

Sayt K'il'im Goot – one heart, one path, one nation

## **2013 NASS RIVER SALMON STOCK ASSESSMENT UPDATE – MONDAY 2 DECEMBER**

Attached is the final public Nass River salmon stock assessment update for 2013 (pdf format) from the Nisga'a Fisheries and Wildlife Department of Nisga'a Lisims Government. *Sayt K'il'im Goot – one heart, one path, one nation.*

**All data presented in this update are preliminary and subject to change with further assessment information and analyses. Please review final program summary reports prepared by Nisga'a Fisheries for final numbers.**

**DAILY FISHWHEEL CATCHES AND ESCAPEMENT ESTIMATES FROM THE NISGA'A FISHERIES AND WILDLIFE DEPARTMENT ARE AVAILABLE AT THE FOLLOWING LINK (It is recommended to refresh link (F5) each time & copy files to your machine before opening):**

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

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### **NISGA'A FISHERIES PRELIMINARY SALMON & STEELHEAD ASSESSMENT PROGRAM POST-SEASON UPDATE FOR 2013:**

#### **GITWINKSIHLKW (GW) FISHWHEELS (NASS TEST FISHERY - 20TH YEAR – STARTED IN 1994):**

The Nass River test fishery fishwheels began operation on 2 June (FW2) and 4 June (FW1) for tagging and historical catch index assessments for salmon and summer-run Steelhead and ended operation on 13 September. **All fish caught in the GW fishwheels were released alive after tagging and/or counting.** Nass River mainstem water levels ranged between 0.54 m (11 Sep) to 5.25 m (27 May). The mean water level in 2013 (2.02 m) was below the historical mean water level (2.23 m) from 1994-2012. A chart of the water levels at the test fishery follow the text summary that show 2013 levels to historical levels. The Nass River water temperature averaged 9.6 °C during fishwheel operations in 2013, ranging between 6.3°C (7 June) and 11.1 °C (2 August).

#### **GREASE HARBOUR (GH) FISHWHEELS:**

Three fishwheels (FW3, FW5 and FW6) operated at Grease Harbour (upstream of Ts'im Anwiihlist) in 2013; FW 3 from 9 June-4 Sep, FW 5 from 12 June-11 Sep, and FW 6 from 13 June-4 Sep. These fishwheels were used for in-season mark-recapture tag recoveries, abundance estimates, additional tagging (adult Chinook, Chum, and Pacific lamprey), and for selective harvest of Sockeye and Coho salmon for the Nisga'a Lisims Government's Nass River In-land Demonstration Fishery (Sockeye only) and for NLG treaty fisheries (see harvest summary in NLG catch summary).

#### **NASS FISHWHEEL CATCH SUMMARY (2 June to 15 September 2013):**

The 2013 Nass fishwheel catches were above average for large adult Sockeye (39,184), Coho (15,608), odd-year Pink (24,801) and Pacific Lamprey (567); and below average for Chinook (1,981), Chum (52), and summer-run steelhead (612) when compared to the mean catches from 1994 to 2012 (Table 1). A chart of catches by year follows the text summary that shows 2013 catch compared to past catches.

The 2013 fishwheel catches of small (jacks) salmon (<50 cm NFL for Chinook, <45 cm NFL for Sockeye, and <40 cm NFL for Coho) were above average for Chinook (1,346 vs. 600), Sockeye (8,315 vs. 3,400) and Coho salmon (741 vs. 560) when compared to the mean catches from 1994 to 2012. Charts showing catches and number tagged are provided in the attachment for reference.

Other adult species and juvenile salmon catches at the fishwheels in 2013 include: 169 Dolly Varden, 137 Pike Minnow, 111 Whitefish, 79 Cutthroat, 67 Rainbow Trout, 46 Peamouth Chub, 21 Sculpin, 12 Sucker, 9 Red-Side Shiner, 149 salmon smolts (74 Coho, 41 Chinook, 34 Sockeye), 2 frogs, and 4 seals. Of the non-salmon fishwheel catches, Pacific Lamprey, Pike Minnow, and Peamouth Chub species were above average when compared to the mean catches from 1994 to 2012. In addition to Table 1, charts of catches by year follow the text summary that shows 2013 catch compared to past catches.

**Table 1. Nass fishwheels catches of salmon and non-salmon species from 1994-2013.**

Year	# of Fw	Start date	End date	Total Effort (days)	Chinook salmon (≥50 cm FL)	Sockeye salmon (≥45 cm FL)	Coho salmon (≥40 cm FL)	Pink salmon	Chum salmon	Summer-run Steelhead (≥20 cm FL)	Dolly (≥20 cm FL)	Cutthroat (≥20 cm FL)	Rainbow (≥20 cm FL)	White Fish	Pacific Lamprey	Pike Minnow	Pea-mouth Chub	Suckers	Sculpins	Red-side Shiner	Longfin Smelts
1994	4	7-Jun	7-Sep	92	2,667	24,746	6,990	12,436	250	208	42	5	2	11	47						
1995	4	8-Jun	4-Sep	88	920	21,090	1,837	8,881	224	111	101	8	6	42	81						
1996	4	29-May	22-Sep	116	2,191	23,063	4,029	23,601	371	485	177	29	21	108	384						
1997	4	21-May	2-Sep	104	3,736	27,762	1,438	13,167	130	502	294	27	23	145	388			7			
1998	4	12-Jun	20-Sep	100	3,071	17,185	3,760	10,624	272	707	388	61	9	140	194	84		38	69		
1999	4	7-Jun	30-Sep	115	3,476	41,545	6,393	22,019	127	641	1,189	97	17	155	185	65		24	24		3
2000	6	11-Jun	18-Sep	99	5,003	33,879	8,529	10,206	241	1,476	558	97	5	75	251	53		34	14		
2001	6	7-Jun	14-Sep	99	12,106	32,821	22,705	42,508	162	1,435	347	69		67	238	75		42	13		
2002	6	20-Jun	9-Sep	81	6,785	58,728	14,556	15,893	54	1,100	429	72	22	51	187	93		8	17		
2003	6	14-Jun	5-Sep	83	5,802	47,556	9,460	33,560	175	583	524	94	26	99	936	105	9	29	25		
2004	6	11-Jun	10-Sep	91	3,314	43,782	11,788	35,605	242	656	276	71	54	55	1,132	137	29	44	11		
2005	6	6-Jun	16-Sep	102	4,111	40,320	14,508	19,788	141	721	150	26	48	55	615	100	73	33	16		
2006	6	8-Jun	3-Sep	87	9,089	50,769	9,671	2,817	158	466	286	62	66	91	363	145	36	33	9		
2007	6	14-Jun	20-Sep	98	9,440	38,942	11,638	17,669	136	783	254	47	69	70	315	140	22	20	31		
2008	5	5-Jun	6-Sep	93	4,331	34,702	14,640	1,932	52	851	193	88	55	55	198	72	9	18	14	6	
2009	6	1-Jun	12-Sep	103	7,136	43,426	20,270	42,120	108	1,688	328	93	117	119	483	93	46	27	56		
2010	6	1-Jun	22-Sep	113	1,140	25,703	12,938	4,614	78	1,197	557	132	161	388	313	126	18	46	21	7	3
2011	5	1-Jun	17-Sep	108	1,795	38,083	5,752	10,719	166	991	481	156	86	353	632	181	35	45	17	10	
2012	5	1-Jun	15-Sep	106	4,059	62,385	15,608	7,694	106	1,525	424	59	45	108	674	180	129	27	22	4	
2013	5	2-Jun	13-Sep	103	1,981	39,184	14,555	24,801	52	612	169	67	46	79	567	137	111	21	12	9	
1994 to 2012:																					
Mean	5	6-Jun	13-Sep	99	4,746	37,184	10,343	23,381	168	849	368	68	46	115	401	110	41	30	24	7	3
Min	4	21-May	2-Sep	81	444	9,046	466	8,881	42	40	42	5	2	11	47	53	9	7	9	4	3
Max	6	20-Jun	30-Sep	116	12,106	62,385	22,705	42,508	371	1,688	1,189	156	161	388	1,132	181	129	46	69	10	3

**MEZIADIN FISHWAY COUNTS (1 July to 4 October 2013):**

The Meziadin Fishway counts were conducted from 1 July to 4 October 2013. The fishway water levels and temperatures averaged 1.18 m (ranged from 1.09 to 2.01 m) and 16°C (ranged from 8 °C to 20.5 °C), respectively. Counts at the fishway in 2013 were below average for large adult Chinook salmon (126 vs. 500) and summer-run steelhead (23 versus 40); and above average for Sockeye (170,376 vs. 162,000) and Coho salmon (5,934 vs. 4,300) when compared to mean counts from 2000 to 2012 (Table 2). Counts of small salmon (jacks) were above average for Sockeye (12,722 vs. 5,400), average for Chinook (54 vs. 50), and below average for Coho (46 vs. 80) when compared with mean counts from 1944 to 2012. A total of 27 adult Bull Trout (>20 cm NFL) were also counted in 2013. Escapement targets for adult large salmon at Meziadin Fishway are approximately: 160,000 Sockeye, 475 Chinook and 3,500 Coho. The escapement targets for Sockeye and Coho salmon at Meziadin were reached; but not for Chinook.

**Table 2. Counts of large salmon and steelhead at the Meziadin Fishway, 2000 to 2013.**

Meziadin Fishway (-149 km from tagging site):		Adult large salmon counted				Tags counted			
Year	Period of Operation	Chinook	Sockeye	Coho	Steelhead	Chinook	Sockeye	Coho	Steelhead
2000	29 June to 13 October	416	137,042	1,423	46	30	2,964	35	2
2001	4 July to 15 October	613	116,192	5,942	72	66	2,982	173	9
2002	1 July to 15 October	464	332,442	5,082	41	21	6,027	99	2
2003	2 July to 10 October	479	196,852	3,907	30	18	4,650	91	1
2004	3 July to 3 October	490	140,923	4,172	58	20	4,417	154	12
2005	1 July to 15 October	638	142,751	7,189	85	33	3,819	259	9
2006	1 July to 12 October	721	146,954	5,466	39	35	4,694	251	1
2007	1 July to 11 October	754	104,308	2,504	27	34	4,082	67	2
2008	1 July to 9 October	518	150,396	3,861	29	17	5,016	167	2
2009	1 July to 6 October	336	168,392	5,423	18	15	4,887	96	2
2010	1 July to 23 October	315	159,120	4,138	81	3	2,670	129	7
2011	1 July to 6 October	330	167,524	2,336	12	28	4,213	44	1
2012	1 July to 4 October	255	144,923	4,980	34	42	6,112	246	5
2013	1 July to 4 October	126	170,376	5,934	23	19	3,726	128	0
Average (2000-12)		500	162,100	4,300	40	30	4,350	140	4

**MEZIADIN GROUND SURVEYS:** The Nisga'a Fish and Wildlife Department, in collaboration with the Gitanyow Fisheries Authority (GFA), conducted three snorkel surveys on the Meziadin River in 2013. With recent low escapements through the Meziadin Fishway, it was recognized that it would be valuable to assess if Chinook salmon were jumping the falls, bypassing the fishway, and therefore resulting in an underestimate of escapement in the fishway counts. Three snorkel surveys were conducted on 29 August, 22 September, and 10 October 2013 with respective raw counts of 63, 86 and 18 Chinook salmon. Four sites between the fishway and the lake outflow were swum as known Chinook spawning areas. A minimum escapement of **137 Chinook salmon was calculated for Meziadin River (90% CIs of 108-177)**. This estimate was generated using the AUCmonteMASTER2.05 based on a mean residency time of 41 days (CSAS 2371) and a standard deviation of 5 with 1000 iterations. **We recommend that the AUC estimate be used as the final Chinook salmon escapement estimate for Meziadin River for 2013 to account for fish jumping the falls.**

**KWINAGEESE WEIR NET UPSTREAM COUNTS** (13 July to 11 October 2013):

The Kwinageese weir operations started on 13 July. The water levels and temperatures at the weir averaged 0.22 m (ranged from 0.09 m to 0.57 m) and 13.5 °C (ranged from 8 °C to 18 °C), respectively. The weir was functional during the entire monitored period (i.e., was not topped by high water). Net upstream counts were below average for salmon (Chinook, Sockeye and Coho) and near average for Steelhead (Table 3) when compared to the average counts for years not impacted by the past downstream blockage. A total of 43 adult Bull Trout (>20 cm NFL) were also counted. Seven salmon jacks (4 Chinook and 3 Coho) were also counted at the weir in 2013. A total of **763 adult Coho salmon** and **208 summer-run steelhead** were counted through the Kwinageese River video weir. It is uncertain how many more of these species would have subsequently passed the weir after operation, therefore these counts should be considered minimum escapement estimates for 2013. Two helicopter inspections (3 July and 29 August) of the 2011 blockage site on the lower Kwinageese River were surveyed by the Nisga'a Fish and Wildlife Department and DFO in 2013. The surveys confirmed the concrete structures installed in August 2011 were still in place and functioning well by 'pooling' water at the base of the barrier. Daily counts of fish indicated good passage by the falls in 2013. Charts showing daily numbers by species are provided after the text summary.

