

**DRAFT AGENDA
PACIFIC SALMON COMMISSION
FRASER RIVER TECHNICAL COMMITTEE
Thursday August 17, 2023 at 1:00 pm.
Via Zoom**

- 1) Agenda
- 2) Webinar Etiquette
- 3) Run status of Fraser River sockeye salmon relative to forecasts and adopted run sizes PSC Staff
- 4) In-season data flow for updating objectives PSC staff
 - a) Test fishing catches and acoustics
 - b) Mission projected sockeye estimate vs. Qualark estimate
 - c) Species Composition
 - d) Stock proportions & age composition
 - e) Environmental conditions
 - f) Observations from the watershed DFO
- 5) Assessments and recommendations
 - a) Daily migration graphs
 - b) Escapement projections
 - c) Expansion lines
 - d) Run size model outputs
 - e) Run size and timing estimates
 - f) Productivity graphs
 - g) Catch evaluation
 - h) Sockeye versus pink salmon proportions in test fisheries
- 6) Other Business Staff/FRTC
- 7) Next Technical Committee meeting, Thursday August 24, 1:00 p.m. via Zoom TC

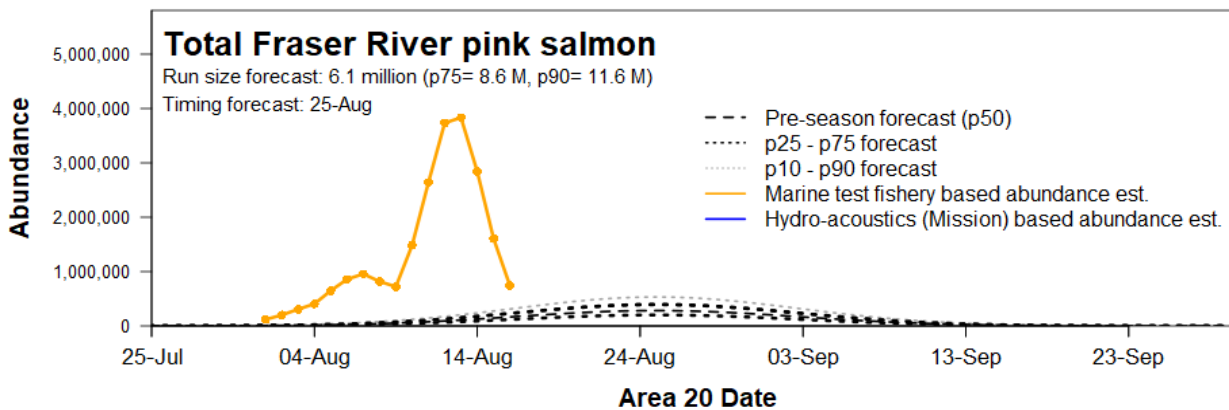
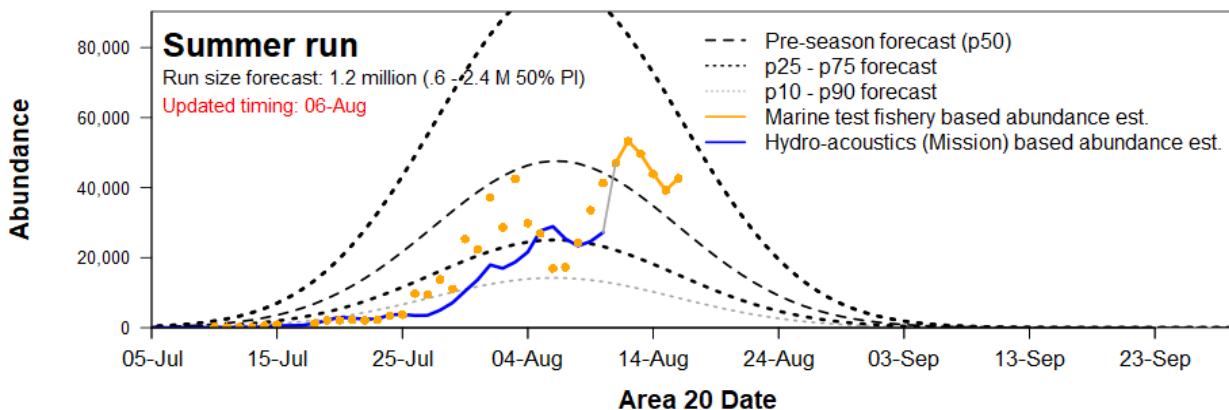
2023 Run status of Fraser sockeye and pink salmon

Date: Aug. 17, 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: Aug. 13 - Aug. 19, 2023	Sockeye				Pink	
	Management Group				Total Fraser	Total Fraser
	E.Stuart	E.Summer	Summer	Late		
Mission passage (incls Pitt, Alouette, Coquitlam)	40,900	278,400	266,700	13,500	599,500	22,800
Catch downstream of Mission	200	3,700	5,900	900	10,700	2,700
Accounted Run To Date	41,100	282,100	272,600	14,400	610,200	25,500
Run size adopted in-season ²	41,000	290,000	na	na	na	8,575,000
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	2/Jul	23/Jul	na	na	na	18/Aug
Area 20 timing expected pre-season	7/Jul	6/Aug	17/Aug	24/Aug	16/Aug	25/Aug
Johnstone Str. Diversion Rate	In-season 5-day average				64%	25%
	Preseason forecast of annual rate:				67%	62%

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.



2023 Catch-to-date by fishery

Date: Aug. 17, 2023

Week of: Aug. 13 - Aug. 19, 2023		Sockeye		Pink	
		Total	Fraser	Total	Fraser
Canada		5,008	5,008	12,526	562
	Commercial	0	0	0	0
	B Purse Seine	0	0	0	0
	D Gillnet	0	0	0	0
	E Gillnet	0	0	0	0
	G Troll	0	0	0	0
	H Troll	0	0	0	0
	First Nations	0	0	493	104
	Food, Social & Ceremonial (FSC)	0	0	493	104
	Marine	0	0	487	98
	Fraser R.	0	0	6	6
	Economic Opportunity (EO) & Demonstration (Demo)	0	0	0	0
	Escapement Surplus to Spawning Requirements (ESSR)	126	126	0	0
	Recreational	0	0	12,030	455
	Charter (Albion & A12 Chum test fishery)	461	461	3	3
	Other****	4,421	4,421	0	0
United States		0	0	0	0
	Commercial	0	0	0	0
	Treaty Tribes (TRB)	0	0	0	0
	All Citizen (AC)	0	0	0	0
	Treaty Tribes Ceremonial & Subsistence (C&S)	0	0	0	0
	All Citizen Recreational	0	0	0	0
	Other****	0	0		
	Alaska *	na	na	na	na
Panel-approved Test Fisheries		11,026	10,510	7,274	2,148
	Panel Waters	7,780	7,496	6,203	2,017
	Canada	7,780	7,496	2,553	402
	U.S.	0	0	3,650	1,615
	Non-Panel Waters**	3,246	3,014	1,071	132
Total		16,034	15,518	19,800	2,710
	Catch Seaward of Mission ***	11,199	10,683	19,794	2,704
	Catch Upstream of Mission	4,835	4,835	6	6

* 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

2023 Fraser Sockeye Test Fishing & Escapement Summary

Area/Gear Location From A20	Johnstone Strait	Juan de Fuca Strait		Fraser River									
	A12 PS Blinkhorn (-1 day)	A20 PS Port Renfrew (0 days)	A7 RN ¹ San Juan Is (+3 days)	A29-13 GN Cottonwood (+5 days)	A29-17 GN Brownsville Bar ² (+5 days)	A29-16 GN Whonnock (+6 days)	Whon CPUE Estimate (+6 days)	GN Catch (+8 days)	Qualark Estimate ³	Method ⁴	Mission Hydroacoustics Estimate ⁵ (+6 days)	Method ⁶	Hells Gate Estimates ⁷ (+10 days)
27-Jul	107	127		9	40	2	0.17	9	8,444	RB + LB	8,500	S1+M2+A2	5,000
28-Jul	522	81		20	36	9	0.83	10	6,521	RB + LB	7,000	S1+M2+A2	3,010
29-Jul	13	265		1	17	3	0.27	11	6,965	RB + LB	9,200	S1+M2+A2	2,660
30-Jul	239	384		3	44	5	0.47	11	5,396	RB + LB	6,600	S1+M2+A2	930
31-Jul	99	1,021		8	66	19	1.64	8	6,890	RB + LB	11,000	S1+M2+A2	890
1-Aug	4,592	230		3	36	11	0.93	16	8,067	RB + LB	9,000	S1+M2+A2	930
2-Aug	1,400	143		3	24	20	1.72	10	8,834	RB + LB	7,900	S1+M2+A2	1,080
3-Aug	6,197	147		10	44	21	1.74	14	9,597	RB + LB	17,800	S1+M2+A2	1,960
4-Aug	2,824	184		17	57	15	1.25	23	9,209	RB + LB	13,900	A1+S1+M2+A2	2,720
5-Aug	203	162		17	136	58	4.33	10	12,073	RB + LB	19,600	A1+S1+M2+A2	2,630
6-Aug	683	387		21	143	31	2.48	7	14,372	RB + LB	23,900	A1+S1+M2+A2	4,220
7-Aug	663	492		28	51	11	0.97	20	16,577	RB + LB	25,700	A1+S1+M2+A2	4,500
8-Aug	93 (2 sets)	188		9	107	12	1.06	17	21,431	RB + LB	30,600	A1+S1+M2+A2	6,870
9-Aug	5,923	85 (3 sets)		19	116	9	0.82	15	21,271	RB + LB	18,000	A1+S1+M2+A2	6,860
10-Aug	1,645	72 (3 sets)		44	155	24	1.89	17	20,706	RB + LB	32,000	A1+S1+M2+A2	11,100
11-Aug	4,017	1,294		15	83	44	3.42	19	11,411	RB + LB	37,100	A1+S1+M2+A2	11,620
12-Aug	9,032	2,000		24	80	72	5.63	12	18,569	RB + LB	37,800	A1+S1+M2+A2	7,060
13-Aug	991	865		15	71	60	4.82	20	29,195	RB + LB	35,200	A1+S1+M2+A2	2,580
14-Aug	763	1006 (5 sets)	290	45	106	84	6.16	47	31,260	RB + LB	26,100	A1+S1+M2+A2	No Count
15-Aug	4714 (5 sets)	405	368	66	141	109	8.72	20	29,702	RB + LB	31,900	A1+S1+M2+A2	14,260
16-Aug	90 (5 sets)	241	376	159	115	138	10.61	43	26,791	RB + LB	37,500	A1+S1+M2+A2	6,530
17-Aug													
18-Aug													

¹ Area 7 Reefnet test fishery is for observation of fish presence and species composition. Vessels are operating at two observation sites.

² Alternative Lower River Test Fishery - Southern Endowment Fund Project

³ Qualark escapement estimate - does not include Chilliwack, Pitt, Harrison, Birkenhead, Big Silver, Weaver, and Cultus

⁴ Qualark source:

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

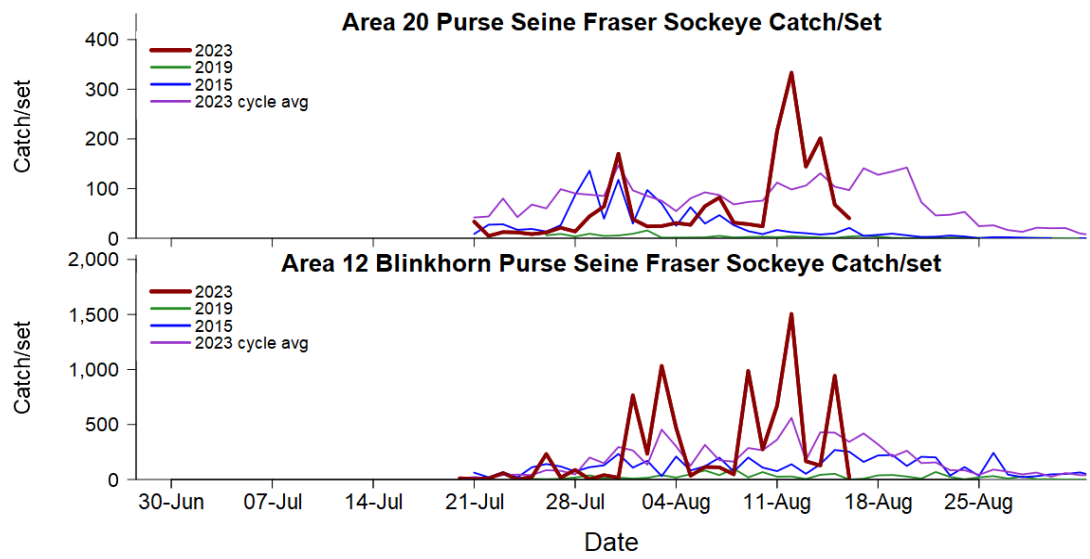
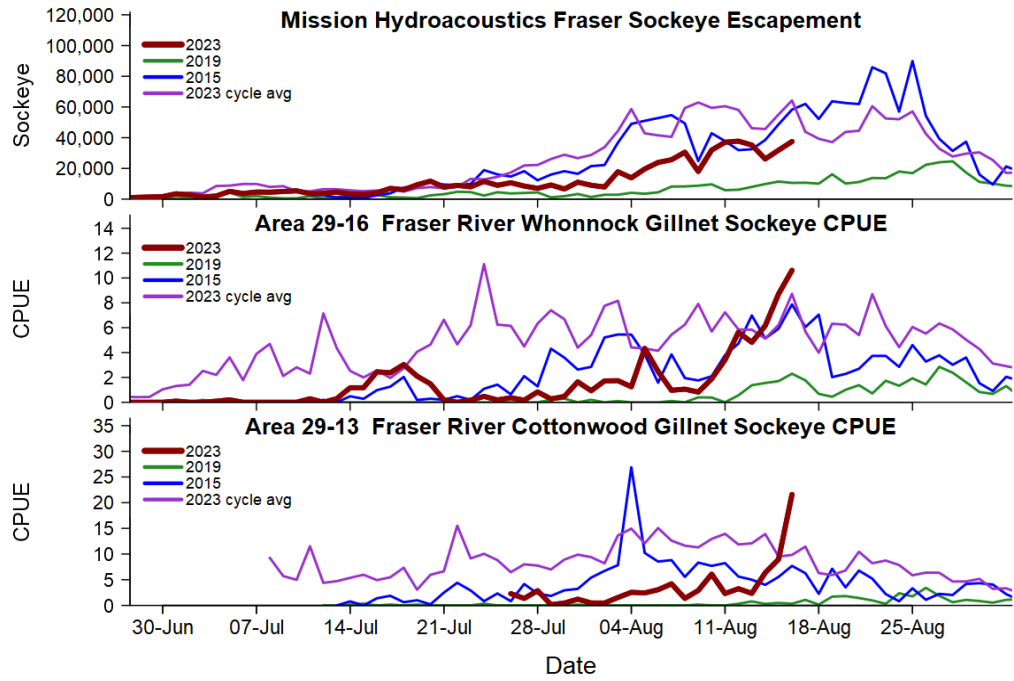
⁵ Mission escapement estimate - does not include Pitt

⁶ Mission source:

S1+M2+A2 = Left bank split-beam (S1) + Mobile ARIS (M2) + Right bank ARIS (A2)

A1+S1+M2+A2 = Left bank ARIS (A1) + Left bank split-beam (S1) + Mobile ARIS (M2) + Right bank ARIS (A2)

⁷ Daily Hells Gate abundance estimate; actual daily count has been expanded.



2023 Fraser Pink Test Fishing & Escapement Summary

Area/Gear Location From A20	Johnstone Strait			Juan de Fuca Strait			Fraser River						
	A12 PS Blinkhorn (- 2 days)	A20 PS Port Renfrew (0 days)	A7 RN ¹ San Juan Is	A29-13 GN Cottonwood	A29-17 GN Brownsville Bar ²	A29-16 GN Whonnock	Whon CPUE Estimate	GN Catch	Qualark Estimate ³	Method ⁴	Mission Hydroacoustics Estimate ⁵	Method ⁶	Hell's Gate Estimates ⁷
27-Jul	3,334	10,148		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
28-Jul	11,055	6,285		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
29-Jul	574	7,964		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
30-Jul	1,800	6,100		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
31-Jul	2,199	4,152		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
1-Aug	10,849	6,072		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
2-Aug	11,745	4,101		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
3-Aug	15,892	5,102		0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
4-Aug	5,826	10,886		0	1	0	0.00	0	0	RB+LB	0	A1+S1+M2+A2	0
5-Aug	4,442	7,835		0	2	0	0.00	0	0	RB+LB	730	A1+S1+M2+A2	0
6-Aug	12,365	20,036		0	0	1	0.08	0	0	RB+LB	1,470	A1+S1+M2+A2	0
7-Aug	25,449	22,255		0	1	0	0.00	0	0	RB+LB	1,470	A1+S1+M2+A2	0
8-Aug	4322 (2 sets)	12,043		0	3	0	0.00	0	0	RB+LB	1,470	A1+S1+M2+A2	0
9-Aug	88,365	2709 (3 sets)		1	0	0	0.00	0	0	RB+LB	2,010	A1+S1+M2+A2	0
10-Aug	51,493	6080 (3 sets)		0	1	0	0.00	0	0	RB+LB	2,010	A1+S1+M2+A2	0
11-Aug	61,846	32,260		0	1	0	0.00	0	0	RB+LB	2,020	A1+S1+M2+A2	0
12-Aug	92,413	52,160		0	1	1	0.08	0	0	RB+LB	1,010	A1+S1+M2+A2	0
13-Aug	12,244	49,024		0	2	0	0.00	0	0	RB+LB	1,520	A1+S1+M2+A2	0
14-Aug	9,283	23431 (5 sets)	398	0	2	0	0.00	0	0	RB+LB	2,020	A1+S1+M2+A2	No Count
15-Aug	45400 (5 sets)	11,635	1,337	1	5	1	0.08	0	0	RB+LB	2,520	A1+S1+M2+A2	0
16-Aug	6486 (5 sets)	3,962	2,108	0	10	4	0.30	1	623	RB+LB	4,540	A1+S1+M2+A2	10,700
17-Aug													
18-Aug													

¹ Area 7 Reefnet test fishery is for observation of fish presence and species composition. Vessels are operating at two observation sites.

² Alternative Lower River Test Fishery - Southern Endowment Fund Project

³ Qualark escapement estimate - does not include Chilliwack, Pitt, Harrison, Birkenhead, Big Silver, Weaver, and Cultus

⁴ Qualark source:

$RB+LB = \text{Right Bank (RB)} + \text{Left Bank (LB)}$

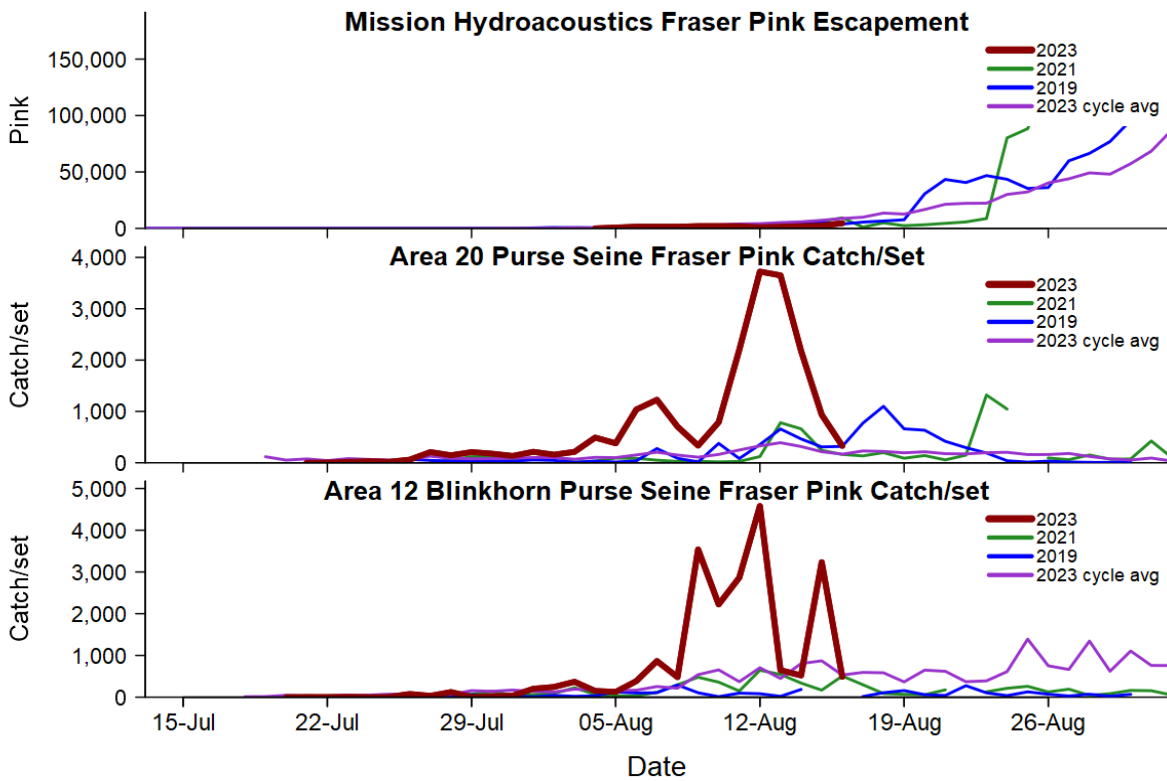
⁵ Mission escapement estimate - does not include Pitt

⁶ Mission source:

$S1+M2+A2 = \text{Left bank split-beam (S1)} + \text{Mobile ARIS (M2)} + \text{Right bank ARIS (A2)}$

$A1+S1+M2+A2 = \text{Left bank ARIS (A1)} + \text{Left bank split-beam (S1)} + \text{Mobile ARIS (M2)} + \text{Right bank ARIS (A2)}$

⁷ Daily Hells Gate abundance estimate; actual daily count has been expanded.



