File: 71007

DRAFT AGENDA
PACIFIC SALMON COMMISSION
FRASER RIVER TECHNICAL COMMITTEE
Thursday August 3, 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
      i) Environmental report
      ii) E.Summer model comparisons
      iii) Current drought map
      iv) Retrospective analysis for E. Summers based on low discharge years
      v) Spawning ground information on drought years
      vi) Tagging information
   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

6) Other Business
   a) Matsqui Fishwheel — Staff/FRTC

7) Next Technical Committee meeting, Thursday August 10, 1:00 p.m. via Zoom — TC

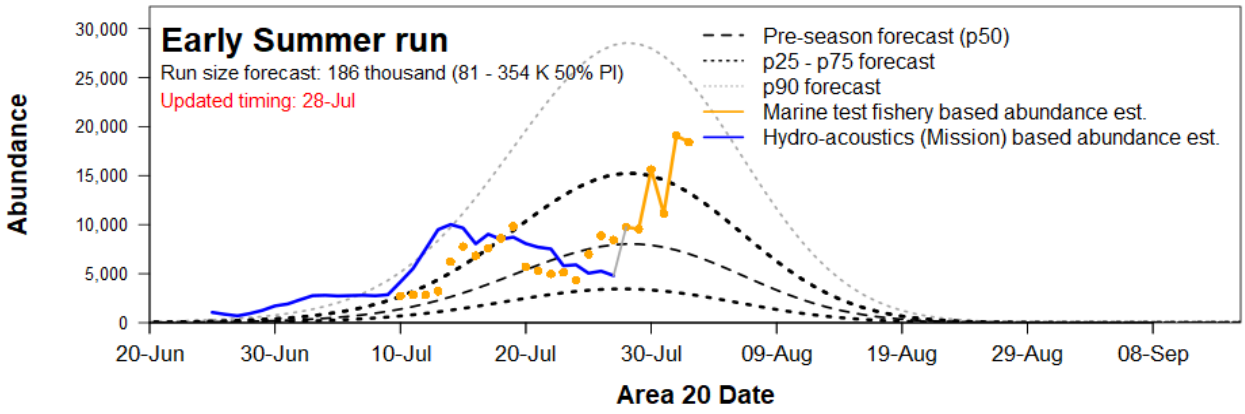
2023 Run status of Fraser sockeye and pink salmon

Date: Aug. 3, 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. 30 - Aug. 5, 2023	Sockeye					Pink
	Management Group				Total	Total
	E.Stuart	E.Summer	Summer	Late	Fraser	Fraser
Mission passage (incldes Pitt, Alouette, Coquitlam)	40,600	161,400	32,800	500	235,300	0
Catch downstream of Mission	200	2,600	1,600	100	4,500	200
Accounted Run To Date	40,800	164,000	34,400	600	239,800	200
Run size adopted in-season [2]	**43,000**	**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	**2/Jul**	**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				In-season 5-day average	**52%**	**0%**
				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 PS Blinkhorn (-1 day)	A20 PS Port Renfrew (0 days)	A29-13 GN Cottonwood (+5 days)	A29-17 GN Brownsville Bar[1]	A29-16 GN Whonnock (+6 days)	Whon CPUE Estimate (+6 days)	Qualark GN Catch (+8 days)	Qualark Estimate[2]	Qualark Method[3]	Mission Hydroacoustics Estimate[4] (+6 days)	Mission Hydroacoustics Method[5]	Hells Gate Estimates[6] (+10 days)
13-Jul				14	3	0.29	14 **	4,082	RB + LB	4,600	S1+M+A2	300
14-Jul				12	13	1.17	9 **	4,777	RB + LB	3,300	S1+M+A2	370
15-Jul				19	13	1.17	8 **	3,765	RB + LB	3,200	S1+M+A2	530
16-Jul				25	29	2.45	11 **	4,754	RB + LB	4,100	S1+M+A2	580
17-Jul				21	29	2.37	4 **	3,245	RB + LB	7,000	S1+M+A2	620
18-Jul				12	40	3.03	5 **	5,724	RB + LB	6,100	S1+M+A2	670
19-Jul				7	27	2.10	9 **	6,009	RB + LB	9,300	S1+M2+A2	900
20-Jul	67			7	18	1.48	10 **	7,528	RB + LB	11,700	S1+M2+A2	560
21-Jul	31	167		13	2	0.19	15 **	7,162	RB + LB	7,800	S1+M2+A2	1,580
22-Jul	62	28		50	0	0.00	6	4,652	RB + LB	9,000	S1+M2+A2	No Count
23-Jul	349	62 (5 sets)		48	2	0.17	12	7,054	RB + LB	8,000	S1+M2+A2	1,880
24-Jul	7 (4 Sets)	70		18	5	0.48	27 (5 sets)	8,566	RB + LB	11,500	S1+M2+A2	730
25-Jul	134	50		43	2	0.19	15	9,079	RB + LB	9,000	S1+M2+A2	1,970
26-Jul	1,390	70	16	42	4	0.37	16	9,408	RB + LB	10,700	S1+M2+A2	1,880
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	7,200	S1+M2+A2	1,080
3-Aug												
4-Aug												

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

[4] Mission escapement estimate - does not include Pitt

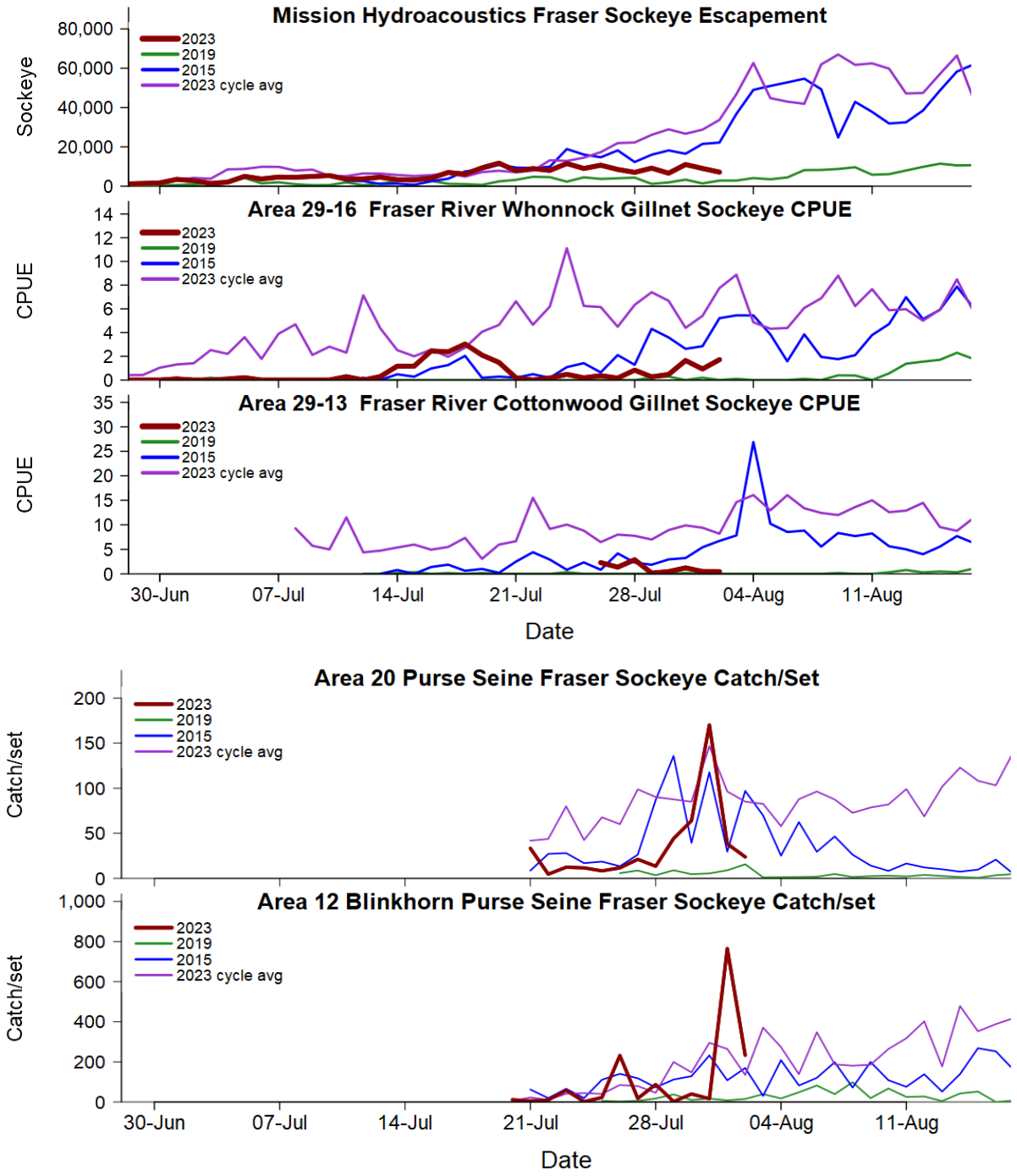
[5] Mission source:

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

A1+M+A2 = Left-bank ARIS (A1) + Mobile ARIS (M2) + Right-bank ARIS (A2)

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

** Three sets performed for Qualark Gillnet


Mission Hydroacoustics Fraser Sockeye Escapement
Sockeye
80,000
60,000
40,000
20,000
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 29-13 Fraser River Cottonwood Gillnet Sockeye CPUE
35
30
25
20
15
10
5
0
30-Jun
07-Jul
14-Jul
21-Jul
28-Jul
04-Aug
11-Aug
Date
Area 20 Purse Seine Fraser Sockeye Catch/Set
Catch/set
200
150
100
50
0
Area 12 Blinkhorn Purse Seine Fraser Sockeye Catch/set
1,000
800
600
400
200
0

2023 Fraser Pink Test Fishing & Escapement Summary

	Johnstone Strait	Juan de Fuca Strait	Fraser River									
Area/Gear	A12 PS	A20 PS	A29-13 GN	A29-17 GN	A29-16 GN	Whon CPUE	Qualark			Mission Hydroacoustics		Hell's Gate
Location	Blinkhorn	Port Renfrew	Cottonwood	Brownsville	Whonnock	Estimate	GN Catch	Estimate[2]	Method[3]	Estimate[4]	Method[5]	Estimates[6]
From A20	(-1 day)	(0 days)	(+5 days)	Bar[1]	(+6 days)	(+6 days)	(+8 days)			(+6 days)		(+10 days)
13-Jul				0	0	0.00	0 **	0	RB+LB	0	S1+M+A2	0
14-Jul				0	0	0.00	0 **	0	RB+LB	0	S1+M+A2	0
15-Jul				0	0	0.00	0 **	0	RB+LB	0	S1+M+A2	0
16-Jul				0	0	0.00	0 **	0	RB+LB	0	S1+M+A2	0
17-Jul				0	0	0.00	0 **	0	RB+LB	0	S1+M+A2	0
18-Jul				0	0	0.00	0 **	0	RB+LB	0	S1+M+A2	0
19-Jul				0	0	0.00	0 **	0	RB+LB	0	S1+M2+A2	0
20-Jul	302			0	0	0.00	0 **	0	RB+LB	0	S1+M2+A2	0
21-Jul	931	128		0	0	0.00	0 **	0	RB+LB	0	S1+M2+A2	0
22-Jul	549	410		0	0	0.00	0	0	RB+LB	0	S1+M2+A2	No Count
23-Jul	1,782	1344 (5 sets)		0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
24-Jul	69 (4 sets)	2,440		0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
25-Jul	927	1,150		0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
26-Jul	9,305	3,364	0	0	0	0.00	0	0	RB+LB	0	S1+M2+A2	0
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												
4-Aug												

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

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

3 Qualark source:

RB+LB = Right Bank (RB) + Left Bank (LB)

4 Mission escapement estimate - does not include Pitt

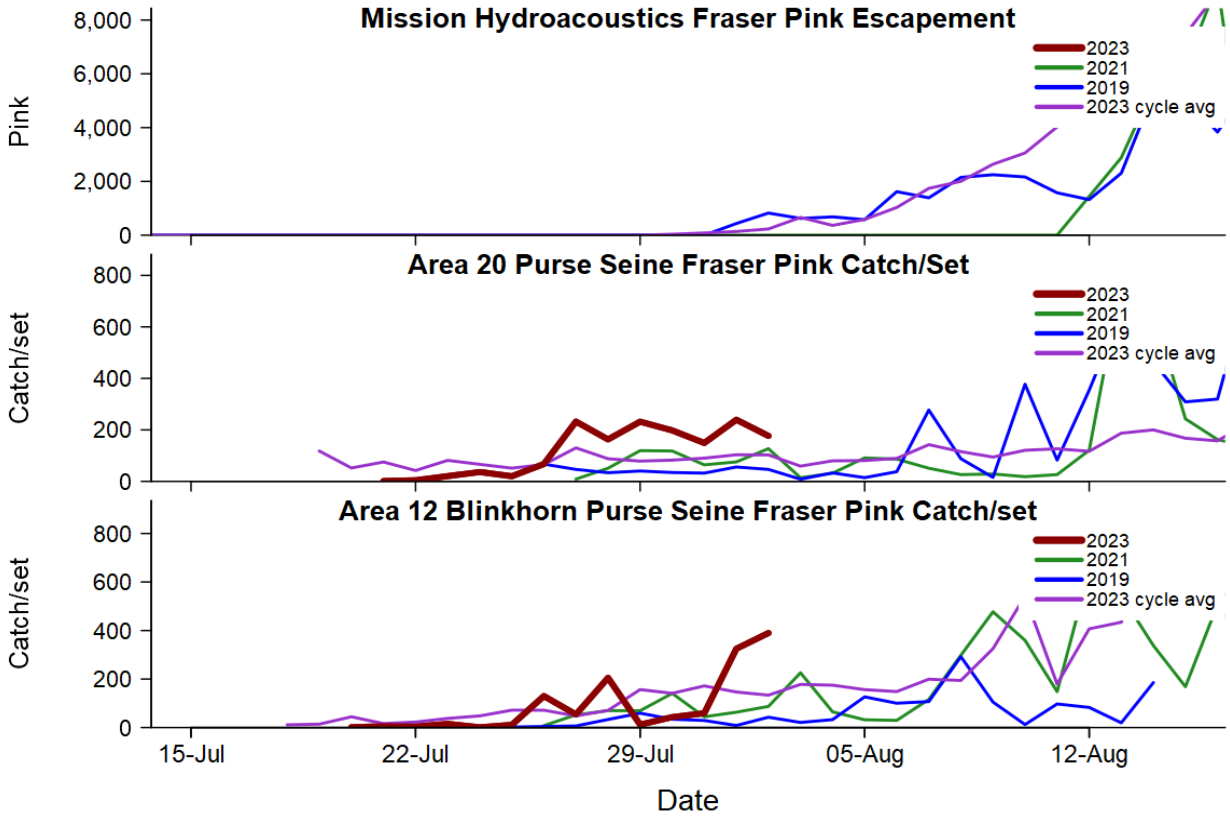
5 Mission source:

