

2022 Run status of Fraser sockeye salmon

Date: Sep. 23, 2022

The information presented in this distribution has been prepared by PSC Secretariat staff and should be considered preliminary until reviewed by the Fraser River Panel

Week of: Sep. 18 - Sep. 24, 2022	Sockeye				
	Management Group				Total Fraser
	E.Stuart	E.Summer	Summer	Late	
Mission passage (incls Pitt, Alouette, Coquitlam)	243,300	565,200	3,261,200	1,261,600	5,331,300
Catch downstream of Mission	1,200	41,100	542,000	521,000	1,105,300
Accounted Run To Date	244,500	606,300	3,803,200	1,782,600	6,436,600
Run size adopted in-season ²	244,000	607,000	3,800,000	2,050,000	6,701,000
Run size forecasted pre-season	105,000	1,579,000	4,403,000	3,688,000	9,775,000
Area 20 timing adopted in-season	6-Jul	30-Jul	15-Aug	17-Aug	16-Aug
Area 20 timing expected pre-season	4-Jul	6-Aug	10-Aug	18-Aug	13-Aug
Johnstone Str. Diversion Rate	Annual average to date				34%
	Preseason forecast of annual rate:				48%

² Run sizes are usually not adopted until after the peak of the run has passed through marine test fishery areas in Juan de Fuca and Johnstone straits.

2022 Catch-to-date by fishery

Date: Sep. 23, 2022

Week of: Sep. 18 - Sep. 24, 2022		Sockeye	
		Total	Fraser
Canada		1,082,519	1,080,604
	Commercial	228,196	228,137
	B Purse Seine	213,162	213,103
	D Gillnet	721	721
	E Gillnet	0	0
	G Troll	0	0
	H Troll	14,313	14,313
	First Nations	838,793	836,938
	Food, Social & Ceremonial (FSC)	827,316	825,464
	Marine	327,930	326,103
	Fraser R.	499,386	499,361
	Economic Opportunity (EO) & Demonstration (Demo)	11,477	11,474
	Escapement Surplus to Spawning Requirements (ESSR)	0	0
	Recreational	0	0
	Charter (Albion & A12 Chum test fishery)	986	986
	Other****	14,544	14,543
United States		318,709	318,585
	Commercial	307,530	307,545
	Treaty Tribes (TRB)	232,054	232,098
	All Citizen (AC)	75,476	75,446
	Treaty Tribes Ceremonial & Subsistence (C&S)	11,179	11,041
	All Citizen Recreational	0	0
	Other****	0	0
	Alaska *	na	na
Panel-approved Test Fisheries		40,685	40,237
	Panel Waters	27,813	27,574
	Canada	27,700	27,464
	U.S.	113	110
	Non-Panel Waters**	12,872	12,663
Total		1,441,913	1,439,426
	Catch Seaward of Mission ***	1,107,784	1,105,299
	Catch Upstream of Mission	334,128	334,128

* Alaska data are processed post-season and so are unavailable in-season.

** Includes Qualark

*** All catches in marine areas and in the Fraser River downstream of Mission.

**** May include unauthorized directed retention or unauthorized bycatch retention in fisheries directed at other species

	Fraser Sockeye				Total	
	Early Stuart	Early Summer	Summer	Lates		
RUN STATUS, ESCAPEMENT NEEDS & AVAILABLE SURPLUS						
Pre-season or Adopted In-season Run Size	244,000	607,000	3,800,000	2,050,000	6,701,000	
Adult Spawning Escapement Target (SET)	195,200	375,500	1,900,000	1,104,800	3,575,500	
%SET from TAM rules	80%	62%	50%	54%		
Management Adjustment (MA)*	2,594,210	221,550	361,000	243,060	3,419,820	
Proportional MA (pMA)*	13.29	0.59	0.19	0.22		
Adjusted Spawning Escapement Target (SET) **	244,000	597,050	2,261,000	1,347,860	4,449,910	
Test Fishing (TF)*****	1,080	6,600	22,900	12,000	42,580	
Surplus above Adjusted SET & Test fishing	0	3,350	1,516,100	690,140	2,209,590	
DEDUCTIONS & TAC FOR INTERNATIONAL SHARING						
Aboriginal Fishery Exemption (AFE)	1,697	70,000	175,221	153,082	400,000	
Total Deductions (Adj. SET + TF + Available AFE)	246,777	673,650	2,459,121	1,512,942	4,892,490	
Available TAC for International Sharing	0	0	1,340,879	537,058	1,877,937	
UNITED STATES (Washington) TAC						
Proportionally Distributed TAC ***	16.5%	0	0	221,250	88,610	309,860
U.S. Payback ***	0.0%	0	0	-340	-130	-470
Proportionally Distributed TAC + Payback	0	0	220,910	88,480	309,390	
Treaty Tribes Share ***	67.7%	0	0	149,450	59,860	209,310
All Citizen Share	32.3%	0	0	71,460	28,620	100,080
CANADA TAC						
Aboriginal Fishery Exemption (AFE)	1,697	70,000	175,221	153,082	400,000	
Canadian TAC + AFE	1,697	70,000	1,295,190	601,660	1,968,547	
CATCH-TO-DATE						
Test	1,080	6,470	22,510	10,170	40,240	
Treaty Tribes (Wash.) / Ceremonial (TRB)	160	15,840	137,000	90,140	243,140	
All Citizen (Wash.)	0	760	46,210	28,480	75,450	
Other (Wash.)****	0	0	0	0	0	
Washington	160	16,600	183,210	118,620	318,590	
First Nations Catch (including AFE)	2,340	55,500	584,190	183,440	825,460	
Planned Charter & Recreational Shares	10	70	590	308	986	
Other****	1,270	5,630	7,550	90	14,540	
Total Commercial (including FN EO/Demo*****)	0	90	4,210	235,310	239,610	
Canada	3,620	61,290	596,540	419,148	1,080,600	
Total Catch in All Fisheries	4,860	84,360	802,260	547,938	1,439,430	
Exploitation Rate (catch-to-date / run size)	2.0%	13.9%	21.1%	26.7%	21.5%	
Exploit. Rate with fishery-induced mortality included	2.0%	13.9%	21.1%	26.7%	21.5%	
CATCH REMAINING (BALANCE)						
Washington	-160	-16,600	37,700	-30,140	-9,200	
Canada	-1,923	8,710	698,650	182,512	887,949	
Balance Remaining [below share / -above share]	-2,083	-7,890	736,350	152,372	878,749	

