



Nisga'a Lisims Government

NISGA'A FISHERIES & WILDLIFE

T 250 633 2617 / F 250 633 2971

TF 1 866 633 2145

PO Box 228 / 5101 Gitzyon St

New Aiyansh BC / Canada V0J 1A0

NISGAANATION.CA

2023 NASS RIVER SALMON STOCK ASSESSMENT UPDATE – FRIDAY, 4 AUGUST

The following is the fifth weekly public update for 2023 of Nass River salmon and summer-run steelhead stock assessments from the Nisga'a Lisims Government Fisheries and Wildlife Department.

All data presented in this update are preliminary and subject to change with further assessment information that becomes available and should be interpreted cautiously. For in-season assessment purposes only.

1. NASS RIVER ENVIRONMENTAL UPDATE – FISHWHEELS, MEZIADIN AND KWINGEESE

Fishwheel Environmental data: 1 June to 3 August.

- The current water level is 0.2 m lower than the average water level (1.7 m vs. 1.9 m) based on 1994–2022 operations. The water levels in June, July, and August 2023 currently rank the 8th, 8th, and 13th lowest years, respectively, compared to 30 years of operations (Table 1).
- Current water temperature at GW fishwheels (10.3°C) is the same as the average water temperature based on 1994–2022 operations. The water temperatures in June, July, and August 2023 currently rank the 5th, 3rd, and 4th highest years, respectively, compared to 30 years of operations (Table 2).

Meziadin Fishway data: operations started on 1 July. Count data from 1 July to 4 August.

- Current water level is 0.08 m lower than average (1.16 vs. 1.24 m) and water temperature is 0.7°C warmer than average (17.5°C vs. 16.8°C) based on operations from 1994 to 2022.
- Counts: 221,778 med/large Sockeye (3,447 tags), 10,709 small Sockeye, 27 Chinook (1 tagged), 4 Coho (0 tagged), and 0 Bull Trout. Counts to date are above average for Sockeye (69,000) and below average for Chinook (130) based on counts from 1994 to 2022.
- Projections to fishway based on Sockeye counts to date and linear regression of in-season to final counts from 1994 to 2022 ($r^2=0.79$): 376,000 med/large Sockeye (95% CI: 290,000, 462,000). In comparison, the projected Meziadin Sockeye return based on fishwheel abundance is 298,000 (range: 196,000–373,000) based on mean genetics (76%; range: 50-95%) from 2000 to 2022.

Kwingeese video-counting weir data: operations started on 9 July. Counts data from 9 July to 4 August.

- Current water level is 0.06 m lower than average (0.21 vs. 0.27 m) and water temperature is 1.3°C cooler than average (15.0°C vs. 16.3°C) based on operations from 2002 to 2022.
- Counts: 3,948 med/large Sockeye (33 tag), 125 med/large Chinook (11 tag), 9 med/large Coho (0 tags), and 16 Bull Trout. Counts to date are above average for Sockeye (220) and below average for Chinook (185) based on counts from 2002 to 2022.

Table 1. Monthly mean water levels (m) at the Gitwinksihlkw fishwheels, 1994–2023.

Mean WL	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Mean (94-22)
June	3.1	2.7	3.8	3.5	3.2	3.8	3.4	3.5	4.0	3.0	3.2	2.9	3.6	4.8	2.8	4.1	2.6	3.5	3.8	3.1	2.6	2.6	2.1	2.9	1.8	2.0	3.1	4.5	5.0	2.7	3.3
July	2.9	2.6	3.2	2.6	1.9	3.0	3.2	3.0	2.6	2.4	2.3	2.2	2.6	4.0	2.6	2.8	1.8	2.1	3.5	1.7	2.0	1.7	1.6	1.7	1.4	1.5	2.7	2.9	3.9	1.9	2.5
Aug	2.5	2.0	2.1	2.1	1.6	2.3	2.4	1.9	2.0	1.2	1.7	1.7	1.4	1.8	2.3	1.6	1.4	1.8	1.7	1.2	1.1	1.5	1.1	1.6	1.0	1.8	3.1	1.9	2.4	1.7	1.8
Sep	1.5	1.8	1.2	1.3	1.2	1.4	2.3	1.1	1.7	1.3	0.9	1.3	1.3	1.3	1.0	1.2	0.9	3.9	0.9	0.7	0.7	0.8	1.1	1.1	0.3	1.0	1.4	1.8	2.5	1.4	1.4
Season	2.7	2.3	2.6	2.5	1.9	2.6	2.8	2.5	2.7	2.2	2.2	2.1	2.3	3.1	2.5	2.6	1.7	2.7	2.7	1.9	1.8	1.8	1.6	2.0	1.3	1.7	2.7	2.9	3.7	2.3	2.3
Rank (Low)	22	13	19	18	8	20	27	16	25	11	12	10	15	29	17	21	3	23	26	7	5	6	2	9	1	4	24	28	30	14	

Table 2. Monthly mean water temperatures (°C) at the Gitwinksihlkw fishwheels, 1994–2023.

Mean Temp	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Mean (94-22)
June	9.0	12.4	8.1	8.5	8.4	8.4	9.4	3.9	6.4	8.6	11.3	9.1	8.8	8.1	7.0	7.4	8.4	7.5	6.7	8.4	8.1	8.9	9.5	8.6	10.1	9.3	7.0	8.4	7.7	9.5	7.9
July	10.4	11.3	9.5	10.4	6.8	9.7	10.5	5.8	9.1	10.2	12.1	9.5	10.1	8.6	8.0	9.0	10.2	8.7	8.1	10.1	9.6	10.5	10.8	10.3	11.0	10.3	8.7	11.1	9.8	11.3	9.8
Aug	10.5	10.1	9.7	10.3	6.8	11.2	10.9	7.6	9.5	10.8	10.5	10.0	10.1	9.6	9.3	10.2	9.7	9.0	8.9	10.1	10.2	9.9	9.4	10.1	9.7	9.4	8.7	10.5	11.1	10.8	9.8
Sep	9.5	8.8	8.6	9.5	6.8	10.2	9.4	5.6	8.7	8.8	8.9	8.8	9.0	8.9	8.2	9.5	8.0	8.1	8.3	10.1	8.6	8.3	8.6	9.6	8.2	9.2	8.5	8.7	9.8	8.7	8.7
Season	10.0	10.1	9.0	9.7	7.1	10.2	10.3	5.8	8.9	10.0	11.0	9.4	9.8	8.9	8.2	8.9	9.2	8.4	8.0	9.6	9.3	9.7	9.8	9.7	10.1	9.7	8.2	9.9	9.6	10.4	9.3
Rank (Highest)	7	5	21	13	29	4	3	30	24	8	1	18	10	22	27	23	20	25	28	16	19	14	11	12	6	15	26	9	17	2	

2. NASS RIVER FISHWHEEL CATCH UPDATE

GITWINKSIHLKW (GW) FISHWHEELS - NASS RIVER TEST FISHERY – STARTED IN 1994 [30th year]:

The 2023 Nass River test fishery fishwheels (FW1 and FW2) began operation on June 1 for tagging and historical catch index assessments for salmon and summer-run steelhead. All fish caught in the GW fishwheels to date were released alive after tagging and/or counting.

GREASE HARBOUR (GH) FISHWHEELS:

Three fishwheels began operation on June 10 (FW5 and FW6) and June 13 (FW3) at Grease Harbour (upstream of Ts'im Anwiihlist), located approximately 16 km upstream of GW fishwheels. The GH fishwheels are used for in-season mark-recapture tag recoveries of salmon, abundance estimates passing upstream, additional tagging (adult Chinook and Chum salmon, and Pacific Lamprey), and for selective harvesting when permitted by Nisga’a Lisims Government. Currently no harvests have occurred or are planned to date.

The total Nass fishwheel catches are currently above average for all adult salmon except for Chinook. Total fishwheel catches of salmon, steelhead, and Pacific Lamprey to date are shown in Table 3 including tagging results and jacks caught. All Sockeye caught at all fishwheels to date have been released, as have the other salmon, steelhead and other fish caught.

Table 3. Nass fishwheel salmon, steelhead, and Pacific Lamprey catches, 2023.

FISHWHEEL CATCH SUMMARIES	SOCK	CHIN	COHO	STEEL	PINK-ODD	CHUM	LAMP
FISHWHEEL TOTAL CATCH OF ADULTS	45,590	2,326	1,579	111	93,454	22	960
HISTORICAL AVG CUM CATCH (00-22) TO DATE	30,900	4,100	1,000	80	8,660	20	430
HISTORICAL AVG CUM TOTAL CATCH (00-22)	45,000	4,200	13,000	900	25,000	130	740
AVERAGE DAILY CATCH (5 D) OF ADULTS - GW	173	1	32	4	3,489	1	5
AVERAGE DAILY CATCH (5 D) OF ADULTS - GH	553	6	190	4	7,528	1	31
FISHWHEEL TOTAL TAGGED (OR ADIPOSE FIN MARKED)	7,011	2,023	211	67	1,425	18	530
FISHWHEEL TOTAL JACKS	3,967	3,253	58	NA	NA	NA	NA
HISTORICAL MEAN JACKS (00-22) TO DATE	2,427	738	84	NA	NA	NA	NA

Other adult species and juvenile salmon catches at the fishwheels to date include: 112 Dolly Varden (57 tagged), 65 Rainbow Trout, 61 Peamouth Chub, 49 Cutthroat Trout, 44 Mountain Whitefish, 12 Pikeminnow, 5 Suckers, 6 Sculpin, 115 salmon smolts (31 Coho, 75 Chinook, 9 Sockeye), 3 seals, and 2 frog.