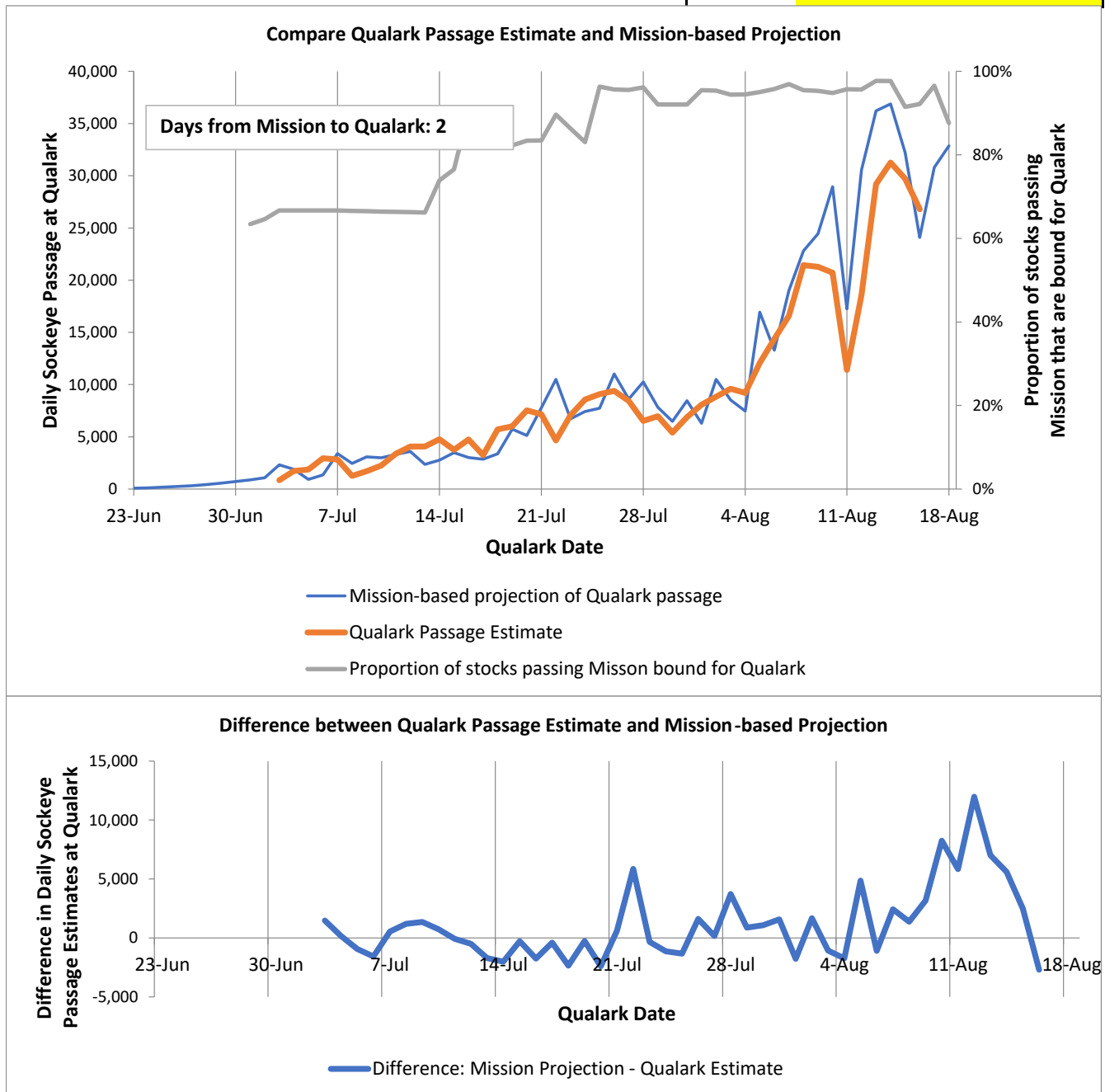
Fraser Sockeye: Qualark Passage Estimate and Mission-based Projection

Year: **2023**

Date: 17/Aug/23

Time: 10:38 AM

	All Days	Common Days
Mission projection	550,509	482,264
Qualark estimate	431,977	431,977
	Difference	50,287
	%Difference	10%

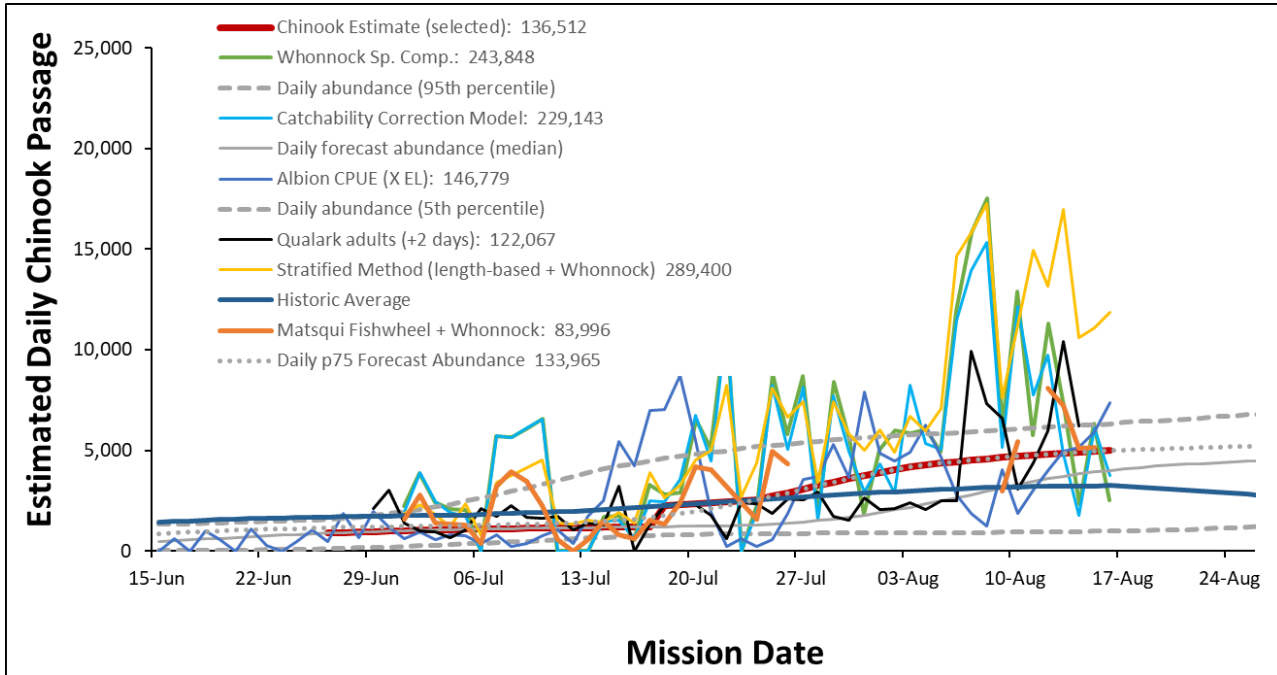


FRTC – August 17, 2023

Species Composition Update

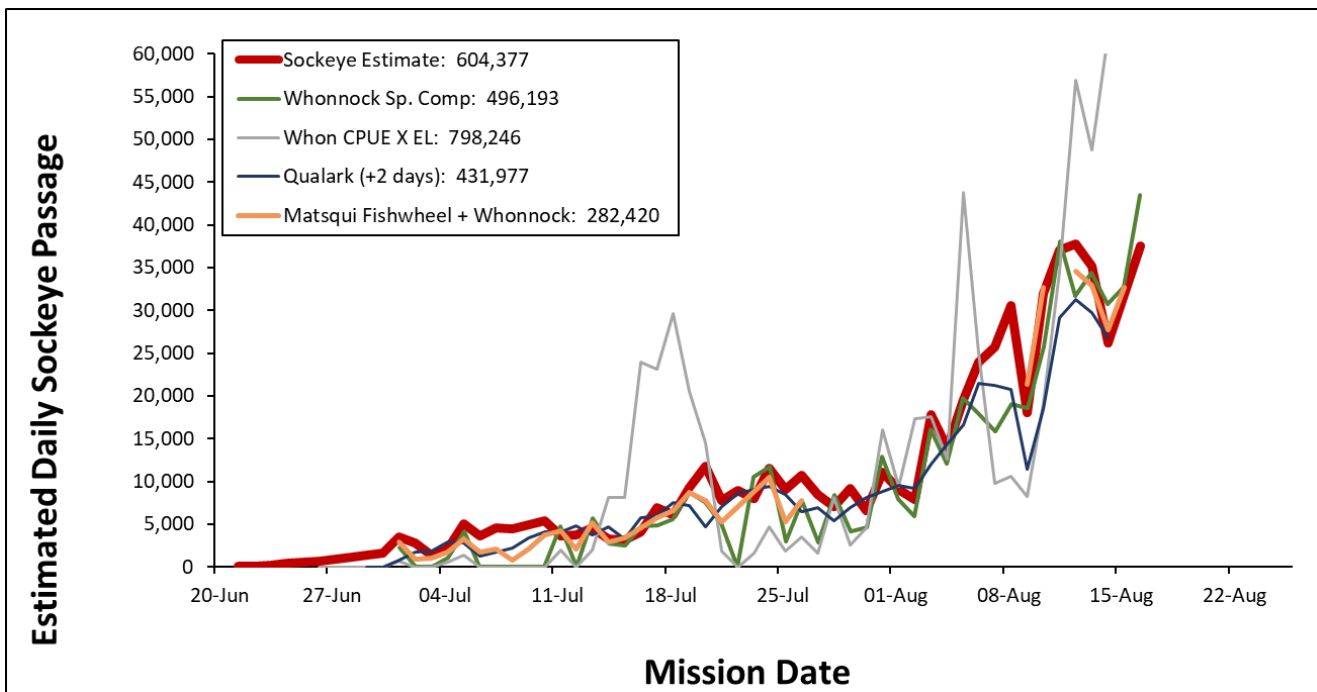
Chinook:

- July 1- 17: median daily forecast abundance; July 18-24: historical daily average; July 25 – August 16: daily p75 forecast abundance
- At this time of year, most Chinook passing Mission will also be passing Qualark.



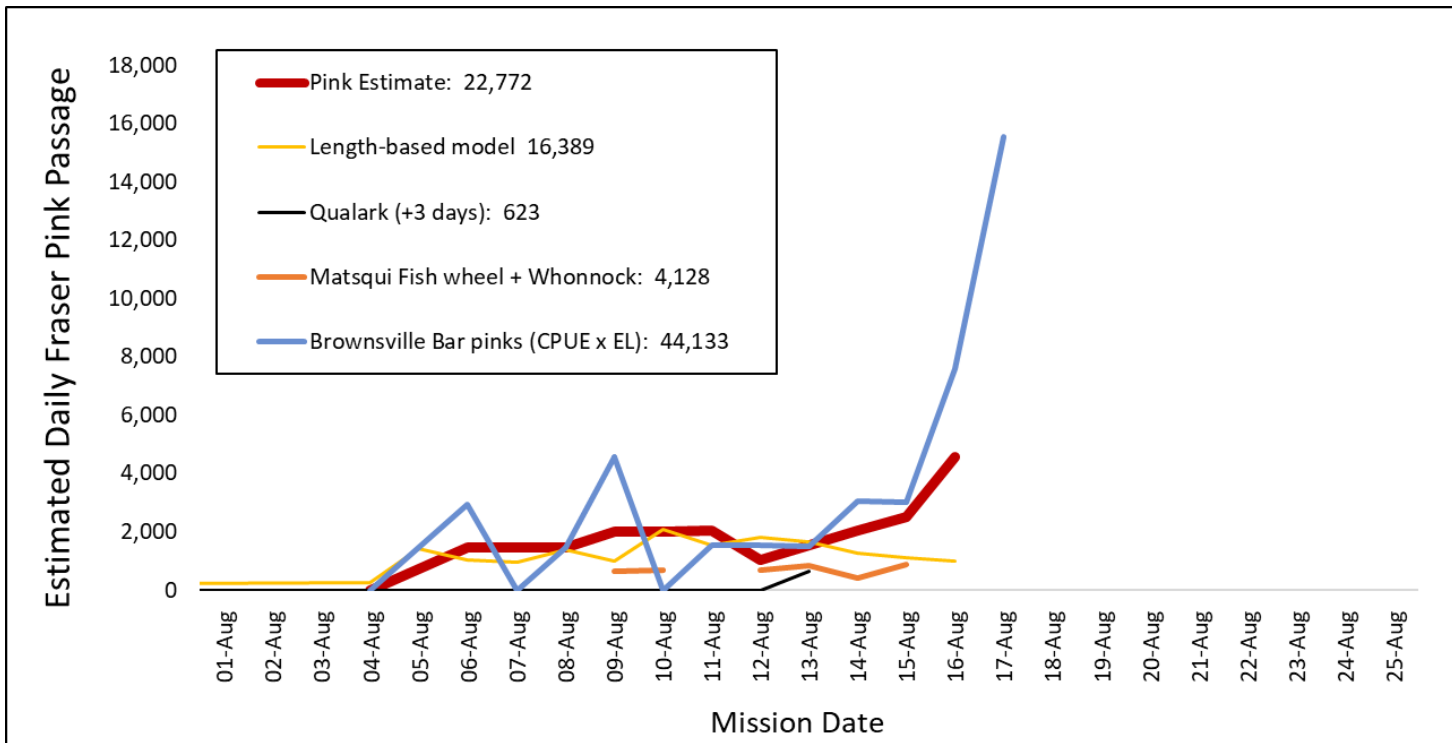
Sockeye:

- Sockeye abundance is calculated as total salmon minus Chinook minus pink (starting Aug 4)
- Total salmon abundance is based on Mission hydroacoustics



Pink:

- Currently using a 3-day average based on Brownsville Bar CPUE x EL
- The Brownsville Bar expansion line is based on a limited data set from 2021
- We may revise these estimates once we have more information on pink salmon in the river
- Starting August 4, we estimate 23,000 pink salmon past Mission
- Qualark data now included for pink salmon. Assumes a 3-day offset between Mission and Qualark



2023 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
						Area/Gear ¹	Sector ²	Date	Type ³	Size (n)	%Fraser	Early Stuart	Chilli-wack	Pitt Alouette	Nadina Bowron Gates Nahat-latch	Early Thompson	Early Summer sub-total	Harrison	Late Stuart	Chilko	Raft North Thompson	Summer sub-total	Birkenhead Big Silver	Late Shuswap Portage
Johnstone Strait & Queen Charlotte Strait																								
A12 ps	tf	Aug 8	DNA	68	99%	0%			7%	5%	12%		14%	49%	7%	70%	4%	1%	13%	18%	64%			
A12 ps	tf	Aug 9	DNA	89	98%	0%	1%		5%	1%	7%		23%	52%	2%	77%	5%	3%	8%	16%	66%			
A12 ps	tf	Aug 12	DNA	90	99%	0%			3%		3%		16%	59%	1%	75%	7%	4%	10%	21%	64%			
A12 ps		Aug 17	Prediction	1	99%	0%	1%		3%	0%	4%		6%	54%	2%	62%	14%	6%	13%	34%	NA			
Juan de Fuca Strait & Washington & Other																								
A20 ps	tf	Aug 11	DNA	98	100%	0%			4%	1%	6%	2%	22%	49%		73%	12%	2%	7%	21%	NA			
A20 ps	tf	Aug 12	DNA	97	98%	0%			8%	3%	11%		9%	60%		69%	6%	9%	5%	20%	70%			
A20 ps	tf	Aug 15	DNA	98	99%	0%			1%	1%	2%		10%	55%	1%	67%	15%	6%	10%	32%	71%			
A20 ps		Aug 17	Prediction	1	99%	0%			4%	2%	6%		7%	54%	1%	62%	14%	9%	9%	32%	NA			
In-river																								
AB gn	tf	Aug 13	DNA	49	100%	0%			14%	6%	20%		19%	56%		75%	5%			5%	NA			
AB gn	tf	Aug14-15	DNA	100	100%	0%	1%		21%	2%	23%	2%	11%	62%	2%	77%				0%	71%			
AB gnps	tf	Aug 17	Prediction	1	100%	0%	0%		6%	2%	8%	1%	16%	64%	2%	83%	9%			9%	NA			
BB gnps	tf	Aug 17	Prediction	1	100%	0%	0%	2%	3%	2%	8%	1%	14%	64%		79%	9%	4%	1%	13%	NA			

2023 Fraser River Pink Salmon Stock identification Review

Recent stock composition estimates for pink salmon

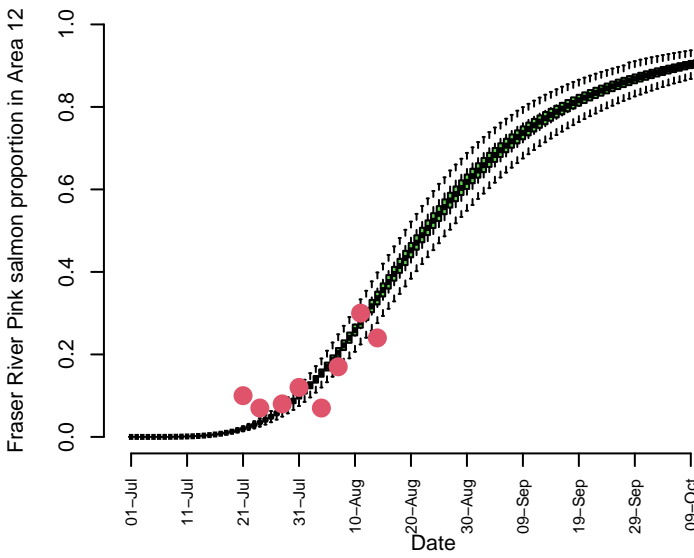
Fishing					DNA % Estimates by Group		
					Canada		
Area/Gear ¹	Sector ²	Date	Type ³	Size (n)	Fraser River	Washington	South Coast
Johnstone Strait							
A12 PS	TF	Aug11	DNA	95	30%	28%	42%
A12 PS	TF	Aug14	DNA	100	24%	25%	51%
A12		Aug17	Prediction	1	40%	26%	35%
Juan de Fuca Strait							
A20 PS	TF	Aug10	DNA	96	43%	38%	19%
A20 PS	TF	Aug14	DNA	91	51%	19%	29%
A20		Aug17	Prediction	1	52%	32%	16%
Washington							
A7 RN	TF	Aug14	DNA	181	40%	23%	37%
A7		Aug17	Prediction	1	50%	22%	29%
A7A		Aug17	Prediction	1	52%	13%	35%

Notes for sockeye and pink tables:

