



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, 14 JULY**

The following is the second 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.**

### **NASS RIVER ASSESSMENT OPERATIONS UPDATE**

#### **OPERATIONAL ASSESSMENT INFORMATION FOR 2023**

1. **Fishwheel Assessment data: 1 June to 13 July.** Data summary below.
2. **Meziadin Fishway data:** operations started on 1 July. Count data from **1 July to 14 July.**
  - Current water level is 0.07 m lower than average (1.25 vs. 1.32 m) and water temperature is 2.6°C warmer than average (18.0°C vs. 15.4°C) based on operations from 1994 to 2022.
  - Counts: 82,180 med/large Sockeye (1,448 tags), 724 small Sockeye, 2 Chinook, and 0 Bull Trout. Counts to date are above average for Sockeye (15,000) and below average for Chinook (10) 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 ( $r^2=0.16$ ): 245,000 med/large Sockeye (95% CI: 133,000, 358,000). In comparison, the projected Meziadin Sockeye return from fishwheel abundance is 274,000 (range: 181,000–343,000) based on mean genetics (76%; range: 50-95%) from 2000 to 2022.
3. **Kwinageese video-counting weir data:** operations started on 9 July. Counts from 9-14 July are: 1 med/large Chinook (0 tag) and 1 Bull Trout. Current water level is 0.09 m lower than average (0.23 vs. 0.32 m) and water temperature is 2.4°C warmer than average (18.0°C vs. 15.6°C) based on operations from 2002 to 2022.

#### **GITWINKSIHLKW (GW) FISHWHEELS - NASS RIVER TEST FISHERY – STARTED IN 1994 [30<sup>th</sup> 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. The water levels in June and July 2023 currently rank the 8<sup>th</sup> and 11<sup>th</sup> lowest years, respectively, compared to 1994 to 2022 operations (Table 1).

A chart of the water levels at the test fishery is included in the update that compares current levels to historical levels. The current water level is 0.6 m lower than the average water level (1.8 m vs. 2.4 m) based on 1994–2022 operations. Current water temperature at GW fishwheels is 1.1°C warmer than the average water temperature (11.8°C vs. 9.1°C) based on 1994–2022 operations. The water temperatures in June and July 2023 currently rank the 4<sup>th</sup> and 2<sup>nd</sup> highest years, respectively, compared to 1994 to 2022 operations (Table 2).

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	2.2	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		1.8
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
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	2.4	2.3
Rank (Low)	22	13	19	18	8	20	27	16	25	11	12	10	14	29	17	21	3	23	26	7	5	6	2	9	1	4	24	28	30	15	

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	8.4
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	11.8	9.7
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		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
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	10.2	9.3
Rank (Highest)	7	5	21	13	29	4	2	30	24	8	1	18	10	22	27	23	20	25	28	16	19	14	11	12	6	15	26	9	17	3	

**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 and Chum salmon. Total fishwheel catches of salmon, steelhead, and Pacific Lamprey to date are shown below 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.

FISHWHEEL CATCH SUMMARIES	SOCK	CHIN	COHO	STEEL	PINK-ODD	CHUM	LAMP
FISHWHEEL TOTAL CATCH OF ADULTS	28,344	2,113	1	17	689	0	418
HISTORICAL AVG CUM CATCH (00-22) TO DATE	14,200	3,200	1	10	90	2	180
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	377	8	0	0	91	0	0
AVERAGE DAILY CATCH (5 D) OF ADULTS - GH	983	33	0	0	31	0	26
FISHWHEEL TOTAL TAGGED (OR ADIPOSE FIN MARKED)	5,089	1,885	0	2	81	0	246
FISHWHEEL TOTAL JACKS	2,258	2,419	0	NA	NA	NA	NA
HISTORICAL MEAN JACKS (00-22) TO DATE	658	447	1	NA	NA	NA	NA

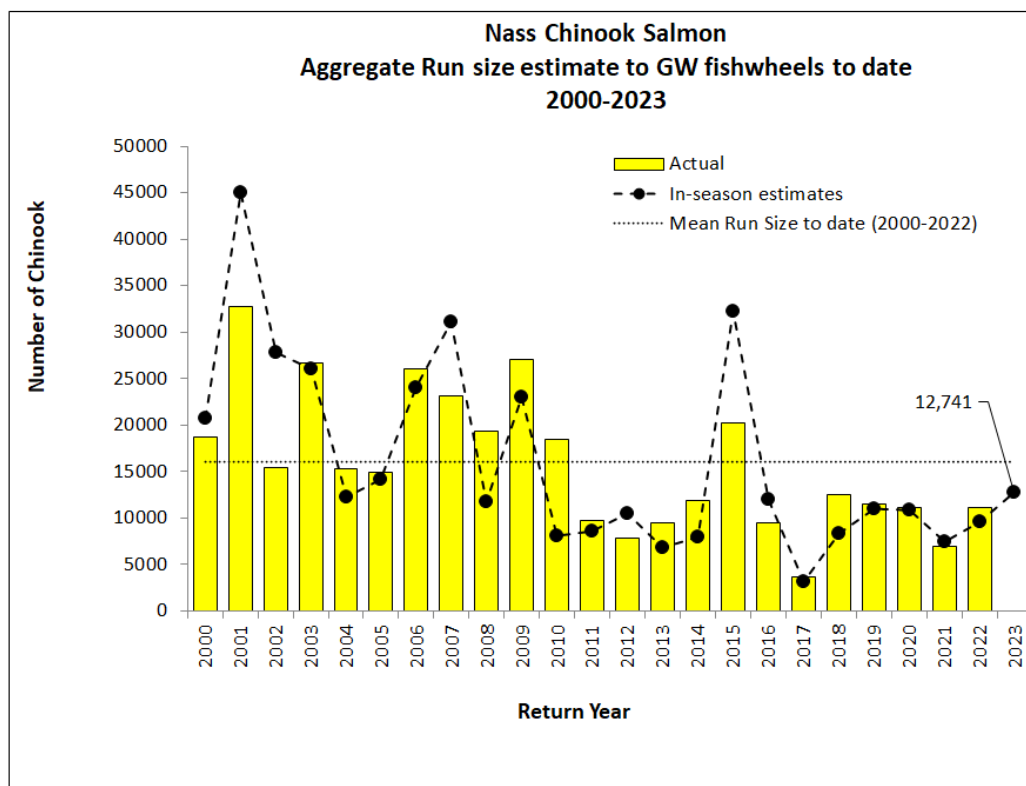
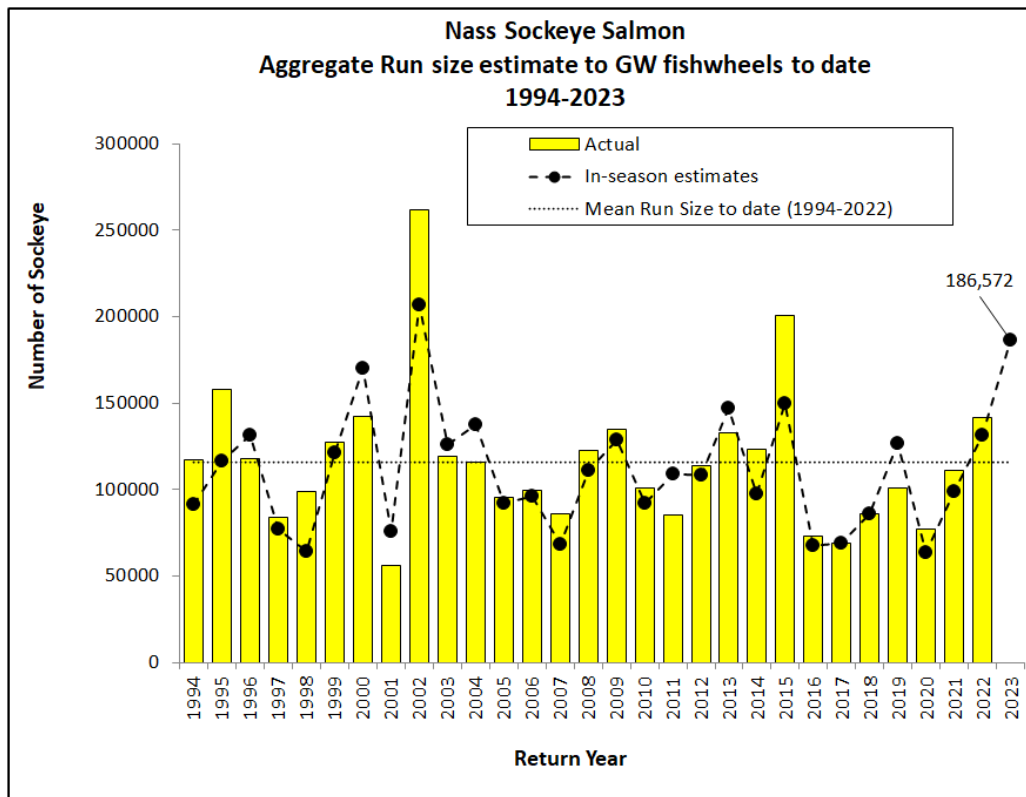
Other adult species and juvenile salmon catches at the fishwheels to date include: 47 Dolly Varden (26 tagged), 62 Rainbow Trout, 40 Peamouth Chub, 38 Cutthroat Trout, 22 Mountain Whitefish, 6 Pikeminnow, 3 Redside Shiners, 4 Sculpin, and 113 salmon smolts (30 Coho, 74 Chinook, 9 Sockeye), 3 seals, and 1 frog.

**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 below. 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 and steelhead when compared to means to date from 1994 to 2022. Summer-run steelhead estimates begin 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.

IN-SEASON RUN SIZE SUMMARIES	SOCK	CHIN	COHO	STEEL	13-Jul-23
IN-SEASON RUN SIZE ESTIMATE TO DATE	186,572	12,741	23	-	
HISTORICAL MEAN RUN SIZE TO GW FOR DATE (94-22)	116,000	16,000	12	70	
RUN SIZE TARGET 2023 (MIN. FOR STEELHEAD)	250,000	15,000	65,000	4,200	

In-season to actual estimates to **July 13** have tracked reasonably well for estimating returns for that date for Nass Sockeye (mean accuracy 86%) from 1994 to 2022 and Chinook (mean accuracy 75%) from 2000 to 2022.



In-season preliminary forecast projections for Nass salmon and summer-run steelhead above Gitwinksihlkw are shown below. Estimates to Gitwinksihlkw are based on two methods, mean run timing and linear-regression of the in-season to final estimates to date. The run size projection estimate for Nass Sockeye is ranging between 231,000 and 491,000 to reach the run size goal (~250,000 for 2023) based on the in-season to final regression method with a point estimate of 361,000 ( $r^2=0.54$ ) based on mean-run timing (40%; range: 24–58%) of the run passing Gitwinksihlkw to date. The current run size projection for Nass Chinook is ranging between 13,000 and 17,000 based on the in-season to final regression method with a point estimate of 15,100 ( $r^2=0.97$ ) based on mean-run timing (87%; range: 53–96%) of the run passed Gitwinksihlkw to date.