3. RUN SIZE AND ESCAPEMENT ESTIMATES FOR NASS SALMON & SUMMER-RUN STEELHEAD

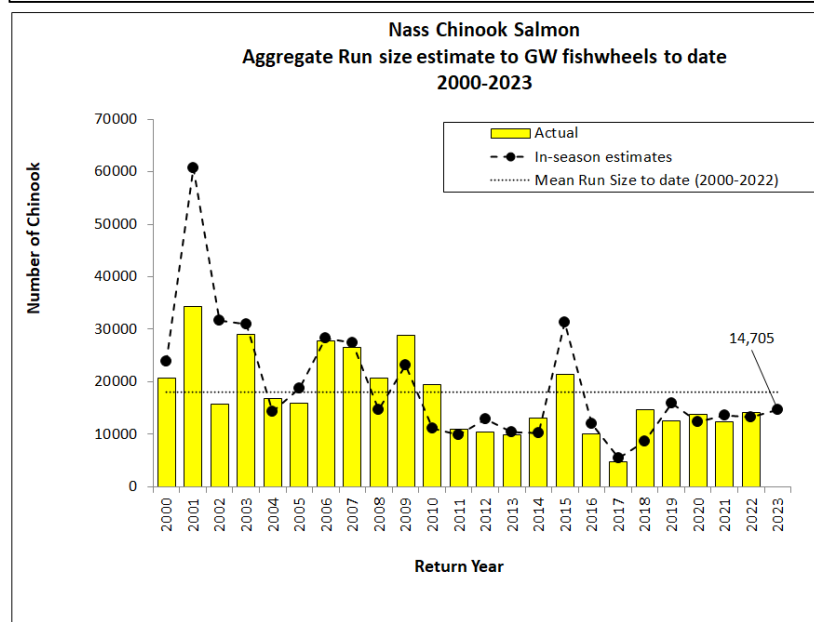
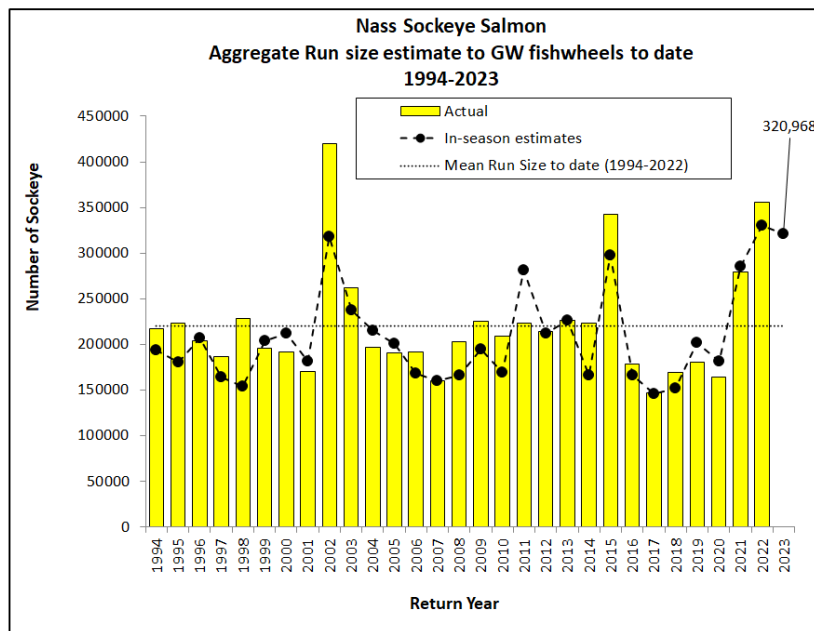
In-season estimates of run size and projected forecasts to Gitwinksihlkw fishwheels for adult Nass salmon and summer-run steelhead are shown in Table 4. For Nass Sockeye, estimates are based on mark-recapture methods as of June 24 when sufficient cumulative tag recoveries (> 25) occurred at GH fishwheels on June 29. The current run sizes for 2023 are above average for Nass Sockeye and Coho and below average for Upper Nass

Chinook salmon and summer-run steelhead when compared to means to date from 1994 to 2022. Summer-run steelhead estimates began on July 1. The Nass run-size target for summer-run steelhead is based on a minimum return goal as steelhead will continue to enter the Nass River after the fishwheels shutdown in mid-September.

Table 4. In-season run size estimates to Gitwinksihlkw fishwheels for Nass Sockeye, Chinook, Coho salmon and summer-run steelhead, 2023.

IN-SEASON RUN SIZE SUMMARIES	SOCK	CHIN	COHO	STEEL		3-Aug-23
IN-SEASON RUN SIZE ESTIMATE TO DATE	320,968	14,705	10,125	1,593		
HISTORICAL MEAN RUN SIZE TO GW FOR DATE (94-22)	221,000	17,500	9,544	1,920		
RUN SIZE TARGET 2023 (MIN. FOR STEELHEAD)	250,000	15,000	65,000	4,200		

In-season to actual estimates to **August 3** have tracked reasonably well for estimating returns for that date for Nass Sockeye (mean accuracy 89%) from 1994 to 2022 and Chinook (mean accuracy 79%) from 2000 to 2022.



In-season preliminary forecast projections for Nass salmon and summer-run steelhead above Gitwinksihlkw
 Estimates to Gitwinksihlkw are based on two methods, mean run timing and linear-regression of the in-season to final estimates to date. The current run size projection estimates of runs passing Gitwinksihlkw to date are: 1) Nass Sockeye is 392,000 ($r^2=0.79$; 95% CI: 275,000, 509,000), 2) Upper Nass Chinook is 15,500 ($r^2=0.99$; 95% CI: 14,000, 16,000), 3) Upper Nass Coho is 89,000 ($r^2=0.51$; 95% CI: 50,000, 128,000), and 4) summer-run steelhead is 13,000 ($r^2=0.53$; 95% CI: 8,000, 18,000; Table 5). Current run size targets have been met or are project to be met for each species.

Table 5. In-season run size projections to Gitwinksihlkw fishwheels for Nass Sockeye, Chinook, Coho salmon and summer-run steelhead, 2023.

IN-SEASON FORECASTS TO GW - METHODS:	SOCK	CHIN	COHO	STEEL		3-Aug-23
1. RUN TIMING METHOD (94-22) - Mean Run timing	425,000	15,000	93,000	11,000		
Lower (-2 S.D.)	346,000	14,000	52,000	6,000		
Upper (+2 S.D.)	548,000	17,000	187,000	22,000		In-season/Final
2. IN-SEASON TO FINAL (regression):	392,000	15,500	89,000	13,000		r^2 (CH) = 1.00
95% CI - lower	275,000	15,000	50,000	8,000		r^2 (SO) = 0.79
95% CI - upper	509,000	16,000	128,000	18,000		r^2 (CO) = 0.51
<i>GW RUN SIZE TARGET (DEPENDING ON HARVESTS ABOVE GW)</i>	<i>250,000</i>	<i>15,000</i>	<i>65,000</i>	<i>4,200</i>		r^2 (ST) = 0.53
Mean Run Timing % Return Estimate to GW fishwheels (94-22)	76%	95%	11%	14%		
Late run	62%	83%	2%	6%		
Early run	91%	99%	18%	33%		

Net Escapement Estimates for adult Nass salmon to date are shown in Table 6 and relative to the Upper Nass net aggregate escapement goals. Approximately 302,000 Sockeye, 13,000 Chinook, 10,000 Coho salmon, and 1,600 summer-run steelhead are estimated to have passed to the Upper Nass River to date. Harvest estimates include 5,648 Sockeye, 54 Chinook, 9 Pink and 1 steelhead as reported by Gitanyow Fisheries Authority on August 4.

Table 6. In-season net escapement estimates above Grease Harbour for Nass Sockeye, Chinook, Coho salmon and summer-run steelhead, 2023.

IN-SEASON NET ESCAPEMENT ESTIMATES	SOCK	CHIN	COHO	STEEL		3-Aug-23
HARVEST ESTIMATES ABOVE GW TO DATE	18,788	1,566	255	32		
NET ESCAPEMENT (ABOVE GW):	302,180	13,139	9,870	1,562		
<i>NET ESCAPEMENT TARGET (UPPER RIVER ONLY)</i>	<i>200,000</i>	<i>13,000</i>	<i>60,000</i>	<i>4,000</i>		

4. HARVEST ESTIMATES FOR ADULT NASS SALMON & STEELHEAD

a) ALASKAN FISHERIES IN SE ALASKA (information courtesy from ADFG's website):

The 2023 Alaskan Southeast fisheries started on 18 June for gillnet fisheries in District 101 (Tree Point) and District 106 (Sumner and Upper Clarence), and for seine fisheries, 2 July for Districts 101, 102, and 104, and 16 July for District 103. The current estimates of catches of salmon in Alaskan commercial net fisheries in Districts 101–106 (and mean catch comparisons from 2000 to 2022) to **3 August 2023** are shown in Table 7 and are currently below average for all salmon except Pink and Chum. ADFG also reported that to August 3, the Hugh Smith Lake weir counts of Sockeye (259) projects 485 escapement that is below the optimal escapement goal range (8,000–18,000) and will continue to be monitored for potential management actions through statistical week 33.

Table 7. Southeast Alaska commercial gillnet and seine salmon catch estimates in Districts 101–104, 2023.

IN-SEASON SE ALASKAN CUM. SALMON GILLNET/SEINE CATCH ESTIMATES (ADFG WEBSITE) - 2023									WEEK END: 5-Aug-23		
DISTRICTS	AREA	SOCK CATCH	AVG (00-22)	CHIN CATCH	AVG (00-22)	PINK CATCH	AVG ODD (01-21)	CHUM CATCH	AVG (00-22)	COHO CATCH	AVG (00-22)
DIST 101 GN	TREE PT	20,200	46,000	900	1,400	113,700	204,300	316,000	170,000	3,800	8,200
DIST 106 GN	UPP. CLAR	30,600	60,000	400	1,300	85,900	180,000	110,100	110,000	8,550	38,000
DIST 101 SN	LOW CLAR	56,900	29,700	0	500	4,004,000	2,178,000	768,000	163,000	16,000	12,100
DIST 102 SN	MID CLAR	29,600	17,000	0	600	2,531,500	1,228,600	947,000	326,000	18,200	20,400
DIST 103 SN	CORDOVA	850	900	0	0	91,700	456,900	43,600	43,600	1,400	1,400
DIST 104 SN	NOYES/DALL	100,100	108,000	0	1,900	4,429,900	2,224,000	333,000	87,000	44,000	34,000
CUMULATIVE TOTAL		238,000	262,000	1,000	6,000	11,257,000	6,472,000	2,518,000	900,000	92,000	114,000

The average harvest of Nass salmon in Alaskan net fisheries from 2000 to 2022 was 107,000 Sockeye (range: 22,000–304,000), 62,000 Pink (range: 4,000–192,000), 136,000 Coho (range: 59,000–433,000), and 9,000 Chum (<500–40,000) based on estimates from NFWD. Of the total in-season Sockeye catch reported in the SE Alaskan fisheries in 2023 to date (238,000), approximately 19% (46,000) is estimated as Nass origin based on mean stock composition estimates from 1982 to 2022 and is currently below average (68,000) to date.

b) CANADIAN COMMERCIAL NET FISHERIES IN AREA 3 (information courtesy from DFO Prince Rupert):

DFO did not open Area 3 commercial net salmon fisheries in 2023 until July 10. Fishery planning for 2023 is based on DFO’s Integrated Fisheries Management Plan (IFMP) where a precautionary approach on reaching escapement targets for Nass salmon are primary objectives for 2023 while supporting DFO’s Pacific Salmon Strategy Initiative (PSSI; <https://www.canada.ca/en/fisheries-oceans/news/2021/06/minister-jordan-announces-long-term-commercial-closures-and-licence-tetirement-program-in-effort-to-save-pacific-salmon.html>).

DFO has conducted six commercial fisheries in outside Area 3, five seine and one gillnet fishery (Table 8). Total catches to date (including releases) are: 8,606 Sockeye, 166,760 Pink, 64,457 Chum, 1,286 Coho (all released), 218 Chinook (all released), and 0 steelhead. To continue rebuilding Kwinageese Sockeye Salmon recovering from a migration blockage (slide) in 2011, DFO implemented a one-week commercial closure (gillnet) and non-retention of Sockeye Salmon (seine) in Area 3 from July 17–23. Of the total Sockeye harvested to date in outside Area 3 (6,509), approximately 9% (600) are estimated as Nass origin based on mean stock composition from northern boundary sockeye run reconstructions from 1982 to 2022. At the time of this update, DFO have not announced another commercial opening in Area 3.

Table 8. DFO’s Statistical Area 3 gillnet and seine salmon catch estimates, 2023.