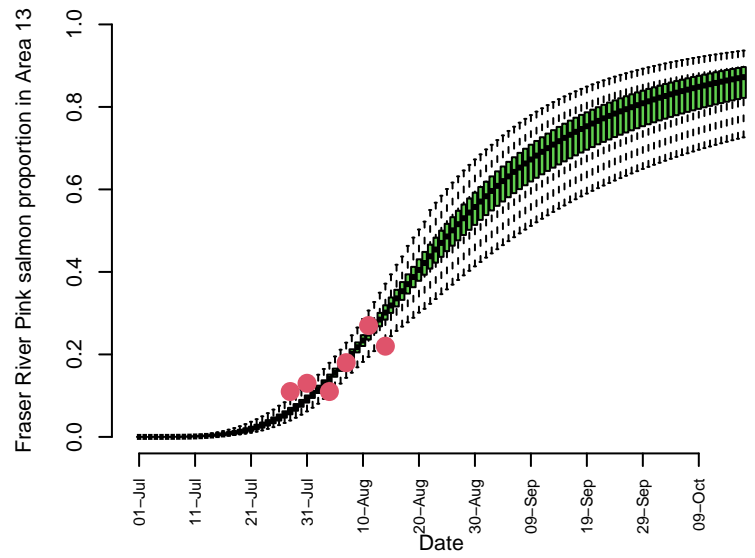
- BB GN=29_13 (Cottonwood,Brownsville), AT = Alaska Twist, AB GN=29_16 (Whonnock), MA FW=Matsqui Fish Wheel, QU GN=Qualark
- TF=sample from test fishery catch, CM=sample from commercial catch, C&S=ceremonial & subsistence catch, FSC=food, social, & ceremonial catch, rec= recreational catch
- Predictions 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
- 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

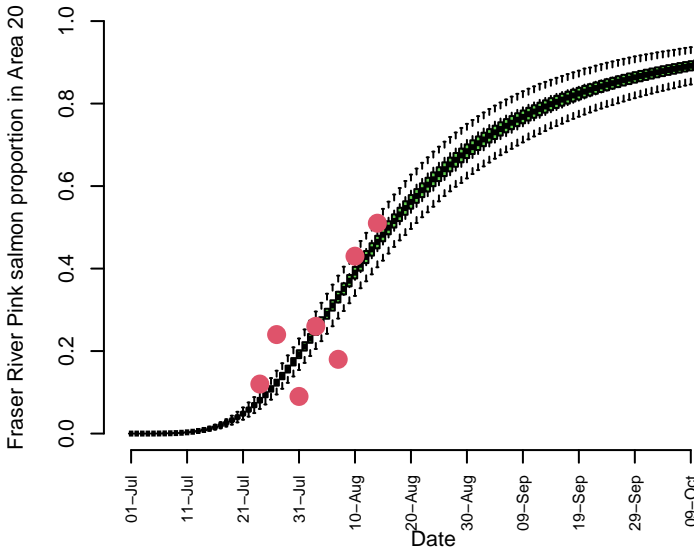
Area 12



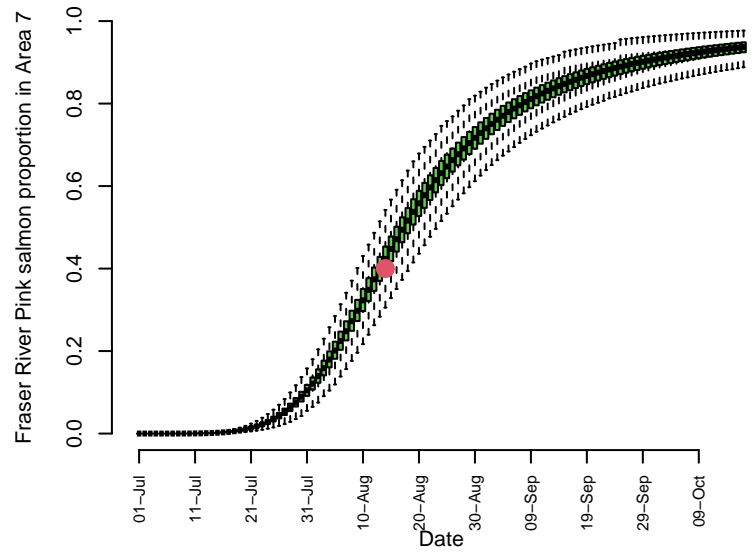
Area 13



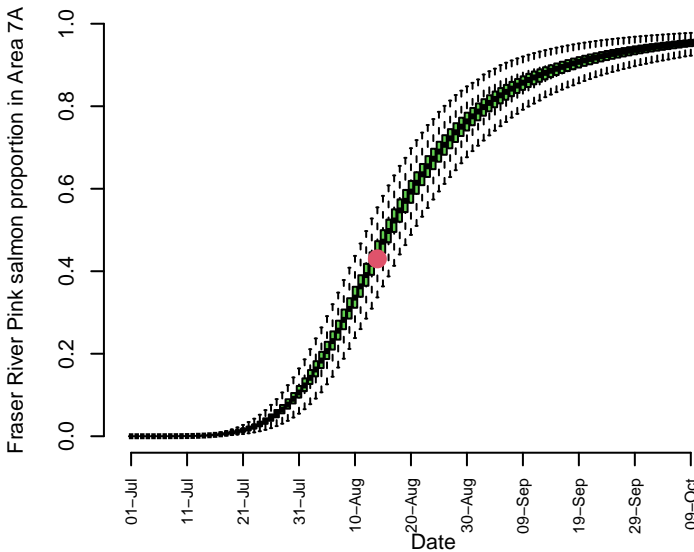
Area 20



Area 7

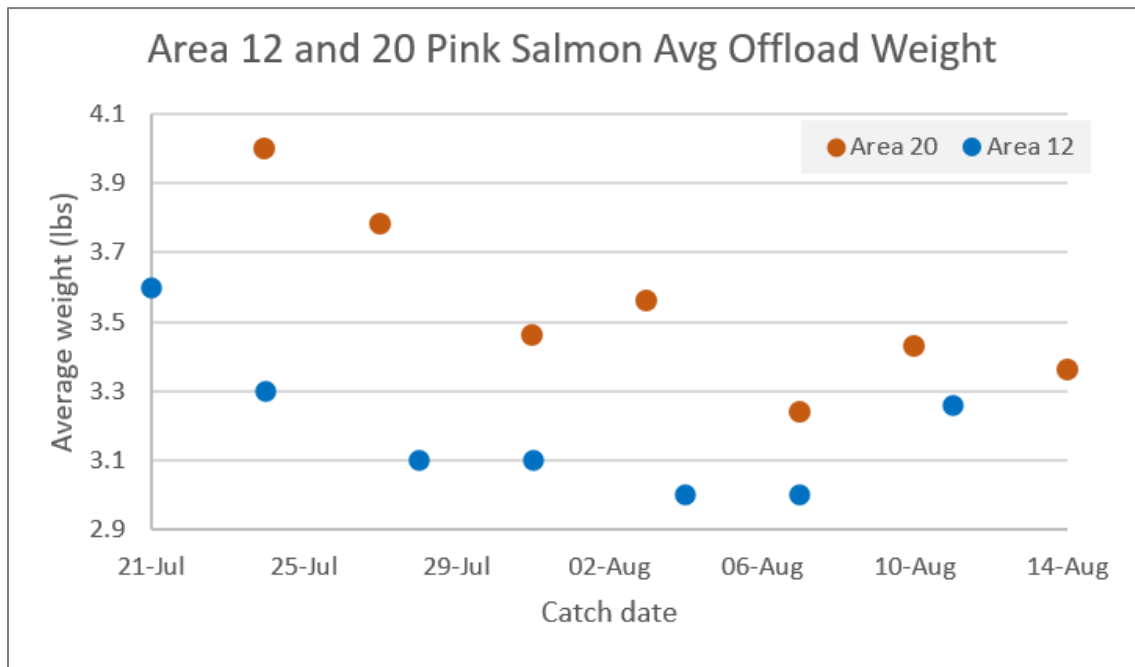
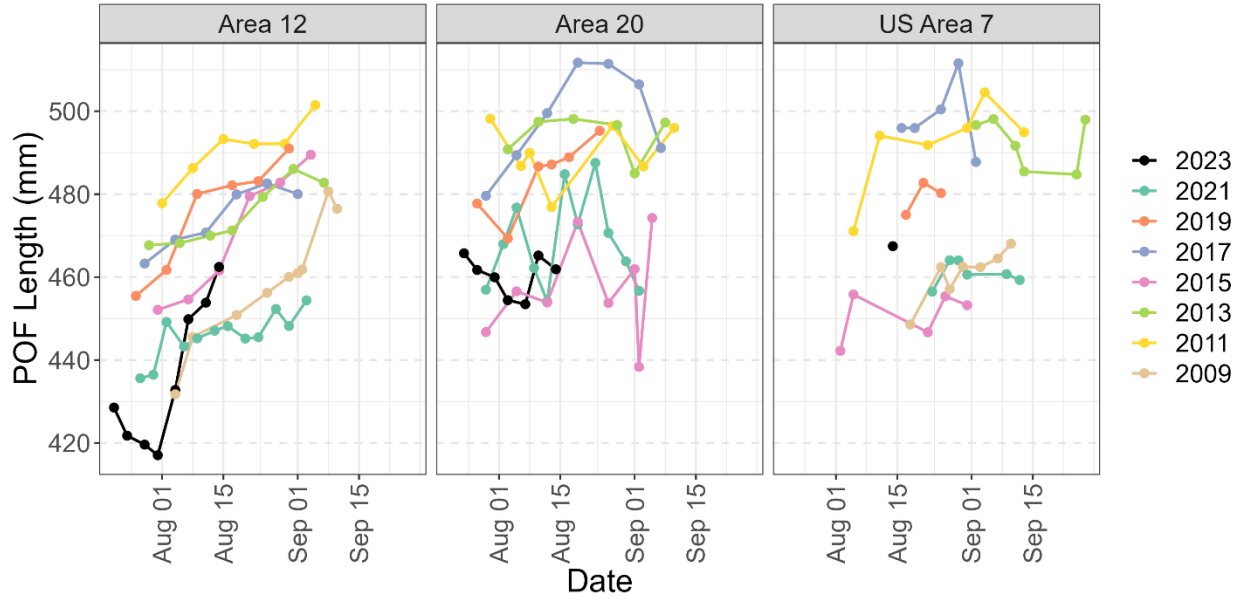


Area 7A



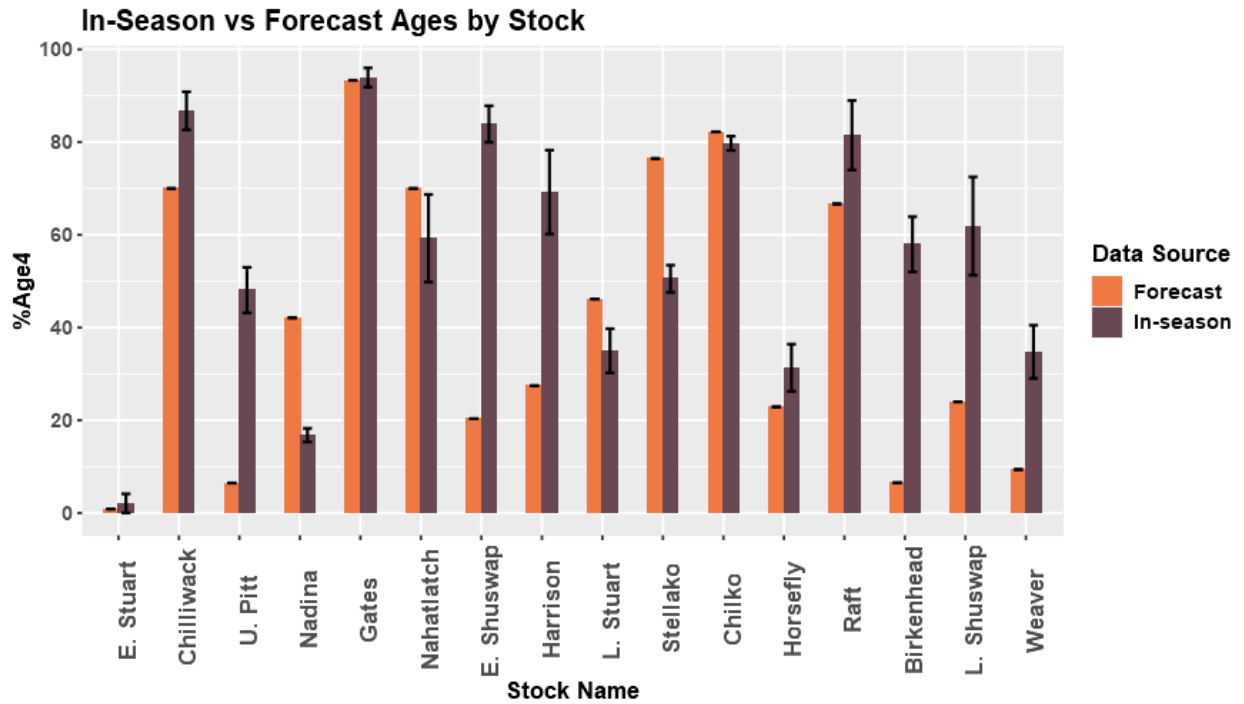
Pink salmon biological data

Mean Length in Marine Fisheries
POF length = Post-Orbit to Fork of Tail

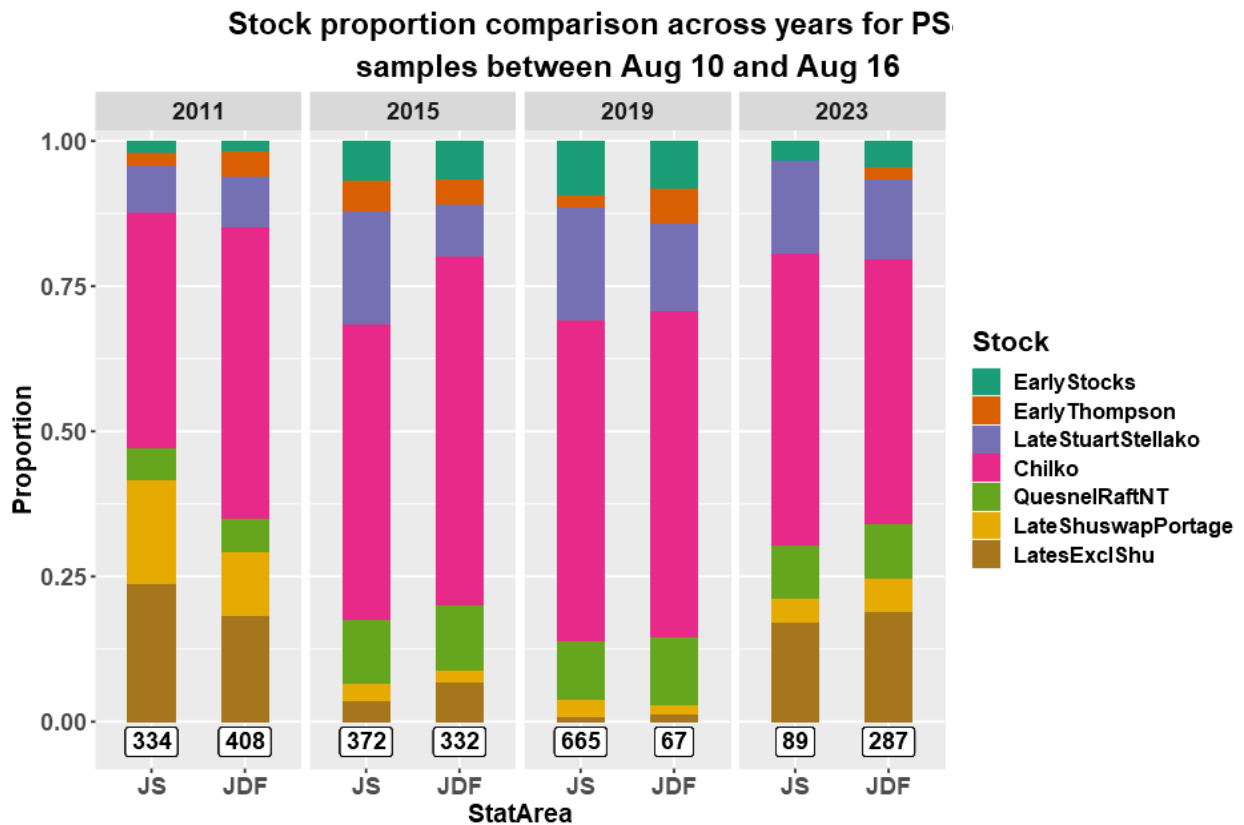


Sockeye biological data

Lower than forecast %age-4 earlier stocks above Big Bar, opposite is observed in lower Fraser.

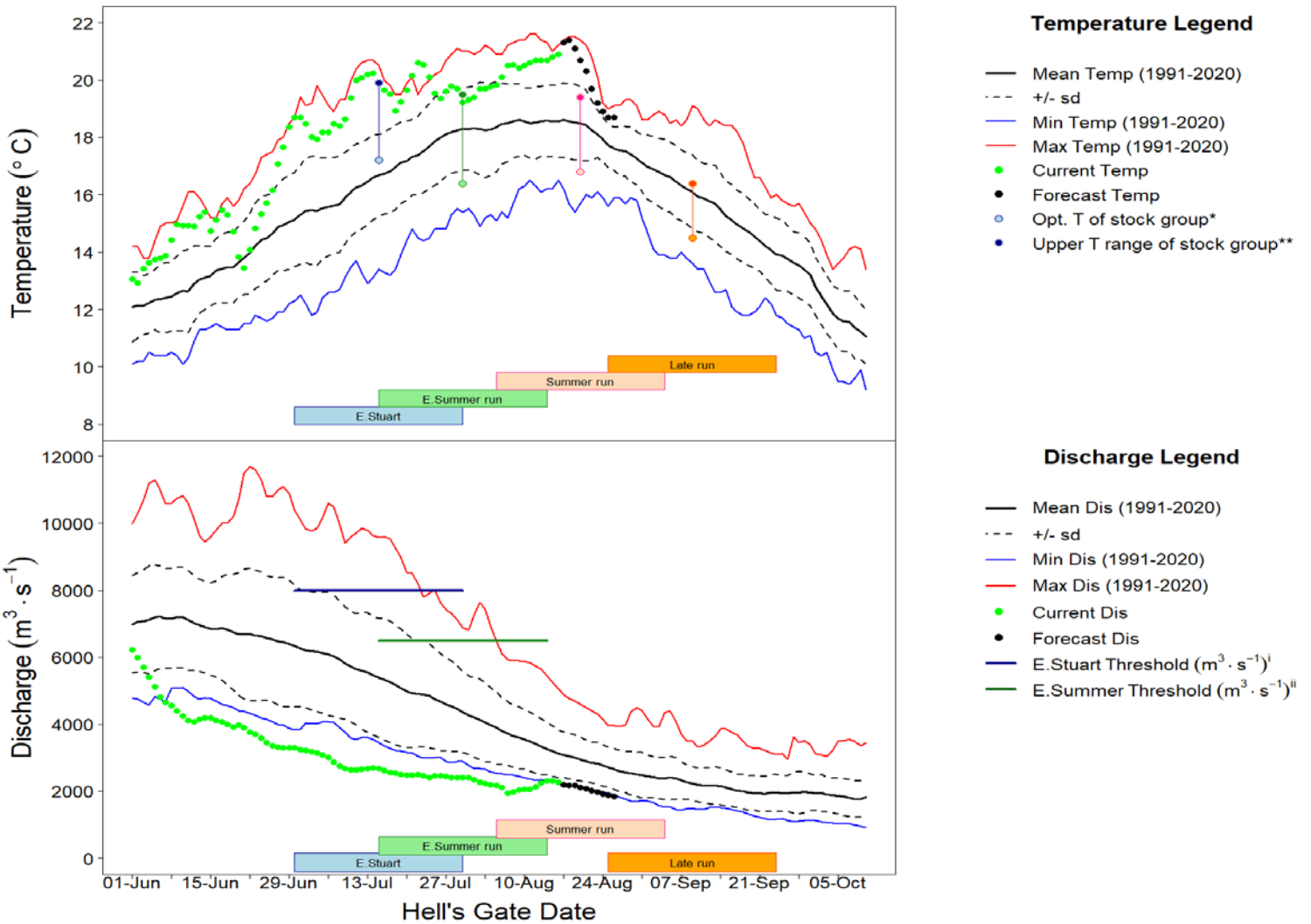


Lower Early Thompson and higher Late-run percentages than recent cycle years.



Observed Fraser River Temperature at Qualark for 16-Aug	20.9°C
Average (1991-2020) Historical Temperature on this day	18.6°C
Deviation from Average	2.3°C
Forecast Temperature for 22-Aug-23	19.7°C
The forecast in Kamloops and Prince George is for above average air temperature until Aug 18 and 17, respectively. Air temperature is then forecast to drop to below average and then return to above average air temperature for the rest of the forecast period.	

