

Chinook Mark-Selective Fishery Data Review

FSMC Forum
MSF monitoring update

March 6, 2024



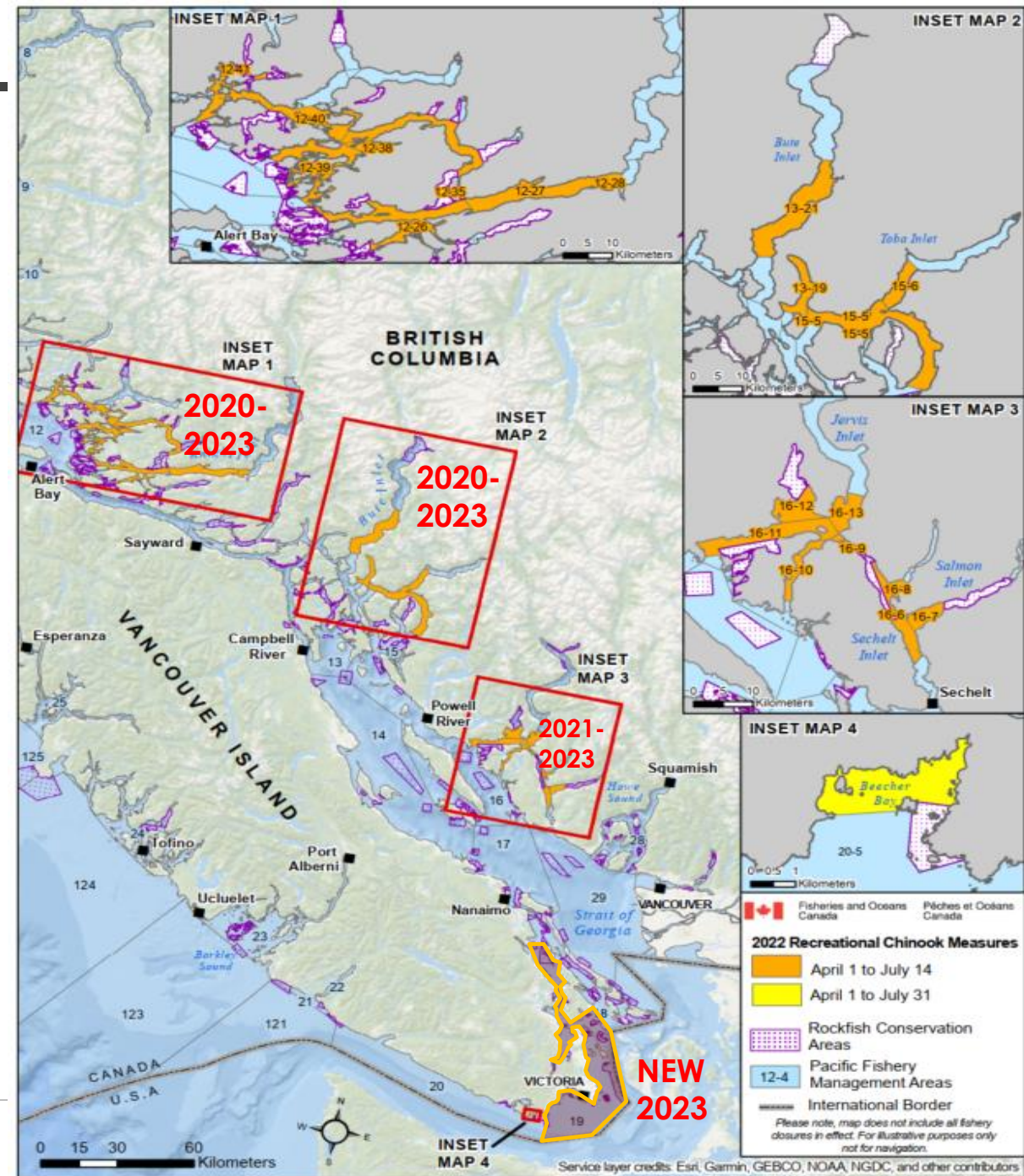


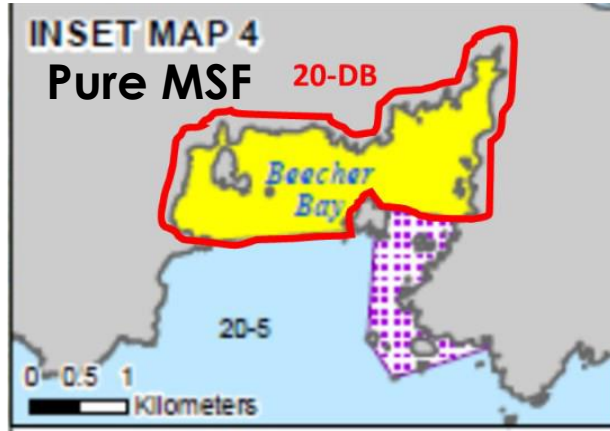
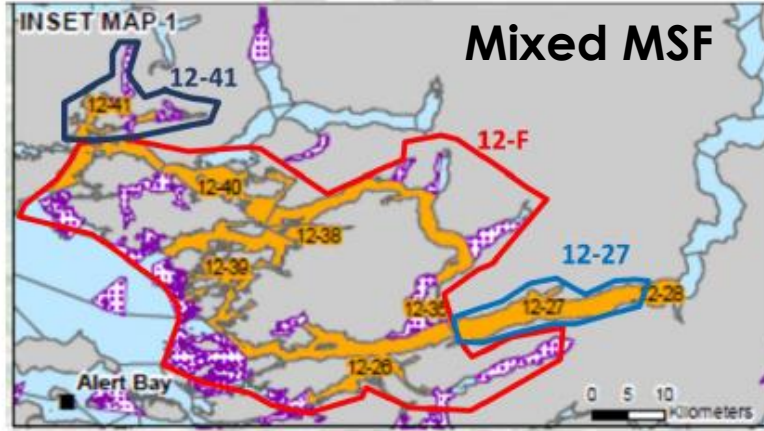
Summary of MSF Times and Areas 2021-2023