GEAR	DATE	Boats fished	SO-harv	SO-Rel	CO-HARV	CO-Rel	PK-HARV	PK-Rel	Chum-harv	Chum-Rel	CH-harv	CH-Rel	STEEL-Rel
GN	2023-07-14	7	393	0	0	31	1,370	0	1,615	0	0	5	0
GN Total		7	393	0	0	31	1,370	0	1,615	0	0	5	0
SN	2023-07-10	7	2,200	0	0	200	12,000	0	8,800	0	0	30	0
	2023-07-11	7	3,000	0	0	250	24,000	0	22,765	0	0	118	0
	2023-07-17	14	0	409	0	161	16,530	0	9,159	0	0	24	0
	2023-07-18	12	0	1,688	0	257	34,200	0	9,320	0	0	36	0
	2023-07-25	9	916	0	0	387	78,660	0	12,798	0	0	5	0
SN Total		49	6,116	2,097	0	1,255	165,390	0	62,842	0	0	213	0
TOTAL		56	6,509	2,097	0	1,286	166,760	0	64,457	0	0	218	0

LABELS: SO=SOCKEYE, PK=PINK, CO=COHO, CH=CHINOOK; HARV=HARVESTED, REL=RELEASED

c) NISGA’A FOOD, SOCIAL, CEREMONIAL (FSC) AND ECONOMIC FISHERIES:

Nisga’a domestic and sale fisheries are monitored by the Nisga’a Fisheries and Wildlife Department and salmon catch monitoring began on May 1, 2023. Preliminary projected cumulative harvests in Nisga’a fisheries to week ending **August 5** are shown in Table 9. The current harvests of Nass salmon and steelhead estimated in 2023 for Nisga’a fisheries are above average for the Food, Social, and Ceremonial fishery (~51,000 vs. 40,000) and below average for total catches (52,000 vs. 96,000) when including past sale fisheries and comparing harvests from 2000 to 2022 (Table 9).

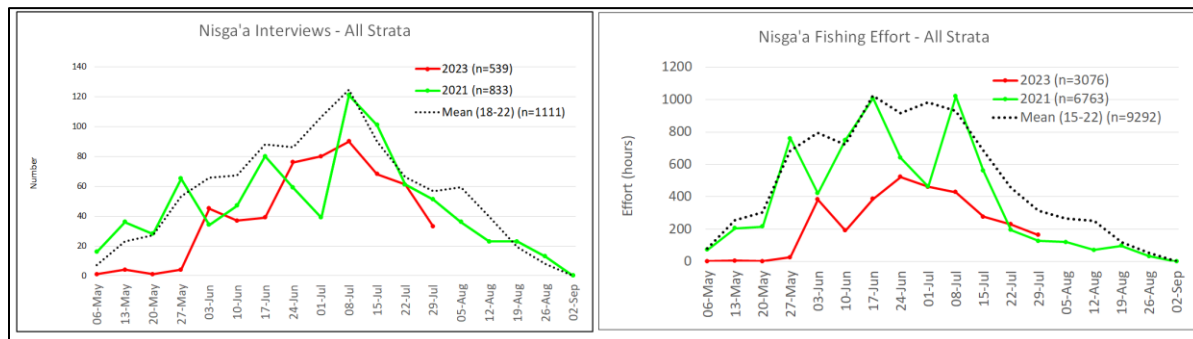
High water impacted the ability to fish in the Nass River for most of May and early June 2023. Nisga’a fishing effort (net hours) to July 29 is currently below average (3,076 vs. 8,152 hours) based on 539 interviews.

Preliminary estimates are from May 1 to August 5 and include projected net catch estimates from July 30–5 August that will be reported on August 9 as well as preliminary additions for catch by angling gear, release mortality (60% of releases), and estimated unmonitored periods.

Table 9. Salmon and steelhead harvests in Nisga'a fisheries, 2023.

NISGA'A NATION CUMULATIVE DOMESTIC (FSC) AND TOTAL CATCH SUMMARY FOR NASS SALMON AND STEELHEAD, 2023.					
Reported Week Ending Period		DOMESTIC (FSC) HARVESTS TO WK END - 2023		TOTAL HARVESTS TO DATE INCLUDING ESTIMATED RELEASE MORTALITIES & SALE FISHERIES 2023	
NASS SPECIES	Wk end	Harvest	Mean	Harvest	Mean*
CHINOOK	5-Aug-23	3,194	5,000	3,197	5,600
SOCKEYE	5-Aug-23	40,500	30,100	40,507	73,300
PINK	5-Aug-23	5,896	2,868	6,642	13,160
COHO	5-Aug-23	991	1,257	991	3,217
CHUM	5-Aug-23	187	416	194	416
STEELHEAD	5-Aug-23	79	195	85	195
TOTAL		50,800	39,800	51,600	96,000

* Total mean harvests from 2000-2022 for week end periods also include historical sale fisheries. Total harvests include all release mortality (60% of releases) and sale fisheries.



5. TOTAL RETURN TO CANADA (TRTC) AND NISGA'A ENTITLEMENT ESTIMATES FOR NASS SALMON

a) Pre-season TRTC and Nisga'a entitlement forecasts:

Pre-season forecasts for Nass salmon Total Runs, Total Return to Canada (TRTC), and Nisga'a Treaty entitlement allocation ranges for 2023 were calculated using pre-season forecast models based on Nass salmon returns and age information for past years (NFWD 2022). The pre-season forecasts are used for general planning purposes until in-season data are available from Nass River salmon assessment programs starting mid-June. Pre-season forecast models used were a combination of sibling regressions (Nass Sockeye and Chinook only) and brood year mean returns (2 year even-year cycle (Pink), 3–4 year (Coho), and 4 year (Chum)) that project 25%, 50%, and 75% probability point estimates. Pre-season Total Return to Canada (TRTC) forecasts (50% probability estimates) for 2023 predicted below average returns for Nass Sockeye (366,000 vs. 616,000), Nass Chinook (27,000 vs. 30,000), and Nass Coho (132,000 vs. 176,000), and above average TRTC returns for Nass Chum (74,000 vs. 54,000) and odd-year Nass Pink (319,000 vs. 324,000), based on mean Total Run returns from 1992 to 2022 (Table 10; DFO IFMP 2023).

Table 10. Pre-season Total Return to Canada (TRTC) and Nisga'a Entitlement forecasts for Nass salmon, 2023.

PRE-SEASON TRTC & ENTITLEMENT FORECASTS	SOCK	CHIN	COHO	PINK-ODD	CHUM
HISTORICAL MEAN TRTC (1994-2022)	616,000	30,000	176,000	324,000	54,000
PRE-SEASON TRTC FORECAST (50% PROBABILITY)	366,000	27,000	132,000	319,000	74,000
75% probability	257,000	22,000	119,000	174,000	44,000
25% probability	522,000	32,000	146,000	586,000	123,000
TOTAL PRE-SEASON NISGA'A CATCH POTENTIAL	55,000	5,700	11,000	16,000	5,900
75% probability	27,000	4,600	9,500	1,000	4,000
25% probability	90,000	6,700	12,000	57,000	10,000

When reviewing Nass salmon TRTC returns over a 32-year period since 1992, the pre-season forecast projections predict 2023 to be poor for Sockeye (8th worst), fair to average returns for Chinook (13th worst), Pink (11th worst) and Coho (13th worst), and good for Chum (9th best). The overall return forecast for Nass salmon in 2023 (918,000 vs. 1,416,000 average) is predicted to be the 8th worst return in 32 years.

b) In-season Total Return to Canada (TRTC) and Nisga’a entitlement estimates for Nass salmon 2023:

The in-season TRTC estimates for Nass Sockeye, Chinook, and Coho salmon are based on run size projections from in-season to final regression methods and run timing to Area 3 to date for Nass Sockeye (78%; range: 64–93%), Chinook (95%; range: 78–99%, including lower/coastal stocks based on habitat capacity proportions), and Coho (6%; range: 2–11%, including lower/coastal stocks based on habitat capacity proportions). For Pink TRTC estimates, current projections are from a linear regression estimate ($r^2=0.79$, $n=26$ years) from odd-year adjusted spawning ground counts from Xnukw (Iknoouk R.) and estimated marine commercial exploitation rates (12.2%; 2.2% CDN) based on two brood cycles (2019 and 2021). For Chum TRTC estimates, current projections are from a linear regression estimate ($r^2=0.59$, $n=63$ years) from adjusted spawning ground counts from Ksi Xts’at’kw (Stagoo R.) and estimated marine commercial exploitation rates (25.8%; 0.6% CDN) based on the last odd-year commercial fishery (2021) of large Pink Salmon harvests in Alaskan fisheries.

Summary of in-season TRTC estimates for Nass Area salmon estimated by NFWD to August 3 are:

- Nass Sockeye: 406,000 (range: 334,000–476,000)
- Nass Chinook: 22,000 (range: 21,000–22,000)
- Nass Coho: 137,000 (range: 80,000–197,000)
- Nass Pink: 502,000 (range: 354,000–651,000) and
- Nass Chum: 27,000 (range: 19,000–35,000).

Currently, in-season TRTC and Nisga’a entitlement estimates for Nass salmon are higher for Sockeye (10%), Coho (4%), Pink (36%), and lower for Chinook (23%) and Chum (174%) when compared to pre-season forecasts for 2023.

Table 11. In-season Total Return to Canada (TRTC) and Nisga’a Entitlement forecasts for Nass salmon, 2023.

IN-SEASON TRTC & ENTITLEMENT ESTIMATES - PRELIMINARY	SOCK	CHIN	COHO	PINK-ODD	CHUM
PROJ. TRTC BASED ON INSEASON TO FINAL REGRESSION TO AREA 3D	406,000	22,000	137,000	502,000	27,000
Lower (95% CI)	334,000	21,000	80,000	354,000	19,000
Upper (95% ci.)	476,000	22,000	197,000	651,000	35,000
ESTIMATED %TRTC TO DATE: MEAN. RUN TIMING (AREA 3D)	78%	95%	6%	16%	16%
Late run	64%	78%	2%	6%	2%
Early run	93%	99%	11%	34%	40%
IN-SEASON NISGA'A ENTITLEMENT TARGET	64,000	4,600	11,000	44,000	2,160
Lower (95% CI)	48,000	4,400	6,000	21,000	<500
Upper (95% ci.)	79,000	4,600	16,000	67,000	3,000

Nisga’a salmon harvest entitlement ranges for 2023 to date are based on TRTC (Table 11) and catch (Table 12) estimates:

- Nass Sockeye is between 48,000 and 79,000 with point estimate 64,000. Current harvest estimate is 40,500 (plus 7 release mortalities);
- Nass Chinook is between 4,400 and 4,600 with point estimate 4,600. Current harvest is 3,194 (plus 3 release mortalities);
- Nass Coho is between 6,000 and 16,000 with point estimate 11,000. Current harvest is 991 (with 0 release mortality);
- Nass Pink is between 21,000 and 67,000 with point estimate 44,000. Current harvest is 5,896 (plus 746 release mortalities);
- Nass Chum is between <500 and 3,000 with point estimate 2,160. Current harvest is 187 (plus 7 release mortalities); and
- Nass steelhead, upper limit is 1,000 summer-run and no limit for winter/spring run, with current harvest of 79 (plus 6 release mortalities).

Table 12. Nisga'a salmon and summer-steelhead total harvests by fishery, 2023.