Observed Fraser River Discharge at Hope for 16-Aug	2267 m ³ ·s ⁻¹
Average (1991-2020) Historical Discharge on this day	3127 m ³ ·s ⁻¹
% above or below Historical Discharge	-28%
Forecast Discharge for 22-Aug-23	2021 m ³ ·s ⁻¹
The forecast in Kamloops is for 12 mm of precipitation. The forecast in Prince George is for 11 mm of precipitation.	



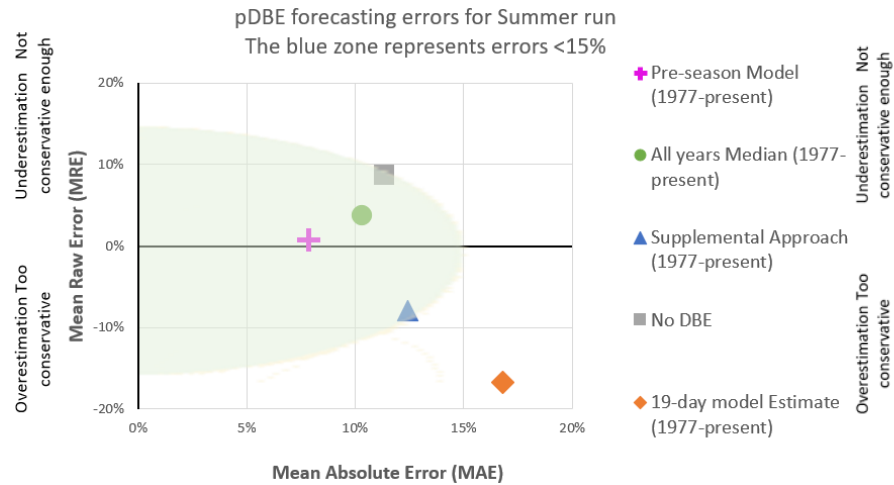
Run timing bars represent a 31 day spread of the run centered around the Hell's Gate date. Hell's gate timing is 5 days from Mission for Early Stuart and Late run; and 4 days from Mission for Early Summer and Summer run. ⁱpMA is the proportional increase to spawning escapement targets to help ensure 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.

Current Temperatures						
Upriver of Slide	Map #	16-Aug	Daily Mean	Historic Mean	Deviation from Historical Mean	Historic Year Range
<u>Fraser River Mainstem</u>						
	1	Fraser River @ Qualark	20.9	18.6	2.3	1991-2020
	2	Fraser River @ Texas Creek	19.7	18.2	1.5	2006-2022
	3	Fraser River @ Big Bar Creek	NA	NA	NA	2019-2022
▶	4	Fraser River @ Marguerite	18.7	18.2	0.5	2015-2022
▶	5	Upper Fraser @ Shelley	16.8	15.4	1.4	1994-2022
<u>Fraser River Tributaries</u>						
	6	Thompson R. @ Ashcroft	21.1	18.7	2.4	1995-2022
	7	South Thompson @ Chase	21.9	19.6	2.3	1994-2022
	8	North Thompson @ McLure	19.2	15.7	3.5	2006-2022
▶	9	Quesnel R. @ Quesnel	19.2	17.9	1.3	2000-2022
▶	10	Nechako R. @ Isle Pierre	18.9	18.9	0.0	2006-2022
▶	11	Stuart R. @ Ft. St. James	19.5	18.6	0.9	2000-2022

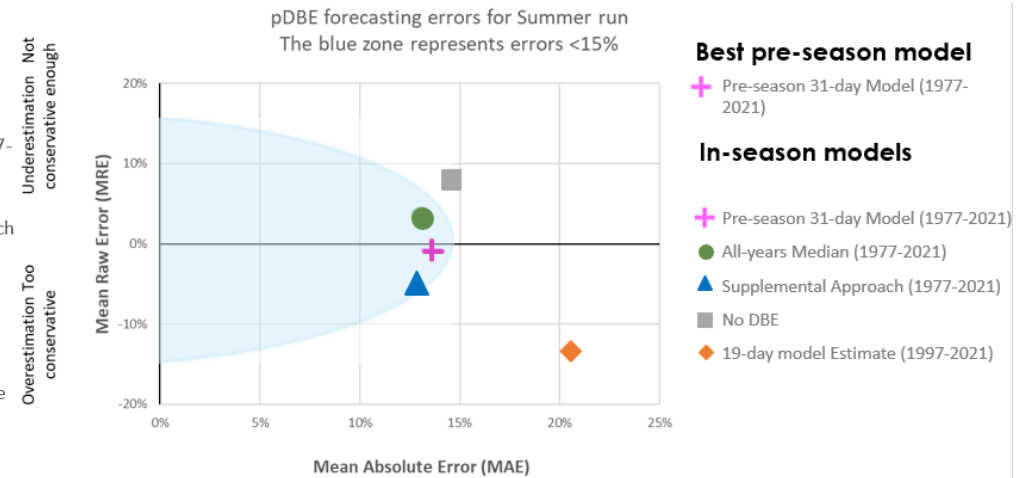


Retrospective Analysis of methods to predict Summer-run pDBEs based on Low Discharge years

Performance using Low Discharge years



Performance using All-years



Model Performance in Low Discharge years

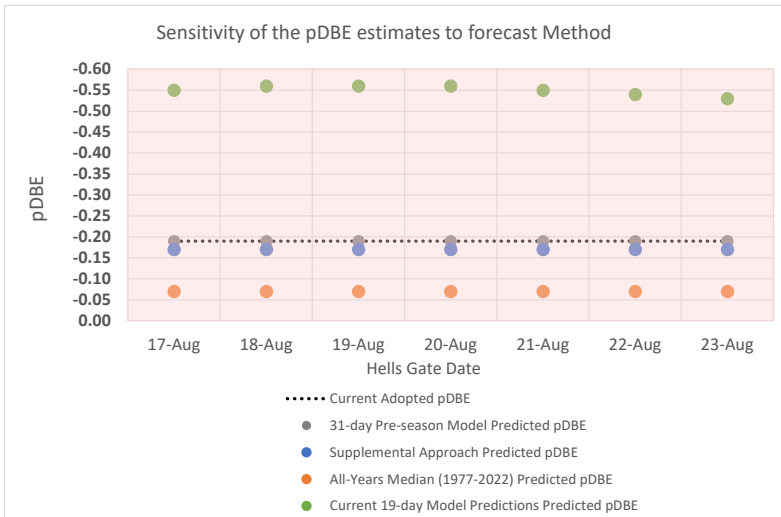
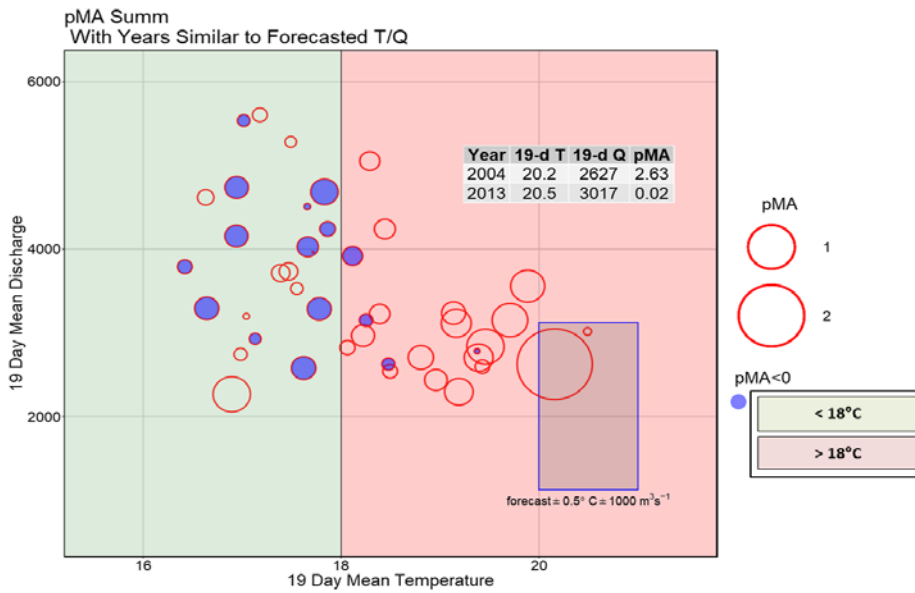
	MAE	MRE
Pre-season Model (1977-present)	8%	1%
All years Median (1977-present)	10%	4%
Supplemental Approach (1977-present)	12%	-8%
No DBE	11%	9%
19-day model Estimate (1977-present)	17%	-17%

Conclusions for low discharge years

- During low discharge years (< 2,500 cms), the mean absolute error and the mean raw error is smallest for the Pre-season model compared to the All-years Median and the Supplemental Approach.
- The pre-season model is still the best performing model, even in low discharge years.

Summer run pDBE Forecast and Sensitivity Analysis for August 17, 2023

Based on the retrospective analysis evaluation of 2010-2021 for Summer run the best performing in-season model is the 31-day pre-season model



Model Performance Based on "In-season pDBE Approach"					Tied Second Best (too conservative)		Tied Second Best (not conservative enough)	
Retrospective					Best	Best	Best	Least
				Current Adopted	31-day Pre-season Model	Supplemental Approach	All-Years Median (1977-2022)	Current 19-day Model Predictions
Area	Hells Gate Date	Average Temperature °C	Average Discharge m ³ /s	pDBE	Predicted pDBE	Predicted pDBE	Predicted pDBE	Predicted pDBE
06-Aug	17-Aug	20.5	2157	-0.19	-0.19	-0.17	-0.07	-0.55
07-Aug	18-Aug	20.6	2147	-0.19	-0.19	-0.17	-0.07	-0.56
08-Aug	19-Aug	20.6	2135	-0.19	-0.19	-0.17	-0.07	-0.56
09-Aug	20-Aug	20.5	2124	-0.19	-0.19	-0.17	-0.07	-0.56
10-Aug	21-Aug	20.5	2110	-0.19	-0.19	-0.17	-0.07	-0.55
11-Aug	22-Aug	20.4	2098	-0.19	-0.19	-0.17	-0.07	-0.54
* 12-Aug	23-Aug	20.3	2092	-0.19	-0.19	-0.17	-0.07	-0.53
Implied pMA								
12-Aug	23-Aug	20.3	2092	0.23	0.23	0.20	0.08	1.13

*Currently last day with 19 days of observed (9 days) and forecasted (10 days) Temp & Disch data.

Years with high temperature similar to 2023

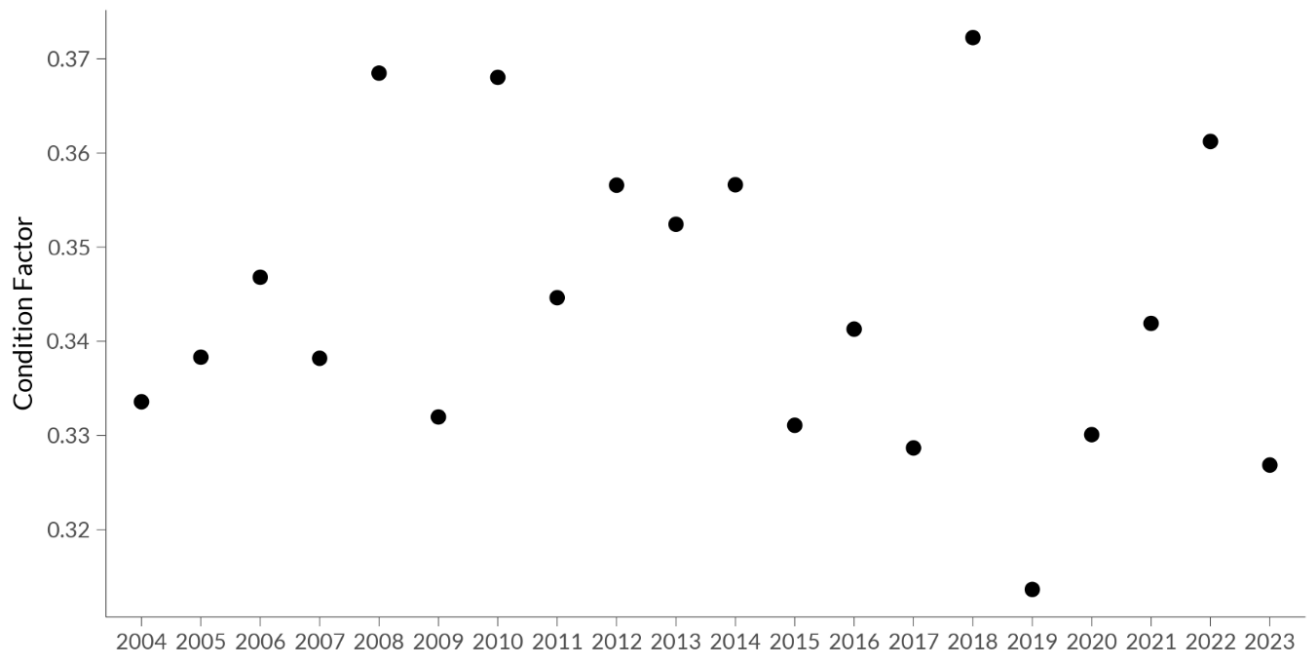
	2004	2013	Current available 2023
19-day Temperature	20.2	20.5	~20.5
31-day Temperature	19.8	19.7	NA
Observed pDBE	-0.72	-0.02	NA
Adopted in-season pDBE	-0.29	-0.71	-0.19
Impact of gear			
Catch Below Mission	1,854,000	386,542	10,434
Catch Above Mission	483,000	231,000	1,630
Inseason Reports of Fish Condition (*strength of evidence is strong) ¹			
Overall fish condition	poor	NA	good
fish holding and schooling in river	reported	NA	not reported
Body damage	reported	NA	NA
*Scale Loss	NA	NA	NA
*Gear marks	NA	NA	NA
Wounds	reported	NA	NA
Infection	NA	NA	NA
*Injury to vital organ	NA	NA	NA
*Fin damage	NA	NA	NA
Sea lice scarring	NA	NA	NA
Carcasses at Mission (August)	528	22	1
Post Season Reports			
Fish Condition	increased incidence of poor fish condition	good	NA
Spawning success	99.3%	98.4%	NA
Incident of high Net marks	high	NA	NA
Water levels and Temperature on SG	Above average rainfall at Quesnel resulting in poor counting conditions - estimates biased low	favorable	NA
Of Note	Chilcotin landslide below Farwell Canyon	NA	NA

Length-weight relationship

Literature suggests that condition factor (length-weight relationship) is an indicator of en-route loss. Below-average sized fish experience larger en-route loss.¹

Average Condition Factor for Sockeye Caught in Area 29

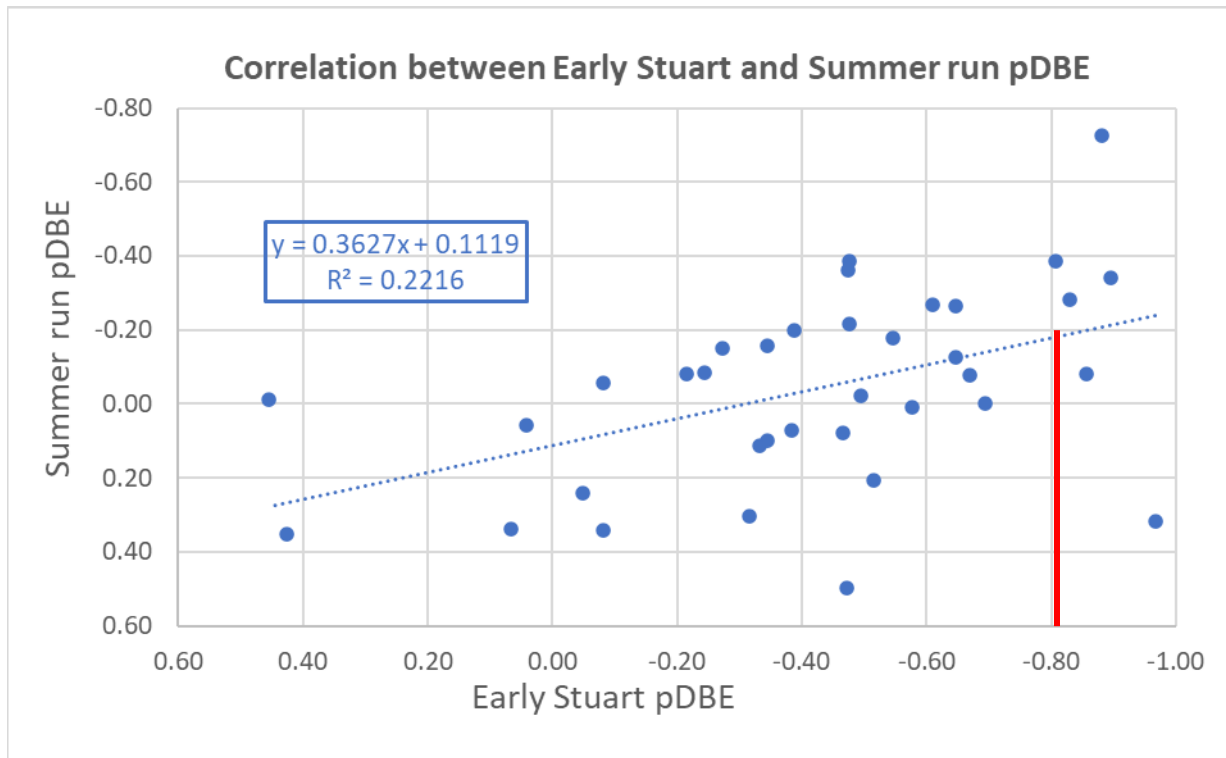
between the dates of Aug 1-15



The condition factor for 2023 during the period between August 1- 15 in Area 29 (in-river test fishing samples) is similar to 2004.

Predictive Power: Correlations Between Early VS Late MA Groups

There is a moderately significant positive correlation between the Early Stuart pDBE and Summer run pDBE.¹



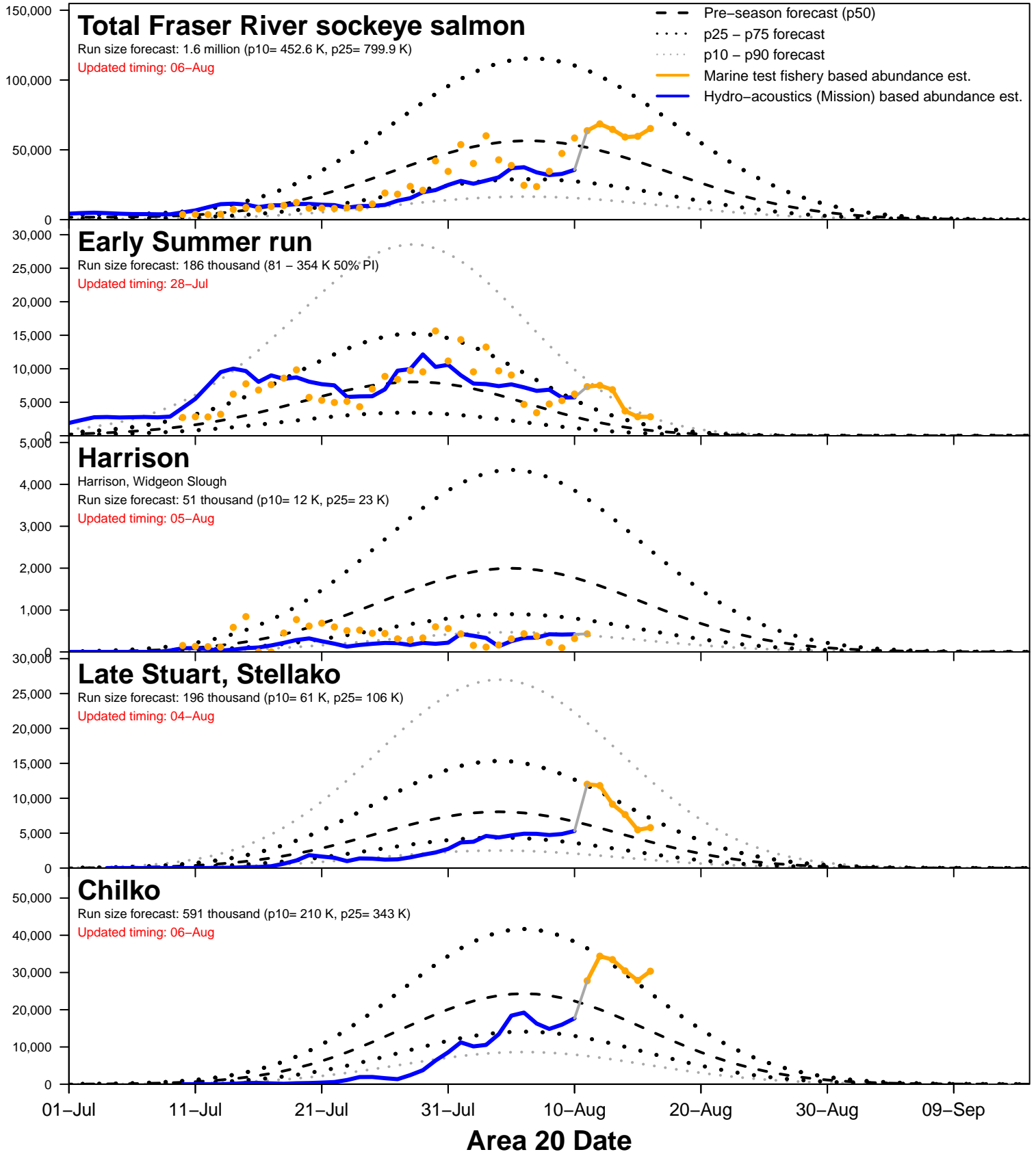
The resulting Summer run pDBE is -0.18 assuming an Early Stuart pDBE of -0.81 (based on a run size of 43,000 and a spawning escapement of 8,000 as reported by Scott Decker).