**Table 3. Counts of large salmon and steelhead at the Kwinageese Weir, 2002 to 2013.**

Kwinageese Weir (~208 km from tagging site):		Adult large salmon counted (net upstream)				Tags counted (net upstream)			
Year	Period of Operation	Chinook	Sockeye	Coho	Steelhead	Chinook	Sockeye	Coho	Steelhead
2002	17 July to 17 October	1,893	5,891	1,283	267	114	86	8	8
2005	12 August to 22 October	538	3,186	2,663	304	19	37	59	25
2006	25 August to 5 October	410	2,700	1,582	129	27	123	51	6
2009	12 July to 15 October	895	107	60	33	28	0	0	4
2010	9 July to 19 October	131	48	191	110	2	0	8	7
2011	10 July to 5 October	740	10,273	226	50	87	240	10	0
2012	19 July to 11 October	715	3,688	155	296	204	141	5	28
2013	13 July to 11 October	813	397	763	208	109	4	13	7
<b>ADJUSTED MEAN COUNT AT KWIN (2002,05,06,11)</b>		<b>1,020</b>	<b>6,120</b>	<b>1,510</b>	<b>220</b>	<b>90</b>	<b>100</b>	<b>30</b>	<b>20</b>

**KWINAGEESE / FRED WRIGHT WATERSHED GROUND SURVEYS** for Sockeye salmon were conducted on 28 August, and 9 & 26 September 2013. As no count was conducted at Bonney Creek on 26 September, the number of spawners was estimated from the number of spawners on 9 September and the ratio of the 26 September count to the 9 September count on the Upper Kwinageese River in 2013 (88%). Escapement estimates were calculated using a survey life of 14.6 days (± standard deviation of 2.3 days) based on the average of Gingit Creek Sockeye salmon tag life curve-based survey life estimates since 2004 (n=8); zero count dates were estimated using AUCMonteMaster2.04. Combining the AUC escapement estimates for **Upper Kwinageese River (363; 90% CIs 307-453)** and **Bonney Creek (101; 90% CIs 76-145)** resulted in an **overall Sockeye salmon escapement estimate of 464 for the Kwinageese Fred Wright System**. This estimate was similar to the video weir count on the upper Kwinageese River (398). **We recommend that the weir count be used as the final Sockeye salmon escapement estimate for the Kwinageese/Fred Wright system.**

Chinook salmon carcass surveys were conducted in the Kwinageese River downstream of Fred Wright Lake on 29 August and 5, 10 & 14 September 2013. Twelve marked carcasses were recovered from a total of 103 examined. Live Chinook counts were conducted from Fred Wright Lake to Second Lake and from Second Lake to the old weir site on each survey date. A total of 578 live adult Chinook salmon and 9 carcasses were counted on 5 September. Expanding the live count for observer efficiency produced a peak live plus dead count estimate of 860 adult Chinook salmon for the Kwinageese River. An AUC estimate was also calculated for Kwinageese River

using the same survey life as for Damdochax River (27.8 days) and assuming that fish first entered the survey area 7 days after the first fish were counted at the weir. **The resulting AUC escapement estimate for Kwinageese River Chinook salmon was 1040 (90% CIs 812-1324).** As in 2012 there was a very close match between the estimated peak count of spawners and the Kwinageese Video weir count (813). In future years we recommend that if the video weir is not operated a simple observer efficiency expanded peak live plus dead count be used to estimate Chinook salmon escapement to the Kwinageese River. **We recommend that the weir count (813) be used as the final Chinook salmon escapement estimate for the Kwinageese/Fred Wright system in 2013.**

LOWER NASS SOCKEYE SURVEYS were conducted at **Gingit Creek** (a sea-type Sockeye stock) on 20 and 26 July; 2, 9, 16 & 26 August; and 8 September 2013 by a crew of 2 or 3 walking upstream from the old road crossing at 55° 13.979' N, 129° 05.300' W to the head pond at 55° 13.236' N, 129° 03.516' W. Along with live adults, jacks and carcasses; reach and tag colour specific counts of live tagged fish, tagged carcasses, and 2013 tags found on the bank or streambed were also recorded. For escapement calculation it was assumed that spawning occurs in an additional 1000 m of habitat downstream of the 3,550 m survey area at an density 1/3 of that in the survey area. Survey life for Gingit Creek Sockeye in 2013 (15.9 days) was estimated using a tag life curve for spaghetti tags applied at the Gitwinksihlkw fishwheels and observed during visual surveys. Survey life was modelled as varying normally with a standard deviation of 2.3 days (this is the standard deviation of the tag life curve based survey life estimates since 2004; n = 8). An estimate of jack Sockeye escapement was also generated assuming the same observer efficiency and survey life parameters as used for adult Sockeye. Escapement estimates of **10,035 (90% CIs 8,083-12,403) adults** and **2,341 (90% CIs 1881-3083) jacks** were calculated for 2013. The peak estimated (observer efficiency expanded) live count (5,110) occurred on 16 August; the peak carcass count (2126) occurred on 26 August. The escapement estimate for 2013 is the second highest since Nisga'a Fisheries began escapement surveys in 2000 and is above the 2000-12 average (mean=4,000, range: 300 (2002) to 12,500 (2011)).

Sockeye salmon were also observed in 2013 during surveys of the **Tseax Side Channel** to enumerate Chum and Pink salmon (see below). It is likely that these were also sea-type Sockeye similar to the Gingit Creek population. Adult Sockeye salmon were observed on all Tseax Side Channel surveys and an escapement estimate of **78 (90% CIs 65-100) spawners** was calculated for 2013. Only Sockeye salmon actually observed in the spawning areas of the side channel were included in this estimate as large schools seen at the mouth of the channel may have been enroute to other spawning areas (possibly Gingit Creek). Surveys of Gitzyon Creek from where it flows into Spencer Lake (part of the Tseax River) to a point approximately 1 km upstream of the Skateen Ave. Bridge (total survey length approximately 2.01 km) were conducted on 4 August and 10 August. Accounting for observer efficiency an estimated 348 Sockeye salmon spawners (and 20 carcasses) were observed on 4 August and 220 spawners and 18 carcasses were present on 10 August. Applying the average ratio of peak live plus dead spawners to robust AUC escapement estimates for 8 years of Sockeye salmon escapement studies at Gingit Creek since 2004 (60%) yielded a **minimum escapement estimate of 613 Sockeye salmon for Gitzyon Creek** in 2013. As it is uncertain whether surveys covered the peak Sockeye salmon spawning in this system this estimate should be treated as conservative.

DAMDOCHAX WATERSHED SURVEYS were conducted by air and ground on 29 August and 5, 10, and 14 September 2013. A total of 27 tagged Chinook were recovered from 161 adult Chinook carcasses examined downstream of the lake. Raw live counts were expanded for habitat not surveyed and reach and survey specific estimates of observer efficiency. An AUC escapement estimate of 1768 Chinook salmon was calculated using a 27.8 day survey life (Koski et al. 1996) and assuming that fish entered the survey area on 4 August. Due to the very long survey life used, this escapement estimate was almost identical to the observer efficiency expanded peak live (1758) plus dead count (4) on 29 August (total 1762). The similarity between peak counts, the weir and AUC estimates for Kwinageese River and Damdochax River respectively in 2012 and 2013 suggest that in future years a well-timed peak count, expanded for observer efficiency, may be an adequate escapement estimate for these systems. We recommend that the AUC estimate of **1768 (90% CIs 1646-1899) adult Chinook salmon** be used as the escapement estimate for **Damdochax River** in 2013.

Aerial Sockeye salmon counts of **Wimnasik Creek** between Wimnasik Lake and Damdochax Lake were conducted on 29 August and 5, 10 and 14 September 2013. Raw live counts were expanded by the helicopter observer efficiency expansion factor (1.95 x) developed in 2011 using same day helicopter and ground counts at Upper Kwinageese Creek. The number of spawners on 26 September was estimated from the number of spawners on 10 September and the ratio of the 26 September count to the 9 September count on the Upper Kwinageese River



in 2013 (88%). The count conducted on 14 September was judged by field crew to have much lower observer efficiency due to greater altitude and over-flight speed, this count was therefore not used in the analysis. An escapement estimate of **3,959 (90% CIs 2,807-5,545) Sockeye salmon** was calculated using a survey life of 14.6 days ( $\pm$  standard deviation of 2.3 days) based on the average of Gingit Creek Sockeye salmon tag life curve based survey life estimates since 2004 (n=8); zero count dates were estimated using the MonteMaster AUC program. Adult Sockeye salmon were also counted in Damdochax River downstream of Damdochax Lake during Chinook salmon surveys. Counts, expanded for observer efficiency, were 174 on 29 August, 172 on 5 September, 258 on 10 September and 146 on 14 September. The majority of these fish were observed in a pool created by a new (since 2011) landslide upstream of Sansixmor Creek. These fish may have been enroute to primary spawning areas in Wimnasik Creek so no attempt was made to calculate an escapement estimate.

LOWER NASS CHUM AND PINK GROUND SURVEYS were conducted between 1 August and 23 September 2013. For AUC escapement estimation Chum salmon survey life was assumed to be 7 days with a standard deviation of 3 days. The standard deviation estimate was based on the coefficient of variation for Chum salmon survey life (0.42) reported in Perrin and Irvine (1990) multiplied by our estimated survey life of 7 days. Survey life for Pink Salmon was assumed to be 12.6 days and vary normally with a standard deviation of 4 days. These values are based on an average of 7 BC Central Coast streams reported in Perrin and Irvine (1990).

Six surveys were conducted on **Ksemamaith Creek** in 2013 with Chum salmon counted on three (11, 19, and 27 August). AUC escapement estimates were **20 Chum salmon (90% CIs 12-60)** and **5,477 Pink salmon (90% CIs 3,604-11,314)**. Seven surveys were conducted on a groundwater-fed tributary of the **Tseax Slough** (locally known as the Tseax second mouth) with Chum salmon counted on all surveys (1, 11, 19 & 27 August; and 3, 12, & 23 September). AUC escapement estimates were **97 Chum salmon (90% CIs 59-282)** and **666 Pink salmon (90% CIs 526-1353)**.

PORTLAND CANAL & INLET GROUND SURVEYS: Three Portland Canal systems (Donahue, Belle Bay and Roberson Creeks) and one Portland Inlet system (Chambers Creek) were surveyed close to the anticipated peak of the Pink salmon run in 2013 (15-22 August), and right after a significant rainfall. Donahue Creek was surveyed on 21 August 2013. The creek was surveyed from the estuary approximately 1 km upstream to the start of the canyon. **Observer efficiency expanded live counts in this reach were 2,695 Pink salmon and 8 Chum salmon, 18 Pink salmon carcasses were also observed at Donahue Creek.** It is uncertain what proportion of the Pink and Chum salmon spawn upstream of the upper limit of these 2013 surveys, so no escapement estimates were determined for Donahue Creek in 2013.

At Bell Bay, Roberson, and Chambers Creeks, surveys covered the majority of spawning habitat. Rough escapement estimates for Pink salmon were calculated for these three systems using a peak count to escapement estimate ratio of 1.61 calculated from surveys at Ksemamaith Creek, Tseax Groundwater Channel and Kincolith River from 2011-2013. These rough escapement estimates were **730 Pink salmon for Roberson Creek, 21,860 Pink salmon for Belle Bay Creek, and 54,180 Pink salmon for Chambers Creek.** Exploratory surveys were also conducted on Gitzyon Creek on 4 and 10 August 2013; the peak count expansion method described above yielded an escapement estimate of **3,270 Pink salmon for Gitzyon Creek.** However, as the peak count date (10 August) was earlier than the anticipated peak spawner abundance in this system, this escapement estimate should be considered conservative. Pink salmon adults were present in Chambers and Gitzyon Creeks. No Chum salmon adults were observed during surveys of Belle Bay and Roberson Creeks.

ZOLZAP CREEK ADULT COHO FENCE operated from 6 September to 13 November 2013 to enumerate coded wire tagged and unmarked adult Coho salmon, and to apply marks to facilitate a mark-recapture escapement estimate for Zolzap Creek. The fence was fish tight through the entire period and was never over-topped by high water. **Total upstream adult counts at the Zolzap fence were 478 CWT Coho, 518 unmarked Coho, and 3 Sockeye salmon.** Of the 996 adult Coho handled at the fence, 989 were marked with a left operculum punch and a cinch up vinyl tag. A total of 326 Coho with intact heads were recovered upstream of the fence by angling, dip netting, or as carcasses. Of these 142 (44%) had been marked at the fence. Based on these data and accounting for an estimated 10% tagging related mortality, a preliminary mark recapture escapement estimate of **2,036 Coho salmon (95% CI: 1,731-2,398)** was calculated for Zolzap Creek in 2013; this is double the average (1,067) for this system from previous years of weir operation (1993-2004, 2011-2012). Due to the high proportion of marked fish recaptured upstream of the fence, the uncertainty around this estimate is low (CV=8%). We recommend that when

finalized this mark-recapture estimate be considered the final escapement estimate for Zolzap Creek Coho salmon in 2013. A juvenile fence was also operated in 2013 (25 April to 8 June) where 30,393 Coho smolts were CWT and released.

LOWER NASS COHO GROUND SURVEYS were conducted in 2013 on the following systems:

- **Zolzap Creek:** Eight ground surveys of the spawning grounds were conducted at the time of this summary (29 September, 13, 20, 27 October and 2, 10, 18 and 23 November), live Coho were observed on all but the September survey. The MR estimate of escapement (**2,036**) is 199% of the habitat-capacity estimate for 2013.
- **Ansedegan Creek:** Eight ground surveys were conducted at the time of this report (29 September; 13, 20 & 27 October, 2, 10, 18 and 25 November); live Coho were observed on all but the September survey. The peak count to date was 502 adult Coho salmon on 20 October. A preliminary AUC escapement estimate of **1,142 Coho salmon (90% CIs 875-1,565)** was calculated using a survey life of  $19 \pm 3$  days and running 1000 iterations in AUCmonteMASTER2.04. This is the highest escapement on record and is well above 2000-2012 average for this system (400). The AUC estimate is 241% of the habitat-capacity estimate for 2013.
- **Diskangieq Creek:** Eight surveys have been conducted to date (30 September, 12, 19, 26 October, 3, 9, 16 and 23 November); live Coho were observed on all but the first survey. The peak count, expanded for observer efficiency was 11,268 adult Coho on 12 October. A preliminary AUC escapement estimate of **14,674 Coho salmon (90% CIs 11,522-19,781)** was calculated using a survey life of  $19 \pm 3$  days and running 1000 iterations in AUCmonteMASTER2.04. This is the highest escapement on record and is well above 2000-2012 average for this system (2,200). The AUC estimate is 1276% of the habitat-capacity estimate for 2013.

A final lower Nass Coho salmon survey will be conducted on 5 December 2013. Overall the preliminary results from the 2013 Lower and Upper Nass Coho escapement programs indicate one of the largest Coho returns to the Nass Area streams, comparable to 2009. Charts of Nass salmon returns (TRTC and escapement) by year are provided after the text summary.