NISGA'A TOTAL HARVEST SUMMARY	SOCK	CHIN	COHO	PINK-ODD	CHUM	STEEL
MARINE SALE FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
IN-RIVER SALE FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
INDIVIDUAL SALE (IS) FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
NLG COMMUNAL SELECTIVE TREATY FISHERY - GH FISHWHEELS	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
NLG COMMUNAL SELECTIVE TREATY FISHERY - SEINE	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
DOMESTIC (FSC) GILLNET FISHERY - WK END: AUG 5 (PROJECTED)	40,507	3,197	991	6,642	194	85
SUB TOTAL (NLG TREATY FISHERIES)	40,507	3,197	991	6,642	194	85
NLG SOCK DEMONSTRATION FISHERY HARVEST - DFO INVENTORY	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
GRAND TOTAL	40,507	3,197	991	6,642	194	85

When reviewing current Nass salmon in-season TRTC return estimates over a 32-year period since 1992 (Table 13), Sockeye is currently tracking as poor (10th worst), and fair to average for Chinook (11th worst), Pink (18th worst), Coho (15th worst), and Chum (14th worst). The overall in-season TRTC estimates for Nass salmon is currently the 12th worst return in 32 years.

Table 13. Ranking of Nass salmon Total Return to Canada estimates from lowest (1) to highest (32) including 2023 in-season estimates, 1992–2023.

NASS SALMON TOTAL RETURN TO CANADA ESTIMATES, 1992-2022 & PREDICTED 2023							NASS TRTC RANKING BY YEAR FOR SALMON: POOREST RETURN FROM 1 TO 32 YEARS					
Year	Sockeye	Pink	Chinook	Coho	Chum	Total Salmon	Sockeye	Pink	Chinook	Coho	Chum	Total Salmon
1992	1,572,000	328,009	35,400	160,210	53,817	2,149,436	31	11	22	17	21	30
1993	1,586,000	874,099	45,400	62,481	238,610	2,806,590	32	25	30	2	32	32
1994	590,000	183,958	42,800	351,220	105,452	1,273,431	22	6	27	30	29	15
1995	855,000	829,319	21,700	68,032	83,001	1,857,053	28	24	10	3	26	25
1996	694,000	465,482	41,600	126,240	40,410	1,367,731	26	17	26	11	18	18
1997	574,000	416,004	36,300	33,182	30,787	1,090,273	21	15	23	1	15	11
1998	446,000	142,601	45,700	72,387	182,007	888,696	15	3	31	4	31	7
1999	645,000	1,258,752	29,000	107,028	68,042	2,107,821	24	31	17	7	24	28
2000	539,000	292,035	32,800	133,589	26,153	1,023,577	20	10	19	14	13	10
2001	380,000	994,702	48,000	243,156	35,897	1,701,755	8	29	32	26	17	24
2002	1,279,000	364,867	28,400	314,180	17,744	2,004,191	30	13	16	28	7	27
2003	1,024,000	1,018,901	43,600	171,932	75,960	2,334,393	29	30	28	19	25	31
2004	681,000	696,270	33,100	131,881	57,729	1,599,980	25	21	21	12	22	22
2005	522,000	1,348,144	28,100	211,287	33,198	2,142,729	19	32	15	23	16	29
2006	637,000	135,913	43,600	125,945	60,478	1,002,936	23	2	28	10	23	9
2007	351,000	896,058	39,600	174,940	12,911	1,474,509	6	26	25	20	4	19
2008	333,000	51,341	30,200	132,418	3,751	550,710	4	1	18	13	1	1
2009	425,000	809,704	39,200	354,879	21,781	1,650,564	13	23	24	31	9	23
2010	392,000	184,697	27,400	179,914	9,143	793,154	9	7	14	21	3	5
2011	458,000	173,951	18,400	122,816	7,030	780,196	16	4	6	9	2	4
2012	419,000	270,319	15,800	153,338	16,485	874,942	12	9	3	16	6	6
2013	437,000	975,543	16,400	443,322	15,272	1,887,537	14	28	4	32	5	26
2014	487,000	399,270	22,700	291,953	21,529	1,222,452	17	14	12	27	8	13
2015	753,000	421,726	33,000	91,646	53,754	1,353,125	27	16	20	6	20	17
2016	362,000	348,942	17,700	225,765	23,879	978,286	7	12	5	24	11	8
2017	341,000	925,835	11,100	240,037	23,312	1,541,285	5	27	2	25	10	21
2018	294,000	255,834	10,641	89,620	47,064	697,160	2	8	1	5	19	2
2019	326,000	174,641	20,300	162,734	24,558	708,233	3	5	8	18	12	3
2020	265,000	743,787	21,100	107,332	102,247	1,239,467	1	22	9	8	28	14
2021	413,000	566,787	19,400	188,836	119,777	1,307,800	11	20	7	22	30	16
2022	520,000	502,000	23,000	345,000	99,000	1,489,000	18	18	13	29	27	20
2023	406,000	502,000	22,000	137,000	27,000	1,094,000	10	18	11	15	14	12

MEANS:	92-22	600,000	324,000	30,000	181,000	55,000	1,416,000
* Color coding from mean averages from 1992-2022: Green - above average; Tan - below average but higher than 1 SD; and Red - below average and lower than 1 SD.							

COLOR CODING:	BEST RETURN:	32	Good	21-32
	WORST:	1	Average	11-20
			Poor	1-10

The next Nass River general stock assessment update from the Nisga'a Fisheries and Wildlife Department is planned for: **Friday, 11 August 2023.**

Nass stock assessment updates are available at the following links (no passwords are required):

Daily run size information is posted on Mondays, Wednesdays, and Fridays to the following NFWD public Dropbox site:

- <https://www.dropbox.com/scl/fo/ahrrza0aplzcnamatapar/h?dl=0&rlkey=n51s6qgu0yze0vrphue8dk4ap>

Weekly email updates will be posted after each update to NFWD Dropbox, DFO and NLG's websites:

- DFO: <http://www.pac.dfo-mpo.gc.ca/fm-gp/northcoast-cotenord/nass-eng.html>
- NLG: <http://www.nisgaanation.ca/nass-river-stock-assessments>

Photo Documentation of Nass salmon and non-salmon caught at fishwheels between July 28 and August 4 prior to release – salmon are tagged in water filled trough with pumped water from river during handling:

Photos courtesy of NFWD's senior crew leader, Ben Guno Jr, and other NFWD staff.



Photo 1. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 29 July 2023.



Photo 2. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 1 August 2023.



Photo 3. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 3 August 2023.



Photo 4. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 29 July 2023.



Photo 5. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 29 July 2023.



Photo 6. Coho Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 29 July 2023.



Photo 7. Coho Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 1 August 2023.



Photo 8. Pink Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 1 August 2023.



Photo 9. Chum Salmon caught and operculum tagged at the Gitwinksihlkw fishwheels, 29 July 2023.



Photo 10. Chum Salmon caught and operculum tagged at the Grease Harbour fishwheels, 30 July 2023.



Photo 11. Chum Salmon caught and operculum tagged at the Gitwinksihlkw fishwheels, 1 August 2023.



Photo 12. Chum Salmon caught and operculum tagged at the Gitwinksihlkw fishwheels, 3 August 2023.



Photo 13. Steelhead caught and fin marked at Gitwinksihlkw fishwheels, 28 July 2023.



Photo 14. Steelhead caught and fin marked at Grease Harbour fishwheels, 29 July 2023.



Photo 15. Steelhead caught and fin marked at Gitwinksihlkw fishwheels, 1 August 2023.



Photo 16. Dolly Varden caught and anchor tagged at Gitwinksihlkw fishwheels, 3 August 2023.



Photo 17. Dolly Varden caught and anchor tagged (top) on 4 August and Rainbow Trout (bottom) caught at Gitwinksihlkw fishwheels, 29 July 2023.



Photo 18. Pacific Lamprey caught and spaghetti tagged at Grease Harbour fishwheels, 4 August 2023.



Nisga'a Lisims Government

NISGA'A FISHERIES & WILDLIFE
 T 250 633 2617 / F 250 633 2971
 TF 1 866 633 2145
 PO Box 228 / 5101 Gitzyon St
 New Aiyansh BC / Canada V0J 1A0
 NISGAANATION.CA

2023 NASS STOCK ASSESSMENT UPDATE

FISHWHEEL OPERATIONAL DATA TO:	3-Aug-23
WATER LEVEL FOR DATE AT GITWINKSIHLKW (m)	1.7
HISTORICAL LEVEL FOR DATE - MEAN 94-22 (m)	1.9
WATER TEMPERATURE FOR DATE AT GITWINKSIHLKW (m)	10.3
HISTORICAL WATER TEMP FOR DATE - MEAN 94-22 (m)	10.3

FISHWHEEL CATCH SUMMARIES	SOCK	CHIN	COHO	STEEL	PINK-ODD	CHUM	LAMP
FISHWHEEL TOTAL CATCH OF ADULTS	45,590	2,326	1,579	111	93,454	22	960
HISTORICAL AVG CUM CATCH (00-22) TO DATE	30,900	4,100	1,000	80	8,660	20	430
HISTORICAL AVG CUM TOTAL CATCH (00-22)	45,000	4,200	13,000	900	25,000	130	740
AVERAGE DAILY CATCH (5 D) OF ADULTS - GW	173	1	32	4	3,489	1	5
AVERAGE DAILY CATCH (5 D) OF ADULTS - GH	553	6	190	4	7,528	1	31
FISHWHEEL TOTAL TAGGED (OR ADIPOSE FIN MARKED)	7,011	2,023	211	67	1,425	18	530
FISHWHEEL TOTAL JACKS	3,967	3,253	58	NA	NA	NA	NA
HISTORICAL MEAN JACKS (00-22) TO DATE	2,427	738	84	NA	NA	NA	NA

IN-SEASON RUN SIZE SUMMARIES	SOCK	CHIN	COHO	STEEL	3-Aug-23
IN-SEASON RUN SIZE ESTIMATE TO DATE	320,968	14,705	10,125	1,593	
HISTORICAL MEAN RUN SIZE TO GW FOR DATE (94-22)	221,000	17,500	9,544	1,920	
RUN SIZE TARGET 2023 (MIN. FOR STEELHEAD)	250,000	15,000	65,000	4,200	

IN-SEASON FORECASTS TO GW - METHODS:	SOCK	CHIN	COHO	STEEL	3-Aug-23
1. RUN TIMING METHOD (94-22) - Mean Run timing	425,000	15,000	93,000	13,000	
Lower (-2 S.D.)	346,000	14,000	52,000	6,000	
Upper (+2 S.D.)	548,000	17,000	187,000	25,000	In-season/Final
2. IN-SEASON TO FINAL (regression):	392,000	15,500	89,000	13,000	r ² (CH) = 1.00
95% CI - lower	275,000	15,000	50,000	8,000	r ² (SO) = 0.79
95% CI - upper	509,000	16,000	128,000	18,000	r ² (CO) = 0.51
GW RUN SIZE TARGET (DEPENDING ON HARVESTS ABOVE GW)	250,000	15,000	65,000	4,200	r ² (ST) = 0.53
Mean Run Timing % Return Estimate to GW fishwheels (94-22)	76%	95%	11%	13%	
Late run	62%	83%	2%	4%	
Early run	91%	99%	18%	30%	

