File: 71007

DRAFT AGENDA
PACIFIC SALMON COMMISSION
FRASER RIVER PANEL
Friday July 14, 2023 at 11:00 am.
Via Zoom Webinar
https://psc-org.zoom.us/j/88416242194

1) Roll Call (Panel and Tech members, others please email Julie, ehrmantraut@psc.org)

2) Webinar Etiquette:

   a) Mute Phone: Please mute phone unless you are asking a question

   b) Chat feature: Please use for questions regarding the distribution only

3) Agenda

4) Total catches, Escapements and accounted-to-date relative to pre-season forecasts and in-season adopted run sizes	PSC Staff
5) In-season data flow for updating objectives	PSC staff
a) Test fishing catches and acoustics	
b) Stock proportions	
c) Environmental conditions	
d) Big Bar update	DFO/PSC staff
6) Assessments and recommendations	PSC Staff
a) Migration graphs, run size assessments	
7) Review and decisions on staff recommendations	Panel
8) Reports from other areas	PSC Staff
9) Other Business	Panel
a) Test fishing start dates	
b) Principals & Constraints	
c) Weekly Report (confirm reviewers)	
10) Next FRP Meeting, Tuesday July 18, 11:00 a.m. via Zoom Webinar	Panel
First Technical Committee meeting, Thursday July 20, 1:00 p.m. via Zoom	TC

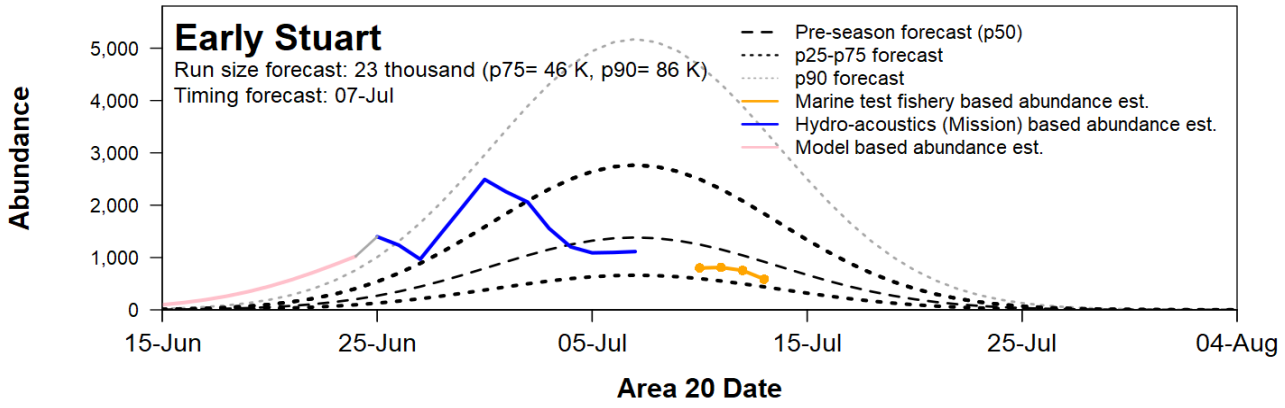
2023 Run status of Fraser sockeye and pink salmon

Date: Jul. 14, 2023

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: Jul. 9 - Jul. 15, 2023	Sockeye					Pink
	Management Group				Total	Total
	E.Stuart	E.Summer	Summer	Late	Fraser	Fraser
Mission passage (incldes Pitt, Alouette, Coquitlam)	24,800	20,300	0	0	45,100	0
Catch downstream of Mission	100	200	0	0	300	0
Accounted Run To Date	24,900	20,500	0	0	45,400	0
Run size adopted in-season [2]	**na**	**na**	**na**	**na**	**na**	**na**
Run size forecasted pre-season	23,000	186,000	1,167,000	188,000	1,564,000	6,135,000
Area 20 timing adopted in-season	**na**	**na**	**na**	**na**	**na**	**na**
Area 20 timing expected pre-season	7/Jul	6/Aug	17/Aug	24/Aug	16/Aug	24/Aug
Johnstone Str. Diversion Rate				Annual average to date	**na**	**na**
				Preseason forecast of annual rate:	67%	53%

[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.*



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2023 Fraser Sockeye Test Fishing & Escapement Summary

	Johnstone Strait	Juan de Fuca Strait	Fraser River								
Area/Gear Location From A20	**A12 GN** Round Is (-2 days)	**A20 GN*** Port Renfrew (0 days)	**A29-17 GN** Brownsville Bar[1]	**A29-16 GN** Whonnock (+6 days)	**Whon CPUE** Estimate (+6 days)	**Qualark** GN Catch (+8 days)	Estimate[2]	Method[3]	**Mission Hydroacoustics** Estimate[4] (+6 days)	Method[5]	**Hells Gate** Estimates[6] (+10 days)
23-Jun									200	Model	
24-Jun									300	Model	
25-Jun									300	Model	
26-Jun				0	0.00				500	Model	
27-Jun				0	0.00				600	Model	
28-Jun				0	0.00				700	Model	
29-Jun				0	0.00				900	Model	
30-Jun				0	0.00				1,000	Model	
1-Jul				1	0.09				2,800	A1+S1+M+A2	
2-Jul				0	0.00	2			2,000	A1+S1+M+A2	
3-Jul				0	0.00	3			800	A1+S1+M+A2	
4-Jul				1	0.09	7			1,600	A1+S1+M+A2	
5-Jul				2	0.20	6	1,860	RB x 2	4,200	A1+S1+M+A2	0
6-Jul				0	0.00	9	2,941	RB x 2	3,400	A1+S1+M+A2	No Count
7-Jul				0	0.00	8	2,845	RB x 2	4,600	A1+S1+M+A2	No Count
8-Jul				0	0.00	3 **	1,256	RB + LB	4,200	A1+S1+M+A2	No Count
9-Jul				0	0.00	1 **	1,715	RB + LB	3,300	A1+S1+M+A2	0
10-Jul		57		0	0.00	2 **	2,253	RB + LB	2,700	A1+S1+M+A2	0
11-Jul	1	129		3	0.28	4 **	3,372	RB + LB	3,100	A1+S1+M+A2	0
12-Jul	6	89	20	0	0.00	5 (Two sets) **	4,078	RB + LB	3,300	A1+S1+M+A2	170
13-Jul	2	38	14	3	0.29	14 **			4,500	A1+S1+M+A2	300
14-Jul											
15-Jul											