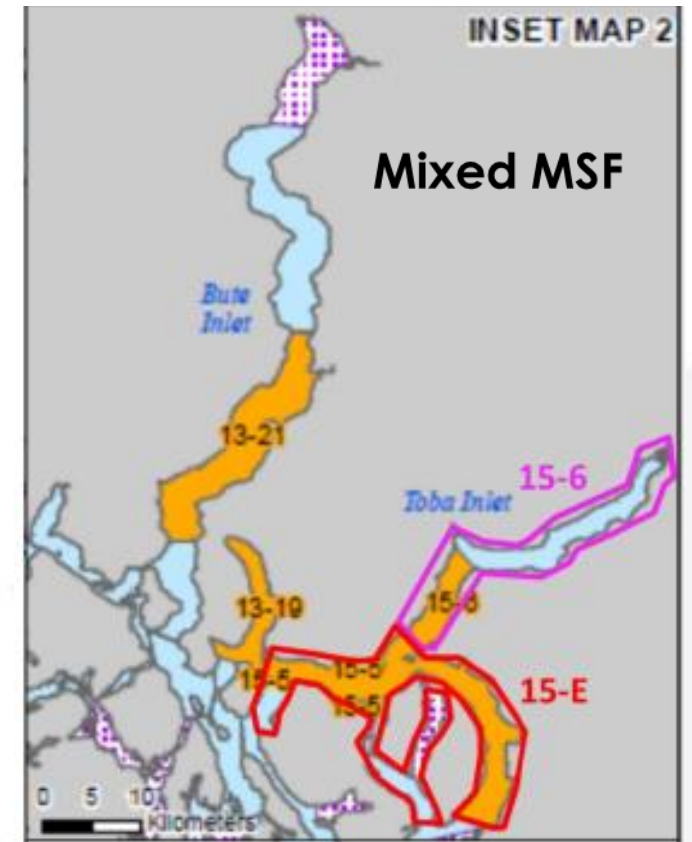
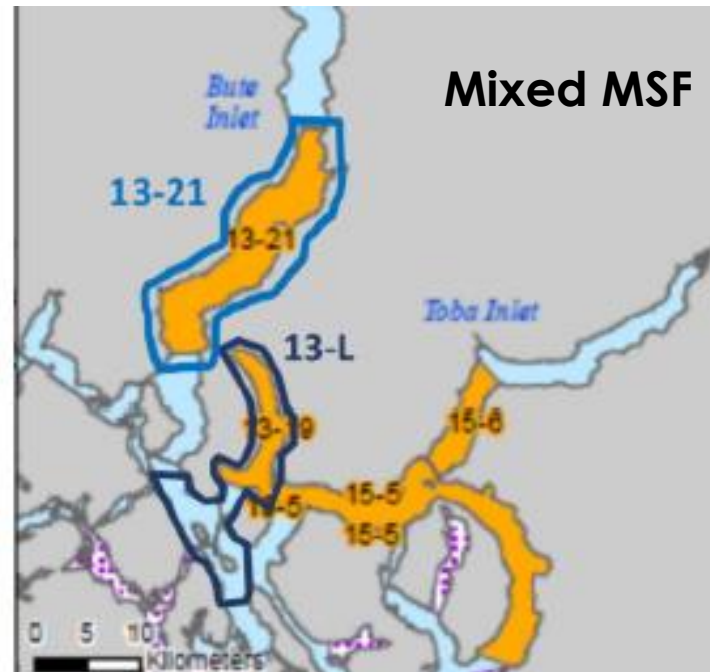
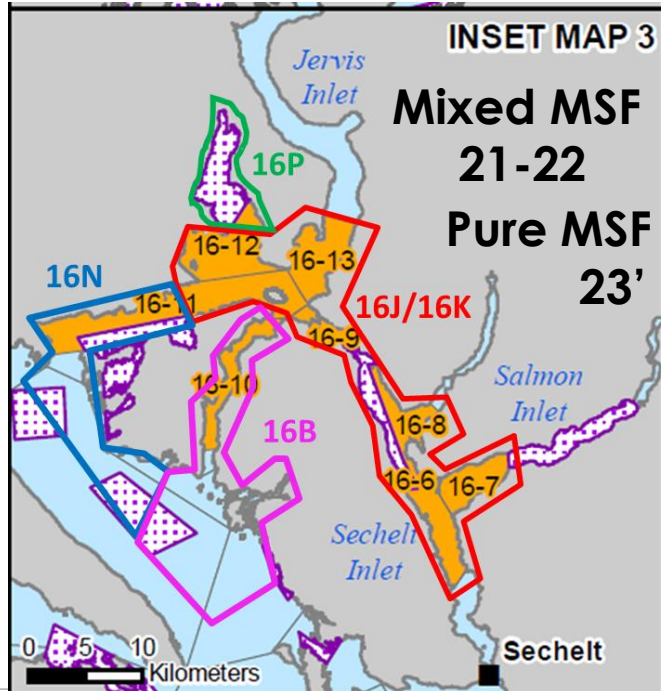
Approved Recreational Chinook MSFs