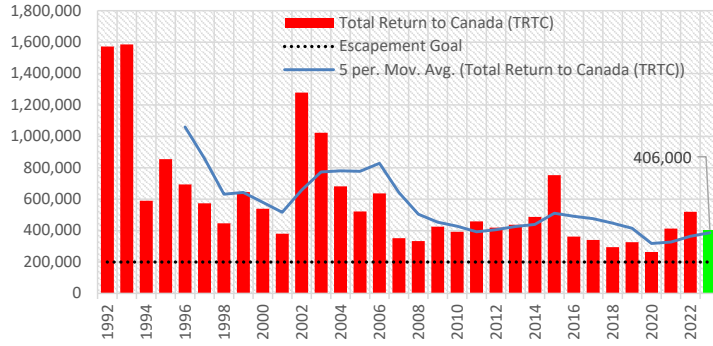
IN-SEASON NET ESCAPEMENT ESTIMATES	SOCK	CHIN	COHO	STEEL	3-Aug-23
HARVEST ESTIMATES ABOVE GW TO DATE	18,788	1,566	255	32	
NET ESCAPEMENT (ABOVE GW):	302,180	13,139	9,870	1,562	
NET ESCAPEMENT TARGET (UPPER RIVER ONLY)	200,000	13,000	60,000	4,000	

NISGA'A TOTAL HARVEST SUMMARY	SOCK	CHIN	COHO	PINK-ODD	CHUM	STEEL
MARINE SALE FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
IN-RIVER SALE FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
INDIVIDUAL SALE (IS) FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
NLG COMMUNAL SELECTIVE TREATY FISHERY - GH FISHWHEELS	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
NLG COMMUNAL SELECTIVE TREATY FISHERY - SEINE	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
DOMESTIC (FSC) GILLNET FISHERY - WK END: AUG 5 (PROJECTED)	40,507	3,197	991	6,642	194	85
SUB TOTAL (NLG TREATY FISHERIES)	40,507	3,197	991	6,642	194	85
NLG SOCK DEMONSTRATION FISHERY HARVEST - DFO INVENTORY	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
GRAND TOTAL	40,507	3,197	991	6,642	194	85

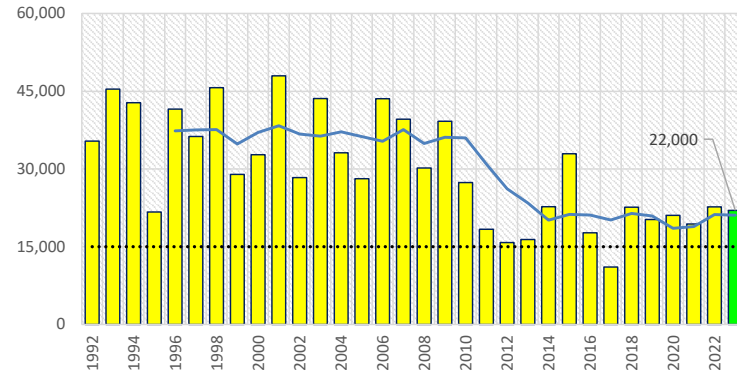
PRE-SEASON TRTC & ENTITLEMENT FORECASTS	SOCK	CHIN	COHO	PINK-ODD	CHUM
HISTORICAL MEAN TRTC (1994-2022)	616,000	30,000	176,000	324,000	54,000
PRE-SEASON TRTC FORECAST (50% PROBABILITY)	366,000	27,000	132,000	319,000	74,000
75% probability	257,000	22,000	119,000	174,000	44,000
25% probability	522,000	32,000	146,000	586,000	123,000
TOTAL PRE-SEASON NISGA'A CATCH POTENTIAL	55,000	5,700	11,000	16,000	5,900
75% probability	27,000	4,600	9,500	1,000	4,000
25% probability	90,000	6,700	12,000	57,000	10,000

IN-SEASON TRTC & ENTITLEMENT ESTIMATES - PRELIMINARY	SOCK	CHIN	COHO	PINK-ODD	CHUM
PROJ. TRTC BASED ON INSEASON TO FINAL REGRESSION TO AREA 3D	406,000	22,000	137,000	502,000	27,000
Lower (95% CI)	335,000	21,000	80,000	354,000	19,000
Upper (95% ci.)	476,000	22,000	197,000	651,000	35,000
ESTIMATED %TRTC TO DATE: MEAN. RUN TIMING (AREA 3D)	78%	95%	6%	16%	16%
Late run	64%	78%	2%	6%	2%
Early run	93%	99%	11%	34%	40%
IN-SEASON NISGA'A ENTITLEMENT TARGET	64,000	4,600	11,000	44,000	2,160
Lower (95% CI)	48,000	4,400	6,000	21,000	<500
Upper (95% ci.)	79,000	4,600	16,000	67,000	3,000

