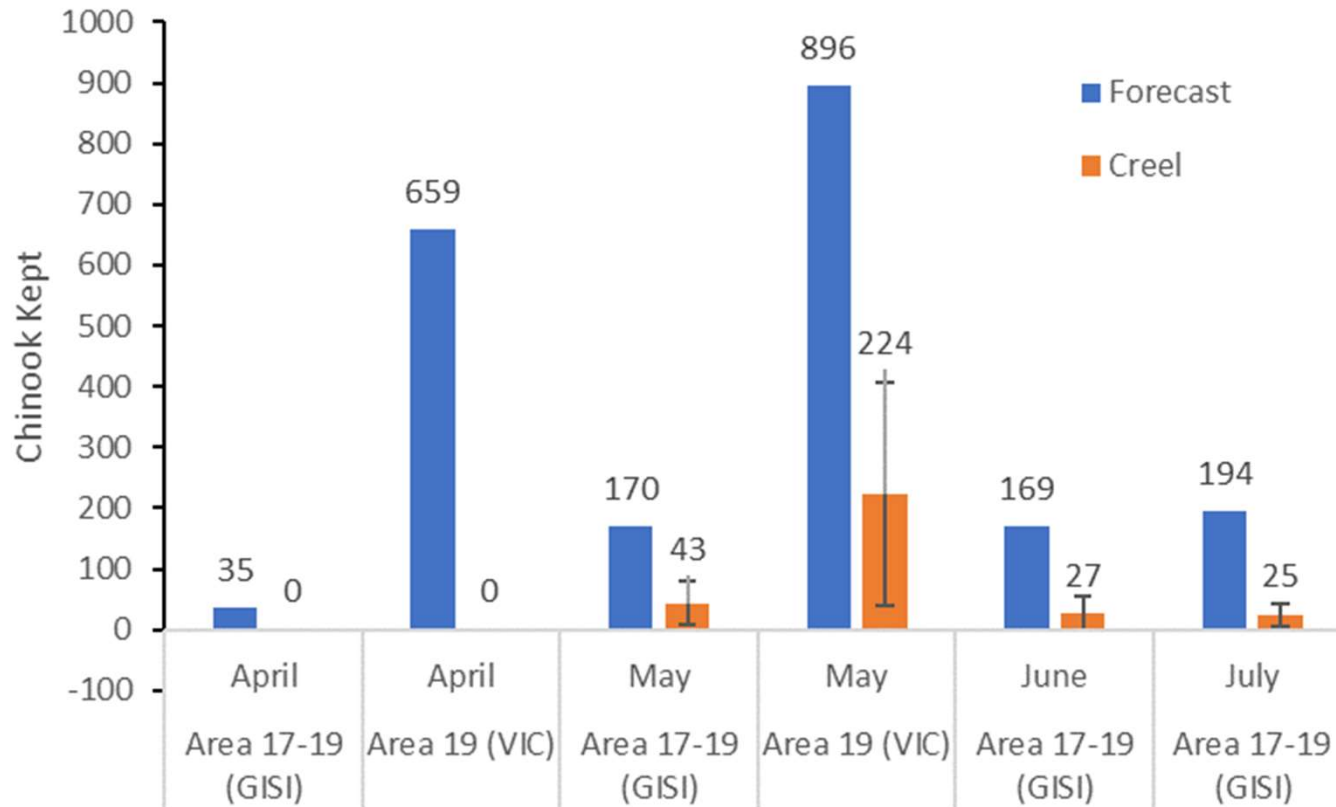


MSF Areas Preliminary 2023





NEW MSF Areas – Preliminary 2023





2023 Creel Bulletin

Table 5: Final recreational Kept Chinook catch estimates (number of fish) by Pacific Fishery Management Area (PFMA), 2023