* Given the 2022 pre-season forecasts of abundances, fisheries decisions that could impact the Early Stuart sockeye management group will be based on Low Abundance Exploitation Rate (LAER) limit of 10%. The intent of LAER is to allow for limited fisheries directed on co-migrating stocks or species, but also may permit limited harvest in some cases. The application of the LAER obviates the need for management adjustments for this group.

** The adjusted SET is the lesser of the run size or the sum of the MA + TAM - defined SET.

*** Washington sockeye and pink shares according to Annex IV of the Pacific Salmon Treaty.

Sockeye: 16.5% of the TAC - payback (maximum of 5% of share).

Pink: 25.7% of the TAC - payback (maximum of 5% of share)

**** May include unauthorized directed retention or unauthorized bycatch retention in fisheries directed at other species.

***** EO = FN Economic Opportunity fisheries; Demo = FN Demonstration fisheries.

***** The test fishing deduction was updated in-season to 42,579 on September 2, 2022.

2022 Fraser Sockeye Test Fishing & Escapement Summary

Area/Gear Location From A20	Fraser River									
	A29B TR	A29-13 GN	A29-16 GN	Whon CPUE	Qualark			Mission Hydroacoustics		Hells Gate
	Gulf Troll (+4 days)	Cottonwood (+5 days)	Whonnock (+6 days)	Estimate (+6 days)	GN Catch (+8 days)	Estimate ¹	Method ²	Estimate ³ (+6 days)	Method ⁴	Estimates ⁵ (+10 days)
2-Sep		73	37	3.14	41	85,767	RB + LB	114,300	A1+S1+M+A2	No Count
3-Sep		46	19	1.73	52	79,799	RB + LB	75,800	A1+S1+M+A2*	No Count
4-Sep	259 (Q3), 260 (Q4)	6 (1 set)	22	1.88	56 (5 sets)	47,765	RB + LB	35,500	A1+S1+M+A2*	47,640
5-Sep	257 (Q2), 389 (Q6A)	4	43	3.24	25 (5 sets)	38,229	RB + LB	48,100	A1+S1+M+A2*	33,740
6-Sep	20 (Q1), 174 (Q5)	8	23	1.93	7 (5 sets)	25,436	RB + LB	29,500	A1+S1+M+A2	37,070
7-Sep		8	46	3.37	19	29,205	RB + LB	33,700	A1+S1+M+A2*	No Count
8-Sep		18	37	2.91	13	16,864	RB + LB	36,100	A1+S1+M+A2	11,120
9-Sep		19	39	2.85	7	7,826	RB + LB	30,600	A1+S1+M+A2	No Count
10-Sep		56	48	3.68	10	10,536	RB + LB	33,900	A1+S1+M+A2	No Count
11-Sep		24	13	1.02	24	17,168	RB + LB	38,400	A1+S1+M+A2	28,330
12-Sep	165 (Q3), 119 (Q4)	76	49	3.79	19	16,178	RB + LB	72,600	A1+S1+M+A2	No Count
13-Sep	248 (Q2), 41 (Q6A)	37	48	3.68	13	15,270	RB + LB	71,900	A1+S1+M+A2	21,660
14-Sep	86 (Q1), 62 (Q5)	397	136	10.88	17	26,669	RB + LB	77,500	A1+S1+M+A2	21,590
15-Sep		97	74	5.77	18	31,547	RB + LB	62,100	A1+S1+M+A2	23,530
16-Sep		38	124	9.92	29	37,311	RB + LB	52,700	A1+S1+M+A2	No Count
17-Sep	87 (Q3), 333 (Q4)	28	134	10.81	19	24,916	RB + LB	102,000	A1+S1+M+A2	No Count
18-Sep	1 (Q2) 172 (Q6A)	35	69	5.52	28 (5 sets)	32,197	RB + LB	52,000	A1+S1+M+A2	30,250
19-Sep	3 (Q1), 53 (Q5)	38	38	2.97	26	44,193	RB + LB	45,800	A1+S1+M+A2	31,530
20-Sep		35	89	6.92	48	58,241	RB + LB	30,100	A1+S1+M+A2	30,480
21-Sep		64	50	3.93	23 (5 sets)	52,972	RB + LB	44,200	A1+S1+M+A2	27,670
22-Sep		23	43	3.39	46 (5 sets)			40,600	A1+S1+M+A2	No Count
23-Sep										
24-Sep										

¹ Qualark escapement estimate - does not include Chilliwack, Pitt, Harrison, Birkenhead, Big Silver, Weaver, and Cultus