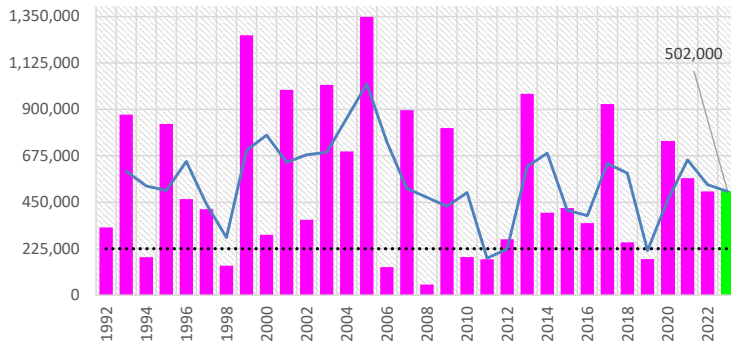
Nass Sockeye - TRTC



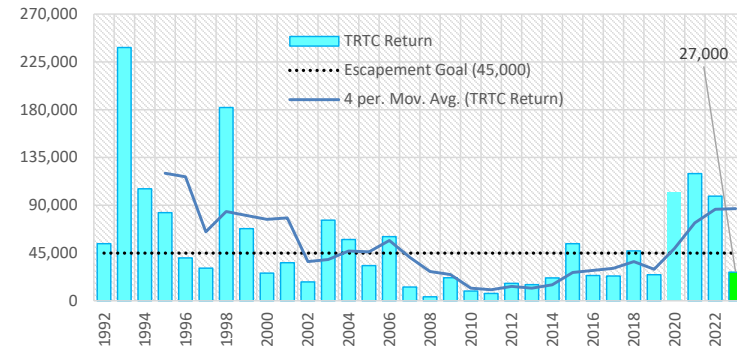
Nass Chinook - TRTC



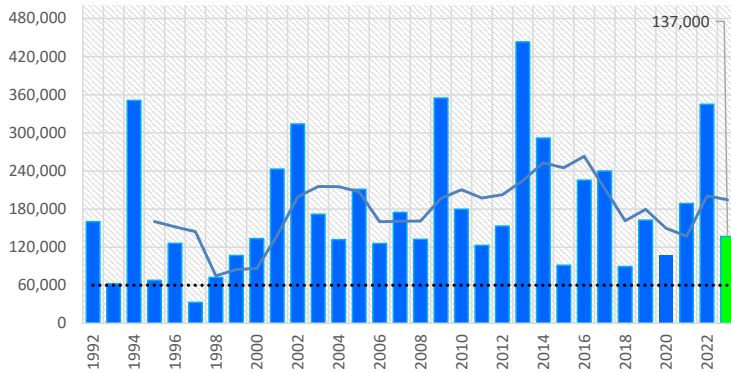
Nass Pink - TRTC



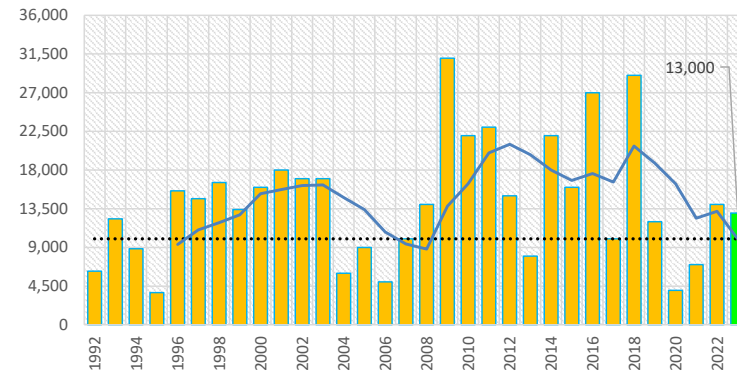
Nass Chum - TRTC

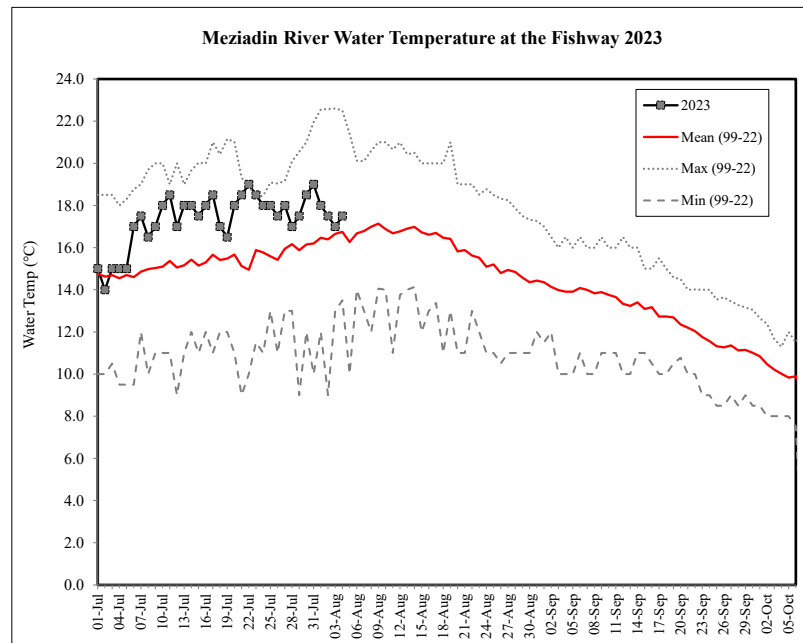
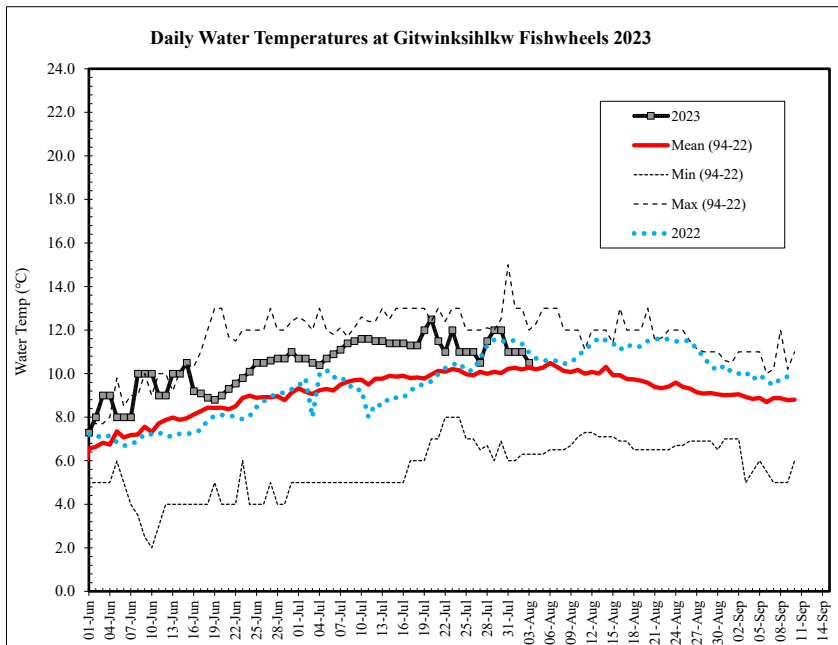
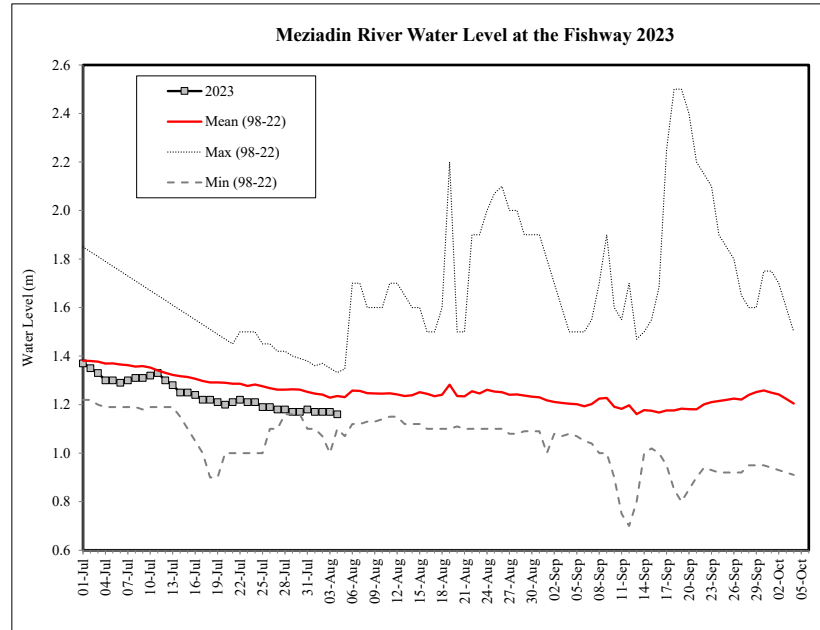
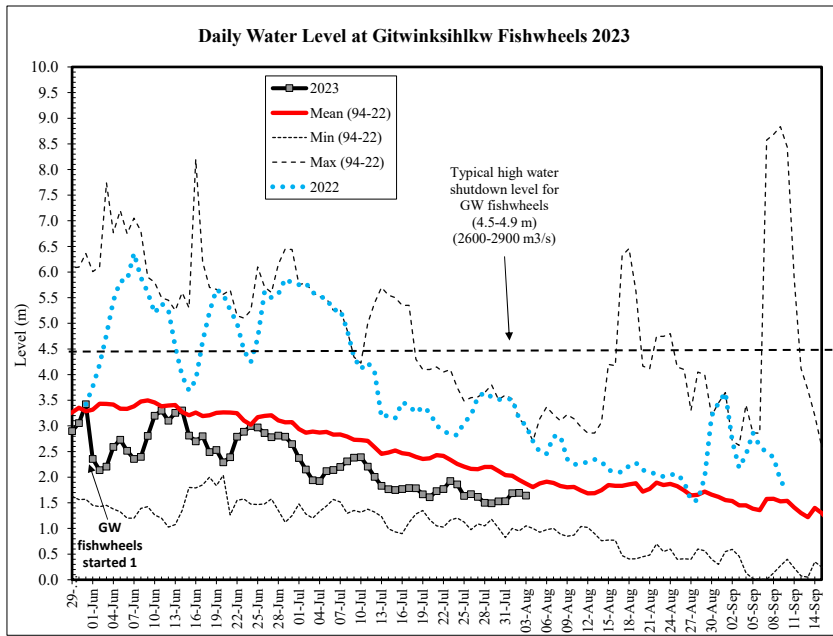