**PRELIMINARY NASS RUN SIZE ESTIMATES TO GITWINKSIHLKW AND NET ESCAPEMENT ESTIMATES FOR 2013:**

UPPER NASS ESTIMATES:

Preliminary post-season aggregate estimates for Upper Nass salmon and summer-run steelhead returns in 2013 (Table 4) were calculated from current mark-recapture data (Table 5). The in-season population estimates in 2013 tracked the Upper Nass salmon returns well; the Sockeye salmon estimate was 2% higher than the post-season estimate, Chinook was 6% higher, and Coho was 12% higher. The Upper Nass salmon runs to Gitwinksihlkw in 2013 were above average for Coho, and below average for Sockeye, Chinook, and summer-run steelhead. Based on the 2013 preliminary results, system-wide Upper Nass net escapement goals were not reached for Chinook; but were reached for Sockeye, Coho and Steelhead.

**Table 4. Preliminary estimates of GW run size and net escapement for Nass salmon and summer-run Steelhead, 2013.**

<b>Run size estimate to Gitwinksilkw (GW) fishwheels</b>	<b>248,650</b>	<b>10,240</b>	<b>129,882</b>
<i>In-season estimate to GW fishwheels</i>	<i>254,036</i>	<i>10,849</i>	<i>145,230</i>
<i>% Difference of in-season to post-season</i>	<i>2%</i>	<i>6%</i>	<i>12%</i>
<b>Net Escapement Estimate Above Gitwinksihlkw</b>	<b>210,263</b>	<b>8,011</b>	<b>117,263</b>

The preliminary Upper Nass escapement estimates for salmon and summer-run Steelhead to Gitwinksihlkw in 2013 were based on the information presented in Table 5. The preliminary adult summer-run steelhead estimate is based on a fishwheel catch index method. Too few fin-marked steelhead were recaptured (<10) to generate an accurate mark-recapture population estimate. The steelhead fishwheel catch index method involves an expansion of the adult summer-run steelhead catches at GW fishwheels after 1 July by post-season Coho salmon mark rates with adjustments to GW operational effort and mean difference in method to mark-recapture techniques.

**Table 5. Mark-recapture estimates for Nass salmon (Chinook, Sockeye and Coho) and summer-run steelhead returns to Gitwinksihlkw and spawning grounds, 2013. Best estimates are bolded.**

Species	Marked (M)	Censored	% marks removed	Net marks available (M*)	Examined (C)	Marks recovered (R)	Population Estimate to GW (N)	SE	CV%	Net escapement estimate
<b>Chinook-stratified by size</b>	<b>1,654</b>	<b>423</b>	<b>26%</b>	<b>1,231</b>	<b>1,061</b>	<b>154</b>	<b>10,240</b>	<b>659</b>	<b>8%</b>	<b>8,011</b>
<i>Chinook-pooled</i>	1,654	423	26%	1,231	1,100	154	10,636	643	8%	8,407
<b>Sockeye</b>	<b>7,102</b>	<b>2,267</b>	<b>32%</b>	<b>4,835</b>	<b>170,376</b>	<b>3,726</b>	<b>248,650</b>	<b>3,581</b>	<b>2%</b>	<b>210,263</b>
<b>Coho</b>	<b>3,422</b>	<b>935</b>	<b>27%</b>	<b>2,487</b>	<b>6,697</b>	<b>141</b>	<b>129,882</b>	<b>9,709</b>	<b>8%</b>	<b>117,263</b>
<i>Steelhead (fin marks)</i>	561	41	7%	520	231	7	NA	NA	NA	NA
<b>Steelhead (Coho MR index)</b>							<b>6,803</b>	<b>1,101</b>	<b>34%</b>	<b>6,581</b>

% marks removed are associated with initial handling/capture induced mortality, primary tag loss if applicable, and selective removal in fisheries below Grease Harbour.

**NASS AREA SALMON NET ESCAPEMENT ESTIMATES:**

The 2013 preliminary post-season estimates of net escapement for Sockeye, Pink, Chinook, Pink, Lower/Upper Nass and Coastal Coho, and summer-run steelhead were calculated according to methods developed by the Nisga'a-Canada-BC Joint technical committee (NCBJTC) and preliminary results are shown in Table 6. Lower and Coastal Nass Coho escapement estimates were calculated by prorating stream specific results to habitat-capacity model aggregate area estimates (Bocking and Peacock 2004; Coastal=212% using mean estimates from Zolzap/Ansedegan; Lower=674% using mean estimates from Zolzap/Ansedegan/Diskangieq). Based on these preliminary results, escapement goals were reached for all species other than Nass Chinook and Chum salmon in 2013. Nass Area salmon and steelhead run size returns and escapements in 2013 were below average for all species except Coho salmon based on returns from 2000 to 2012.

**Table 6. Estimates of GW run size and net escapement for Nass salmon and summer-run steelhead, 2013.**

Year	Escapement to GW						Net Escapement (Coastal, Lower, Middle and Upper Nass)					
	Sockeye	Pink	Chinook	Coho	Chum	Steelhead	Sockeye	Pink	Chinook	Coho	Chum	Steelhead
2000	243,584	UNK	21,617	72,175	UNK	13,545	204,407	350,455	19,348	107,358	22,766	13,431
2001	206,033	UNK	34,703	89,536	UNK	11,524	167,253	839,628	32,952	160,768	37,226	11,325
2002	470,083	UNK	16,081	167,829	UNK	15,254	405,473	408,969	17,162	269,515	18,238	14,989
2003	328,916	UNK	29,462	77,574	UNK	14,673	263,688	1,071,399	28,478	126,021	79,791	14,429
2004	283,712	UNK	17,984	60,106	UNK	4,308	215,857	1,363,654	17,670	72,937	61,192	4,045
2005	285,916	UNK	16,764	99,906	UNK	7,090	224,559	1,348,319	16,663	144,129	37,237	7,008
2006	296,338	UNK	28,618	54,730	UNK	4,192	250,642	328,543	28,577	83,454	63,783	4,108
2007	195,238	UNK	27,173	55,944	UNK	5,864	164,747	812,171	27,683	115,679	13,593	5,823
2008	235,222	UNK	21,687	84,817	UNK	11,764	218,375	120,424	21,390	106,568	3,773	11,692
2009	281,235	UNK	30,262	201,684	UNK	23,021	244,900	917,070	27,785	324,384	25,052	22,884
2010	261,597	UNK	20,706	92,134	UNK	19,407	229,010	483,487	19,820	149,654	10,567	19,191
2011	308,625	UNK	11,477	74,108	UNK	19,267	276,700	161,321	10,170	85,910	7,826	19,181
2012	239,400	UNK	10,785	69,383	UNK	12,916	203,028	609,174	10,810	125,756	19,467	12,623
<b>2013</b>	<b>248,650</b>	<b>UNK</b>	<b>10,240</b>	<b>112,149</b>	<b>UNK</b>	<b>6,803</b>	<b>210,263</b>	<b>597,198</b>	<b>9,306</b>	<b>322,173</b>	<b>14,140</b>	<b>6,578</b>
<b>Mean 00-12</b>	<b>280,000</b>		<b>22,000</b>	<b>92,000</b>		<b>13,000</b>	<b>236,000</b>	<b>678,000</b>	<b>21,000</b>	<b>144,000</b>	<b>31,000</b>	<b>12,000</b>
<b>Targets</b>	<b>275,000</b>		<b>13,000</b>	<b>60,000</b>		<b>4500-10500</b>	<b>200,000</b>	<b>225,000</b>	<b>15,000</b>	<b>60,000</b>	<b>45,000</b>	<b>4000-10000</b>

**PRELIMINARY HARVEST ESTIMATES FOR ADULT NASS SALMON & STEELHEAD**

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

Alaskan gillnet fisheries in Districts 101 (Tree Point) and 106 (Sumner and Upper Clarence) started on 16 June and 17 June 2013, respectively. Alaskan seine fisheries start dates in 2013: Districts 101 (Lower Clarence/Revilla) opened on 7 July, 102 (Middle Clarence) on 16 June, 103 (Cordova) opened on 21 July, and 104 (Noyes/Dall) opened on 7 July. The table below shows the in-season catch estimates of salmon in Alaskan net fisheries in Districts 101-104 (and mean catch comparisons between 2000 and 2012) based on data from ADFG's notices.

Alaskan net catches in 2013 were below average for Sockeye, Chinook, and Chum; and well above average for Pink (1.8 times) and Coho salmon (1.3 times). Alaskan Pink fisheries ended on 8 September. District 101 gillnet fishery closed on 3 October. Of the total in-season Sockeye catch reported in Alaskan net fisheries (232,500), approximately 65,500 (28%) are estimated as Nass origin based on mean stock composition estimates from 1982 to 2011. The 2013 in-season harvest estimate is below average (145,000 (range: 47,000-300,000)) based on mean harvests of Nass Sockeye in Alaskan fisheries from 2000 to 2011.

**Table 7. In-season salmon catch estimates in Alaskan net fisheries in Districts 101-104, 2013.**

IN-SEASON SE ALASKAN CUM. SALMON CATCH ESTIMATES (ADFG WEBSITE) - 2013								WEEK END: 5-Oct-13			
DISTRICTS	AREA	SOCK CATCH	AVG (00-12)	CHIN CATCH	AVG (00-12)	PINK CATCH	AVG ODD (00-12)	CHUM CATCH	AVG (00-12)	COHO CATCH	AVG (00-12)
DIST 101 GN	TREE PT	52,000	81,000	2,000	1,400	662,200	421,800	262,000	254,000	93,600	47,400
DIST 106 GN	UPP. CLAR	45,000	96,000	1,500	1,500	487,000	157,900	81,000	191,000	148,900	138,200
DIST 101 SN	LOW CLAR	24,000	60,800	100	800	12,395,000	5,391,000	184,000	277,000	63,400	37,600
DIST 102 SN	MID CLAR.	30,000	34,800	800	730	9,187,000	3,886,500	395,000	492,000	69,800	50,600
DIST 103 SN	CORDOVA	12,500	26,000	220	500	8,105,000	6,290,000	77,500	137,000	36,700	30,000
DIST 104 SN	NOYES/DALL	69,000	263,000	3,200	6,500	10,325,000	7,312,000	92,000	182,000	72,700	64,100
<b>CUMULATIVE TOTAL</b>		<b>232,500</b>	<b>561,600</b>	<b>7,820</b>	<b>11,430</b>	<b>41,161,200</b>	<b>23,459,200</b>	<b>1,091,500</b>	<b>1,533,000</b>	<b>485,100</b>	<b>367,900</b>

**CANADIAN COMMERCIAL HARVEST DATA:**

**IN-SEASON AREA 3 GILLNET AND SEINE CATCH DATA (information courtesy from DFO Prince Rupert):**

The total openings conducted by the DFO commercial net fisheries in Area 3 in 2013 were 16 gillnet and 20 seine. The 16 gillnet openings were conducted between 18 June and 30 July, and the 20 seine openings between 8 July and 20 August. Sockeye salmon were not permitted for gillnet retention in commercial fisheries from 12-24 July in Area 3, the anticipated peak of the Kwinageese Sockeye migration that is in a stock rebuilding phase after a spawning ground migration barrier was detected and remediated in 2011 (DFO's 2013 Integrated Fisheries Management Plan). Sockeye retention in the Area 3 seine fishery was only permitted on 8-9 July. Commercial net harvest and release data for salmon and steelhead caught in Area 3 are shown below.

**Table 8. In-season salmon and steelhead gillnet and seine catch estimates in DFO commercial net fisheries in Area 3, 2013.**

GEAR	AREA 3	Data											
		Vessels	SO-harv	SO-Rel	CO-HARV	CO-Rel	PK-HARV	PK-Rel	Chum-harv	Chum-Rel	CH-harv	CH-Rel	STEEL-Rel
GN	3-12	1404	73,688	0	2,472	754	170,739	738	0	2,717	618	1,026	289
	3-7A	594	38,166	0	1,137	306	82,984	293	0	2,293	327	336	129
	3-7B	428	24,465	0	744	802	29,851	208	8,351	254	184	216	36
	BOSTON ROCKS	31	1,077	0	76	93	5,987	24	2,442	0	0	10	0
	TRACEY BAY	24	666	0	27	70	3,748	16	1,138	0	0	7	0
<b>GN Total</b>		<b>2,481</b>	<b>138,062</b>	<b>0</b>	<b>4,456</b>	<b>2,025</b>	<b>293,309</b>	<b>1,279</b>	<b>11,931</b>	<b>5,264</b>	<b>1,129</b>	<b>1,595</b>	<b>454</b>
SN	3-12	5	0	256	365	6	44,882	0	0	468	0	11	0
	3-7A	8	0	341	547	12	53,939	0	0	450	0	11	1
	3-7B	107	3,419	12,420	6,611	90	894,433	0	13,300	8,284	0	629	69
	BOSTON ROCKS	90	1,382	4,883	5,436	62	787,253	0	13,038	5,395	0	262	53
	TRACEY BAY	63	2,126	2,779	3,607	31	452,582	0	15,653	3,355	0	189	39
<b>SN Total</b>		<b>273</b>	<b>6,927</b>	<b>20,679</b>	<b>16,566</b>	<b>201</b>	<b>2,233,089</b>	<b>0</b>	<b>41,991</b>	<b>17,952</b>	<b>0</b>	<b>1,102</b>	<b>162</b>
<b>Grand Total</b>		<b>2,754</b>	<b>144,989</b>	<b>20,679</b>	<b>21,022</b>	<b>2,226</b>	<b>2,526,398</b>	<b>1,279</b>	<b>53,922</b>	<b>23,216</b>	<b>1,129</b>	<b>2,697</b>	<b>616</b>

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

**PRELIMINARY POST-SEASON NET, TROLL, AND RECREATIONAL CATCH ESTIMATES FOR NASS SALMON STOCKS:**

**COMMERCIAL CATCH ESTIMATES OF NASS SALMON:** Preliminary harvest estimates of Nass salmon in commercial net and troll fisheries for 2013 are approximately: 134,000 Sockeye, 225,000 Pink, 1,100 Chinook, 55,000 Coho, and <1,000 Chum based on preliminary data from DFO Prince Rupert and methods developed by the NCBJTC (Table 9). Commercial catches were below average for all Nass salmon species with the exception of average catches of Nass Pink and above average catches on Nass Coho when compared to the mean catches from 2000 to 2012.