² Qualark source:

RB + LB = Right-bank + Left bank

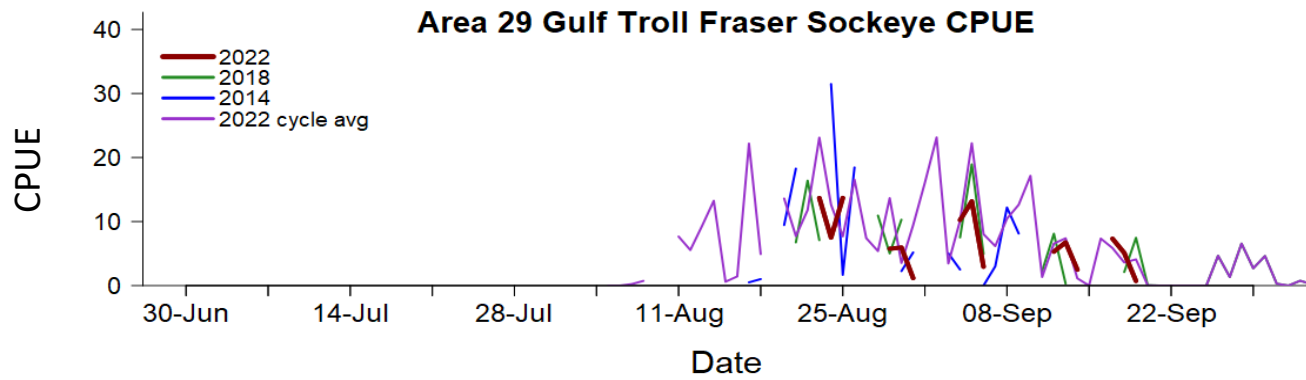
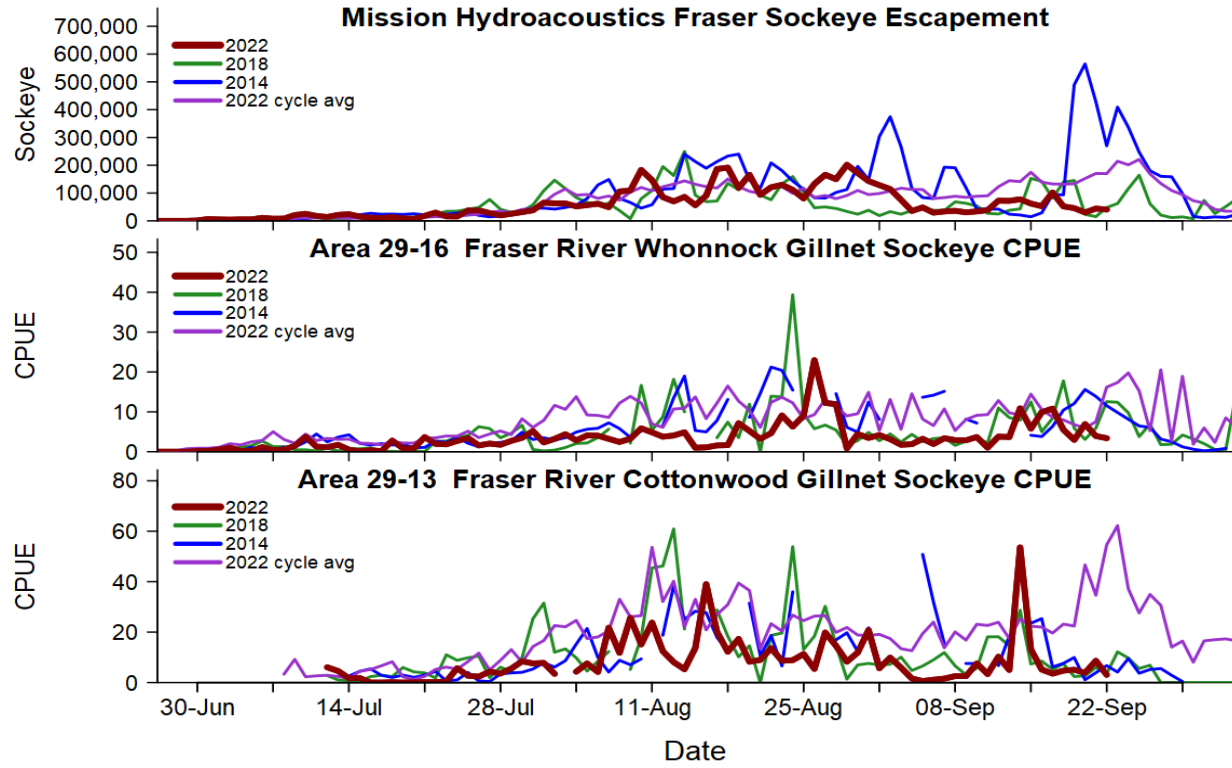
³ Mission escapement estimate - does not include Pitt

⁴ Mission source:

A1+S1+M+A2 = Left-bank ARIS (A1) + Left-bank split-beam (S1) + Mobile split-beam (M) + Right-bank ARIS (A2)

⁵ Daily Hells Gate abundance estimate; actual daily count has been expanded.