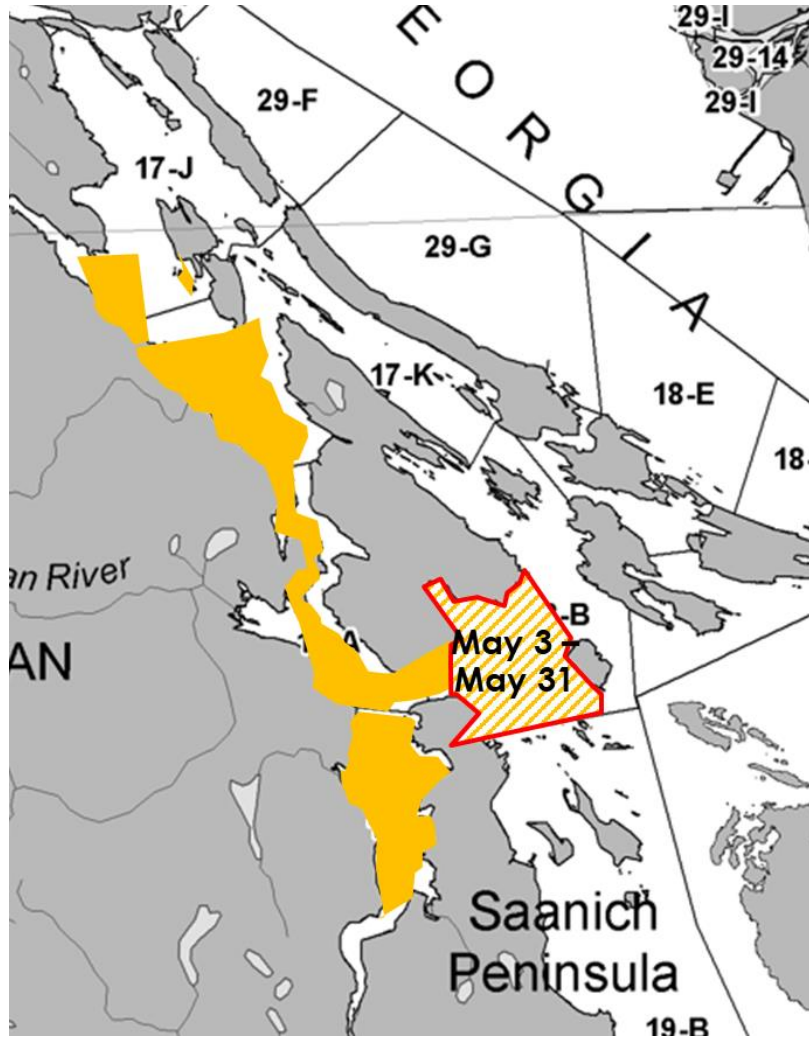
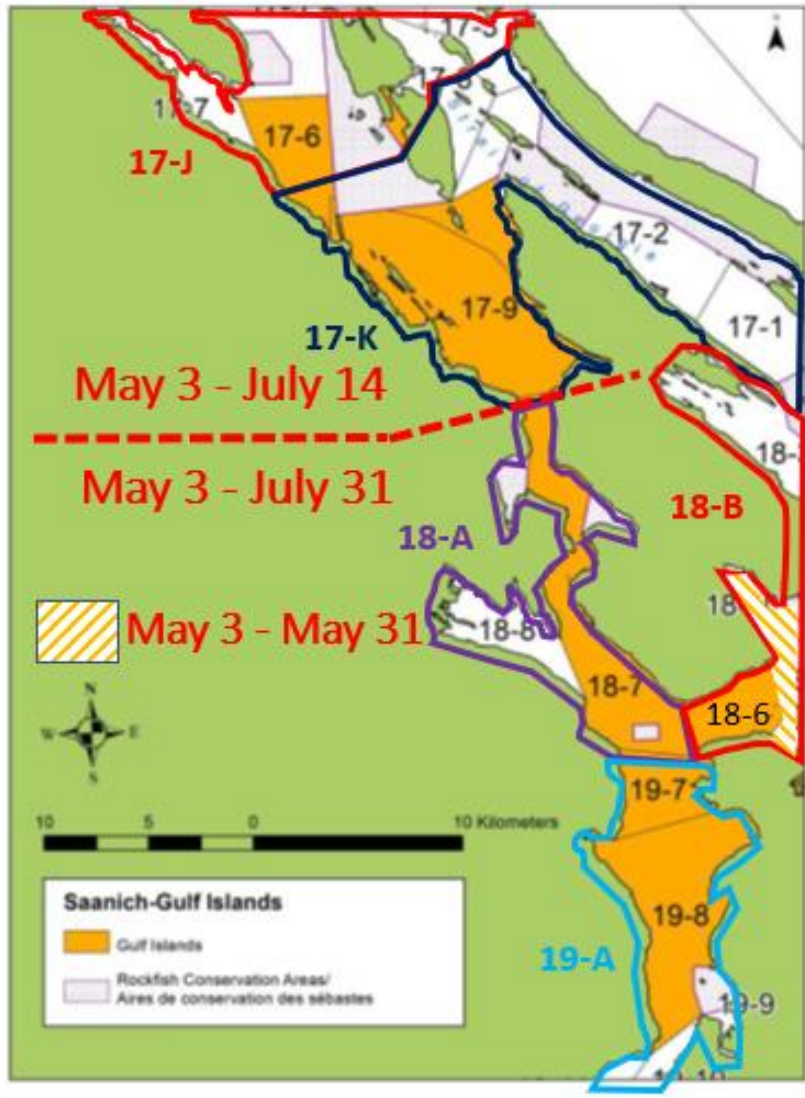
- Four Chinook MSF pilots have been approved since broad Chinook closures were implemented in 2019 to protect Fraser River Chinook stocks of concern.
 - **July 1, 2020** – All the MSF below opened, except Area 16
 - **May 14, 2021** – All the MSF reopened, Area 16 was added
 - Reduced fishing area in Area 12
 - Expanded fishing area in Area 15
 - **April 1, 2022** – All the previously approved MSF reopened
 - **April 1, 2023** – A16 changed to pure MSF, NEW MSF in areas 17, 18, 19
- **Portions of Areas 12, 13/15 (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 Areas 16 (Sechelt) and 20 (Beecher Bay)** – One (1) Chinook per day, hatchery-marked only from April 1 to July 14 (A16) or July 31 (A20).





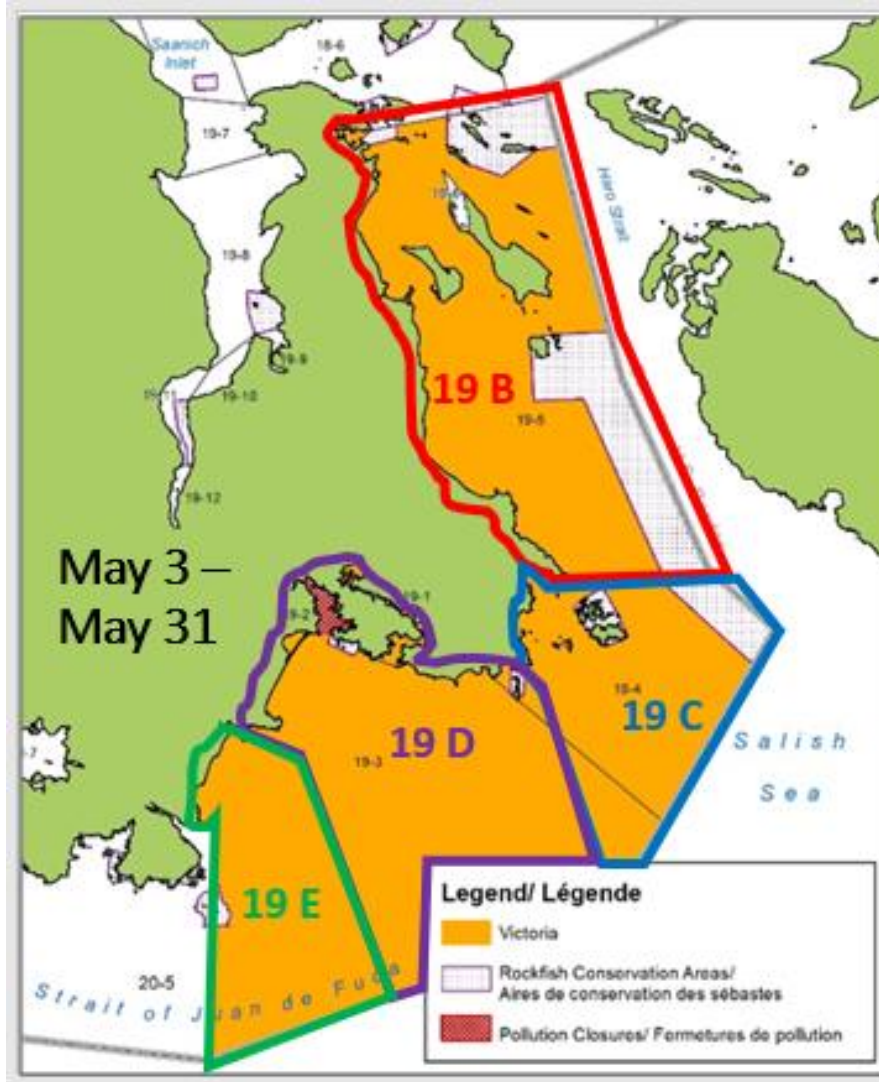
MSF Maps vs Creel Areas 2020-2023





NEW in 2023

Gulf Islands
Saanich Inlet
Pure MSF



NEW in 2023

Area 19 – Victoria
Pure MSF May 3-31



2021/2022 Monitoring Results

DNA based Stock Composition



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

Pilot MSF Area/Creel Sub Area	DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2021 - OBSERVED LEGAL SAMPLES													
	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

Pilot MSF Area/Creel Sub Area	DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2021 - OBSERVED SUPER LEGAL SAMPLES													
	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

Pilot MSF Area/Creel Sub Area	DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA 2021 - OBSERVED SUB LEGAL SAMPLES													
	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