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

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

[6] *Daily Hells Gate abundance estimate; actual daily count has been multiplied by 2.*

*** Three sets performed for Qualark*

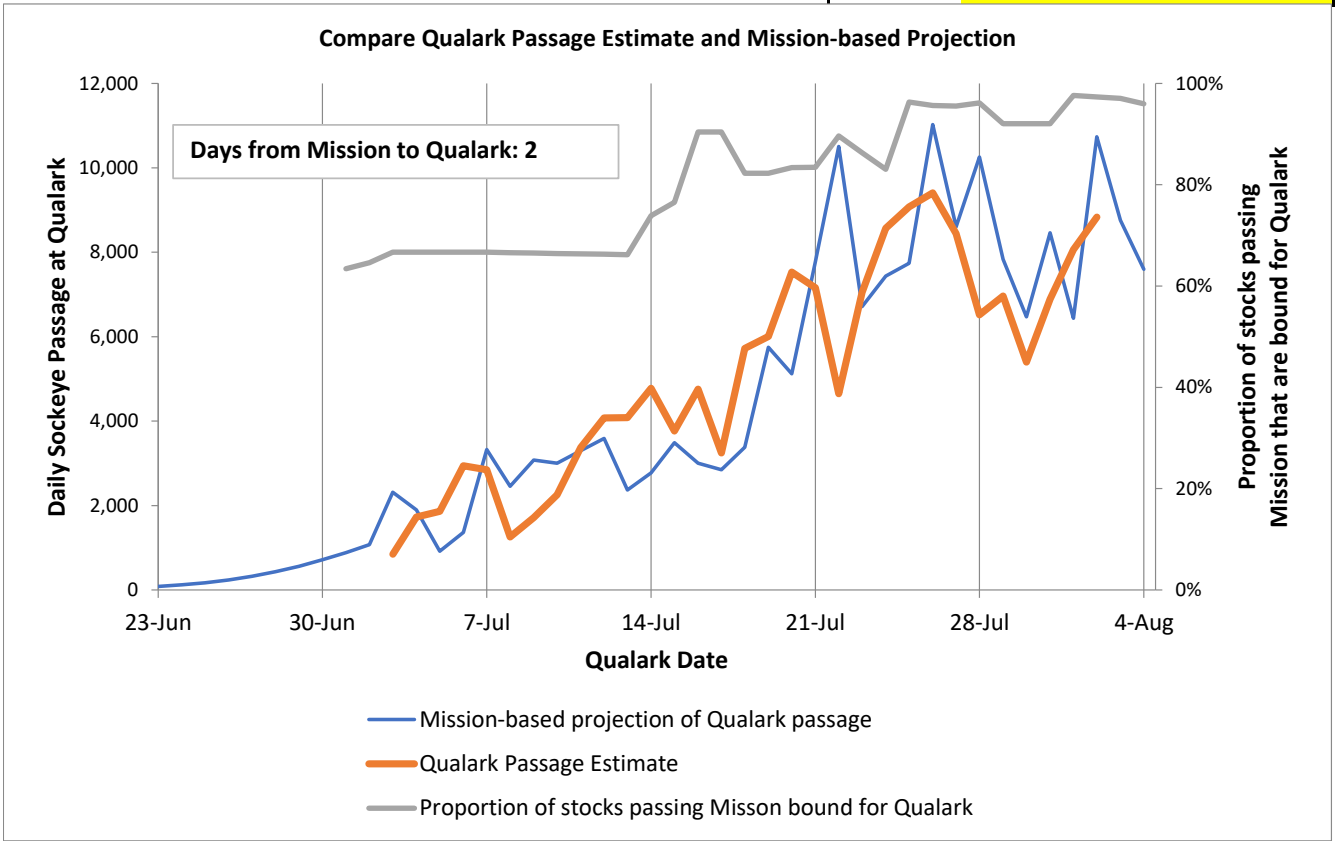


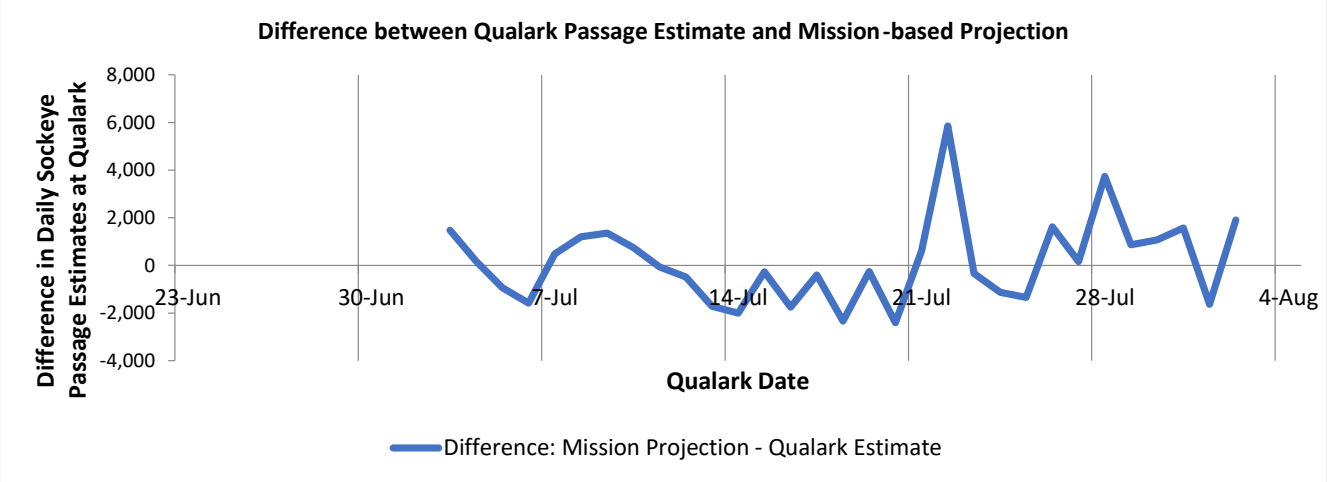
Fraser Sockeye: Qualark Passage Estimate and Mission-based Projection Year: **2023**

Date: 3/Aug/23

Time: 11:57 AM

	All Days	Common Days
Mission projection	184,955	163,987
Qualark estimate	159,813	159,813
	Difference	**4,174**
	%Difference	**3%**





FRTC – August 3, 2023

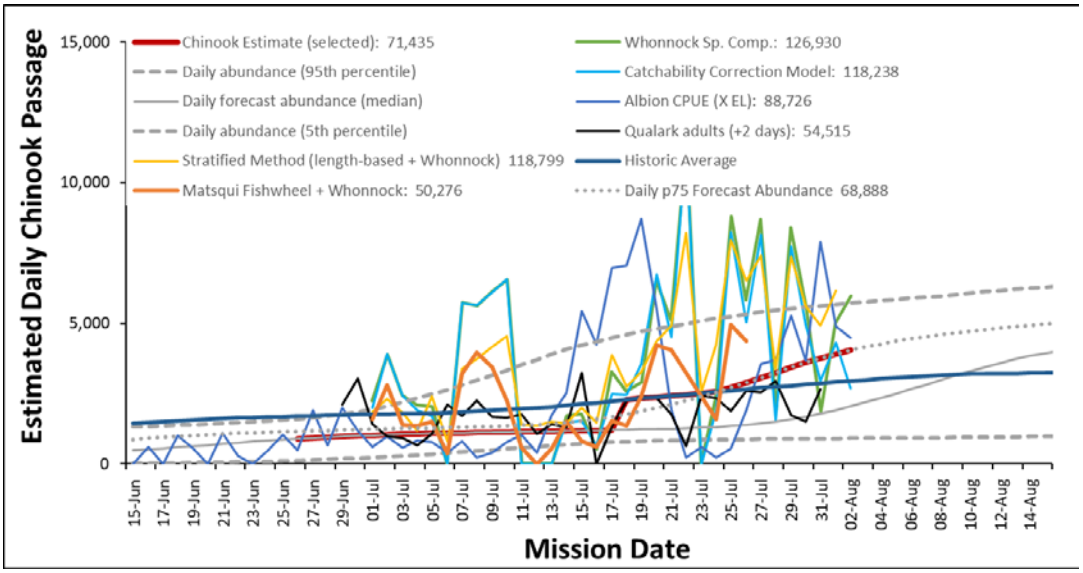
Species Composition Update

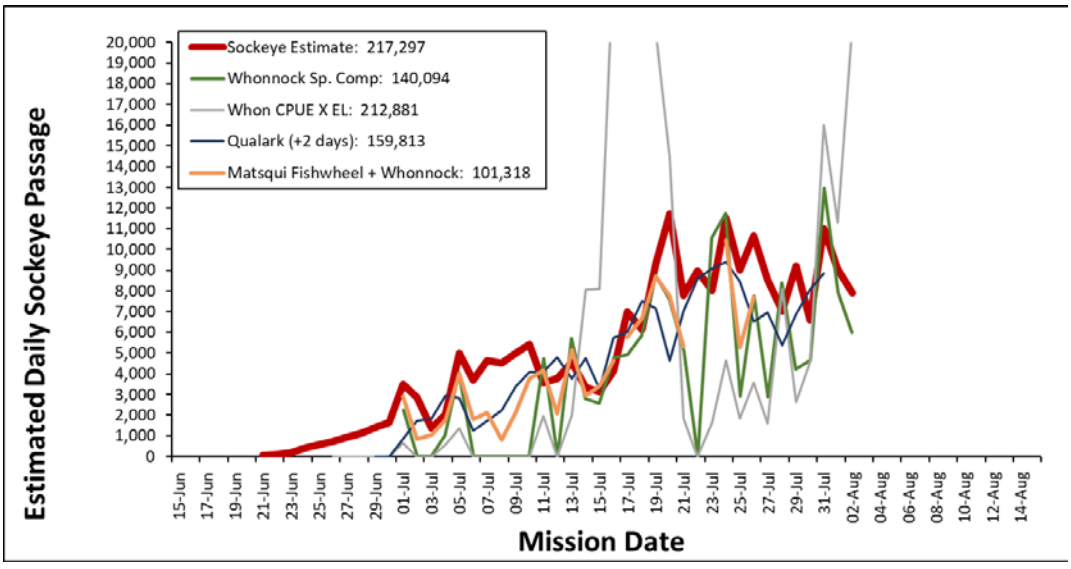
Chinook:

- July 1- 17: median daily forecast abundance; July 18-24: historical daily average
- From July 25 onwards we have updated the Chinook abundance to follow the p75 forecast abundance level as most estimators have been above the historic median. Our typical approach would have been to use the Albion CPUE and cap the Chinook estimate using the 95th percentile. Adding the p75 forecast provides an alternative that is not as extreme as some of the other methods indicate (Albion, Whonnock species comp, stratified method).
- Had we continued to use the historical median, Chinook abundance would be 5,600 less.
- At this time of year, most Chinook passing Mission will also be passing Qualark.

Sockeye:

- Sockeye abundance is calculated as total salmon minus Chinook
- Total salmon abundance is based on Mission hydroacoustics
- Most alternative sockeye estimates are in congruence.





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				
Area/Gear[1]	Fishing Sector[2]	Sample Date	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	Overall Stocks Age-4_2
Johnstone Strait & Queen Charlotte Strait																					
A12 ps	tf	Jul 25	DNA	100	87%	0%		6%	36%	6%	48%	1%	27%	22%		50%	2%			2%	48%
A12 ps	tf	Jul 26	DNA	95	91%	0%	1%	2%	35%	9%	47%		27%	22%		49%			3%	3%	54%
A12 ps	tf	Jul 29	DNA	13	77%	10%			9%		9%		51%	30%		81%				0%	60%
A12 ps	tf	Jul30-31	DNA	98	91%	0%	1%	2%	14%	2%	20%		40%	35%	1%	77%	1%	1%	1%	4%	53%
A12 gnps		Aug 5	Prediction	1	96%	0%	0%	2%	9%	2%	13%		33%	52%	1%	85%	1%	1%	0%	2%	NA
Juan de Fuca Strait & Washington & Other																					
A20 at	tf	Jul 29	DNA	94	96%	0%	1%	18%	25%	10%	54%	3%	7%	30%		40%	5%		1%	6%	NA
A20 gn	tf	Jul 29	DNA	47	98%	0%	2%	20%	28%	1%	51%		13%	29%	4%	45%	2%		2%	4%	NA
A20 ps	tf	Jul 29	DNA	95	95%	0%	1%	8%	32%	9%	50%	4%	22%	20%		47%	1%		1%	2%	47%
A20 ps	tf	Aug 1	DNA	96	95%	0%		1%	12%	6%	19%	3%	26%	45%	2%	76%	4%		1%	5%	63%
A20 gnps		Aug 6	Prediction	1	96%	0%	0%	4%	6%	2%	13%	2%	28%	50%	3%	83%	3%		2%	4%	NA
In-river																					
BB gn Bro	tf	Jul24-25	DNA	58	100%	0%	1%	4%	59%	9%	73%	2%	13%	11%		27%				0%	33%
BB gn Bro	tf	Jul27-28	DNA	71	100%	5%	9%	10%	56%	3%	78%	2%	11%	4%		17%				0%	44%
BB gn Bro	tf	Jul29-30	DNA	58	100%	0%		7%	39%	8%	54%	3%	27%	14%	1%	46%				0%	32%

2023 Fraser River Pink Salmon Stock identification Review

Recent stock composition estimates for pink salmon

	Fishing			Sample	DNA % Estimates by Group		
Area/Gear[1]	Sector[2]	Date	Type[3]	Size (n)	Fraser River	Washington	Canada South Coast
Johnstone Strait							
A12 PS	TF	Jul28	DNA	94	8%	25%	67%
A12 PS	TF	Jul31	DNA	95	12%	15%	73%
A12		Aug05	Prediction	1	26%	23%	51%
Juan de Fuca Strait							
A20 PS	TF	Jul27	DNA	96	24%	36%	40%
A20 PS	TF	Jul31	DNA	94	9%	30%	61%
A20		Aug05	Prediction	1	32%	34%	34%
Washington							