IN-SEASON FORECASTS TO GW - METHODS:	SOCK	CHIN	COHO	STEEL		13-Jul-23
1. RUN TIMING METHOD (94-22) - Mean Run timing	471,000	15,000	Too Early	Too Early		
Lower (-2 S.D.)	313,000	12,000	Too Early	Too Early		
Upper (+2 S.D.)	943,000	19,000	Too Early	Too Early		In-season/Final
2. IN-SEASON TO FINAL (regression):	361,000	15,100	Too Early	Too Early		$r^2$ (CH) = 0.97
95% CI - lower	231,000	13,000	Too Early	Too Early		$r^2$ (SO) = 0.54
95% CI - upper	491,000	17,000	Too Early	Too Early		$r^2$ (CO) =
GW RUN SIZE TARGET (DEPENDING ON HARVESTS ABOVE GW)	250,000	15,000	65,000	4,200		$r^2$ (ST) =
Mean Run Timing % Return Estimate to GW fishwheels (94-22)	40%	87%	0%	1%		
Late run	24%	53%	0%	0%		
Early run	58%	96%	0%	3%		

Net Escapement Estimates for adult Nass salmon to date are shown below and relative to the Upper Nass net aggregate escapement goals. Approximately 182,283 Sockeye, 11,939 Chinook, and 19 Coho salmon are estimated to have passed to the Upper Nass River to date.

IN-SEASON NET ESCAPEMENT ESTIMATES	SOCK	CHIN	COHO	STEEL		13-Jul-23
HARVEST ESTIMATES ABOVE GW TO DATE	4,289	802	4	2		
NET ESCAPEMENT (ABOVE GW):	182,283	11,939	19	-		
NET ESCAPEMENT TARGET (UPPER RIVER ONLY)	200,000	13,000	60,000	4,000		

## HARVEST ESTIMATES FOR ADULT NASS SALMON & STEELHEAD

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 2 July for Districts 101, 102, and 104 seine fisheries. The table below shows the current estimates of catches of salmon in Alaskan net fisheries in Districts 101–106 (and mean catch comparisons from 2000 to 2022) to 14 July 2023 based on data from ADFG. Alaskan catches to date are below average for all salmon except Pink and Chum.

IN-SEASON SE ALASKAN CUM. SALMON GILLNET/SEINE CATCH ESTIMATES (ADFG WEBSITE) - 2023									WEEK END: 15-Jul-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	14,700	31,000	830	1,200	28,700	56,700	151,000	79,000	1,600	3,100
DIST 106 GN	UPP. CLAR	17,100	31,000	400	1,000	25,900	48,000	72,100	47,000	2,250	20,000
DIST 101 SN	LOW CLAR	10,600	2,700	0	100	584,000	184,000	334,000	29,000	5,000	1,500
DIST 102 SN	MID CLAR	3,200	6,000	0	400	23,500	84,700	345,000	176,000	3,400	8,500
DIST 103 SN	CORDOVA	0	0	0	0	0	0	0	0	0	0
DIST 104 SN	NOYES/DALL	2,100	10,000	0	200	9,900	57,000	38,000	16,000	3,000	6,000
<b>CUMULATIVE TOTAL</b>		<b>48,000</b>	<b>81,000</b>	<b>1,000</b>	<b>3,000</b>	<b>672,000</b>	<b>430,000</b>	<b>940,000</b>	<b>347,000</b>	<b>15,000</b>	<b>39,000</b>

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 (48,000), approximately 33% (16,000) is estimated as Nass origin based on mean stock composition estimates from 1982 to 2022 and is currently below average (33,000) to date.

### 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>).

For 2023, pre-season total run forecasts (50% probability estimates) for Nass salmon are predicted to be below average returns for Nass Sockeye (455,000 vs. 768,000), Nass Pink (348,000 vs. 364,000), Nass Chinook (28,500 vs. 32,000), and Nass Coho (233,000 vs. 314,000), and above average return for Nass Chum (88,000 vs. 73,000) based on mean Total Run returns from 1992 to 2022 (NFWD 2023; DFO IFMP 2023). In summary for 2023 forecasts, the total run of Nass Sockeye is predicted to be the 8th poorest return over a 32 period (1992–2022), low to average returns for Nass Pink (11th worst), Chinook (14th worst), and Coho (15th worst), and very good return for Nass Area Chum (8th best return). The overall return of Nass salmon in 2023 (1.2 million vs. 1.8 million average) is predicted to be the 7th worst salmon return in 32 years. After accounting for mean Alaska harvest rates (21% Sockeye, 8% Pink, 6% Chinook, 44% Coho, and 16% Chum) of Nass salmon, pre-season Total Return to Canada (TRTC) forecasts (50% probability estimates) for 2023 are predicted to be below average returns for Nass Sockeye (366,000 vs. 600,000), Nass Chinook (27,000 vs. 30,000), and Nass Coho (132,000 vs. 181,000), and above average TRTC returns for Nass Chum (74,000 vs. 55,000) and odd-year Nass Pink (319,000 vs. 324,000), based on mean Total Run returns from 1992 to 2022 (NFWD 2023; DFO IFMP 2023).

As of July 13, a good portion of the Nass Chinook return have passed marine areas (Area 3 mean = 81%; range: 10–95%) and entered the Nass River to alleviate concerns of harvest impacts by marine commercial fisheries and the current in-season TRTC return forecast for Nass Sockeye (423,000; 95% CI: 313,000–533,000) is currently tracking higher than the pre-season forecast (366,000; 75%/25% prob: 257,000–522,000). DFO have conducted two commercial seine fisheries in outside Area 3 on July 10 and July 11 targeting Nass Area Pink Salmon with Sockeye and Chum Salmon retention with an estimated 25,000 Pink, 21,300 Chum, and 2,300 Sockeye harvested, and 36 Chinook and 213 Coho released. Future commercial salmon openings in Area 3 (outside areas) are July 14 (gillnet) and July 17 (seine) with Sockeye, Pink and Chum retention permitted in the gillnet opening, and Sockeye and Pink retention permitted in seine opening. To continue rebuilding Kwinageese Sockeye Salmon recovering from a slide in 2011, an one-week commercial closure (gillnet) and non-retention of Sockeye Salmon (seine) will occur in Area 3 from July 17–23.

### 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 **July 15** are shown in the table below for Food, Social, and Ceremonial (FSC) catches. The current harvests of Nass salmon and steelhead estimated in 2023 for Nisga'a fisheries are above average for the FSC fishery (~32,000 vs. 27,000) and below average for total catches (32,900 vs. 68,000) when including past sale fisheries and comparing harvests from 2000 to 2022.

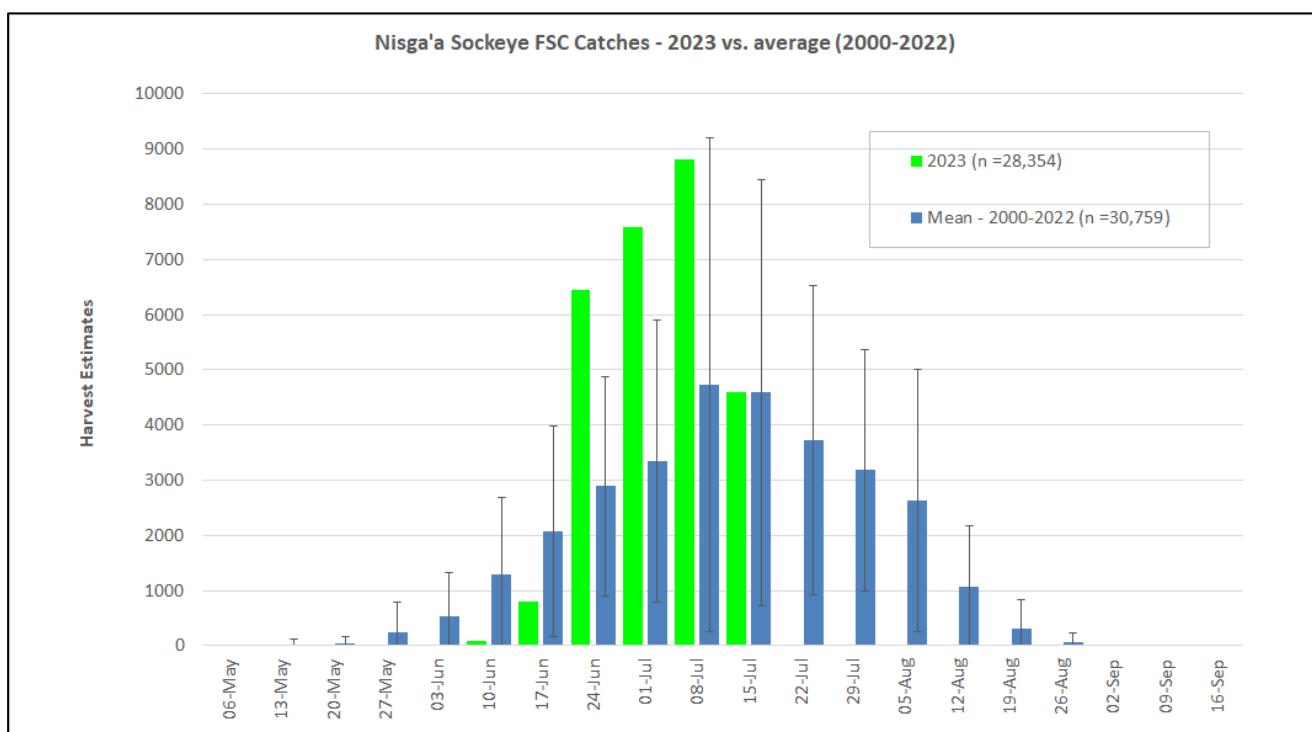
High water impacted the ability to fish in the Nass River for most of May and early June 2023. Nisga'a fishing effort (net hours) to July 8 is currently below average (2232 vs. 6695 hours) from 337 interviews.

Preliminary estimates are from May 1 to July 15 and include projected net catch estimates from July 9–15 that will be reported on July 19 as well as preliminary additions for catch by angling gear, release mortality (60% of releases), and any estimated unmonitored periods.

**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	15-Jul-23	3,496	4,800	3,499	5,200
SOCKEYE	15-Jul-23	28,354	20,300	28,354	57,500
PINK	15-Jul-23	822	1,486	823	4,840
COHO	15-Jul-23	143	109	143	163
CHUM	15-Jul-23	53	223	56	223
STEELHEAD	15-Jul-23	34	85	38	85
<b>TOTAL</b>		<b>32,900</b>	<b>27,000</b>	<b>32,900</b>	<b>68,000</b>

\* 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.