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

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													
	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	24	19	71	1	13	0	0	0	0	128
Area 15	0	0	0	1	34	23	96	0	15	0	0	0	0	169
Area 16	0	0	0	0	6	3	6	0	15	0	0	0	0	30
Area 20	0	0	1	1	0	0	0	0	11	0	0	1	0	14
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													
	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	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													
	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	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



2021 – DNA by size by creel sub area by month

JUNE 1-30 Pilot MSF Area/Creel Sub Area	DNA STOCK ASSIGNMENTS BY MSF PILOT PFMA AND CREEL SUB AREA - JUNE 2021 - OBSERVED LEGAL SAMPLES													
	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														
12-27							1		3			1		5
12F							1		1					2
									2			1		3
Area 13					5	26	100	6	8	4				149
13-21					4	26	93	4	7	4				138
13L					1		7	2	1					11
Area 15				2	24	15	150	4	30		1	1	1	228
15-5				2			16		3					21
15-6					5	4	19	2	6				1	37
15E					19	11	115	2	21		1	1		170
Area 16					3	1	7		5					16
16B									1					1
16J					2		3		3					8
16K					1	1	4		1					7
16N														
Grand Total	0	0	0	2	32	42	258	10	46	4	1	2	1	398

Total for each PFMA/month used for impact estimates

Example: Area 15 June 2021

Creel **sub areas** catch presented but **not used** in impact calculations.

2021	12.27	12.41	12F	13.21	13L	15.6 + 15E	16B	16J	16K	16N	20DB
April 1-30											
May 1-31				8 +/- 0	17 +/- 0						2.1 +/- 2.8
June 1-30			2 +/- 0	273.3 +/- 69.3	199.4 +/- 58.6	128.6 +/- 67.6	124.2 +/- 88.7	146.7 +/- 103.7	121.5 +/- 88.1	99.1 +/- 73.9	8.7 +/- 10.5
July 1-14				109.3 +/- 40	104.4 +/- 45.7	53.9 +/- 32.1	161.6 +/- 84.4	375.8 +/- 154.8	154 +/- 70.2	156.4 +/- 69.2	
July 1-31											157.2 +/- 66.8
TOTAL			2 +/- 0	390.6 +/- 109.4	320.7 +/- 104.3	182.4 +/- 99.7	285.8 +/- 173.1	522.5 +/- 258.5	275.6 +/- 158.3	255.5 +/- 143	167.9 +/- 80.1

Total MSF kept catch by area used in impact calculations.

2021	Area12	Area13	Area15	Area16	Area20
April 1-30					
May 1-31		25 +/- 0			173.1 +/- 103.6
June 1-30	2 +/- 0	472.7 +/- 127.9	1263.8 +/- 487.6	491.5 +/- 354.4	99.7 +/- 31
July 1-14		213.7 +/- 85.8	442.8 +/- 212.8	847.8 +/- 378.5	
July 1-31					505.3 +/- 128.6
TOTAL	2 +/- 0	711.4 +/- 213.7	1706.6 +/- 700.4	1339.3 +/- 732.9	167.9 +/- 80.1