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

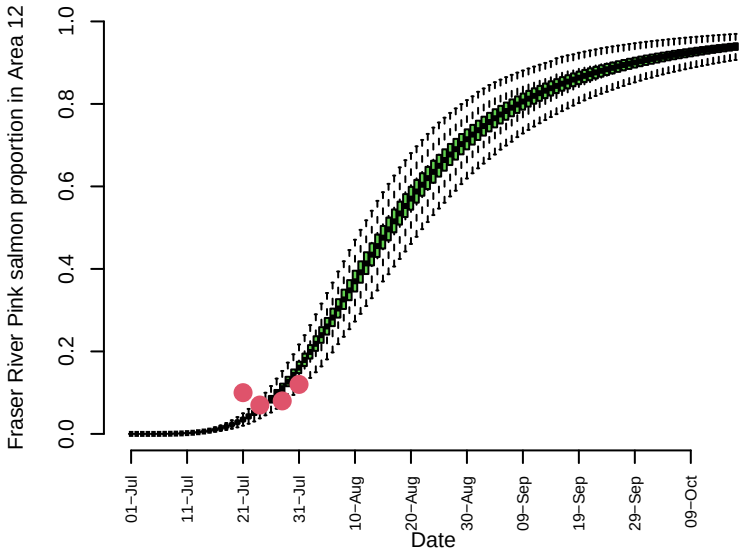
[2] TF=sample from test fishery catch, CM=sample from commercial catch, C&S=ceremonial & subsistence catch, FSC=food, social, & ceremonial catch, rec= recreational catch

[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

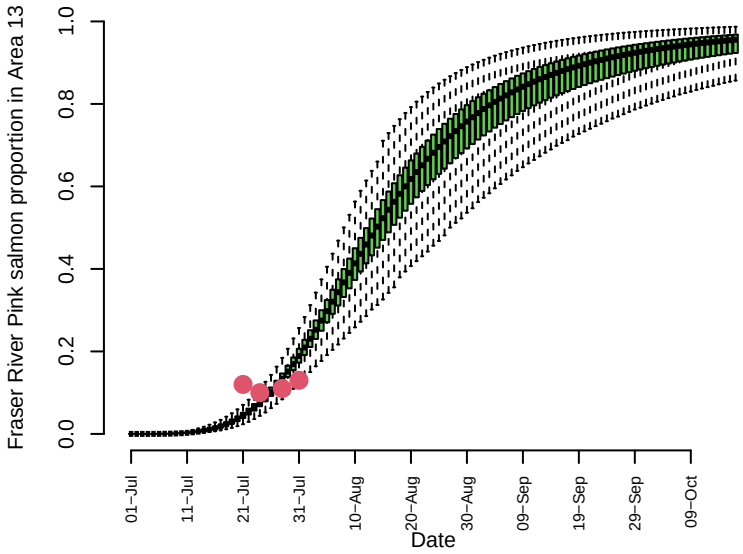
[4] Further information relating stock group descriptions to spawning ground locations and population definitions can be found at http://www.psc.org/FRPWeb/Escapement/PSC_Fraser_Sockeye_Stock_Group_Definitions.pdf

Results in grey text have been presented to the Panel previously

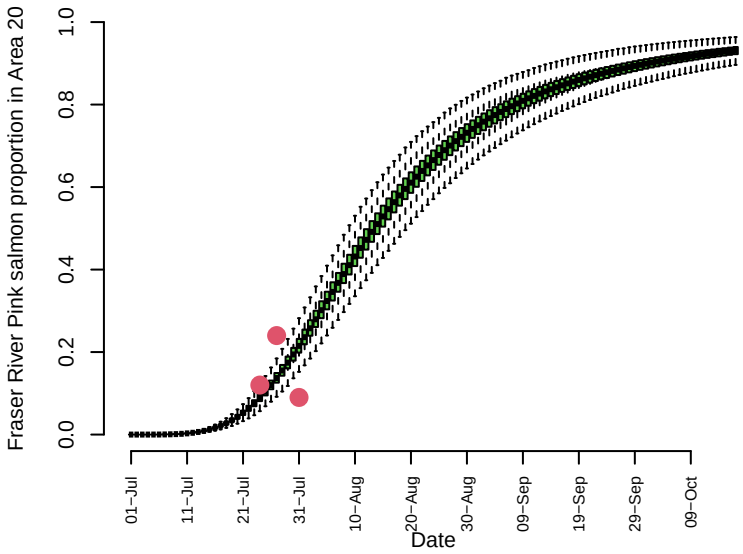
Area 12



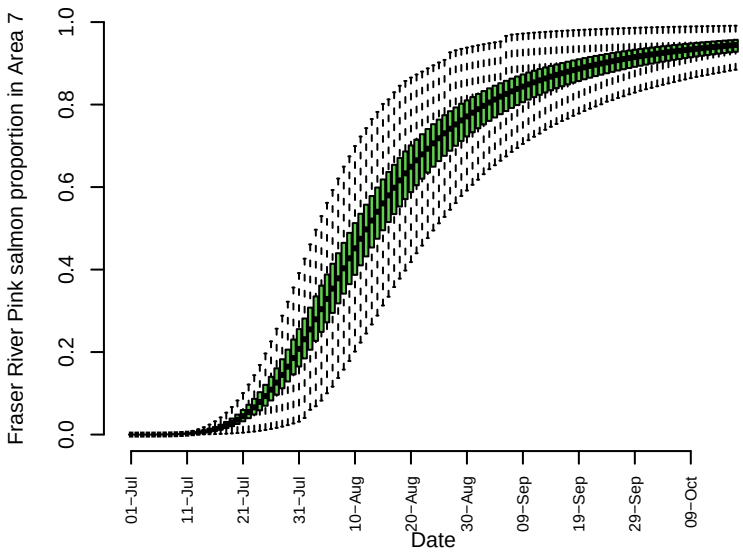
Area 13



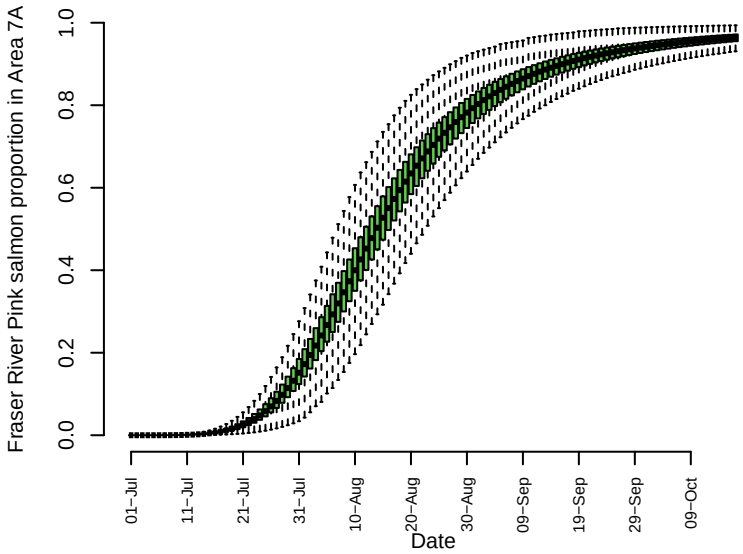
Area 20

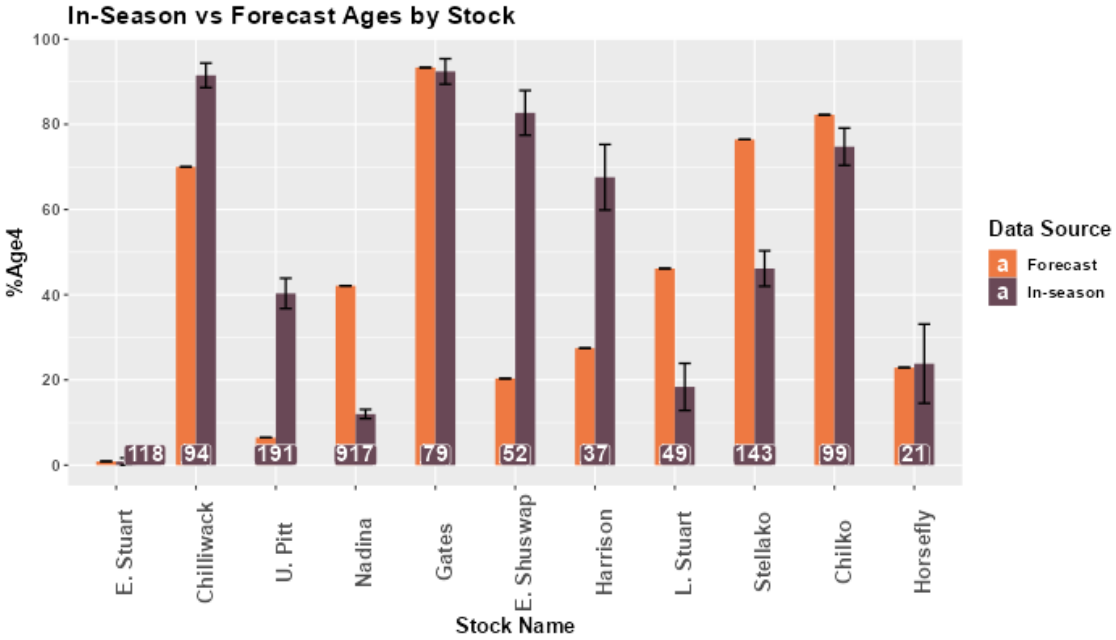


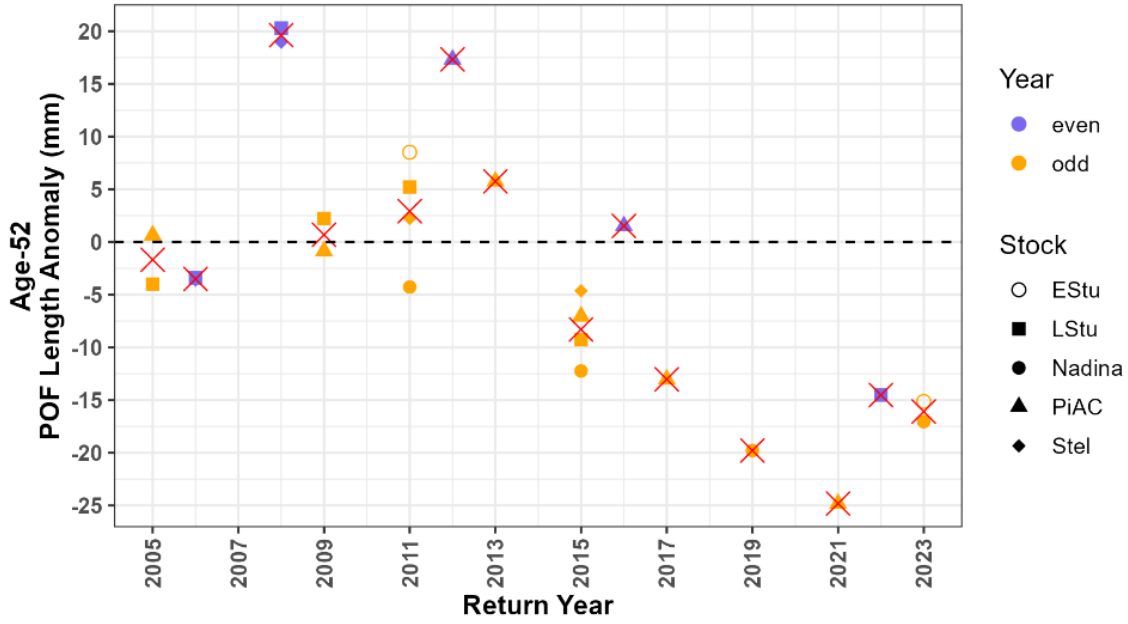
Area 7



Area 7A




In-Season vs Forecast Ages by Stock
%Age4
100
80
60
40
20
0
118
94
191
917
79
52
37
49
143
99
21
E. Stuart
Chilliwack
U. Pitt
Nadina
Gates
E. Shuswap
Harrison
L. Stuart
Stellako
Chilko
Horsefly
Stock Name
Data Source
a Forecast
a In-season

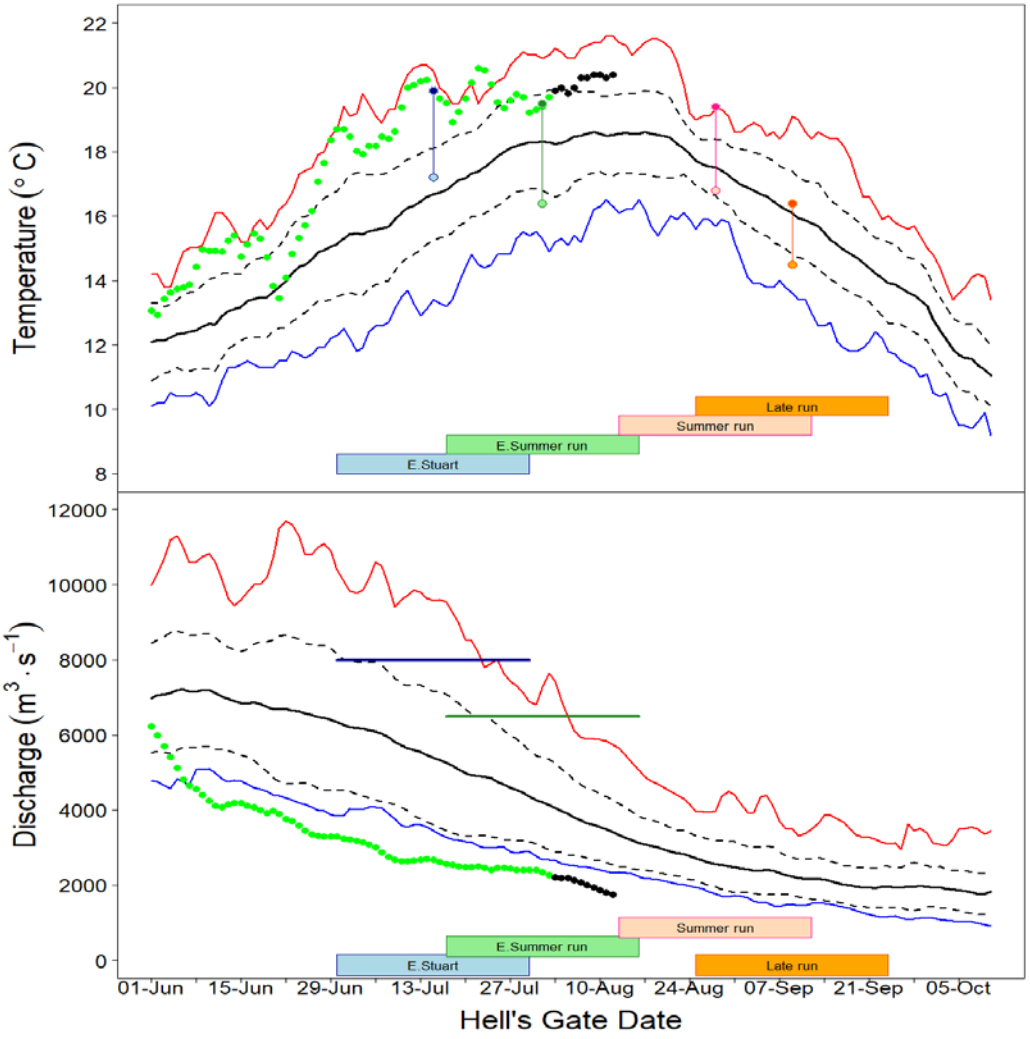

Age-52
POF Length Anomaly (mm)
20
15
10
5
0
-5
-10
-15
-20
-25
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
Return Year
Year
even
odd
Stock
EStu
LStu
Nadina
PiAC
Stel

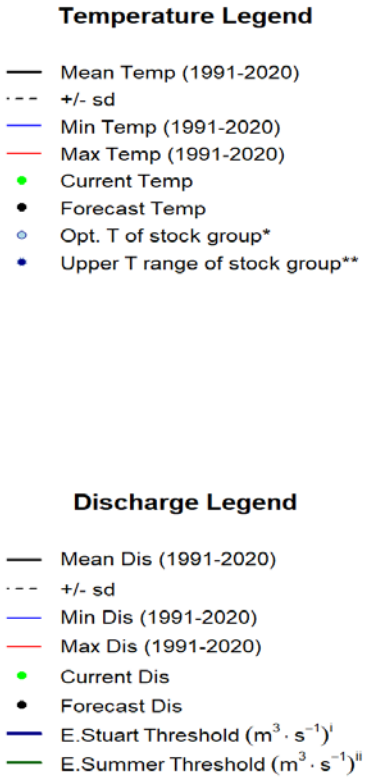
Observed Fraser River Temperature at Qualark for 02-Aug	19.7°C
Average (1991-2020) Historical Temperature on this day	18.3°C
Deviation from Average	1.4°C
Forecast Temperature for 08-Aug-23	20.3°C

The forecast in Kamloops is for above average air temperature. The forecast for Prince George is for above average air temperature.

