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## **2018 NASS RIVER SALMON STOCK ASSESSMENT UPDATE – MONDAY, 13 AUGUST**

The following is the ninth general public update for 2018 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 2018**

1. Fishwheel Assessment data: 1 June to 12 August. Data summary below.
2. Meziadin Fishway data: Operations began on June 30.
  - Water temperature: 18.5°C (98-17 mean=16.3°C).
  - Counts to date: 21,423 Sockeye (20,493 large (226 tagged) and 930 small) and 7 Chinook (6 large and 1 small). The average (94-17) large counts for date: 94,000 Sockeye and 221 Chinook.
  - Projection to fishway based on sockeye counts and regression of in-season to final counts to date from 1994 to 2017 ( $r^2=0.83$ ): 93,000 large Sockeye (95% CI: 70,000, 116,000).
  - Although the Mez sockeye return has been very low to date, NFWD radio telemetry data are showing large numbers of radio tagged sockeye are in the Nass mainstem below the Meziadin confluence. The Nass fishwheels have spaghetti-tagged over 4,700 sockeye (including 559 radio tagged fish); but only 226 spaghetti (and 22 radio tags) have been counted at Mez to date. The Mez water temps were 22.0°C from July 31 to Aug 3 and the Nass mainstem has been 10.0°C. Fish may be holding in mainstem until water temperatures drop. Aging results up to 12 July also found that 60% of the sampled Nass sockeye return were sea/river ecotype fish (e.g., Gingit stock) that would not be destined to Meziadin River.
3. Kwinageese Weir data: Video-weir operations began on 6 July.
  - Water temperature is 15.0°C (98-17 mean=15.6°C).
  - Counts to date: 78 large Chinook (2 tags), 1 small Chinook, 7 Sockeye (0 tags), and 41 Bull Trout. The average (09-17) large counts for date: 440 Chinook, 1,450 Sockeye, and 14 Bull Trout.
  - The 2018 Kwin sockeye return is from extreme poor returns in 2013 (only 397 spawners) and 2014 (only 498 spawners).

#### **GITWINKSIHLKW (GW) FISHWHEELS (NASS TEST FISHERY –STARTED IN 1994 [25th year]):**

The Nass River test fishery fishwheels began operation on 1 June 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. Fishwheels 1 and 2 are currently operating at 0.5 m lower than average water levels (1.2 m vs. 1.7 m) based on 1994–2017 operations and were at record low water levels from the 1–17 June period (up to 2.4 m lower than historical averages). A chart of the water levels at the test fishery

follows the text summary that compares current levels to historical levels. The Nass River water temperature is currently 0.4°C below average (9.7°C vs. 10.1°C) based on the 1994–2017 operations.

**GREASE HARBOUR (GH) FISHWHEELS:**

Start-up dates of the GH fishwheels were on 5 June (FW5), 6 June (FW6), 7 June (FW3), and 15 June (FW4) for operating four fishwheels at Grease Harbour (upstream of Ts'im Anwiihlist). The GH fishwheels are used for in-season mark-recapture tag recoveries, 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. No harvesting from the fishwheels has been directed to date.

Of the 20,412 Sockeye caught at all fishwheels to date, all have been released. The Nass fishwheel catches are currently below average for Sockeye, Chinook, Coho, Pink, and Chum, and above average for steelhead and Pacific Lamprey. Total fishwheel catches of salmon, steelhead, and Pacific Lamprey to date are shown below including tagging results and jacks caught.

<b>FISHWHEEL CATCH SUMMARIES</b>	<b>SOCK</b>	<b>CHIN</b>	<b>COHO</b>	<b>STEEL</b>	<b>PINK-EVE</b>	<b>CHUM</b>	<b>LAMP</b>
<b>FISHWHEEL TOTAL CATCH OF ADULTS</b>	<b>20,412</b>	<b>827</b>	<b>1,595</b>	<b>355</b>	<b>4,216</b>	<b>20</b>	<b>1,088</b>
<i>HISTORICAL AVG CUM CATCH (00-17) TO DATE</i>	<i>37,000</i>	<i>4,600</i>	<i>4,400</i>	<i>240</i>	<i>7,450</i>	<i>40</i>	<i>430</i>
<i>HISTORICAL AVG CUM TOTAL CATCH (00-17)</i>	<i>43,000</i>	<i>5,000</i>	<i>14,000</i>	<i>1,000</i>	<i>13,000</i>	<i>130</i>	<i>600</i>
AVERAGE DAILY CATCH (5 D) OF ADULTS - GW	166	1	50	12	133	0	7
AVERAGE DAILY CATCH (5 D) OF ADULTS - GH	368	0	93	7	95	0	7
FISHWHEEL TOTAL TAGGED (OR ADIPOSE FIN MARKED)	4,764	767	546	310	298	19	842
FISHWHEEL TOTAL JACKS - GW ONLY	1,833	481	99	NA	NA	NA	NA
<i>HISTORICAL MEAN JACKS AT GW (94-17) TO DATE</i>	<i>1,102</i>	<i>203</i>	<i>64</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

Other adult species and juvenile salmon catches at the fishwheels to date include: 96 Whitefish, 84 Rainbow Trout, 59 Dolly Varden, 44 Peamouth Chub, 28 Pikeminnow, 26 Redside Shiner, 17 Sculpin, 5 Suckers, 45 salmon smolts (3 Coho, 5 Chinook, 37 Sockeye), 4 frogs, and 3 seals.

**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 and are based on historical catch index and mark-recapture methods. The current run sizes for 2018 are below average for Nass Sockeye, Chinook, and Coho, and above average for summer-run steelhead when compared to means to date from 1994 to 2017. Summer-run steelhead estimates began on 1 July and the run size target is based on a minimum return goal as steelhead will continue to enter the Nass River after the fishwheels shutdown in mid-September.

	<b>SOCK</b>	<b>CHIN</b>	<b>COHO</b>	<b>STEEL</b>
<b>IN-SEASON RUN SIZE ESTIMATE TO DATE</b>	<b>178,083</b>	<b>9,247</b>	<b>13,600</b>	<b>5,627</b>
<i>HISTORICAL MEAN RUN SIZE TO GW FOR DATE (94-17)</i>	<i>250,000</i>	<i>19,000</i>	<i>30,390</i>	<i>3,560</i>
<b>RUN SIZE TARGET 2018 (MIN. FOR STEELHEAD)</b>	<b>250,000</b>	<b>15,000</b>	<b>65,000</b>	<b>4,200</b>

In-season forecast projections above Gitwinksihlkw are shown below. Estimates to Gitwinksihlkw are based on two methods, mean run timing and log-regression of the in-season to final estimates to date. The current run size projection for Nass Sockeye is ranging between 173,000 and 292,000 to reach the run size goal (250,000) based on the in-season to final method with a point estimate of 209,000 based on 88% of the run entered to date based on mean-run timing. The current run size projection for Nass Chinook is ranging between 9,000 and 11,000 to reach the run size goal (15,000) based on in-season to final method with a point estimate of 10,000 based on 97% of the run entered to date based on mean-run timing. Run size projections to date for Coho (49,000; range: 18,000-81,000) and summer-run steelhead (16,000; range: 9,500-23,000) are below. Of note, by 12 Aug, in-season run size forecasts for Nass Sockeye are performing well (mean absolute percent accuracy 90%; range=69–100% from 1994 to 2017). For in-season Chinook estimates to 12 Aug, mean percent accuracy is 80%; range: 60–93% from 2013 to 2017.

IN-SEASON FORECASTS TO GW - METHODS:		SOCK	CHIN	COHO	STEEL	12-Aug-18	
1. RUN TIMING METHOD (94-17) - Mean Run timing		202,000	10,000	38,000	19,600		
	Lower (-2 S.D.)	173,000	9,000	25,000	11,600		
	Upper (+2 S.D.)	244,000	10,000	76,000	39,200		In-season to Final
2. IN-SEASON TO FINAL (regression):		209,000	10,000	49,000	16,200		r <sup>2</sup> (CH) = 1.00
	95% CI - lower	127,000	9,000	18,000	9,400		r <sup>2</sup> (SO) = 0.86
	95% CI - upper	292,000	10,000	81,000	23,000		r <sup>2</sup> (CO) = 0.69
GW RUN SIZE TARGET (DEPENDING ON HARVESTS ABOVE GW)		250,000	15,000	65,000	4,200		r <sup>2</sup> (ST) = 0.61
Run Timing % Return Estimate to GW		88%	97%	36%	29%		

Net Escapement Estimates for adult Nass salmon and summer-run steelhead to date are shown below and relative to the Upper Nass net aggregate escapement goals. Note that no catches from Upper First Nations have been reported to assist in the tracking of this assessment update.

IN-SEASON NET ESCAPEMENT ESTIMATES	SOCK	CHIN	COHO	STEEL
HARVEST ESTIMATES ABOVE GW TO DATE	11,817	1,757	13	81
<b>NET ESCAPEMENT (ABOVE GW):</b>	<b>166,266</b>	<b>7,490</b>	<b>13,587</b>	<b>5,546</b>
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):

Alaskan gillnet fisheries start dates in 2018: District 101 (Tree Point) and District 106 (Sumner and Upper Clarence) opened on 17 June. Alaskan seine fisheries start dates in 2018: District 101 (Lower Clarence/Revilla) on 1 July; District 102 (Middle Clarence) on 17 June; District 103 (Cordova) on 22 July, and District 104 (Noyes/Dall) on 15 July. 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 2017) to week ending **11 AUG 2018** based on data from ADFG. Current salmon catches are below average for all salmon species. Of the total in-season Sockeye catch reported in Alaskan fisheries to date (89,160), approximately 18,000 (20%) are estimated as Nass origin based on mean stock composition estimates from 1982 to 2017 and are below average (89,000) to date. The average total mean harvest of Nass Sockeye in Alaskan fisheries from 2000 to 2017 was 120,000 (range: 28,000–300,000).

IN-SEASON SE ALASKAN CUM. SALMON CATCH ESTIMATES (ADFG WEBSITE) - 2018									WEEK END: 11-Aug-18		
DISTRICTS	AREA	SOCK CATCH	AVG (00-17)	CHIN CATCH	AVG (00-17)	PINK CATCH	AVG EVE (00-16)	CHUM CATCH	AVG (00-17)	COHO CATCH	AVG (00-17)
DIST 101 GN	TREE PT	14,800	62,000	1,500	1,400	79,500	265,200	146,000	196,000	2,590	12,700
DIST 106 GN	UPP. CLAR	17,000	80,000	2,100	1,400	180,000	180,000	102,000	130,000	20,800	52,000
DIST 101 SN	LOW CLAR	10,200	47,200	0	700	406,500	3,110,900	81,000	224,200	5,000	20,400
DIST 102 SN	MID CLAR.	14,160	26,800	0	800	319,100	1,902,500	321,000	374,000	12,100	29,900
DIST 103 SN	CORDOVA	7,000	12,000	0	300	538,000	2,017,000	24,000	23,000	10,000	8,000
DIST 104 SN	NOYES/DALL	26,000	189,000	0	4,400	494,000	2,898,000	61,000	125,000	23,000	50,000
<b>CUMULATIVE TOTAL</b>		<b>89,160</b>	<b>417,000</b>	<b>3,600</b>	<b>9,000</b>	<b>2,017,100</b>	<b>10,370,000</b>	<b>735,000</b>	<b>1,072,000</b>	<b>73,490</b>	<b>173,000</b>

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

Area 3 commercial net fisheries in 2018 started on 25 June for gillnets and 5 July. Total net fisheries conducted in Area 3 to date are four gillnet and five seine fisheries. Commercial net harvest and release data to **12 AUG 2018** for salmon and steelhead in Area 3 are shown below. Area 3 fisheries continue to be closed.

GEAR	DATE	Vessel days	SO-harv	SO-Rel	CO-HARV	CO-Rel	PK-HARV	PK-Rel	Chum-harv	Chum-Rel	CH-harv	CH-Rel	STEEL-Rel
GN	6/25/2018	120	3,521	0	8	1	0	0	1,254	36	0	169	4
	6/26/2018	57	1,285	0	0	0	9	0	364	8	0	38	4
	7/2/2018	103	3,770	0	36	2	306	1	5,119	455	0	84	8
	7/3/2018	99	3,051	0	49	2	503	6	1,769	25	0	50	11
	<b>GN Total</b>		<b>379</b>	<b>11,627</b>	<b>0</b>	<b>93</b>	<b>5</b>	<b>818</b>	<b>7</b>	<b>8,506</b>	<b>524</b>	<b>0</b>	<b>341</b>
SN	7/5/2018	21	159	0	13	1	234	0	1,654	0	0	95	50
	7/11/2018	27	0	921	81	16	6,669	0	7,814	0	0	240	155
	7/16/2018	21	0	805	132	0	20,994	0	10,229	0	0	123	131
	7/19/2018	21	0	1,143	309	0	34,579	0	10,046	0	0	181	45
	7/20/2018	21	0	1,072	375	0	25,765	0	7,721	0	0	131	35
<b>SN Total</b>		<b>111</b>	<b>159</b>	<b>3,941</b>	<b>910</b>	<b>17</b>	<b>88,241</b>	<b>0</b>	<b>37,464</b>	<b>0</b>	<b>0</b>	<b>770</b>	<b>416</b>
<b>Grand Total</b>		<b>490</b>	<b>11,786</b>	<b>3,941</b>	<b>1,003</b>	<b>22</b>	<b>89,059</b>	<b>7</b>	<b>45,970</b>	<b>524</b>	<b>0</b>	<b>1,111</b>	<b>443</b>

Of the total commercial catch of sockeye (23,500) in Area 3 (11,786) and outside Area 4 (11,630) to date, NFWD is estimating approximately 10,500 are of Nass origin (45%) based on stock composition modeling. The average total mean harvest of Nass Sockeye in Canadian commercial net fisheries in Areas 3–5 from 2000 to 2017 was 84,000 (range: 11,000–280,000). DFO implemented management actions in Area 3 to reduce harvest impacts on the Kwinageese Sockeye stock during their migration through Area 3 in mid-July. The Nass Sockeye stock requires rebuilding from a past spawning barrier detected in 2011 that resulted in extreme poor returns in 2013 (only 397 spawners) and 2014 (only 498 spawners). Sockeye retention was not permitted in commercial fisheries in Area 3 from **9 July to 22 July**, the anticipated peak of the Kwinageese Sockeye migration, as documented in DFO’s 2018 Integrated Fisheries Management Plan (IFMP).

**NISGA’A DOMESTIC AND SALE FISHERIES:**

Nisga’a domestic and sale fisheries are monitored by the Nisga’a Fisheries and Wildlife Department and began on 6 May 2018. Cumulative harvests to week ending **4 AUGUST** are shown in the table below for Food, Social, and Ceremonial (FSC) catches. For the same week ending period, mean cumulative harvests from 2000 to 2017 are shown for comparison. The current total harvests estimated in 2018 to date, including Nisga’a sale fisheries in the marine and in-river that occurred in June and July, are below average for all Nass salmon. Due to low returns of Nass Sockeye and Chinook, total salmon and steelhead harvests (46,000) in the Nisga'a fisheries to date are currently 53,000 fewer fish than on average harvests (99,000) based on returns from 2000 to 2017.

FSC Reported Week Ending Period		DOMESTIC (FSC) HARVESTS TO WK END - 2018		TOTAL HARVESTS TO DATE INCLUDING SALE FISHERIES - 2018	
NASS SPECIES	Wk end	Harvest	Mean*	Harvest	Mean*
CHINOOK	4-Aug-18	<b>4,641</b>	4,900	<b>4,641</b>	5,700
SOCKEYE	4-Aug-18	<b>30,057</b>	26,100	<b>40,392</b>	78,000
PINK	4-Aug-18	<b>321</b>	2,431	<b>605</b>	13,600
COHO	4-Aug-18	<b>264</b>	708	<b>264</b>	1,300
CHUM	4-Aug-18	<b>86</b>	320	<b>86</b>	300
STEELHEAD	4-Aug-18	<b>207</b>	160	<b>207</b>	160
<b>TOTAL</b>		<b>36,000</b>	35,000	<b>46,000</b>	99,000

\* Mean harvests from 2000-2017 for week end periods. Harvests include all gear types estimates (net, angling, seine, etc.).