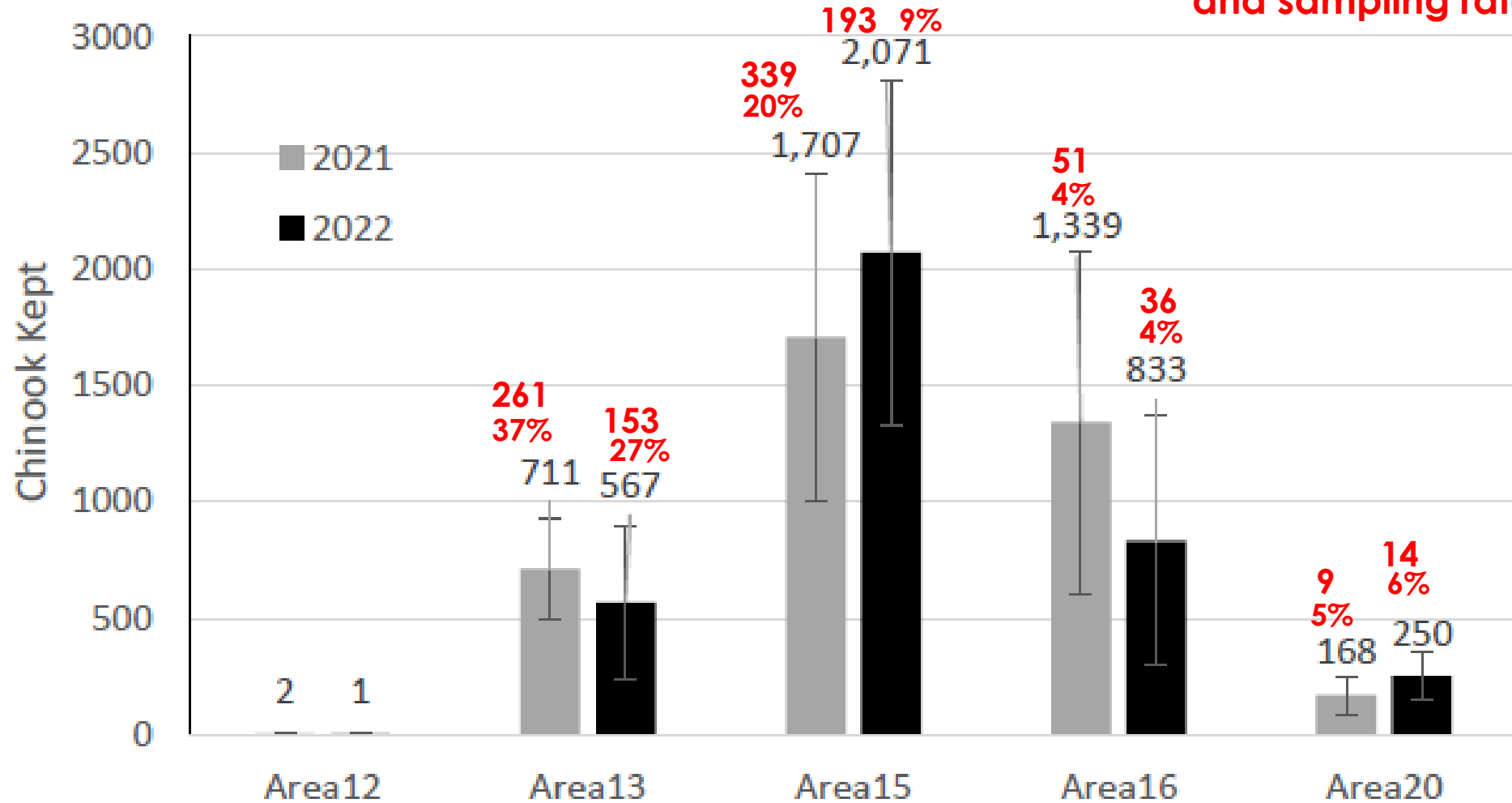
228 legal and 34 extra legal samples

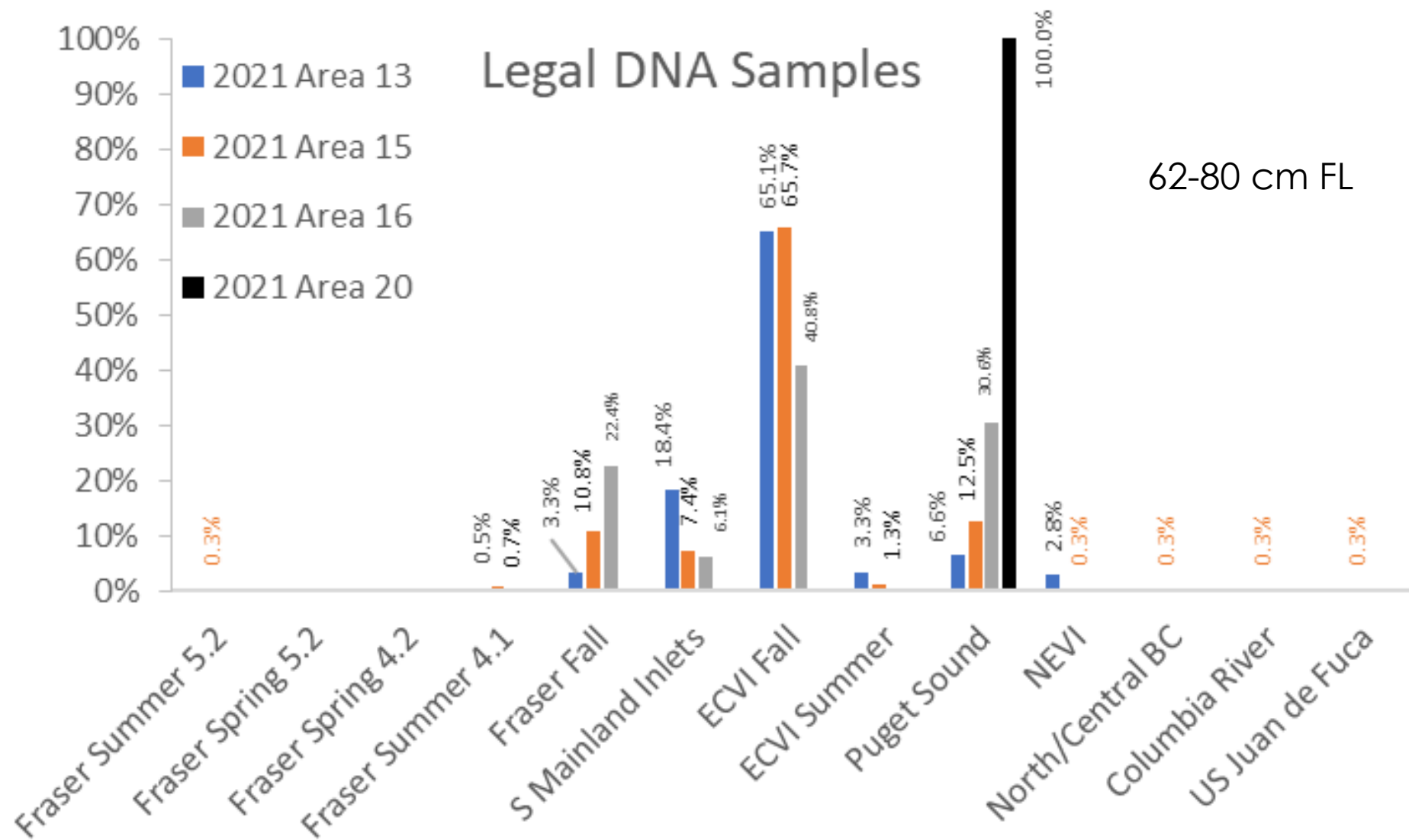
Sample ratio = 20.7%

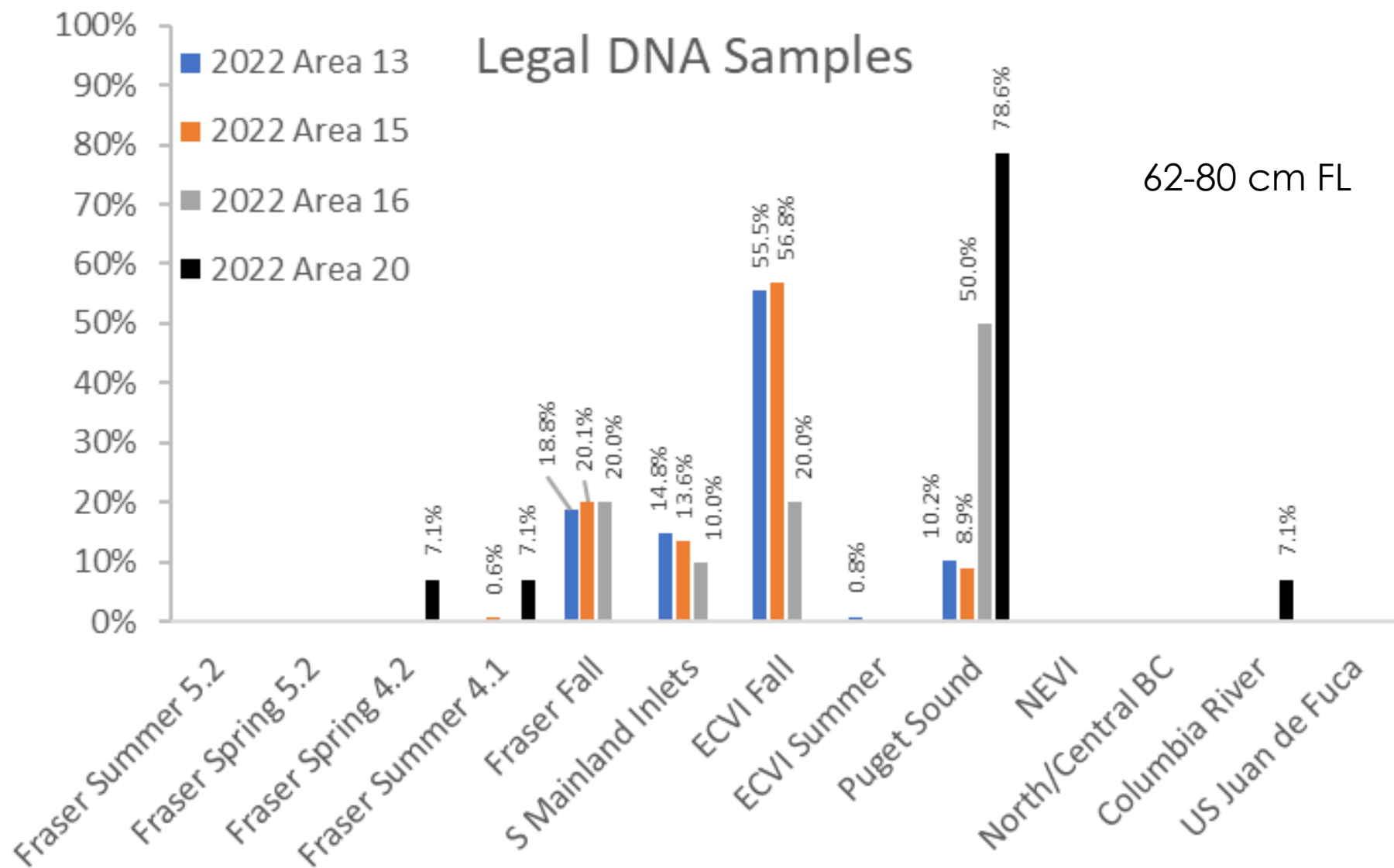