**Table 9. In-season commercial net and troll catch estimates of Nass salmon in DFO commercial fisheries in Areas 1-5, 2000-2013.**

Year	COMMERCIAL (GILLNET & SEINE)					COMMERCIAL (TROLL)					TOTAL COMMERCIAL CATCH ESTIMATES				
	Sockeye	Pink	Chinook	Coho	Chum	Sockeye	Pink	Chinook	Coho	Chum	Sockeye	Pink	Chinook	Coho	Chum
2000	239,022	205,149	1,826	1,656	11,534	0	UNK	NA	NA	UNK	239,022	205,149	1,826	1,656	11,534
2001	131,879	982,403	928	2,367	31,192	0	UNK	NA	4,111	UNK	131,879	982,403	928	6,478	31,192
2002	725,478	239,403	3,838	2,367	9,767	0	UNK	2,142	9,519	UNK	725,478	239,403	5,980	11,886	9,767
2003	615,584	183,096	3,585	2,367	13,718	0	UNK	2,491	19,857	UNK	615,584	183,096	6,076	22,224	13,718
2004	317,649	530,455	6,270	4,979	8,365	0	UNK	419	22,142	UNK	317,649	530,455	6,689	27,121	8,365
2005	173,573	353,920	2,685	14,955	2,714	0	UNK	430	19,230	UNK	173,573	353,920	3,115	34,185	2,714
2006	291,650	36,604	3,240	8,295	9,251	0	UNK	1,273	7,503	UNK	291,650	36,604	4,513	15,798	9,251
2007	130,920	302,555	3,443	2,574	1,070	0	UNK	588	8,752	UNK	130,920	302,555	4,031	11,326	1,070
2008	59,975	3,655	340	9,789	204	0	UNK	45	4,475	UNK	59,975	3,655	385	14,264	204
2009	102,572	69,956	849	2,367	1,289	0	UNK	274	16,460	UNK	102,572	69,956	1,123	18,827	1,289
2010	85,862	5,167	554	2,683	244	0	UNK	268	13,440	UNK	85,862	5,167	822	16,123	244
2011	107,768	15,022	821	2,925	475	0	UNK	383	17,870	UNK	107,768	15,022	1,204	20,795	475
2012	113,420	47,930	372	2,882	998	0	UNK	422	20,500	UNK	113,420	47,930	794	23,382	998
<b>2013</b>	<b>134,436</b>	<b>224,927</b>	<b>904</b>	<b>3,927</b>	<b>725</b>	<b>0</b>	<b>UNK</b>	<b>178</b>	<b>51,098</b>	<b>UNK</b>	<b>134,436</b>	<b>224,927</b>	<b>1,082</b>	<b>55,025</b>	<b>725</b>
<b>Mean 00-12</b>	<b>238,000</b>	<b>229,000</b>	<b>2,000</b>	<b>5,000</b>	<b>7,000</b>			<b>1,000</b>	<b>14,000</b>		<b>238,000</b>	<b>229,000</b>	<b>3,000</b>	<b>17,000</b>	<b>7,000</b>



**RECREATIONAL CATCH ESTIMATES: Preliminary harvest estimates of Nass salmon in recreational fisheries for 2013 are approximately: 31 Sockeye, 990 Chinook, and 8,900 Coho** based on preliminary data from Nisga’a Fisheries, DFO Prince Rupert, and methods developed by the NCBJTC (Table 10). **The recreational catch estimates of Nass salmon that are shown in Table 10 are considered minimum** and based on many assumptions (e.g., relative stock composition of Nass salmon in total recreational catches in Area 3 and Area 4 (tidal only). The recreational harvest estimates for 2013 indicate average catches of Nass Sockeye, below average catches of Nass Chinook, and above average catches of Nass Coho when compared to mean estimates from 2000 to 2012 (Table 10).

In-river recreational catches were monitored by Nisga’a Fisheries at four systems in 2013 from July to end of September to generate minimum in-river catch estimates. Systems monitored in 2013 included: Kincolith River (~10 Chinook kept), Tseax River (~200 Chinook and ~30 Coho kept), Cranberry River (~155 Chinook kept), and Meziadin River (~35 Sockeye and ~50 Chinook kept). These system estimates combined with a historical harvest rate method were used to generate minimum estimates of the Lower Nass and Upper Nass in-river harvests for Nass Chinook (~80) and Coho (~235) in 2013. In-river monitoring results for 2013 indicated average and below average catches of Nass Sockeye and Nass Chinook/Coho, respectively, when compared to mean estimates from 2000 to 2012 (Table 10).

**Table 10. Preliminary post-season Nass salmon harvest estimates in recreational fisheries, 2000-2013.**

Year	In-river Recreational Catch					Tidal Recreational Catch					Total Recreational Catch				
	Sock.	Pink	Chin.	Coho	Chum	Sock.	Pink	Chin.	Coho	Chum	Sock.	Pink	Chin.	Coho	Chum
2000	15	UNK	1,237	275	UNK	UNK	UNK	986	1,376	UNK	15	UNK	2,223	1,651	UNK
2001	3	UNK	1,050	411	UNK	UNK	UNK	1,705	7,418	UNK	3	UNK	2,755	7,829	UNK
2002	25	UNK	870	340	UNK	UNK	UNK	1,116	4,125	UNK	25	UNK	1,986	4,465	UNK
2003	UNK	UNK	1,190	157	UNK	UNK	UNK	1,167	4,495	UNK	UNK	UNK	2,357	4,652	UNK
2004	UNK	UNK	930	171	UNK	UNK	UNK	1,925	4,370	UNK	UNK	UNK	2,855	4,541	UNK
2005	UNK	UNK	773	453	UNK	UNK	UNK	1,542	4,844	UNK	UNK	UNK	2,315	5,297	UNK
2006	UNK	UNK	1,311	76	UNK	UNK	UNK	983	4,147	UNK	UNK	UNK	2,294	4,223	UNK
2007	UNK	UNK	1,518	519	UNK	UNK	UNK	1,810	3,945	UNK	UNK	UNK	3,328	4,464	UNK
2008	UNK	UNK	1,317	148	UNK	UNK	UNK	1,620	5,102	UNK	UNK	UNK	2,937	5,250	UNK
2009	UNK	UNK	1,296	1,727	UNK	UNK	UNK	1,316	5,931	UNK	UNK	UNK	2,612	7,658	UNK
2010	119	UNK	547	225	UNK	UNK	UNK	399	3,822	UNK	119	UNK	946	4,047	UNK
2011	7	UNK	569	219	UNK	UNK	UNK	898	4,789	UNK	7	UNK	1,467	5,008	UNK
2012	0	UNK	550	164	UNK	UNK	UNK	494	2,145	UNK	0	UNK	1,044	2,309	UNK
<b>2013</b>	<b>31</b>	<b>UNK</b>	<b>472</b>	<b>259</b>	<b>UNK</b>	<b>UNK</b>	<b>UNK</b>	<b>518</b>	<b>8,641</b>	<b>UNK</b>	<b>31</b>	<b>UNK</b>	<b>990</b>	<b>8,900</b>	<b>UNK</b>
<b>Mean 00-12</b>	<b>30</b>		<b>1,000</b>	<b>400</b>				<b>1,200</b>	<b>4,300</b>		<b>30</b>		<b>2,000</b>	<b>5,000</b>	

**GITANYOW HARVEST ESTIMATES:**

Preliminary harvest estimates of Nass salmon in Gitanyow fisheries in the Upper Nass River were reported by the Gitanyow Fisheries Authority to week ending 14 September as: 10,779 adult Sockeye (164 tags recovered), 66 adult Chinook (52 large (4 tags) and 14 small), and 46 adult Coho (2 tags recovered). The total adult Sockeye harvested includes a commercial harvest of Sockeye (3,098) below the Meziadin Fishway as part of DFO’s Inland Demonstration Economic Fishery that occurred between 5 August and 12 August 2013. Harvests in 2013 were above average for Sockeye (10,779 vs. 7,000), below average for large Chinook (52 vs. 200) and Coho (46 vs. 200) and based on mean harvests from 2000 to 2012.

Year	Gitanyow				
	Sock.	Pink	Chin.	Coho	Chum
2000	2,884	0	49	98	0
2001	2,544	0	195	399	0
2002	6,958	0	151	26	0
2003	3,472	0	181	68	0
2004	2,622	0	230	44	0
2005	10,113	0	179	718	0
2006	6,460	0	456	392	0
2007	1,325	0	24	127	0
2008	9,406	0	174	54	0
2009	8,172	0	148	327	0
2010	9,154	0	88	193	0
2011	13,091	0	103	18	0
2012	14,298	0	105	187	0
<b>2013</b>	<b>10,779</b>	<b>0</b>	<b>52</b>	<b>46</b>	<b>0</b>
<b>Mean 00-12</b>	<b>7,000</b>	<b>0</b>	<b>200</b>	<b>200</b>	<b>0</b>

**NISGA’A NATION CATCH ESTIMATES:**

The 2013 Nisga’a domestic (FSC) salmon fishery was monitored from 1 May to 31 August as part of the Nisga’a Fisheries salmon and steelhead catch monitoring program. Incidental salmon and Steelhead catches after 31 August were added from the non-salmon catch and recreational catch monitoring programs. Tables 11 and 12 show preliminary harvest estimates of Nass salmon and steelhead in Nisga’a fisheries in 2013. **Total harvests were: 73,432 Sockeye, 4,352 Chinook, 19,370 Coho, 36,081 Pink, 111 Chum salmon, and 433 steelhead (includes winter-run catches in May and summer-run catches from June to August).**

Of the total Nisga'a harvests of Nass salmon in 2013, 6 marine and 12 in-river individual-sale (IS) gillnet fisheries were conducted and 41,573 Sockeye, 9,920 Coho, and 16,869 Pink salmon were harvested with restricted sale fishery periods (12-24 July marine and 16-28 July in-river) to allow for Kwinnageese Sockeye to pass upriver (Tables 11 and 12). Total IS fisher permits issued in 2013 were 174 (including 43 elder permits). Permits issued by community: 49 Gitlakdamix, 34 Gitwinksihlkw, 26 Gingolx, 23 Laxgalts'ap, 15 Prince Rupert, 15 Terrace, and 9 from other areas. Total IS fishers that participated were 2013 were 112 (including 27 elder permits). Permits fished by community: 26 Gitlakdamix, 25 Gitwinksihlkw, 19 Gingolx, 15 Laxgalts'ap, 12 Prince Rupert, 10 Terrace, and 5 from other areas.

**Table 11. Nisga'a individual-sale (IS) fisheries conducted in 2013.**

NISGA'A MARINE SALE FISHERY:		
NUMBER OF NISGA'A MARINE FISHERIES (16 HR OPENINGS):	6	22, 23, 30 JUNE; 7, 10, 28 JULY
DATA FROM 22 JUNE FISHERY (25 BOATS - 30 FISHERS) - FINAL		6700 SOCKEYE
DATA FROM 23 JUNE FISHERY (25 BOATS - 36 FISHERS) - FINAL		6903 SOCKEYE
DATA FROM 30 JUNE FISHERY (25 BOATS - 29 FISHERS) - FINAL		4571 SOCKEYE AND 277 PINK
DATA FROM 7 JULY FISHERY (25 BOATS - 28 FISHERS) - FINAL		2882 SOCKEYE, 3701 PINK, AND 25 COHO
DATA FROM 10 JULY FISHERY (17 BOATS - 20 FISHERS) - FINAL		734 SOCKEYE, 2589 PINK, AND 20 COHO
DATA FROM 28 JULY FISHERY (17 BOATS - 20 FISHERS) - FINAL		1565 SOCKEYE, 10,302 PINK, AND 357 COHO
NISGA'A IN-RIVER SALE FISHERY:		
NUMBER OF NISGA'A IN-RIVER FISHERIES (10 HR OPENINGS):	12	5, 7, 9, 11, 13, 15, 30, 31 JULY; 22, 23, 26, 27 AUGUST
DATA FROM 5 JULY FISHERY (42 FISHERS) - FINAL		3268 SOCKEYE
DATA FROM 7 JULY FISHERY (30 FISHERS) - FINAL		1624 SOCKEYE
DATA FROM 9 JULY FISHERY (25 FISHERS) - FINAL		2081 SOCKEYE AND 2 COHO
DATA FROM 11 JULY FISHERY (28 FISHERS) - FINAL		2273 SOCKEYE AND 10 COHO
DATA FROM 13 JULY FISHERY (25 FISHERS) - FINAL		1390 SOCKEYE AND 8 COHO
DATA FROM 15 JULY FISHERY (25 FISHERS) - FINAL		1512 SOCKEYE AND 13 COHO
DATA FROM 30 JULY FISHERY (24 FISHERS) - FINAL		2954 SOCKEYE AND 793 COHO
DATA FROM 31 JULY FISHERY (27 FISHERS) - FINAL		2123 SOCKEYE AND 586 COHO
DATA FROM 22 AUGUST FISHERY (18 FISHERS) - FINAL		434 SOCKEYE AND 2738 COHO
DATA FROM 23 AUGUST FISHERY (12 FISHERS) - FINAL		268 SOCKEYE AND 2114 COHO
DATA FROM 26 AUGUST FISHERY (12 FISHERS) - FINAL		135 SOCKEYE AND 1855 COHO
DATA FROM 27 AUGUST FISHERY (11 FISHERS) - FINAL		75 SOCKEYE AND 1399 COHO

In addition to IS fisheries, Nisga'a communal selective fisheries were also conducted in 2013 at the Grease Harbour fishwheels (82 Sockeye and 5629 Coho harvested) and by a contracted Nisga'a seiner (7 Sockeye, 2 Chinook, 234 Coho, and 12,184 Pink harvested) in the Nass marine area to fish treaty allocations of Nass Coho and Pink salmon (Table 12).

In addition to treaty fisheries, Nisga'a Lisims Government (NLG) were successful in negotiating the leasing of 40 Area C commercial gillnet licenses to participate in DFO's Inland Selective Demonstration Fishery Program in 2013. DFO allocated weekly gillnet catches of Sockeye to NLG's inland selective fishery program based on a license sharing formula from commercial gillnet catches in Area 3. These harvests were additional to Nisga'a Treaty Allocations (and IS targets) and had to be caught selectively (no gillnets). The Grease Harbour fishwheels were used to harvest these additional catch shares as arranged by NLG and Nisga'a Fisheries Limited. DFO allocated 5,008 Sockeye to NLG for selectively harvesting from the GH fishwheels based on Area 3 in-season commercial gillnet catches in 2013. Harvests started on 5 July, with a closure period from 22 July to 3 August to allow Kwinnageese Sockeye to pass, and ended on 12 August when the allocation of 5,008 was reached (Table 12).