[1] Alternative Lower River Test Fishery - Southern Endowment Fund Project

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

[3] Qualark source:

RB x 2 = Right-bank (RB) x 2

RB + LB = Right-bank (RB) + Left-bank (LB)

[4] Mission escapement estimate - does not include Pitt

[5] Mission source:

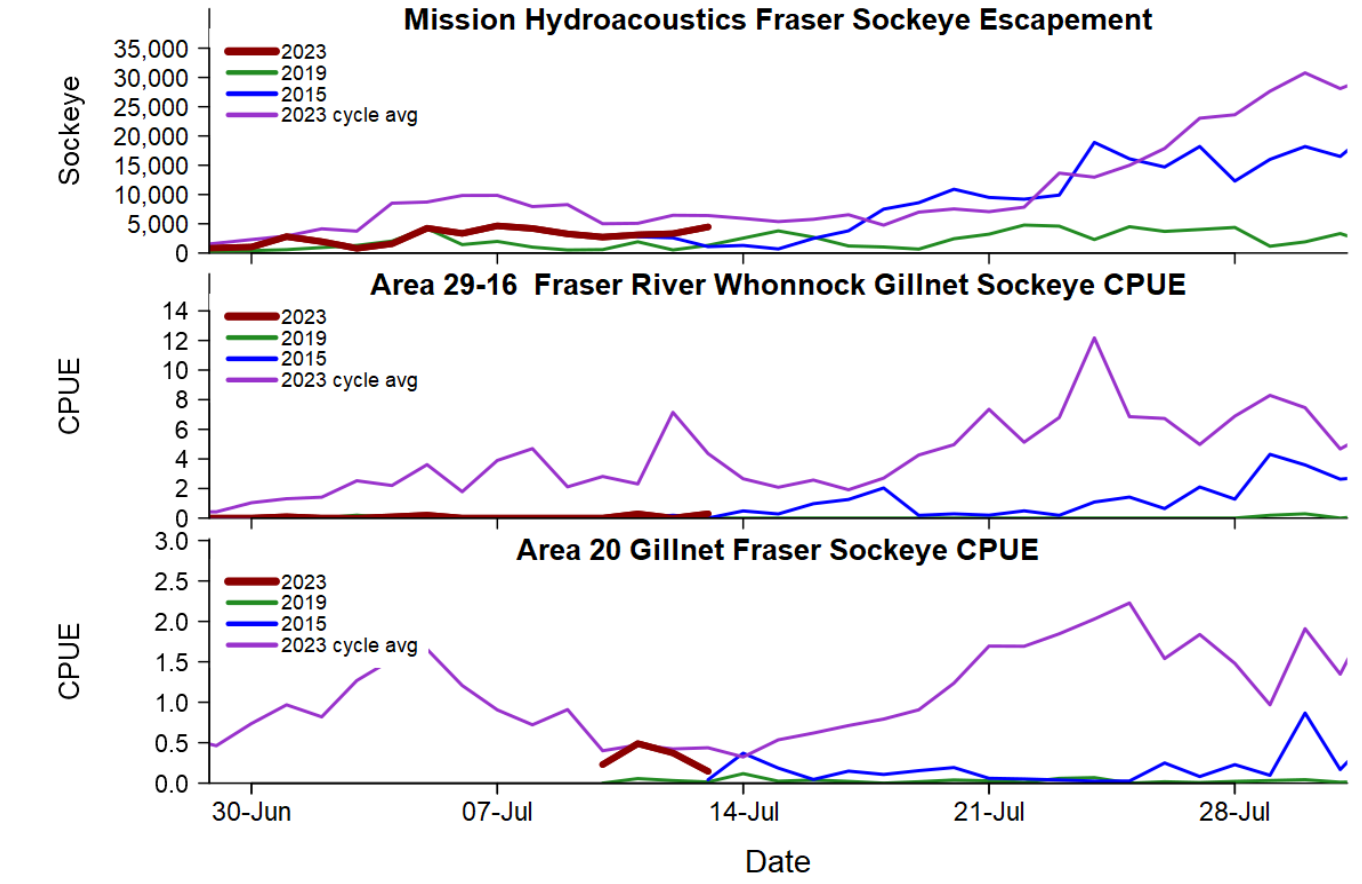
A1+S1+M+A2 = Left bank ARIS (A1) + Left bank split-beam (S1) + Mobile split-beam (M) + Right bank ARIS (A2)