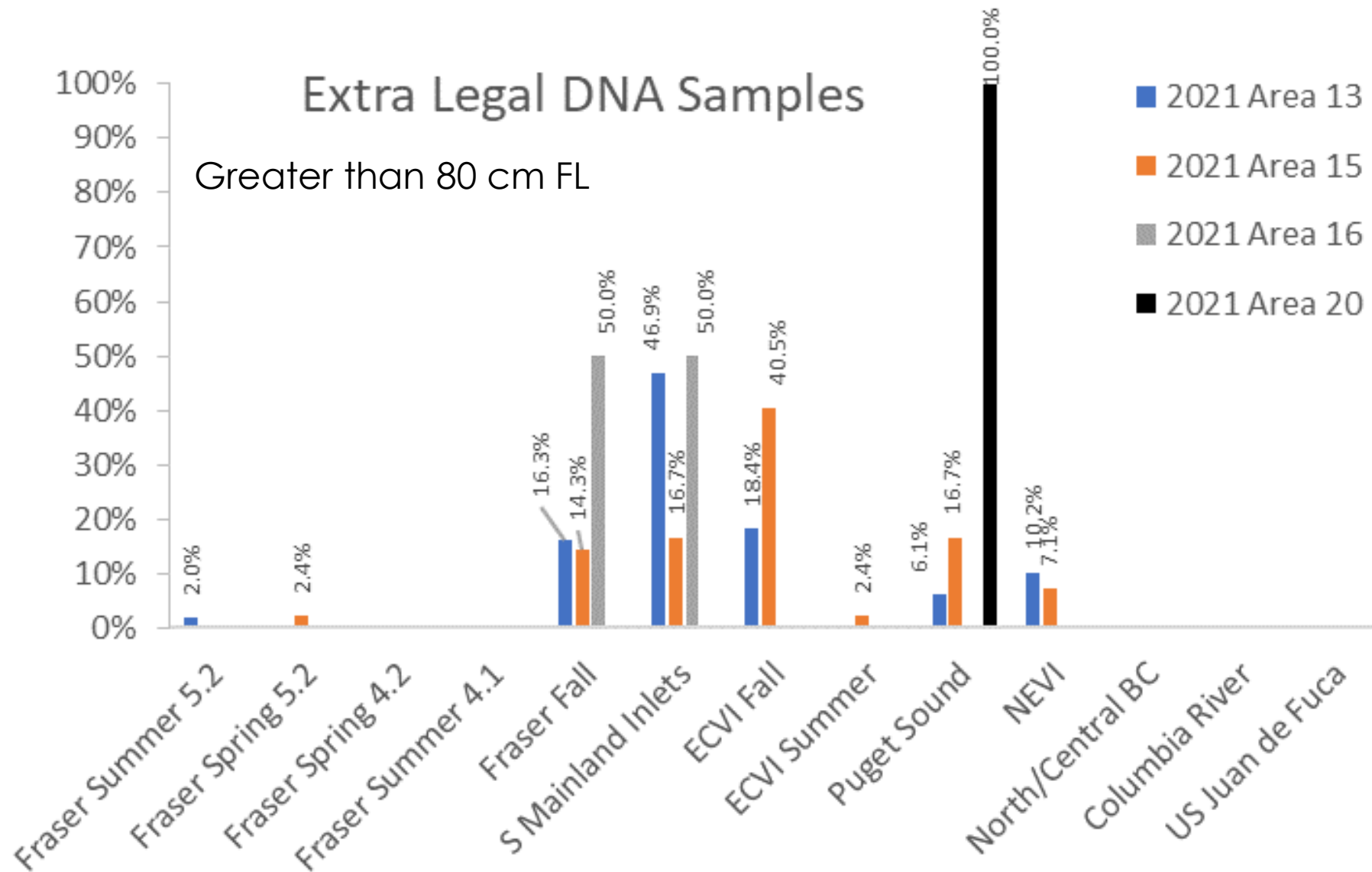
MSF Catch – 2021 and 2022

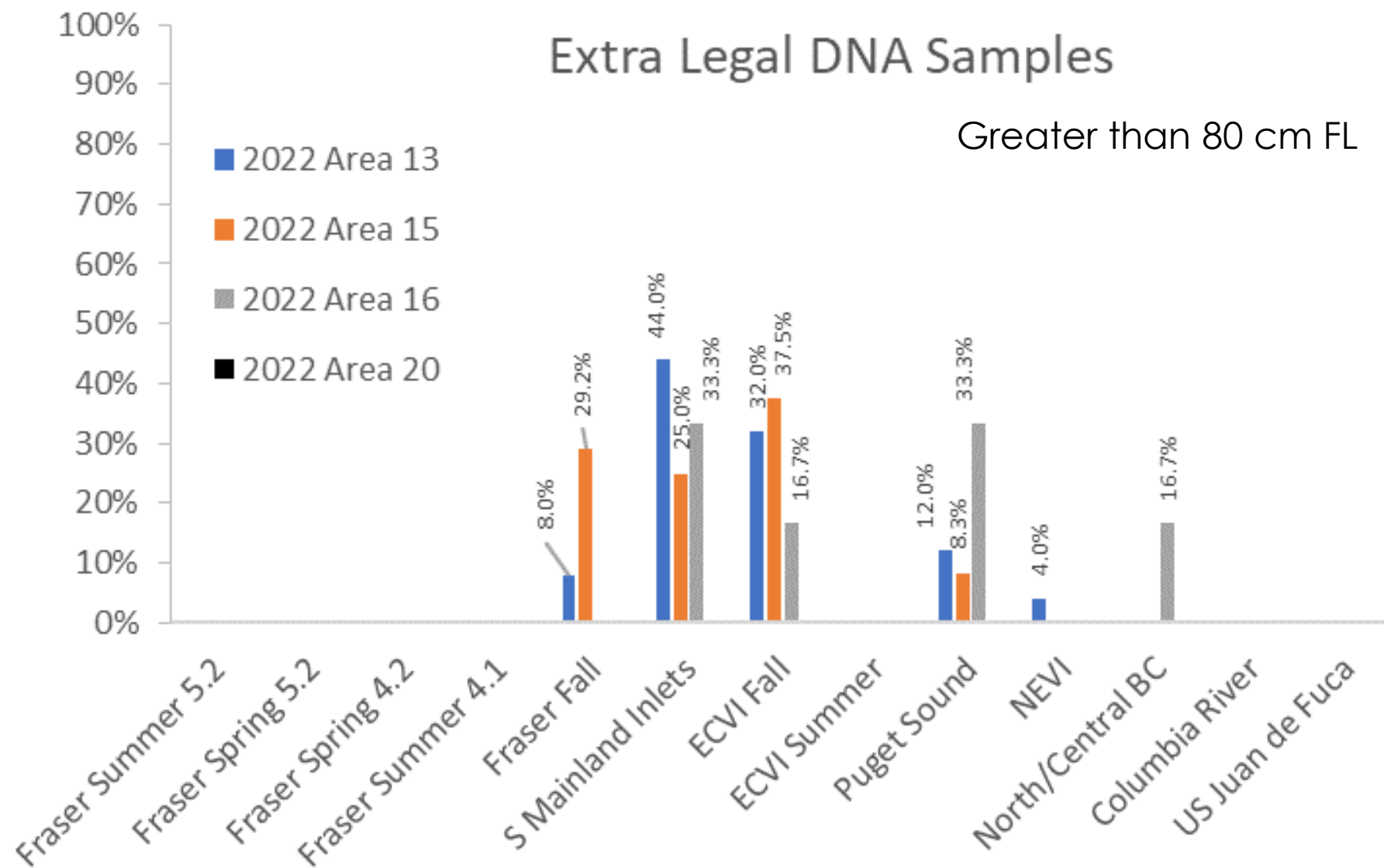
Legal (>62 cm) DNA samples
and sampling rate (%) in red