**Nisga’a Sale fishery information to date:**

- Future sale fisheries: closed due to low return status. Sale fisheries were also closed in the marine (9-22 July) and in-river (12-25 July) Nass areas to allow passage of the Kwinageese sockeye stock.
- Total Individual-sale (IS) fisher permits issued in 2018 to date are 123 (including 47 elder permits). Of the permits issued, 53 fishers have participated in IS fisheries to date.
- Summary of permits issued by community are: 42 Gitlaxt'aamiks, 21 Gingolx, 16 Laxgalts'ap, 15 Gitwinksihkw, 13 Prince Rupert, 9 Terrace, and 5 other areas.
- Individual-sale fishery data to date is as follows:

<b>NISGA'A MARINE SALE FISHERY:</b>			
NUMBER OF NISGA'A MARINE FISHERIES (16 HR OPENINGS):	4	JUNE 28, JUNE 29, JULY 5, JULY 6	
DATA FROM JUNE 28 FISHERY (21 BOATS; 12 FISHERS SOLD) - FINAL		809 SOCKEYE	
DATA FROM JUNE 29 FISHERY (17 BOATS; 21 FISHERS SOLD) - FINAL		2,147 SOCKEYE	
DATA FROM JULY 5 FISHERY (18 BOATS; 8 FISHERS SOLD) - FINAL		617 SOCKEYE AND 24 PINK	
DATA FROM JULY 6 FISHERY (17 BOATS; 19 FISHERS SOLD) - FINAL		1,811 SOCKEYE AND 245 PINK	
NEXT NISGA'A MARINE SALE FISHERY PLANNED:		<b>CLOSED UNTIL FURTHER NOTICE - LOW RETURN STATUS</b>	
<b>NISGA'A IN-RIVER SALE FISHERY:</b>			
NUMBER OF NISGA'A IN-RIVER FISHERIES (10 HR OPENINGS):	2	JULY 9, JULY 10	
DATA FROM JULY 9 FISHERY (30 FISHERS SOLD) - FINAL		2,778 SOCKEYE	
DATA FROM JULY 10 FISHERY (27 FISHERS SOLD) - FINAL		2,173 SOCKEYE	
NEXT NISGA'A IN-RIVER SALE FISHERY PLANNED:		<b>CLOSED UNTIL FURTHER NOTICE - LOW RETURN STATUS</b>	

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

NISGA'A TOTAL HARVEST SUMMARY	SOCK	CHIN	COHO	PINK-EVE	CHUM	STEEL
MARINE SALE FISHERY TOTAL	5,384	CLOSED	0	284	CLOSED	CLOSED
IN-RIVER SALE FISHERY TOTAL	4,951	CLOSED	0	CLOSED	CLOSED	CLOSED
<b>INDIVIDUAL SALE (IS) FISHERY TOTAL</b>	<b>10,335</b>	<b>CLOSED</b>	<b>0</b>	<b>284</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: AUGUST 4</b>	<b>30,057</b>	<b>4,641</b>	<b>264</b>	<b>321</b>	<b>86</b>	<b>207</b>
<b>SUB TOTAL (NLG TREATY FISHERIES)</b>	<b>40,392</b>	<b>4,641</b>	<b>264</b>	<b>605</b>	<b>86</b>	<b>207</b>
NLG SOCK DEMONSTRATION FISHERY HARVEST - DFO INVENTORY	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
<b>GRAND TOTAL</b>	<b>40,392</b>	<b>4,641</b>	<b>264</b>	<b>605</b>	<b>86</b>	<b>207</b>

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

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

Based on the preliminary Nass salmon return and age information from 2017, preliminary forecasts for Nass salmon and Nisga'a entitlement allocations for 2018 were calculated using pre-season forecast models. Forecast models used were a combination of sibling (Sockeye and Chinook only) and brood year mean returns that project 25%, 50%, and 75% probability point estimates. Pre-season TRTC forecasts (50% probability estimates) for 2018 predicted a below average return forecast for Nass Sockeye (377,000 vs. 570,000), Nass Area even-year Pink (635,000 vs. 740,000), Nass Chinook (19,000 vs. 31,000), Nass Chum (33,000 vs. 52,000; well below the 45,000 escapement goal), and above average return forecast for Nass Coho (223,000 vs. 200,000) based on mean TRTC estimates from 1994 to 2017. When reviewing Nass salmon returns over a 34-year period (1985–2017), the forecasted returns in 2018 are projected to be poor for Chinook (28<sup>th</sup>), Sockeye (27<sup>th</sup>) and Chum (22<sup>nd</sup>); fair for Pink (17<sup>th</sup>); and good for Coho (10<sup>th</sup>) with caution for Coastal Nass Coho salmon returns that returned in low numbers in 2015.

PRE-SEASON TRTC & ENTITLEMENT FORECASTS	SOCK	CHIN	COHO	PINK-EVE	CHUM
HISTORICAL MEAN TRTC (1994-2017)	570,000	31,000	200,000	740,000	52,000
<b>PRE-SEASON TRTC FORECAST (50% PROBABILITY)</b>	<b>377,000</b>	<b>19,000</b>	<b>223,000</b>	<b>635,000</b>	<b>33,000</b>
PRE-SEASON NISGA'A ENTITLEMENT	57,000	4,000	17,800	65,000	2,640
CUM NISGA'A UNDERAGE (+)/OVERAGE (-) AVAILABLE OR OWED: 2000-17	4,109	no surplus	3,988	16,356	-1,198
<b>TOTAL PRE-SEASON NISGA'A CATCH POTENTIAL</b>	<b>61,000</b>	<b>4,000</b>	<b>22,000</b>	<b>81,000</b>	<b>1,400</b>

### In-season TRTC and Nisga'a entitlement estimates for Nass salmon:

Preliminary in-season TRTC estimates estimated by NFWF for Nass Sockeye (259,000; range: 230,000–300,000), Chinook (13,000; range: 12,000–14,000), and Coho (92,000; range: 58,000–197,000) are based on preliminary harvest and run size data and mean run timing to date (Sockeye 91%, Chinook 97%, and Coho 36%) to Area 3 with standard deviation range estimates from 1994 to 2017 returns. The current in-season TRTC estimates are tracking below pre-season forecasts for all three Nass salmon species with ranges indicating returns that are early or late.

Nisga'a entitlement ranges to date for: Nass Sockeye is between 32,000 and 49,000 with a current harvest estimate of 40,500 to date, Nass Chinook, between 2,500 and 3,500, with a current harvest of 4,554, and Nass Coho, between 9,000 and 19,200, with a current harvest of 264. The Nisga'a Nation also has an underage of 4,109 Nass sockeye, 5,700 Nass Chinook, and 16,000 Nass coho accumulated from 2000 to 2017 fisheries.

IN-SEASON TRTC & ENTITLEMENT ESTIMATES	SOCK	CHIN	COHO	PINK-EVE	CHUM
PROJECTED TRTC BASED ON MEAN RUN % & MR EST.	<b>259,000</b>	<b>13,000</b>	<b>92,000</b>	Pre-season	Pre-season
ESTIMATED %TRTC TO DATE: MEAN. RUN TIMING	91%	97%	36%	29%	22%
Lower (-2 S.D.)	230,000	12,000	58,000	Pre-season	Pre-season
Upper (+2 S.D.)	300,000	14,000	197,000	Pre-season	Pre-season
<b>IN-SEASON NISGA'A ENTITLEMENT TARGET</b>	<b>35,000</b>	<b>2,700</b>	<b>7,000</b>	<b>65,000</b>	<b>2,600</b>
IN-SEASON UNDERAGE (+)/OVERAGE (-) AVAILABLE OR OWED	4,109	no surplus	3,988	16,356	- 1,198
<b>TOTAL IN-SEASON NISGA'A TREATY CATCH POTENTIAL</b>	<b>39,000</b>	<b>2,700</b>	<b>11,000</b>	<b>81,000</b>	<b>1,400</b>
MINIMUM ENTITLEMENT FORECAST	32,000	2,500	9,000	Pre-season	Pre-season
MAXIMUM ENTITLEMENT FORECAST	49,000	3,500	20,000	Pre-season	Pre-season

The next Nass River general stock assessment update from the Nisga'a Fisheries and Wildlife Department is planned for: **Monday, 20 August 2018.**

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

Weekly updates are posted after each Monday's update to 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>

Daily and weekly run size information are also posted on Mondays, Wednesdays, and Fridays to the following site:

- <ftp://ftp.lgl.com/Nass%20Stock%20Assessment%20Updates/>



Photo 1. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels on 13 August 2018.



Photo 2. Sockeye Salmon caught and spaghetti tagged at Gitwinksihlkw fishwheels on 12 August 2018.



Photo 3. Coho Salmon caught and tagged at Gitwinksihlkw fishwheels on 12 August 2018.



Photo 4. Coho Salmon caught and tagged at Gitwinksihlkw fishwheels on 13 August 2018.



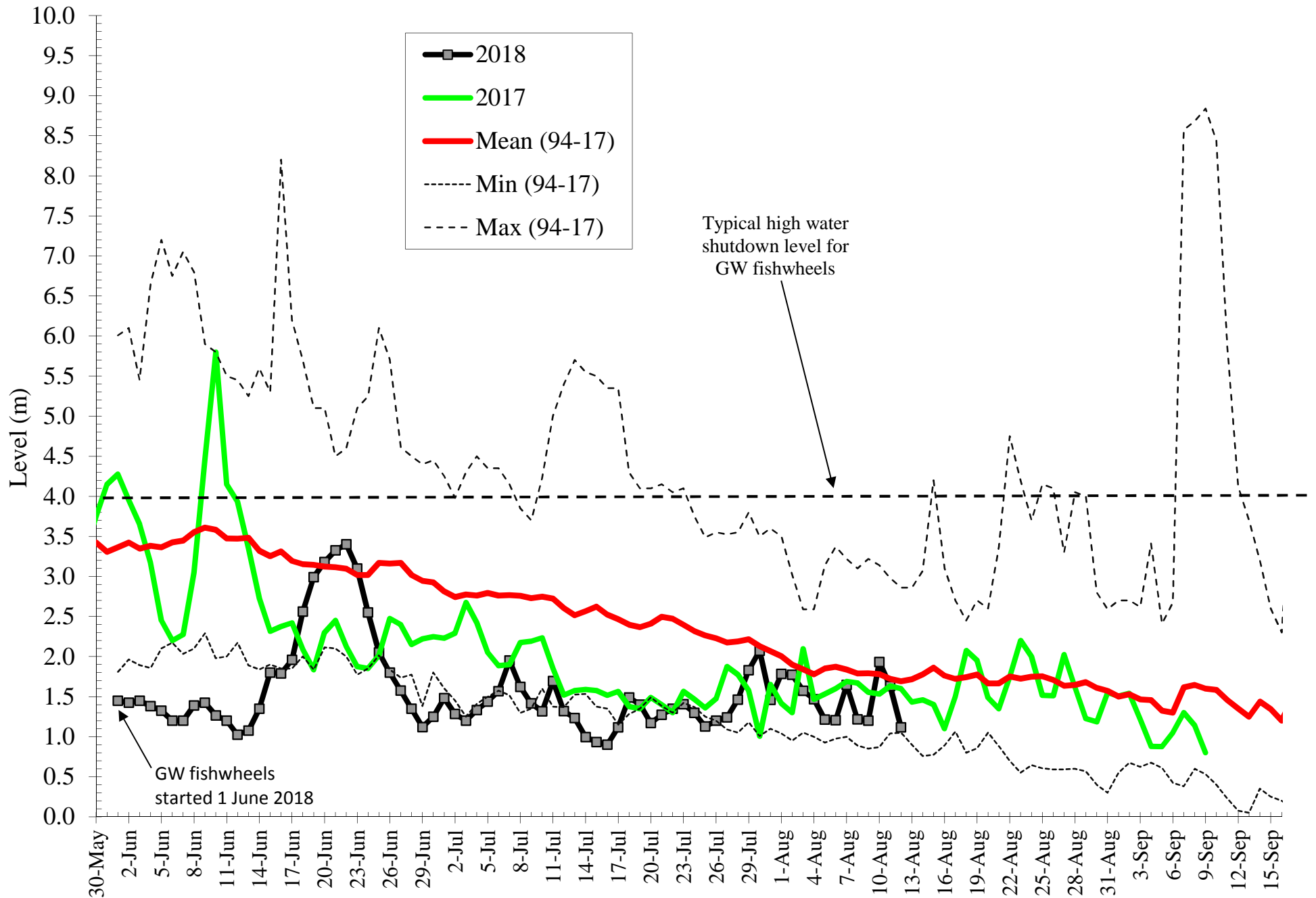
Photo 5. Chum caught and tagged at Gitwinksihlkw fishwheels on 12 August 2018.



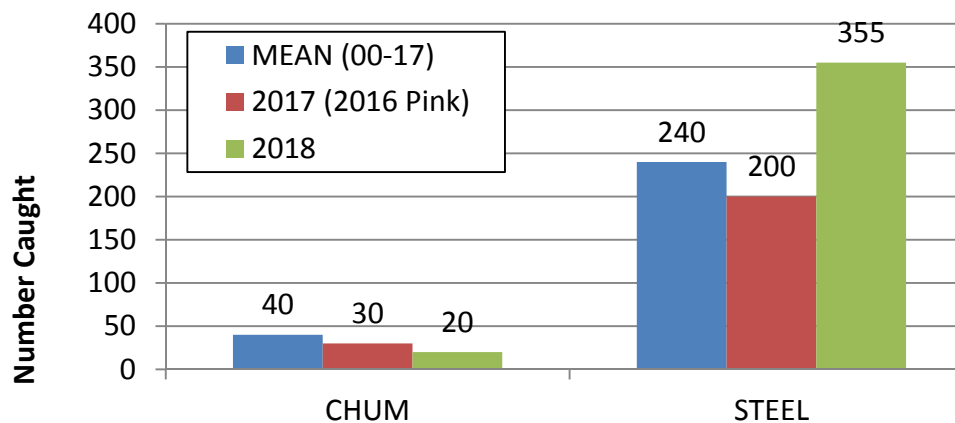
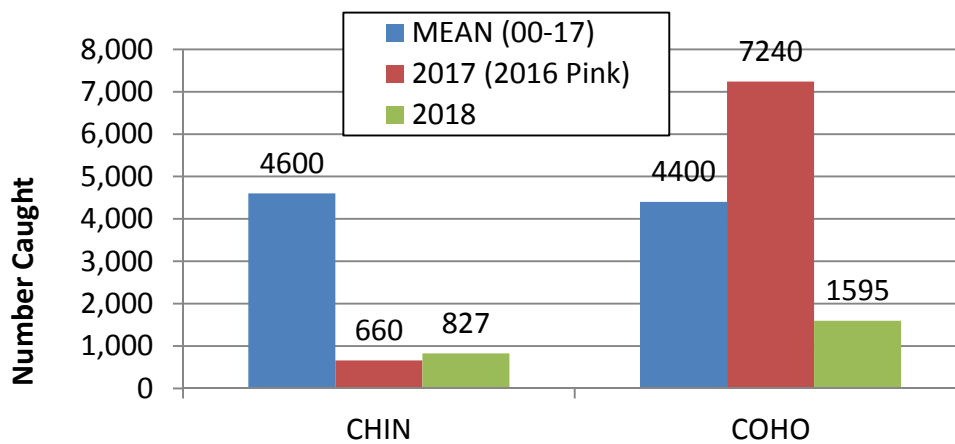
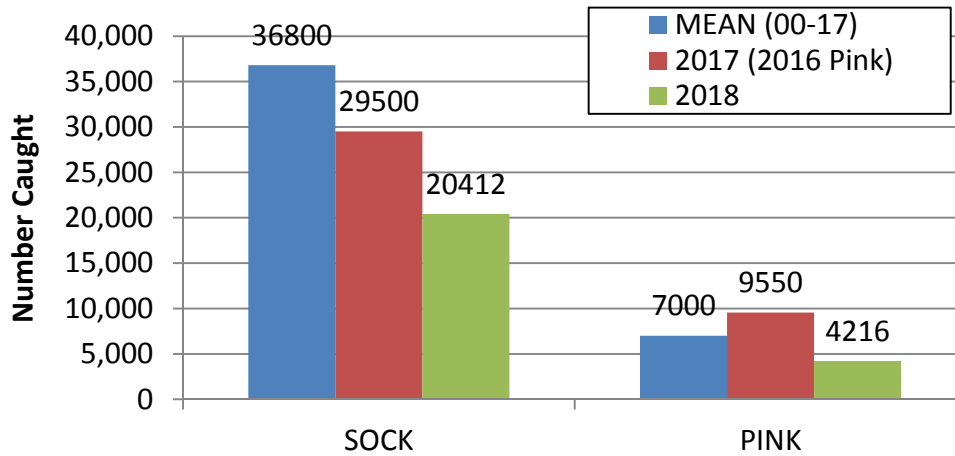
Photo 6. Pink Salmon caught and fin marked at Gitwinksihlkw fishwheels on 13 July 2018.