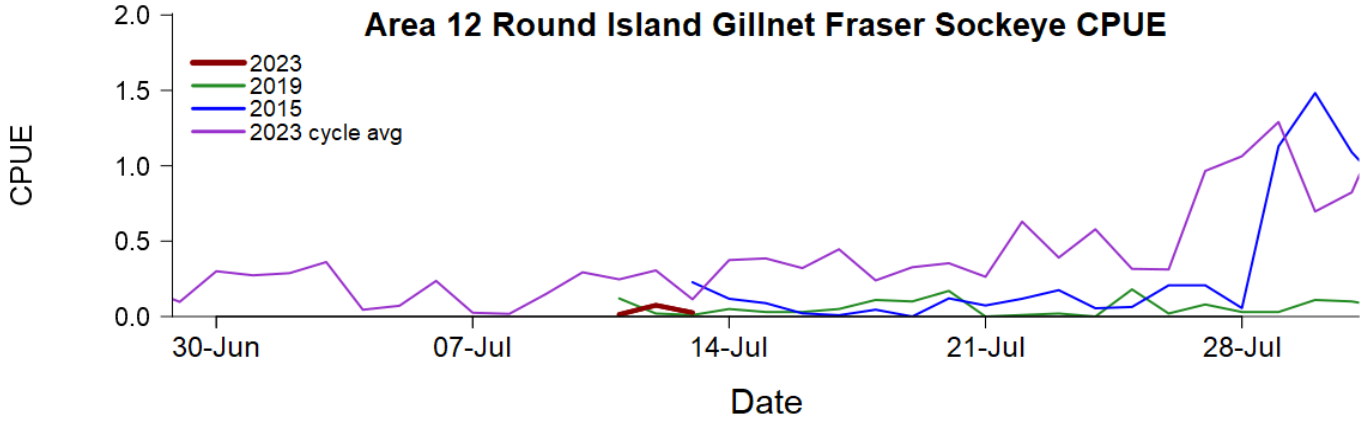
Model = Daily abundances generated by the Early Stuart run-size model.

[6] Daily Hells Gate abundance estimate; actual daily count has been expanded.

* Area 20 Gillnet - two boats fishing each day, unless specified otherwise. One boat is fishing with a 5" Alaska twist net, while the other is fishing a 5 1/8" multistrand net.

** Three sets performed for Qualark Gillnet


Mission Hydroacoustics Fraser Sockeye Escapement
Sockeye
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
2023
2019
2015
2023 cycle avg
Area 29-16 Fraser River Whonnock Gillnet Sockeye CPUE
CPUE
14
12
10
8
6
4
2
0
Area 20 Gillnet Fraser Sockeye CPUE
3.0
2.5
2.0
1.5
1.0
0.5
0.0
30-Jun
07-Jul
14-Jul
21-Jul
28-Jul
Date


Area 12 Round Island Gillnet Fraser Sockeye CPUE
CPUE
2.0
1.5
1.0
0.5
0.0
2023
2019
2015
2023 cycle avg
30-Jun
07-Jul
14-Jul
21-Jul
28-Jul
Date

2023 Fraser River Sockeye Salmon Stock identification Review

Recent stock composition estimates for sockeye salmon

						Fraser-only Stock Proportions by Reporting Group[4] (%)												Age (%)
						Early Stuart	Early Summer						Summer					Late					Overall Stocks
Area/Gear[1]	Fishing Sector[2]	Date	Sample Type[3]	Size (n)	%Fraser	Early Stuart	Chilli-wack	Pitt	Alouette Coquit-lam	Nadina Bowron Gates Nahat-latch Taseko	Early Thomp-son	Early Summer sub-total	Harri-son Widg-eon	Late Stuart Stellako	Chilko Ques-nel	Raft North Thomp-son	Summer sub-total	Birken-head Big Silver	Late Shuswap Portage	Weaver Cultus	Late sub-total	Age-4$_2$
Johnstone Strait & Queen Charlotte Strait																						
Juan de Fuca Strait & Washington & Other																						
A20 at	tf	Jul10-11	DNA	91	83%	**21%**	8%	2%		66%		**75%**	4%				**4%**				**0%**	22%
A20 gn	tf	Jul10-11	DNA	75	72%	**23%**	9%	15%		53%		**77%**					**0%**				**0%**	19%
In-river																						
AB gn	tf	Jul1-5	DNA	3	100%	**67%**	33%					**33%**					**0%**				**0%**	50%
AB gn	tf	Jul 11	DNA	3	100%	**34%**	34%			32%		**66%**					**0%**				**0%**	33%
BB gn	tf	Jul 12	DNA	20	100%	**24%**	25%			51%		**76%**					**0%**				**0%**	28%

Next Stock ID Samples Reported:

Whonnock TF: Tuesday FRP (thru Saturday Jul 15 catch samples)
Cottonwood & Brownsville TF: Tuesday FRP (thru Sunday Jul 16)
Area 20 GN TF: Tuesday FRP Scales & DNA (thru Saturday Jul 15)
Area 12 GN TF: Tuesday FRP Scales & DNA (thru Saturday, Jul 15)
Qualark TF: Likely the week after next (schedule to be determined)

Age Compositions:

Early Stuart:	n= 35	0%	Age 4/2
Chilliwack:	n= 16	94%	Age 4/2
Nadina:	n= 79	5%	Age 4/2
Non-Fraser:	n= 32	47%	Age 4/2

Notes for sockeye and pink tables:

[1] BB GN=29_13 (Cottonwood,Brownsville), AT = Alaska Twist, AB GN= 29_16 (Whonnock), MA FW=Matsqui Fish Wheel, QU GN=Qualark

[2] TF=sample from test fishery catch, CM=sample from commercial catch, C&S=ceremonial & subsistence catch, FSC=food, social, & ceremonial catch, rec= recreational catch

[3] Predictions for sockeye are multinomial extrapolations of current year data to 5 days after the last observation; Predictions for pink salmon are projections of stock compositions based on historic and current data

[4] Further information relating stock group descriptions to spawning ground locations and population definitions can be found at http://www.psc.org/FRPWeb/Escapement/PSC_Fraser_Sockeye_Stock_Group_Definitions.pdf