¹SEF Report: Evaluation and coordination of information useful for predicting en-route loss in Fraser sockeye. Principal Proponents: David Patterson, Merran Hague, Jamie Scroggie & Keri Benner

<https://airtable.com/shrGEuBDi5F62fZSO/tblrBw94Z3jFJd7Nd/viwckM3kuy51cTOyn/recv3xehZqok55NLJ/fldSqbaFlrLKI8SPf/att5fSED9htA7LkyN>

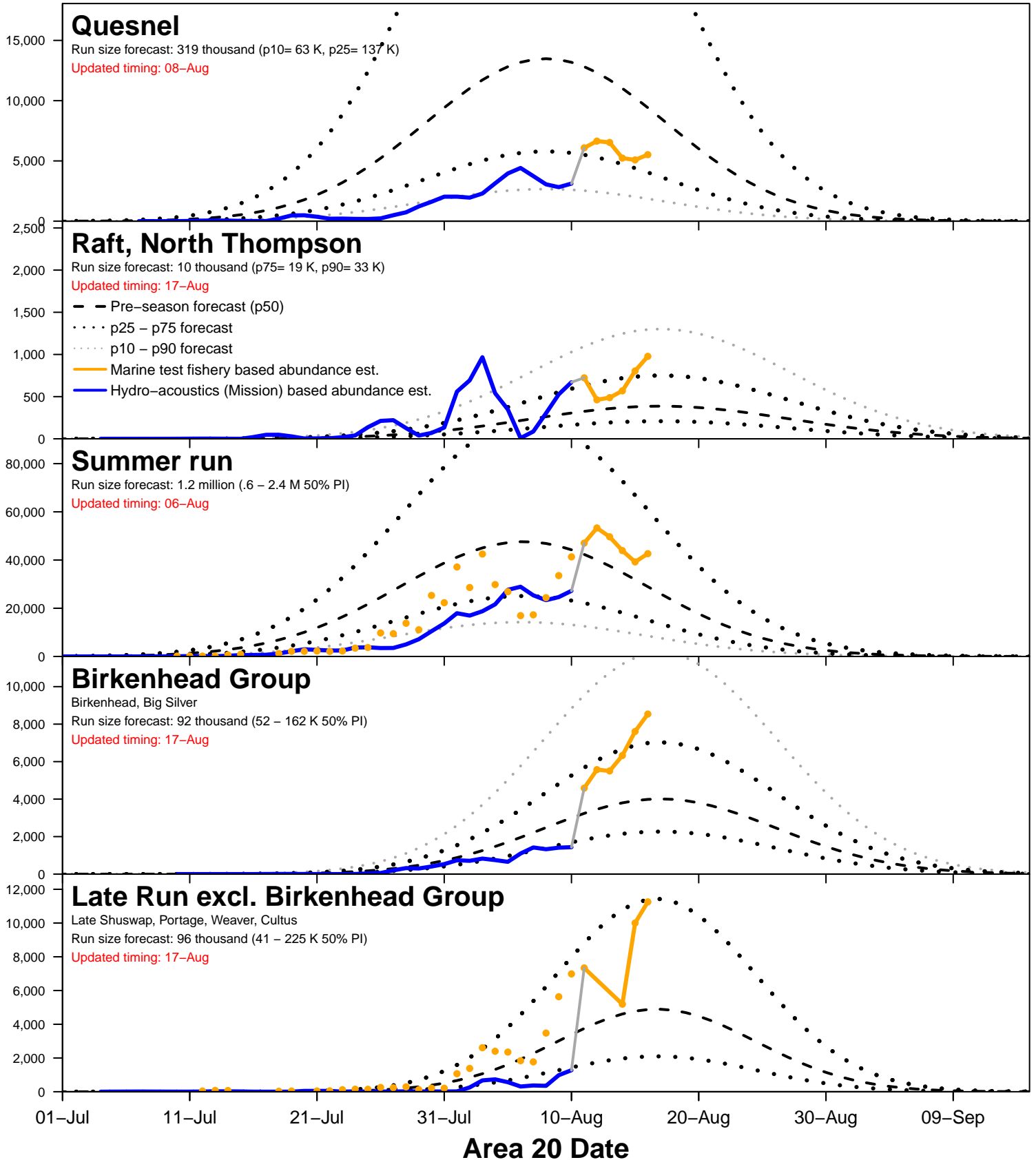
2023 Fraser River sockeye salmon daily migration

Timing updated based on Timing Correlations



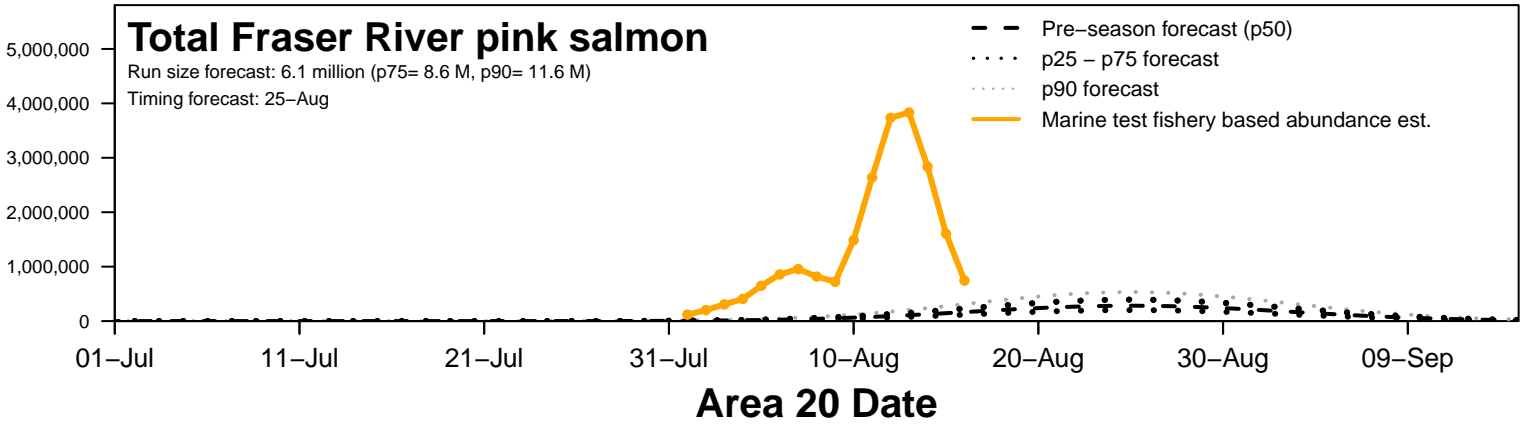
2023 Fraser River sockeye salmon daily migration

Timing updated based on Timing Correlations



2023 Fraser River sockeye salmon daily migration

Timing updated based on Timing Correlations



Abundance

2023 Fraser River sockeye abundance en-route to Mission

Current date: 17-Aug

Area 20 date Mission date	Escapement past Mission through 16-Aug	Projected abundance en route to Mission based on marine test fishery data ^{1,2}									Escapement + projections through 22-Aug
		11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	Total	80% PI ³		
		17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug		10p	90p	
Total Fraser	637,300	59,800	64,500	80,300	48,300	48,200	82,000	383,100	230,100	570,900	1,020,400
Early Summer Run	281,700	4,100	10,600	7,400	2,800	900	4,800	30,600	15,000	63,300	312,300
Chilliwack	32,000	200	200	0	100	100	500	1,100	500	2,300	33,100
Pitt/Alouette/Coquitlam	32,900	0	0	0	0	0	0	0	0	0	32,900
Nadina group ⁴	185,300	3,100	7,900	6,700	2,000	600	3,700	24,000	11,800	49,700	209,300
Early Thompson ⁵	31,500	800	2,500	700	700	200	600	5,500	2,700	11,400	37,000
Summer Run	296,200	43,900	49,600	66,500	32,300	32,500	52,500	277,300	169,200	399,300	573,500
Harrison / Widgeon ²	6,900	800	0	0	0	0	0	800	500	1,200	7,700
Late Stuart / Stellako	67,000	12,800	9,300	13,300	4,800	4,800	6,700	51,700	31,500	74,400	118,700
Chilko	177,300	25,400	32,300	44,900	22,800	23,300	37,200	185,900	113,400	267,700	363,200
Quesnel	39,200	4,500	7,600	7,700	4,200	3,700	7,300	35,000	21,400	50,400	74,200
Raft / North Thompson	5,800	400	400	600	500	700	1,300	3,900	2,400	5,600	9,700
Late Run	18,500	11,800	4,300	6,400	13,200	14,800	24,700	75,200	45,900	108,300	93,700
Birkenhead / Big Silver	12,500	5,900	4,300	6,400	5,700	6,700	10,300	39,300	24,000	56,600	51,800
Late Shuswap / Portage ²	3,800	1,500	0	0	3,100	2,800	4,600	12,000	7,300	17,300	15,800
Weaver / Cultus ²	2,200	4,400	0	0	4,400	5,300	9,800	23,900	14,600	34,400	26,100

¹ En route catches are incomplete: catches from present and future fisheries must be deducted from projections and added to the catches removed

² Projected abundances en route to Mission include Harrison and Late runs, an uncertain number of which are expected to delay

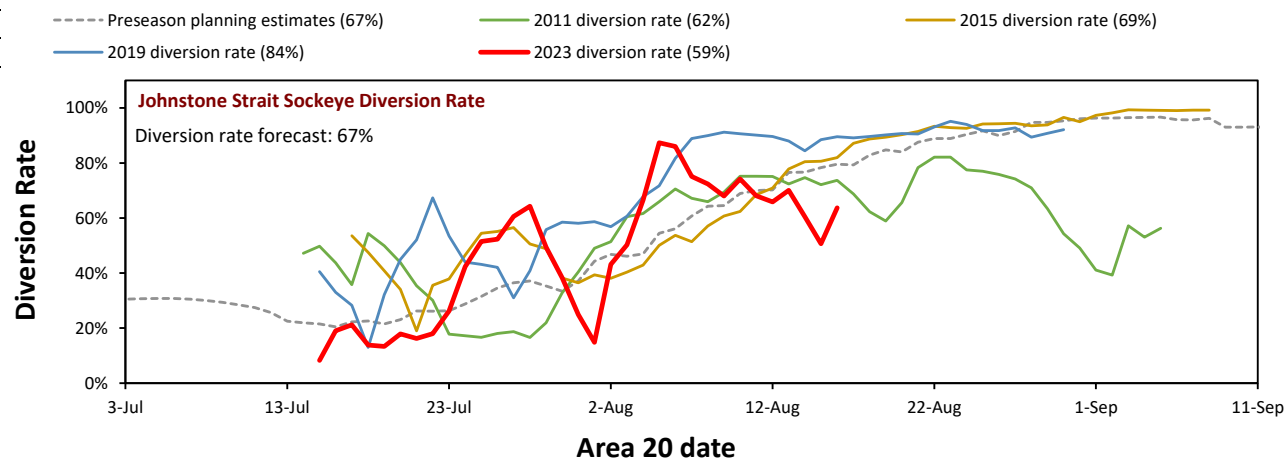
³ 80% Probability Interval: there exists an 80% chance that the true abundance lies within this interval

⁴ Nadina / Bowron / Gates / Nahatlatch / Taseko

⁵ Early South Thompson / North Barriere

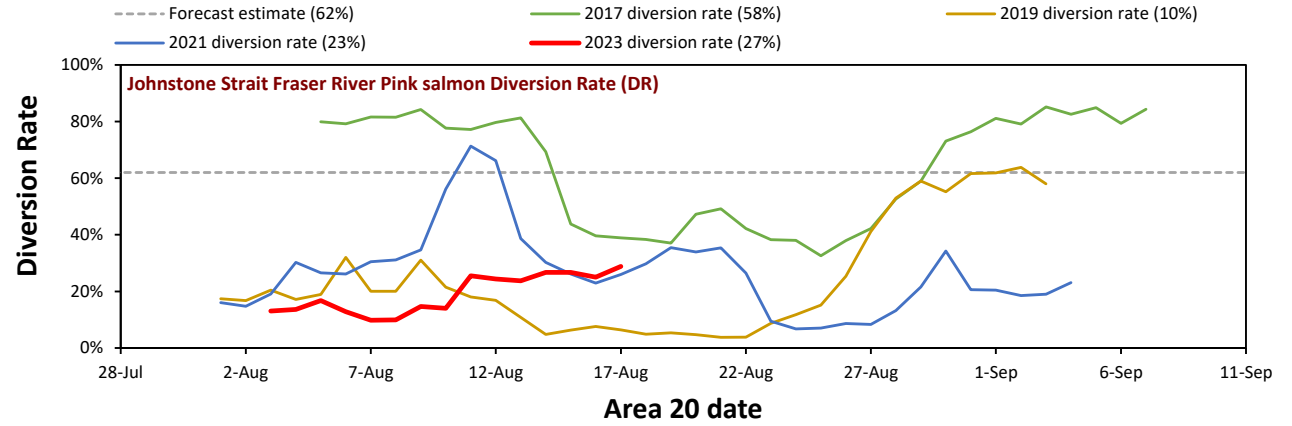
2023 Fraser River sockeye diversion rates through Johnstone Strait

	5-day-average
Diversion rate	64%



2023 Fraser River Pink salmon diversion rates through Johnstone Strait

	5-day-average
Fraser pink salmon	25%



* Pink forecast diversion rate updated from 53% to 62% based upon the DFO forecast received in August

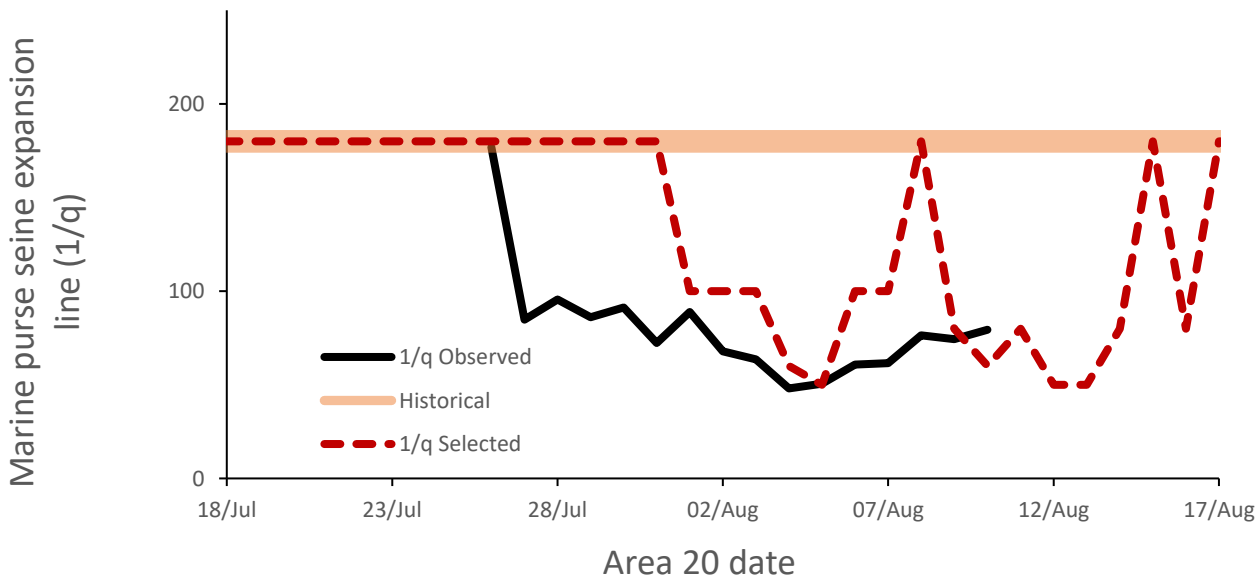
2023 Fraser River sockeye expansion line (1/catchability)

Purse Seine test fishery

	First Area 20 Date	Last Area 20 Date	1/q (6-day ave.)
In-season est. observed*	05-Aug	10-Aug	80
Currently used in-season			100
Historical prediction	11-Aug	16-Aug	180
In-season applied A12			90
A20**			190

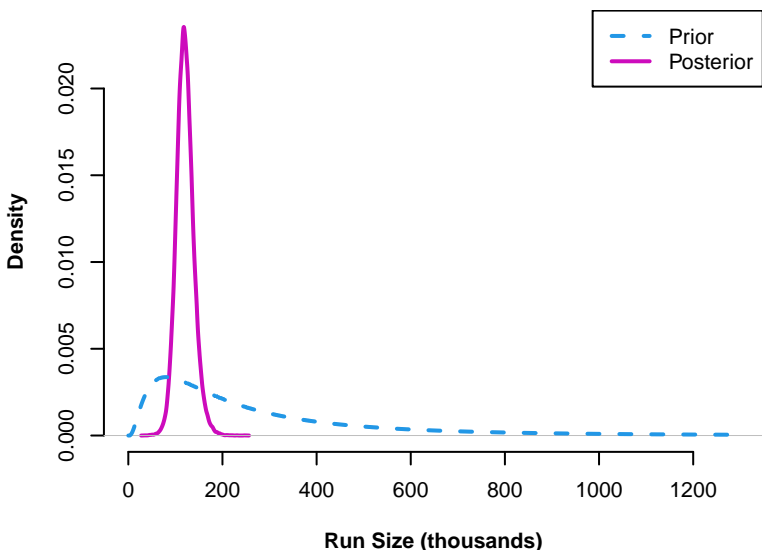
*Summer excl. Harrison 1/q

**Adjusted 1/q



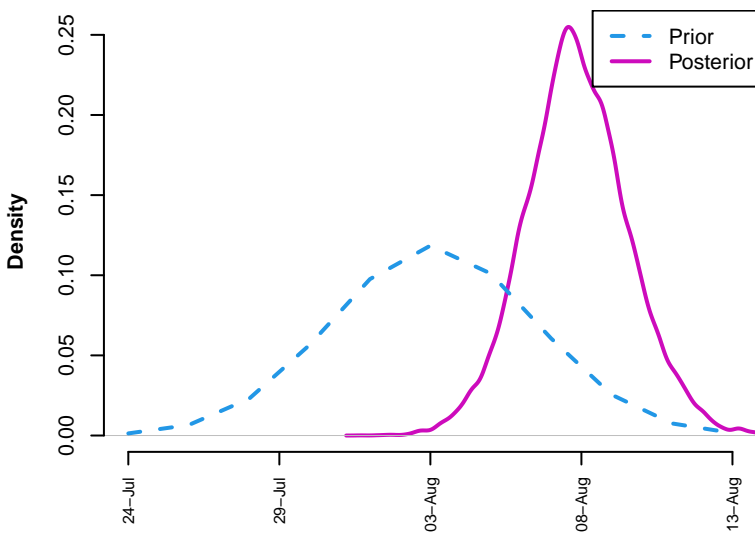
LStuStel Abundance

Median = 119.7 thousand (98 – 144 K 80% PI)
Mode = 120 thousand



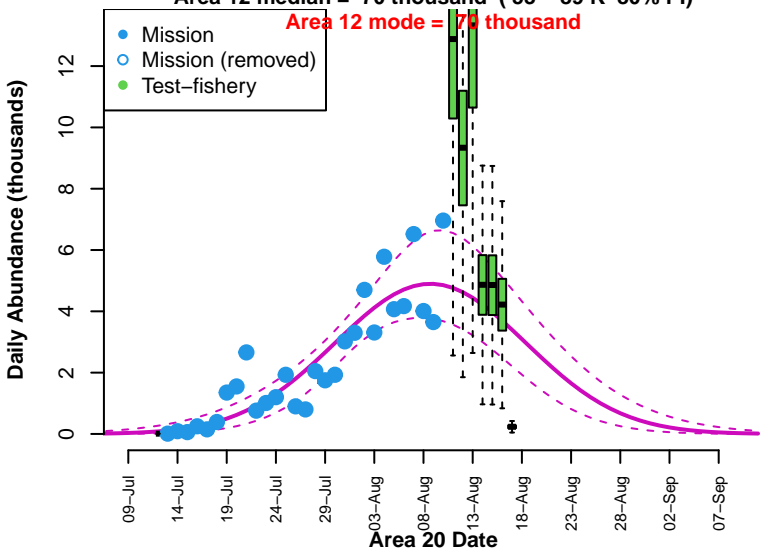
Timing of 50% the run

Timing = 09-Aug (07-Aug – 11-Aug 80% PI)
Spread = 38 days (31 – 45 days 80% PI)