**Table 12. Preliminary Nass salmon and steelhead harvests in Nisga'a fisheries, 2013.**

NISGA'A TOTAL HARVEST SUMMARY	SOCK	CHIN	COHO	PINK-ODD	CHUM	STEEL
MARINE SALE FISHERY TOTAL	23,355	CLOSED	402	16,869	CLOSED	CLOSED
IN-RIVER SALE FISHERY TOTAL	18,218	CLOSED	9,518	0	CLOSED	CLOSED
<b>INDIVIDUAL SALE (IS) FISHERY TOTAL</b>	<b>41,573</b>	<b>0</b>	<b>9,920</b>	<b>16,869</b>	<b>CLOSED</b>	<b>CLOSED</b>
NLG COMMUNAL SELECTIVE FISHWHEEL FISHERY	82	CLOSED	5,629	CLOSED	CLOSED	CLOSED
NLG COMMUNAL SEINE SELECTIVE FISHERY	7	2	234	12,184	CLOSED	CLOSED
DOMESTIC (FSC) GILLNET FISHERY	26,762	4,350	3,587	7,028	111	433
<b>SUB TOTAL (NLG TREATY FISHERIES)</b>	<b>68,424</b>	<b>4,352</b>	<b>19,370</b>	<b>36,081</b>	<b>111</b>	<b>433</b>
NLG SOCK DEMONSTRATION FISHERY	5,008	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
<b>GRAND TOTAL</b>	<b>73,432</b>	<b>4,352</b>	<b>19,370</b>	<b>36,081</b>	<b>111</b>	<b>433</b>

Preliminary Nisga'a entitlements for 2013 were below average for Sockeye, Pink, Chinook, and Chum, and above average for Coho salmon based on mean entitlements from 2000-2013 (Table 13). Preliminary Nisga'a harvests in 2013 were below average for Sockeye, Chinook, and Chum salmon; and above average for Pink, Coho, and

steelhead based on mean catches from 2000 to 2012. Nisga'a catch estimates for steelhead not only include summer-run stocks caught from late June onward but also winter/spring run stocks caught in May and June. Note that there are currently no defined Nisga'a entitlement for steelhead (winter or summer-run); but domestic harvests are permitted. The Nisga'a entitlement estimates for 2013 shown in Table 13 are based on preliminary data to date and include entitlement adjustments from any over harvests in all fisheries as calculated from the Nisga'a Final Agreement.

**Table 13. Preliminary Nisga'a entitlement and harvest summary for Nass salmon and Steelhead, 2000-2013.**

Year	Nisga'a Entitlement					Nisga'a Harvests					
	Sock.	Pink	Chin.	Coho	Chum	Sock.	Pink	Chin.	Coho	Chum	Steel
2000	93,855	42,118	6,935	9,241	12,601	93,179	6,086	9,326	1,950	1,067	495
2001	66,781	257,071	10,447	15,878	7,071	77,183	79,378	11,764	14,706	1,617	403
2002	195,288	67,129	6,315	19,200	2,899	140,666	2,043	5,431	9,016	132	557
2003	161,879	162,877	9,198	12,440	7,506	140,861	18,949	6,709	14,882	318	445
2004	117,388	257,556	6,928	8,187	5,647	145,241	10,528	5,548	20,337	1,030	512
2005	89,454	227,874	5,940	15,599	3,412	113,345	4,519	6,015	14,969	698	244
2006	111,590	23,466	9,049	8,509	5,931	88,021	3,753	7,250	8,425	1,110	251
2007	56,245	139,993	8,776	11,883	455	53,863	6,159	6,724	9,515	932	116
2008	47,754	39	6,160	9,773	161	45,444	4,372	4,450	3,450	506	179
2009	68,094	123,149	7,792	19,200	324	69,446	24,572	5,435	13,794	139	266
2010	60,733	42,427	5,514	14,399	79	67,691	2,493	4,581	10,292	102	709
2011	75,380	15,662	6,455	8,641	156	60,441	45,719	4,584	2,635	210	193
2012	62,430	71,304	5,366	13,708	299	68,759	20,224	3,547	12,082	316	542
<b>2013</b>	<b>68,946</b>	<b>99,358</b>	<b>5,438</b>	<b>19,200</b>	<b>190</b>	<b>68,424</b>	<b>36,081</b>	<b>4,352</b>	<b>19,370</b>	<b>111</b>	<b>433</b>
<b>Mean 00-12</b>	<b>93,000</b>	<b>110,000</b>	<b>7,000</b>	<b>13,000</b>	<b>4,000</b>	<b>90,000</b>	<b>18,000</b>	<b>6,000</b>	<b>10,000</b>	<b>1,000</b>	<b>400</b>

**PRELIMINARY NASS SALMON TOTAL RETURN TO CANADA (TRTC) ESTIMATES FOR 2013:**

The preliminary TRTC estimates used by the Nisga'a Fisheries and Wildlife Department for tracking Nisga'a salmon entitlements for 2013 are: **429,000 Sockeye, 858,000 Pink, 15,800 Chinook, 411,000 Coho and 15,000 Chum.** The preliminary TRTC salmon estimates were higher than the pre-season estimates for Sockeye (429,000 vs. 344,000), Coho (411,000 vs. 172,000) and Chum (15,000 vs. 12,000); and below average for Pink (886,000 vs. 858,000) and Chinook (15,800 vs. 20,000). Nass salmon returns in 2013 were all below average with the exception of Nass Coho based on mean returns from 2000 to 2012. Charts of the 2013 TRTC, escapement, and Nisga'a catches compared to past years are provided in the attachment that follows this summary.

**Table 14. Preliminary Total Return to Canada and total harvest estimates for Nass salmon, 2000-2013.**

Year	Total Return To Canada (TRTC)					HARVEST TOTALS (ALL FISHERIES)				
	Sock.	Pink	Chin.	Coho	Chum	Sock.	Pink	Chin.	Coho	Chum
2000	541,471	561,690	33,023	115,517	36,309	335,100	211,235	13,424	5,355	12,601
2001	380,692	1,901,409	49,749	198,478	71,566	211,609	1,061,781	15,642	25,301	32,809
2002	1,280,600	650,415	30,073	314,618	29,975	873,127	241,446	11,406	15,874	9,899
2003	1,023,605	1,273,444	43,801	155,500	93,827	759,917	202,045	12,832	21,969	14,036
2004	681,369	1,904,637	32,992	102,335	70,588	465,512	540,983	14,903	29,901	9,395
2005	521,590	1,706,758	28,287	194,986	40,649	297,031	358,439	11,194	35,939	3,412
2006	636,773	368,900	43,090	106,364	74,144	386,131	40,357	13,240	21,335	10,361
2007	350,855	1,120,885	41,790	148,533	15,596	186,108	308,714	13,519	16,680	2,002
2008	333,200	128,452	29,336	122,164	4,483	114,825	8,027	7,901	18,543	710
2009	425,090	1,011,599	37,103	365,306	26,479	180,190	94,528	9,044	24,146	1,428
2010	391,836	491,147	26,257	179,993	10,913	162,826	7,660	6,169	17,215	346
2011	458,007	222,062	17,528	108,013	8,511	181,307	60,741	6,975	10,586	685
2012	399,505	677,328	16,300	171,345	20,781	196,477	68,154	5,068	17,460	1,314
<b>2013</b>	<b>428,941</b>	<b>858,206</b>	<b>15,782</b>	<b>410,858</b>	<b>14,976</b>	<b>213,670</b>	<b>261,008</b>	<b>6,298</b>	<b>32,243</b>	<b>836</b>
<b>Mean 00-12</b>	<b>571,000</b>	<b>925,000</b>	<b>33,000</b>	<b>176,000</b>	<b>39,000</b>	<b>335,000</b>	<b>246,000</b>	<b>11,000</b>	<b>20,000</b>	<b>8,000</b>

**PRELIMINARY NASS SALMON TOTAL RETURN TO CANADA (TRTC) AND NISGA'A ALLOCATION PRE-SEASON FORECASTS FOR 2014:**

Based on the preliminary Nass salmon return and age information from 2013, preliminary forecasts for Nass salmon and Nisga'a allocations for 2014 were calculated using pre-season forecast models (Table 15). Forecast models are a combination of sibling (Sockeye and Chinook only) and 5 year mean returns that project 25%, 50%, and 75% probability point estimates.

Pre-season TRTC forecasts (50% probability estimates) for 2014 suggest an improving return for Nass Sockeye but below average (539,000 vs. 571,000); below average returns for even-year, Nass Area Pink (496,000 vs. 700,000), Nass Chinook (24,000 vs. 33,000), and Nass Chum (15,000 vs. 39,000); and an above average return for Nass Coho (219,000 vs. 176,000) based on mean TRTC estimates from 2000 to 2012.

Nisga'a entitlement pre-season forecasts for 2014 are about average for Nass Sockeye (93,000 vs. 90,000), below average for Nass even-year Pink (43,000 vs. 70,000), Chinook (5,000 vs. 7,000), and Chum (<100 vs. 4,000), and above average for Nass Coho (18,000 vs. 13,000).

**Table 15. Preliminary Total Return to Canada and Nisga'a Allocation forecasts for Nass salmon for 2014.**

<b>TRTC</b>	<b>SOCKEYE</b>	<b>PINK</b>	<b>CHINOOK</b>	<b>COHO</b>	<b>CHUM</b>
75% prob.	449,000	260,000	18,000	151,000	11,000
<b>50% prob.</b>	<b>539,000</b>	<b>496,000</b>	<b>24,000</b>	<b>219,000</b>	<b>15,000</b>
25% prob.	661,000	948,000	31,000	317,000	20,000
<b>NISGA'A ENTITLEMENT</b>					
75% prob.	73,386	6,200	3,780	12,080	0
<b>50% prob.</b>	<b>93,308</b>	<b>43,016</b>	<b>5,040</b>	<b>17,520</b>	<b>0</b>
25% prob.	114,740	113,528	6,510	19,200	0
Nisga'a Cum. overage (-)/underage (+) status from 2000-2013 allocations					
	2,078	-	9,477	2,249	30,318

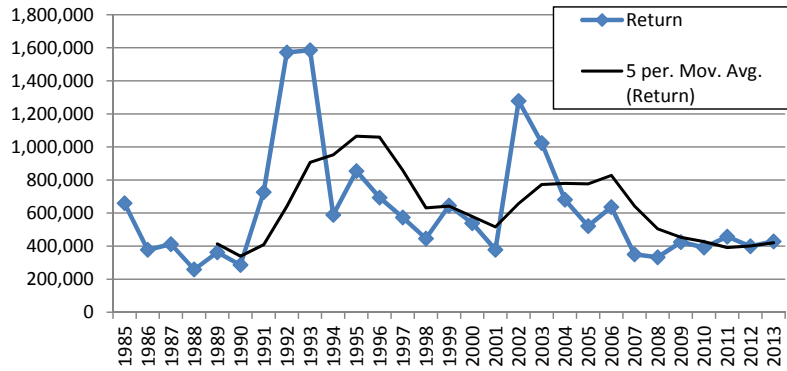
Special thanks to all of the staff from the Nisga'a Fisheries and Wildlife Department and Nisga'a Lisims Government for their dedicated efforts that enabled these updates to be produced and helped achieve the majority of the aggregate escapement goals for Nass salmon and steelhead returns in 2013. Thanks also to the staff from the various governmental and other organizations (DFO (Prince Rupert), BC Fisheries (Smithers), ADFG, LGL and GFA) that provided information or supported the in-season tracking of the Nass salmon returns in 2013.

Respectfully,

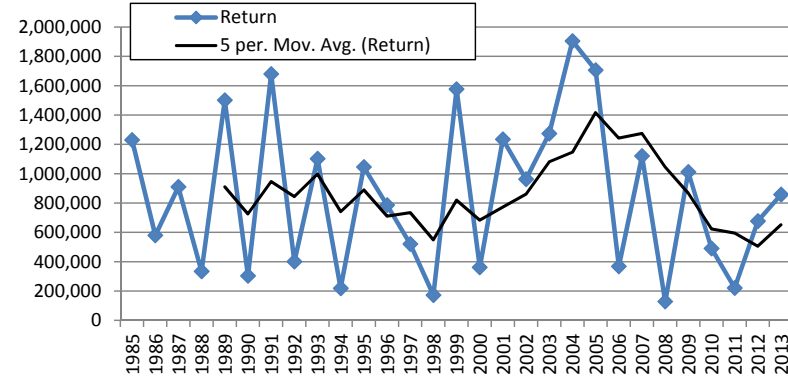
Richard Alexander, R.P.Bio  
 Nisga'a Fisheries Stock Assessment Management Biologist  
 Nisga'a Lisims Government - Fisheries & Wildlife Department  
 PO Box 228, New Aiyansh, BC, V0J 1A0  
 Nisga'a Fisheries (website: <http://www.nisgaalisims.ca/?q=fisheries-and-wildlife> )  
 LGL Limited (website: <http://www.lgl.com>)



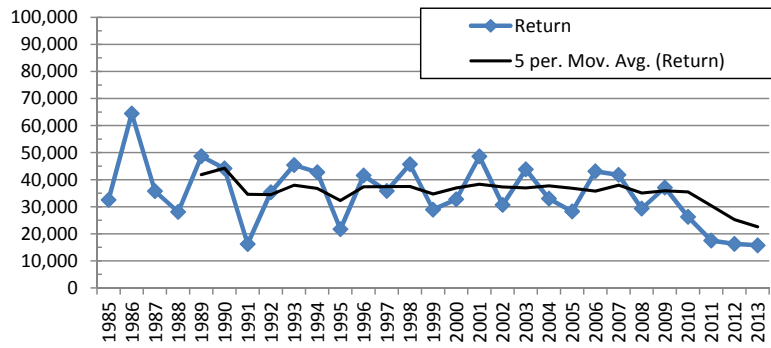
### Nass Sockeye TRTC Returns - 1985-2013