Results in grey text have been presented to the Panel previously

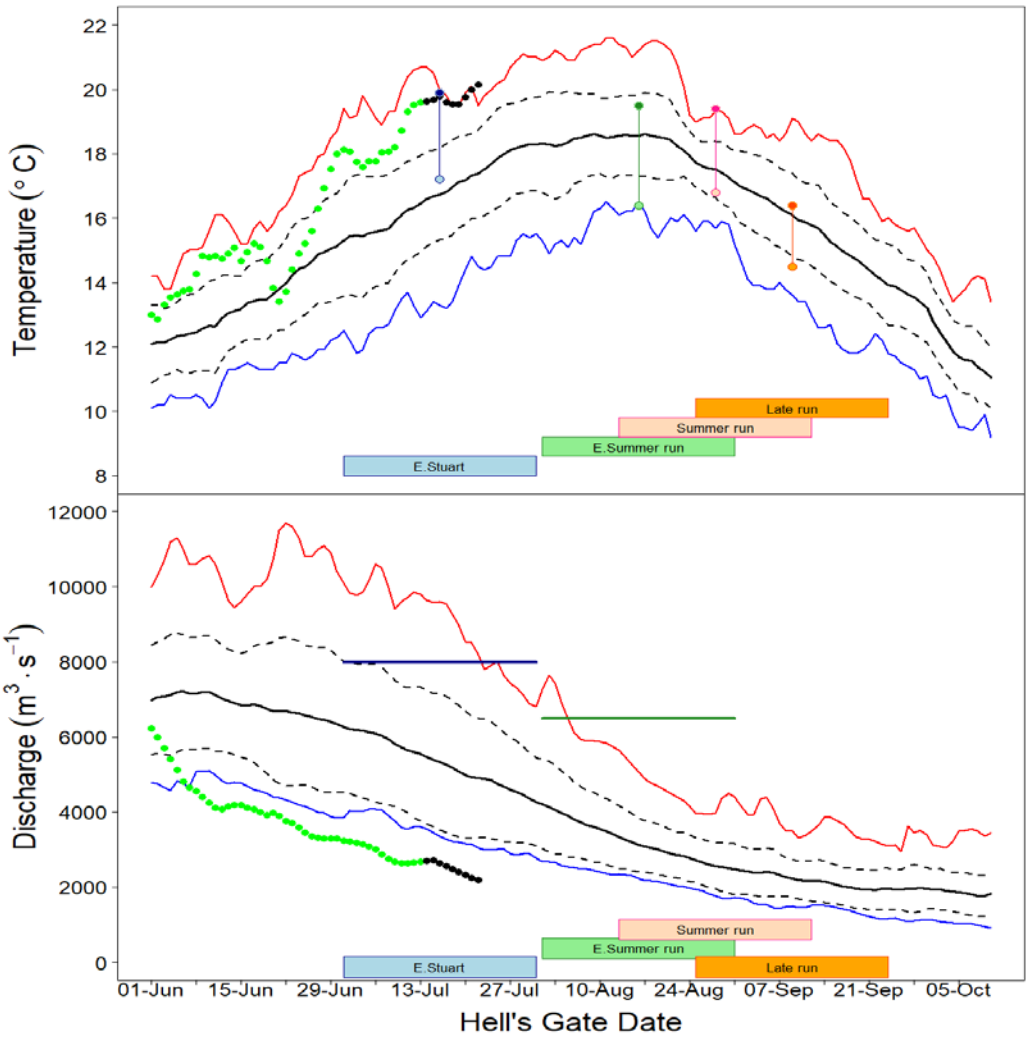
Fraser River Environmental Report for July 13, 2023

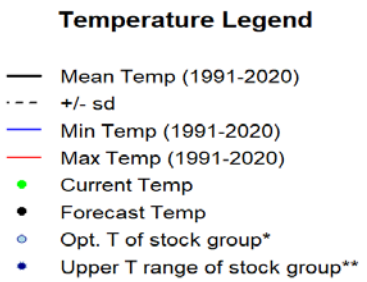
Observed Fraser River Temperature at Qualark for 13-Jul	19.6°C
Average (1991-2020) Historical Temperature on this day	16.5°C
Deviation from Average	3.1°C
Forecast Temperature for 19-Jul-23	19.5°C

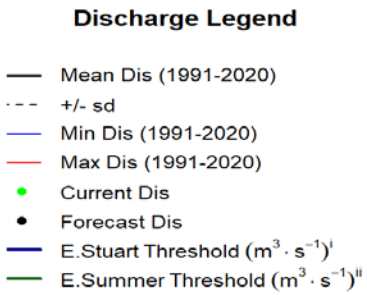
The forecast in Kamloops and Prince George is for above average air temperatures to continue until July 16 and to drop to below average for the rest of the forecast period.

Observed Fraser River Discharge at Hope for 13-Jul	2682 $m^3 \cdot s^{-1}$
Average (1991-2020) Historical Discharge on this day	5546 $m^3 \cdot s^{-1}$
% above or below Historical Discharge	-52%
Forecast Discharge for 19-Jul-23	2410 $m^3 \cdot s^{-1}$

The forecast in Kamloops is for 9 mm of precipiatation. The forecast in Prince George is for 10 mm of precipitation.