*Photos courtesy of NFWD's senior crew leader, Ben Guno Jr and fishwheel crew.*

# Daily Water Level at Gitwinksihlkw Fishwheels 2018

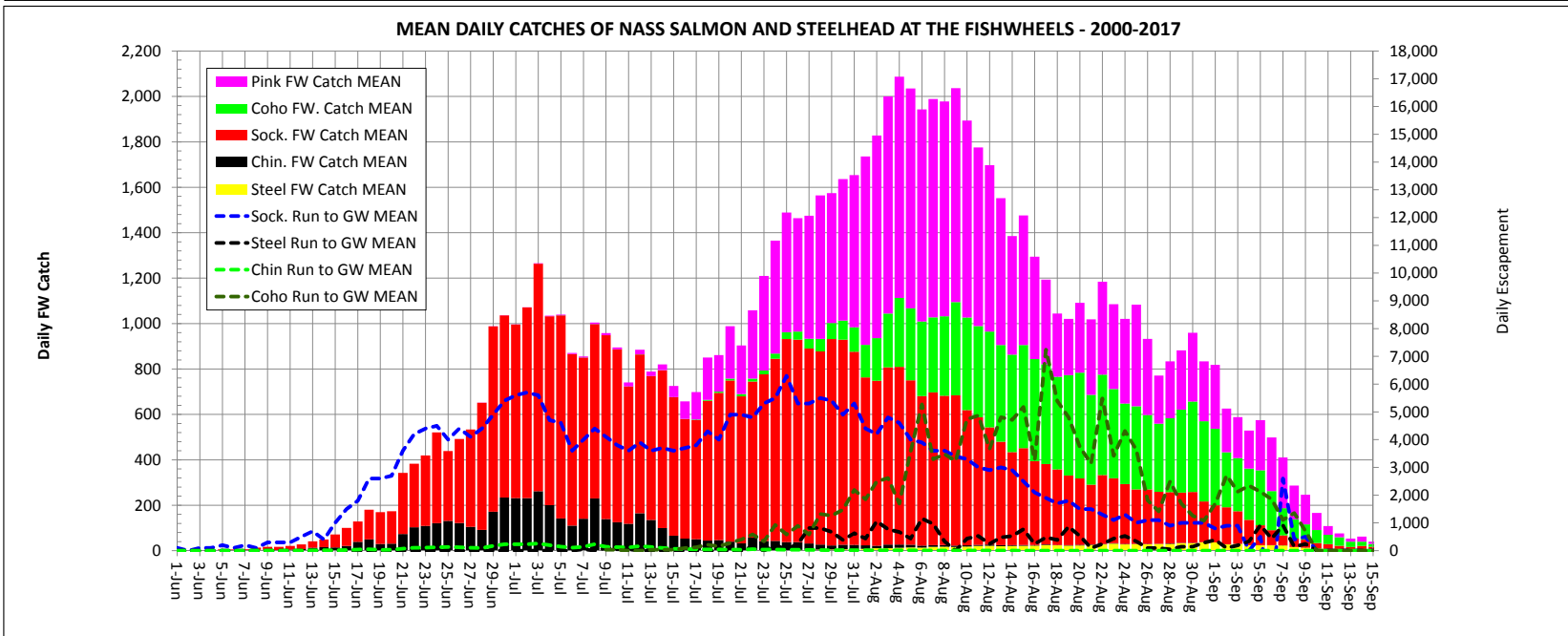
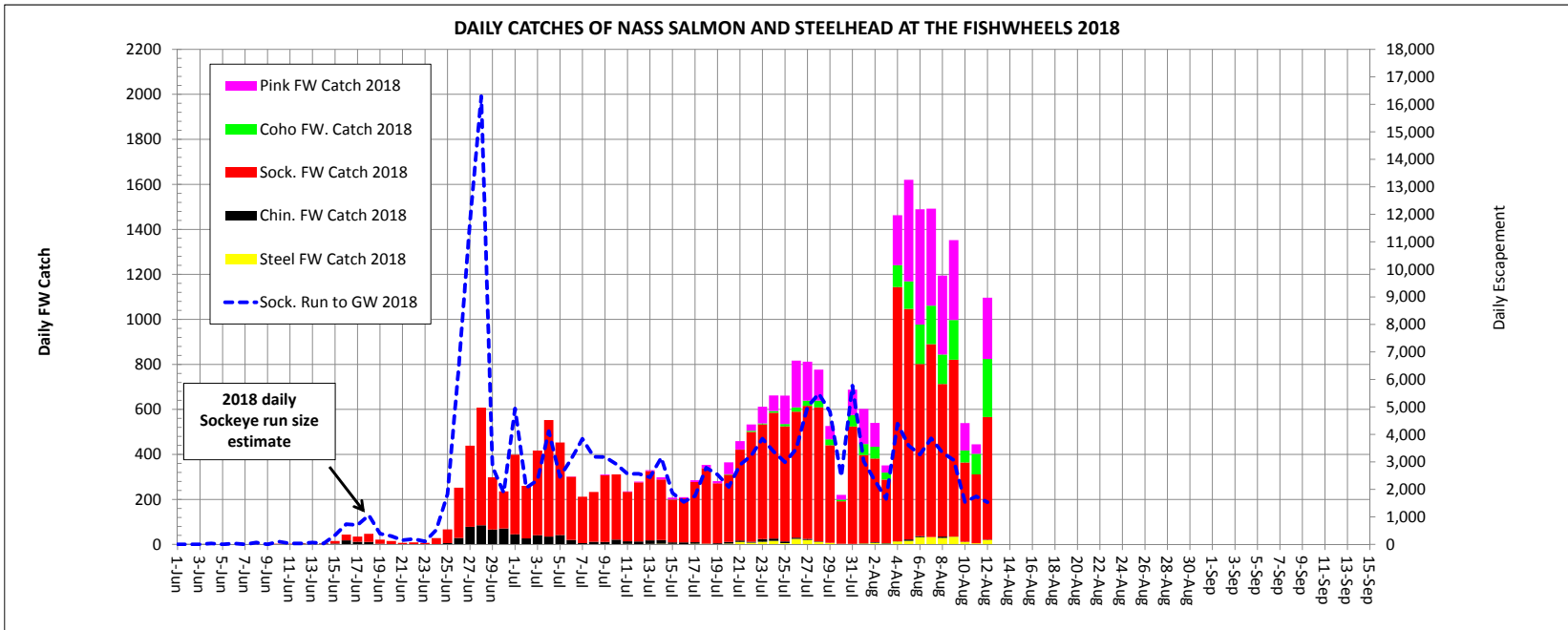


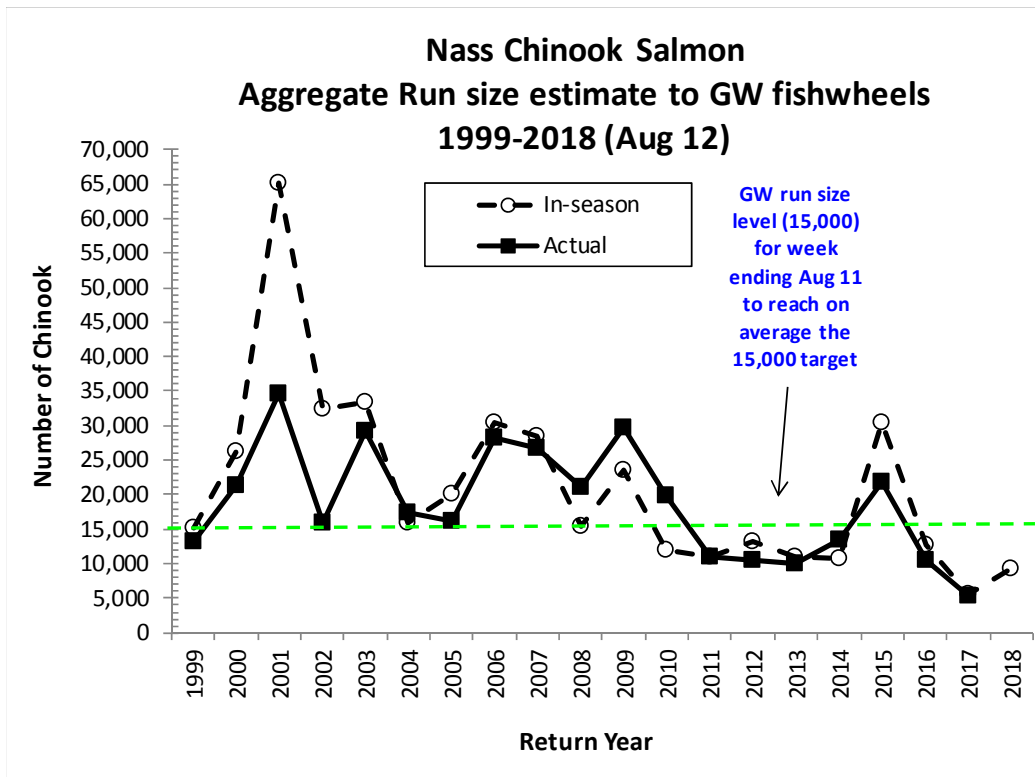
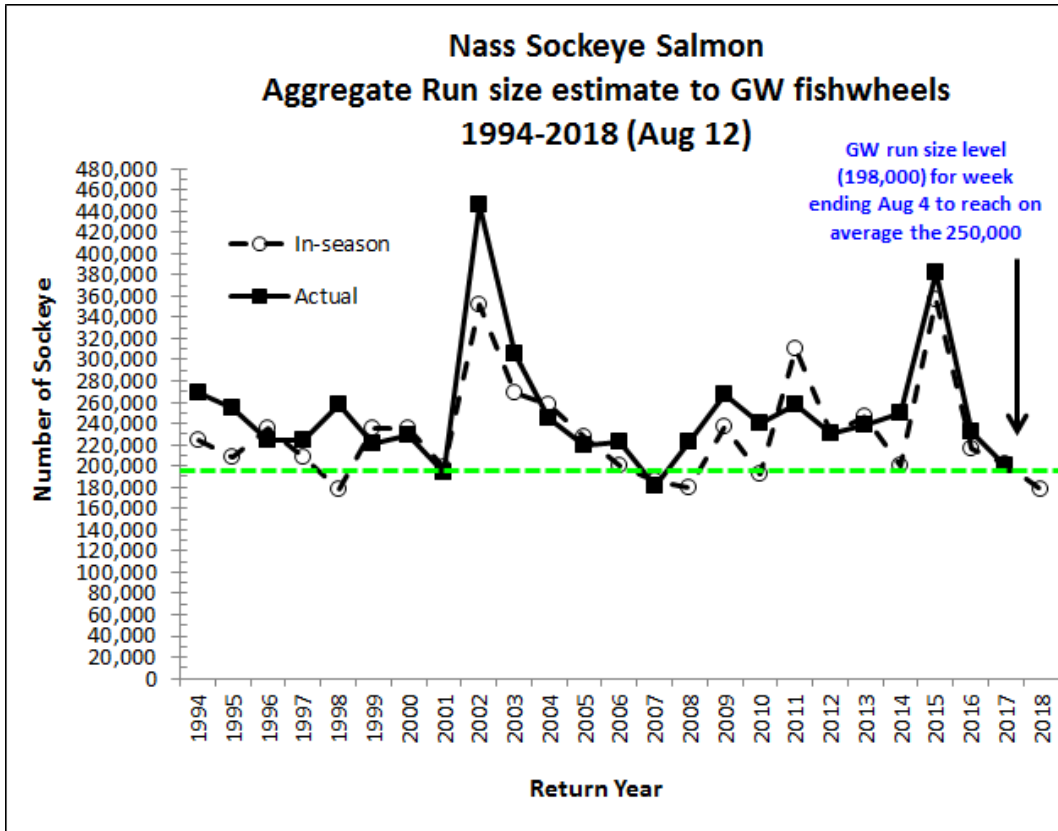
### Nass Fishwheel Catches 2018 - 12 AUG