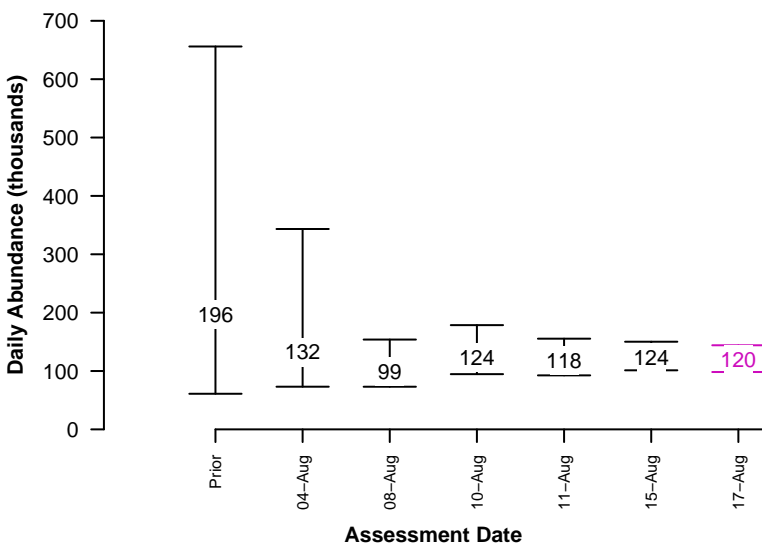
Fit of the model to reconstructed data

Area 20 median = 49 thousand (34 – 66 K 80% PI)
Area 20 mode = 50 thousand
Area 12 median = 70 thousand (53 – 89 K 80% PI)
Area 12 mode = 70 thousand

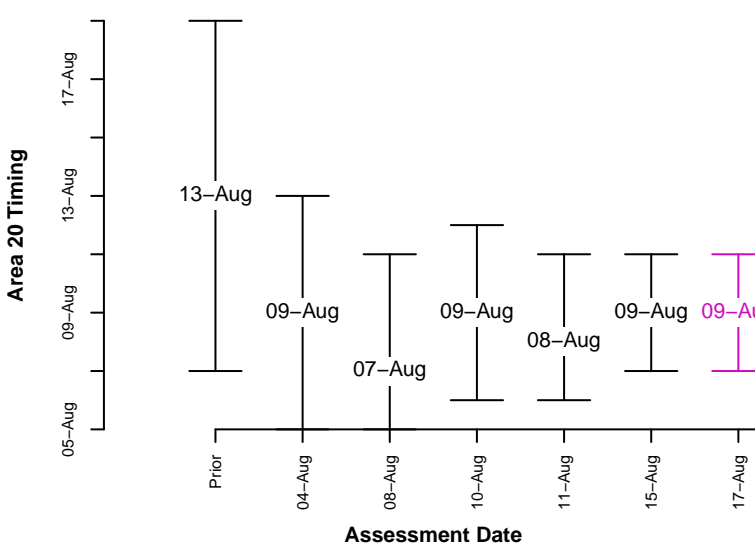


Run Size Statistics	
25% PI	108K
75% PI	132K
p10 (Prob>p10)	61K (100%)
p25 (Prob>p25)	106K (79%)
p50 (Prob>p50)	196K (0%)
p75 (Prob>p75)	373K (0%)
p90 (Prob>p90)	656K (0%)
Mission to-date	67 K (50 – 88 K 80% PI)
% Mission to-date	56 % (41.4 – 73.6 % 80% PI)
Projected+Tails	50,000 (32 – 76 K)
Tails	24,000 (13 – 40 K)

In-season changes in run size estimates

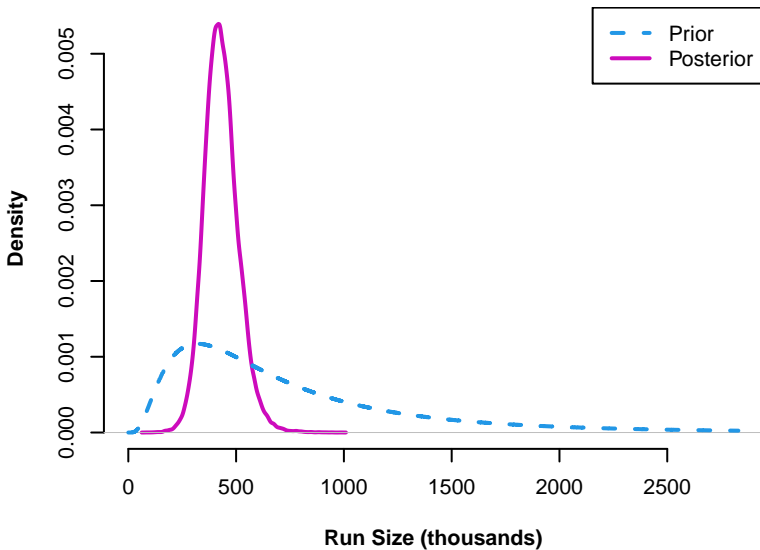


In-season changes in Area 20 timing estimates



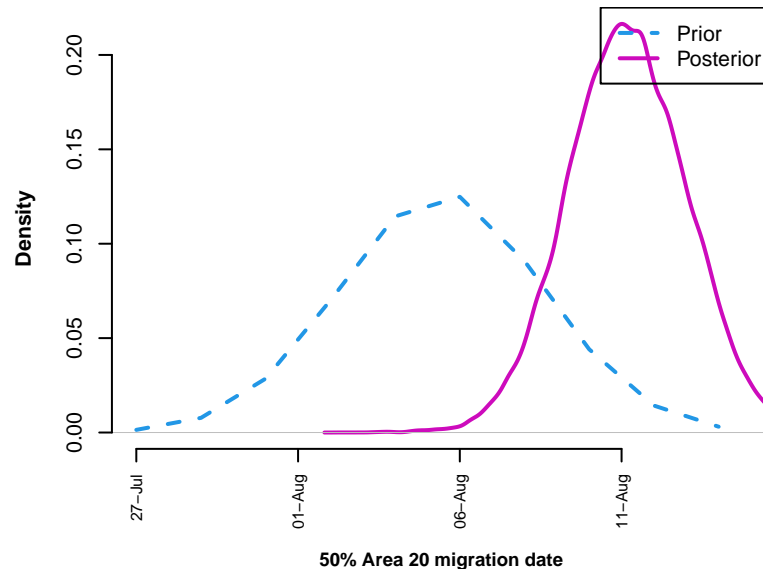
Chil Abundance

Median = 426.4 thousand (338 – 532 K 80% PI)
Mode = 420 thousand



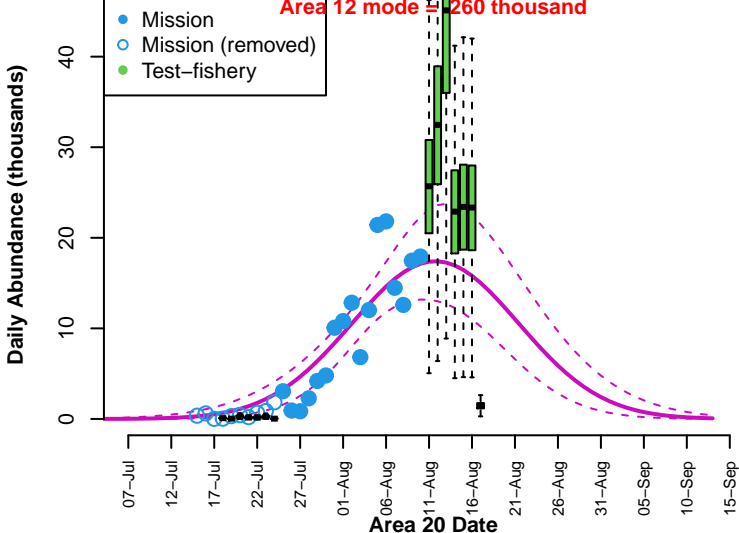
Timing of 50% the run

Timing = 12-Aug (09-Aug – 14-Aug 80% PI)
Spread = 38 days (32 – 44 days 80% PI)



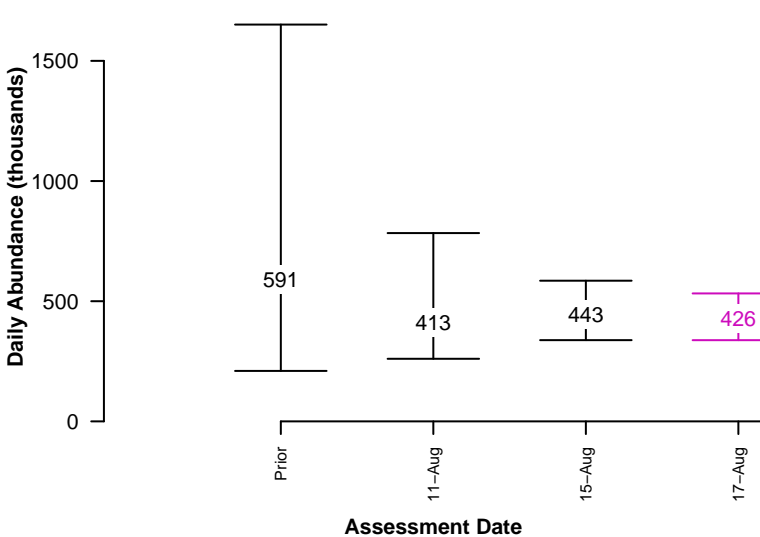
Fit of the model to reconstructed data

Area 20 median = 147 thousand (98 – 208 K 80% PI)
Area 20 mode = 140 thousand
Area 12 median = 276 thousand (207 – 360 K 80% PI)
Area 12 mode = 260 thousand

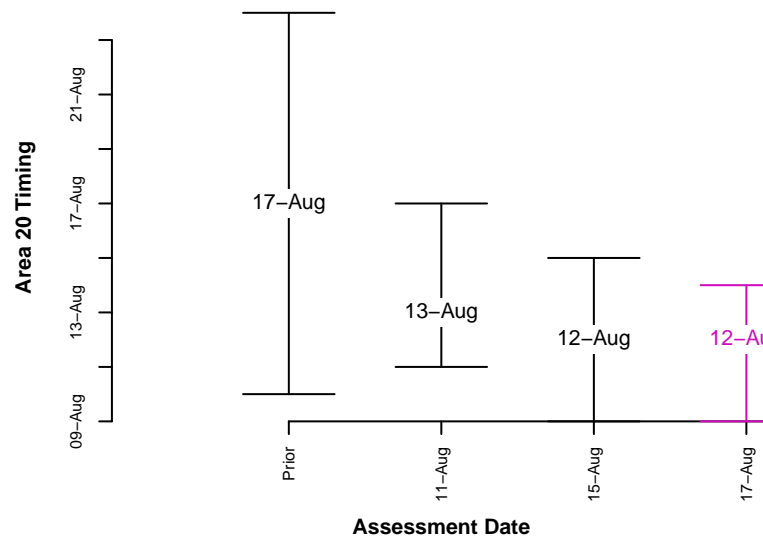


Run Size Statistics	
25% PI	378K
75% PI	478K
p10 (Prob>p10)	210K (100%)
p25 (Prob>p25)	343K (89%)
p50 (Prob>p50)	591K (3%)
p75 (Prob>p75)	1013K (0%)
p90 (Prob>p90)	1651K (0%)
Mission to-date	187 K (137 – 242 K 80% PI)
% Mission to-date	44 % (32.1 – 56.8 % 80% PI)
Projected+Tails	230,000 (147 – 351 K)
Tails	128,000 (73 – 212 K)

In-season changes in run size estimates

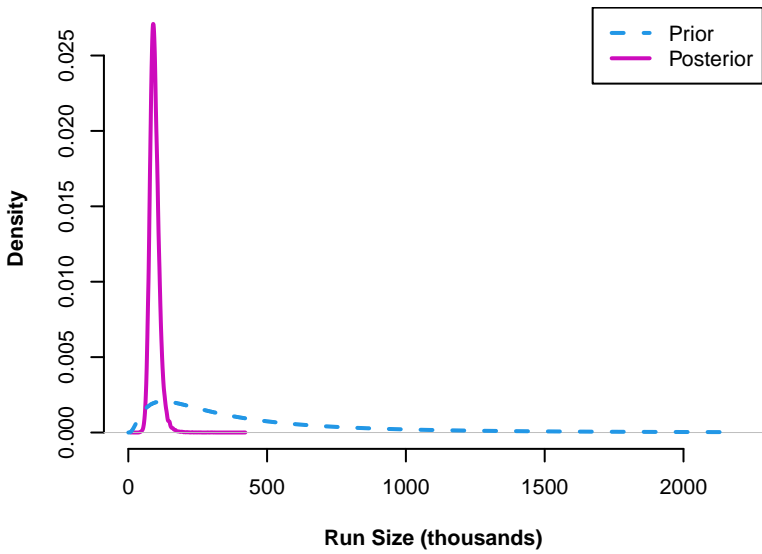


In-season changes in Area 20 timing estimates



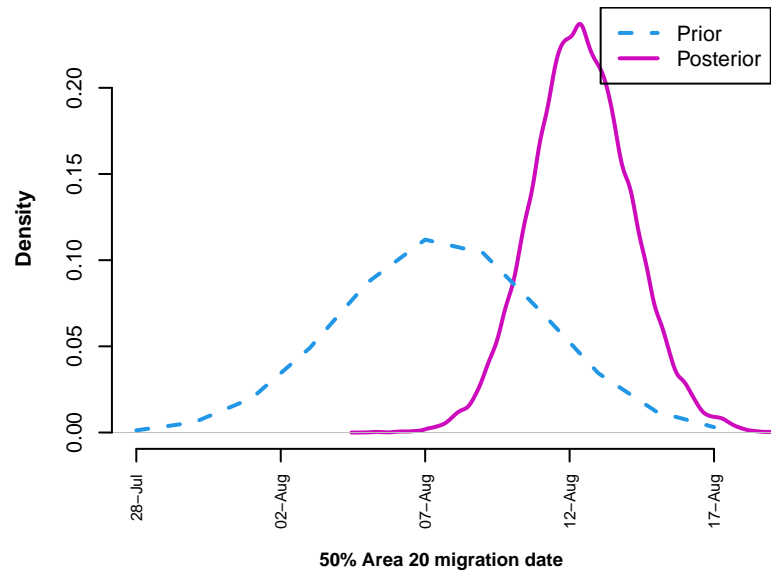
HflyMtch Abundance

Median = 92.9 thousand (76 - 116 K 80% PI)
Mode = 90 thousand



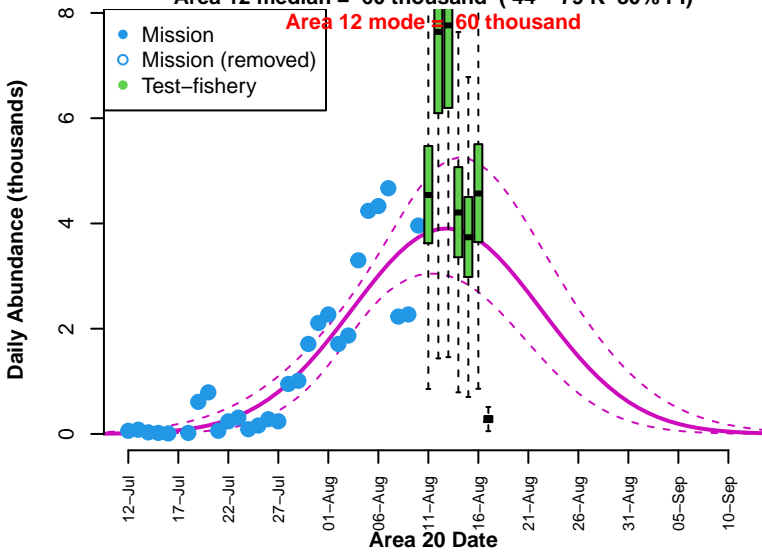
Timing of 50% the run

Timing = 13-Aug (11-Aug - 15-Aug 80% PI)
Spread = 37 days (31 - 42 days 80% PI)



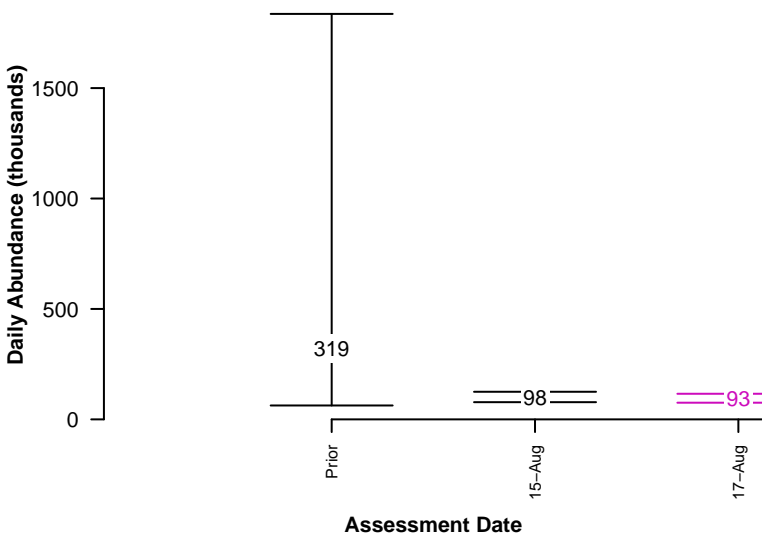
Fit of the model to reconstructed data

Area 20 median = 32 thousand (20 - 49 K 80% PI)
Area 20 mode = 30 thousand
Area 12 median = 60 thousand (44 - 79 K 80% PI)
Area 12 mode = 60 thousand