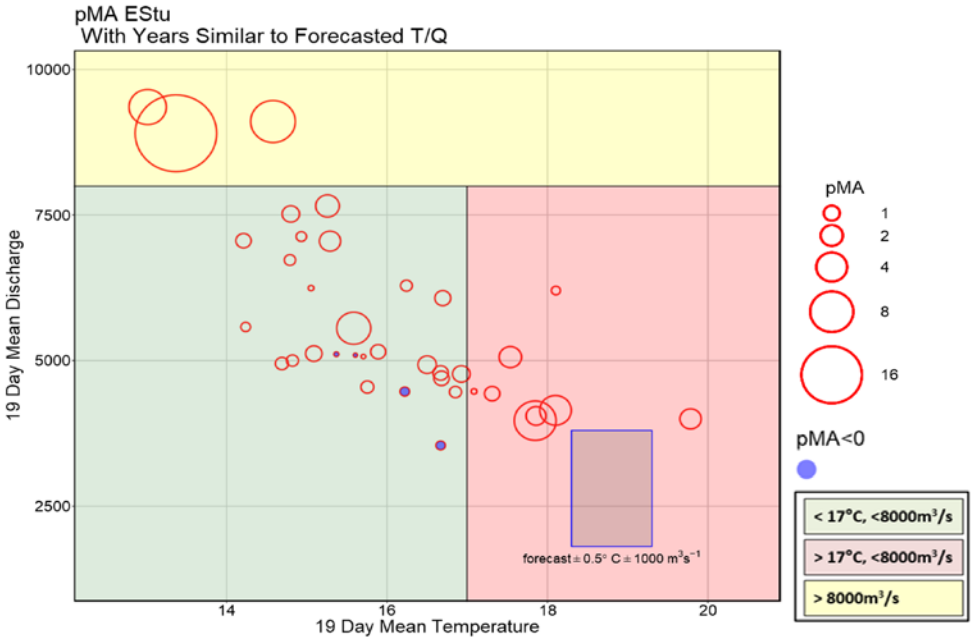


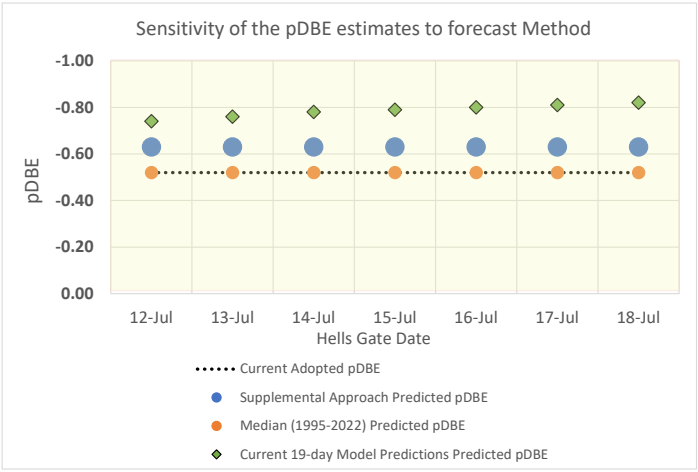
Run timing bars represent a 31 day spread of the run centered around the Hell's Gate date. Hell's gate timing is 5 days from Mission for Early Stuart and Late run; and 4 days from Mission for Early Summer and Summer run.'pMA is the proportional increase to spawning escapement targets to help ensure targets are achieved."%DBE is %difference betweeen 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}. [i]Discharge threshold of 8000cms for Early Stuart from Macdonald (2000). Can. Tech. Rep. Fish. Aquat. Sci. 2315: 120p. [ii]Discharge 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.

Upriver of Slide	Map #	Current Temperatures 12-Jul	Daily Mean	Historic Mean	Deviation from Historical Mean	Historic Year Range
		Fraser River Mainstem				
	1	Fraser River @ Hope	19.5	16.4	3.1	1991-2020
	2	Fraser River @ Texas Creek	20.4	16.4	4.0	2006-2022
	3	Fraser River @ Big Bar Creek	NA	NA	NA	2019-2022
►	4	Fraser River @ Marguerite	19.7	16.9	2.8	2015-2022
►	5	Upper Fraser @ Shelley	18.1	13.5	4.6	1994-2022
		Fraser River Tributaries				
	6	Thompson R. @ Ashcroft	17.8	15.4	2.4	1995-2022
	7	South Thompson @ Chase	18.8	16.3	2.5	1994-2022
	8	North Thompson @ McLure	18.8	13.3	5.5	2006-2022
►	9	Quesnel R. @ Quesnel	15.5	14.5	1.0	2000-2022
►	10	Nechako R. @ Isle Pierre	NA	18.5	NA	2006-2022
►	11	Stuart R. @ Ft. St. James	20.2	17.4	2.8	2000-2022

Early Stuart pDBE Forecast and Sensitivity Analysis for July 14, 2023

Based on the retrospective analysis evaluation of 2010-2021 for Early Stuart the best performing in-season model is the Supplemental Approach