*Fishery occurred at Mission site



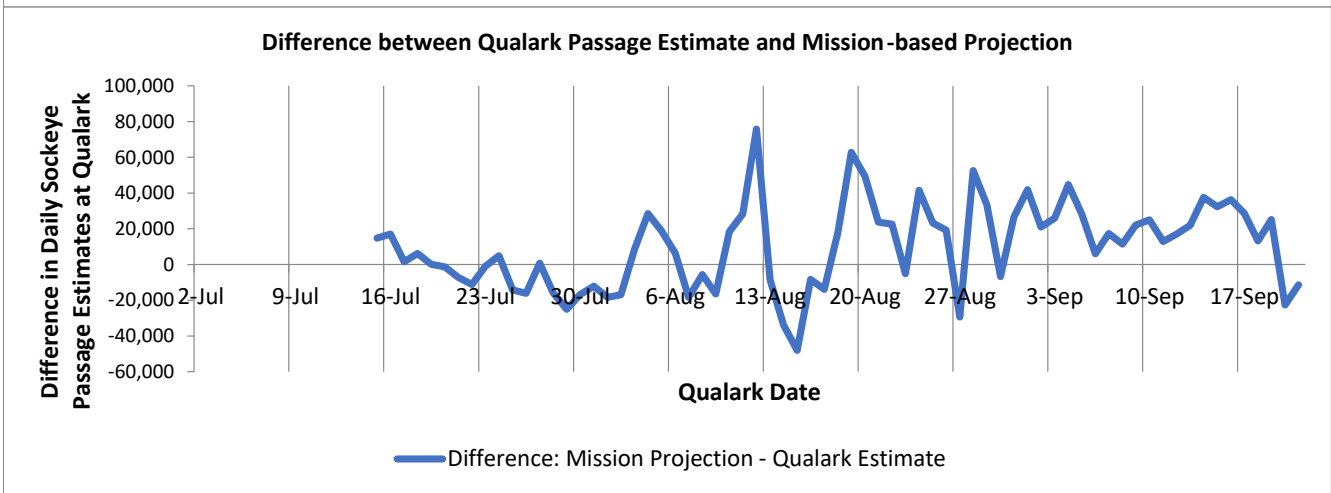
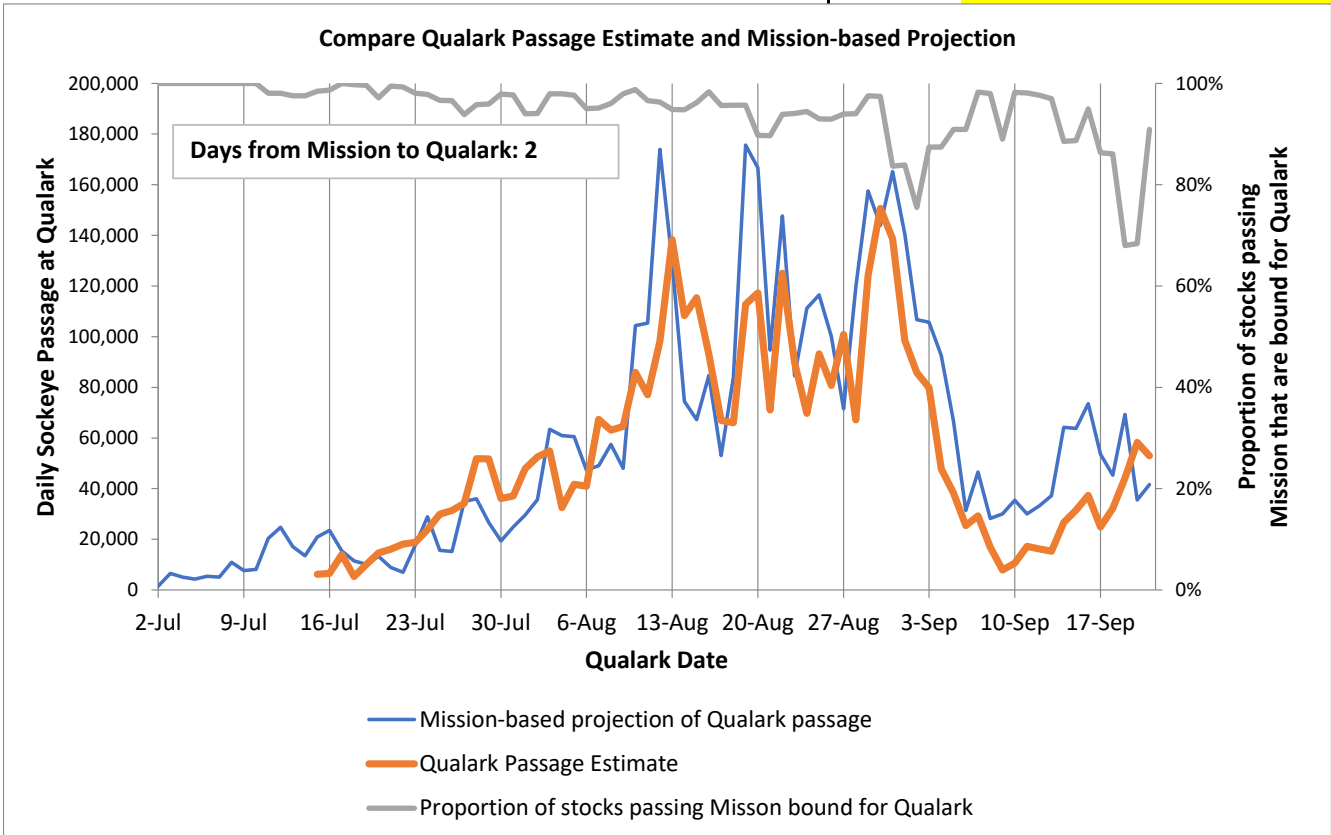
Fraser Sockeye: Qualark Passage Estimate and Mission-based Projection