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

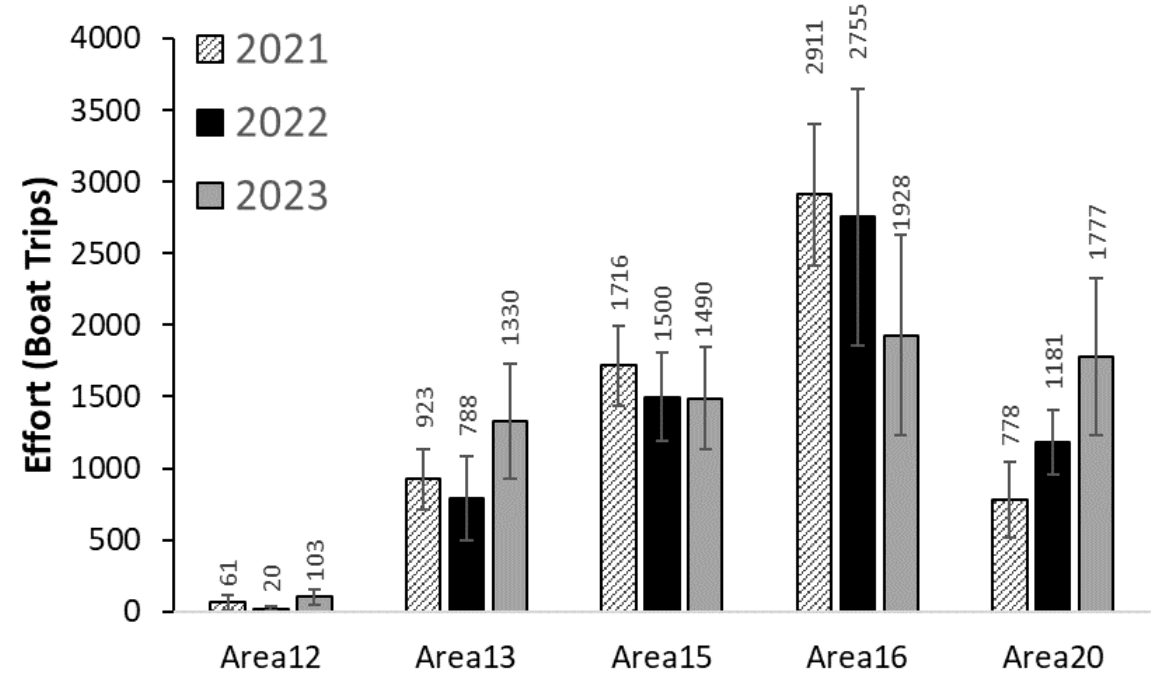
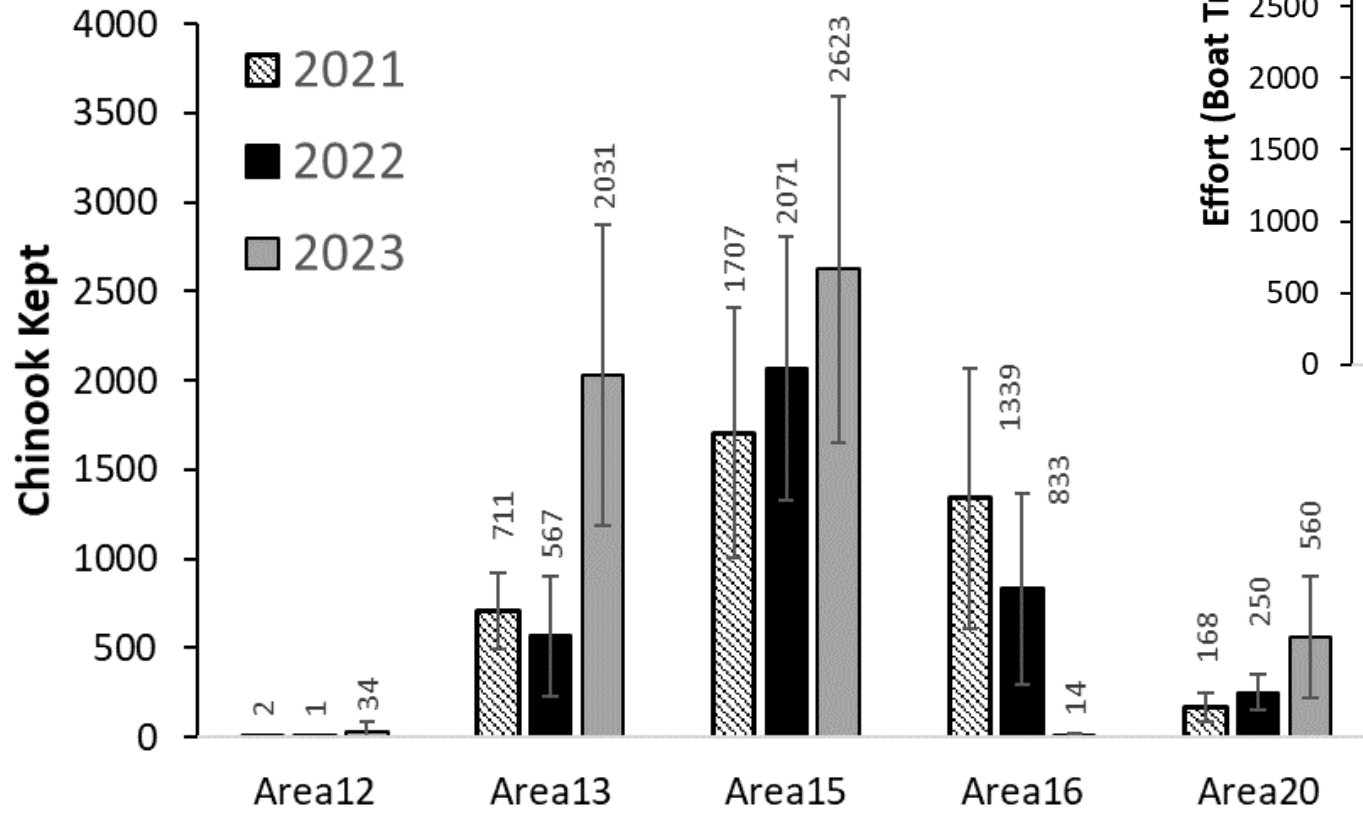
COLLECTION_DATE	AREA	SUBAREA	DISPOSITION	ADIPOSE_FIN_CLIPPED	LENGTH_MM	RESOLVED_STOCK_REGION	DNA_RESULTS_STOCK_1	PROB_1
6/25/2022	20	20DB	Kept	Y	690	Fraser Spring 4.2	NICOLA_RIVER	1