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

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 (NFD 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 are predicted to be 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 (NFWD 2023; DFO IFMP 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 are predicting 2023 to be poor for Sockeye (8<sup>th</sup> worst), fair to average returns for Chinook (13<sup>th</sup> worst), Pink (11<sup>th</sup> worst) and Coho (13<sup>th</sup> worst), and good for Chum (9<sup>th</sup> best). The overall return forecast for Nass salmon in 2023 (918,000 vs. 1,416,000 average) is predicted to be the 8<sup>th</sup> worst return in 32 years.

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	Steelhead	Sockeye	Pink	Chinook	Coho	Chum	Total Salmon	Steelhead
1992	1,572,000	328,009	35,400	160,210	53,817	2,149,436	5,000	31	12	22	17	20	30	5
1993	1,586,000	874,099	45,400	62,481	238,610	2,806,590	9,100	32	25	30	2	32	32	13
1994	590,000	183,958	42,800	351,220	105,452	1,273,431	6,200	22	6	27	30	29	15	8
1995	855,000	829,319	21,700	68,032	83,001	1,857,053	2,700	28	24	10	3	26	25	1
1996	694,000	465,482	41,600	126,240	40,410	1,367,731	10,300	26	18	26	11	17	18	15
1997	574,000	416,004	36,300	33,182	30,787	1,090,273	8,500	21	16	23	1	14	12	11
1998	446,000	142,601	45,700	72,387	182,007	888,696	10,400	15	3	31	4	31	7	17
1999	645,000	1,258,752	29,000	107,028	68,042	2,107,821	10,300	24	31	17	7	23	28	15
2000	539,000	292,035	32,800	133,589	26,153	1,023,577	13,800	20	10	19	15	13	11	23
2001	380,000	994,702	48,000	243,156	35,897	1,701,755	11,500	9	29	32	26	16	24	20
2002	1,279,000	364,867	28,400	314,180	17,744	2,004,191	15,500	30	14	16	28	7	27	26
2003	1,024,000	1,018,901	43,600	171,932	75,960	2,334,393	14,800	29	30	28	19	25	31	25
2004	681,000	696,270	33,100	131,881	57,729	1,599,980	4,300	25	21	21	12	21	22	3
2005	522,000	1,348,144	28,100	211,287	33,198	2,142,729	7,200	19	32	15	23	15	29	10
2006	637,000	135,913	43,600	125,945	60,478	1,002,936	4,400	23	2	28	10	22	10	4
2007	351,000	896,058	39,600	174,940	12,911	1,474,509	5,900	6	26	25	20	4	19	7
2008	333,000	51,341	30,200	132,418	3,751	550,710	11,800	4	1	18	14	1	1	21
2009	425,000	809,704	39,200	354,879	21,781	1,650,564	23,100	13	23	24	31	9	23	31
2010	392,000	184,697	27,400	179,914	9,143	793,154	19,700	10	7	14	21	3	5	29
2011	458,000	173,951	18,400	122,816	7,030	780,196	19,300	16	4	6	9	2	4	27
2012	419,000	270,319	15,800	153,338	16,485	874,942	12,800	12	9	3	16	6	6	22
2013	437,000	975,543	16,400	443,322	15,272	1,887,537	7,000	14	28	4	32	5	26	9
2014	487,000	399,270	22,700	291,953	21,529	1,222,452	19,500	17	15	11	27	8	13	28
2015	753,000	421,726	33,000	91,646	53,754	1,353,125	13,900	27	17	20	6	19	17	24
2016	362,000	348,942	17,700	225,765	23,879	978,286	21,800	7	13	5	24	11	9	30
2017	341,000	925,835	11,100	240,037	23,312	1,541,285	9,100	5	27	2	25	10	21	13
2018	294,000	255,834	10,641	89,620	47,064	697,160	26,800	2	8	1	5	18	2	32
2019	326,000	174,641	20,300	162,734	24,558	708,233	10,400	3	5	8	18	12	3	17
2020	265,000	743,787	21,100	107,332	102,247	1,239,467	3,900	1	22	9	8	28	14	2
2021	413,000	566,787	19,400	188,836	119,777	1,307,800	5,500	11	20	7	22	30	16	6
2022	520,000	502,000	23,000	345,000	99,000	1,489,000	11,000	18	19	12	29	27	20	19
2023	366,000	319,000	27,000	132,000	74,000	918,000	9,000	8	11	13	13	24	8	12

MEANS:							
92-22	600,000	324,000	30,000	181,000	55,000	1,416,000	11,000

\* 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
WORST:	1

Good	
25-32	Green
Average	11-20
Poor	1-10

Pre-season forecast charts of Nass salmon and summer-run steelhead total run sizes for 2023 and return summaries from 1992 to 2022:



Figure 1. Total run size estimates of Nass salmon and summer-run steelhead from 1992 to 2022 and the pre-season forecast for 2023 with 4–5-year trend line comparisons (NFWD 2023).



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

In-season TRTC estimates for Nass Sockeye and Chinook estimated by NFWD to July 13:

- 1) Nass Sockeye is ranging between 313,000 and 533,000 with a point estimate of 423,000 (vs. 616,000 based on returns from 1992 to 2022), and
- 2) Nass Chinook is ranging between 19,000 and 25,000 with a point estimate of 22,000 (vs. 30,000 based on returns from 1992 to 2022).

The in-season TRTC estimates for Nass Sockeye and Chinook salmon are based on run size projections from in-season to final regression methods and run timing ranges to Area 3 to date for Nass Sockeye (43%; range: 27–59%) and Chinook (81%; range: 10–95%, including lower/coastal stocks based on habitat capacity proportions).

Currently, in-season TRTC and Nisga’a entitlement estimates for Nass Sockeye and Chinook are higher and lower, respectively, than pre-season forecasts. Insufficient in-season data are available for Nass Area Pink, Chum, and Coho salmon species so pre-season forecasts are considered for preliminary Nisga’a entitlement estimates.

Pre-season Nass salmon TRTC forecasts for 2023 are:

- Nass Coho: 132,000 (range: 119,000–146,000),
- Nass Pink: 319,000 (range: 174,000–586,000), and
- Nass Chum: 74,000 (range: 44,000–123,000).

<b>IN-SEASON TRTC &amp; ENTITLEMENT ESTIMATES - PRELIMINARY</b>	<b>SOCK</b>	<b>CHIN</b>	<b>COHO</b>	<b>PINK-ODD</b>	<b>CHUM</b>
<b>PROJ. TRTC BASED ON INSEASON TO FINAL REGRESSION TO AREA 3D</b>	<b>423,000</b>	<b>22,000</b>	<b>Pre-season</b>	<b>Pre-season</b>	<b>Pre-season</b>
Lower (95% CI)	313,000	19,000	Pre-season	Pre-season	Pre-season
Upper (95% ci.)	533,000	25,000	Pre-season	Pre-season	Pre-season
<b>ESTIMATED %TRTC TO DATE: MEAN. RUN TIMING (AREA 3D)</b>	<b>43%</b>	<b>81%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>
Late run	27%	10%	0%	0%	0%
Early run	59%	95%	0%	0%	9%
<b>IN-SEASON NISGA'A ENTITLEMENT TARGET</b>	<b>68,000</b>	<b>4,600</b>	<b>Pre-season</b>	<b>Pre-season</b>	<b>Pre-season</b>
Lower (95% CI)	43,000	4,000	Pre-season	Pre-season	Pre-season
Upper (95% ci.)	92,000	5,300	Pre-season	Pre-season	Pre-season

Nisga’a salmon harvest entitlement ranges for 2023 to date are based on TRTC estimates:

- Nass Sockeye is between 43,000 and 92,000 with point estimate 68,000. Current harvest estimate is 28,354 (with no release mortalities);
- Nass Chinook is between 4,000 and 5,300 with point estimate 4,600. Current harvest is 3,496 (plus 3 release mortalities);
- Nass Coho is between 9,500 and 12,000 with point estimate 11,000. Current harvest is 143 (with 0 release mortality);
- Nass Pink is between 1,000 and 57,000 with point estimate 16,000. Current harvest is 822 (plus 1 release mortality);
- Nass Chum is between 4,000 and 10,000 with point estimate 5,900. Current harvest is 53 (plus 2 release mortalities); and
- Nass steelhead, upper limit is 1,000 summer-run and no limit for winter/spring run, with current harvest of 34 (plus 4 release mortalities).

The total harvest summary of Nass salmon and steelhead to date in all Nisga'a fisheries for 2023 is as follows:

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
<b>INDIVIDUAL SALE (IS) FISHERY TOTAL</b>	<b>CLOSED</b>	<b>CLOSED</b>	<b>CLOSED</b>	<b>CLOSED</b>	<b>CLOSED</b>	<b>CLOSED</b>
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
<b>DOMESTIC (FSC) GILLNET FISHERY - WK END: JUL 15 (PROJECTED)</b>	<b>28,354</b>	<b>3,499</b>	<b>143</b>	<b>824</b>	<b>56</b>	<b>38</b>
<b>SUB TOTAL (NLG TREATY FISHERIES)</b>	<b>28,354</b>	<b>3,499</b>	<b>143</b>	<b>824</b>	<b>56</b>	<b>38</b>
NLG SOCK DEMONSTRATION FISHERY HARVEST - DFO INVENTORY	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
<b>GRAND TOTAL</b>	<b>28,354</b>	<b>3,499</b>	<b>143</b>	<b>824</b>	<b>56</b>	<b>38</b>

The next Nass River general stock assessment update from the Nisga'a Fisheries and Wildlife Department is planned for: **Friday, 21 July 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:

- NFWD Dropbox:  
<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/stock-assessments>

**Photo Documentation of Nass fishwheels and fish caught between July 7 and July 14:**  
*Photos courtesy of NFWD's senior crew leader, Ben Guno Jr, and other NFWD staff.*



Photo 1. Nass fishwheel FW 1 moved to low water fishing site (< 1.8 m) at Gitwinksihlkw on 13 July 2023.



Photo 2. FW1 placed in low water fishing site at Gitwinksihlkw, 13 July 2023.



Photo 3. FW1 placed in low water fishing site at Gitwinksihlkw, 13 July 2023.



Photo 4. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 5 July 2023.



Photo 5. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 9 July 2023.



Photo 6. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 10 July 2023.



Photo 7. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 10 July 2023.



Photo 8. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 11 July 2023.



Photo 9. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 11 July 2023.



Photo 10. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 12 July 2023.



Photo 11. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 12 July 2023.



Photo 12. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 12 July 2023.



Photo 13. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 12 July 2023.



Photo 14. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 12 July 2023.



Photo 15. Chinook Salmon caught, operculum and PIT tagged at Grease Harbour fishwheels, 12 July 2023.



Photo 16. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 12 July 2023.



Photo 17. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 18. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 19. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 20. Chinook Salmon caught, operculum and PIT tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 21. Chinook Salmon recapture at the Gitwinksihlkw fishwheels, 14 July 2023. Fish was anchor tagged on 3 June in marine Area 1 from Langara Sport tagging program. Fish was operculum and PIT tagged and released from fishwheels.



Photo 22. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 9 July 2023.



Photo 23. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 10 July 2023.



Photo 24. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 12 July 2023.