Nass Coho - TRTC

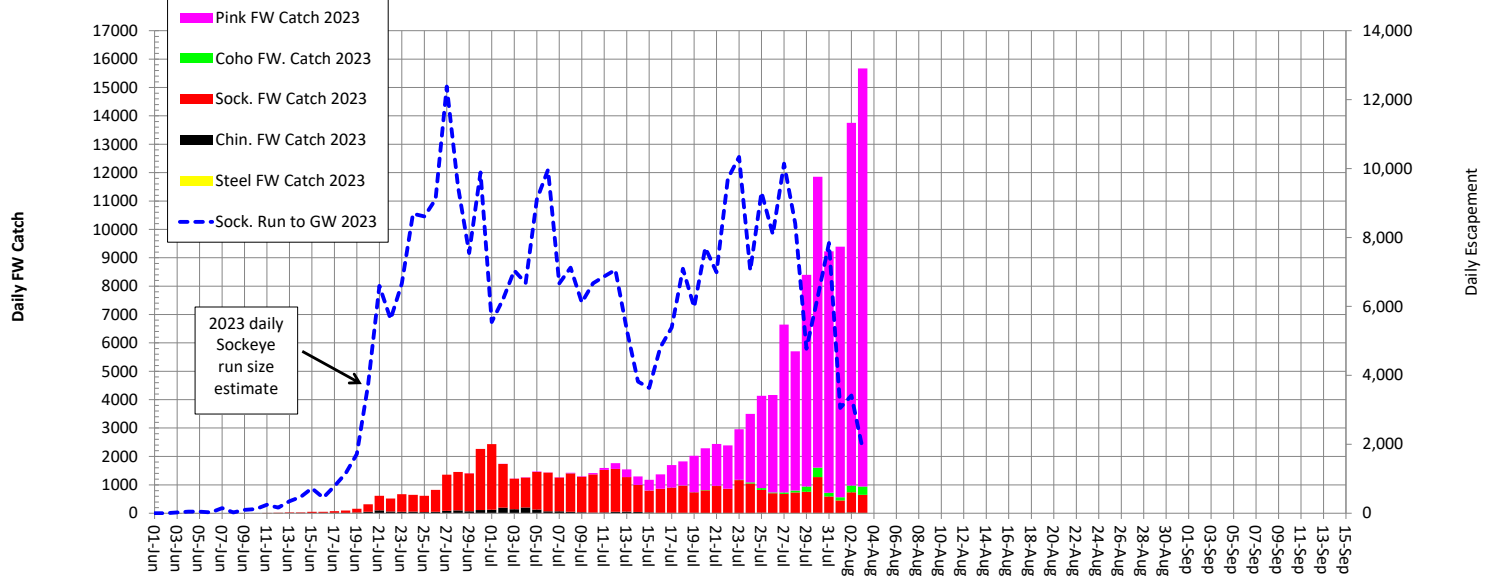


Nass Steelhead - TRTC

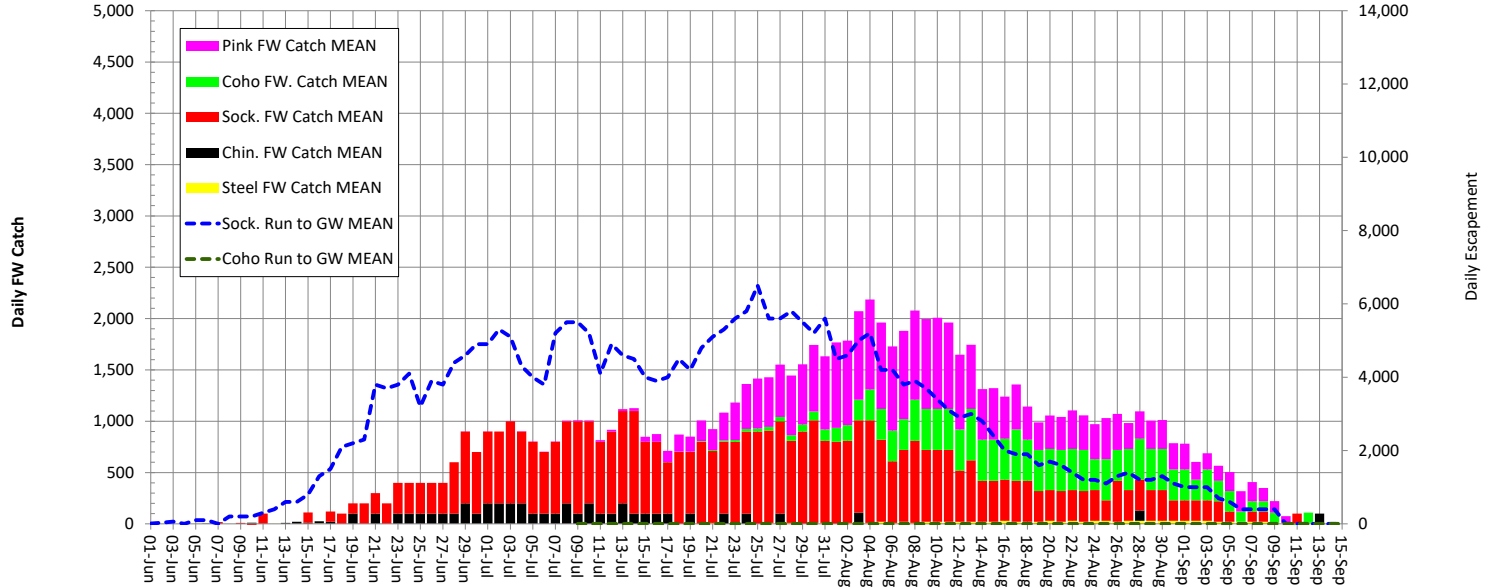




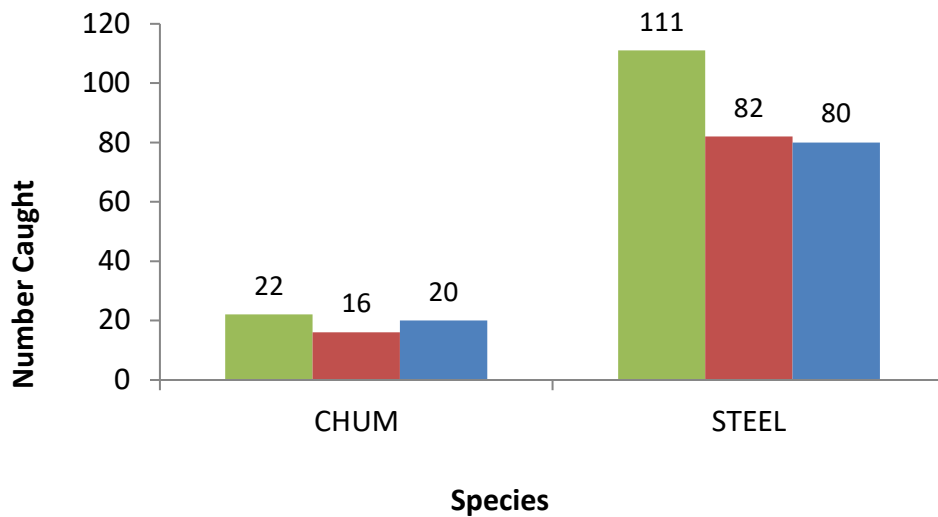
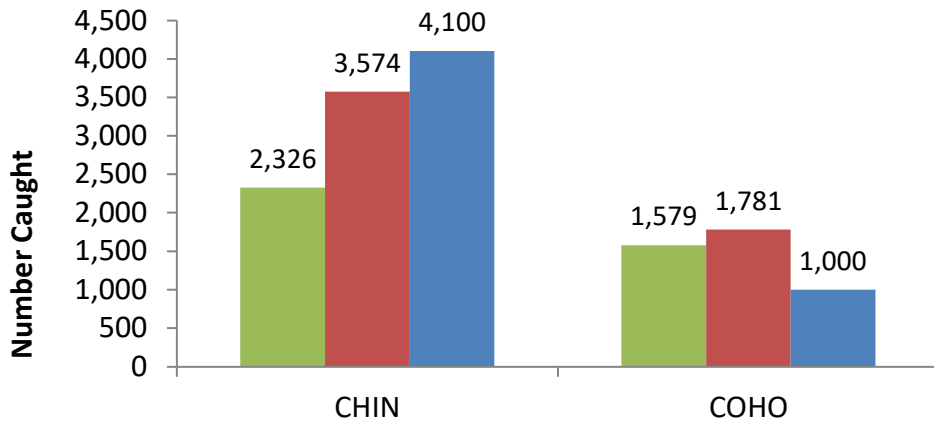
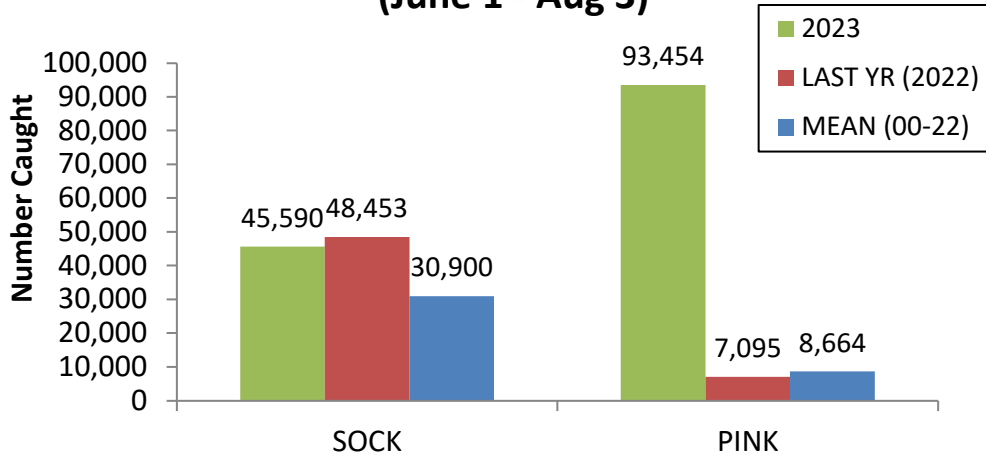
DAILY CATCHES OF NASS SALMON AND STEELHEAD AT THE FISHWHEELS 2023

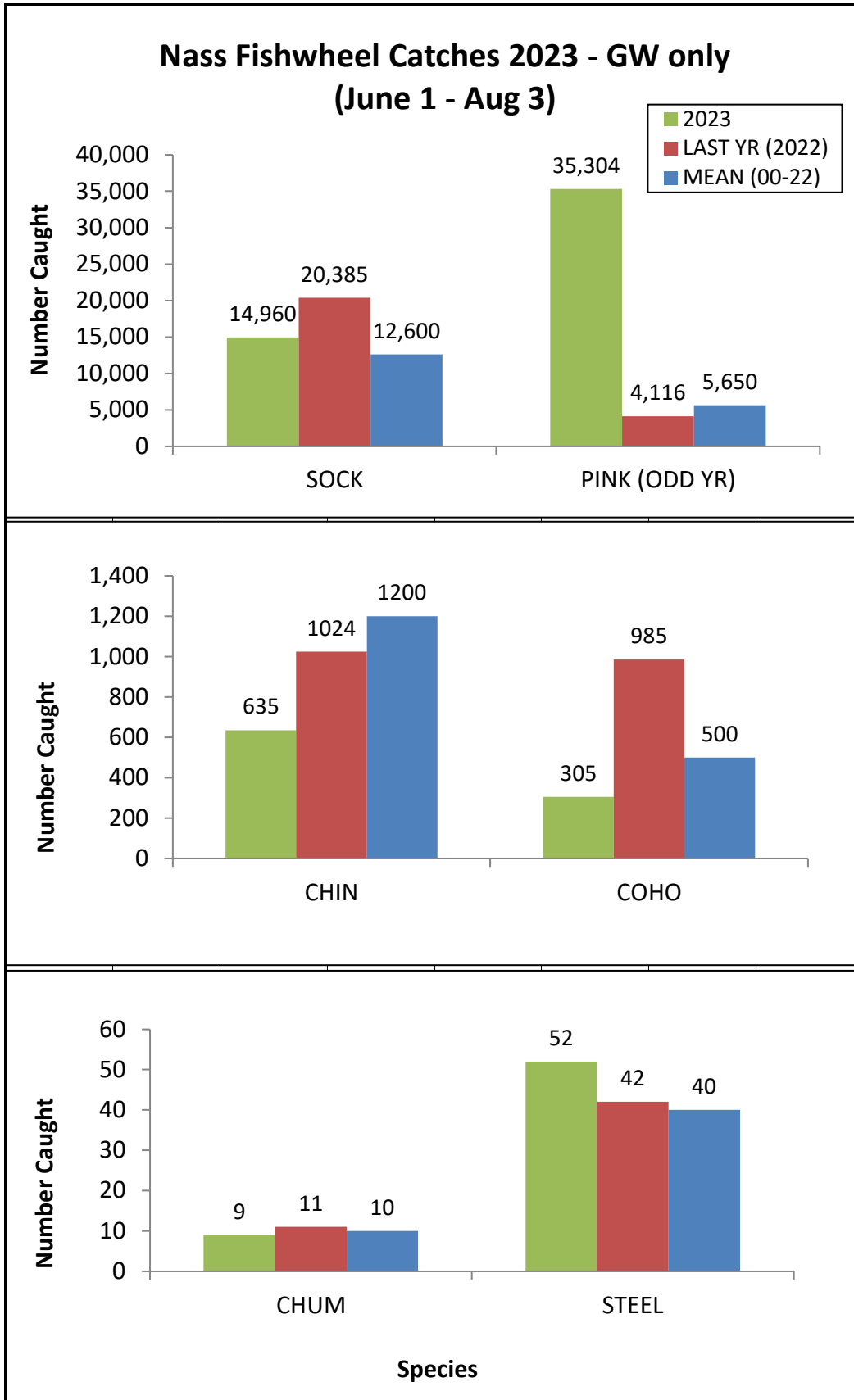


MEAN DAILY CATCHES OF NASS SALMON AND STEELHEAD AT THE FISHWHEELS - 2000-2021 (Odd YR PINK)

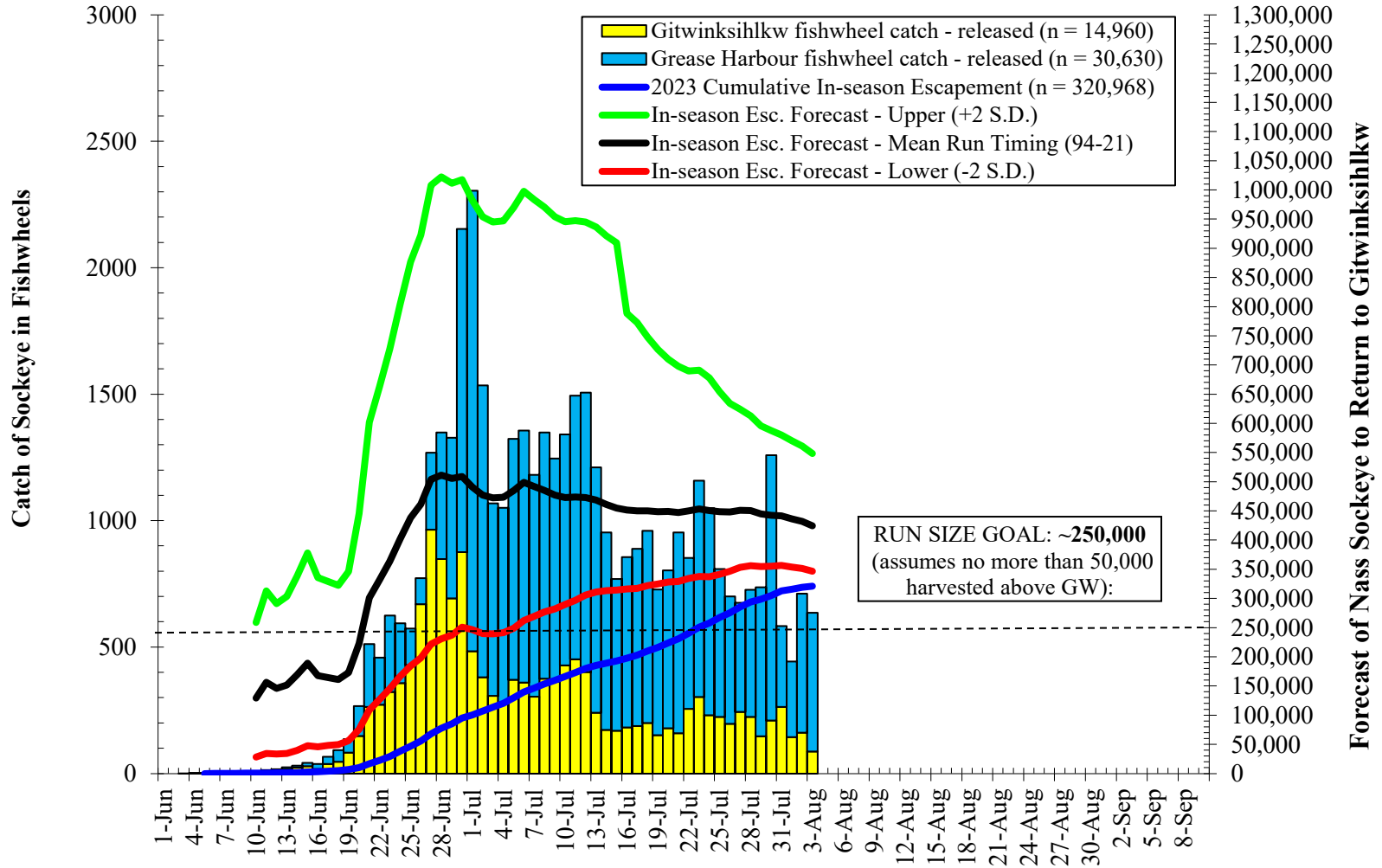


Nass Fishwheel Catches 2023 - All (June 1 - Aug 3)