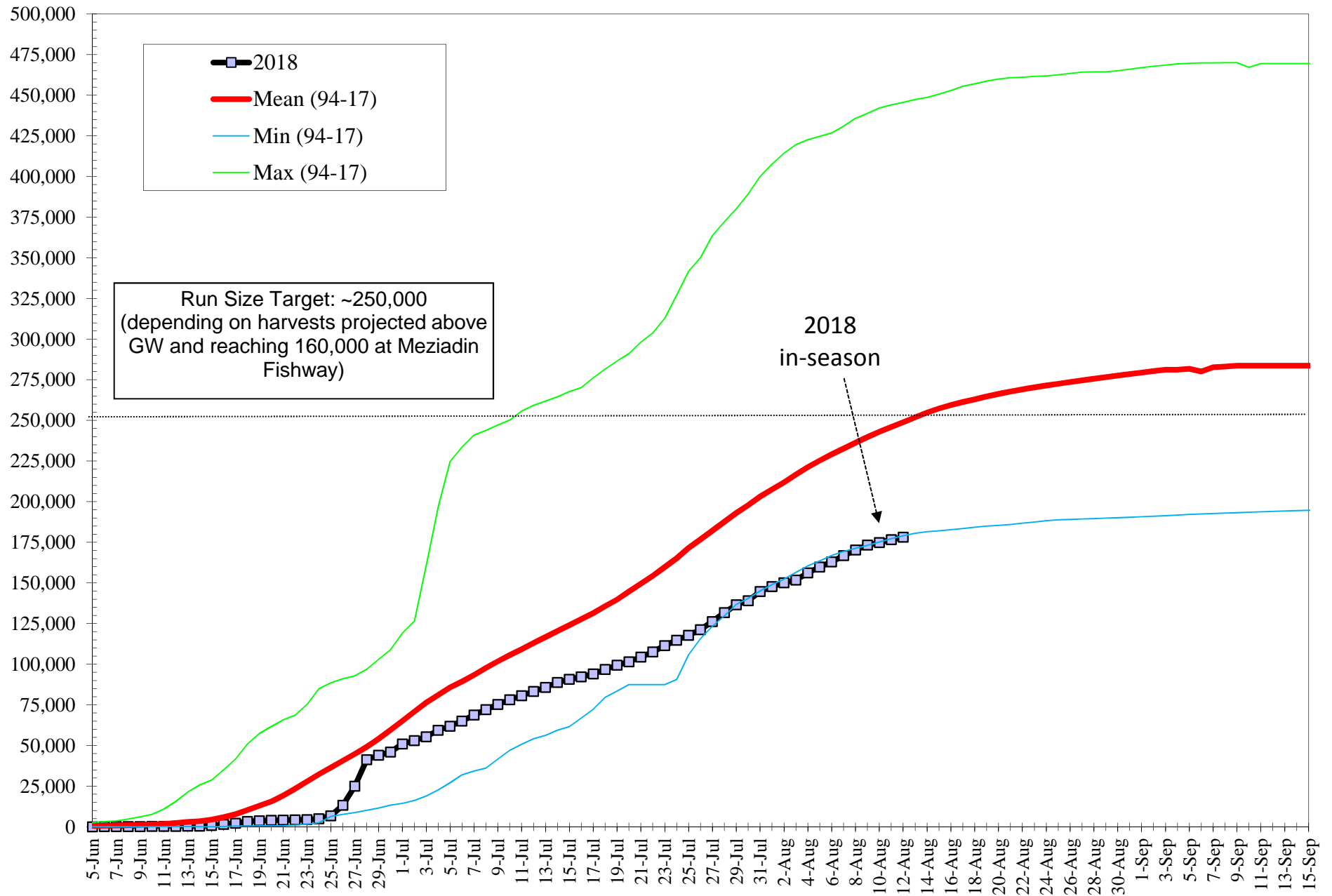
Species



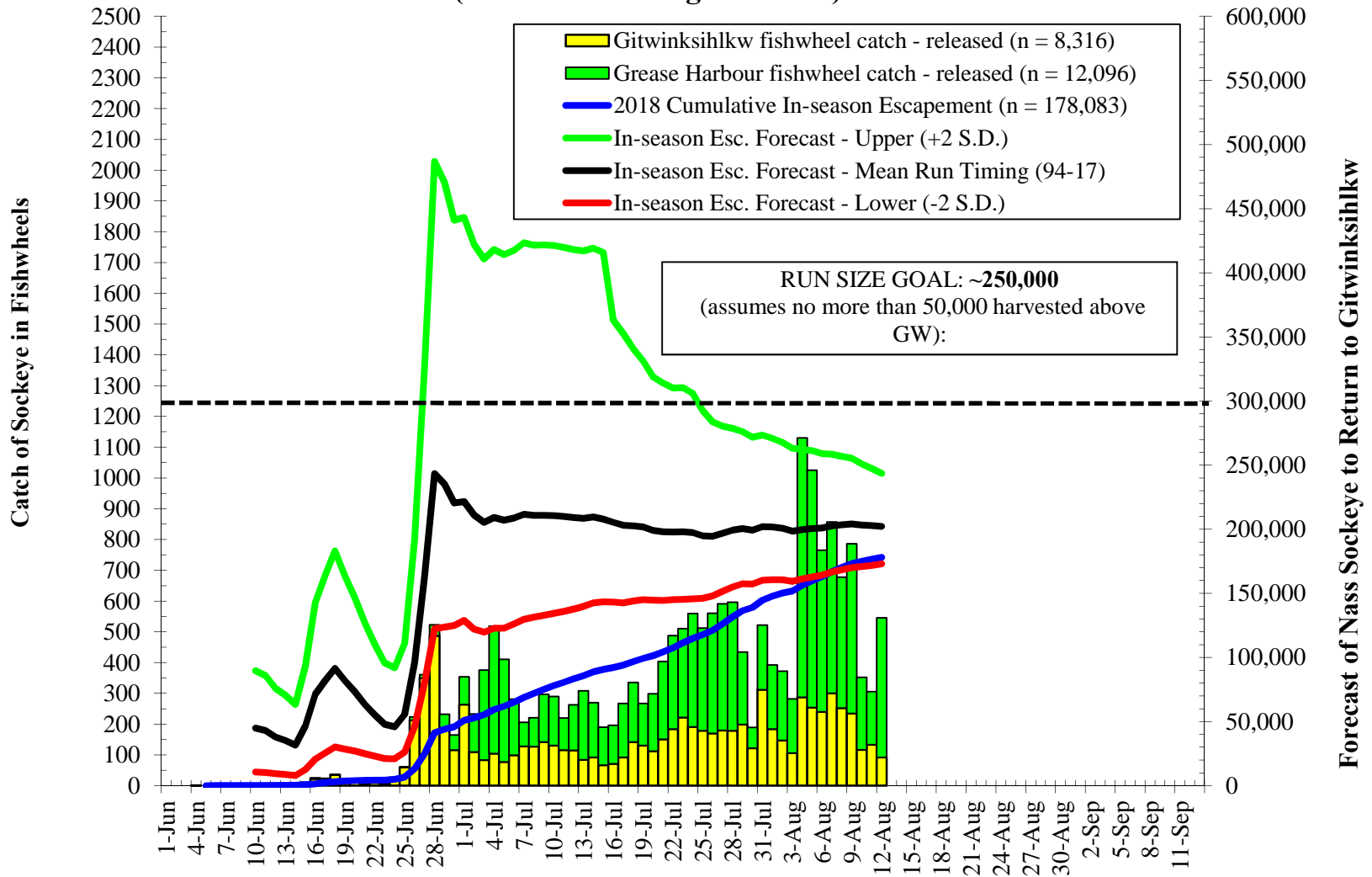




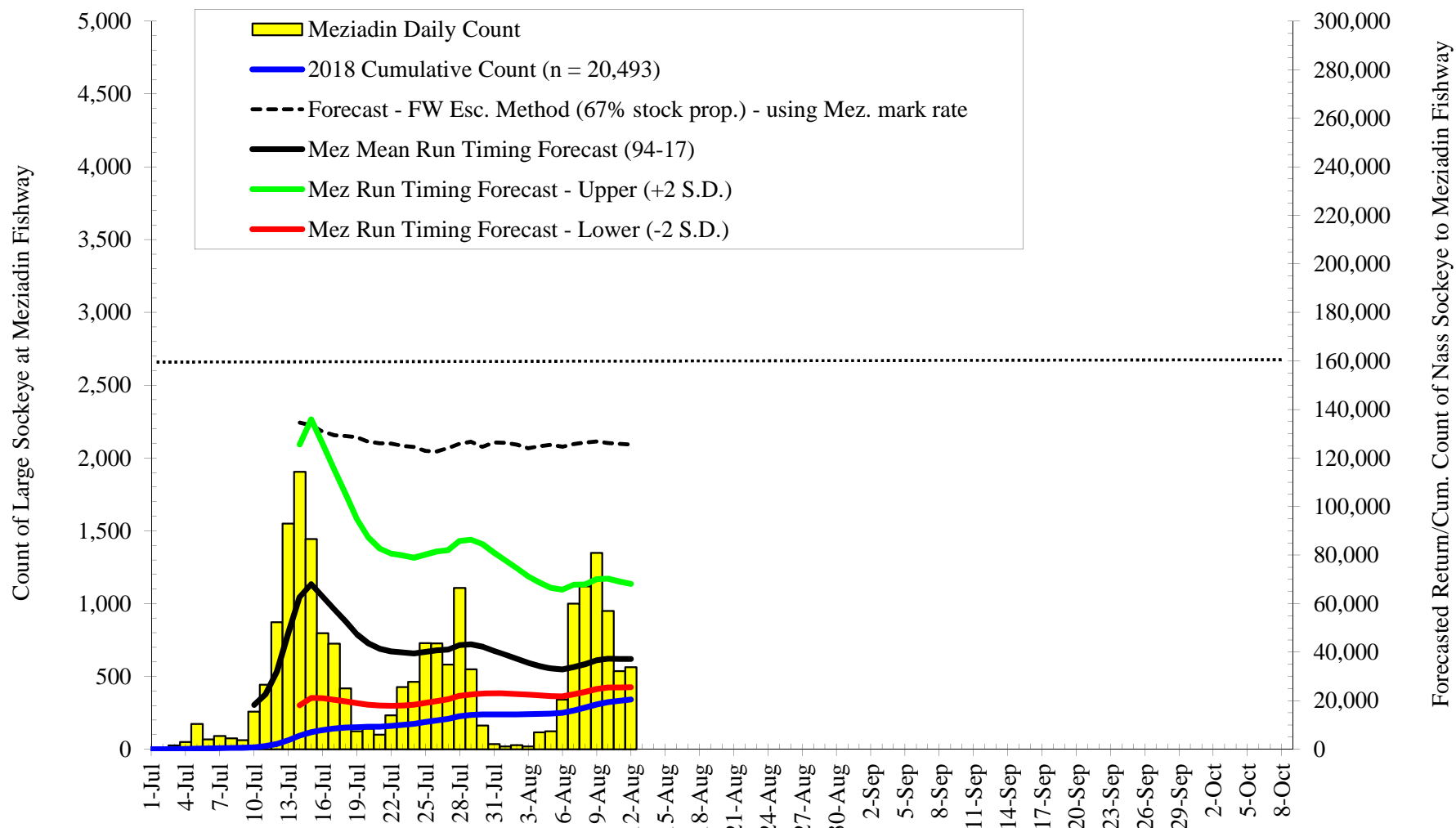
## Nass Sockeye Cum. Run Size to Gitwinksilhkw Fishwheels 2018 versus 94-17 Mean, Min, Max returns (before upriver harvests)



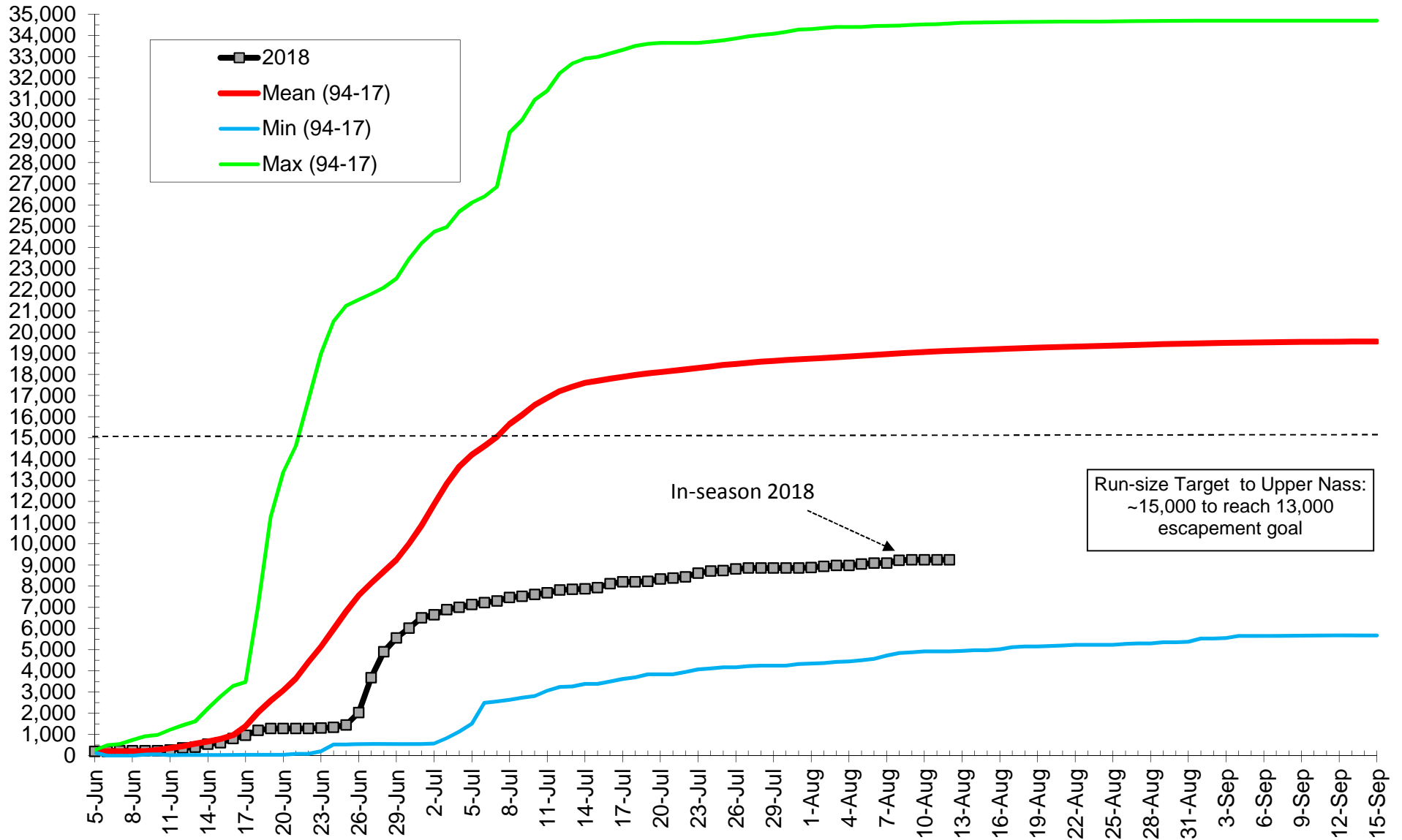
### Nass Sockeye ( $\geq 45$ cm NFL) Run Forecasts to Gitwinksihlkw Fishwheels 2018 (Mean Run timing - 1994-17)



## Meziadin Fishway Sockeye Counts & In-season Forecast Data 2018



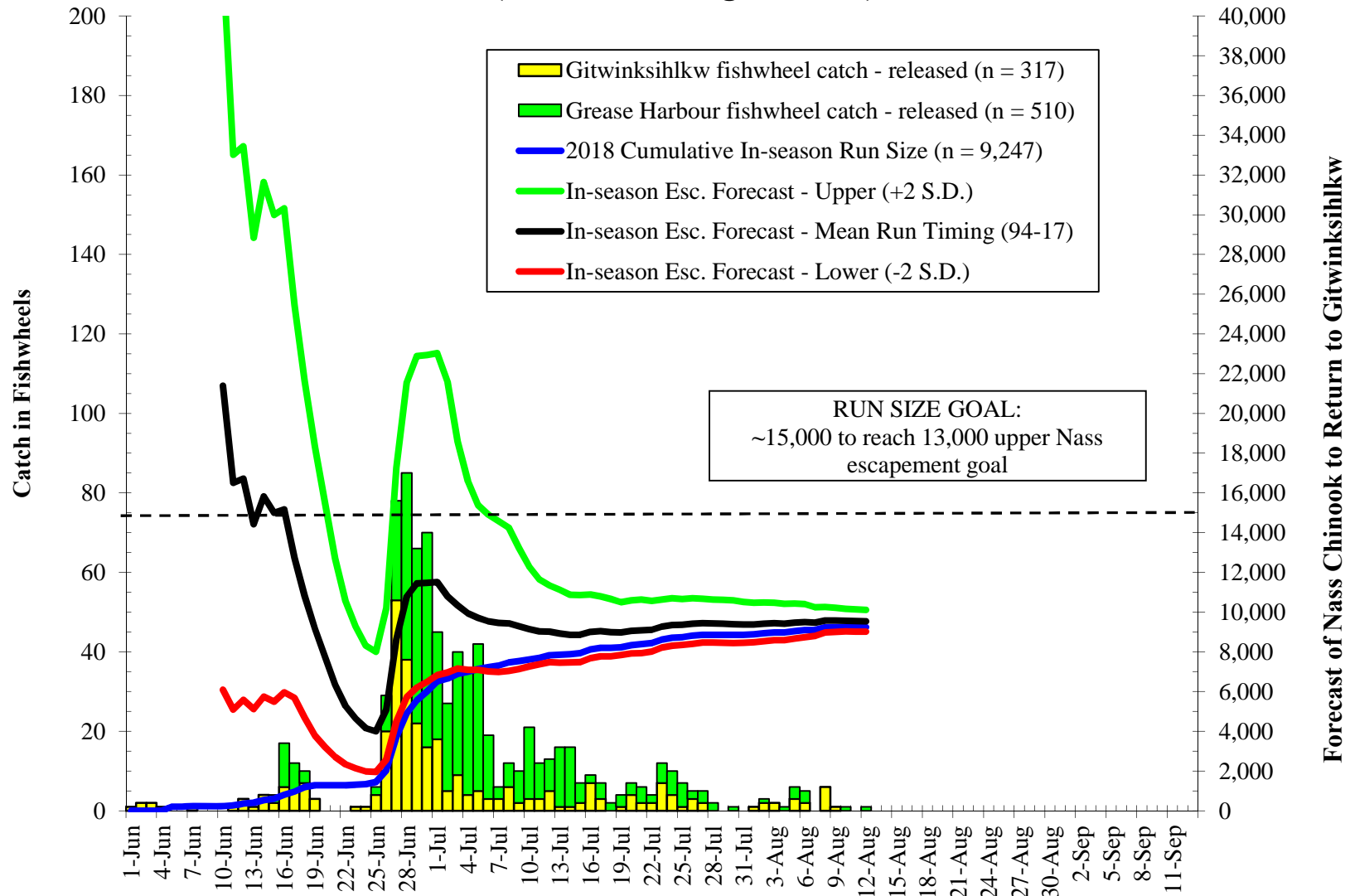
## Cumulative Nass Adult Chinook Run Size to Gitwinksihlkw 2018 vs 94-17 Mean, Minimum and Maximum returns (before up river harvests)