Photo 25 Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 26. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 27. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 28. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 29. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 13 July 2023.



Photo 30. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels, 14 July 2023.



Photo 31. Pink Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 11 July (top) and July 14 (bottom), 2023.



Photo 32. Pink Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 12 July 2023.



Photo 33. Pink Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 12 July 2023.



Photo 34. Coho Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 14 July 2023.



Photo 35. Coho Salmon caught and anchor tagged at the Gitwinksihlkw fishwheels, 14 July 2023.



Photo 36. Steelhead caught and fin marked at Gitwinksihlkw fishwheels, 14 July 2023.



Photo 37. Dolly Varden caught and anchor tagged at Gitwinksihlkw fishwheels, July 12, 2023.



Photo 38. Dolly Varden caught and anchor tagged at Gitwinksihlkw fishwheels, July 13, 2023.



Photo 39. Sucker caught at Grease Harbour fishwheels, 10 July 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 Alyanah BC / Canada V0J 1A0  
 NISGAANATION.CA

2023 NASS STOCK ASSESSMENT UPDATE

FISHWHEEL OPERATIONAL DATA TO:	13-Jul-23
WATER LEVEL FOR DATE AT GITWINKSIHLKW (m)	1.8
HISTORICAL LEVEL FOR DATE - MEAN 94-22 (m)	2.4
WATER TEMPERATURE FOR DATE AT GITWINKSIHLKW (m)	11.0
HISTORICAL WATER TEMP FOR DATE - MEAN 94-22 (m)	9.9

FISHWHEEL CATCH SUMMARIES	SOCK	CHIN	COHO	STEEL	PINK-ODD	CHUM	LAMP
FISHWHEEL TOTAL CATCH OF ADULTS	28,344	2,113	1	17	689	0	418
HISTORICAL AVG CUM CATCH (00-22) TO DATE	14,200	3,200	1	10	90	2	180
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	377	8	0	0	91	0	0
AVERAGE DAILY CATCH (5 D) OF ADULTS - GH	983	33	0	0	31	0	26
FISHWHEEL TOTAL TAGGED (OR ADIPOSE FIN MARKED)	5,089	1,885	0	2	81	0	246
FISHWHEEL TOTAL JACKS	2,258	2,419	0	NA	NA	NA	NA
HISTORICAL MEAN JACKS (00-22) TO DATE	658	447	1	NA	NA	NA	NA

IN-SEASON RUN SIZE SUMMARIES	SOCK	CHIN	COHO	STEEL	13-Jul-23
IN-SEASON RUN SIZE ESTIMATE TO DATE	186,572	12,741	23	-	
HISTORICAL MEAN RUN SIZE TO GW FOR DATE (94-22)	116,000	16,000	12	70	
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	13-Jul-23
1. RUN TIMING METHOD (94-22) - Mean Run timing	471,000	15,000	Too Early	Too Early	
Lower (-2 S.D.)	313,000	12,000	Too Early	Too Early	
Upper (+2 S.D.)	943,000	19,000	Too Early	Too Early	In-season/Final
2. IN-SEASON TO FINAL (regression):	361,000	15,100	Too Early	Too Early	r <sup>2</sup> (CH) = 0.97
95% CI - lower	231,000	13,000	Too Early	Too Early	r <sup>2</sup> (SO) = 0.54
95% CI - upper	491,000	17,000	Too Early	Too Early	r <sup>2</sup> (CO) =
GW RUN SIZE TARGET (DEPENDING ON HARVESTS ABOVE GW)	250,000	15,000	65,000	4,200	r <sup>2</sup> (ST) =
Mean Run Timing % Return Estimate to GW fishwheels (94-22)	40%	87%	0%	0%	
Late run	24%	53%	0%	0%	
Early run	58%	96%	0%	3%	

IN-SEASON NET ESCAPEMENT ESTIMATES	SOCK	CHIN	COHO	STEEL	13-Jul-23
HARVEST ESTIMATES ABOVE GW TO DATE	4,289	802	4	2	
NET ESCAPEMENT (ABOVE GW):	182,283	11,939	19	-	
NET ESCAPEMENT TARGET (UPPER RIVER ONLY)	200,000	13,000	60,000	4,000	

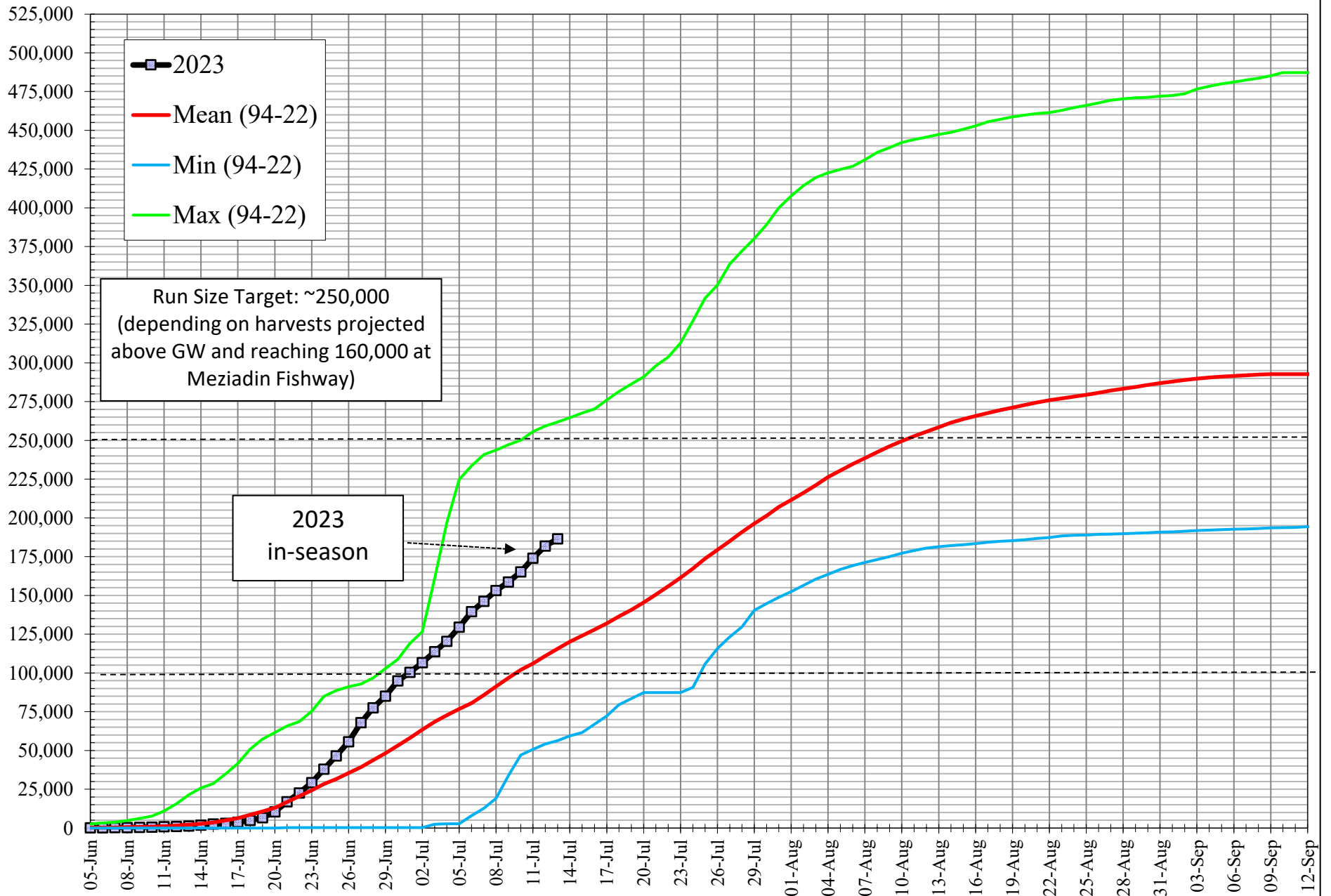
NISGA'A TOTAL HARVEST SUMMARY	SOCK	CHIN	COHO	PINK-ODD	CHUM	STEEL
MARINE SALE FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
IN-RIVER SALE FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
INDIVIDUAL SALE (IS) FISHERY TOTAL	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
NLG COMMUNAL SELECTIVE 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: JUL 15 (PROJECTED)	28,354	3,499	143	824	56	38
SUB TOTAL (NLG TREATY FISHERIES)	28,354	3,499	143	824	56	38
NLG SOCK DEMONSTRATION FISHERY HARVEST - DFO INVENTORY	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
GRAND TOTAL	28,354	3,499	143	824	56	38