PFMA	January		February		March		April		May		June		July		August		September		October		November		December		Total	5 Yr. Avg	
	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE	Est.	%SE			Est.
Area 11							124 ¹	(28%)	1365	(29%)	1713	(19%)	1528	(39%)	93 ¹	(86%)									4813	(16%)	30
Area 111									12 ¹	(51%)	235	(40%)	502	(45%)	5	(184%)									754	(33%)	16
Area 12									20 ¹	(62%)	266	(43%)	1430	(26%)	1770	(13%)	222 ¹	(51%)							3698	(12%)	42
Area 13									153	(48%)	1749	(26%)	5440	(16%)	6447	(6%)	3324	(16%)			321	(34%)			17434	(7%)	19
Area 14											1	(0%)	3778	(19%)	5533	(11%)	6341	(17%)	448	(25%)					16099	(9%)	1232
Area 15									426	(26%)	1729	(20%)	1727	(16%)	820	(15%)	1267	(19%)							5969	(9%)	5051
Area 16									4	(0%)	2	(0%)	487	(48%)	446	(24%)	167	(54%)							1106	(36%)	3428
Area 17									20	(68%)	16	(113%)	984	(44%)	1538	(20%)	462	(23%)							3020	(19%)	3463
Area 18									105	(56%)	5	(104%)	18	(101%)	283	(37%)	189	(32%)							600	(33%)	498
Area 19 (GS)					136	(48%)			45	(71%)	4	(97%)			42	(57%)	45	(67%)	38	(36%)				310	(27%)	328	
Area 19 (JDF)					517	(23%)			178	(41%)			12	(111%)	2599	(9%)	862	(24%)	72	(45%)				4240	(11%)	2328	
Area 20 (East)					439	(17%)	123	(51%)	25	(77%)	45	(63%)	462	(34%)	9476	(7%)	3494	(26%)	358	(40%)					14422	(8%)	11647
Area 20 (West)							2 ¹	(89%)	19 ¹	(34%)			555	(21%)	6184	(9%)	331	(29%)							7091	(8%)	6608
Area 21							26 ¹	(77%)	196 ¹	(21%)	298	(28%)	270	(28%)	303 ¹	(29%)	3 ¹	(69%)							1084	(14%)	1431
Area 121									14 ¹	(44%)			515	(28%)	849	(28%)									1378	(18%)	4560
Area 23 (Alberni Canal)							46 ¹	(61%)	121 ¹	(28%)			31	(67%)	6944	(14%)	767	(39%)							7809	(13%)	6269
Area 23 (Barkley)							127 ¹	(28%)	659 ¹	(13%)	3966	(14%)	2648	(10%)	13544	(8%)	3505	(20%)							24449	(6%)	16771
Area 123							16 ¹	(41%)	147 ¹	(23%)	333	(18%)	3888	(12%)	8263	(7%)	1521	(26%)							14168	(6%)	14507
Area 24							68 ¹	(36%)	72 ¹	(39%)	485	(44%)	417	(21%)	5	(104%)	21	(53%)							1068	(22%)	493
Area 124							33 ¹	(62%)	12 ¹	(38%)	517	(22%)	2531	(16%)	2357	(14%)	161	(40%)							5611	(10%)	3726
Area 25							7 ¹	(60%)	113 ¹	(36%)	618	(22%)	3106	(15%)	5958	(12%)									9800	(9%)	10940
Area 125							3 ¹	(54%)	7 ¹	(55%)	2946	(27%)	1799	(17%)	820	(34%)	37 ¹	(25%)							5112	(16%)	2756
Area 26											754 ²	(%)	1554 ²	(%)	1827 ²	(%)	19 ¹	(41%)							4164	(41%)	5179
Area 126											2 ¹	(%)	897 ²	(%)	1532 ²	(%)	2 ¹	(92%)							2433	(332%)	1272
Area 27							134 ¹	(40%)	233 ¹	(25%)	1423	(26%)	2128	(15%)	514	(23%)	554 ¹	(25%)							4988	(11%)	3045
Area 127											116	(56%)	1493	(29%)	2051	(20%)	79 ¹	(57%)							3739	(16%)	1289
Area 28															1791	(29%)	1979	(32%)	204	(34%)					3974	(23%)	1078
Area 29							9	(106%)	1	(0%)	271	(38%)	749	(28%)	8021	(24%)	633	(64%)							9084	(21%)	6163
Juan de Fuca					956	(15%)	123	(51%)	203	(37%)	45	(63%)	474	(34%)	12075	(6%)	4356	(21%)	430	(34%)					18662	(7%)	13975
North Island							156	(24%)	1848	(23%)	3645	(15%)	3303	(19%)	315	(44%)									9265	(10%)	8978
Strait of Georgia					136	(286%)			762	(20%)	3507	(16%)	12705	(10%)	17649	(6%)	21795	(11%)	1642	(27%)					58196	(5%)	51887
WCVI							462	(17%)	1583	(8%)	11154	(10%)	21832	(5%)	50851	(4%)	7000	(13%)							92882	(3%)	78543
All Areas					1092	(39%)	565	(17%)	2704	(8%)	16552	(8%)	38856	(5%)	83878	(3%)	33486	(8%)	2072	(23%)					179005	(2%)	153380

	Total Est.	%SE	5 Yr. Avg Est.
Juan de Fuca	18662	(7%)	13975
North Island	9265	(10%)	8978
Strait of Georgia	58196	(5%)	51887
WCVI	92882	(3%)	78543
All Areas	179005	(2%)	153380