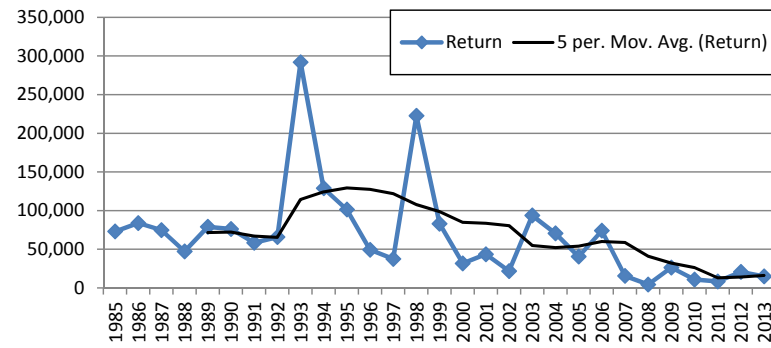
### Nass Pink TRTC Returns - 1985-2013



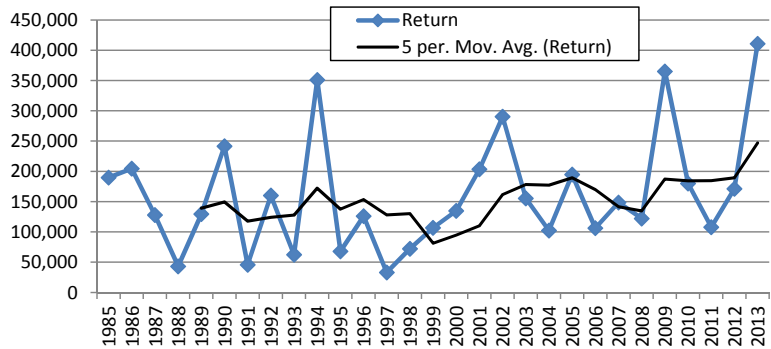
### Nass Chinook TRTC Returns - 1985-2013



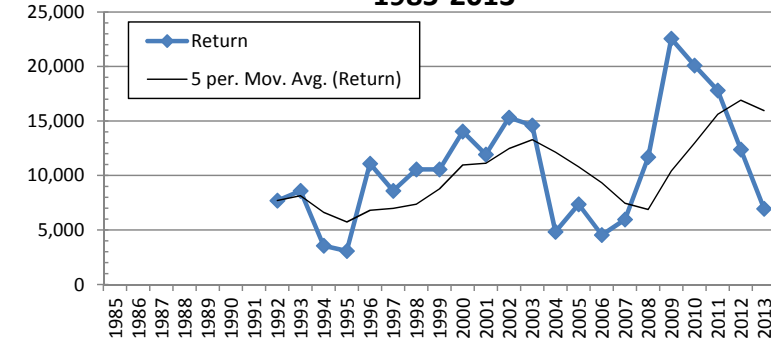
### Nass Chum TRTC Returns - 1985-2013

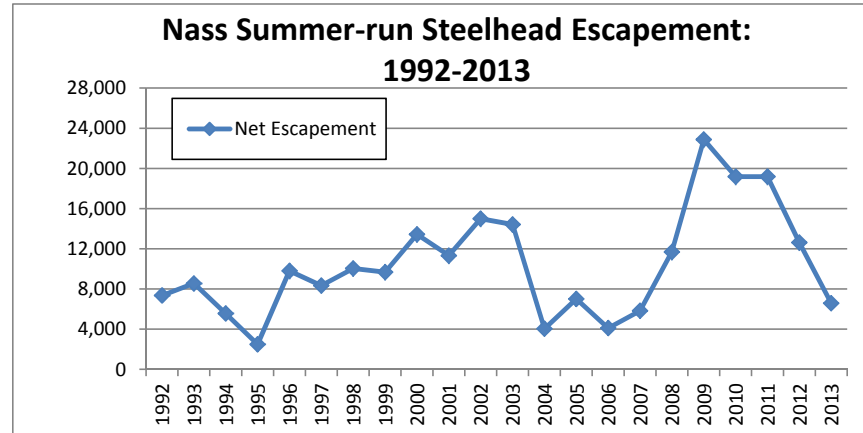
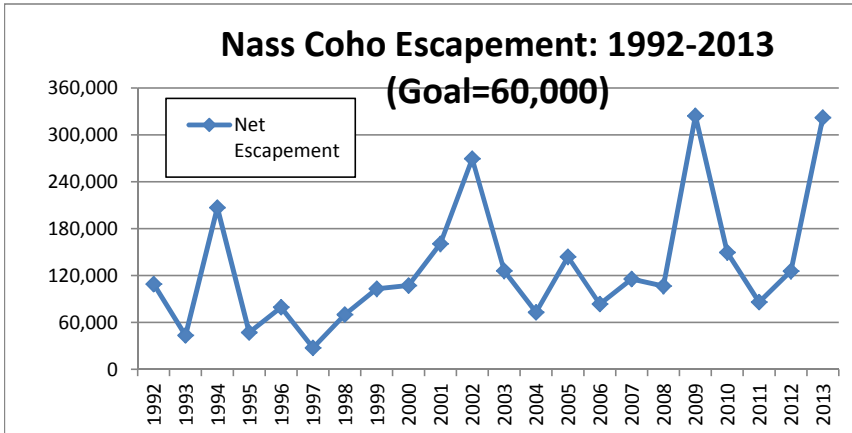
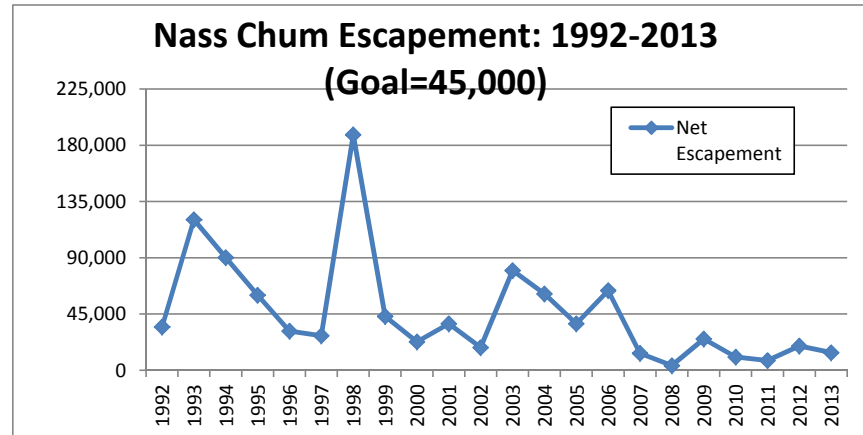
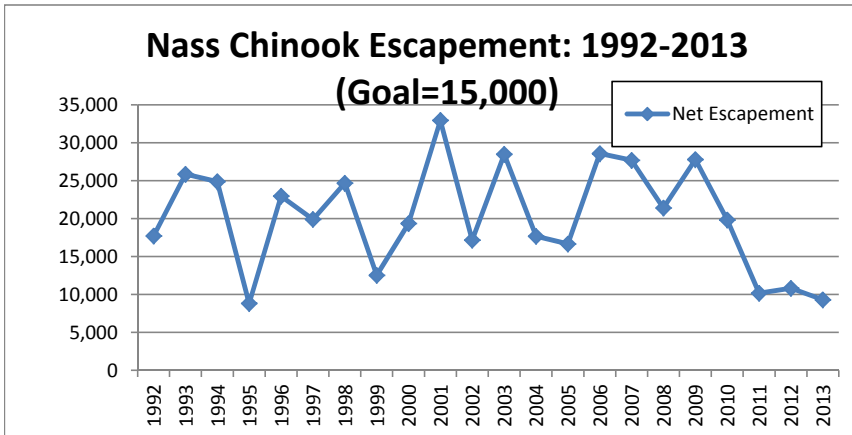
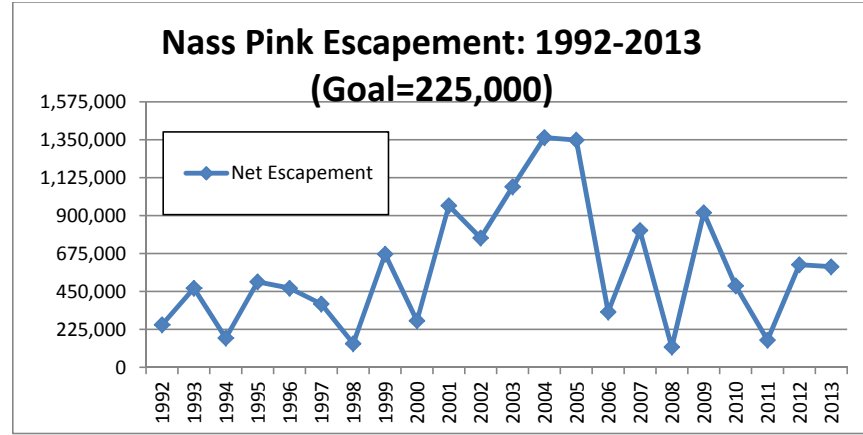
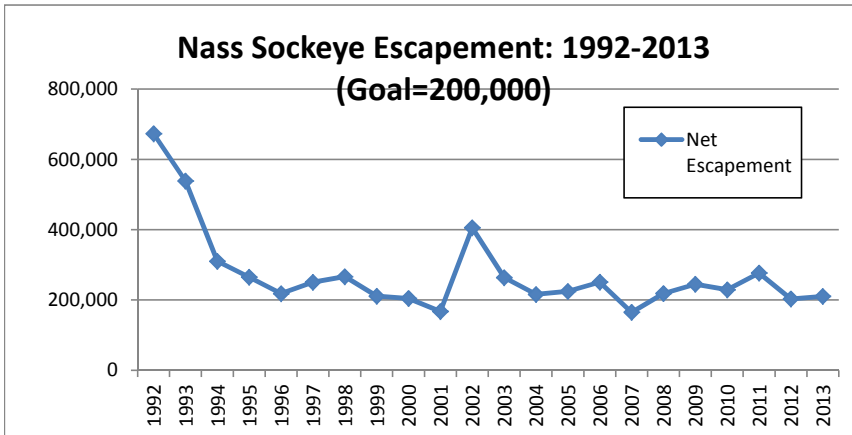


### Nass Coho TRTC Returns - 1985-2013

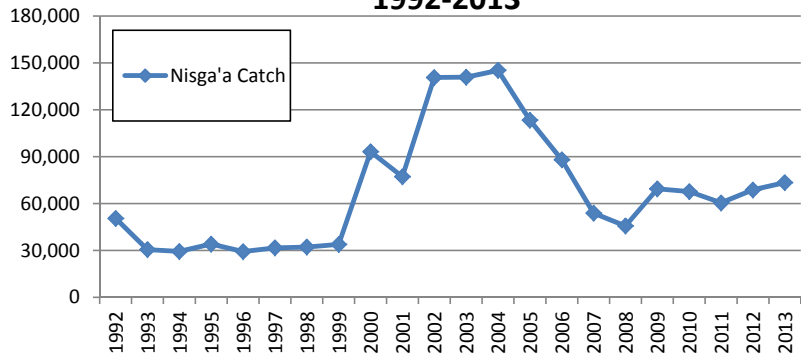


### Nass Summer-run Steelhead Returns to mouth - 1985-2013

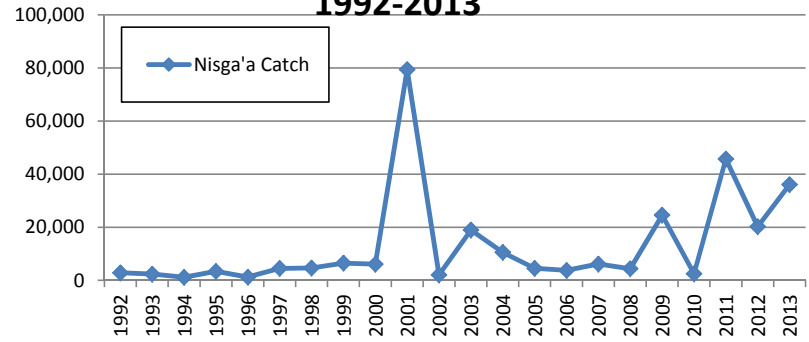




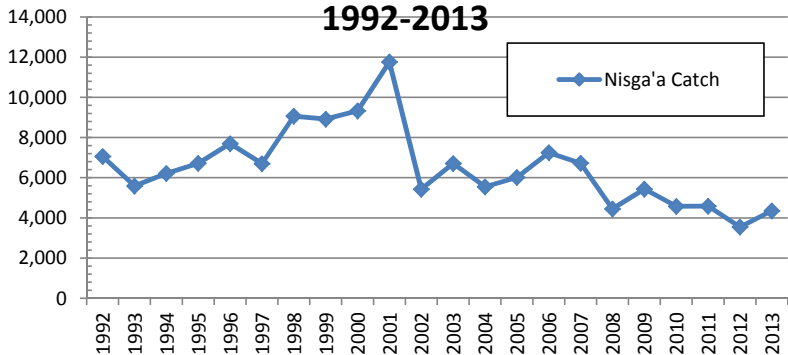
**Nass Sockeye Catch by Nisga'a  
1992-2013**



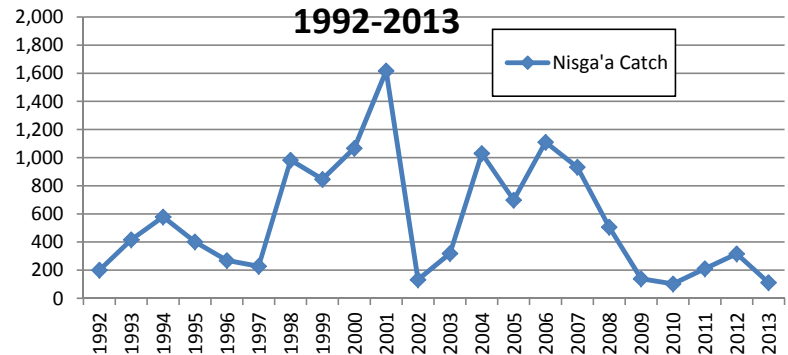
**Nass Pink Catch by Nisga'a  
1992-2013**