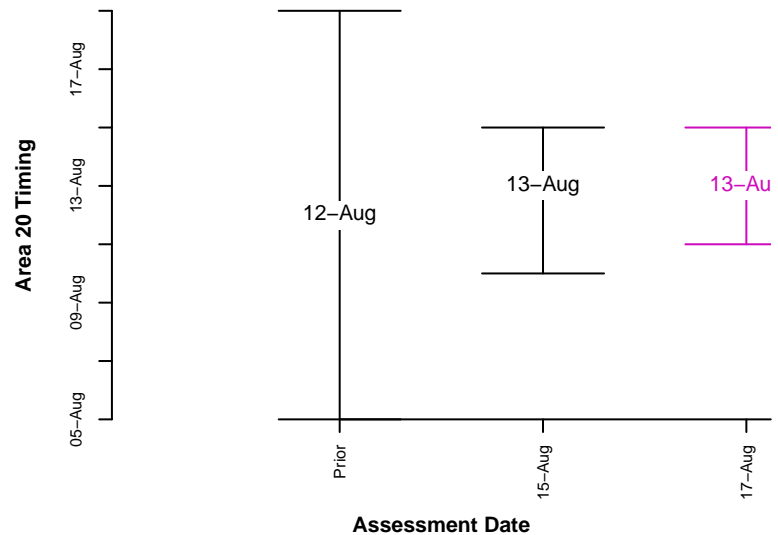


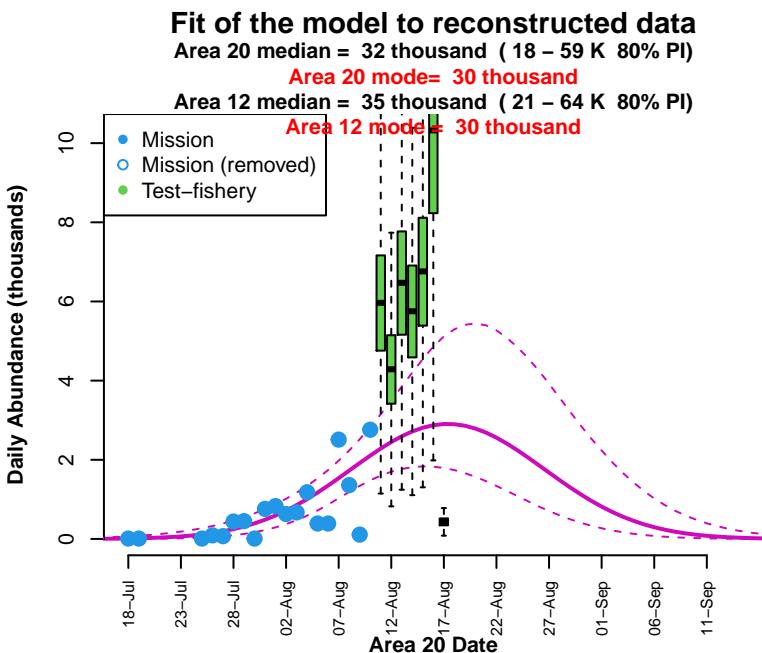
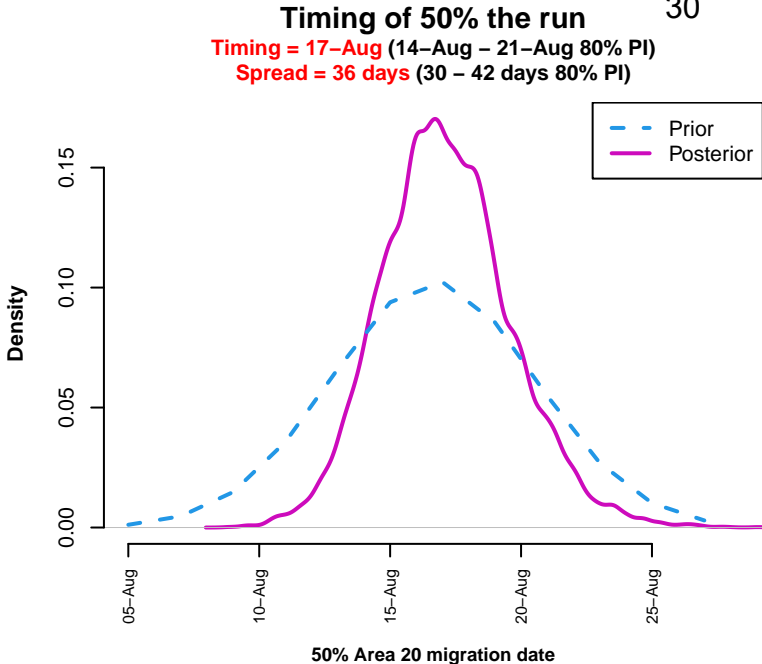
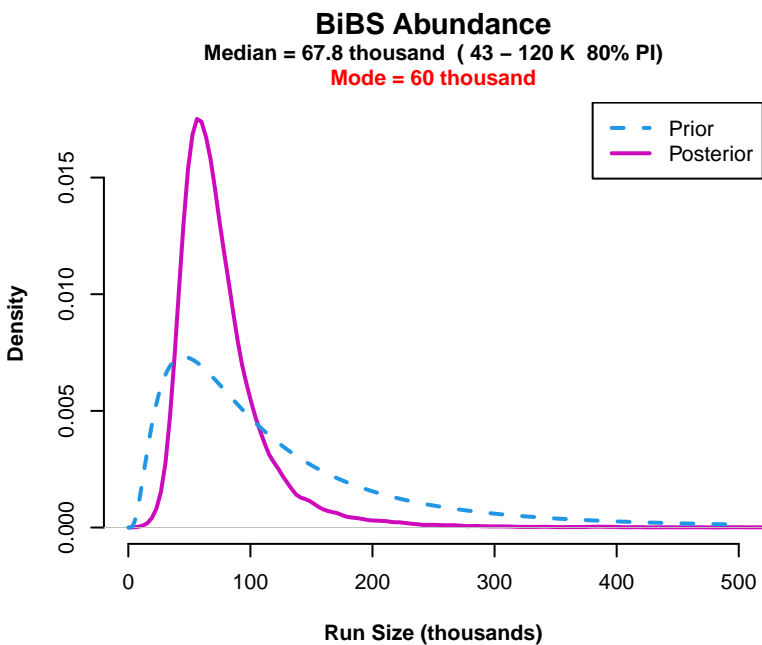
Run Size Statistics	
25% PI	83K
75% PI	104K
p10 (Prob>p10)	63K (99%)
p25 (Prob>p25)	137K (2%)
p50 (Prob>p50)	319K (0%)
p75 (Prob>p75)	882K (0%)
p90 (Prob>p90)	1836K (0%)
Mission to-date	37 K (28 - 46 K 80% PI)
% Mission to-date	40 % (30.3 - 49.5 % 80% PI)
Projected+Tails	55,000 (37 - 82 K)
Tails	32,000 (19 - 51 K)

In-season changes in run size estimates



In-season changes in Area 20 timing estimates



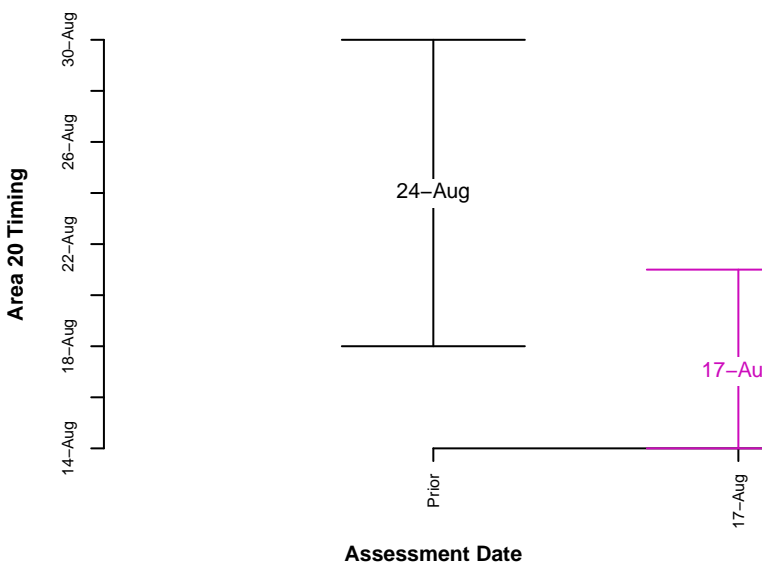


Run Size Statistics	
25% PI	53K
75% PI	89K
<i>p</i> 10 (<i>Prob</i> > <i>p</i> 10)	31.07K (98%)
<i>p</i> 25 (<i>Prob</i> > <i>p</i> 25)	52.2K (77%)
<i>p</i> 50 (<i>Prob</i> > <i>p</i> 50)	92.3K (22%)
<i>p</i> 75 (<i>Prob</i> > <i>p</i> 75)	161.9K (4%)
<i>p</i> 90 (<i>Prob</i> > <i>p</i> 90)	272K (1%)
Mission to-date	15 K (9 - 22 K 80% PI)
% Mission to-date	22 % (13.6 - 32.1 % 80% PI)
Projected+Tails	52,000 (28 - 105 K)
Tails	36,000 (17 - 81 K)

In-season changes in run size estimates



In-season changes in Area 20 timing estimates

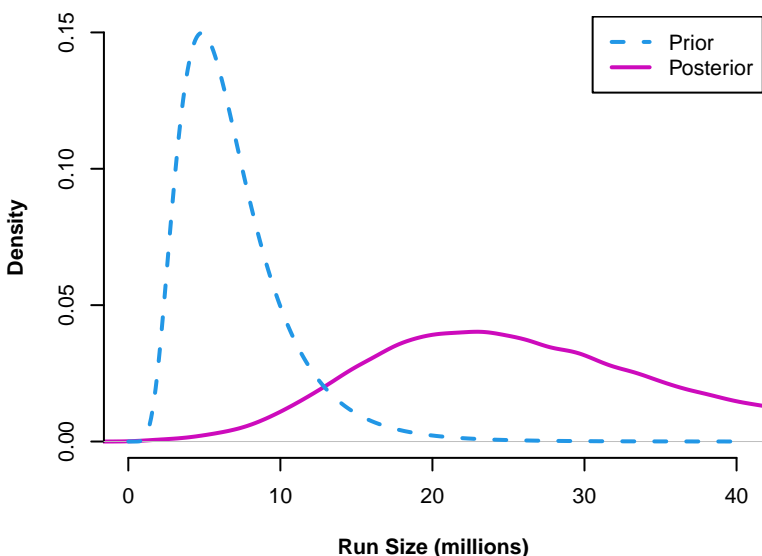


Pinks run size assessment using PurseSeine NA

Pinks Abundance

Median = 25.05 million (14 – 40 M 80% PI)

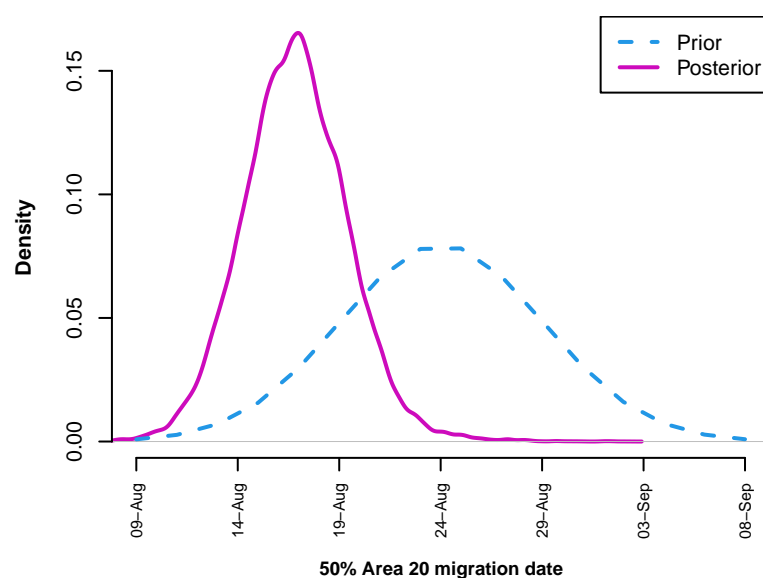
Mode = 22 million



Timing of 50% the run

Timing = 18-Aug (15-Aug – 21-Aug 80% PI)

Spread = 34 days (29 – 39 days 80% PI)



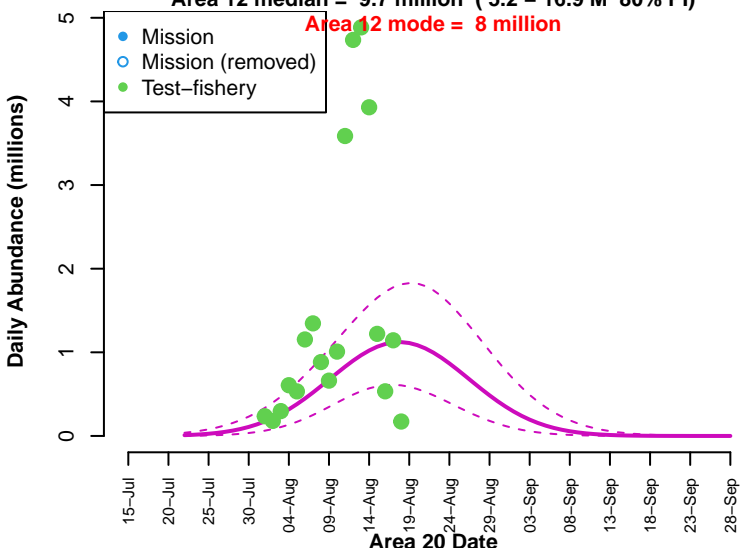
Fit of the model to reconstructed data

Area 20 median = 14.7 million (7 – 25.3 M 80% PI)

Area 20 mode = 14 million

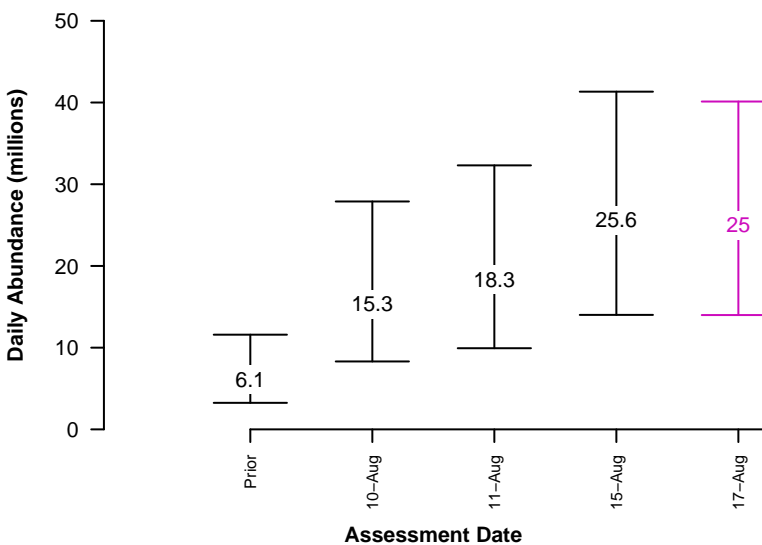
Area 12 median = 9.7 million (5.2 – 16.9 M 80% PI)

Area 12 mode = 8 million

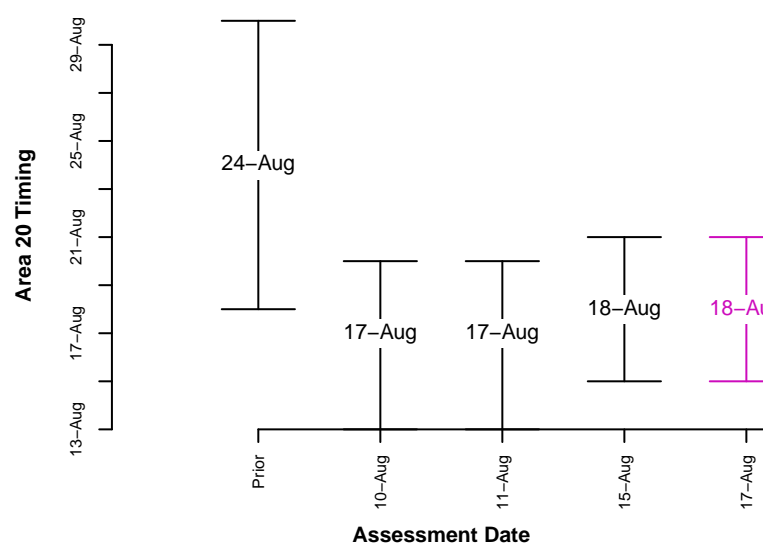


Run Size Statistics	
25% PI	19K
75% PI	33M
p10 (Prob>p10)	3.247M (100%)
p25 (Prob>p25)	4.389M (100%)
p50 (Prob>p50)	6.135M (99%)
p75 (Prob>p75)	8.575M (98%)
p90 (Prob>p90)	11.591M (95%)
Mission to-date	M (- M 80% PI)
% Mission to-date	% (- % 80% PI)
Projected+Tails	19,000,000 (9 – 35 M)
Tails	13,400,000 (6.2 – 25.8 M)

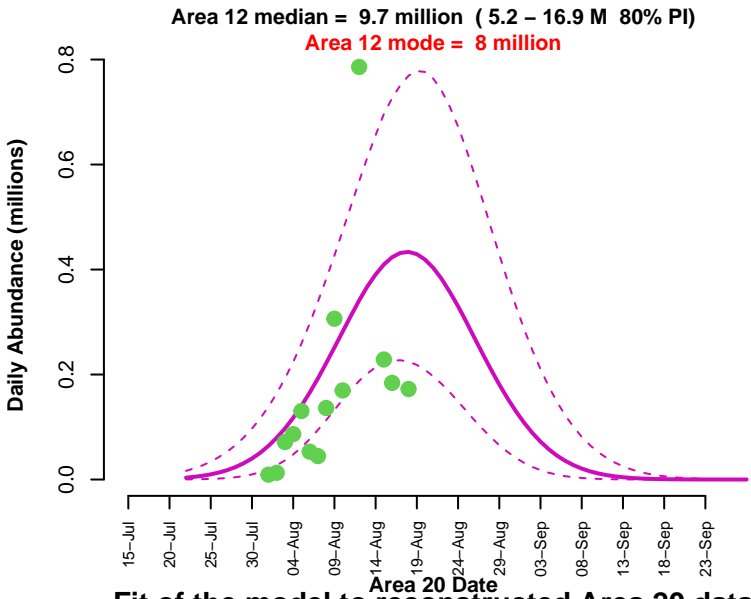
In-season changes in run size estimates



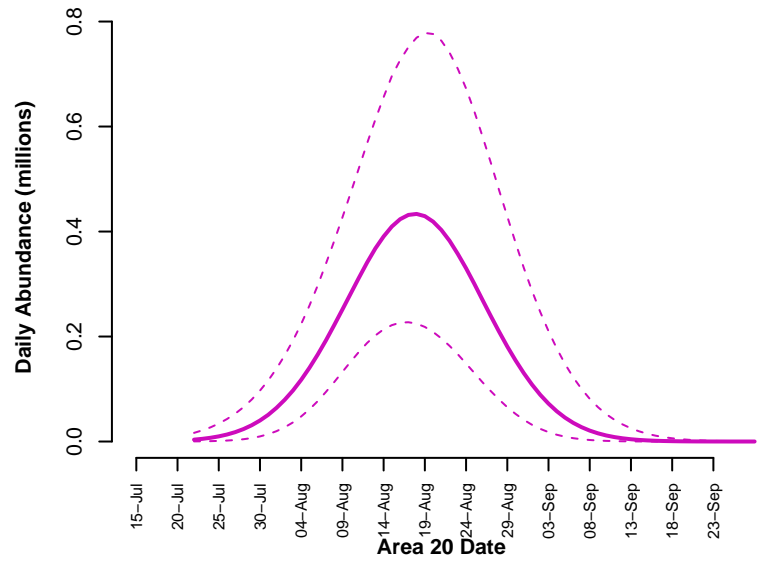
In-season changes in Area 20 timing estimates



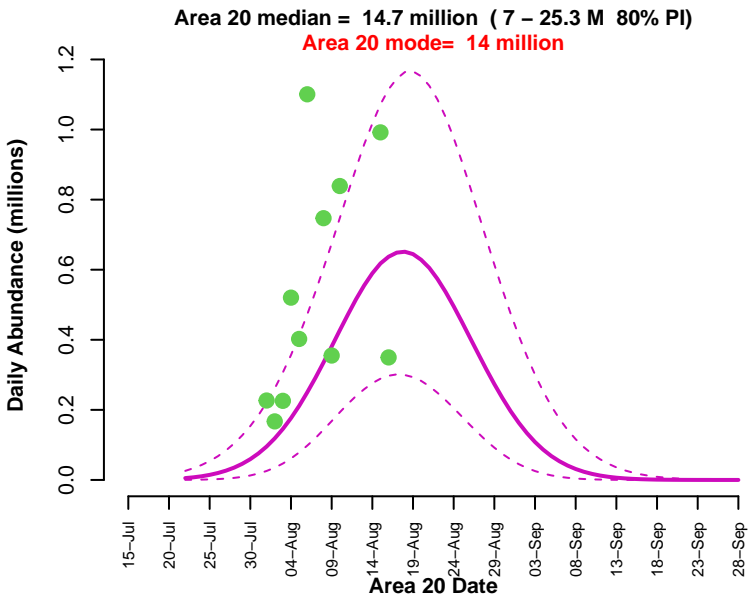
Fit of the model to reconstructed Area 12 data
Area 12 Purse Seine



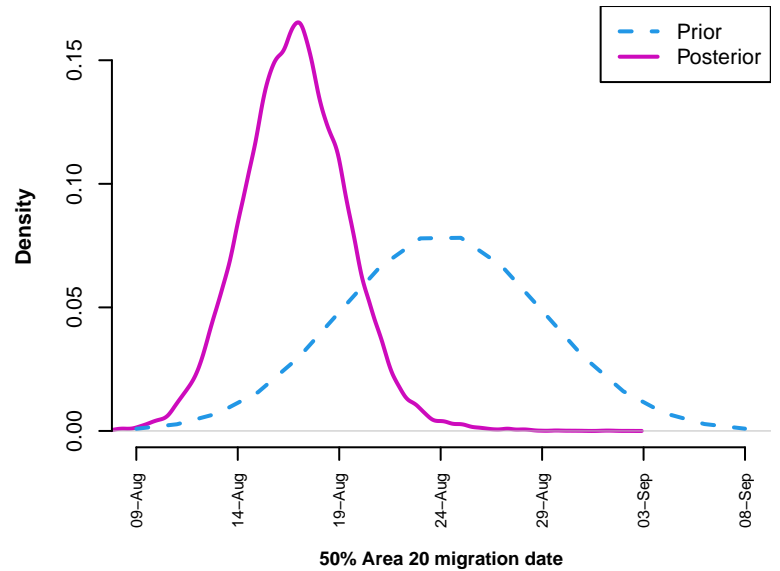
Fit of the model to reconstructed Area 13 data
Area 13 Purse Seine 32