Observed Fraser River Discharge at Hope for 02-Aug	2276 $m^3 \cdot s^{-1}$
Average (1991-2020) Historical Discharge on this day	4134 $m^3 \cdot s^{-1}$
% above or below Historical Discharge	-45%
Forecast Discharge for 08-Aug-23	2005 $m^3 \cdot s^{-1}$

The forecast in Kamloops is for 6 mm precipiatation. The forecast in Prince George is for 9 mm of precipitation.



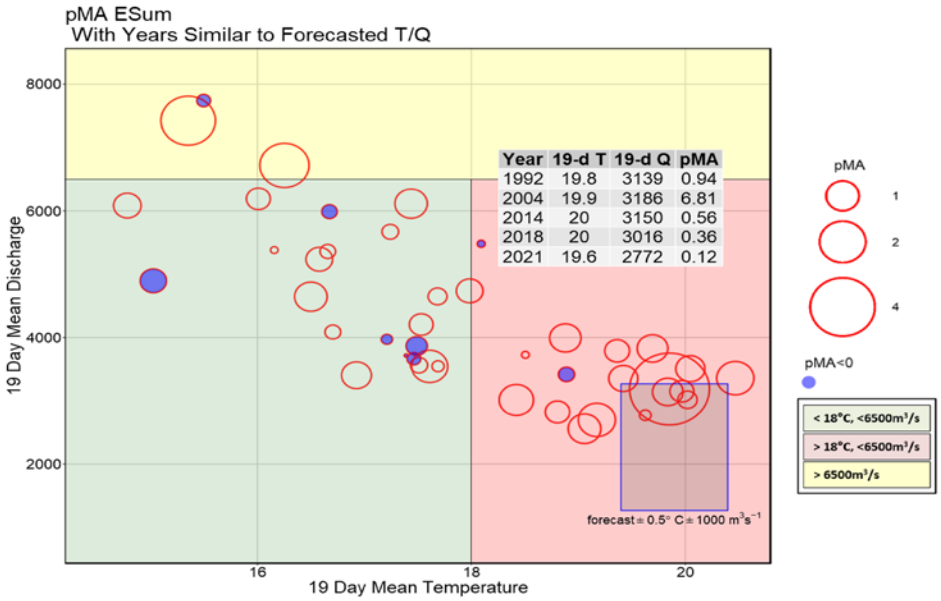


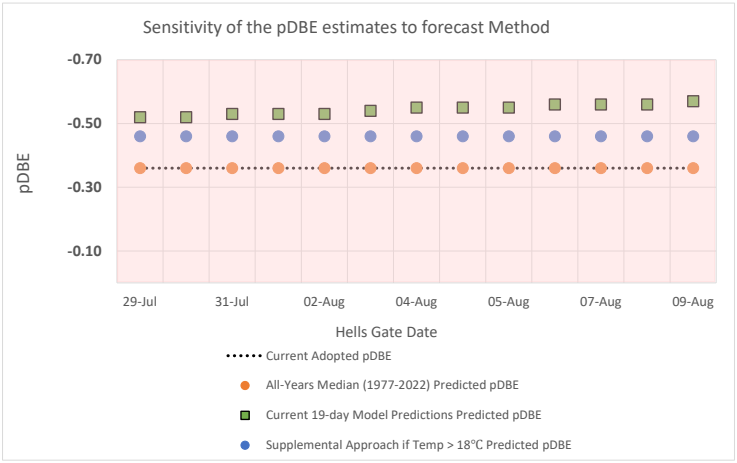
Run timing bars represent a 31 day spread of the run centered around the Hell's Gate date. Hell's gate timing is 5 days from Mission for Early Stuart and Late run; and 4 days from Mission for Early Summer and Summer run.'pMA is the proportional increase to spawning escapement targets to help ensure targets 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 02-Aug	Daily Mean	Historic Mean	Deviation from Historical Mean	Historic Year Range
		Fraser River Mainstem				
	1	Fraser River @ Qualark	**19.7**	**18.3**	**1.4**	**1991-2020**
	2	Fraser River @ Texas Creek	**18.9**	**18.3**	**0.6**	**2006-2022**
	3	Fraser River @ Big Bar Creek	**NA**	**NA**	**NA**	**2019-2022**
►	4	Fraser River @ Marguerite	**18.6**	**18.6**	**0.0**	**2015-2022**
►	5	Upper Fraser @ Shelley	**17.2**	**15.2**	**2.0**	**1994-2022**
		Fraser River Tributaries				
	6	Thompson R. @ Ashcroft	**19.7**	**17.8**	**1.9**	**1995-2022**
	7	South Thompson @ Chase	**19.8**	**19.2**	**0.6**	**1994-2022**
	8	North Thompson @ McLure	**18.1**	**15.4**	**2.7**	**2006-2022**
►	9	Quesnel R. @ Quesnel	**17.1**	**16.8**	**0.3**	**2000-2022**
►	10	Nechako R. @ Isle Pierre	**18.7**	**19.1**	**-0.4**	**2006-2022**
►	11	Stuart R. @ Ft. St. James	**19.3**	**18.7**	**0.6**	**2000-2022**

Early Summer run pDBE Forecast and Sensitivity Analysis for August 03, 2023

Based on the retrospective analysis evaluation of 2010-2021 for Early Summer run the best performing in-season model is the All-years Median (1977-2021)





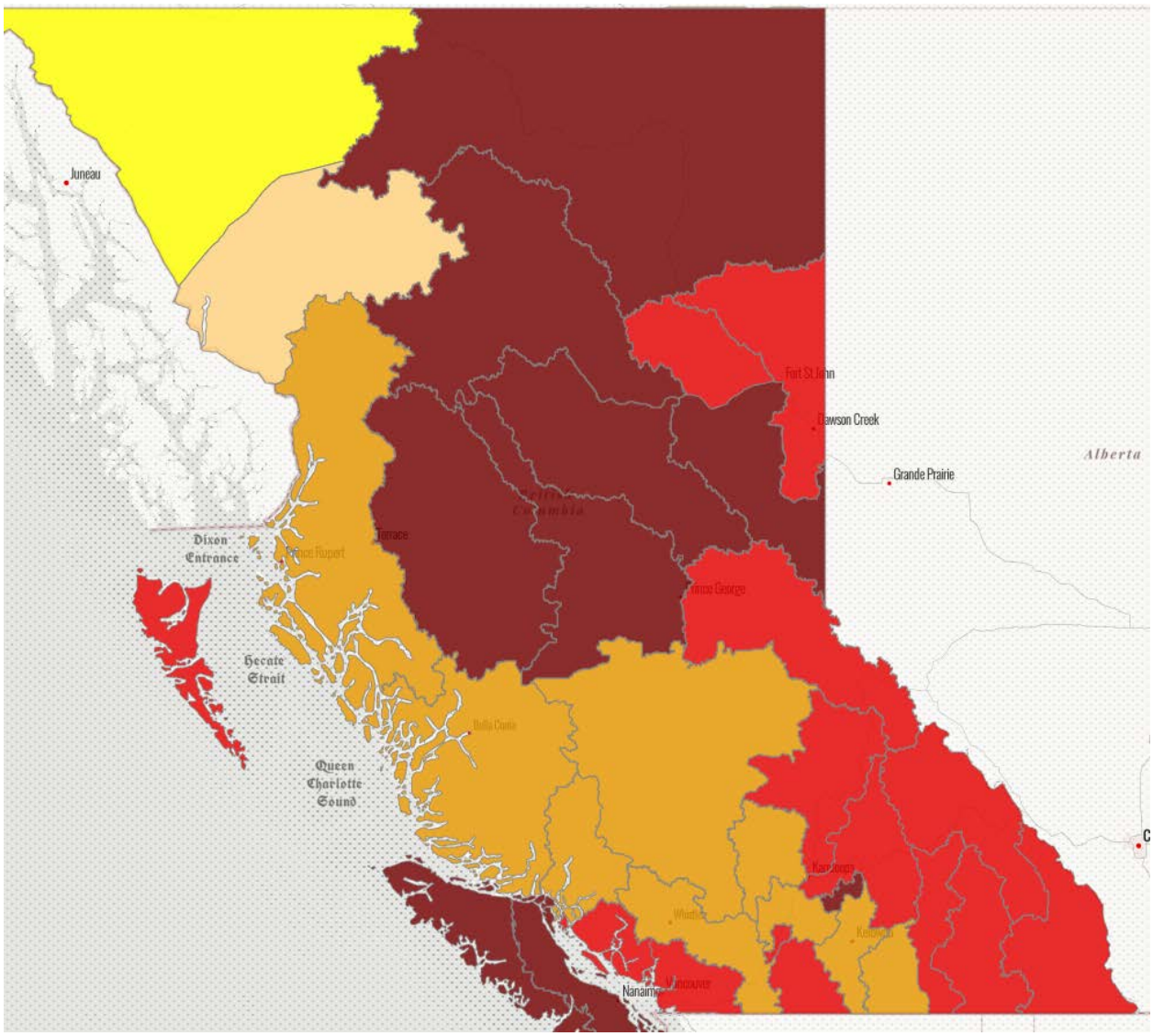
Model Performance Based on "In-season pDBE Approach"
Retrospective

					Current Adopted	All-Years Median (1977-2022)	Supplemental Approach if Temp > 18 °C	Current 19-day Model Predictions
						Best	2	3
	Area 20 Date	Hells Gate Date	Average Temperature ºC	Average Discharge m^3/s	pDBE	Predicted pDBE	Predicted pDBE	Predicted pDBE
	19-Jul	29-Jul	19.7	2489	-0.36	-0.36	-0.46	-0.52
	20-Jul	30-Jul	19.7	2467	-0.36	-0.36	-0.46	-0.52
	21-Jul	31-Jul	19.7	2442	-0.36	-0.36	-0.46	-0.53
	22-Jul	01-Aug	19.7	2421	-0.36	-0.36	-0.46	-0.53
	23-Jul	02-Aug	19.7	2402	-0.36	-0.36	-0.46	-0.53
	24-Jul	03-Aug	19.8	2381	-0.36	-0.36	-0.46	-0.54
	25-Jul	04-Aug	19.8	2358	-0.36	-0.36	-0.46	-0.55
	25-Jul	04-Aug	19.8	2358	-0.36	-0.36	-0.46	-0.55
	26-Jul	05-Aug	19.9	2333	-0.36	-0.36	-0.46	-0.55
	27-Jul	06-Aug	19.9	2304	-0.36	-0.36	-0.46	-0.56
	28-Jul	07-Aug	19.9	2271	-0.36	-0.36	-0.46	-0.56
	29-Jul	08-Aug	19.8	2237	-0.36	-0.36	-0.46	-0.56
*	30-Jul	09-Aug	19.9	2202	-0.36	-0.36	-0.46	-0.57
	Implied pMA							
*	30-Jul	09-Aug	19.9	2202	0.56	0.56	0.85	1.33

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

BC Drought Information

Drought is a recurrent feature of climate involving a deficiency of precipitation over an extended period of time, resulting in a water shortage.