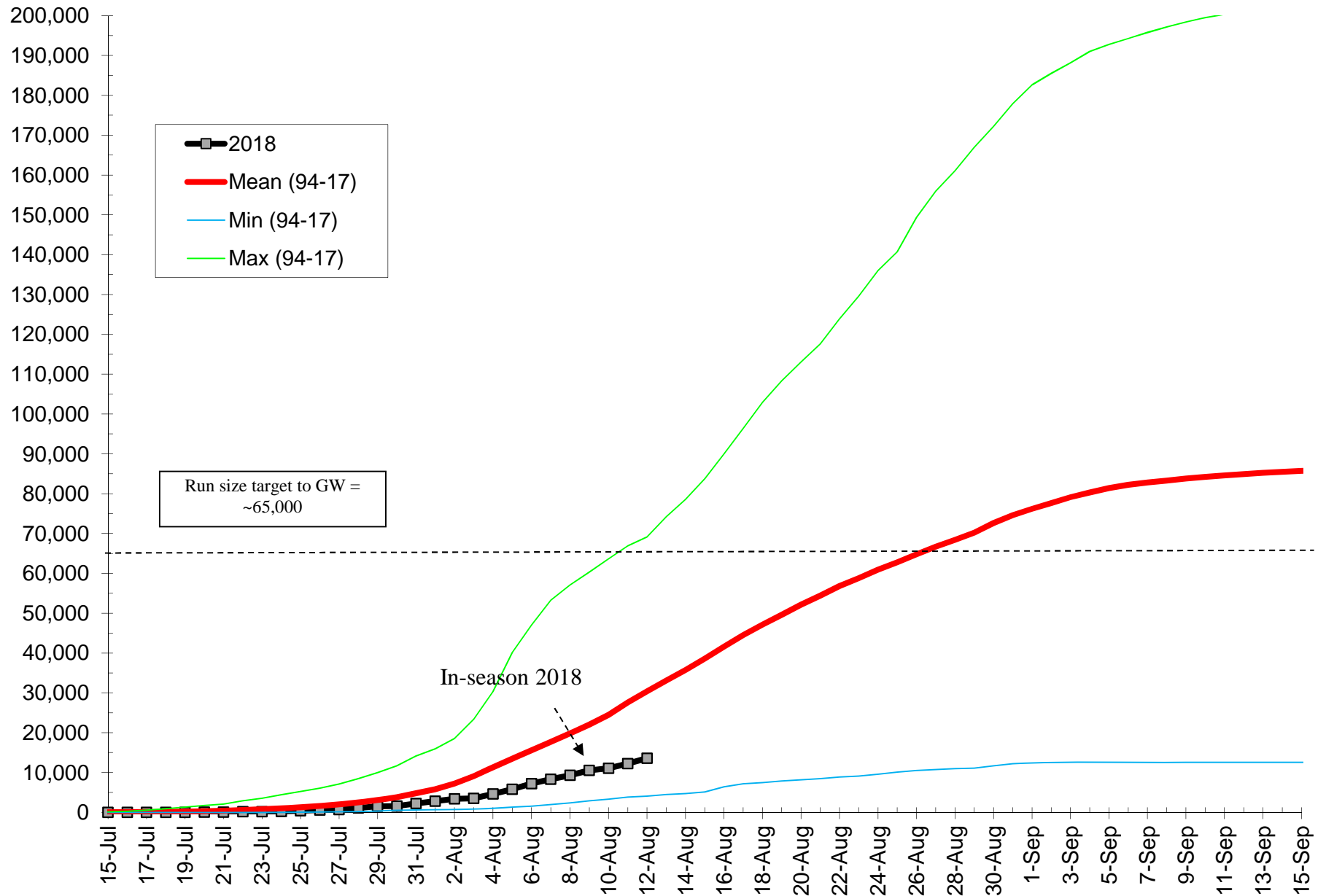
Run-size Target to Upper Nass:  
~15,000 to reach 13,000  
escapement goal

In-season 2018

### Nass Chinook ( $\geq 50$ cm NFL) Forecasts to Gitwinksihlkw Fishwheels 2018 (Mean Run timing - 1994-17)

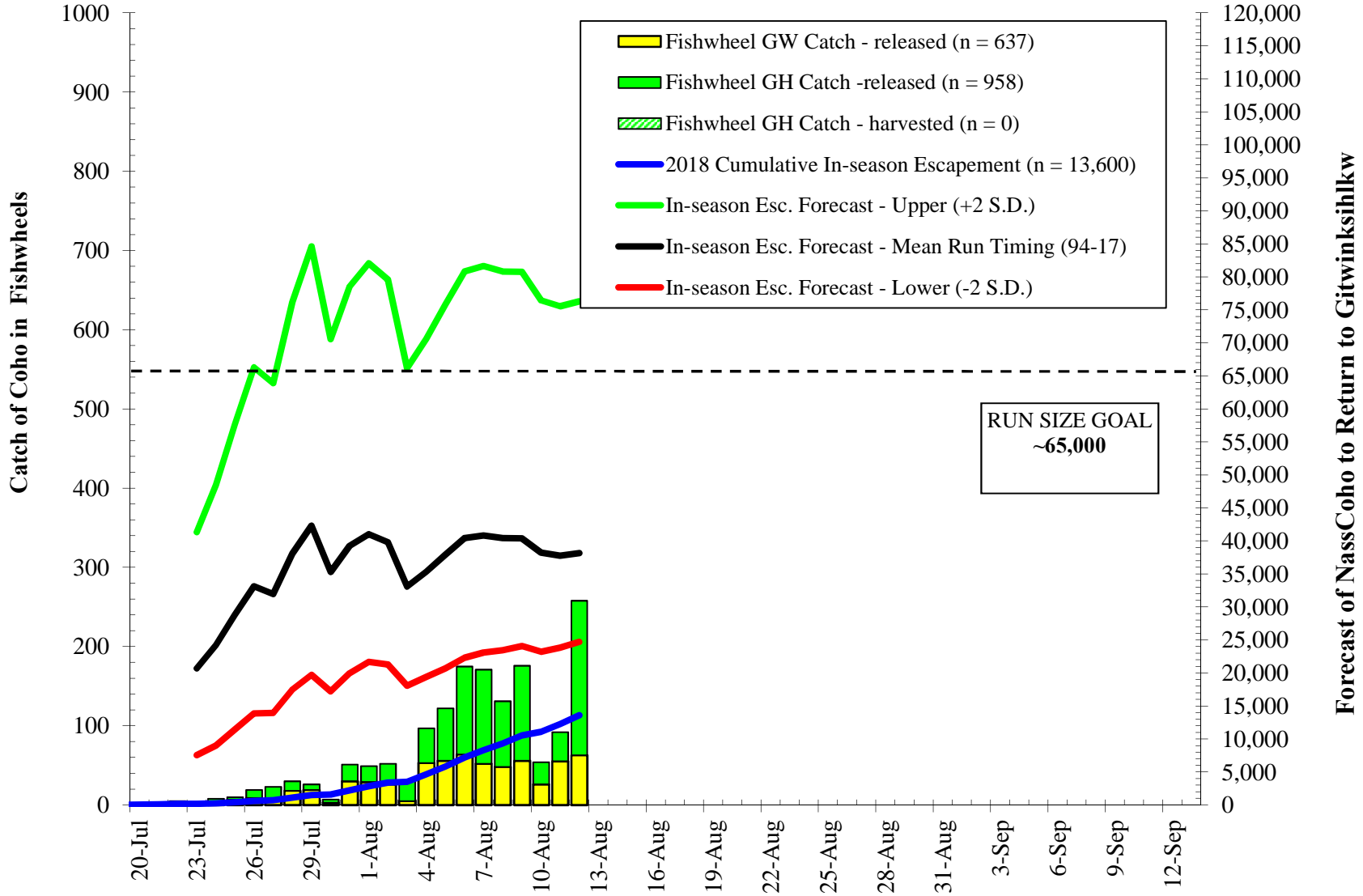


# Cumulative Nass Adult Coho Run Size to Gitwinksihlkw 2018 vs. 94-17 Mean, Minimum and Maximum returns (before up river harvests)

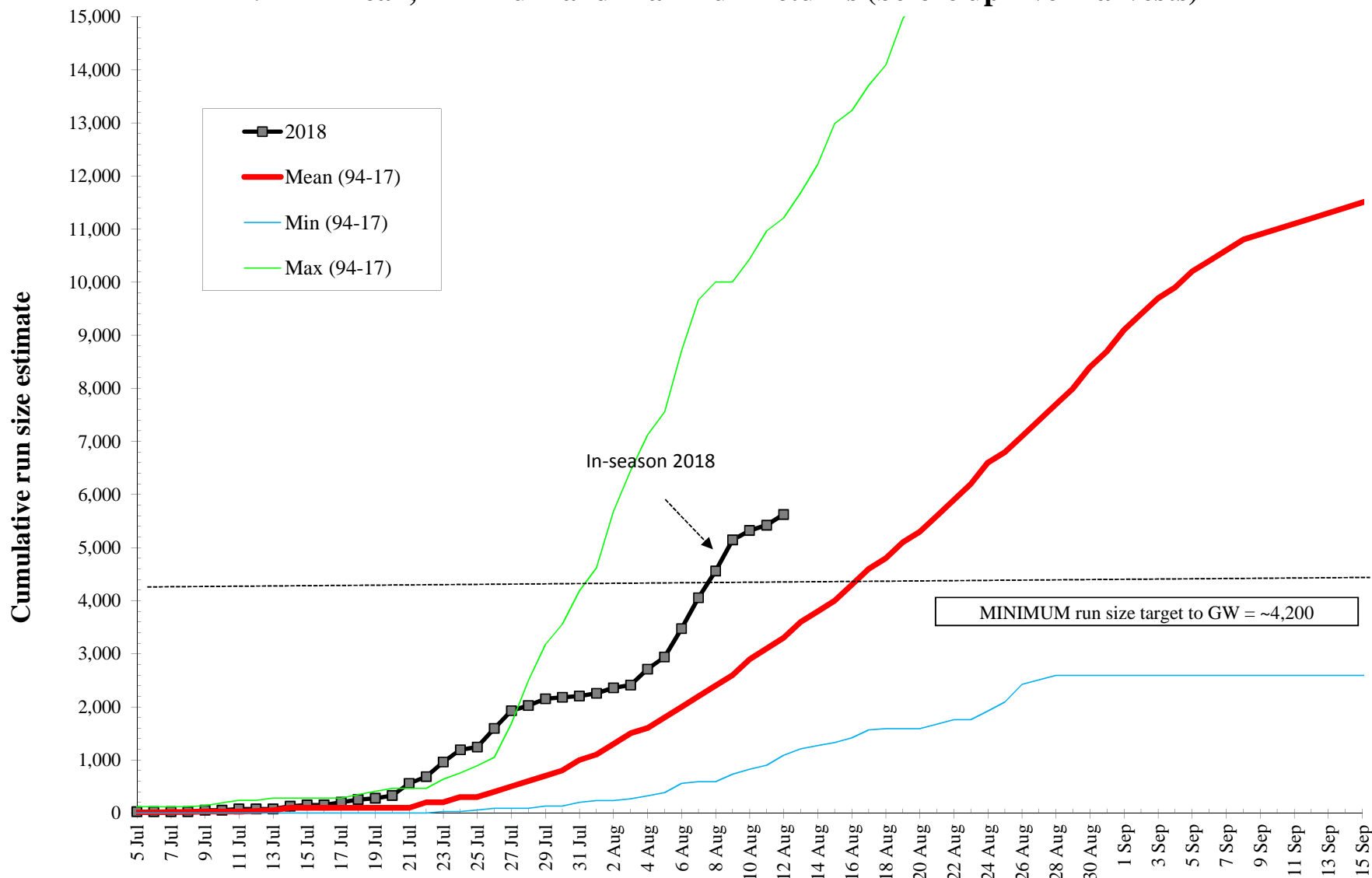




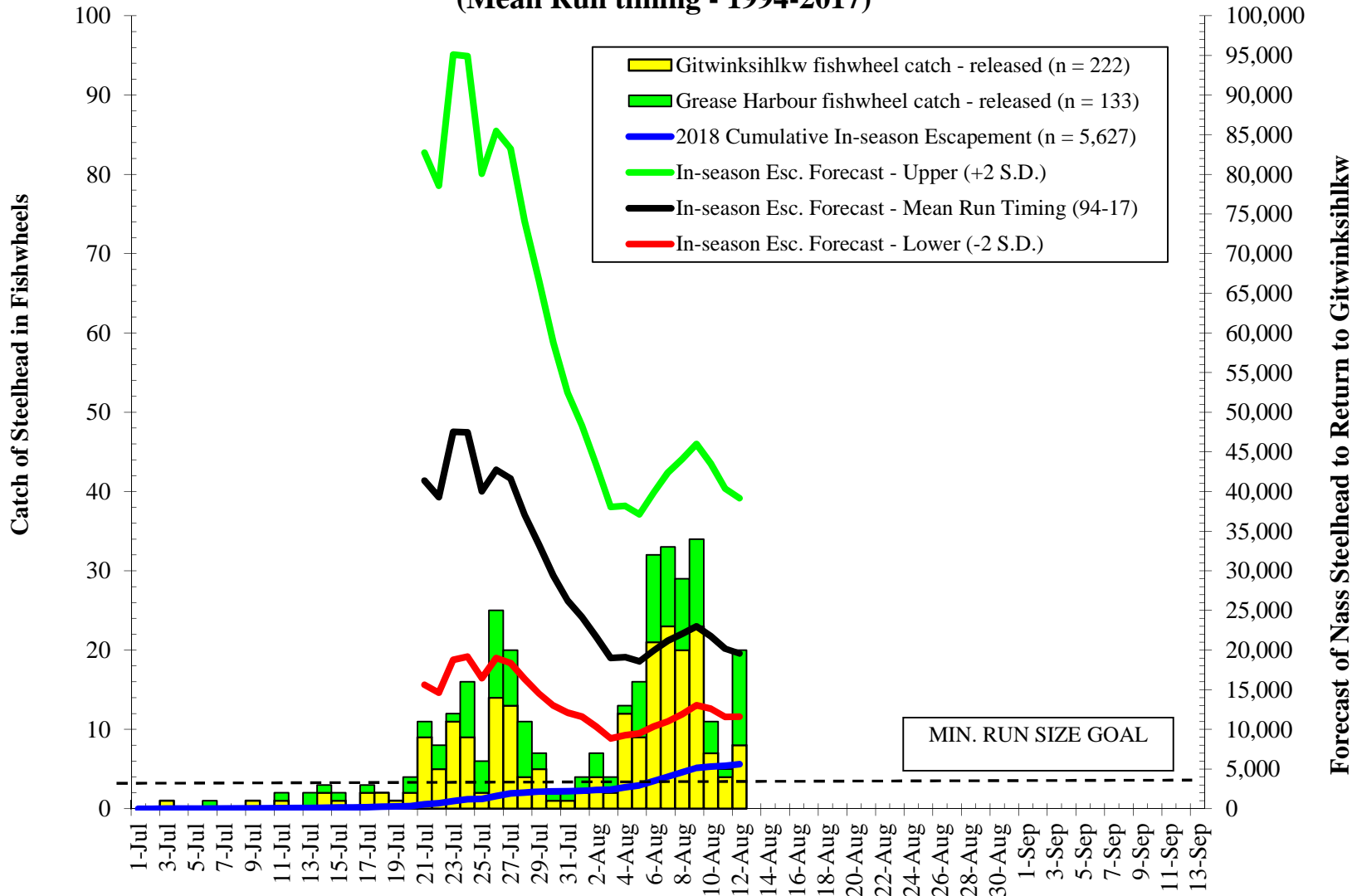
### Nass Coho ( $\geq 40$ cm NFL) Forecasts to Gitwinksihlkw Fishwheels 2018 (Mean Run timing - 1994-2017)