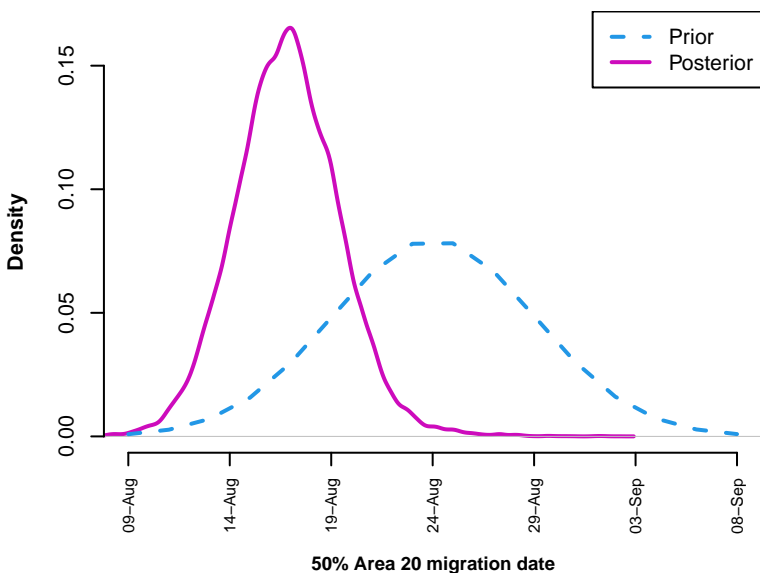
Fit of the model to reconstructed Area 20 data
Area 20 Purse Seine



Area 12 Timing of 50% the run
 Timing = 18-Aug (15-Aug – 21-Aug 80% PI)



Area 20 Timing of 50% the run
 Timing = 18-Aug (15-Aug – 21-Aug 80% PI)



Pink In-season Update

August 17, 2023

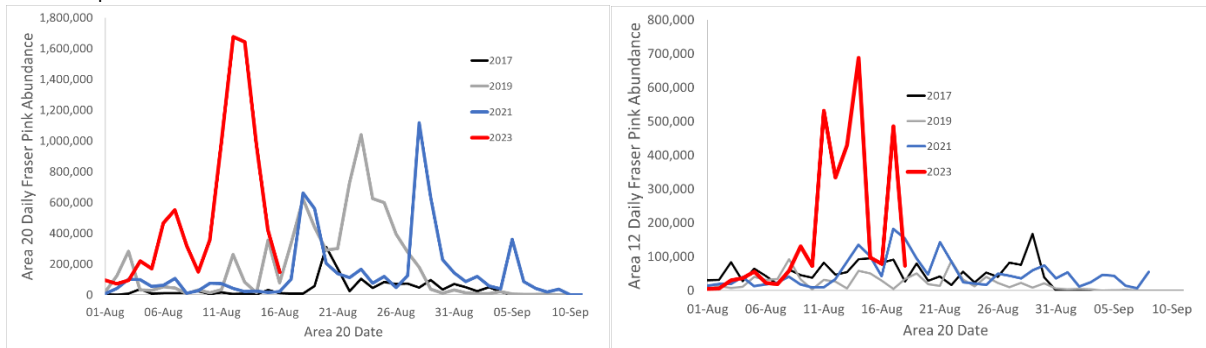
Current Trends

- Currently assume a 150 expansion line with an Area 20 timing of August 13th
- The time density model suggests a timing of August 18th, but this is uncertain and based on expectations of seaward abundance
- Low expansion lines were also observed in 1999 (N = 3.6M, EL = 152) and 2013 (N = 15.9M, EL = 138)

Daily abundances by Area

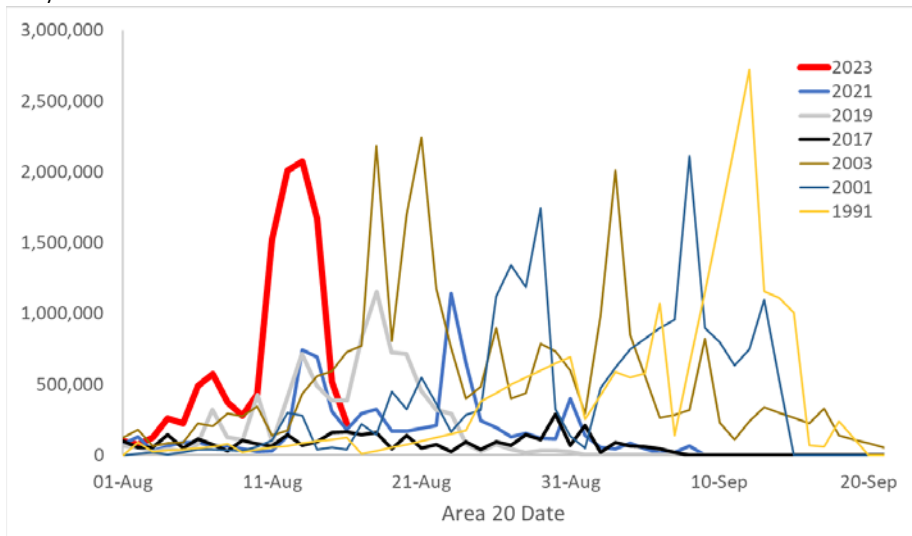
Area 20 expansion line: 450

Area 12 expansion line: 150



Overall run size (for overlapping days only)

2-day assumed offset between Area 12 and Area 20



Historical Annual Pink Salmon Data

Year	Run Size	Area 20 Timing	Annual Expansion Line
1987	7,100,000	28-Aug	289
1989	15,600,000	04-Sep	347
1991	22,300,000	04-Sep	729
1993	17,000,000	02-Sep	440
1995	12,900,000	29-Aug	344
1997	8,200,000	01-Sep	256
1999	3,600,000	07-Sep	152
2001	21,106,000	03-Sep	416
2003	Test fishing data only. No confirmation of final run size.		
2005			
2007			
2009			
2011	20,646,000	27-Aug	448
2013	15,898,000	29-Aug	138
2015	5,779,000	23-Aug	253
2017	3,549,232	18-Aug	364
2019	8,858,203	17-Aug	348
2021	8,104,574	21-Aug	272

Pink Salmon Sensitivity Analysis

Pink salmon run size depending on timing and assumed expansion line

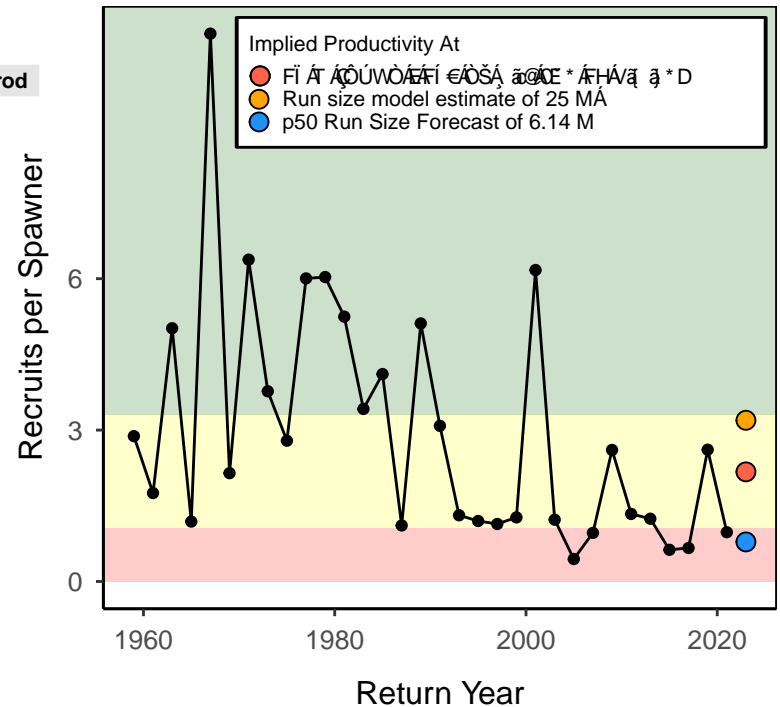
Total Catch + Escapement: 25,000

17-08-2023

Migration timing scenario	Expansion line scenario		
	150	200	300
12-Aug	12,919,000	17,225,000	25,837,000
13-Aug Day with largest CPUE	17,064,000	22,751,000	34,127,000
14-Aug	20,398,000	27,197,000	40,795,000
15-Aug	21,433,000	28,577,000	42,866,000

- * Total marine abundance is calculated for overlapping Area 12 and Area 20 days
- * Based on % seaward in 2015, 2017, 2019 and 2021 if timing is later than 16-Aug
- * Equal to double the reconstructed abundance if timing is earlier than 17-Aug

Hist. Prod	10-yr Avg. Prod	p50 Run Size	p50 Prod	In-season Run Size	In-season Prod
2.96	1.27	6,135,000	0.78	17,000,000	2.17



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		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		
Early Stuart Run	41,000	23,000	✓ 41,000	41,000	41,000	41,000	Recon	41,000	0	0	0	02-Jul	07-Jul	02-Jul	02-Jul	02-Jul	Recon
Early Summer Run	290,000	186,000	✓ 300,000	290,000	315,000	Sum	285,000	11,000	4,000	0	0	23-Jul	06-Aug	24-Jul	23-Jul	25-Jul	Weight
Chilliwack		2,000	✓ 33,000	33,000	34,000	Recon	32,000	1,000	0	0		20-Jul	05-Jul	05-Jul	06-Jul	Recon	
Pitt/Nadina Group ⁴		123,000	✓ 230,000	223,000	241,000	Recon(2)	221,000	6,000	3,000	0		05-Aug	25-Jul	24-Jul	26-Jul	Recon(2)	
Early Thompson ⁵		61,000	● 37,000	34,000	40,000	Recon(2)	32,000	4,000	1,000	0		09-Aug	02-Aug	02-Aug	03-Aug	Recon(2)	
Summer Run	NA	1,167,000	◇ 664,000	519,000	834,000	Sum	302,000	250,000	108,000	4,000	0	NA	17-Aug	11-Aug	08-Aug	13-Aug	Weight
Harrison / Widgeon		51,000	▲ 14,000	9,000	23,000	Model	7,000	1,000	2,000	4,000		12-Aug	30-Jul	27-Jul	03-Aug	Model	
Late Stuart / Stellako		196,000	▲ 117,000	86,000	143,000	Recon(2)	68,000	25,000	24,000	0		13-Aug	09-Aug	05-Aug	11-Aug	Recon(2)	
Chilko		591,000	◇ 426,000	338,000	532,000	Model	181,000	186,000	59,000	0		17-Aug	12-Aug	09-Aug	14-Aug	Model	
Quesnel		319,000	◇ 93,000	76,000	116,000	Model	40,000	35,000	18,000	0		19-Aug	13-Aug	11-Aug	15-Aug	Model	
Raft / North Thompson		10,000	◇ 14,000	10,000	20,000	Model	6,000	3,000	5,000	0		23-Aug	11-Aug	08-Aug	14-Aug	Model	

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 Pitt / Alouette / Coquitlam / Nadina / Bowron / Gates / Nahatlatch / Taseko

⁵ Early South Thompson / North Barriere.

Methods for run size & timing estimation

Model	Run size assessment model (median)
Recon	Catch + escapement + 6-day test fish projection + model seaward projection
Recon(2)	Catch + escapement + model projections
Sum	Sum of individual groups
Weight	Weighted average of individual groups

Run Size Uncertainty Legend[†]

- ✓ ≥ 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

[†] 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.

Summer run size based on timing

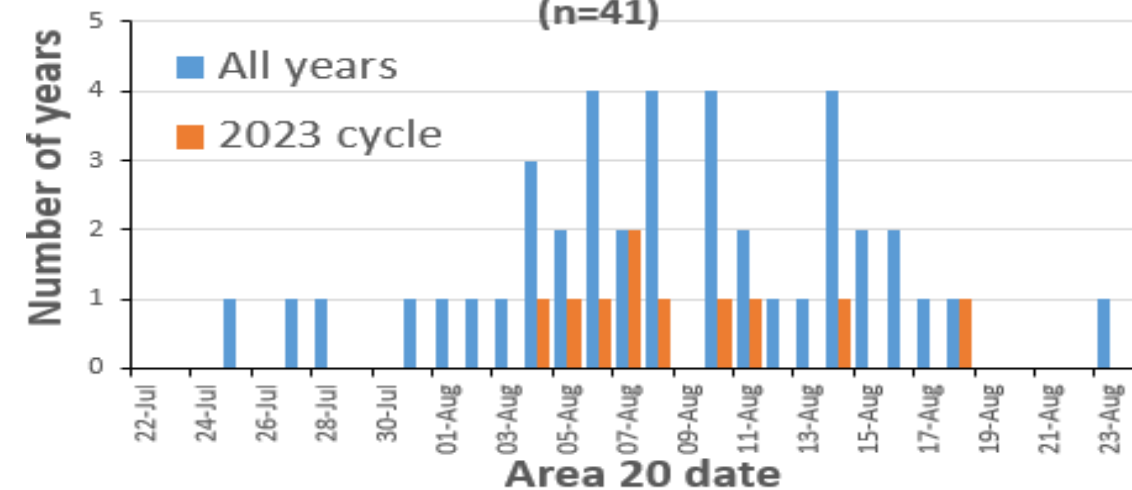
Catch+Escapement To Date: 302,000
6-day Projection: 250,000

	Method	Run Size*	% Seaward
Based on timing of 11-Aug	50% Date	690,000	56%
Based on timing of 13-Aug	50% Date	923,000	67%
Based on timing of 15-Aug	50% Date	1,053,000	71%
Based on timing of 17-Aug	% Seaward	1,180,000	74%
Based on timing of 19-Aug	% Seaward	1,403,000	78%

*Based on % seaward in 2011, 2015 and 2019 if timing is later than 16-Aug

*Equal to double the reconstructed abundance if timing is earlier than 17-Aug

Historical 50% migration date for Summer run (n=41)



2023 Predicted Fraser River Sockeye Mortality in Area 7/7A Pink Directed Net Fisheries

The actual pink salmon catch of proposed fisheries should not exceed the available total allowable catch for pink salmon

Date: 17/08/2023

Predicted abundances in Area 7/7A

Area 7 date	Predicted Pink Salmon Abundance ¹		Fraser River Sockeye Salmon ^{2,5}				% Sockeye Abundance
	Fraser ³	Non-Fraser ⁴	Total	E. Summers	Summer	Lates	
16-Aug	355,823	397,289	26,594	1,344	19,794	5,456	3%
17-Aug	990,456	1,008,296	23,126	946	17,243	4,937	1%
18-Aug	1,675,342	1,560,450	19,470	637	14,561	4,272	1%
19-Aug	1,642,489	1,405,010	22,607	635	16,493	5,479	1%
20-Aug	979,955	771,500	21,734	739	16,099	4,896	1%
21-Aug	420,777	305,642	21,734	739	16,099	4,896	3%
22-Aug	148,337	99,645	21,734	739	16,099	4,896	8%

Predicted sockeye impacts of net fisheries in Area 7/7A

Area 7 date	Treaty Tribes						All Citizen		
	Assuming retention			Assuming non-retention			Assuming non-retention		
	Early Summers	Summers	Lates	Early Summers	Summers	Lates	Early Summers	Summers	Lates
16-Aug	282	4,149	1,144	102	1,508	416	83	1,227	338
17-Aug	195	3,554	1,018	71	1,292	370	58	1,052	301
18-Aug	157	3,583	1,051	57	1,303	382	46	1,053	309
19-Aug	140	3,646	1,211	51	1,325	440	41	1,076	357
20-Aug	167	3,637	1,106	61	1,322	402	49	1,072	326
21-Aug	167	3,637	1,106	61	1,322	402	49	1,072	326
22-Aug	167	3,637	1,106	61	1,322	402	49	1,072	326

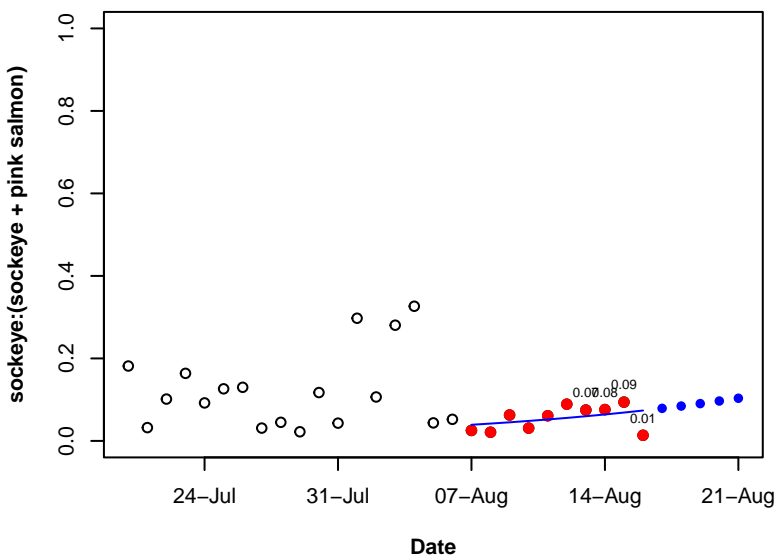
- ¹ Assumed travel time for pink salmon from Area 20 to Area 7 is 6 days
- ² Assumed travel time for sockeye salmon from Area 20 to Area 7 is 3 days
- ³ Based on purse seine test fishery projections and an expansion line of 150
- ⁴ Based on stock identification projections of non-Fraser pinks in Area 7
- ⁵ Based on a time-density run-size model

Predicted catches in Area 7/7A

Area 7 date	Purse Seine						Gillnet									
	Daily predicted Fraser pink salmon catch ¹		Pink salmon harvest rate ²		Sockeye Release Mortality rate ³	Predicted mortality of Sockeye ⁵			Daily predicted Fraser pink salmon catch ¹		Pink salmon harvest rate ^{2,7}		Sockeye Release Mortality rate ⁴	Predicted mortality of Sockeye ⁵		
			TRT	AC		Treaty Tribes	All Citizen	Treaty Tribes			All Citizen	Treaty Tribes		All Citizen		
	Treaty Tribes	All Citizen	Assuming retention	Assuming non-retention	Assumign non-retention	Treaty Tribes	All Citizen	TRT ⁵	AC	Assuming retention	Assuming non-retention	Assumign non-retention				
16-Aug	124,278	86,189	12%	8%	25%	3,766	941	978	3,416	1,423	0.96%	0.40%	60%	1,808	1,085	670
17-Aug	180,468	186,744	8%	8%	25%	3,221	805	837	9,508	3,962	0.96%	0.40%	60%	1,546	928	574
18-Aug	300,963	312,818	8%	8%	25%	3,237	809	835	16,083	6,701	0.96%	0.40%	60%	1,554	932	573
19-Aug	351,944	365,444	8%	8%	25%	3,377	844	875	15,768	6,570	0.96%	0.40%	60%	1,621	973	600
20-Aug	279,311	288,981	8%	8%	25%	3,318	829	859	9,408	3,920	0.96%	0.40%	60%	1,592	955	589
21-Aug	151,148	155,981	8%	8%	25%	3,318	829	859	4,039	1,683	0.96%	0.40%	60%	1,592	955	589
22-Aug	60,006	61,907	8%	8%	25%	3,318	829	859	1,424	593	0.96%	0.40%	60%	1,592	955	589

- ¹ Assumes fishing on 3 days (or blocks) of pink salmon. Does not account for any depletion effects.
- ² Assumes TRT effort = 10 PS and 24 gillnets; AC effort = 7 PS and 10 gillnets
- ³ Sockeye release mortality of 25% applied to purse seine catches based on past studies
- ⁴ Sockeye release mortality of 60% applies to gillnet catches based on past studies
- ⁵ Assumes Treaty Tribes and All Citizen fisheries will take place on different days
- ⁶ Based on average annual catchability of pink (harvest rate/vessel) in U.S. Area 67,7a gill net fisheries
- ⁷ Catchability of sockeye in marine gillnets is approximately 10x the catchability of pink salmon. Independently verified with test fishing data.

Proportion of sockeye in
A12PS TF: 0.1



Proportion of sockeye in
A20PS TF: 0.08