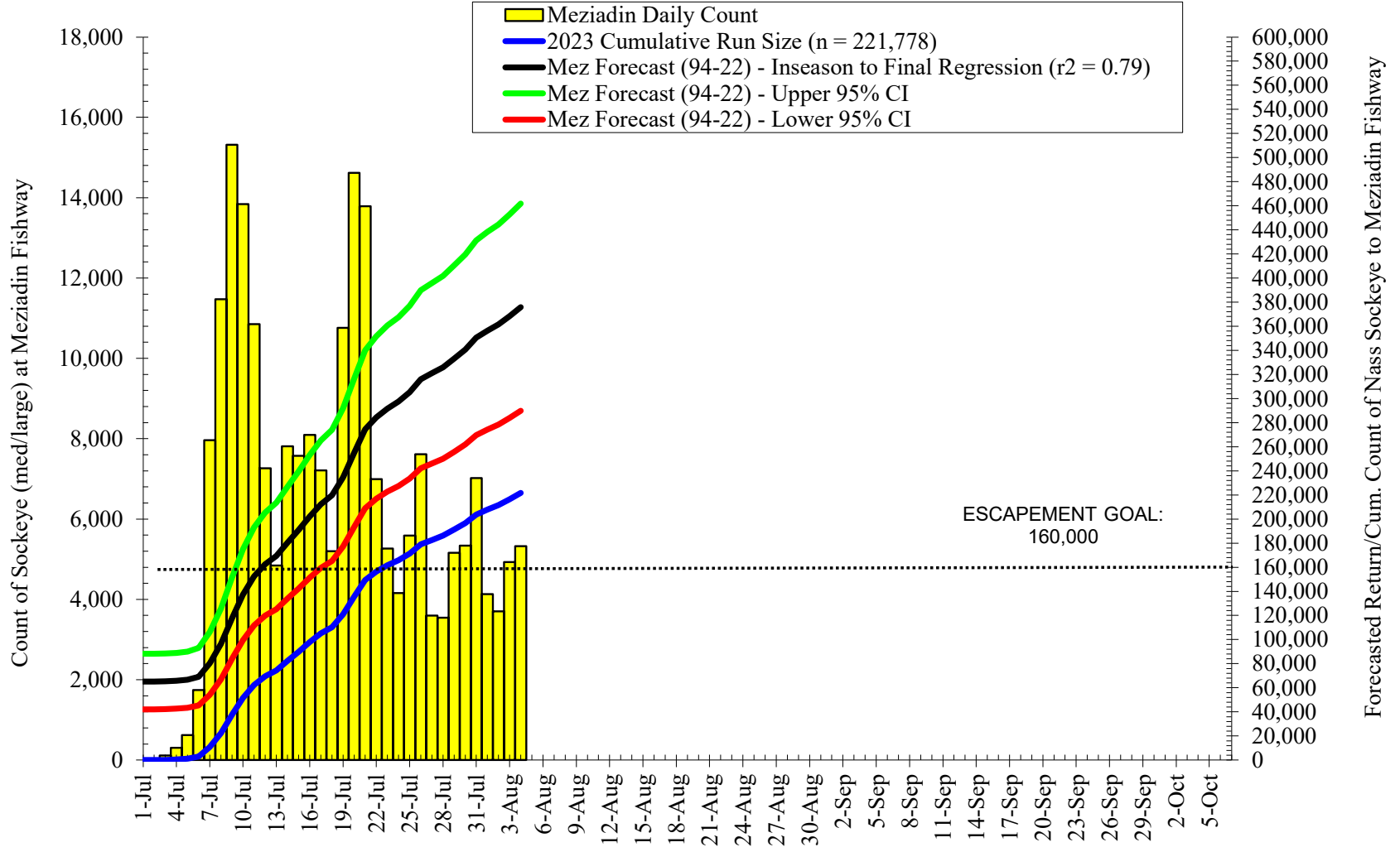




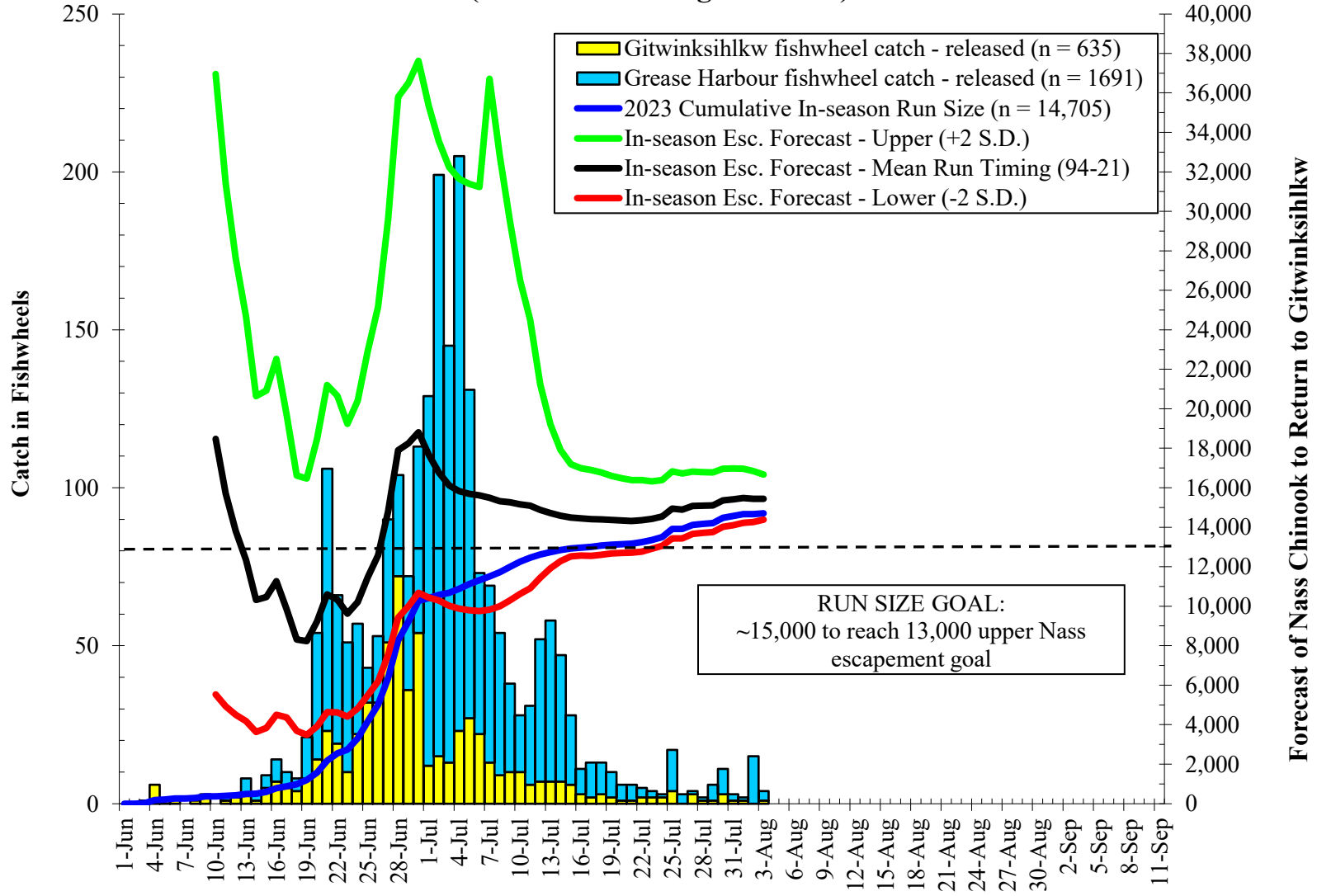
Nass Sockeye (≥ 45 cm NFL) Run Forecasts to Gitwinksihlkw Fishwheels 2023 (Mean Run timing - 1994-22)



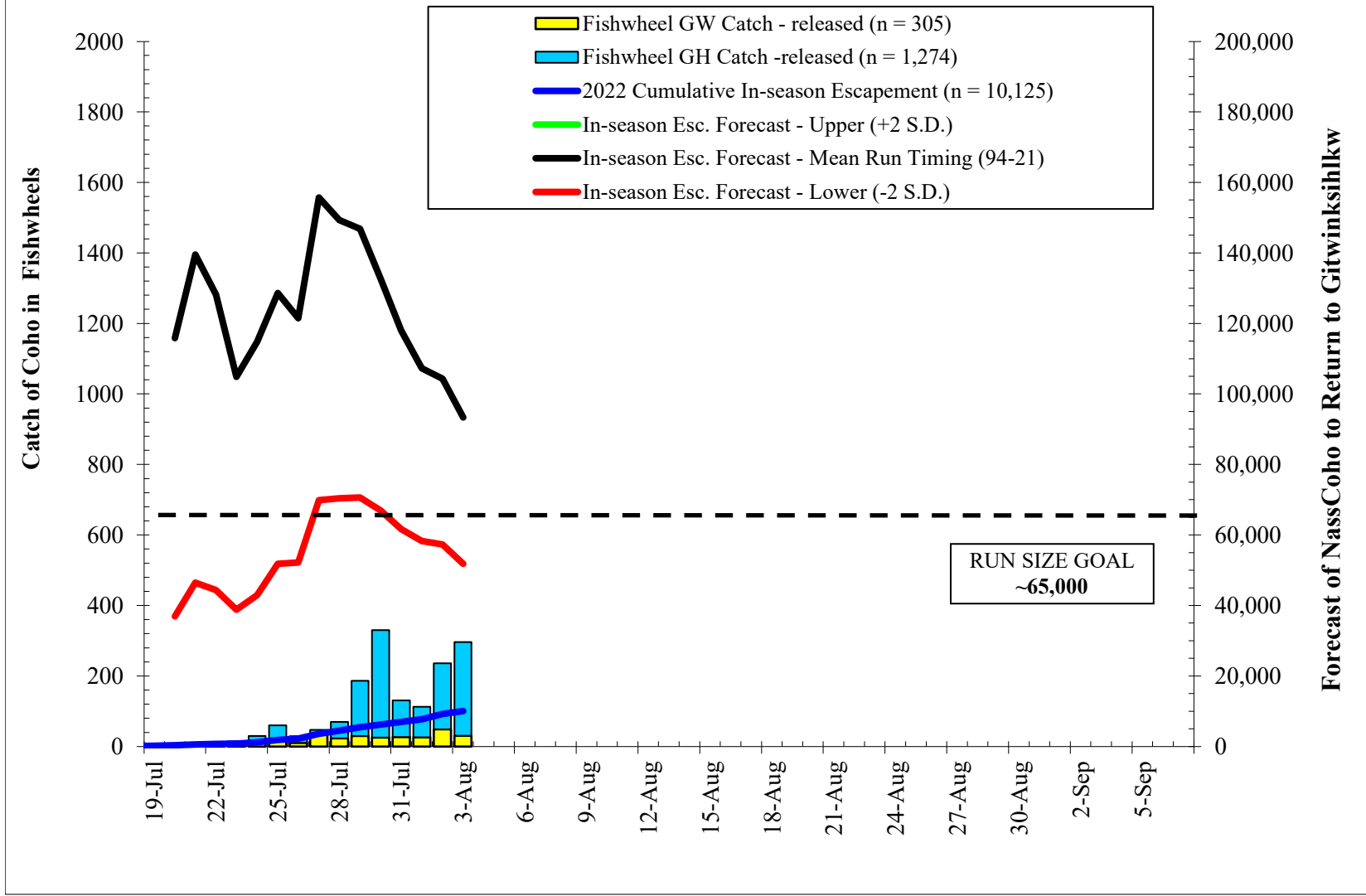
Meziadin Fishway Sockeye Counts & In-season Forecast Data 2023



Nass Chinook (≥ 50 cm NFL) Forecasts to Gitwinksihlkw Fishwheels 2023 (Mean Run timing - 1994-22)



Nass Coho (≥ 40 cm NFL) Forecasts to Gitwinksihlkw Fishwheels 2023 (Mean Run timing - 1994-2022)



Nass Summer Run Steelhead Forecasts to Gitwinksihlkw Fishwheels 2023 (Mean Run timing - 1994-2022)