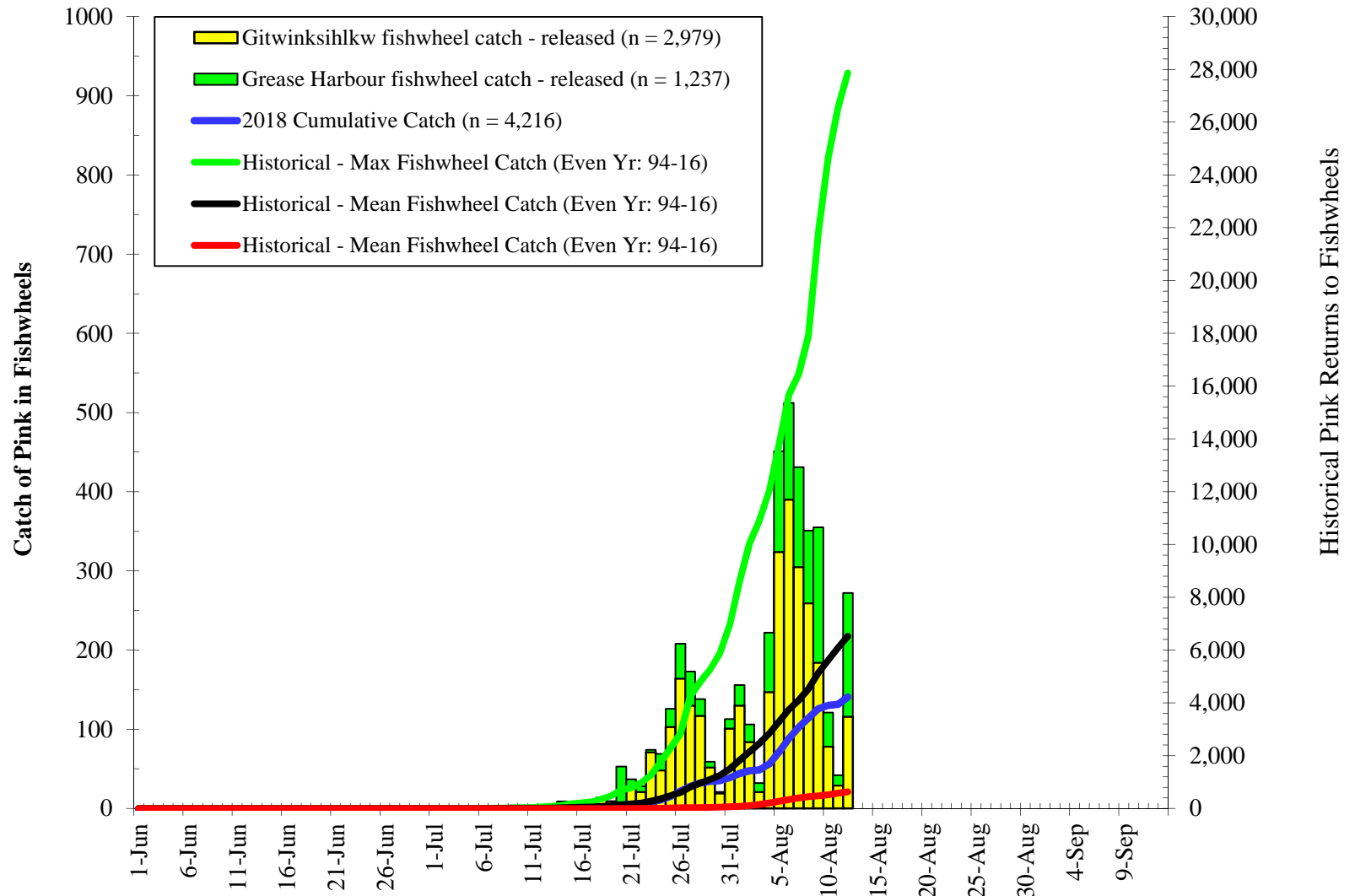
### Cumulative Nass Adult Summer-run Steelhead Return to Gitwinksihlkw 2018 vs. 94-17 Mean, Minimum and Maximum returns (before up river harvests)



### Nass Summer Run Steelhead Forecasts to Gitwinksihlkw Fishwheels 2018 (Mean Run timing - 1994-2017)



### Nass Pink Salmon Returns to Gitwinksihlkw and Grease Harbour Fishwheels 2018



**Cumulative Daily Run Sizes of Adult Nass River Sockeye Salmon (≥ 45 cm NFL) to Gitwinksihkw Fishwheels, 2000-2018.**

**Note: In-season cum. values with yellow shading are preliminary and will change as these fish pass the upper fishwheels to finalize mark-recapture data over a 5-d period.**

Date	Cumulative run size																	IN-SEASON (FW-MR)			
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Cum	Mean (94-17)	2018 Daily
	30-Jul	175,368	147,982	389,306	218,780	184,304	175,767	172,272	140,439	192,150	196,068	182,855	205,449	198,678	218,059	204,568	321,783	156,267	144,783	138,992	197,900
31-Jul	178,241	156,115	399,998	229,746	187,131	181,258	177,184	144,996	196,898	202,306	187,793	211,923	202,672	219,876	209,256	327,311	161,070	149,740	144,763	203,200	5,771
1-Aug	179,643	161,655	407,673	239,135	190,874	184,593	182,640	148,868	199,243	208,262	193,139	216,155	207,525	221,269	214,374	330,433	167,075	154,556	147,785	207,600	3,022
2-Aug	182,579	165,862	414,363	249,377	194,249	187,372	188,784	152,404	201,148	214,306	201,075	219,961	211,402	223,085	219,027	336,201	172,270	157,813	150,098	211,800	2,313
3-Aug	191,406	170,583	419,559	261,686	197,333	190,967	192,826	156,518	202,543	224,956	209,066	222,949	213,968	225,992	223,185	342,084	178,685	161,467	151,755	216,600	1,657
4-Aug	201,010	173,645	422,606	265,940	202,744	194,709	197,765	160,512	204,555	234,990	216,395	227,680	216,824	227,695	227,180	346,630	184,957	167,727	156,143	221,200	4,388
5-Aug	209,054	177,699	424,734	269,727	207,011	198,193	202,526	163,550	206,084	243,140	220,694	229,743	218,700	229,502	231,043	350,915	191,581	172,627	159,733	225,200	3,590
6-Aug	214,015	181,570	426,774	273,061	211,531	201,935	207,823	166,834	207,908	248,345	225,599	231,984	221,103	230,585	234,514	356,097	198,151	177,426	163,000	229,100	3,267
7-Aug	217,680	184,923	431,000	278,577	215,759	204,381	212,293	169,319	210,322	252,180	228,960	236,402	222,858	231,979	239,065	361,555	203,671	181,322	166,854	232,700	3,854
8-Aug	220,499	187,819	435,829	284,498	223,907	207,871	217,130	171,278	213,433	255,896	230,633	242,628	224,647	233,476	241,913	365,743	209,150	185,669	170,196	236,300	3,342
9-Aug	223,168	189,952	438,819	290,979	229,967	210,555	221,833	173,130	216,840	259,860	233,098	247,917	226,160	235,024	243,779	369,482	214,050	190,254	173,264	239,700	3,068
10-Aug	225,686	192,147	442,182	297,973	236,522	212,822	226,271	175,104	218,769	262,646	235,696	251,198	227,387	237,088	245,417	372,677	222,115	194,934	174,803	243,000	1,540
11-Aug	228,035	193,702	444,072	302,418	241,819	215,924	229,992	177,243	220,261	265,411	238,293	253,943	228,882	238,255	247,284	377,265	228,040	197,737	176,546	246,000	1,743
12-Aug	229,050	194,341	445,628	304,869	245,331	219,055	233,739	179,035	222,052	266,956	240,714	257,692	230,719	239,249	250,530	382,092	232,917	200,731	178,083	248,900	1,536
13-Aug	230,009	195,201	447,340	307,713	250,191	221,978	237,779	180,598	223,682	268,562	242,915	260,102	231,691	239,725	254,465	385,338	238,611	206,530		251,900	
14-Aug	231,268	196,000	448,696	309,968	253,446	226,096	242,110	181,457	224,624	269,721	245,601	262,113	233,188	240,805	259,952	392,475	243,982	210,536		254,800	
15-Aug	232,095	197,159	450,741	311,994	256,097	229,144	245,997	182,131	225,267	271,083	247,267	263,415	234,592	241,583	265,324	397,625	249,988	215,070		257,300	
16-Aug	232,552	197,619	452,942	313,824	258,152	230,935	249,965	182,698	226,782	272,194	248,656	263,710	235,780	241,842	267,794	400,915	254,871	219,006		259,400	
17-Aug	232,780	198,199	455,477	315,330	260,467	233,234	254,393	183,495	227,667	273,062	249,965	264,834	236,397	242,534	268,991	404,507	258,849	221,853		261,300	
18-Aug	233,665	198,679	457,113	316,564	262,577	236,977	259,531	184,261	228,893	273,843	251,195	266,313	237,107	242,815	270,772	407,857	261,212	223,048		263,000	
19-Aug	234,207	198,977	458,680	317,558	265,042	240,186	265,793	184,951	229,847	274,433	252,425	267,674	237,446	243,142	273,221	411,721	264,853	224,595		264,800	
20-Aug	234,749	199,345	459,902	318,702	267,638	241,175	271,023	185,362	230,487	274,972	253,298	269,212	237,894	243,517	275,141	414,181	267,801	225,617		266,300	
21-Aug	235,434	199,828	460,832	320,931	269,543	242,167	273,615	185,995	231,032	275,440	254,687	269,770	238,200	243,844	277,618	416,807	269,176	228,333		267,800	
22-Aug	235,576	200,219	461,090	322,436	272,426	244,266	275,610	186,738	231,876	275,926	255,775	269,770	238,386	244,312	279,204	421,093	270,774	230,663		269,100	
23-Aug	235,576	201,092	461,659	323,581	274,031	249,573	276,734	187,418	232,217	276,266	256,047	269,770	238,670	244,921	281,375	424,907	272,292	231,317		270,200	
24-Aug	235,633	201,644	461,865	324,716	274,625	253,795	277,950	188,319	232,511	276,607	256,513	271,345	238,802	245,717	283,093	428,905	274,018	233,329		271,500	
25-Aug	235,890	201,874	462,629	325,095	275,814	256,287	279,166	188,777	232,548	276,898	256,979	273,445	238,867	246,104	284,910	432,955	275,905	235,240		272,500	
26-Aug	236,033	202,183	463,441	325,527	276,646	258,709	281,116	189,030	232,683	277,481	257,601	275,447	238,942	246,529	286,824	436,629	278,128	236,279		273,600	
27-Aug	236,204	202,183	464,254	326,068	277,954	262,124	283,088	189,435	233,039	278,274	257,873	278,860	239,006	246,761	288,469	439,788	279,684	237,401		274,700	
28-Aug	236,745	202,227	464,416	326,771	279,113	264,283	284,488	189,548	233,665	278,566	258,184	281,871	239,038	247,110	289,082	441,951	281,894	239,506		275,600	
29-Aug	237,664	202,382	464,416	327,041	280,016	266,441	286,781	189,885	234,119	278,809	258,437	285,031	239,124	247,497	289,917	443,052	284,893	240,908		276,600	
30-Aug	238,232	202,890	465,131	327,366	280,467	268,363	289,488	190,087	234,536	279,104	258,690	289,194	239,156	247,729	290,530	445,438	287,025	242,617		277,600	
31-Aug	238,961	203,376	465,992	327,656	280,733	269,895	290,773	190,402	234,731	279,357	258,690	292,316	239,167	247,922	291,428	447,104	288,573	243,778		278,600	
1-Sep	239,475	203,707	466,961	327,850	280,972	272,011	292,149	190,807	234,836	279,621	258,798	295,625	239,210	247,992	292,351	449,333	289,970	244,862		279,400	
2-Sep	239,989	203,851	467,788	327,996	281,343	273,263	294,626	191,010	234,875	279,673	258,943	299,119	239,220	248,026	293,326	452,350	292,479	246,022		280,300	
3-Sep	240,394	203,959	468,498	328,189	281,795	274,429	296,338	191,387	235,005	279,779	259,160	301,275	239,260	248,096	294,198	454,984	294,397	249,554		281,200	
4-Sep	240,637	204,013	469,402	328,577	282,007	275,182		191,794	235,083	279,863	259,340	302,279	239,280	248,131	295,096	457,596	297,315	252,513		281,200	
5-Sep	241,313	204,084	469,596	328,916	282,470	276,152		192,085	235,161	280,032	259,846	302,874	239,300	248,200	296,224	459,622	299,711	254,094		281,700	
6-Sep	241,746	204,192	469,919		282,742	276,865		192,463	235,222	280,053	259,918	303,097	239,310	248,270	297,481	461,313	301,374	255,943		280,100	
7-Sep	242,097	204,300	469,957		283,178	278,014		192,695		280,116	260,062	303,097	239,330	248,304	298,251	462,731	302,368	257,322		282,700	
8-Sep	242,395	204,354	470,014		283,287	278,411		192,928		280,190	260,459	303,097	239,330	248,339	298,687	464,503	303,230	258,836		283,100	
9-Sep	242,557	204,479	470,083		283,532	278,668		193,131		280,253	260,892	303,097	239,360	248,339	299,200	465,921	304,135	260,585		283,600	
10-Sep	242,746	204,497			283,695	279,619		193,553		280,295	261,072	303,097	239,380	248,339	299,789	467,121				283,600	
11-Sep	242,773	204,497			283,695	280,702		193,821		280,527	261,145	303,097	239,380	248,339	300,149	469,466				283,600	
12-Sep	242,935	204,497			283,712	281,491		193,936		281,234	261,253	303,097	239,390	248,513	300,687					283,600	
13-Sep	243,151	204,515			283,712	282,573		194,358			261,397	303,097	239,400	248,513	301,072					283,600	
14-Sep	243,233	204,533			283,712	283,656		194,434			261,542	304,472	239,400							283,600	