Drought Level Classification		
Level	**Impacts**	**General Response Measures**
0	There is sufficient water to meet socio-economic and ecosystem needs	Preparedness
1	Adverse impacts to socio-economic or ecosystem values are **rare**	Conservation
2	Adverse impacts to socio-economic or ecosystem values are **unlikely**	Conservation Local water restrictions where appropriate
3	Adverse impacts to socio-economic or ecosystem values are **possible**	Conservation Local water restrictions likely
4	Adverse impacts to socio-economic or ecosystem values are **likely**	Conservation and local water restrictions Regulatory action possible
5	Adverse impacts to socio-economic or ecosystem values are **almost certain**	Conservation and local water restrictions Regulatory action likely Possible emergency response

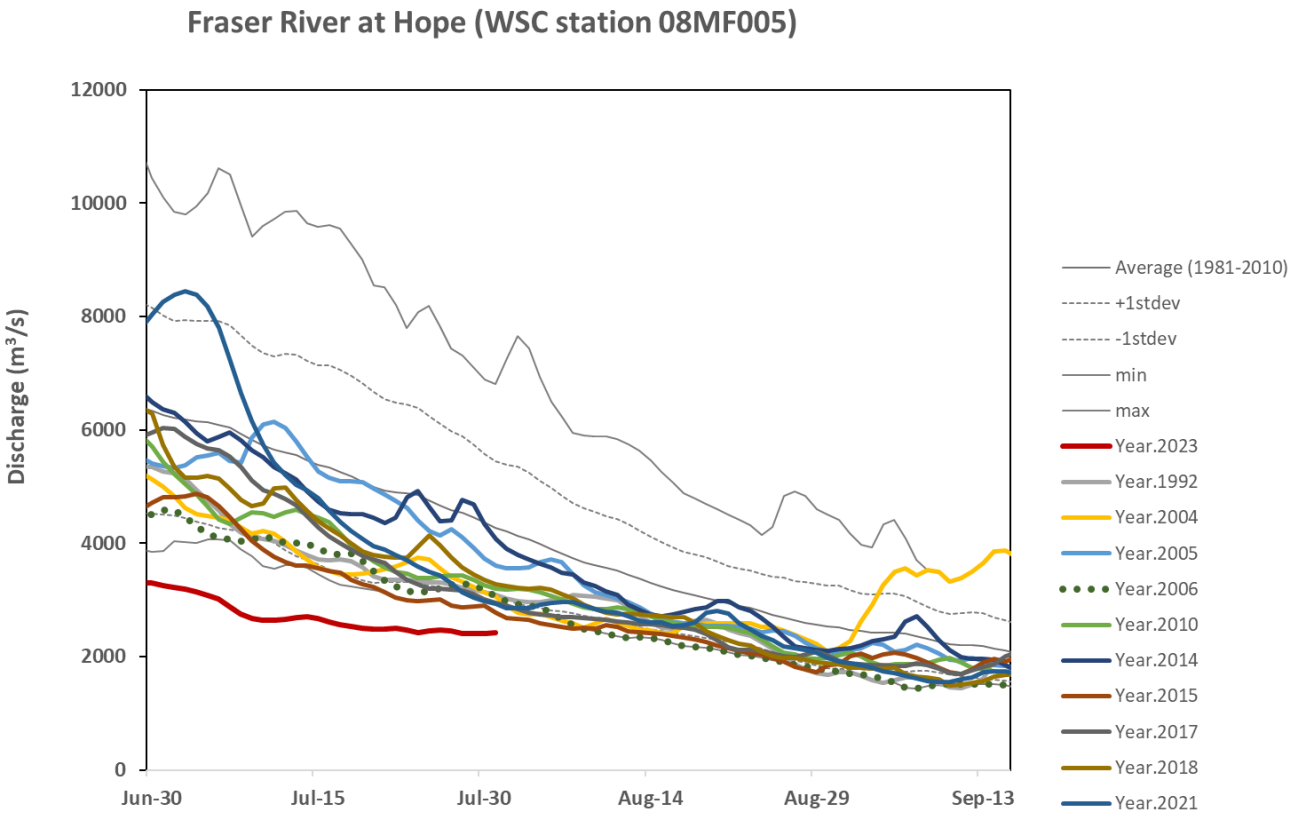
BRITISH COLUMBIA

https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=838d533d8062411c820eef50b08f7ebc

Early Summer run low discharge years

Years where the 31-day mean Discharge was <3000 cms.

- 9 out of 10 years highlighted in the discharge graph had observed Temperatures greater than 18°C.



Observed Impacts of low water levels on the Spawning Grounds

(Based on Near Final Spawning Escapement presentations)

The following table indicates the conditions in the river and on the spawning grounds in previous low discharge years compared to 2023.

	1992		2004		2005		2006		2010		2014		2015		2017		2018		2021		**2023**
°C	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	Nadina	E.S. Thompson	**Early Summer run**
31-day mean Discharge at Hope (cms)	2960		2932		2734		2230		2569		2866		2530		2333		2691		2592		2276
31-day mean Temperature at Qualark ( )	19.8		20.1		17.9		18.4		18.1		19.5		19.2		18.8		19.1		18.8		19.7
Low water levels at spawning grounds							✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	
Restricted spawning ground access								✓		✓										✓	
Poor fish condition noted									✓				✓				✓				
Stock specific pDBE	-0.75	-0.25	-0.77	-0.85	-0.27	-0.70	-0.52	-0.60	*0.86*	-0.38	-0.04	-0.39	-0.56	-0.52	*0.55*	-0.35	-0.17	-0.30	*0.55*	*0.08*	

✓ *Ich* present

- Discharge and Temperature for 2023 is the observed Discharge and Temperature for August 2. It is not a 19 or 31-day mean.
- The 2006 31-day mean discharge level is very similar to current conditions.
- Restricted spawning ground access would not have had a substantial impact on escapement for the population as a whole because the tributaries that had difficult or no access for spawners typically represent a very small proportion of total spawners (pers. comm. Scott Decker)
- This would not have had a substantial impact on escapement for the population as a whole because the tributaries that had difficult or no access for spawners typically represent a very small proportion of total spawners (pers. comm. Scott Decker)

Performance of different methods to predict Early Summer Run pDBE

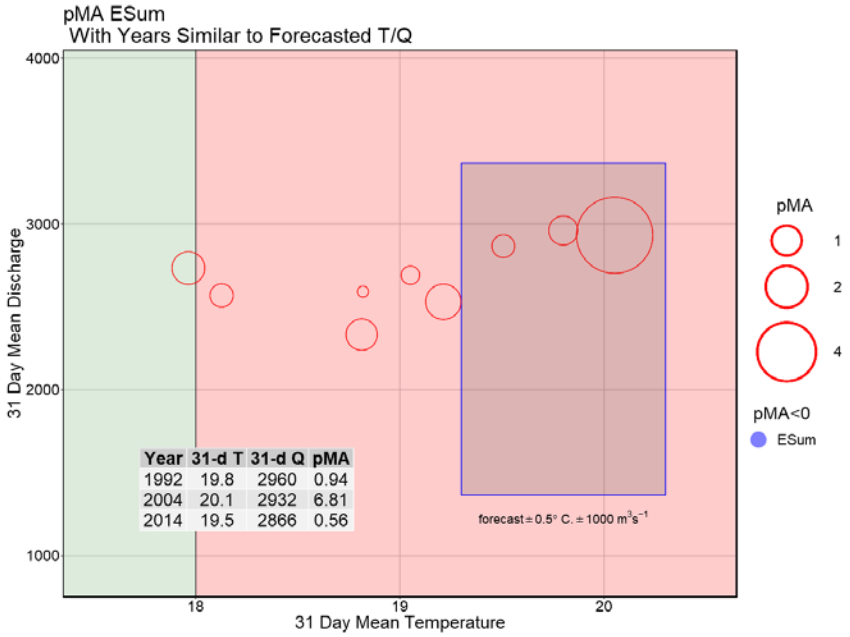
Three different models have been tested:

- All years median
- Supplemental approach (using discharge and temperature thresholds to determine median pDBEs)
- 19-day temperature and discharge model

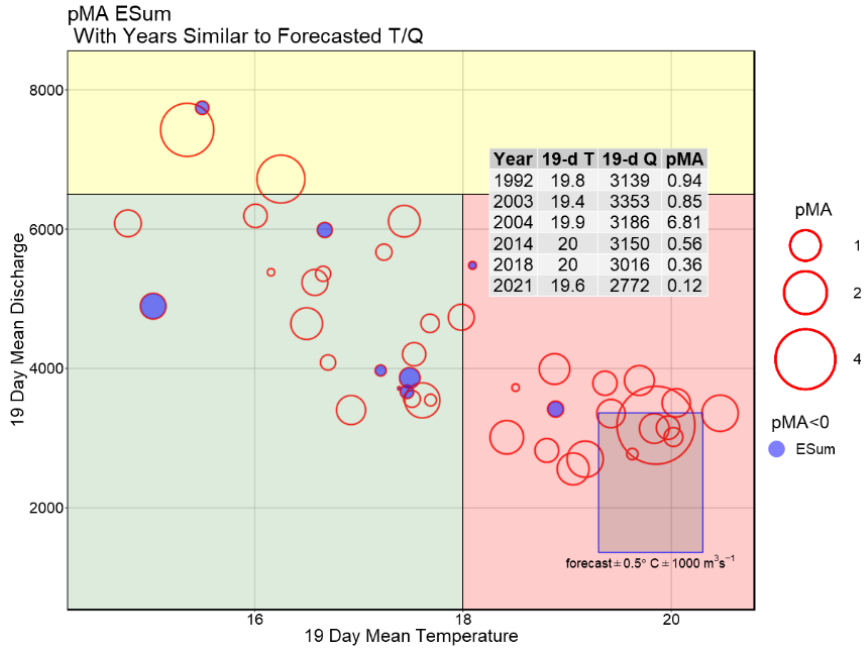
Previously these models had been evaluated using a retrospective analysis[1] to determine how well the different models performed in recent years (since 2010).

The extremely low discharge observed in 2023 might require a different evaluation: how well do the different models perform in low discharge years?

Low Discharge years

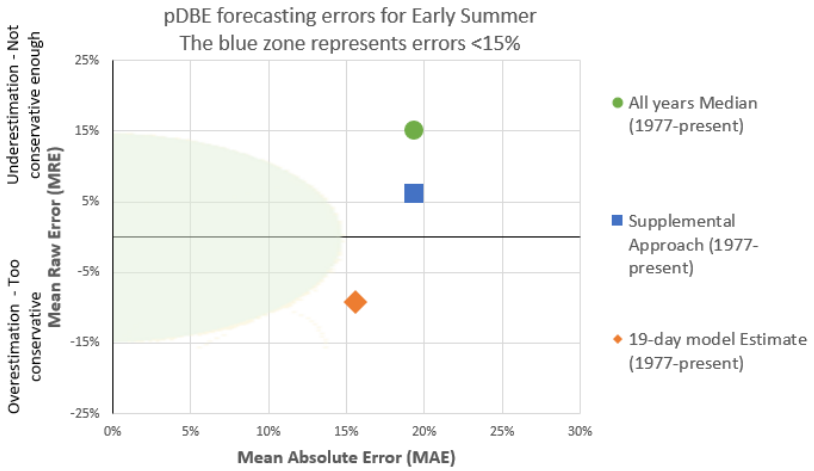


All Years

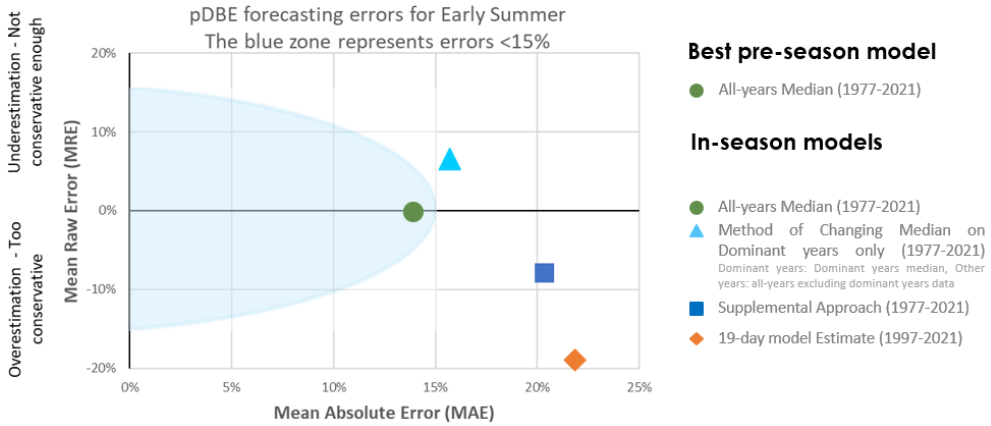


[1] Forrest, M. 2022. Retrospective analysis of the DBE approach: part II. June FRP meeting presentation, Sequim, WA.

Performance using Low Discharge years



Performance using All-years

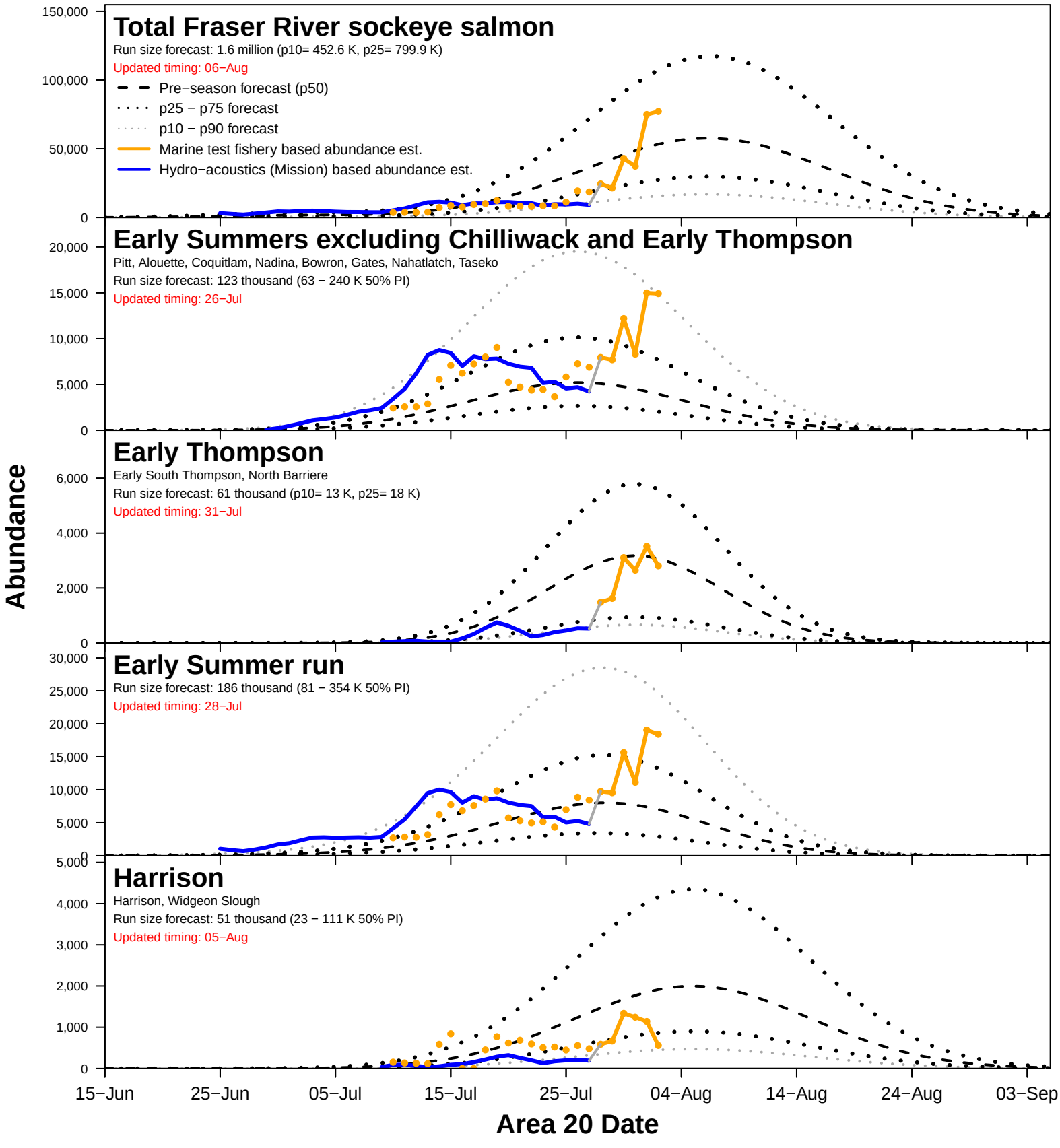


Conclusions for low discharge years

- During low discharge years (< 3000 cms), the mean absolute error is smallest for the 19-day temperature and discharge model compared to the Supplemental Approach and the All-years Median.
- The 19-day temperature and discharge model is slightly conservative but the tendency to be too conservative is considerably smaller on low discharge years compared to recent years in general.
- Applying the all-years median (which performed best in recent years) in low discharge years would tend to underestimate the pDBE and not be conservative enough.