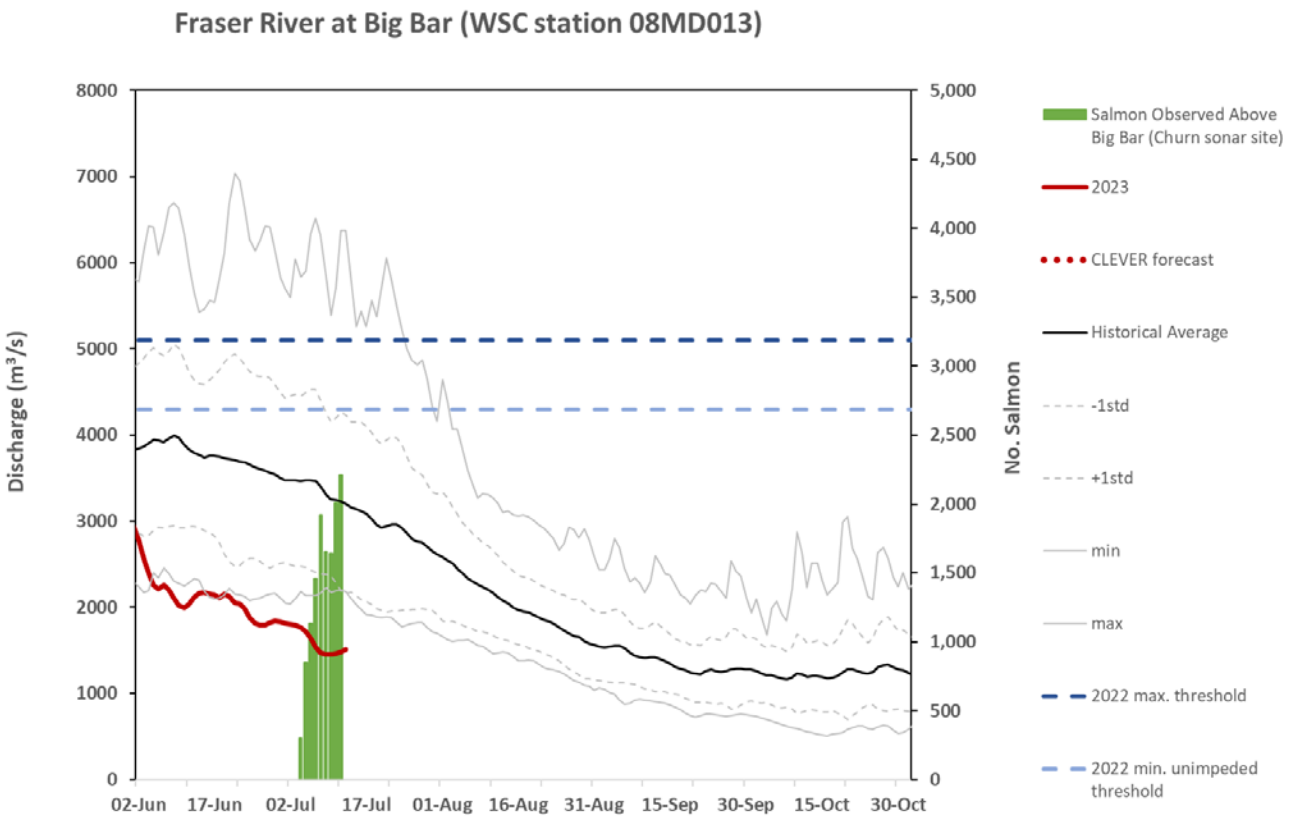




Model Performance Based on "In-season pDBE Approach" Retrospective					Best	2	3
Area 20 Date	Hells Gate Date	Average Temperature ºC	Average Discharge m^3/s	Current Adopted pDBE	Supplemental Approach Predicted pDBE	Median (1995-2022) Predicted pDBE	Current 19-day Model Predictions Predicted pDBE
01-Jul	12-Jul	18.2	2968	-0.52	-0.63	-0.52	-0.74
02-Jul	13-Jul	18.4	2933	-0.52	-0.63	-0.52	-0.76
03-Jul	14-Jul	18.6	2894	-0.52	-0.63	-0.52	-0.78
04-Jul	15-Jul	18.7	2851	-0.52	-0.63	-0.52	-0.79
05-Jul	16-Jul	18.8	2805	-0.52	-0.63	-0.52	-0.80
06-Jul	17-Jul	18.8	2757	-0.52	-0.63	-0.52	-0.81
* 07-Jul	18-Jul	18.9	2706	-0.52	-0.63	-0.52	-0.82
Implied pMA							
* 07-Jul	18-Jul	18.9	2706	1.08	1.70	1.08	4.56

* Currently adopted timing with updated forecast information (11 observed and 8 forecast days)

Fraser River Discharge at Big Bar



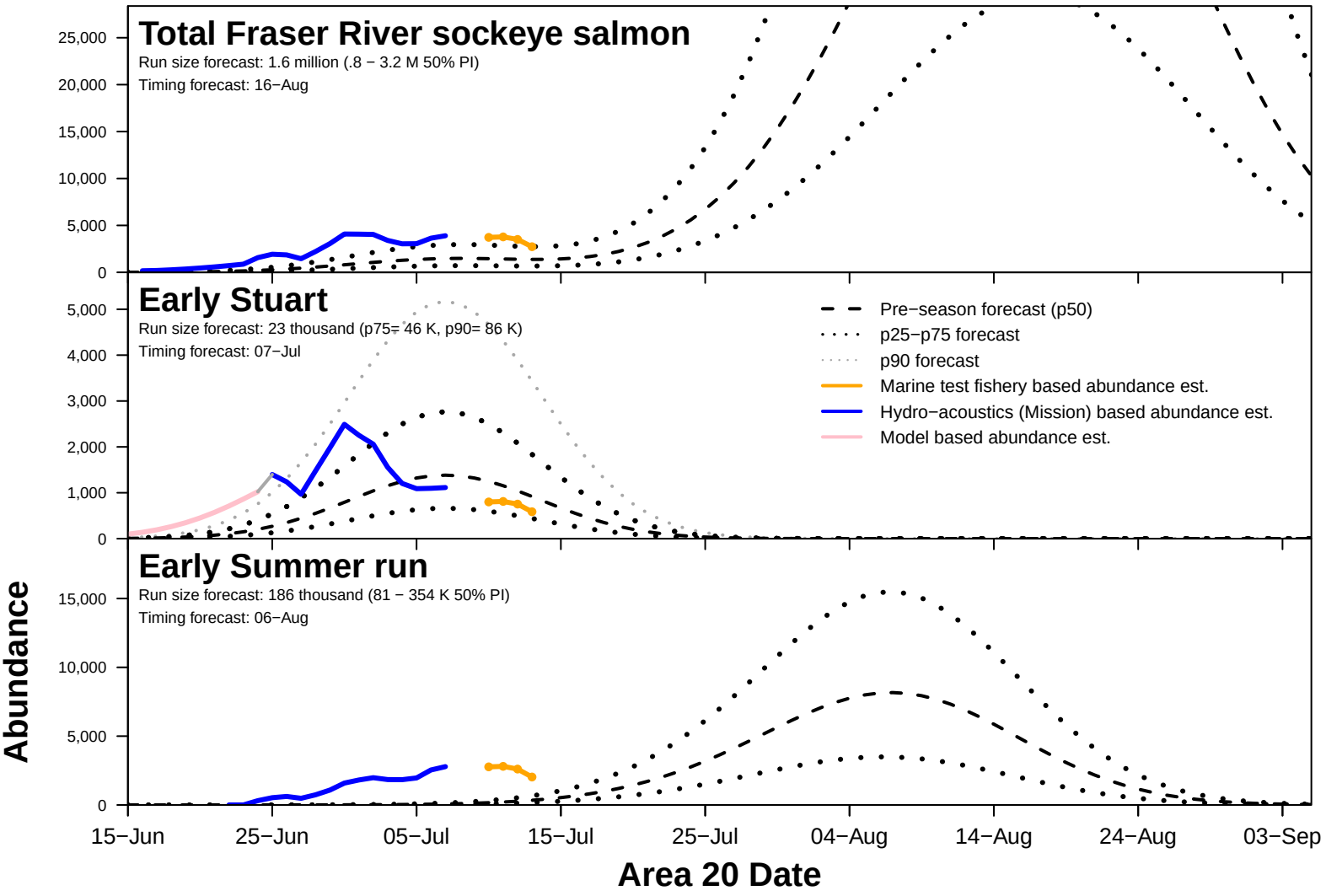
Data made available by: Environment and Climate Change Canada and nhc northwest hydraulic consultants