Year: **2022**

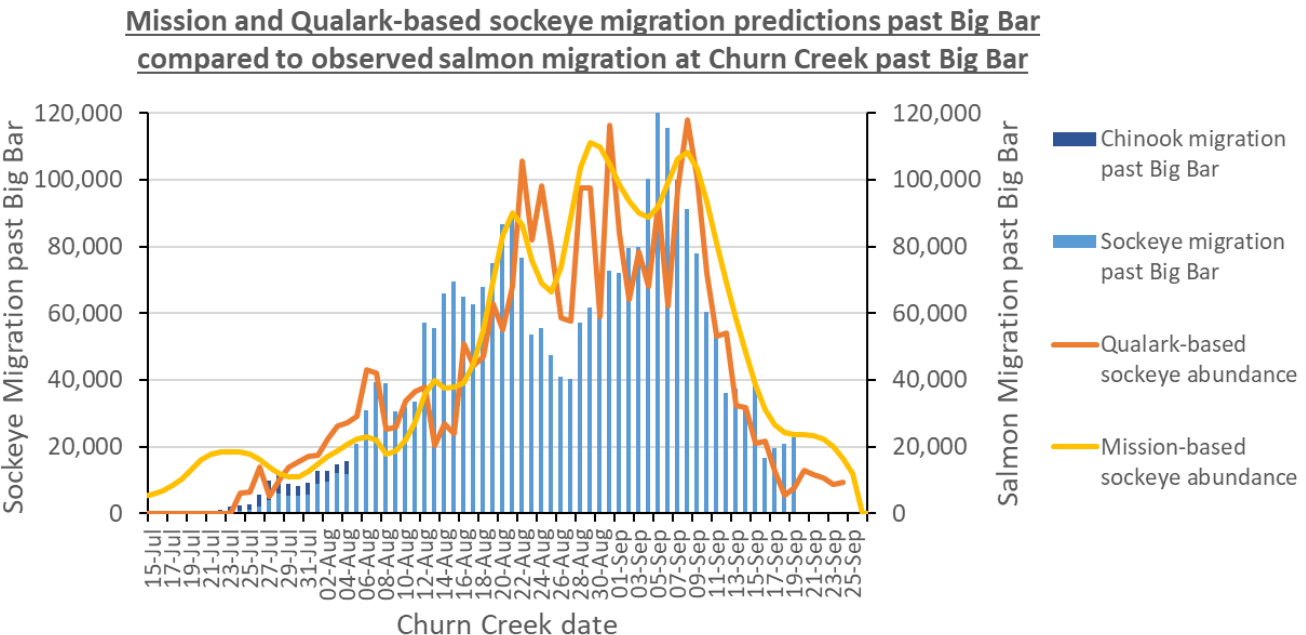
Date: 23-Sep-22

Time: 10:04 AM

	All Days	Common Days
Mission projection	4,766,406	4,544,688
Qualark estimate	3,858,102	3,858,102
	Difference	686,586
	%Difference	15%



Comparisons between Mission and Qualark predictions and Big Bar estimates

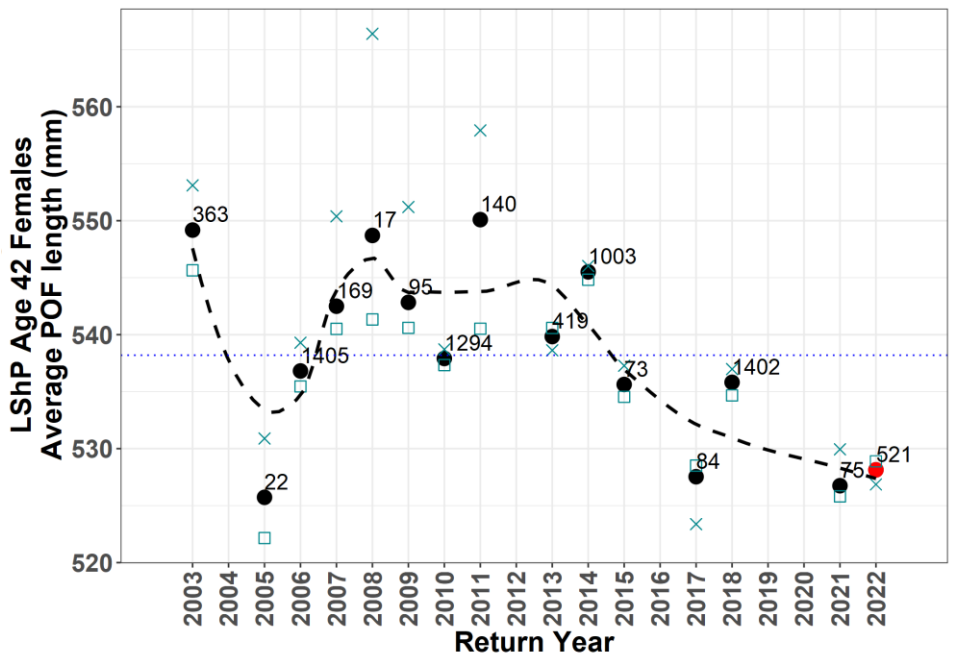
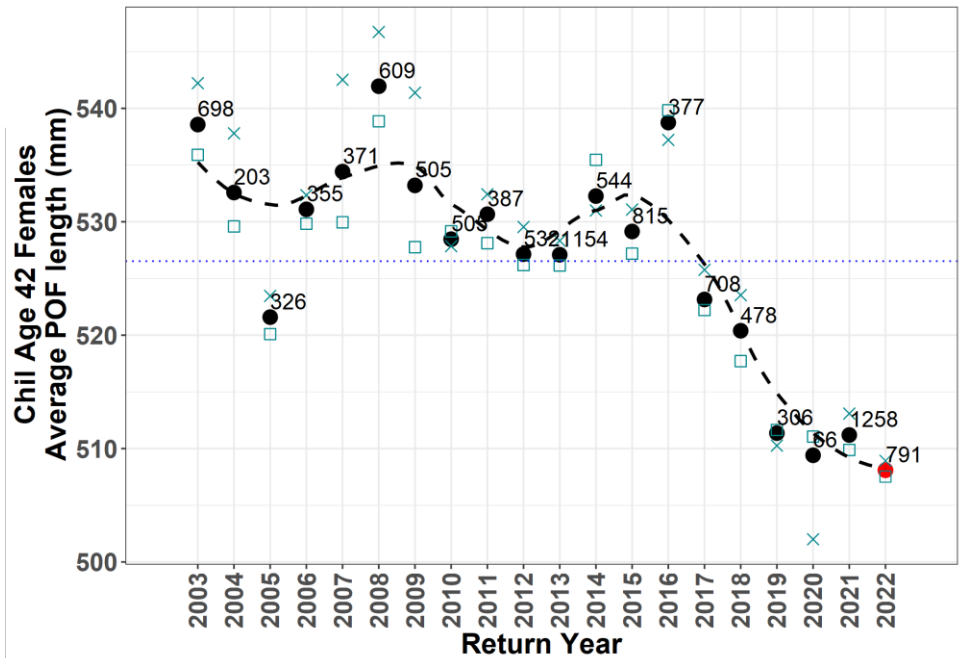