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

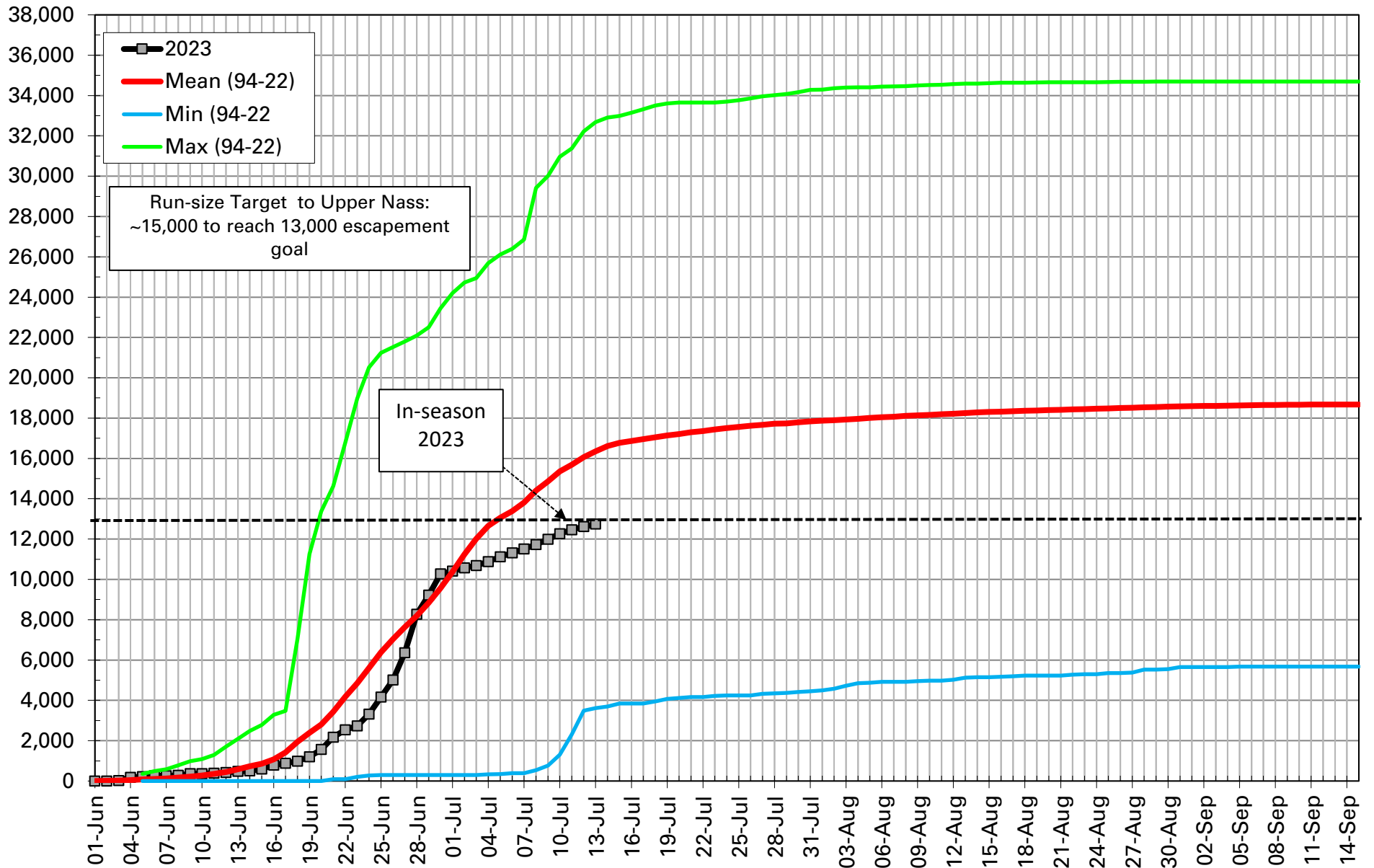
IN-SEASON TRTC & ENTITLEMENT ESTIMATES - PRELIMINARY	SOCK	CHIN	COHO	PINK-ODD	CHUM
PROJ. TRTC BASED ON INSEASON TO FINAL REGRESSION TO AREA 3D	423,000	22,000	Pre-season	Pre-season	Pre-season
Lower (95% CI)	313,000	19,000	Pre-season	Pre-season	Pre-season
Upper (95% ci.)	533,000	25,000	Pre-season	Pre-season	Pre-season
ESTIMATED %TRTC TO DATE: MEAN. RUN TIMING (AREA 3D)	43%	81%	0%	0%	2%
Late run	27%	10%	0%	0%	0%
Early run	59%	95%	0%	0%	9%
IN-SEASON NISGA'A ENTITLEMENT TARGET	68,000	4,600	Pre-season	Pre-season	Pre-season
Lower (95% CI)	43,000	4,000	Pre-season	Pre-season	Pre-season
Upper (95% ci.)	92,000	5,300	Pre-season	Pre-season	Pre-season



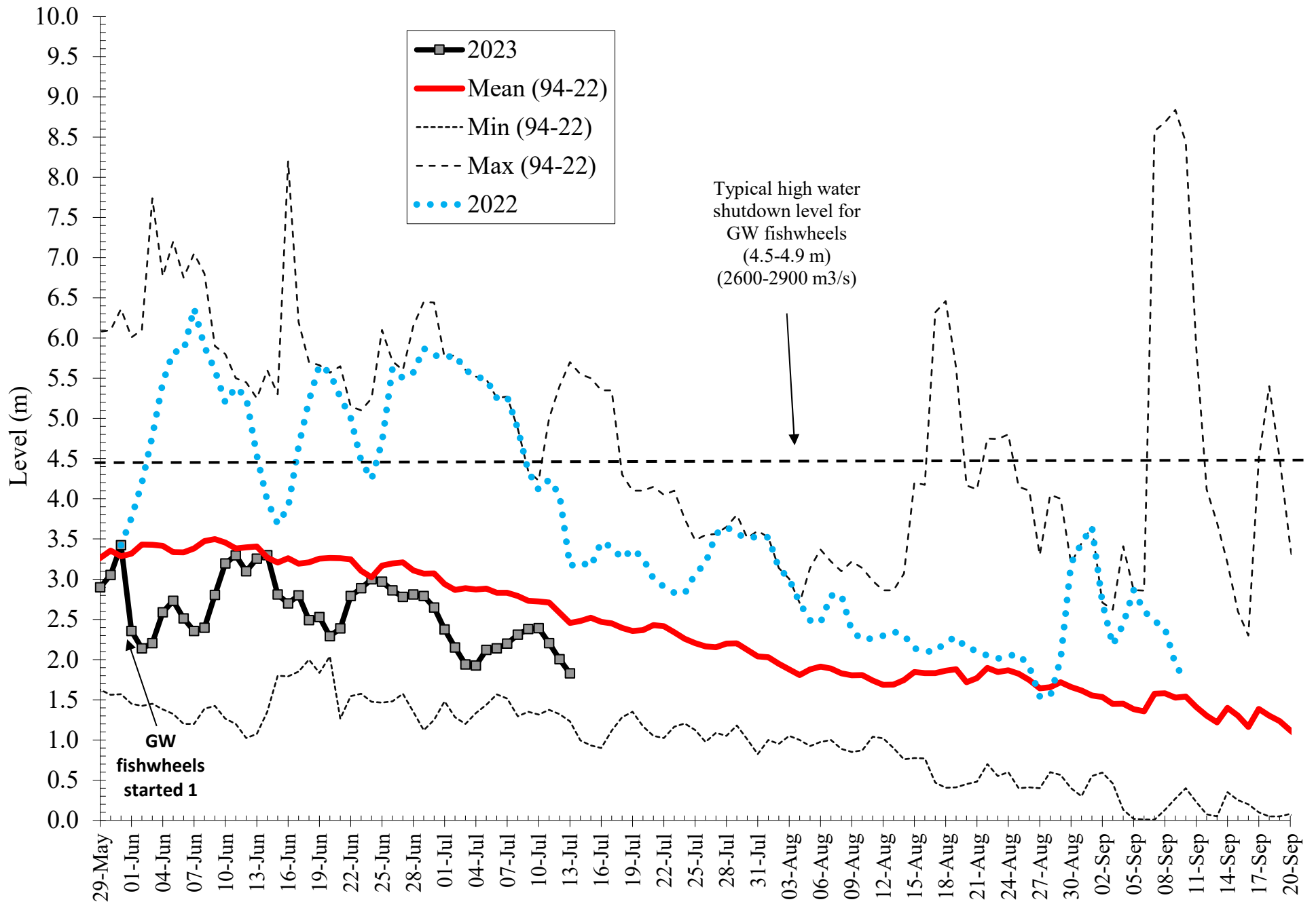
# Nass Sockeye Cum. Run Size to Gitwinksilkw Fishwheels 2023 versus 94-22 Mean, Min, Max returns (before upriver harvests)

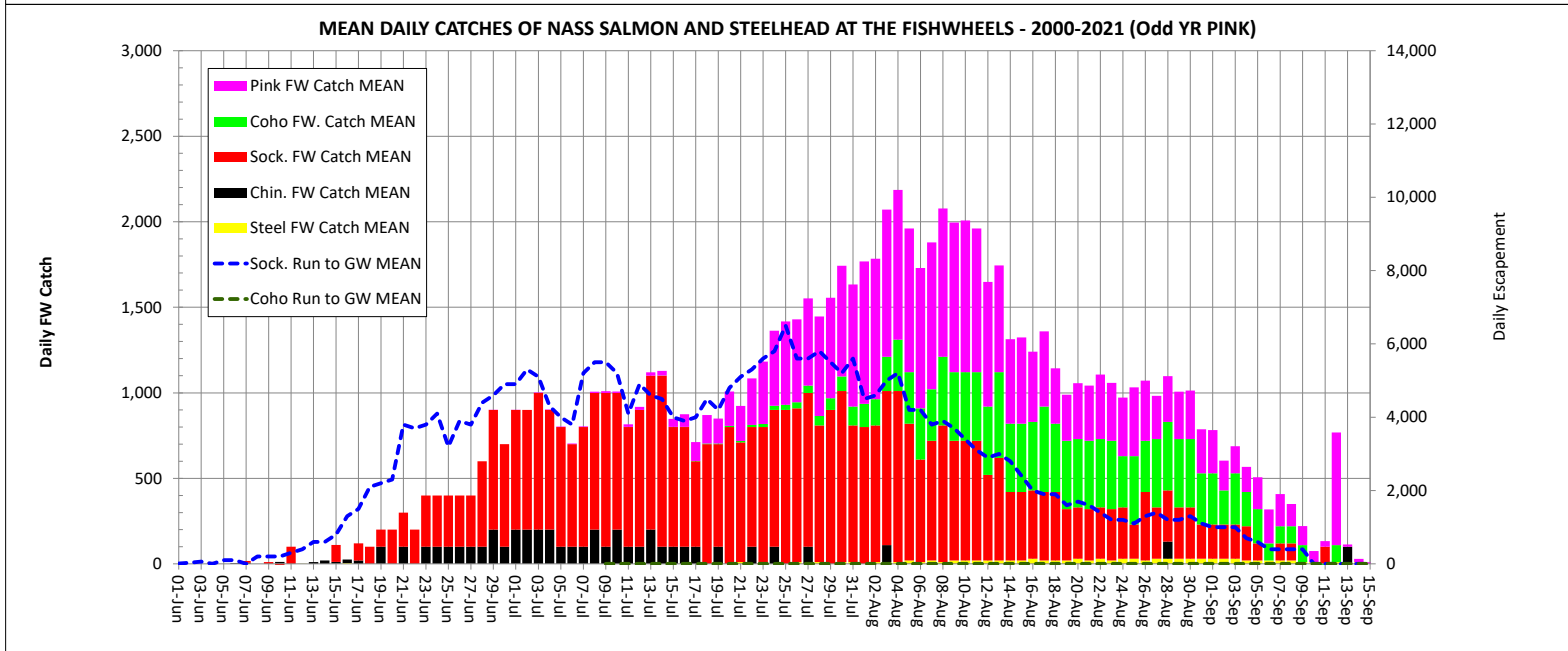
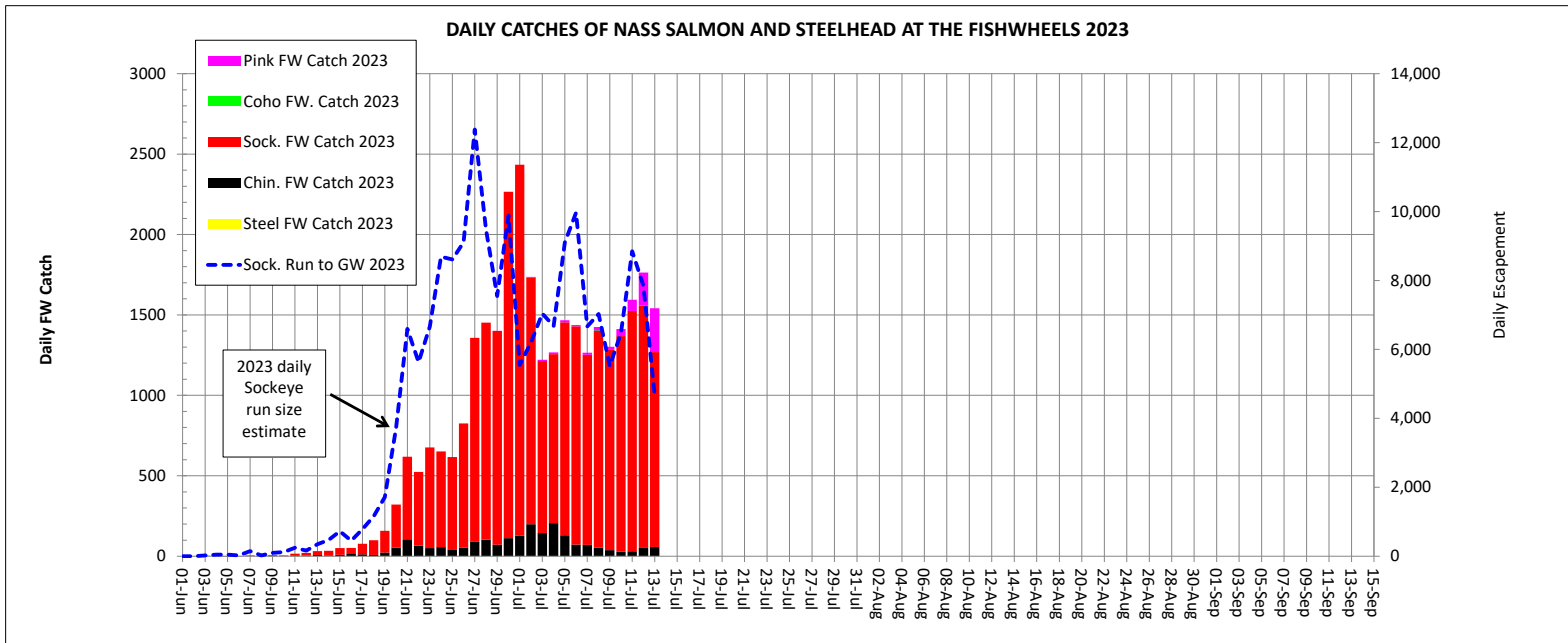