2023 Creel Results

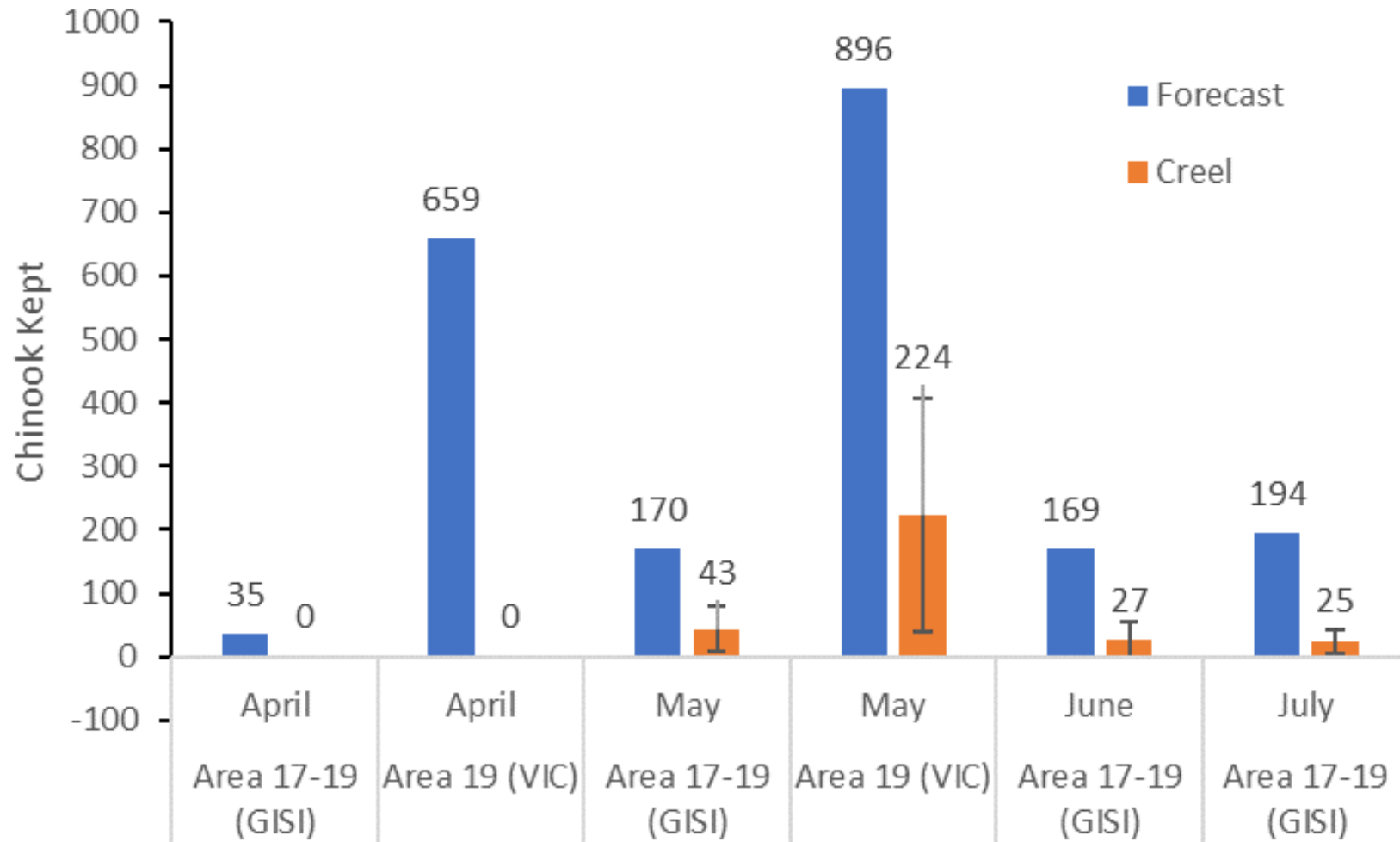


MSF Areas Preliminary 2023





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%)	1355	(29%)	1713	(19%)	1528	(39%)	93 ¹	(66%)							4813	(16%)	30
Area 111									12 ¹	(51%)	235	(40%)	502	(45%)	5	(184%)									754	(33%)	16
Area 12									20 ¹	(62%)	256	(43%)	1430	(25%)	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%)		446	(25%)				18099	(9%)	12232
Area 15									426	(26%)	1729	(20%)	1727	(16%)	820	(18%)	1267	(19%)							5969	(9%)	5051
Area 16									4	(0%)	2	(0%)	487	(48%)	446	(24%)	167	(54%)							1106	(35%)	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%)	486
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	(85%)	19 ¹	(34%)			555	(21%)	6184	(9%)	331	(29%)						7091	(8%)	6606	
Area 21							26 ¹	(77%)	186 ¹	(21%)	296	(28%)	270	(28%)	303 ¹	(29%)	3 ¹	(69%)						1064	(14%)	1431	
Area 121									14 ¹	(44%)			515	(28%)	849	(25%)									1378	(18%)	4560
Area 23 (Alberni Canal)					46 ¹	(51%)	121 ¹	(28%)					31	(67%)	6844	(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%)									14188	(6%)	14507
Area 24					68 ¹	(35%)	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%)	616	(22%)	3106	(15%)	5958	(12%)											9800	(9%)	10640
Area 125					3 ¹	(64%)	7 ¹	(55%)	2646	(27%)	1799	(17%)	620	(34%)	37 ¹	(25%)									5112	(16%)	2756
Area 26									754 ^P	(%)	1554 ^P	(%)	1827 ²	(%)	19 ¹	(41%)									4154	(41%)	5179
Area 126									2 ²	(%)	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	(26%)									4986	(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%)	1076
Area 29									9	(106%)	1	(0%)	271	(38%)	749	(28%)	8021	(24%)	635	(64%)					9684	(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%)	1846	(23%)	3645	(15%)	3303	(19%)	315	(44%)							9265	(10%)	8976
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%)	585	(17%)	2704	(8%)	16552	(8%)	38656	(5%)	83878	(3%)	33466	(8%)	2072	(23%)					179005	(2%)	153380

	Total	5 Yr. Avg	
	Est.	%SE	Est.
Juan de Fuca	18662	(7%)	13975
North Island	9265	(10%)	8976
Strait of Georgia	58196	(5%)	51887
WCVI	92882	(3%)	78543
All Areas	179005	(2%)	153380