Big Bar data and information provided by Tanya Vivian, DFO

2022 Fraser River Sockeye Salmon Stock identification Review

Recent stock composition estimates for sockeye salmon

Fishing						Fraser-only Stock Proportions by Reporting Group ⁴ (%)														Age (%)		
						Sample		Early Stuart	Early Summer				Summer					Late				Overall Stocks
								Early Stuart	Chilli-wack	Pitt Alouette	Nadina Bowron Gates Nahat-latch	Early Thompson	Early Summer sub-total	Harrison Widgeon	Late Stuart	Chilko Quesnel	Raft North Thompson	Summer sub-total	Birken-head Big Silver	Late Shuswap Portage	Weaver Cultus	Late sub-total
In-river																						
BB gn	tf	Sep19-20	DNA	73	100%	0%														NA		
BB gn	tf	Sep 21	DNA	64	100%	0%														92%		
AB gn	tf	Sep19-20	DNA	100	100%	0%														96%		
AB gn	tf	Sep 21	DNA	50	100%	0%														94%		

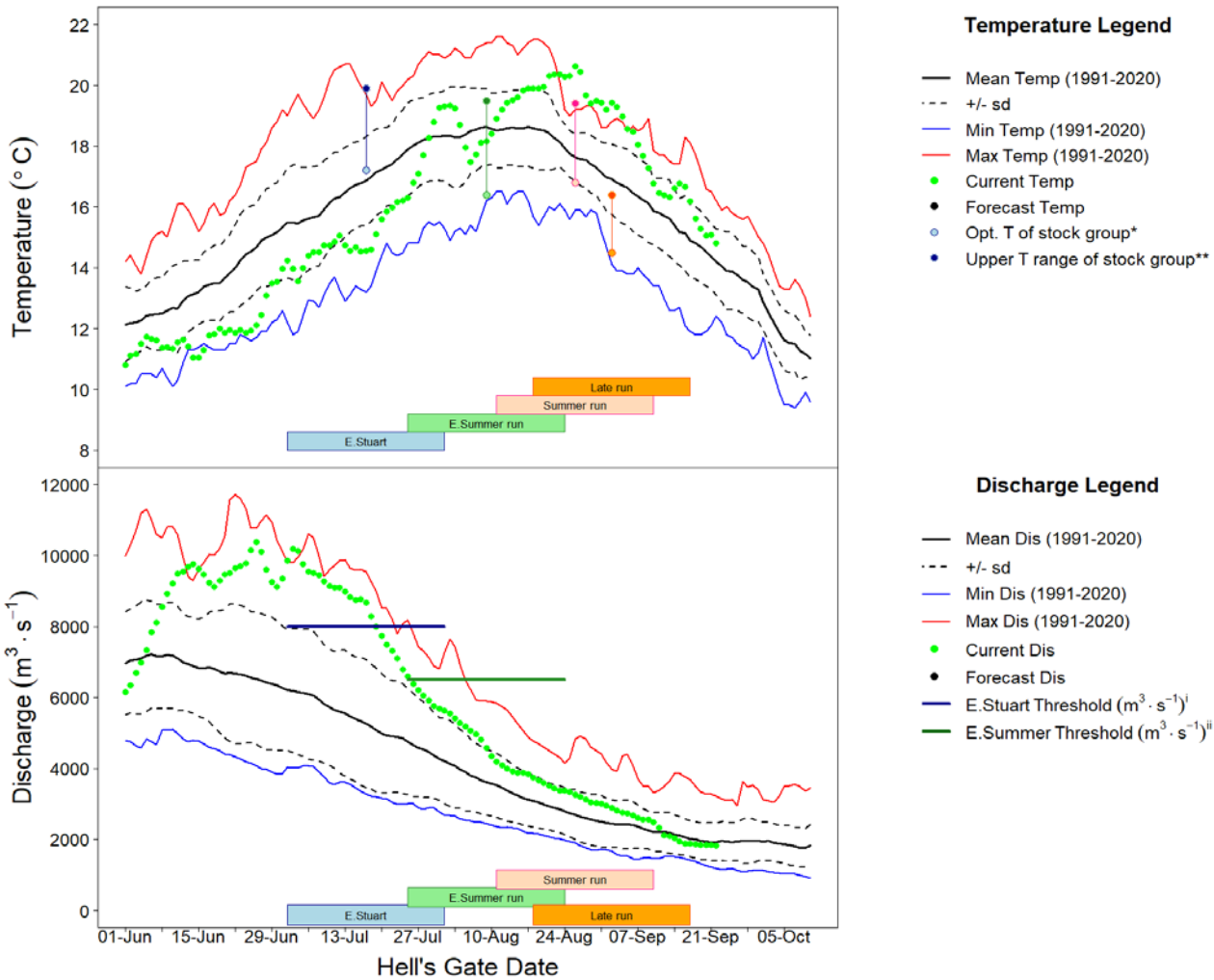


Average lengths (POF mm) of age 42 females identified as Chilko and Late Shuswap in 2022 compared to past years. Chilko, Stuart and Stellako sockeye showed the most dramatic trends.

Fraser River Environmental Report for September 22, 2022

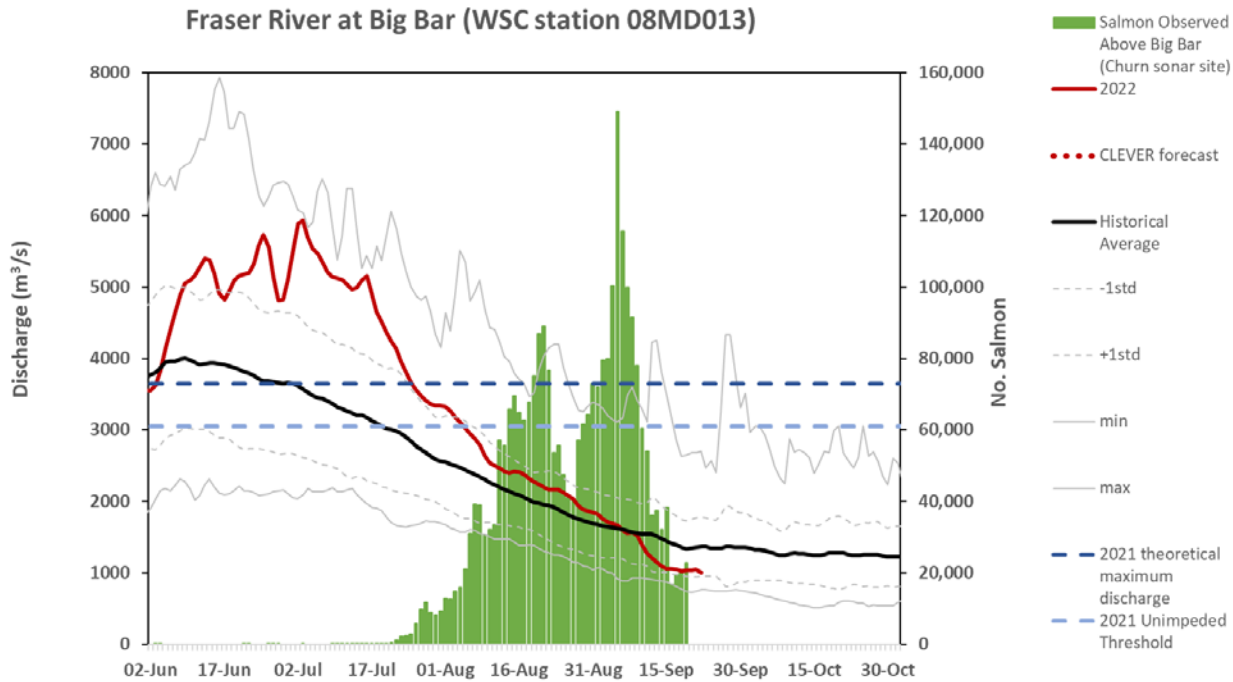
Observed Fraser River Temperature at Qualark for 22-Sep	14.8°C