## Cumulative Nass Adult Chinook Run Size to Gitwinksihlkw 2023 vs 94-22 Mean, Minimum and Maximum returns (before up river harvests)

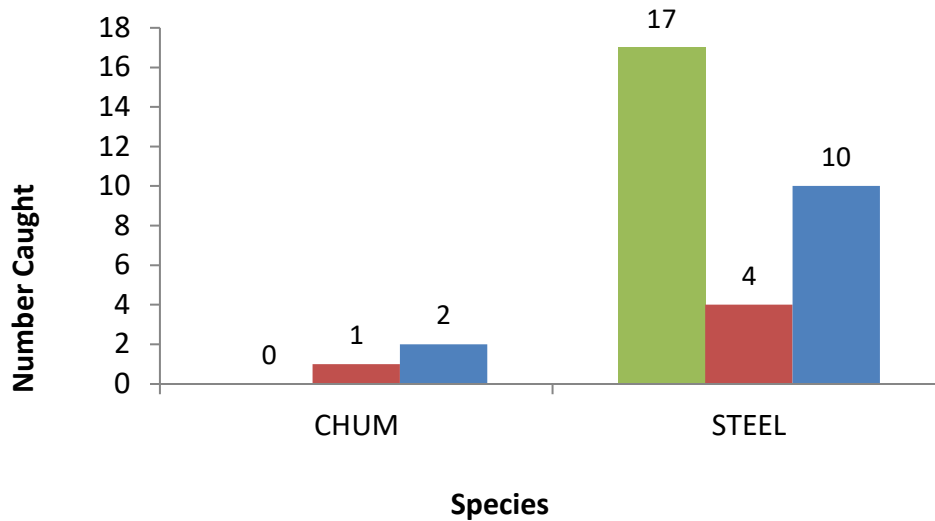
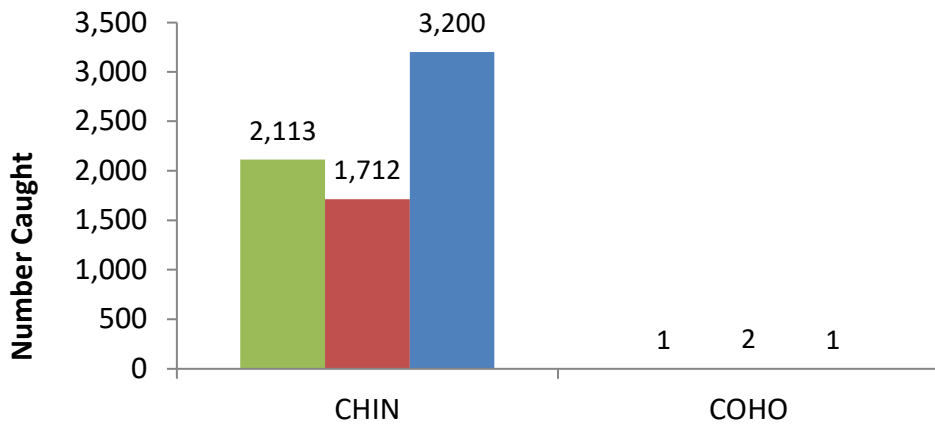
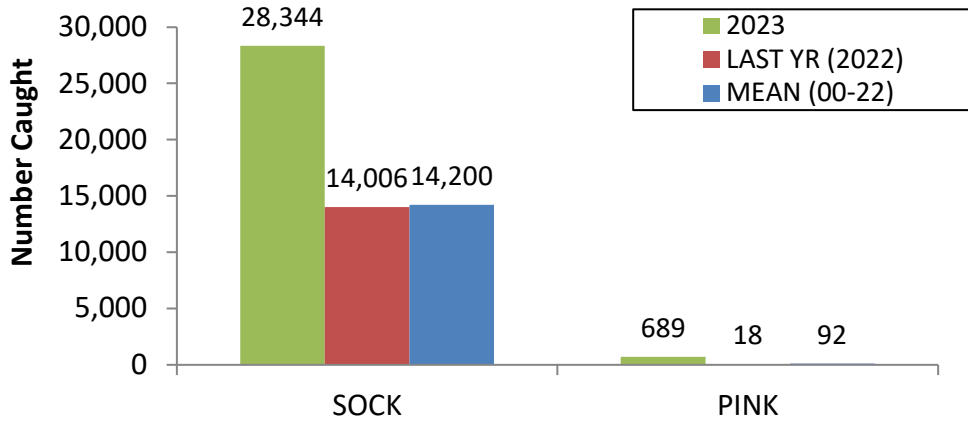