Cumulative Daily Run Sizes of Adult Nass River Chinook Salmon ( $\geq 50$ cm NFL) to Gitwinksihlkw Fishwheels, 2000-2018.																			IN-SEASON		
Note: In-season cum. values with yellow shading are preliminary and will change as mark-recapture data finalize over a 5-d period as fish pass the upper fishwheels.																					
Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Cum	Mean (94-17)	2018 Daily
31-Jul-18	20,529	34,282	15,808	28,857	16,777	15,797	27,714	26,438	20,689	28,842	19,257	10,872	9,933	9,888	12,745	21,156	9,710	4,321	8,860	18,710	0
1-Aug-18	20,540	34,297	15,817	28,873	16,826	15,811	27,761	26,475	20,712	28,864	19,440	10,893	9,973	9,888	12,874	21,245	9,778	4,346	8,884	18,745	24
2-Aug-18	20,572	34,358	15,817	28,919	16,826	15,855	27,824	26,500	20,712	28,887	19,440	10,915	10,036	9,922	12,874	21,245	9,892	4,371	8,931	18,773	48
3-Aug-18	20,669	34,397	15,826	29,012	16,859	15,884	27,824	26,500	20,758	28,910	19,440	10,936	10,115	9,939	12,906	21,348	9,961	4,421	8,979	18,810	47
4-Aug-18	20,842	34,404	15,835	29,043	16,957	15,913	27,824	26,512	20,758	28,955	19,501	10,936	10,217	9,939	12,938	21,377	10,006	4,446	8,979	18,844	0
5-Aug-18	20,960	34,404	15,853	29,090	16,989	15,941	27,871	26,524	20,781	29,138	19,501	10,957	10,327	9,939	12,970	21,377	10,075	4,497	9,048	18,881	69
6-Aug-18	21,003	34,443	15,871	29,106	17,054	15,941	27,949	26,561	20,781	29,183	19,562	10,957	10,359	9,955	13,002	21,377	10,120	4,572	9,093	18,911	45
7-Aug-18	21,068	34,458	15,890	29,106	17,087	15,985	27,981	26,574	20,874	29,342	19,623	11,021	10,383	9,955	13,099	21,407	10,166	4,723	9,093	18,955	0
8-Aug-18	21,111	34,466	15,890	29,121	17,120	15,999	28,028	26,574	20,920	29,479	19,684	11,042	10,398	9,972	13,228	21,422	10,211	4,848	9,225	18,995	132
9-Aug-18	21,175	34,496	15,899	29,152	17,217	16,028	28,075	26,598	20,943	29,547	19,745	11,063	10,430	9,972	13,324	21,451	10,280	4,873	9,247	19,029	22
10-Aug-18	21,208	34,519	15,899	29,183	17,332	16,028	28,075	26,635	20,943	29,547	19,745	11,063	10,454	9,972	13,388	21,481	10,325	4,924	9,247	19,050	0
11-Aug-18	21,283	34,535	15,908	29,183	17,413	16,043	28,122	26,697	20,989	29,593	19,867	11,084	10,461	9,972	13,453	21,495	10,417	4,924	9,247	19,086	0
12-Aug-18	21,305	34,565	15,935	29,230	17,413	16,057	28,169	26,709	21,012	29,593	19,989	11,106	10,485	9,989	13,517	21,510	10,439	4,924	9,247	19,109	0
13-Aug-18	21,348	34,596	15,935	29,245	17,462	16,071	28,185	26,722	21,058	29,593	20,050	11,106	10,493	10,039	13,517	21,510	10,439	4,949		19,128	
14-Aug-18	21,401	34,596	15,935	29,261	17,527	16,086	28,185	26,746	21,058	29,661	20,111	11,106	10,525	10,056	13,517	21,525	10,485	4,974		19,150	
15-Aug-18	21,434	34,619	15,944	29,292	17,625	16,086	28,232	26,759	21,058	29,775	20,111	11,127	10,564	10,056	13,517	21,540	10,508	4,974		19,173	
16-Aug-18	21,466	34,634	15,944	29,307	17,641	16,086	28,264	26,808	21,081	29,843	20,111	11,127	10,611	10,056	13,549	21,554	10,599	5,024		19,195	
17-Aug-18	21,498	34,634	15,953	29,307	17,674	16,115	28,279	26,820	21,151	29,843	20,172	11,169	10,643	10,056	13,582	21,584	10,622	5,125		19,222	
18-Aug-18	21,498	34,634	15,972	29,307	17,690	16,144	28,311	26,833	21,151	29,889	20,172	11,169	10,643	10,056	13,646	21,628	10,667	5,150		19,243	
19-Aug-18	21,520	34,642	15,972	29,307	17,707	16,172	28,389	26,857	21,174	29,912	20,232	11,169	10,666	10,056	13,678	21,658	10,713	5,150		19,263	
20-Aug-18	21,531	34,657	15,999	29,338	17,739	16,172	28,436	26,870	21,174	29,912	20,232	11,169	10,666	10,073	13,678	21,672	10,736	5,175		19,278	
21-Aug-18	21,531	34,657	16,017	29,338	17,772	16,172	28,452	26,870	21,197	29,934	20,232	11,169	10,682	10,073	13,678	21,746	10,736	5,200		19,291	
22-Aug-18	21,541	34,657	16,017	29,338	17,853	16,187	28,468	26,894	21,197	29,957	20,232	11,169	10,682	10,089	13,678	21,775	10,736	5,225		19,304	
23-Aug-18	21,541	34,657	16,017	29,354	17,902	16,230	28,468	26,956	21,266	30,048	20,232	11,169	10,714	10,106	13,710	21,820	10,758	5,225		19,327	
24-Aug-18	21,541	34,657	16,017	29,385	17,935	16,317	28,484	26,980	21,381	30,071	20,232	11,191	10,722	10,106	13,710	21,820	10,804	5,225		19,345	
25-Aug-18	21,541	34,665	16,017	29,385	17,935	16,346	28,484	26,993	21,381	30,071	20,293	11,191	10,729	10,106	13,871	21,834	10,804	5,225		19,359	
26-Aug-18	21,541	34,680	16,017	29,400	17,935	16,389	28,499	26,993	21,381	30,116	20,293	11,191	10,745	10,123	13,871	21,864	10,804	5,275		19,374	
27-Aug-18	21,552	34,680	16,017	29,400	17,967	16,418	28,515	26,993	21,404	30,116	20,293	11,191	10,745	10,139	13,903	21,908	10,827	5,300		19,388	
28-Aug-18	21,563	34,680	16,017	29,416	17,967	16,505	28,546	26,993	21,473	30,139	20,293	11,191	10,753	10,139	13,968	21,952	10,850	5,300		19,407	
29-Aug-18	21,574	34,688	16,017	29,416	17,967	16,533	28,546	26,993	21,496	30,185	20,293	11,191	10,753	10,139	14,000	22,041	10,872	5,351		19,424	
30-Aug-18	21,584	34,695	16,017	29,447	17,967	16,533	28,562	27,030	21,543	30,185	20,354	11,212	10,753	10,139	14,097	22,115	10,895	5,351		19,443	
31-Aug-18	21,595	34,695	16,017	29,447	17,984	16,577	28,562	27,042	21,589	30,185	20,354	11,212	10,761	10,156	14,097	22,159	10,918	5,376		19,454	

Cumulative Daily Run Sizes of Adult Nass River Coho Salmon (≥ 40 cm NFL) to Gitwinksihkw Fishwheels, 2000-2018.																		In-season	Mean Cum	Daily	
Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	(94-17)	2018
9-Jul-18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	21	0	0	0
10-Jul-18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	62	21	0	0	0
11-Jul-18	-	-	-	-	-	19	-	-	-	-	-	-	-	30	-	-	62	21	0	0	10
12-Jul-18	-	-	-	32	-	39	-	-	16	32	-	-	-	30	-	-	62	42	0	0	10
13-Jul-18	-	-	-	32	16	39	-	-	33	32	-	-	-	30	-	-	92	42	0	0	10
14-Jul-18	-	-	33	63	16	39	-	-	33	64	-	-	-	119	-	-	123	42	0	0	20
15-Jul-18	-	-	33	127	32	39	29	-	49	64	47	-	-	119	-	23	154	84	21	30	21
16-Jul-18	-	-	33	190	65	39	29	-	66	64	71	-	-	238	-	45	246	105	21	50	0
17-Jul-18	-	-	66	190	113	96	72	-	99	159	95	-	-	565	19	113	370	189	21	90	0
18-Jul-18	25	-	66	190	161	116	173	-	99	222	142	239	26	891	37	227	585	231	21	100	0
19-Jul-18	51	-	66	317	210	154	288	-	165	318	284	342	38	1,337	74	294	739	357	21	200	0
20-Jul-18	51	-	66	412	403	193	447	25	329	477	332	512	64	1,723	148	317	1,016	588	64	300	43
21-Jul-18	101	-	265	508	500	193	562	25	379	699	474	649	103	2,110	333	385	1,416	945	85	400	21
22-Jul-18	127	-	563	698	629	251	634	25	461	1,048	616	820	115	2,912	500	521	2,002	1,366	171	600	85
23-Jul-18	152	-	629	1,301	742	771	778	25	692	1,557	711	1,195	205	3,536	870	634	2,340	1,660	171	800	0
24-Jul-18	202	-	795	1,777	1,161	1,041	908	99	972	2,065	876	1,400	231	4,398	1,314	702	3,264	1,849	256	1,000	85
25-Jul-18	228	49	894	2,411	1,629	1,368	1,124	669	1,334	2,383	1,066	1,571	384	5,259	1,684	997	3,849	2,437	406	1,300	149
26-Jul-18	329	81	1,060	2,982	2,000	1,657	1,427	818	1,647	3,145	1,350	1,912	449	6,091	2,332	1,404	4,742	2,920	598	1,600	192
27-Jul-18	405	146	1,226	3,427	2,807	1,869	1,657	1,065	2,009	4,670	1,918	2,356	564	7,102	2,924	1,654	5,327	3,635	726	2,000	128
28-Jul-18	658	211	1,755	4,347	3,404	2,197	2,118	1,462	2,503	6,259	2,416	2,698	730	8,439	4,183	2,084	6,651	3,971	1,110	2,500	384
29-Jul-18	759	454	2,451	5,172	3,968	2,525	2,997	1,635	2,767	7,816	3,363	3,074	987	10,014	5,275	2,311	7,914	5,484	1,516	3,100	406
30-Jul-18	1,088	908	3,875	6,123	4,662	2,737	3,703	2,478	3,508	8,673	4,216	4,098	1,333	11,707	6,219	2,945	9,392	6,513	1,580	3,800	64
31-Jul-18	1,493	1,557	4,736	7,361	5,711	3,373	4,640	2,998	4,249	10,897	6,111	5,225	1,833	14,144	7,477	3,285	11,578	8,068	2,220	4,800	641
1-Aug-18	2,100	2,432	5,664	8,122	6,904	4,221	5,879	3,791	5,188	12,708	7,437	6,352	2,755	15,957	9,513	3,624	13,426	11,640	2,840	5,800	619
2-Aug-18	2,733	3,713	6,790	9,233	7,840	4,741	7,537	4,683	5,912	15,155	9,877	8,708	3,742	18,512	12,289	4,213	15,920	15,065	3,395	7,200	555
3-Aug-18	5,365	4,945	8,678	11,295	8,421	5,338	8,891	5,426	7,049	23,225	13,074	10,587	4,793	23,415	17,675	5,391	18,537	18,678	3,501	9,100	107
4-Aug-18	12,830	6,275	11,394	13,104	9,824	5,705	10,606	6,169	8,762	30,310	16,461	12,328	5,754	27,872	22,135	7,000	20,231	23,742	4,633	11,300	1,132
5-Aug-18	16,778	7,459	13,315	14,309	11,308	6,379	12,047	7,433	11,298	40,159	20,061	13,285	6,831	32,924	24,985	7,702	23,803	28,595	5,829	13,500	1,196
6-Aug-18	20,296	8,237	14,607	16,879	13,776	6,957	13,949	8,399	13,982	46,989	23,330	14,275	8,676	35,954	28,076	8,630	29,069	31,285	7,195	15,600	1,366
7-Aug-18	26,218	9,761	15,865	19,290	14,373	8,210	15,505	9,192	16,897	53,280	26,006	15,641	11,201	38,956	30,704	9,423	32,363	34,037	8,305	17,700	1,110
8-Aug-18	30,520	12,809	17,886	21,892	16,922	9,540	16,990	10,282	19,137	57,093	28,588	16,632	14,405	42,818	33,295	10,443	35,843	36,306	9,330	19,800	1,025
9-Aug-18	33,202	17,285	18,648	24,272	20,261	11,236	18,820	11,620	22,069	60,301	33,348	17,485	16,814	46,860	35,349	11,598	39,076	39,038	10,526	22,000	1,196
10-Aug-18	36,745	20,998	20,238	26,461	23,262	12,835	21,024	12,883	24,589	63,606	36,546	18,305	18,916	52,565	37,552	12,459	43,818	42,946	11,081	24,500	555
11-Aug-18	39,301	24,370	23,715	29,538	26,133	14,839	22,538	14,692	28,591	66,910	40,075	18,988	24,183	57,111	38,403	13,184	48,684	45,866	12,255	27,600	1,174
12-Aug-18	41,047	29,689	28,021	32,553	27,537	16,593	24,411	16,699	31,802	69,166	43,533	19,910	29,232	62,192	39,810	13,523	52,348	48,156	13,600	30,400	1,345
13-Aug-18	42,363	35,331	31,797	34,837	30,037	18,597	26,803	18,929	33,680	74,249	47,322	20,969	32,308	64,480	41,549	14,180	57,152	51,350		33,100	
14-Aug-18	43,452	38,963	35,142	38,327	32,957	21,970	29,195	20,737	34,684	78,538	51,538	21,754	35,666	67,689	45,029	15,630	61,863	53,808		35,700	
15-Aug-18	44,287	43,503	42,429	41,373	35,441	26,114	32,668	22,447	35,771	83,780	54,215	22,847	38,280	70,928	50,544	17,963	67,036	56,813		38,600	
16-Aug-18	45,071	47,168	52,598	44,958	37,344	27,944	35,593	24,553	37,912	89,976	56,891	23,120	41,035	73,276	56,818	20,047	70,300	59,607		41,600	
17-Aug-18	45,982	49,778	60,150	46,957	39,248	32,589	37,582	25,643	39,279	96,393	61,320	24,384	42,676	76,782	62,814	21,814	77,537	61,351		44,500	
18-Aug-18	47,323	52,243	66,641	49,114	40,764	36,867	39,498	26,931	41,832	102,938	64,778	26,125	44,662	79,664	66,738	22,811	82,925	61,897		47,100	
19-Aug-18	48,589	55,486	71,842	51,843	42,716	41,242	41,905	27,625	44,697	108,308	68,141	27,252	46,610	81,417	72,994	23,604	87,729	62,738		49,600	
20-Aug-18	49,525	57,594	76,015	54,952	45,588	42,822	44,427	29,607	47,629	113,073	71,173	28,106	48,366	83,884	78,065	24,283	91,455	64,628		52,100	
21-Aug-18	49,881	58,988	79,592	58,125	48,637	43,497	46,386	31,540	51,153	117,553	72,689	28,721	50,006	89,203	81,452	25,710	94,596	67,633		54,400	
22-Aug-18	50,132	60,237	80,652	60,536	51,121	45,520	47,712	33,299	57,922	123,907	73,399	28,721	52,133	92,441	84,098	27,545	100,077	72,150		56,800	
23-Aug-18	50,132	62,426	82,606	62,757	52,186	51,745	48,519	34,736	61,644	129,594	73,968	28,721	53,915	96,483	86,800	29,108	103,495	73,726		58,800	
24-Aug-18	50,487	63,820	83,931	65,232	53,363	57,527	49,052	36,123	64,444	136,044	74,773	29,131	55,094	100,108	89,373	30,467	107,806	75,869		60,900	
25-Aug-18	51,550	65,506	87,608	66,914	54,170	60,977	49,686	36,991	64,741	140,682	76,241	30,599	56,260	103,436	91,316	32,143	111,440	79,924		62,800	
26-Aug-18	51,980	67,112	94,431	68,817	54,734	63,848	50,248	38,229	65,613	149,388	77,189	33,980	57,016	105,605	93,796	33,503	113,257	82,824		64,800	
27-Aug-18	52,638	67,112	98,041	69,928	55,363	68,377	50,767	39,468	68,413	155,932	77,970	37,942	57,862	107,536	95,536	34,903	114,673	85,429		66,700	
28-Aug-18	54,080	67,339	99,134	70,975	55,863	72,771	51,171	40,781	72,086	161,079	78,515	42,894	58,554	110,092	97,738	35,632	117,167	90,093		68,400	
29-Aug-18	58,129	70,079	99,962	72,434	56,718	75,431	51,603	41,450	74,523	166,925	79,155	46,138	59,323	112,350	99,441	36,447	118,861	93,182		70,200	
30-Aug-18	60,736	74,084	114,834	72,974	57,364	78,264	52,338	42,342	77,521	172,231	79,723	50,987	60,476	114,281	101,014	37,308	120,123	96,880		72,600	
31-Aug-18	63,520	76,857	124,804	73,703	57,622	80,480	53,116	43,432	80,073	177,886	80,315	54,983	61,335	115,619	102,994	37,852	121,201	99,149		74,600	
1-Sep-18	65,013	78,397	134,542	74,528	57,993	83,005	53,534	44,448	82,379	182,620	80,599	57,613	62,014	117,253	103,864	38,509	122,895	101,418		76,200	
2-Sep-18	66,405	79,970	141,862	75,036	58,380	84,778	53,995	45,290	82,824	185,511	80,765	60,276	62,745	118,649	105,326	39,437	125,605	104,233		77,600	
3-Sep-18	67,240	81,494	150,705	75,988	58,654	86,763	54,730	46,306	83,631	188,116	81,120	62,189									