Migration passage at Big Bar

Big Bar Update

- There have been no upstream migration problems reported at Big Bar.
- A total of 13,182 salmon have been observed 40 km upstream of Big Bar (Churn Creek).
- Using a length cut off of 68 cm to differentiate Chinook and sockeye (based on tagging data from 2022), 1,872 sockeye have migrated past Churn sonars up until July 10.
- A total of 20 sockeye have been collected for broodstock.
- A total of 74 sockeye have been tagged.

2023 Fraser River sockeye salmon daily migration



Date: 2023−07−14, Time: 09:46 SW

2023 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] 10% PI	Inseason 80% PIs[2] 90% PI	Method	Catch + Escapement	6-day Projection[3]	Seaward Abundance	Inseason Adopted	Preseason Forecast	Inseason estimate	Inseason 80% PIs[2] 10% PI	Inseason 80% PIs[2] 90% PI	Method
Early Stuart Run	NA	23,000	● 30,000	*27,000*	*34,000*	Recon(2)	25,000	4,000	1,000	NA	07-Jul	01-Jul	*30-Jun*	*02-Jul*	Recon(2)

[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).

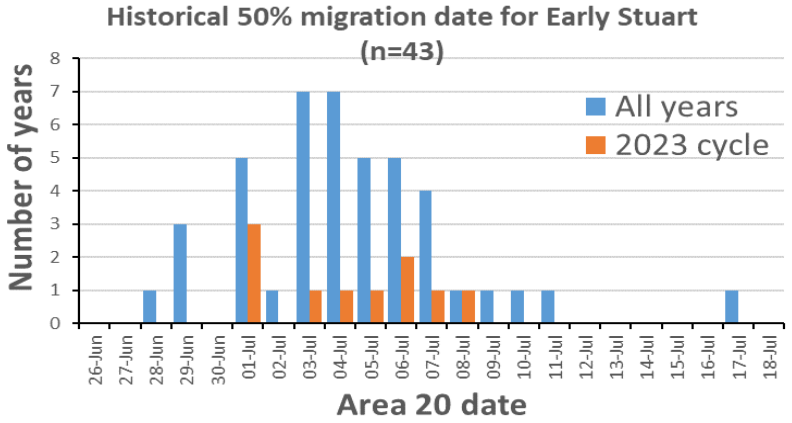
Methods for run size & timing estimation

Recon(2) Catch + escapement + model projections

Run Size Uncertainty Legend[4]

- ✓ ≥ 95% of the run size has been accounted for in catch + escapement. Clear indication of run size; minor run size updates still expected
- ● ≥ 70% of the run size has been accounted for in catch + escapement. Good indication of run size; peak fo the run has been observed at Mission, uncertainty relates to seaward abundance
- ▲ ≥ 50% of the run size has been accounted for in catch + escapement. Decent indciation of run size; ≥ 50% confirmed at Mission
- ◇ < 50% of the run size has been accounted for in catch + escapement. Uncertain or early indciation of run size based on marine data

[4] The **Run Size Uncertainty Indicator** is a categorical indication of the degree of uncertainty present in the run size estimate. Estimates are categorized quantitatively based on the proportion of the run that has been accounted for with high certainty in catch + escapement.



Sockeye assessment updates from other areas

	Area	Pre-season Forecast	Run Size Estimate	Run to Date	Date of Last Update	Sources
Alaska	Bristol Bay	51 million	49 million	34.5 million	July 12	1, 2
British Columbia	Nass River (TRTC)	366,000	427,000	174,000	July 12	3
	Skeena River	2.8 million		0.38 million	July 11	4
	Barkley Sound	500,000 – 700,000	800,000	439,000	July 13	5
Washington	Baker Lake	31,300	52,000	26,900	July 13	6
	Lake Washington	21,850		9,900	July 9	7
	Columbia River	234,500	332,000	314,200	July 13	8

[1] University of Washington Alaska Salmon Program - 2023 In-season Reports
[2] ADF&G In-season Total Run Summary
[3] Nisga'a Fisheries - Nass Stock Assessment Updates
[4] DFO North Coast Salmon Update (email distribution)
[5] DFO Barkley Sound Stock Assessment Updates
[6] WDFW Baker River sockeye salmon counts
[7] WDFW Lake Washington sockeye salmon counts
[8] Fish Passage Center - Bonneville Dam Counts

Upcoming Test Fishing Start Dates 2023

	Test Fishery	Start Date
Panel Waters	Area 20 Purse Seine	July 21
	Cottonwood	July 26
	Area 7 Reefnet	TBD
Non-Panel Waters	Area 12 Blinkhorn Purse Seine	July 20