Average (1991-2020) Historical Temperature on this day	14.2°C
Deviation from Average	0.6°C

Observed Fraser River Discharge at Hope for 22-Sep	1830 m ³ ·s ⁻¹
Average (1991-2020) Historical Discharge on this day	1917 m ³ ·s ⁻¹
% above or below Historical Discharge	-5%



Run timing bars represent a 31 day spread of the run centered around the Hell's Gate date. Hell's gate timing is 5 days from Mission for Early Stuart and Late run; and 4 days from Mission for Early Summer and Summer run. ⁱpMA is the proportional increase to spawning escapement targets to help ensure targets are achieved. ⁱⁱ%DBE is %difference between estimates of potential spawning escapement and spawning escapement. *This is the optimum temp for aerobic swimming - T_{opt} (Eliason et al. (2011). Science 332: 109-112)**This is the upper range of the optimum temp for aerobic swimming - T_{pejus}. ⁱDischarge threshold of 8000cms for Early Stuart from Macdonald (2000). Can. Tech. Rep. Fish. Aquat. Sci. 2315: 120p. ⁱⁱDischarge threshold of 6500cms for Early Summer run from Macdonald et al. (2010). Trans. Am. Fish. Soc. 139: 768-782. 19 days of T & Q data are required to calculate a pMA - 15 days before the Hell's Gate Date and 3 days after. MA estimates can be calculated 4 days after the Area 20 date.