Nass Summer-run Steelhead Cumulative Daily Run Size Estimates to Gitwinksihlkw Fishwheels, 2000-2018.																		IN-SEASON	Mean Cum	Daily		
Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	(94-17)	2018	
1-Jul-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2-Jul-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3-Jul-18	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	25	0	25
4-Jul-18	0	0	0	0	0	0	0	0	0	0	0	116	49	0	0	0	0	0	25	10	0	
5-Jul-18	0	0	0	0	0	0	0	0	0	0	0	116	49	0	0	0	0	0	25	10	0	
6-Jul-18	0	0	0	0	0	0	0	0	0	0	0	116	49	0	0	0	0	0	25	10	0	
7-Jul-18	0	0	0	0	0	0	0	0	0	0	0	116	73	0	32	39	48	0	25	20	0	
8-Jul-18	0	0	0	0	0	0	0	67	0	0	0	116	73	0	32	39	48	0	25	20	0	
9-Jul-18	0	0	0	0	0	0	0	67	0	0	0	116	73	0	32	39	144	0	51	30	25	
10-Jul-18	31	0	0	0	0	0	0	100	0	0	0	116	73	0	32	39	192	0	51	30	0	
11-Jul-18	31	0	0	0	0	0	0	100	0	0	0	116	73	0	32	39	241	0	76	30	25	
12-Jul-18	31	0	0	0	0	0	0	100	0	0	0	116	73	0	64	39	241	0	76	40	0	
13-Jul-18	31	0	0	0	0	0	0	100	0	0	0	116	73	0	95	77	241	0	76	50	0	
14-Jul-18	31	28	0	0	0	41	0	100	0	0	0	116	73	0	159	116	241	0	127	100	51	
15-Jul-18	31	28	0	0	0	41	0	100	0	0	0	116	73	0	191	116	241	0	152	100	25	
16-Jul-18	62	28	0	0	0	41	30	100	0	0	77	174	73	0	191	155	241	0	152	100	0	
17-Jul-18	155	57	52	0	0	41	30	100	0	0	77	174	73	0	191	232	241	0	203	100	51	
18-Jul-18	155	57	52	0	0	83	30	133	82	0	77	290	73	0	223	348	241	0	253	100	51	
19-Jul-18	155	57	52	0	18	83	30	133	123	0	153	407	73	0	223	348	241	0	279	100	25	
20-Jul-18	155	57	52	0	36	83	30	133	123	0	153	465	73	0	223	387	241	29	330	100	51	
21-Jul-18	155	57	52	0	54	83	59	133	123	0	307	465	73	0	254	387	241	58	558	100	228	
22-Jul-18	155	57	52	59	54	166	59	133	164	0	460	465	97	53	350	387	385	58	684	200	127	
23-Jul-18	186	57	104	59	54	249	59	133	246	51	537	639	97	105	572	387	385	58	963	200	279	
24-Jul-18	310	57	156	178	72	249	59	133	328	103	690	755	146	158	700	425	577	58	1,191	300	228	
25-Jul-18	310	85	208	415	72	290	89	133	492	103	690	871	170	264	891	425	625	115	1,242	300	51	
26-Jul-18	372	113	208	771	90	290	89	133	615	205	844	871	218	264	1,050	542	866	202	1,597	400	355	
27-Jul-18	372	170	259	831	180	332	89	133	738	308	1,074	1,103	243	316	1,209	580	1,684	259	1,926	500	330	
28-Jul-18	434	198	363	1,068	198	332	89	133	902	461	1,304	1,278	267	422	1,336	735	2,501	288	2,028	600	101	
29-Jul-18	465	283	571	1,365	270	332	148	133	984	667	1,381	1,394	267	686	1,431	774	3,175	288	2,155	700	127	
30-Jul-18	527	311	934	1,661	288	332	177	133	1,229	718	1,457	1,394	364	791	1,463	928	3,560	346	2,180	800	25	
31-Jul-18	682	396	1,297	1,958	324	373	236	200	1,434	718	1,688	1,452	412	844	1,590	1,006	4,185	375	2,205	1,000	25	
1-Aug-18	744	453	1,608	2,136	451	580	236	233	1,557	718	1,918	1,510	558	844	1,813	1,044	4,618	461	2,256	1,100	51	
2-Aug-18	837	934	2,024	2,789	559	663	266	233	1,762	718	2,148	1,568	728	844	2,258	1,044	5,676	663	2,357	1,300	101	
3-Aug-18	1,209	1,076	2,127	2,907	649	705	295	267	1,967	923	2,455	1,742	946	844	2,926	1,160	6,446	836	2,408	1,500	51	
4-Aug-18	1,829	1,218	2,335	3,085	793	705	325	366	2,008	1,333	2,455	1,858	1,116	844	3,180	1,508	7,119	980	2,712	1,600	304	
5-Aug-18	2,449	1,218	2,750	3,441	901	746	384	433	2,377	1,743	2,761	1,975	1,189	844	3,530	1,741	7,552	1,153	2,940	1,800	228	
6-Aug-18	2,759	1,246	2,854	3,619	991	871	561	566	2,500	1,897	2,838	2,033	1,358	896	4,007	1,934	8,707	1,210	3,473	2,000	532	
7-Aug-18	3,162	1,359	2,906	3,916	1,009	912	708	633	2,746	2,718	2,992	2,149	1,552	896	4,262	2,205	9,669	1,297	4,056	2,200	583	
8-Aug-18	3,409	1,586	3,165	4,272	1,118	1,078	797	666	2,869	3,230	2,992	2,555	1,892	1,002	4,580	2,553	10,005	1,441	4,562	2,400	507	
9-Aug-18	4,122	2,124	3,321	4,865	1,172	1,161	826	733	2,951	4,102	3,375	2,788	2,062	1,213	4,771	2,785	10,005	1,470	5,145	2,600	583	
10-Aug-18	4,649	2,322	3,321	5,459	1,460	1,244	944	833	3,033	4,564	3,835	3,020	2,329	1,424	5,184	2,978	10,438	1,671	5,323	2,900	177	
11-Aug-18	5,331	2,633	3,373	6,052	1,658	1,285	1,003	900	3,197	4,717	4,449	3,543	2,692	1,529	5,248	3,172	10,967	1,729	5,424	3,100	101	
12-Aug-18	5,703	3,086	3,580	6,527	1,766	1,368	1,092	1,099	3,279	4,717	4,679	3,833	3,274	1,635	5,343	3,288	11,208	1,873	5,627	3,300	203	
13-Aug-18	6,013	3,370	3,840	6,942	1,911	1,493	1,210	1,233	3,361	5,743	4,909	4,065	3,541	1,740	5,502	3,288	11,689	2,305			3,600	
14-Aug-18	6,385	3,483	3,943	7,476	2,235	1,617	1,269	1,333	3,361	6,717	5,830	4,356	4,026	1,740	5,725	3,558	12,218	2,363			3,800	
15-Aug-18	6,664	3,766	3,943	7,773	2,451	1,617	1,328	1,533	3,443	7,538	6,213	4,530	4,730	1,740	6,011	3,674	12,988	2,536			4,000	
16-Aug-18	7,005	3,964	4,358	8,010	2,487	1,658	1,417	1,832	3,565	7,948	6,827	4,588	5,239	1,793	6,234	4,023	13,228	3,026			4,300	
17-Aug-18	7,160	4,332	5,137	8,485	2,632	1,658	1,564	2,066	3,729	8,614	7,210	4,588	5,724	1,846	6,520	4,680	13,709	3,141			4,600	
18-Aug-18	7,377	4,446	5,759	8,603	2,758	1,949	1,682	2,199	3,852	9,743	7,441	4,588	6,137	2,109	6,870	4,990	14,094	3,141			4,800	
19-Aug-18	7,563	4,785	6,071	8,722	2,830	1,990	1,918	2,265	4,262	10,255	7,594	4,704	6,670	2,109	7,379	5,222	14,960	3,141			5,100	
20-Aug-18	7,873	4,984	6,330	9,256	2,920	1,990	2,095	2,299	4,959	10,563	7,747	4,820	7,010	2,215	7,665	5,299	15,489	3,170			5,300	
21-Aug-18	8,090	5,380	6,797	9,909	3,028	1,990	2,361	2,465	5,287	10,666	8,131	4,820	7,398	2,215	8,460	5,802	15,585	3,314			5,600	
22-Aug-18	8,121	5,663	7,108	10,383	3,244	1,990	2,479	2,532	6,065	11,383	8,438	4,820	7,689	2,478	9,128	6,769	15,826	3,602			5,900	
23-Aug-18	8,121	5,805	7,264	10,680	3,371	2,405	2,656	2,732	6,721	12,409	8,514	4,820	7,980	2,847	10,209	7,272	16,259	3,689			6,200	
24-Aug-18	8,121	6,314	7,264	11,451	3,425	2,861	2,892	2,865	7,500	12,768	8,975	4,937	8,271	3,269	11,386	7,658	16,788	3,919			6,600	
25-Aug-18	8,245	6,682	7,316	11,985	3,479	3,234	3,040	3,032	7,500	13,434	9,282	5,111	8,538	3,375	12,117	8,045	17,124	4,323			6,800	
26-Aug-18	8,276	7,079	7,731	12,282	3,641	3,358	3,128	3,165	7,500	13,793	9,588	5,227	8,683	3,480	13,167	8,896	17,221	4,582			7,100	
27-Aug-18	8,338	7,079	8,042	12,757	3,803	3,773	3,158	3,232	7,705	14,101	10,355	6,156	8,950	3,691	13,708	9,824	17,317	4,813			7,400	
28-Aug-18	8,369	7,079	8,094	13,172	3,875	3,939	3,305	3,332	8,360	14,563	10,509	7,318	9,120	3,902	14,185	10,134	17,365	5,187			7,700	
29-Aug-18	8,834	7,277	8,146	13,291	3,893	4,188	3,482	3,432	8,975	15,127	10,892	8,247	9,654	4,166	15,043	10,173	17,509	5,389			8,000	
30-Aug-18	9,516	7,673	8,509	13,669	3,947	4,519	3,482	3,565	9,795	15,998	10,892	9,234	9,896	4,429	15,393	10,250	17,654	5,879			8,400	
31-Aug-18	10,290	8,325	9,287	13,647	4,037	4,644	3,600	3,831	10,287	17,178	11,123	10,512	10,211	4,482	15,743	10,443	17,942	6,138			8,700	
1-Sep-18	10,755	8,806	9,599	13,765	4,056	4,892	3,777	4,031	10,901	18,870	11,429	12,138	10,406	4,588	15,902	10,482	18,327</					



2018 Nass Fishwheel Catches

	GW		GW Total	GH				GH Total	Grand Total
Data	FW1	FW2		FW3	FW4	FW5	FW6		
<b>Chin-adult catch</b>	<b>96</b>	<b>221</b>	<b>317</b>	<b>117</b>	<b>145</b>	<b>205</b>	<b>43</b>	<b>510</b>	<b>827</b>
Chin-tagged	90	210	300	112	135	180	40	467	767
Chin-recaps	9	11	20	5	9	31	5	50	70
Chin-Jacks	39	109	148	58	99	97	79	333	481
Sum of CH Harv	0	0	0	0	0	0	0	0	0
<b>Sockeye-adult catch</b>	<b>1,805</b>	<b>6,511</b>	<b>8,316</b>	<b>3,165</b>	<b>2,223</b>	<b>5,135</b>	<b>1,573</b>	<b>12,096</b>	<b>20,412</b>
Sockeye-tagged	1,450	3,314	4,764	0	0	0	0	0	4,764
Sum of sk-radio	171	388	559	0	0	0	0	0	559
Sockeye-recaps	94	158	252	91	76	167	50	384	636
Sockeye_jacks	548	1285	1833	283	261	664	255	1463	3296
Sum of sk_harvest_total	0	0	0	0	0	0	0	0	0
<b>Coho-adult catch</b>	<b>247</b>	<b>390</b>	<b>637</b>	<b>168</b>	<b>131</b>	<b>414</b>	<b>245</b>	<b>958</b>	<b>1,595</b>
Coho-tagged	203	343	546	0	0	0	0	0	546
Coho-recaps	6	6	12	2	2	7	3	14	26
Coho-jack	10	10	20	12	14	30	23	79	99
Sum of co_harvest_total	0	0	0	0	0	0	0	0	0
<b>Steel-adult catch</b>	<b>36</b>	<b>186</b>	<b>222</b>	<b>23</b>	<b>18</b>	<b>66</b>	<b>26</b>	<b>133</b>	<b>355</b>
Steel-Adipose marked	32	174	206	20	13	50	21	104	310
Steel-unmarked	4	12	16	3	5	16	5	29	45
Steel-recap-total	4	1	5	0	0	4	0	4	9
<b>Pacific Lamprey-catch</b>	<b>174</b>	<b>206</b>	<b>380</b>	<b>65</b>	<b>181</b>	<b>270</b>	<b>192</b>	<b>708</b>	<b>1088</b>
Lamprey-tagged	121	173	294	48	142	208	150	548	842
Lamprey-released	53	31	84	17	39	62	42	160	244
Lamprey-recaps	0	1	1	0	9	10	9	28	29
River Lamprey	0	0	0	0	1	3	1	5	5
<b>Pink-adult-catch</b>	<b>728</b>	<b>2251</b>	<b>2979</b>	<b>351</b>	<b>190</b>	<b>472</b>	<b>224</b>	<b>1237</b>	<b>4216</b>
<b>Chum-adult-catch</b>	<b>5</b>	<b>12</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>20</b>
Chum-tagged	5	11	16	0	0	2	1	3	19
Chum-punched	0	0	0	0	0	0	0	0	0
Chum-recaps	0	1	1	1	0	0	0	1	2
<b>Whitefish</b>	<b>6</b>	<b>4</b>	<b>10</b>	<b>10</b>	<b>12</b>	<b>27</b>	<b>37</b>	<b>86</b>	<b>96</b>
<b>Rainbow Trout</b>	<b>13</b>	<b>5</b>	<b>18</b>	<b>16</b>	<b>7</b>	<b>14</b>	<b>29</b>	<b>66</b>	<b>84</b>
<b>Dolly Varden</b>	<b>41</b>	<b>13</b>	<b>54</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>59</b>
<b>Peamouth Chub</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>1</b>	<b>20</b>	<b>14</b>	<b>44</b>	<b>44</b>
<b>Pikeminnow</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>13</b>	<b>8</b>	<b>28</b>	<b>28</b>
<b>Redside Shiner</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>9</b>	<b>9</b>	<b>25</b>	<b>26</b>
<b>Cutthroat Trout</b>	<b>11</b>	<b>4</b>	<b>15</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>20</b>
<b>Sculpin</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>11</b>	<b>1</b>	<b>15</b>	<b>17</b>
<b>Suckers</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>5</b>
<b>Seals</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>