# Daily Water Level at Gitwinksihlkw Fishwheels 2023

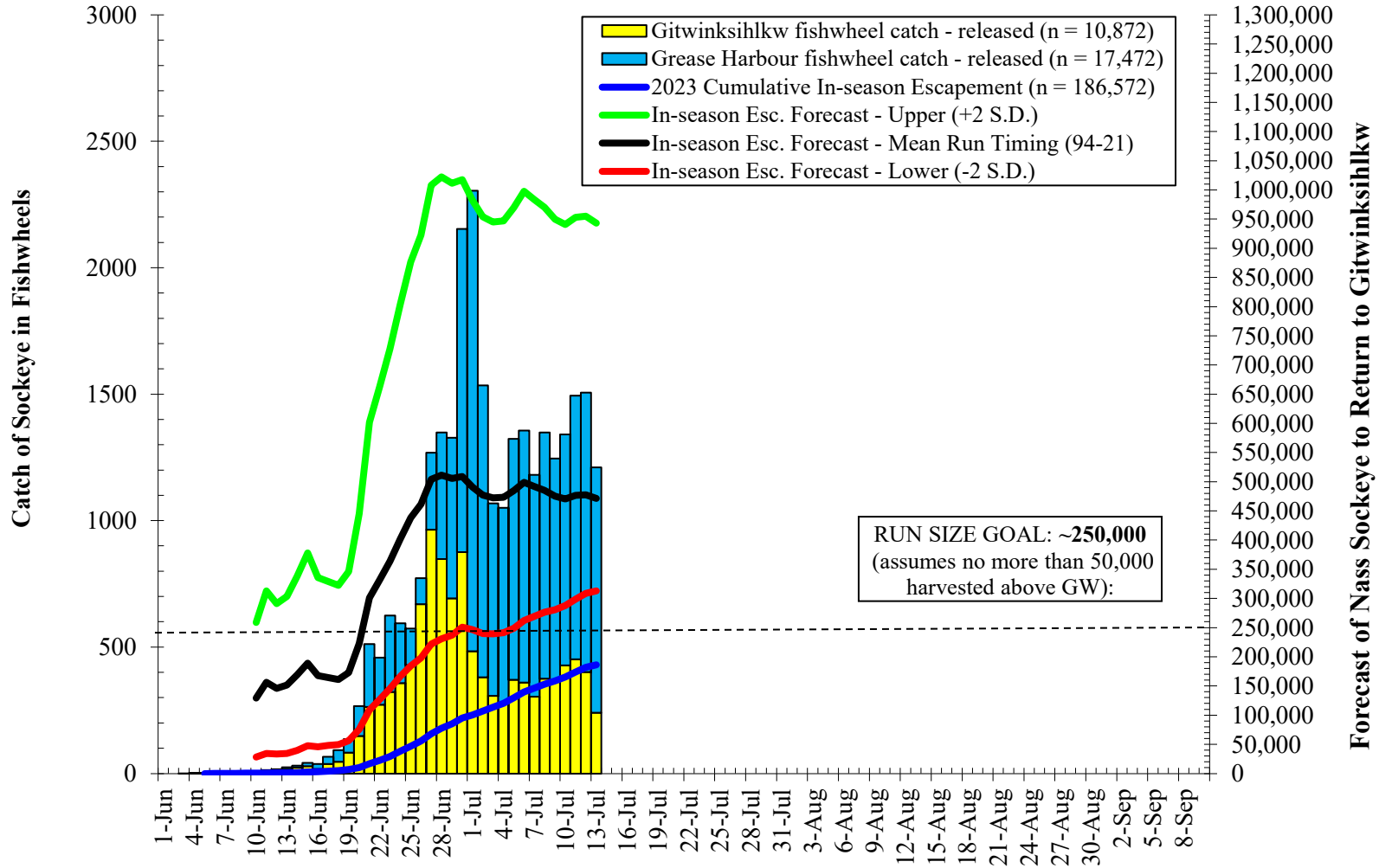




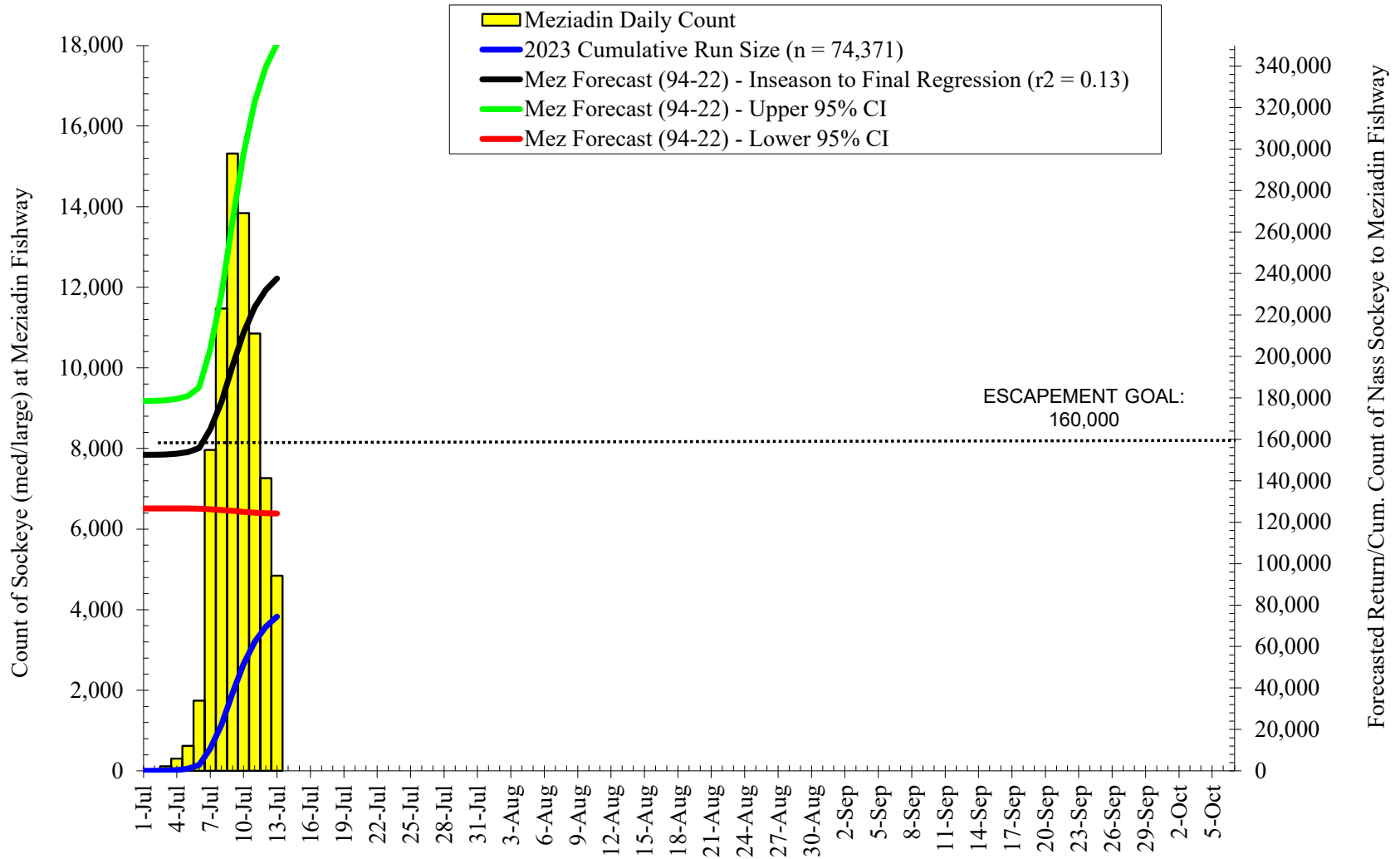
### Nass Fishwheel Catches 2023 - All (June 1 - July 13)



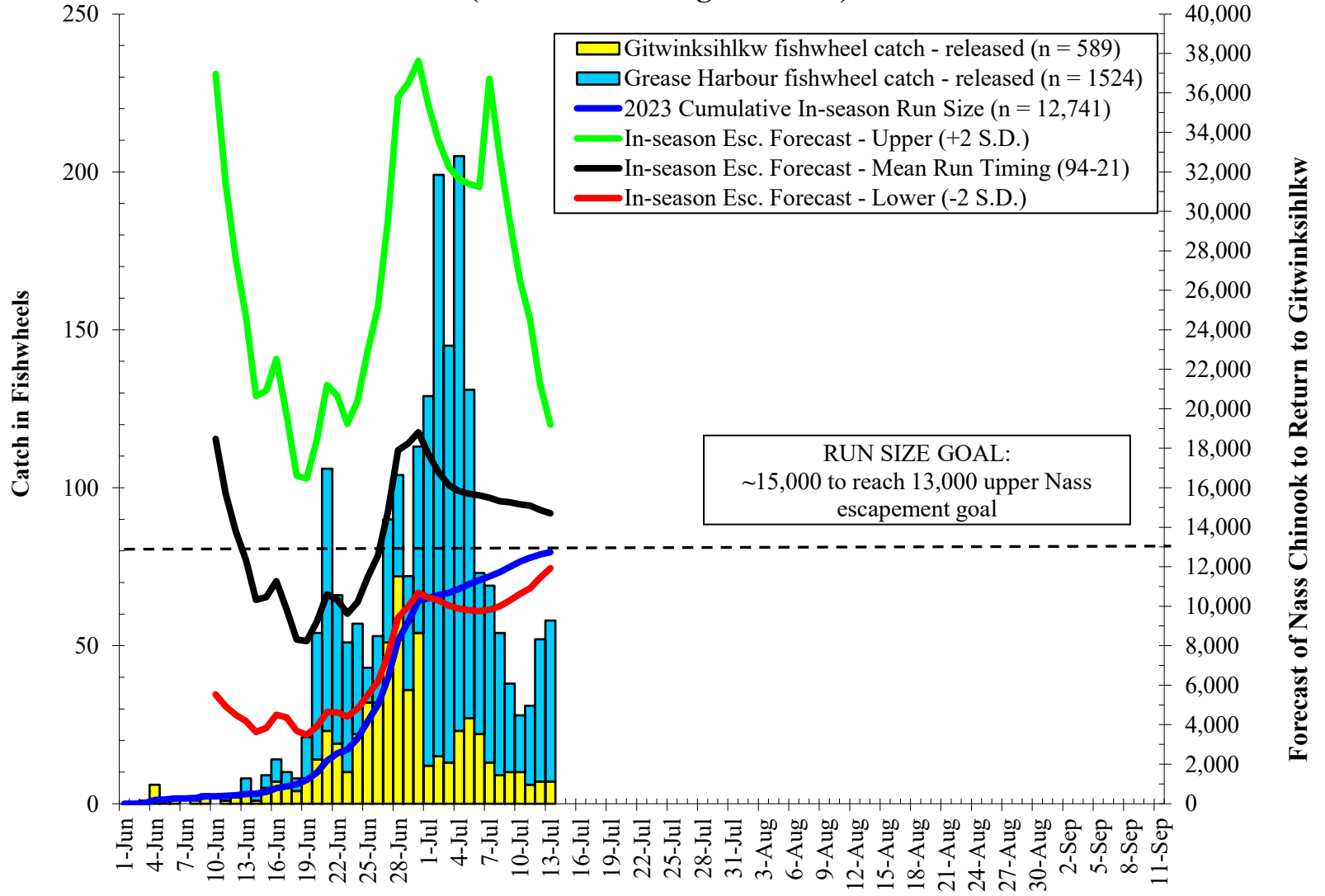
### Nass Sockeye ( $\geq 45$ cm NFL) Run Forecasts to Gitwinksihlkw Fishwheels 2023 (Mean Run timing - 1994-22)



## Meziadin Fishway Sockeye Counts & In-season Forecast Data 2023

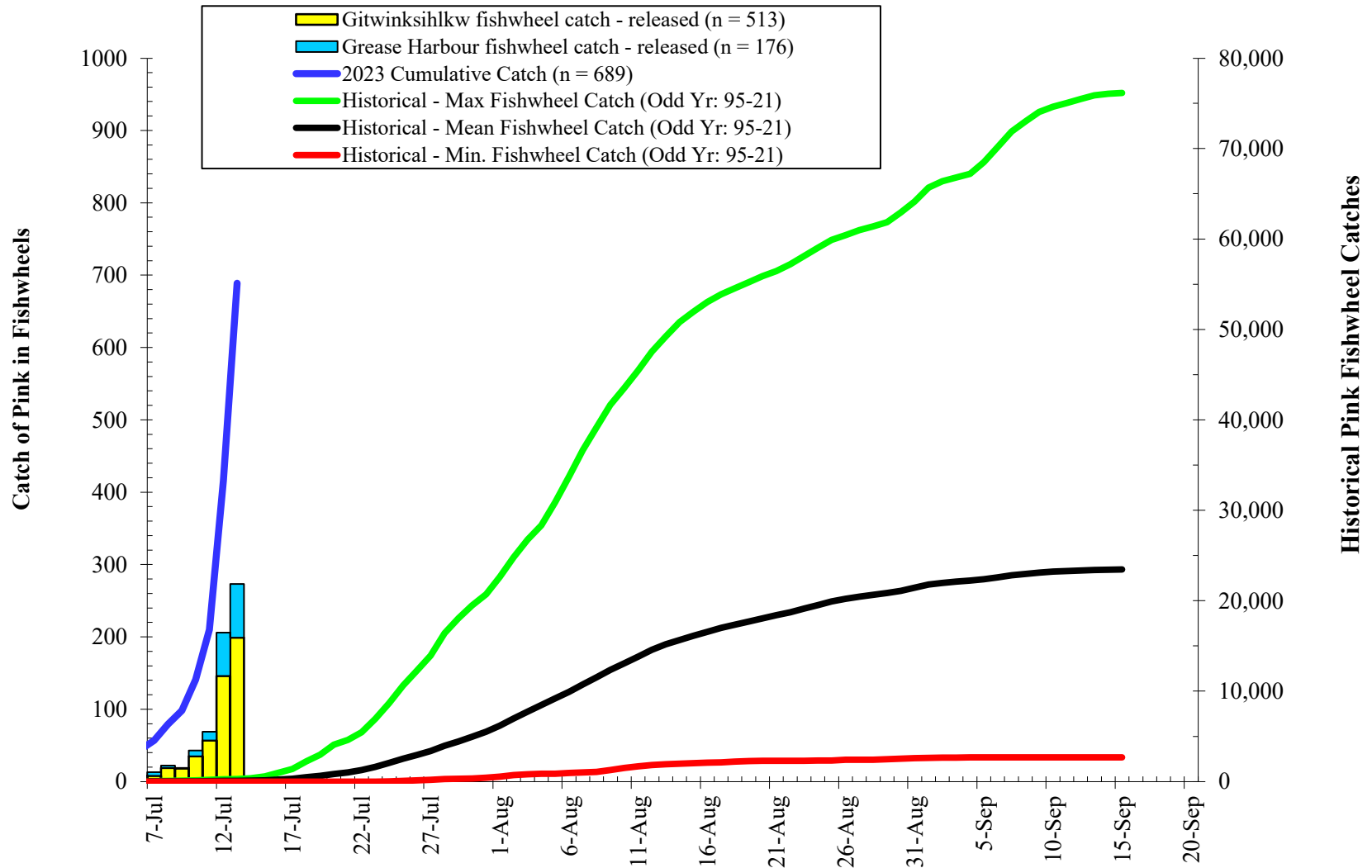


### Nass Chinook ( $\geq 50$ cm NFL) Forecasts to Gitwinksihlkw Fishwheels 2023 (Mean Run timing - 1994-22)





### Nass Pink Salmon Returns to Gitwinksihlkw and Grease Harbour Fishwheels 2023







2023-07-14

Table 1. In-season and post-season estimates of aggregate escapement for Nass adult sockeye salmon to Gitwinksihlkw test fishery fishwheels to date, 1994-2023.