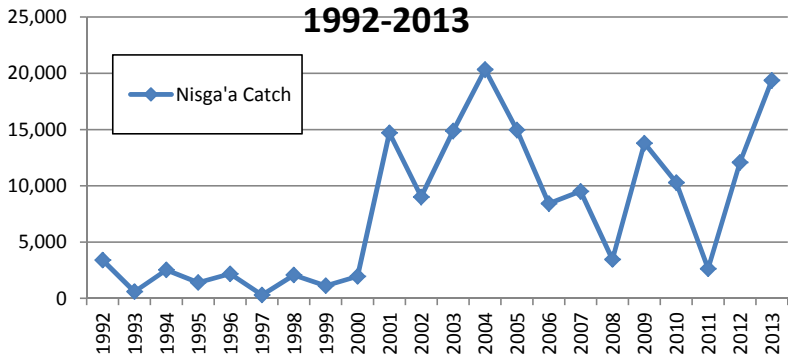
**Nass Chinook Catch by Nisga'a  
1992-2013**



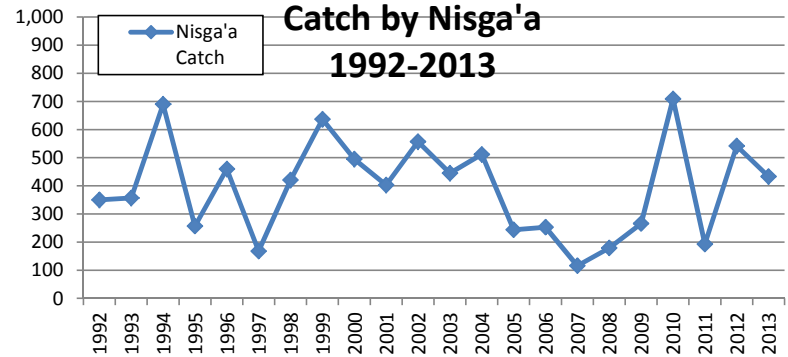
**Nass Chum Catch by Nisga'a  
1992-2013**

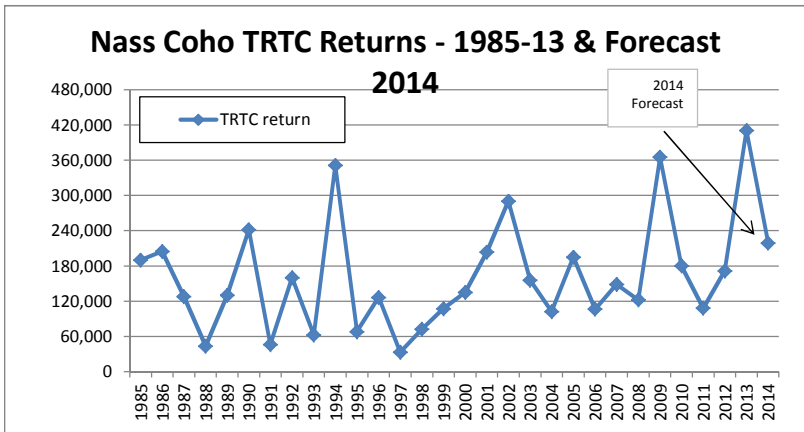
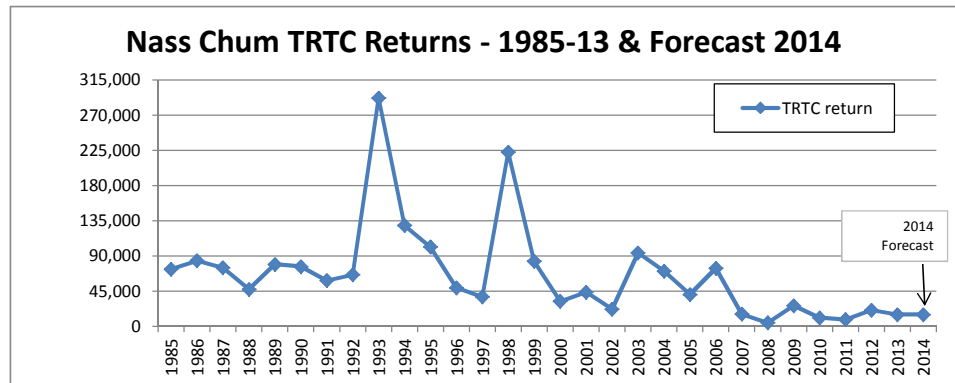
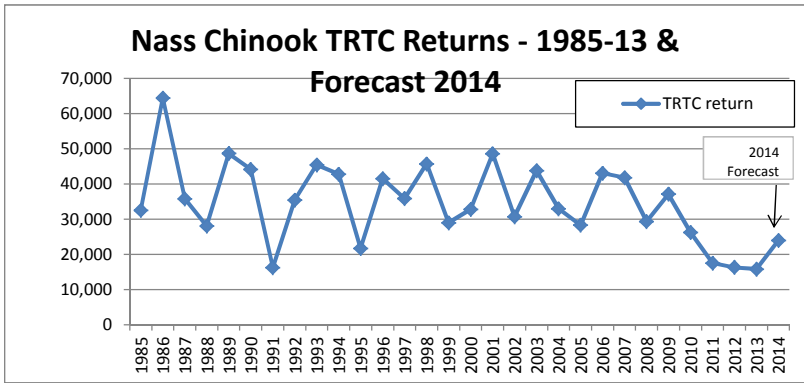
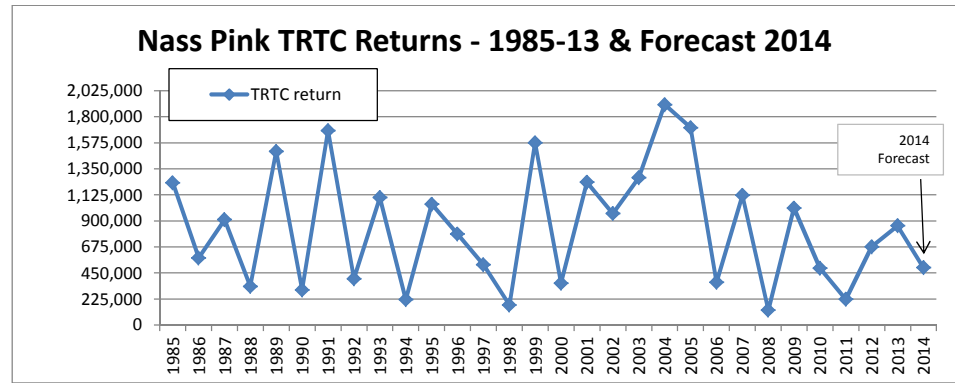
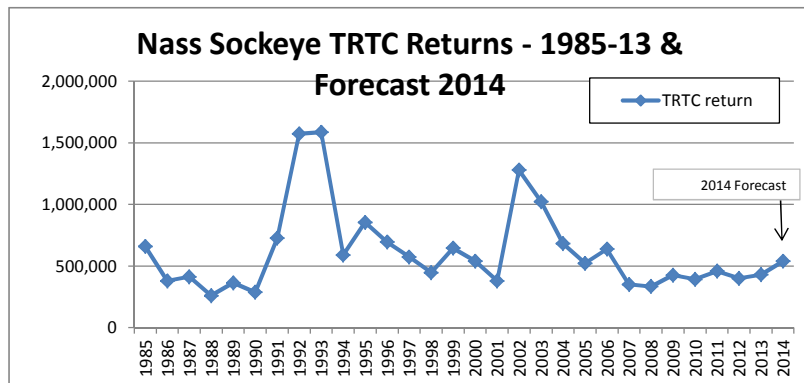


**Nass Coho Catch by Nisga'a  
1992-2013**



**Nass Steelhead (Winter & Summer run)  
Catch by Nisga'a  
1992-2013**





#### 2014 NASS SALMON PRELIMINARY FORECASTS: TRTC AND NISGA'A ENTITLEMENT

TRTC	SOCKEYE	PINK	CHINOOK	COHO	CHUM
75% prob.	449,000	260,000	18,000	151,000	11,000
<b>50% prob.</b>	<b>539,000</b>	<b>496,000</b>	<b>24,000</b>	<b>219,000</b>	<b>15,000</b>
25% prob.	661,000	948,000	31,000	317,000	20,000

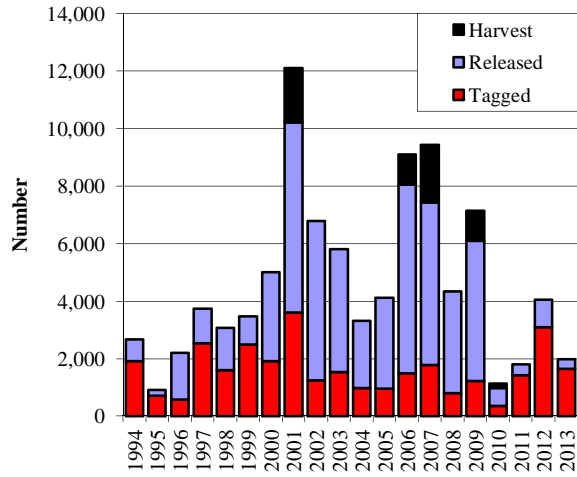
NISGA'A ENTITLEMENT	SOCKEYE	PINK	CHINOOK	COHO	CHUM
75% prob.	73,386	6,200	3,780	12,080	0
<b>50% prob.</b>	<b>93,308</b>	<b>43,016</b>	<b>5,040</b>	<b>17,520</b>	<b>0</b>
25% prob.	114,740	113,528	6,510	19,200	0

Nisga'a Cum. overage (-)/underage (+) status from 2000-2013 allocations	2,078	-	9,477	2,249	30,318
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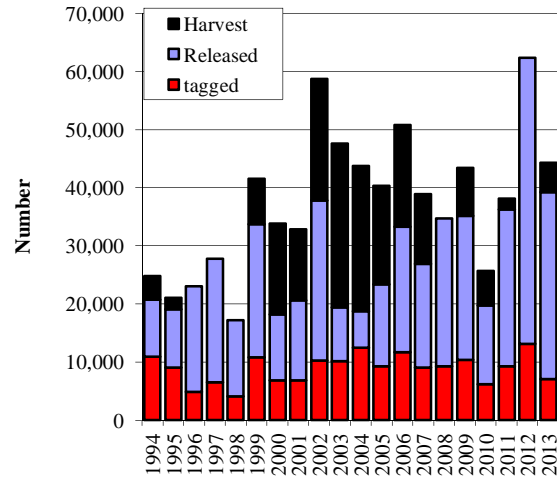