2023 Fraser River sockeye salmon daily migration

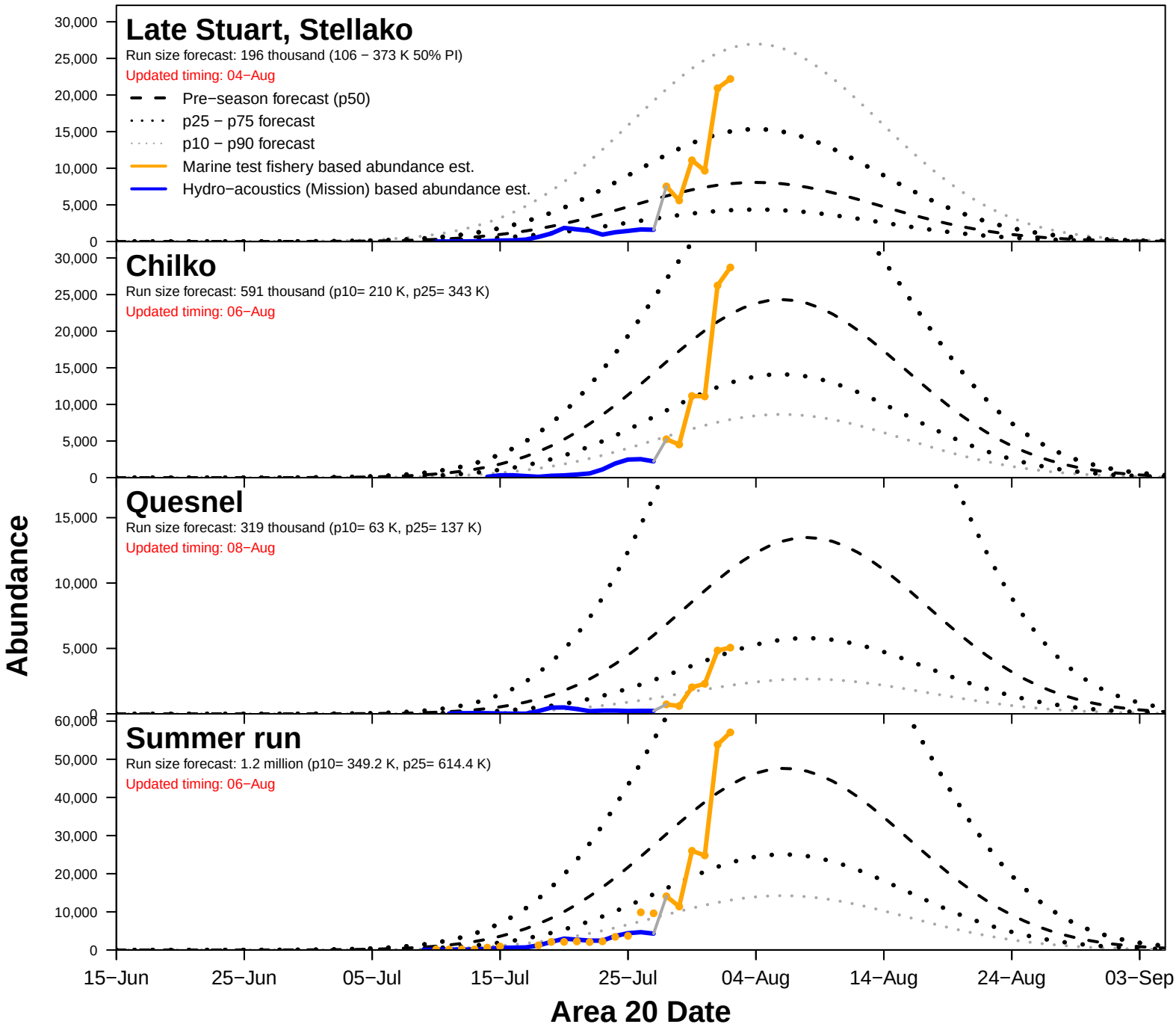
Timing updated based on Timing Correlations



Date: 2023−08−03, Time: 12:22 SW

2023 Fraser River sockeye salmon daily migration

Timing updated based on Timing Correlations



Date: 2023−08−03, Time: 12:22 SW

2023 Fraser River sockeye abundance en-route to Mission

Current date: 03-Aug

	Escapement	Projected abundance en route to Mission based on marine test fishery data[1,2]								Escapement +
Area 20 date	past Mission	28-Jul	29-Jul	30-Jul	31-Jul	01-Aug	02-Aug	Total	80% PI[3]	projections
Mission date	through 02-Aug	03-Aug	04-Aug	05-Aug	06-Aug	07-Aug	08-Aug		10p 90p	through 08-Aug
Total Fraser	**235,300**	**6,000**	**33,600**	**24,400**	**70,200**	**16,800**	**136,900**	**287,900**	**165,400 468,400**	**523,200**
Early Stuart	**40,600**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0 0**	**40,600**
Early Summer Run	**161,500**	**2,000**	**16,700**	**9,600**	**20,300**	**3,300**	**33,400**	**85,300**	**41,800 176,600**	**246,800**
Chilliwack	29,100	0	500	200	300	0	1,300	2,300	1,100 4,800	31,400
Pitt/Alouette/Coquitlam	18,000	400	5,700	1,300	2,100	100	4,700	14,300	7,000 29,600	32,300
Nadina group[4]	108,800	1,100	8,200	6,100	13,000	2,200	22,800	53,400	26,200 110,500	162,200
Early Thompson[5]	5,600	500	2,300	2,000	4,900	1,000	4,600	15,300	7,500 31,700	20,900
Summer Run	**32,800**	**3,800**	**16,400**	**14,000**	**47,200**	**12,800**	**101,000**	**195,200**	**119,100 281,100**	**228,000**
Harrison / Widgeon[2]	2,800	300	700	1,000	2,300	500	700	5,500	3,400 7,900	8,300
Late Stuart / Stellako	13,900	1,900	9,000	5,800	18,300	4,700	39,500	79,200	48,300 114,000	93,100
Chilko	12,700	1,400	6,200	5,900	21,200	6,000	51,300	92,000	56,100 132,500	104,700
Quesnel	3,100	200	500	1,100	4,400	1,300	8,800	16,300	9,900 23,500	19,400
Raft / North Thompson	300	0	0	200	1,000	300	700	2,200	1,300 3,200	2,500
Late Run	**400**	**200**	**500**	**800**	**2,700**	**700**	**2,500**	**7,400**	**4,500 10,700**	**7,800**
Birkenhead / Big Silver	100	100	200	500	1,800	500	900	4,000	2,400 5,800	4,100
Late run excl Birkenhead	300	100	300	300	900	200	1,600	3,400	2,100 4,900	3,700

[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

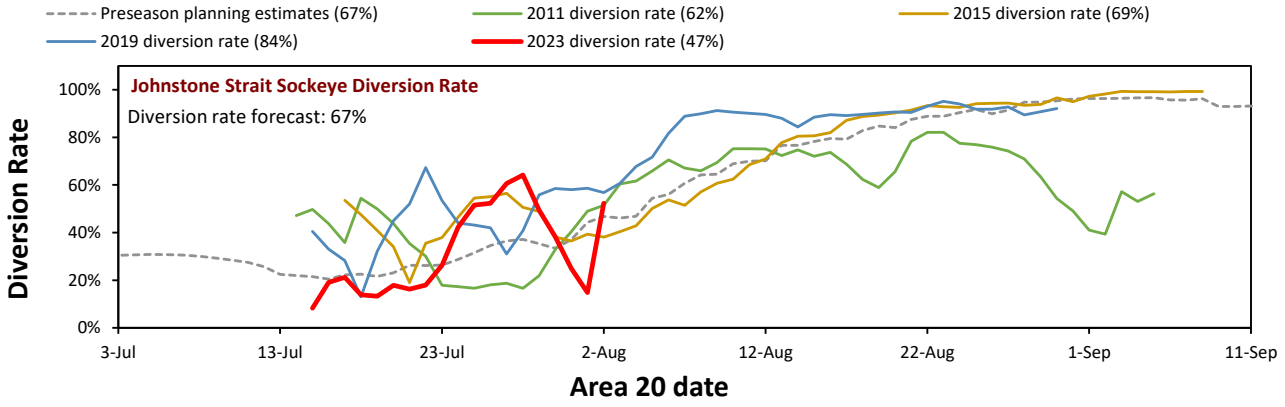
[3] 80% Probability Interval: there exists an 80% chance that the true abundance lies within this interval

[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	**52%**



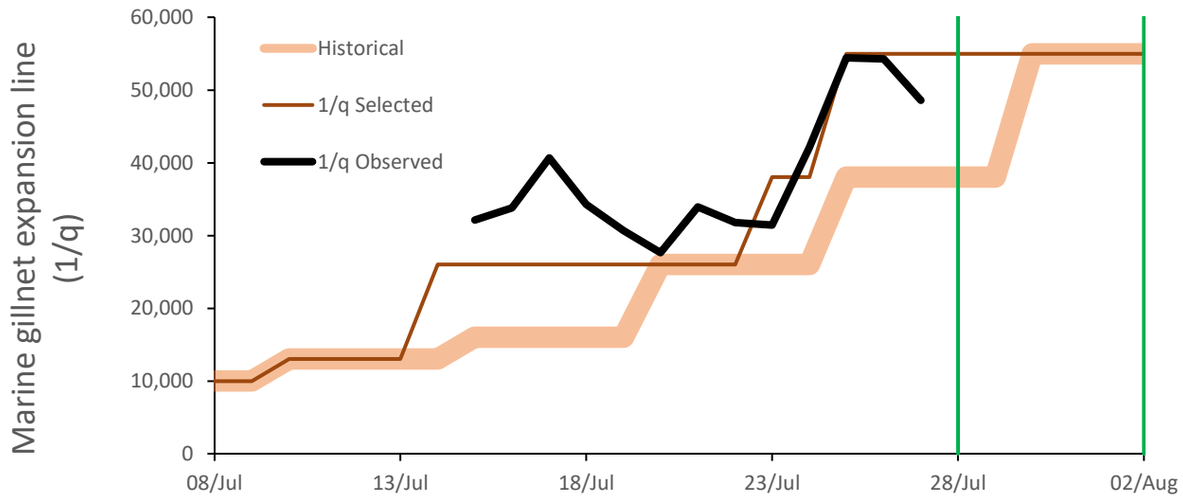
2023 Fraser River sockeye expansion line (1/catchability)

Marine Gillnet test fishery

		First Area 20 Date	Last Area 20 Date	1/q (6-day ave.)
In-season est. observed*		22-Jul	27-Jul	49,000
Currently used in-season				**45,000**
Historical prediction w/ offset =	3			55,000

*Early Stuart, Early Summer, Summer excl. Harrison 1/q

**Adjusted 1/q; applied to 6-day projections

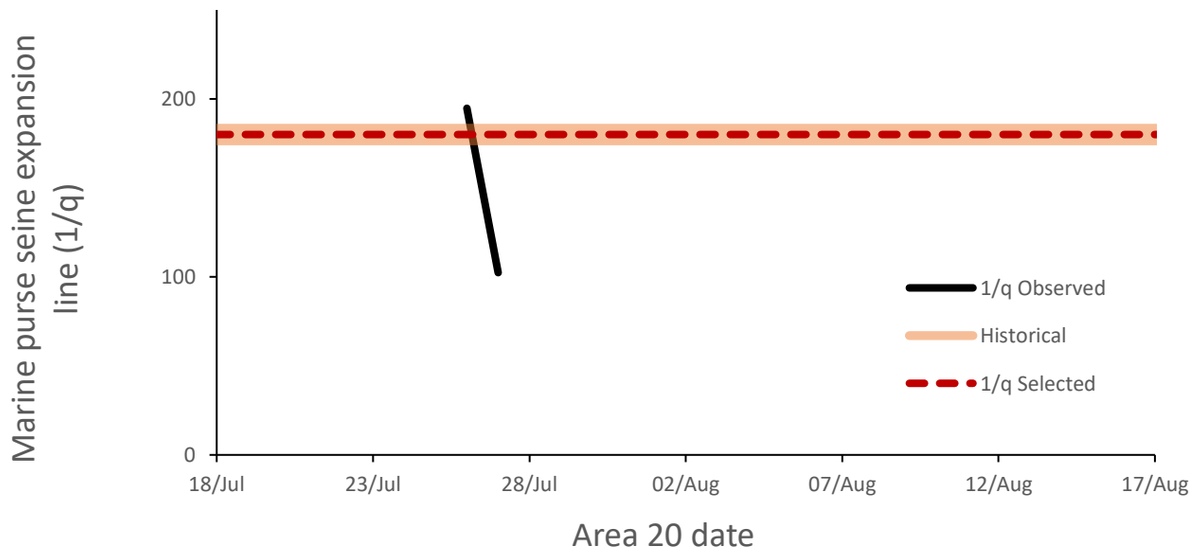


Purse Seine test fishery

		First Area 20 Date	Last Area 20 Date	1/q (6-day ave.)
In-season est. observed*		22-Jul	27-Jul	100
Currently used in-season				**180**
Historical prediction		28-Jul	02-Aug	180
In-season applied A12				**180**
A20**				400