2023 Fraser River Panel Management Plan

Principles and Constraints

Agreed ??, 2023[1]

1. Fisheries and Oceans Canada (DFO) has provided the Panel with run-size forecasts for Fraser River sockeye and pink salmon. It is broadly understood that the sockeye run size forecasts are low due to the low number of sockeye that returned in 2019 and the impact of the Big Bar landslide in the same year. In addition, sockeye and pink run-size forecasts are very uncertain due to high variability in annual salmon productivity (e.g., the number of returning recruits per spawner, and the number of returning recruits per outmigrating fry), and observation error in the associated data. The median forecast for the total Fraser sockeye return is 1,564,000 fish, and there is a one in four chance that the actual number of returning sockeye will be at or below 800,000 fish and there is a one in four chance that the actual number of returning sockeye will be at or larger than 3,185,000 fish. The median forecasts for the four different management groups are 23,000 Early Stuart, 186,000 Early Summer-run, 1,167,000 Summer-run, and 188,000 Late-run sockeye. Of note, Chilko, Stellako and Quesnel sockeye represent 68% of the total Fraser sockeye return and 91% of the Summer-run return at the median forecast. Also of note is the large, expected contribution of 5-year-olds, constituting 49% of the total Fraser sockeye forecast, 99% for Early Stuart, 67% for Early Summer run, 39% for Summer run and 89% for Late run. The degree of uncertainty in Fraser sockeye forecasts is somewhat higher for 5-year-olds than 4-year-olds. The median forecast for Fraser River pink salmon is 6,135,000 fish, and there is a one in four chance that the actual number of returning pink salmon will be below 4,389,000, and a one in four chance that the return will be larger than 8,575,000. The median, or 50% probability level, forecasts for Fraser River sockeye and pink salmon were used for pre-season planning purposes. In addition, pre-season plans were developed for the 75% probability level forecasts for both sockeye and pink salmon, as well as early timing for pink salmon and higher northern diversion rates for sockeye. When sufficient information is available in-season, the Panel will adopt updated run size estimates of Fraser River sockeye and pink salmon, as appropriate.
2. The Panel's first priority is to meet sockeye spawning escapement goals by management group and the pink escapement objective. A coordinated approach to management has been developed that reflects both Parties sharing the burden of conservation. At the median forecast, no directed harvest of sockeye is planned; however, depending upon sockeye and coho constraints, both Canada and the United States anticipate harvesting the full pink salmon total allowable catch (TAC) if Fraser River pink salmon returns in 2023 correspond to the range of forecasts provided (p10 to p90).
3. TAC and international shares of the TAC are calculated according to the 2020 revised Annex IV, Chapter 4, of the Pacific Salmon Treaty, which limits the United States harvest (in Washington State) to 16.5% of the international TAC of Fraser River sockeye salmon and 25.7% of the international TAC of Fraser River pink salmon. For 2023, the Fraser River Panel agreed to pre-season Fraser River Aboriginal Fisheries Exemptions as determined by the process outlined in paragraph 3d for the purposes of computing Fraser River sockeye TAC by management group. The Panel will implement low abundance exploitation rates (LAER) for a management group when the allowable harvest for that group, according to Total Allowable Mortality rules as defined in Canada's escapement plan,

[1] Panel Chair, Adam Keizer, and Vice-Chair, Jason Gobin agreed to Principles and Constraints for 2023 season.

has no identified TAC, in order to allow access to available TAC for other co-migrating Fraser River sockeye salmon management groups. At the median forecasts, the LAERs are set at 10% for each sockeye management group. LAERs are not intended to create directed harvest opportunities in mixed stock areas, do not contribute to international TACs, and represent maximum allowable fishing-related impacts (including test fisheries and release mortalities). Calculated shares of the international TACs that fall below the LAER amount will contribute to the international share of the TAC.

4. Given pre-season assumptions about sockeye marine migration timing, recent late run delay behaviour, and an anticipated large proportion of en-route mortality due to predicted warm water temperatures, the Panel has agreed to use proportional Management Adjustment (pMA) factors for sockeye of 1.08 for Early Stuart, 0.56 for Early Summer, 0.23 for Summer, and 1.00 for Late Run sockeye.
5. At the median forecast, no directed harvest of sockeye is planned. However, some limited impacts on sockeye may occur in fisheries directed at harvestable surpluses of Fraser River pink salmon. It is understood that the overlapping of sockeye and pink salmon migrations may result in a small but acceptable rate of incidental harvest on one or more overlapping sockeye management groups that have little or no TAC. How this sockeye bycatch harvest occurs will be determined based on in-season information. Retention of sockeye bycatch at returns that are below levels which generate international TAC will be discussed in-season prior to approval. In the event that sockeye international TAC becomes available (e.g., if abundances approach p75), fisheries plans will be discussed by the Fraser River Panel, and harvests based on in-season information will be conducted respecting the conservation concerns for both nations on co-migrating stocks and species.
6. There is significant concern related to environmental conditions in 2023, as a result of the well below average snowpack and predicted air and water temperatures likely to be well above average, which may result in the adoption of more conservative management adjustments where appropriate to achieve the escapement objectives for the various sockeye management groups.

Regulations

i) If in-season conditions are consistent with pre-season expectations, low impact fisheries directed at pink salmon would be expected to commence in late-August in Panel Waters. The actual start dates and duration of fisheries will depend on in-season estimates of timing, abundance, diversion, and agreed management adjustments.

ii) At the median forecast, no directed harvest of sockeye is planned. However, some limited by-catch of sockeye as determined in-season may occur in fisheries directed at harvestable surpluses of Fraser River pink salmon.

iii) The Parties' conservation concerns for other species and stocks will be taken into account throughout the 2023 management season by minimizing by-catch of weak stocks of sockeye, Chinook, coho, and steelhead in fisheries directed at abundant stocks.