Fraser River Discharge at Big Bar



Data made available by:  Environment and Climate Change Canada and  northwest hydraulic consultants

Migration passage at Big Bar

<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/fish/aquatic-habitat-management/fish-passage/big-bar-landslide-incident?keyword=biq&keyword=bar>
<https://www.pac.dfo-mpo.gc.ca/pacific-smon-pacifique/biq-bar-landslide-eboulement/smon-count-denombrement-eng.html>

Big Bar Update

- A total of 2,769,304 sockeye have been observed 40km upstream of Big Bar (Churn Creek).

2022 Fraser River run size and timing estimates

The information presented on this page has been prepared by PSC Secretariat Staff. All in-season estimates of run size and timing should be considered draft preliminary estimates unless adopted by the Fraser River Panel.

Preseason forecasts, inseason estimates, and official estimates of run size and associated timing

	Run Size					Run size components					Run Timing ¹					
	Inseason Adopted	Preseason Forecast	Inseason estimate	Inseason 80% PIs ²		Method	Catch + Escapement	6-day Projection ³	Seaward Abundance	Migration Delay	Inseason Adopted	Preseason Forecast	Inseason estimate	Inseason 80% PIs ²		Method
				10% PI	90% PI									10% PI	90% PI	
Total Fraser sockeye	6,701,000	9,775,000	6,721,000				6,437,000	0	0	284,000		13-Aug	16-Aug			Recon
Early Stuart Run	244,000	105,000	244,000	244,000	244,000	Recon	244,000	0	0	0	06-Jul	04-Jul	06-Jul	06-Jul		Recon
Early Summer Run	607,000	1,579,000	606,000	606,000	606,000	Sum	606,000	0	0	0	30-Jul	06-Aug	30-Jul	30-Jul		Recon
E.Summers excl. E.Thomp		303,000	331,000	<i>331,000</i>	<i>331,000</i>	Recon	331,000	0	0			28-Jul	23-Jul	<i>23-Jul</i>	<i>23-Jul</i>	Recon
Early Thompson ⁴		1,276,000	275,000	<i>275,000</i>	<i>275,000</i>	Recon	275,000	0	0			08-Aug	04-Aug	<i>04-Aug</i>	<i>04-Aug</i>	Recon
Summer Run	3,800,000	4,403,000	3,807,000	3,804,000	3,808,000	Sum	3,804,000	0	0	3,000	15-Aug	10-Aug	15-Aug	15-Aug	15-Aug	Recon
Harrison / Widgeon		14,000	22,000	<i>19,000</i>	<i>23,000</i>	Recon	19,000	0	0	3,000		06-Aug	29-Jul	<i>27-Jul</i>	<i>06-Aug</i>	Marine N
Late Stuart / Stellako		994,000	387,000	<i>387,000</i>	<i>387,000</i>	Recon	387,000	0	0	0		09-Aug	11-Aug	<i>11-Aug</i>	<i>11-Aug</i>	Recon
Chilko		1,463,000	1,540,000	<i>1,540,000</i>	<i>1,540,000</i>	Recon	1,540,000	0	0	0		10-Aug	18-Aug	<i>18-Aug</i>	<i>18-Aug</i>	Recon
Quesnel		1,907,000	1,791,000	<i>1,791,000</i>	<i>1,791,000</i>	Recon	1,791,000	0	0	0		11-Aug	12-Aug	<i>12-Aug</i>	<i>12-Aug</i>	Recon
Raft / North Thompson		25,000	67,000	<i>67,000</i>	<i>67,000</i>	Recon	67,000	0	0	0		18-Aug	23-Aug	<i>23-Aug</i>	<i>23-Aug</i>	Recon
Late Run	2,050,000	3,688,000	2,064,000	1,458,000	2,660,000	Sum	1,783,000	0	0	281,000	17-Aug	18-Aug	17-Aug	15-Aug	20-Aug	Marine N
Alt. Late Run			3,047,000	1,980,000	8,876,000	Sum			0	1,264,000						
Birkenhead Group		77,000	203,000	<i>203,000</i>	<i>203,000</i>	Recon	203,000	0	0	0		19-Aug	18-Aug	<i>18-Aug</i>	<i>18-Aug</i>	Recon
L.Shuswap / Weaver Gr.		3,611,000	1,861,000	<i>1,255,000</i>	<i>2,457,000</i>	Annual CPUE*EL	1,580,000	0	0	281,000		18-Aug	17-Aug	<i>15-Aug</i>	<i>20-Aug</i>	Marine N
Alt.L.Shuswap / Weaver			2,844,000	<i>1,777,000</i>	<i>8,673,000</i>	Gulf Troll	1,580,000	0	0	1,264,000						

¹ Run timing refers to the date when 50% of the run migrated past the Area 20 reference point.

² 80% Probability Interval: there exists an 80% chance that the true abundance lies within this interval

³ Normally based on test fishery data. Based on Model if Method = Recon(2).

⁴ Early South Thompson / North Barriere.

Methods for run size & timing estimation

Recon	Catch + escapement + 6-day test fish projection + model seaward projection
Sum	Sum of individual groups
Marine N	Reconstruction of CPUE-based marine abundances
Annual CPUE*EL	Annual CPUE * estimated annual EL based on Summer-run relationship
Gulf Troll	Gulf Troll survey adjusted for catch+escapement since day of last survey