*Summer excl. Harrison 1/q

**Adjusted 1/q

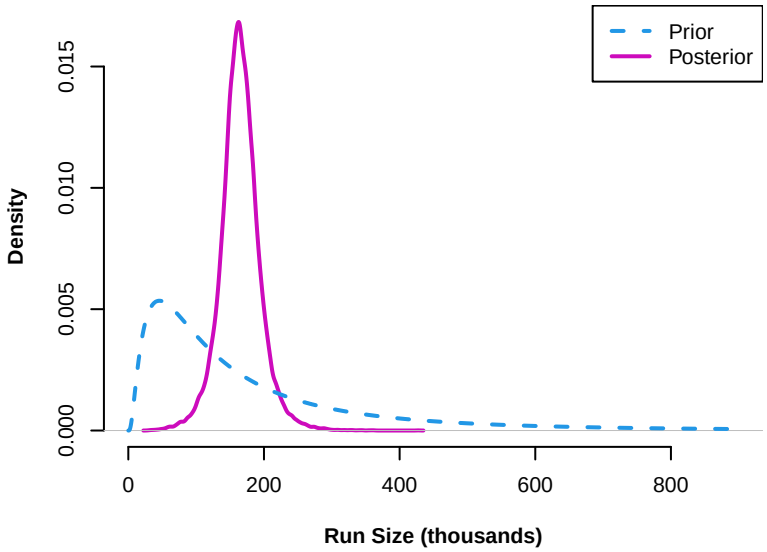


PiACNdBoGaNhTsko run size assessment using MissionGillNetPurseSeine NA

PiACNdBoGaNhTsko Abundance

Median = 164.1 thousand (131 − 199 K 80% PI)

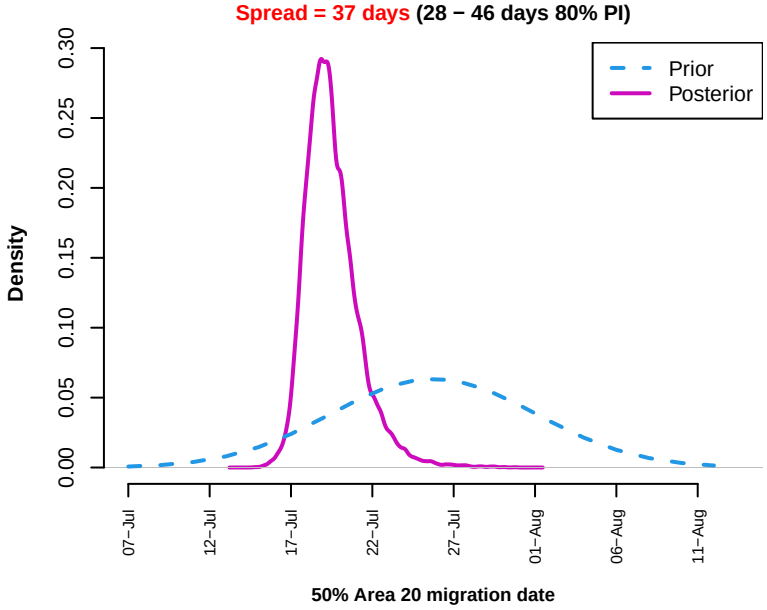
Mode = 160 thousand



Timing of 50% the run

Timing = 20−Jul (18−Jul − 22−Jul 80% PI)

Spread = 37 days (28 − 46 days 80% PI)



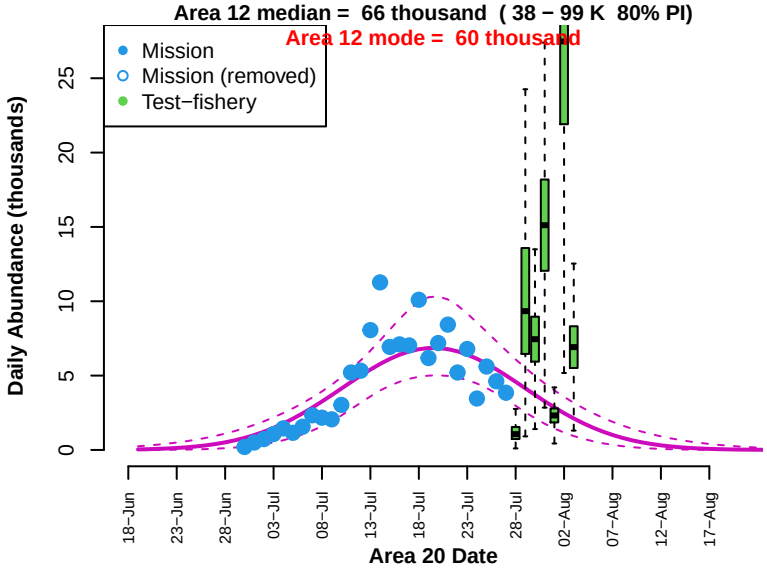
Fit of the model to reconstructed data

Area 20 median = 97 thousand (62 − 131 K 80% PI)

Area 20 mode= 100 thousand

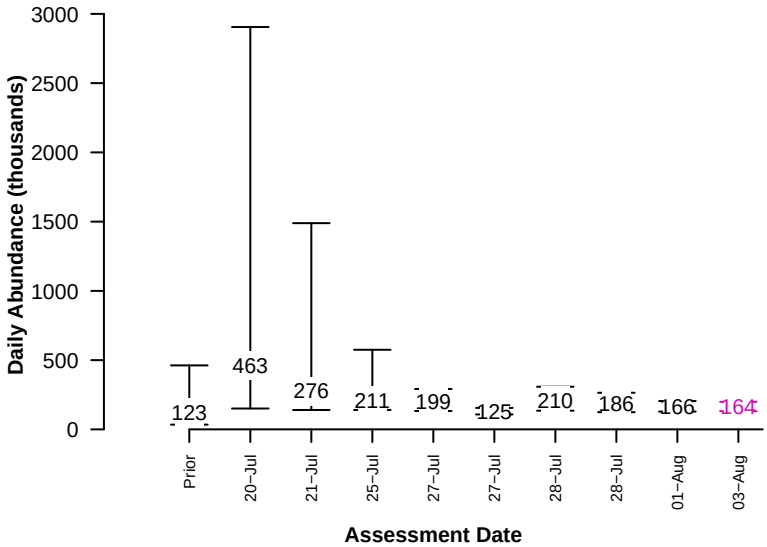
Area 12 median = 66 thousand (38 − 99 K 80% PI)

Area 12 mode = 60 thousand

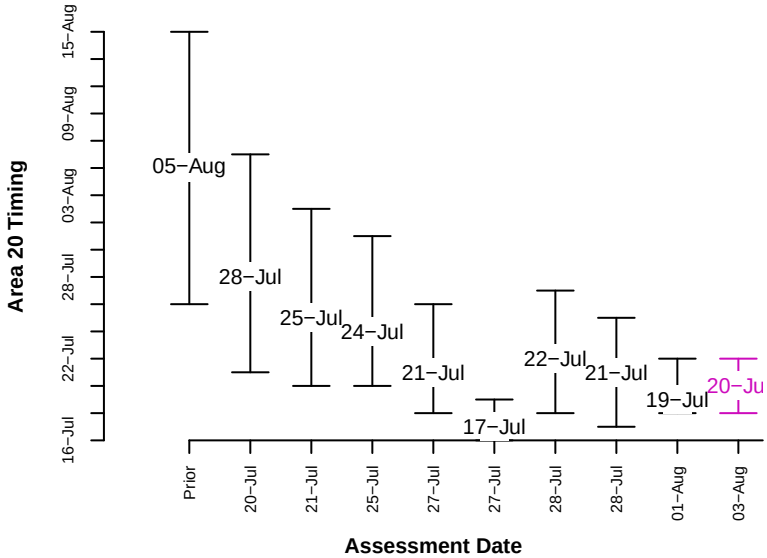


	Run Size Statistics
25% PI	148K
75% PI	181K
p10 (Prob>p10)	34.4K (100%)
p25 (Prob>p25)	62.9K (100%)
p50 (Prob>p50)	123.01K (93%)
p75 (Prob>p75)	240.01K (1%)
p90 (Prob>p90)	462.01K (0%)
Mission to−date	127 K (84 − 182 K 80% PI)
% Mission to−date	78 % (51.3 − 110.7 % 80% PI)
Projected+Tails	31,000 (16 − 52 K)
Tails	11,000 (4 − 24 K)

In−season changes in run size estimates



In−season changes in Area 20 timing estimates



Date: 2023−08−03, Time: 12:27

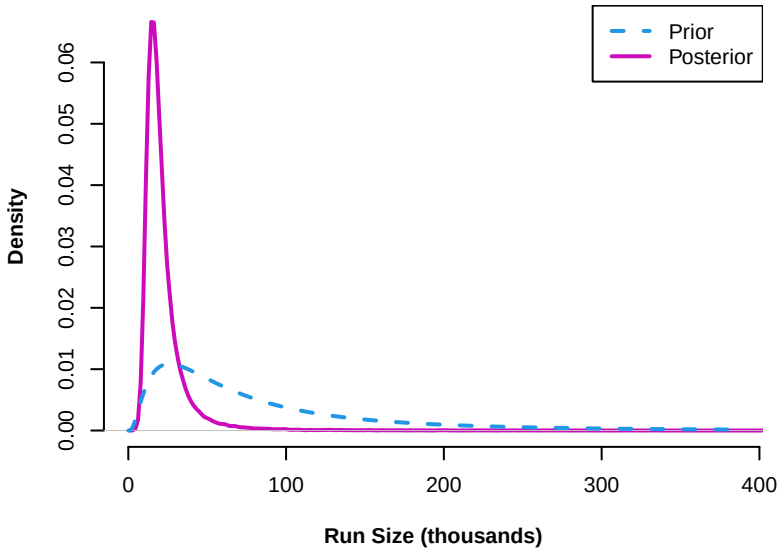
ESThNBar run size assessment using MissionGillNetPurseSeine NA

PSC file nr:6100−04 (2023)

ESThNBar Abundance

Median = 18.3 thousand (12 − 35 K 80% PI)

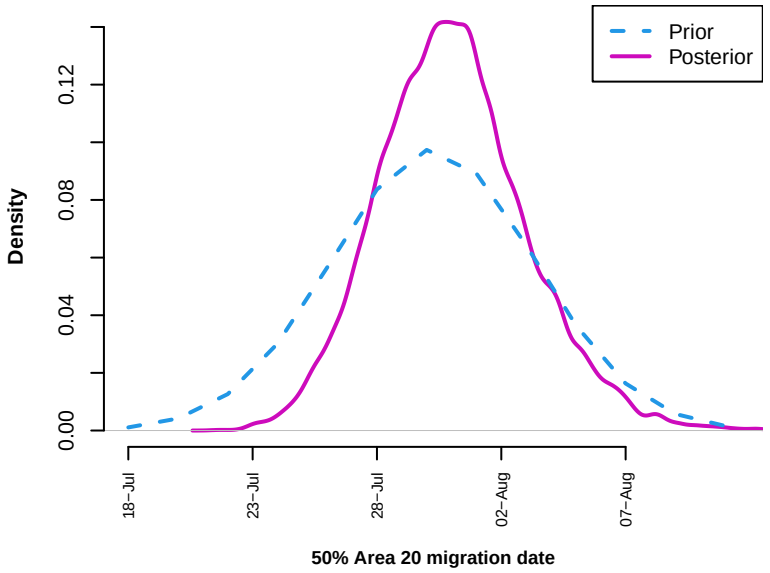
Mode = 20 thousand



Timing of 50% the run

Timing = 01−Aug (28−Jul − 05−Aug 80% PI)

Spread = 30 days (24 − 36 days 80% PI)



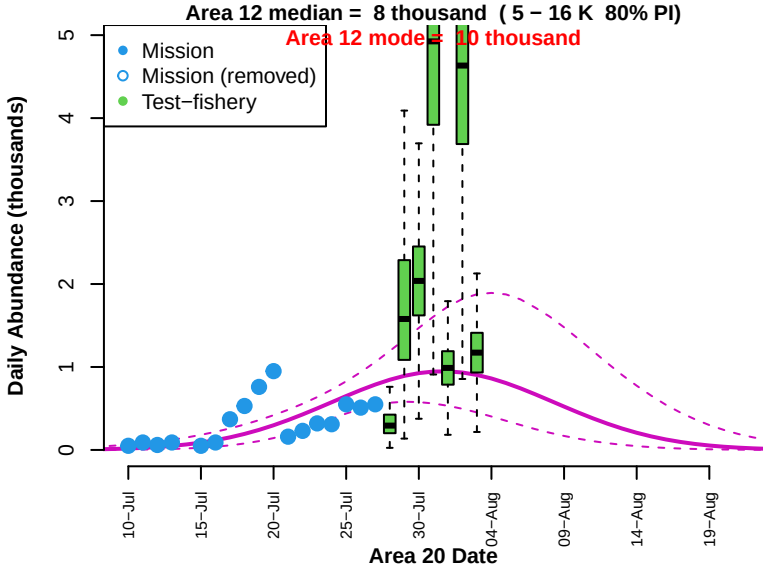
Fit of the model to reconstructed data

Area 20 median = 10 thousand (6 − 20 K 80% PI)

Area 20 mode= 10 thousand

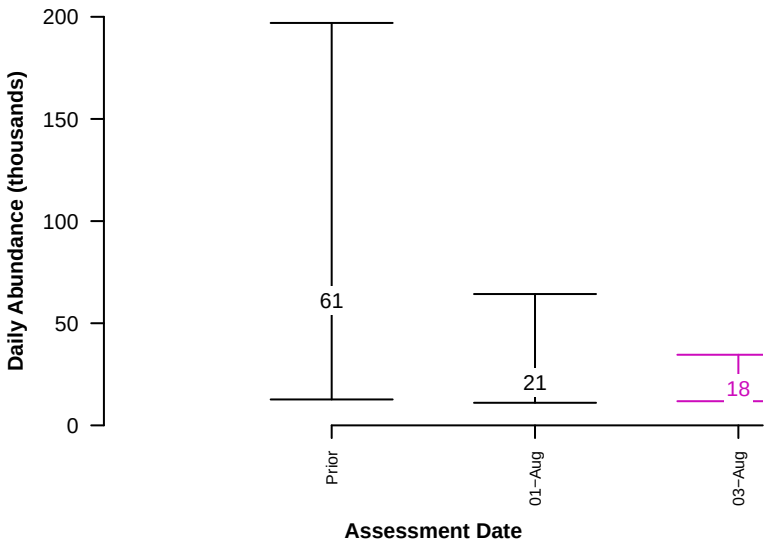
Area 12 median = 8 thousand (5 − 16 K 80% PI)