Year	Date	In-season	Actual	Raw Error	Raw Error%	Abs Error	Abs Error%	Abs Acc%
1994	13-Jul	91,240	117,017	-25,777	-22.0%	25,777	22%	78%
1995	13-Jul	116,537	158,002	-41,465	-26.2%	41,465	26%	74%
1996	13-Jul	131,160	117,600	13,560	11.5%	13,560	12%	88%
1997	13-Jul	77,332	83,919	-6,587	-7.8%	6,587	8%	92%
1998	13-Jul	64,393	99,060	-34,667	-35.0%	34,667	35%	65%
1999	13-Jul	121,499	127,566	-6,067	-4.8%	6,067	5%	95%
2000	13-Jul	169,917	142,248	27,669	19.5%	27,669	19%	81%
2001	13-Jul	76,086	56,301	19,785	35.1%	19,785	35%	65%
2002	13-Jul	206,864	261,891	-55,027	-21.0%	55,027	21%	79%
2003	13-Jul	126,043	119,333	6,710	5.6%	6,710	6%	94%
2004	13-Jul	137,390	115,590	21,800	18.9%	21,800	19%	81%
2005	13-Jul	92,058	95,442	-3,383	-3.5%	3,383	4%	96%
2006	13-Jul	95,830	99,692	-3,862	-3.9%	3,862	4%	96%
2007	13-Jul	68,623	86,278	-17,655	-20.5%	17,655	20%	80%
2008	13-Jul	111,325	122,817	-11,492	-9.4%	11,492	9%	91%
2009	13-Jul	128,539	134,647	-6,108	-4.5%	6,108	5%	95%
2010	13-Jul	91,841	101,199	-9,358	-9.2%	9,358	9%	91%
2011	13-Jul	109,195	85,035	24,161	28.4%	24,161	28%	72%
2012	13-Jul	108,300	113,917	-5,617	-4.9%	5,617	5%	95%
2013	13-Jul	147,036	132,769	14,267	10.7%	14,267	11%	89%
2014	13-Jul	97,386	123,616	-26,230	-21.2%	26,230	21%	79%
2015	13-Jul	149,585	200,631	-51,046	-25.4%	51,046	25%	75%
2016	13-Jul	67,898	72,877	-4,979	-6.8%	4,979	7%	93%
2017	13-Jul	68,649	68,995	-346	-0.5%	346	1%	99%
2018	13-Jul	85,672	85,643	29	0.0%	29	0%	100%
2019	13-Jul	126,939	100,551	26,387	26.2%	26,387	26%	74%
2020	13-Jul	63,556	77,190	-13,634	-17.7%	13,634	18%	82%
2021	13-Jul	98,658	110,992	-12,334	-11.1%	12,334	11%	89%
2022	13-Jul	131,570	141,750	-10,180	-7.2%	10,180	7%	93%
2023	13-Jul	186,572						
MAPE <sup>1</sup>		109,000	115,000	-6,000	-3%		14%	
Min (MAPE)		63,556	56,301	29	-35%		0%	65%
Max (MAPE)		207,000	262,000	55,000	35%		35%	100%
MAA <sup>2</sup>								<b>86%</b>

<sup>1</sup> MAPE = Mean Absolute Percent Error

<sup>2</sup> MAA = Mean Absolute Accuracy

2023-07-14

Table 2. In-season and post-season estimates of aggregate escapement for Nass adult Chinook salmon to Gitwinksihlkw test fishery fishwheels to date, 1994-2023.

Year	Date	In-season	Actual	Raw Error	Raw Error%	Abs Error	Abs Error%	Abs Acc%
1994	13-Jul	27,123	23,132	3,991	17.3%	3,991	17%	83%
1995	13-Jul	13,508	9,849	3,659	37.1%	3,659	37%	63%
1996	13-Jul	21,147	22,268	-1,121	-5.0%	1,121	5%	95%
1997	13-Jul	39,882	19,748	20,133	101.9%	20,133	100%	0%
1998	13-Jul	38,271	24,227	14,044	58.0%	14,044	58%	42%
1999	13-Jul	12,406	11,636	770	6.6%	770	7%	93%
2000	13-Jul	20,712	18,762	1,949	10.4%	1,949	10%	90%
2001	13-Jul	45,064	32,681	12,383	37.9%	12,383	38%	62%
2002	13-Jul	27,776	15,370	12,406	80.7%	12,406	81%	19%
2003	13-Jul	26,043	26,732	-689	-2.6%	689	3%	97%
2004	13-Jul	12,282	15,342	-3,060	-19.9%	3,060	20%	80%
2005	13-Jul	14,145	14,884	-739	-5.0%	739	5%	95%
2006	13-Jul	23,996	26,064	-2,069	-7.9%	2,069	8%	92%
2007	13-Jul	31,044	23,172	7,872	34.0%	7,872	34%	66%
2008	13-Jul	11,765	19,351	-7,587	-39.2%	7,587	39%	61%
2009	13-Jul	22,953	27,066	-4,113	-15.2%	4,113	15%	85%
2010	13-Jul	8,041	18,404	-10,364	-56.3%	10,364	56%	44%
2011	13-Jul	8,556	9,768	-1,212	-12.4%	1,212	12%	88%
2012	13-Jul	10,476	7,805	2,671	34.2%	2,671	34%	66%
2013	13-Jul	6,814	9,537	-2,723	-28.6%	2,723	29%	71%
2014	13-Jul	7,907	11,876	-3,969	-33.4%	3,969	33%	67%
2015	13-Jul	32,275	20,286	11,989	59.1%	11,989	59%	41%
2016	13-Jul	12,030	9,414	2,616	27.8%	2,616	28%	72%
2017	13-Jul	3,106	3,617	-512	-14.1%	512	14%	86%
2018	13-Jul	8,398	12,541	-4,143	-33.0%	4,143	33%	67%
2019	13-Jul	11,004	11,456	-451	-3.9%	451	4%	96%
2020	13-Jul	10,827	11,172	-345	-3.1%	345	3%	97%
2021	13-Jul	7,427	6,933	494	7.1%	494	7%	93%
2022	13-Jul	9,597	11,161	-1,564	-14.0%	1,564	14%	86%
2023	13-Jul	12,741						
MAPE <sup>1</sup>		18,000	17,000	2,000	7%		27.7%	
Min (MAPE)		3,106	3,617	345	-56%		2.6%	0%
Max (MAPE)		45,000	33,000	20,000	102%		100.0%	97%
MAA (1994-2022) <sup>2</sup>								72%
MAA (2000-2022) <sup>2</sup>								75%
MAA (2007-2022) <sup>2</sup>								74%

<sup>1</sup> MAPE = Mean Absolute Percent Error

<sup>2</sup> MAA = Mean Absolute Accuracy

2023 Nass Fishwheel Catches

	fw2	FW-No							
	GW		GW Total	GH				GH Total	Grand Total
Data	FW1	FW2		FW3	FW4	FW5	FW6		
<b>Chin-adult catch</b>	<b>126</b>	<b>463</b>	<b>589</b>	<b>363</b>	<b>0</b>	<b>724</b>	<b>437</b>	<b>1,524</b>	<b>2,113</b>
Chin-tagged	114	402	516	329	0	651	389	1,369	1,885
Chin-Pit tags	114	400	514	314	0	648	386	1,348	1,862
Chin-recaps	13	22	35	58	0	129	116	303	338
Chin-Jacks	200	380	580	428	0	699	712	1,839	2,419
<b>Sockeye-adult catch</b>	<b>3,797</b>	<b>7,075</b>	<b>10,872</b>	<b>4,482</b>	<b>0</b>	<b>8,740</b>	<b>4,250</b>	<b>17,472</b>	<b>28,344</b>
Sockeye-tagged	1,758	3,331	5,089	0	0	0	0	0	5,089
Sockeye-recaps	169	142	311	85	0	189	84	358	669
Sum of sk_jack	362	888	1,250	178	0	507	323	1,008	2,258
<b>Coho-adult catch</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
Coho-tagged	0	0	0	0	0	0	0	0	0
Coho-recaps	0	0	0	0	0	0	0	0	0
Coho-jack	0	0	0	0	0	0	0	0	0
<b>Steel-adult catch</b>	<b>3</b>	<b>10</b>	<b>13</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>17</b>
Steel-Adipose marked	0	0	0	1	0	1	0	2	2
Steel-unmarked	3	10	13	1	0	0	1	2	15
Steel-recap-total	0	0	0	0	0	0	0	0	0
<b>Pacific Lamprey-catch</b>	<b>1</b>	<b>22</b>	<b>23</b>	<b>9</b>	<b>0</b>	<b>204</b>	<b>182</b>	<b>395</b>	<b>418</b>
Lamprey-tagged	1	17	18	3	0	106	119	228	246
Lamprey-released	0	5	5	6	0	98	63	167	172
Lamprey-recaps	0	0	0	0	0	3	6	9	9
River Lamprey	0	0	0	0	0	0	0	0	0
<b>Pink-adult catch</b>	<b>323</b>	<b>190</b>	<b>513</b>	<b>61</b>	<b>0</b>	<b>98</b>	<b>17</b>	<b>176</b>	<b>689</b>
Sum of pink_tagged	36	45	81	0	0	0	0	0	81
Sum of pink_recap	8	2	10	1	0	1	0	2	12
<b>Chum-adult-catch</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Chum-tagged	0	0	0	0	0	0	0	0	0
Chum-punched	0	0	0	0	0	0	0	0	0
Chum-recaps	0	0	0	0	0	0	0	0	0
<b>Dolly Varden</b>	<b>7</b>	<b>38</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>47</b>
Dolly-tagged	2	24	26	0	0	0	0	0	26
<b>Rainbow Trout</b>	<b>40</b>	<b>5</b>	<b>45</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>17</b>	<b>62</b>
<b>Peamouth Chub</b>	<b>6</b>	<b>6</b>	<b>12</b>	<b>9</b>	<b>0</b>	<b>14</b>	<b>5</b>	<b>28</b>	<b>40</b>
<b>Cutthroat Trout</b>	<b>19</b>	<b>17</b>	<b>36</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>38</b>
<b>Mountain Whitefish</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>10</b>	<b>8</b>	<b>22</b>	<b>22</b>
<b>Pikeminnow</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>6</b>
<b>Sculpin</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>
<b>Redside Shiners</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>
<b>Suckers</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>Seals</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>