Area 12 mode = 10 thousand

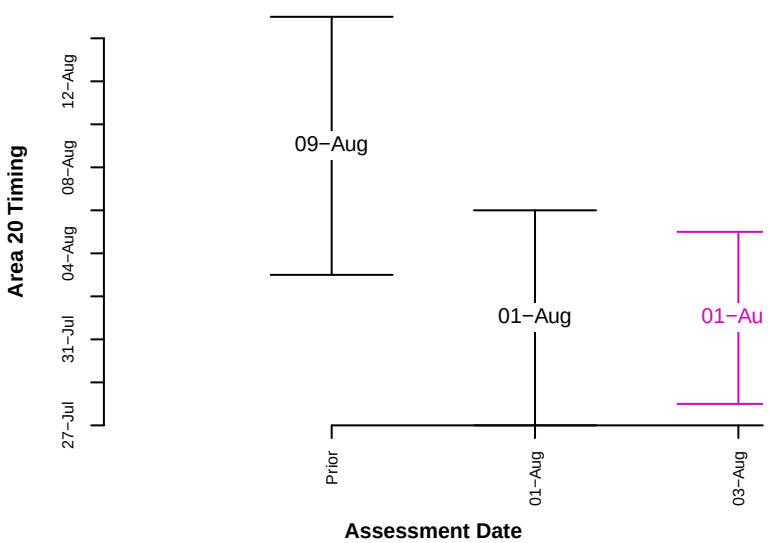


	Run Size Statistics
25% PI	14K
75% PI	24K
p10 (Prob>p10)	12.7K (85%)
p25 (Prob>p25)	18K (52%)
p50 (Prob>p50)	61K (2%)
p75 (Prob>p75)	111K (1%)
p90 (Prob>p90)	197K (0%)
Mission to−date	5 K (3 − 8 K 80% PI)
% Mission to−date	29 % (16.9 − 42.1 % 80% PI)
Projected+Tails	13,000 (6 − 30 K)
Tails	7,000 (3 − 21 K)

In−season changes in run size estimates



In−season changes in Area 20 timing estimates

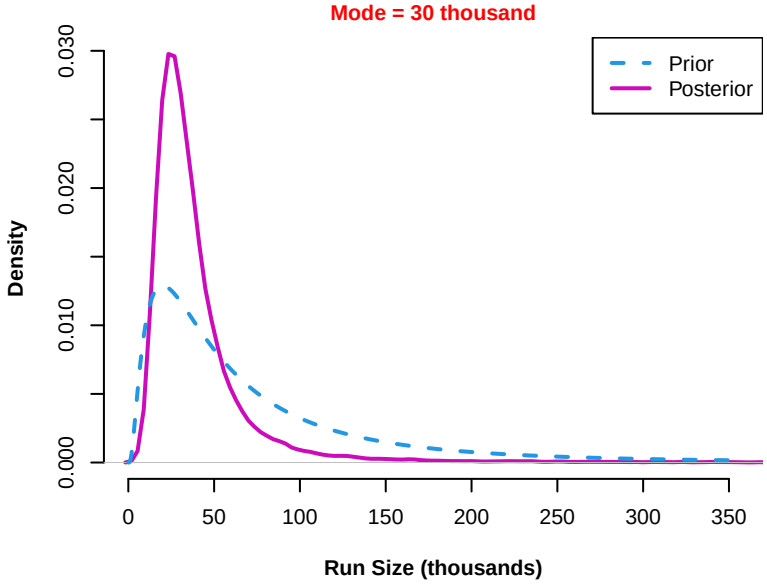


Date: 2023−08−03, Time: 12:24

HarrWidg run size assessment using GillNetPurseSeine NA

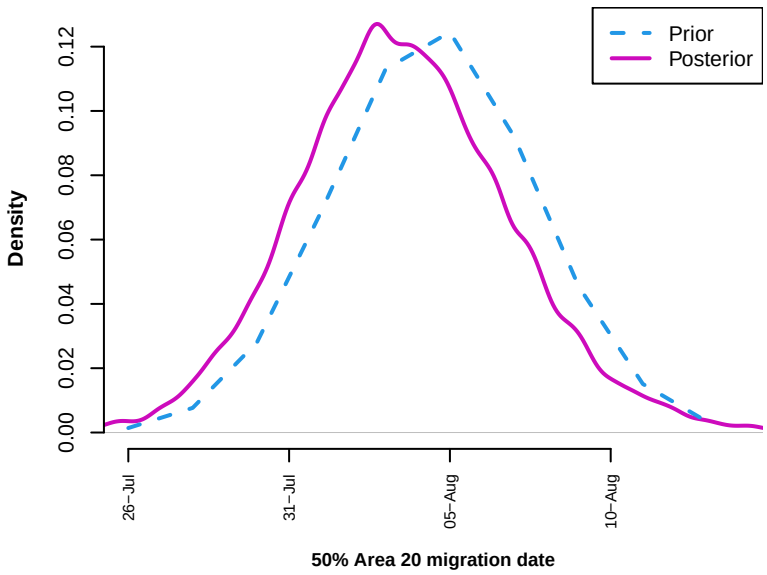
HarrWidg Abundance

Median = 31.6 thousand (17 − 68 K 80% PI)
Mode = 30 thousand



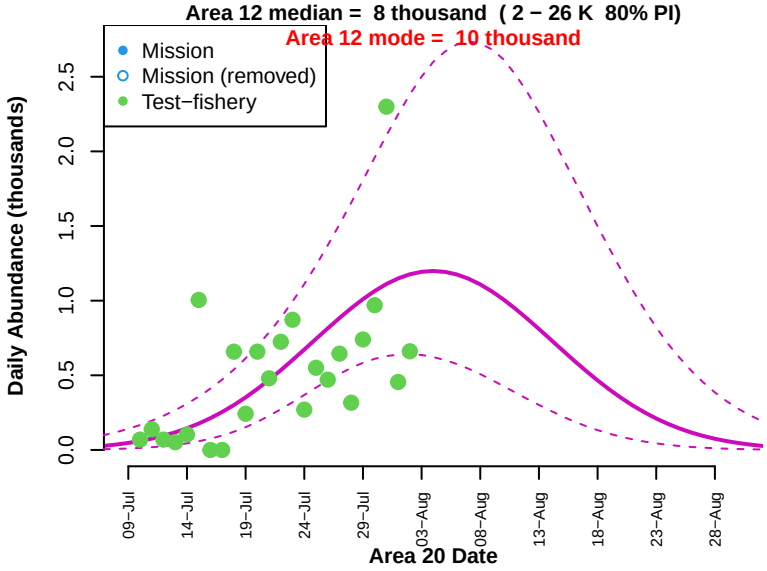
Timing of 50% the run

Timing = 04−Aug (31−Jul − 08−Aug 80% PI)
Spread = 40 days (32 − 49 days 80% PI)



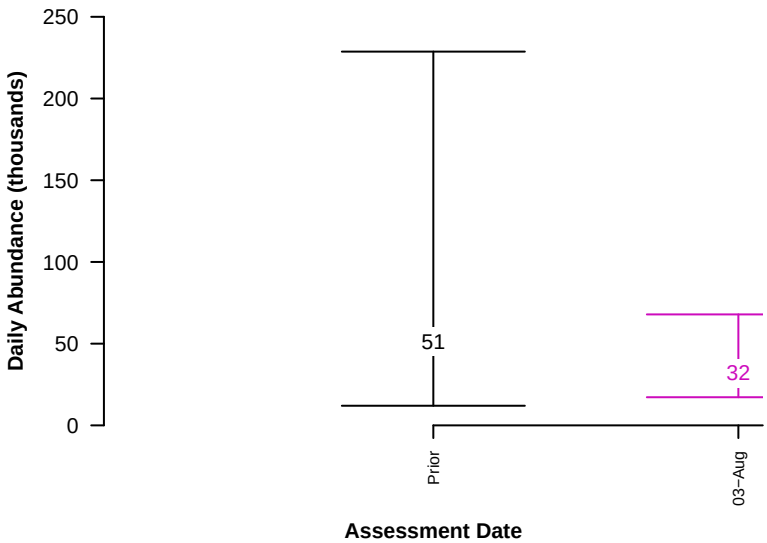
Fit of the model to reconstructed data

Area 20 median = 22 thousand (12 − 46 K 80% PI)
Area 20 mode= 20 thousand
Area 12 median = 8 thousand (2 − 26 K 80% PI)
Area 12 mode = 10 thousand

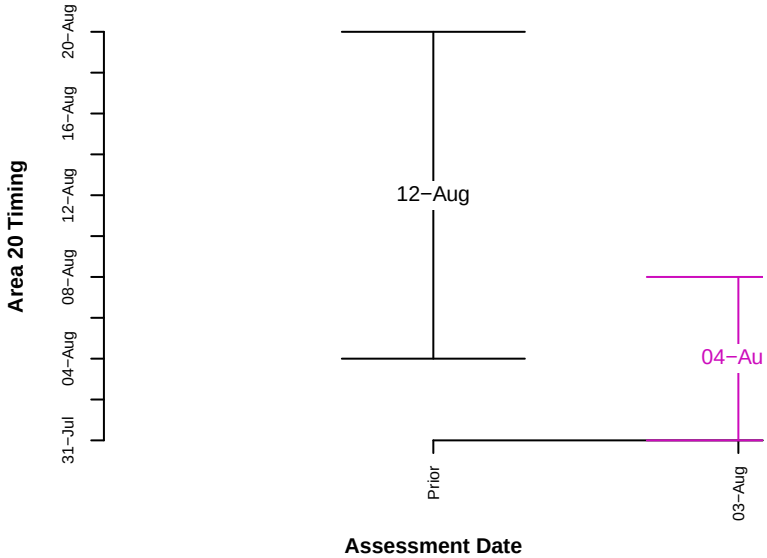


	Run Size Statistics
25% PI	23K
75% PI	45K
p10 (Prob>p10)	12.02K (98%)
p25 (Prob>p25)	23.06K (74%)
p50 (Prob>p50)	51.08K (19%)
p75 (Prob>p75)	111.2K (3%)
p90 (Prob>p90)	228.7K (1%)
Mission to−date	K (− K 80% PI)
% Mission to−date	% (− % 80% PI)
Projected+Tails	24,000 (11 − 60 K)
Tails	17,000 (7 − 47 K)

In−season changes in run size estimates



In−season changes in Area 20 timing estimates



Date: 2023−08−03, Time: 12:17

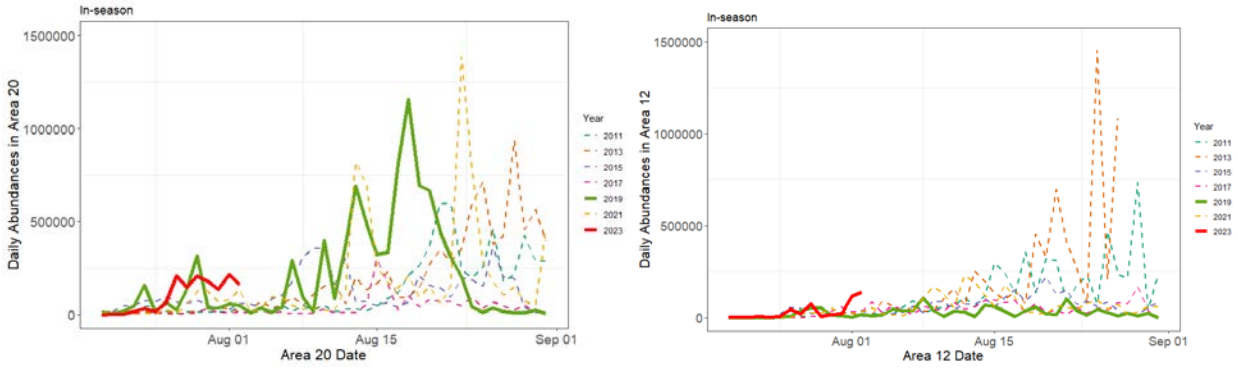
Pink In-season Update

August 3, 2023

M. Hague

Current Trends

- Currently applying a 900 expansion line to Area 20 data and 300 to Area 12 CPUE data
- Similar to 2019 we are seeing:
    - Most of the abundance in Area 20 to date
    - Higher than expected Fraser stock proportions in Area 20
- **Reminder:** data prior to August 1st is not included in official assessments. In 2019, the sum of marine abundances from August 1st onwards was a better reflection of post-season run size than when total marine abundance included early purse seine data. Future figures will only include data from August 1st onwards.



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	90% PI	Method	Catch + Escapement	6-day Projection[3]	Seaward Abundance	Migration Delay	Inseason Adopted	Preseason Forecast	Inseason estimate	Inseason 80% PIs[2] 10% PI	90% PI	Method
Early Stuart Run	**43,000**	**23,000**	✓ **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	**NA**	**186,000**	● **209,000**	***183,000***	***248,000***	**Sum**	**165,000**	**26,000**	**18,000**	**0**	**NA**	**06-Aug**	**18-Jul**	***16-Jul***	***20-Jul***	**Weight**
Chilliwack		2,000	● 31,000	30,000	32,000	Recon	29,000	2,000	0	0		20-Jul	05-Jul	04-Jul	05-Jul	Recon
Pitt/Nadina Group[4]		123,000	● 160,000	*141,000*	*181,000*	Recon(2)	129,000	19,000	12,000	0		05-Aug	19-Jul	*18-Jul*	*20-Jul*	Recon(2)
Early Thompson[5]		61,000	◇ 18,000	*12,000*	*35,000*	Model	7,000	5,000	6,000	0		09-Aug	01-Aug	*28-Jul*	*05-Aug*	Model
Summer Run	**NA**	**1,167,000**					**34,000**	**195,000**		**3,000**	**NA**	**17-Aug**	**06-Aug**	***03-Aug***	***17-Aug***	**Timing Corr.**
Harrison / Widgeon		51,000					3,000	6,000		3,000		12-Aug	05-Aug	*28-Jul*	*13-Aug*	Timing Corr.

[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.

Early Thompson run size based on timing

Catch+Escapement To Date: **6,000**
6-day projections: **15,000**

	Method	Run Size*	% Seaward of Mission
Based on timing of 30-Jul	50% Date	21,000	71%
Based on timing of 01-Aug	50% Date	33,000	82%
Based on timing of 05-Aug	% Seaward	53,000	89%
Based on timing of 08-Aug	% Seaward	74,000	92%
Based on timing of 11-Aug	% Seaward	109,000	94%

*Based on % seaward in 2011, 2015 and 2019 if timing is later than 02-Aug
*Equal to double the reconstructed abundance if timing is earlier than 03-Aug

Early Summer run size based on timing

Catch+Escapement To Date: **164,000**
6-day Projection: **26,000**

	Method	Run Size*	% Seaward
Based on timing of 18-Jul	50% Date	212,000	23%
Based on timing of 19-Jul	50% Date	226,000	27%
Based on timing of 20-Jul	50% Date	243,000	33%
Based on timing of 21-Jul	50% Date	261,000	37%
Based on timing of 22-Jul	50% Date	272,000	40%

*Based on % seaward in 2011, 2015 and 2019 if timing is later than 02-Aug
*Equal to double the reconstructed abundance if timing is earlier than 03-Aug