## NASS FISHWHEEL SALMON AND STEELHEAD CATCH CHARTS - 1994 TO 2013

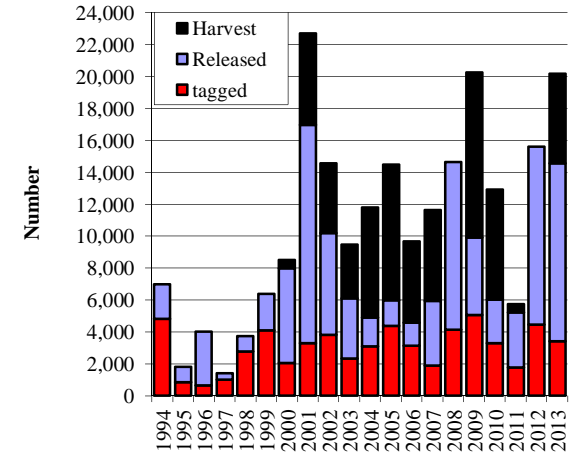
### Chinook FW Catch



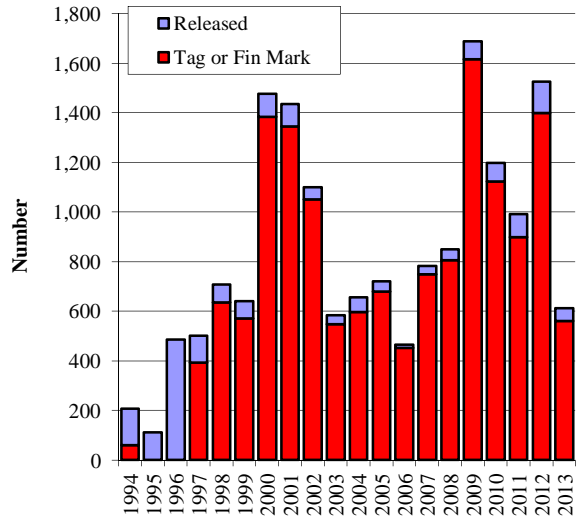
### Sockeye FW Catch



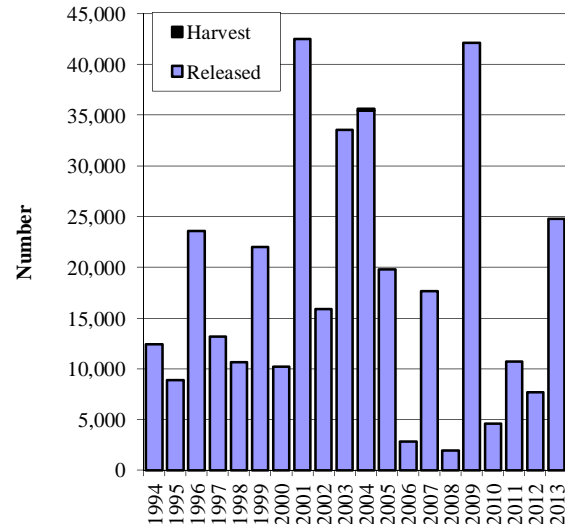
### Coho FW Catch



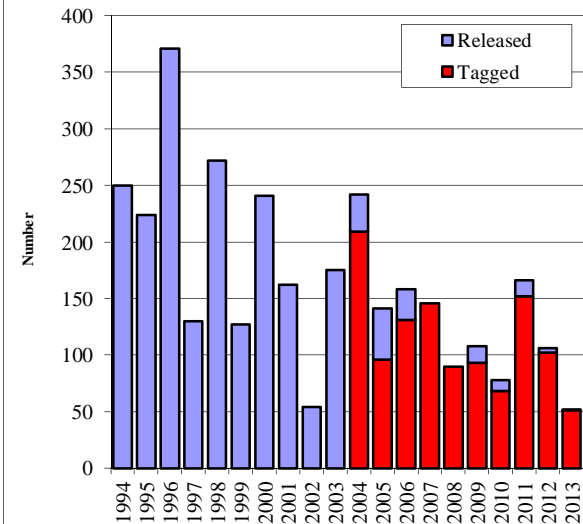
### Steelhead FW Catch



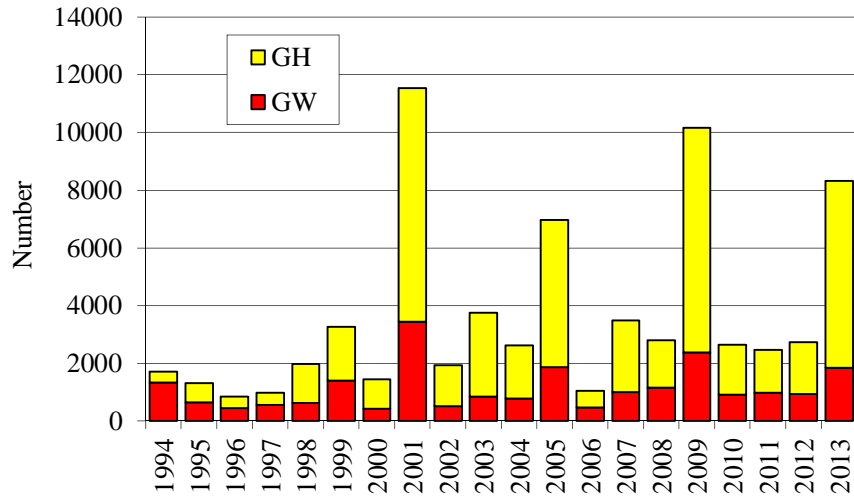
### Pink FW Catch



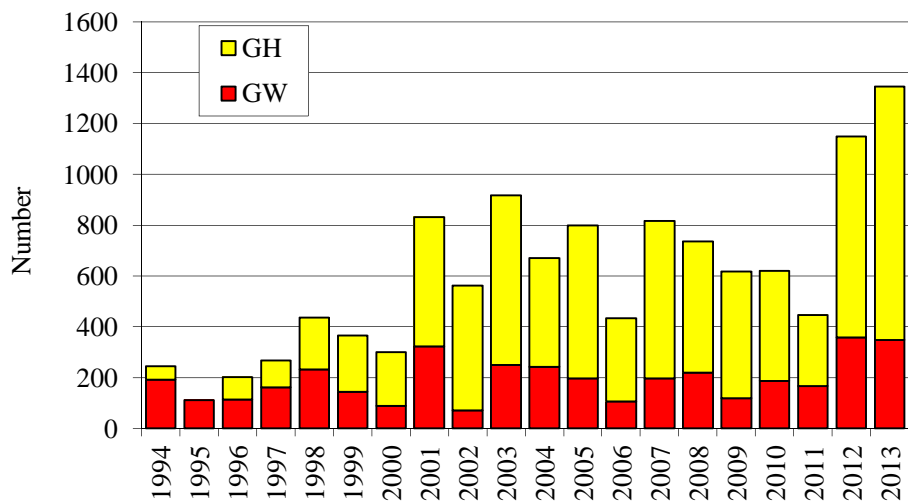
### Chum FW Catch



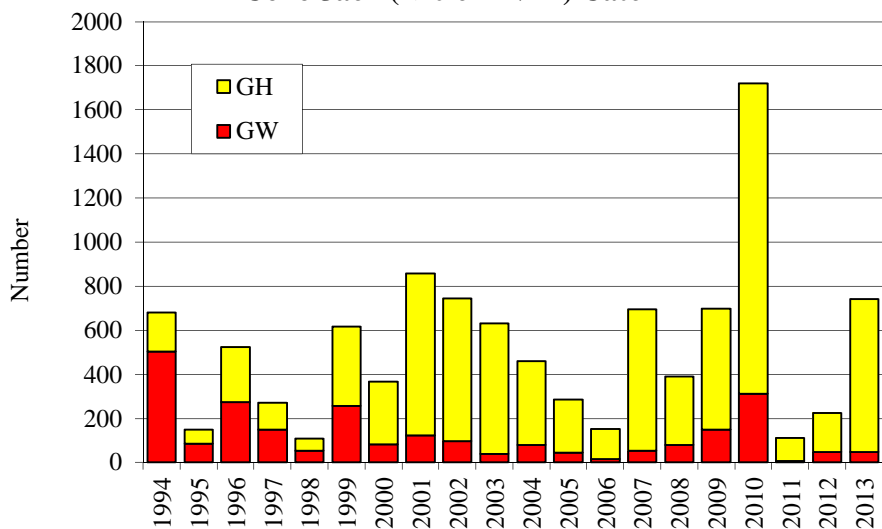
### Sockeye Jack (<45 cm NFL) Fishwheel Catch - 8,315



### Chinook Jack (<50 cm NFL) Fishwheel Catch - 1,346

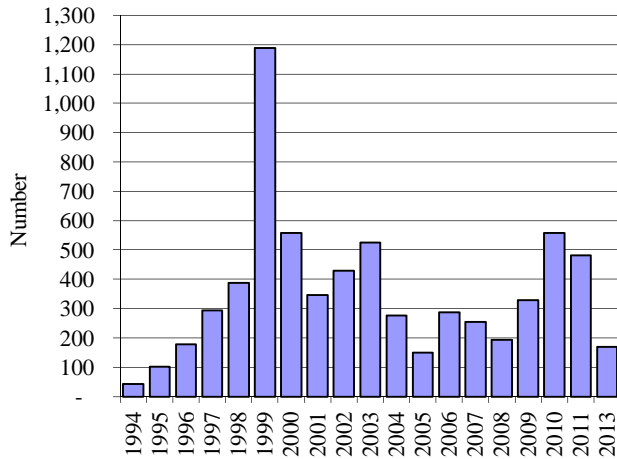


### Coho Jack (<40 cm NFL) Catch - 741

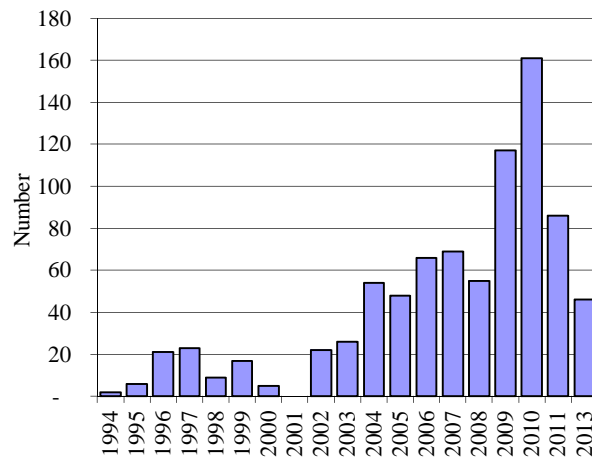


### NASS FISHWHEEL NON-SALMON CATCH CHARTS - 1994 TO 2013

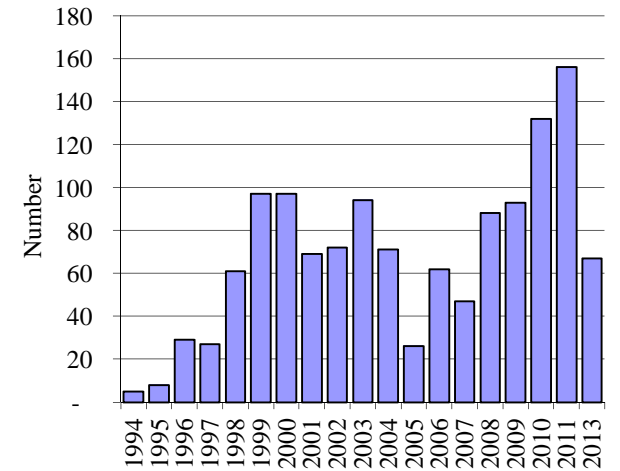
Dolly FW Catch (>19 cm NFL)



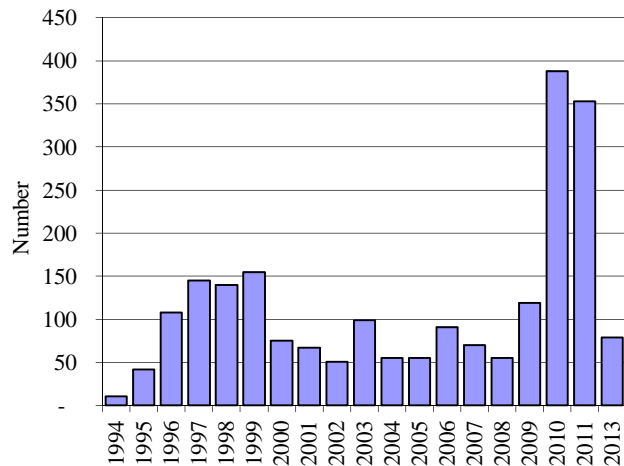
Rainbow FW Catch (>19 cm NFL)



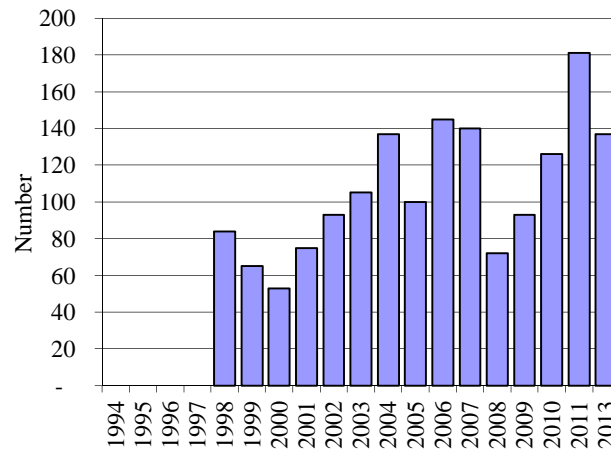
Cutthroat FW Catch (>19 cm NFL)



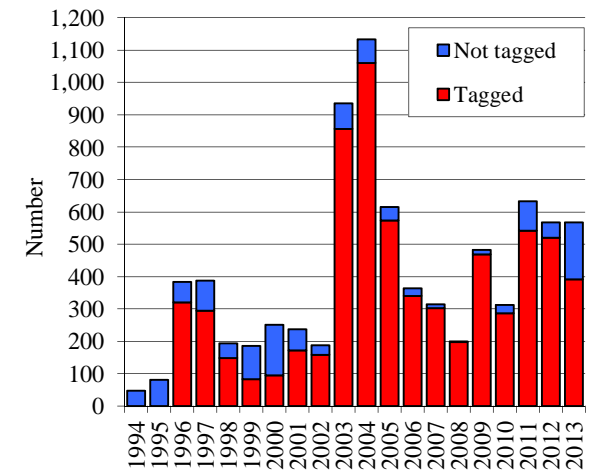
Whitefish FW Catch



Northern Pike Minnow FW Catch



Pacific Lamprey FW Catch

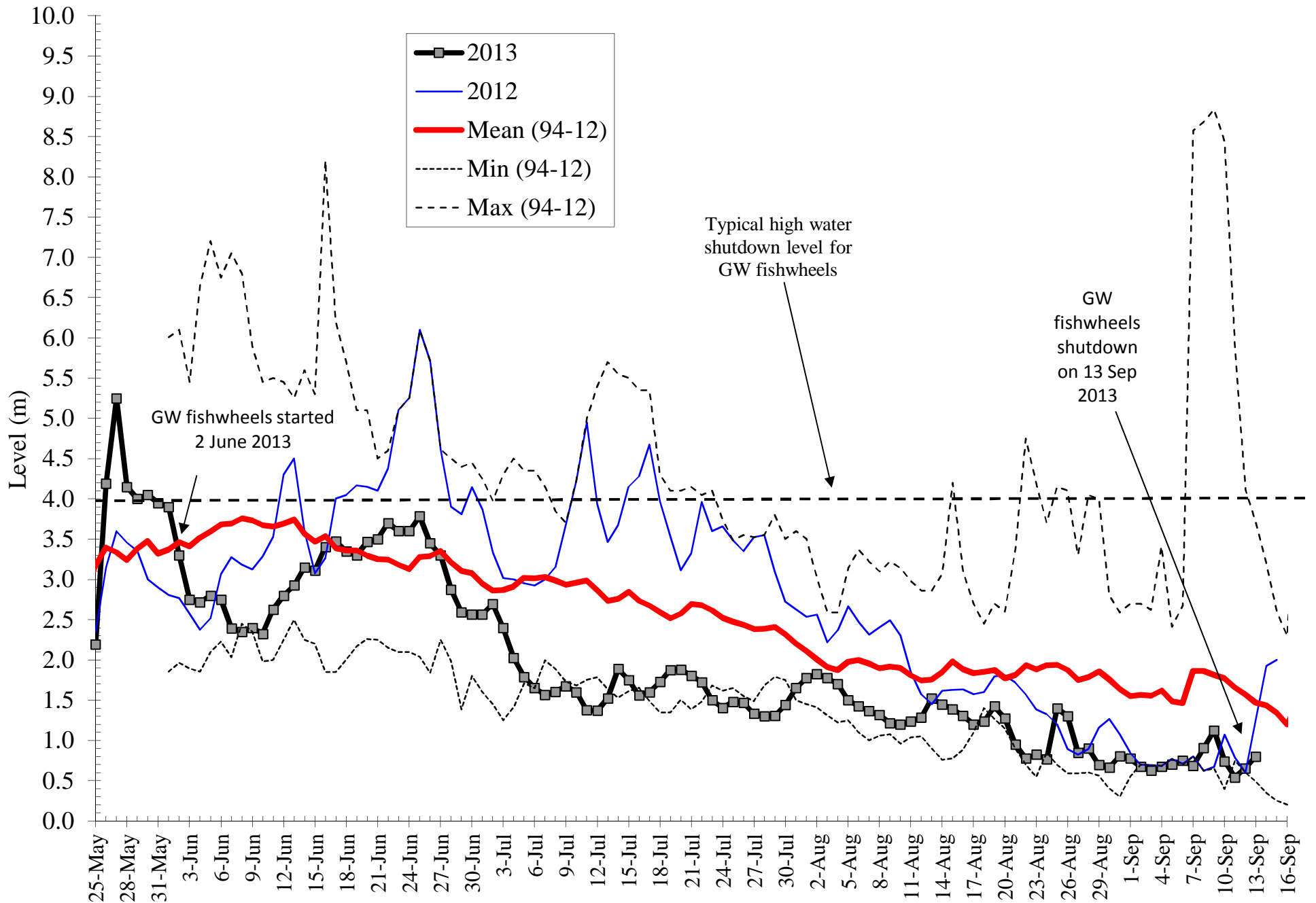


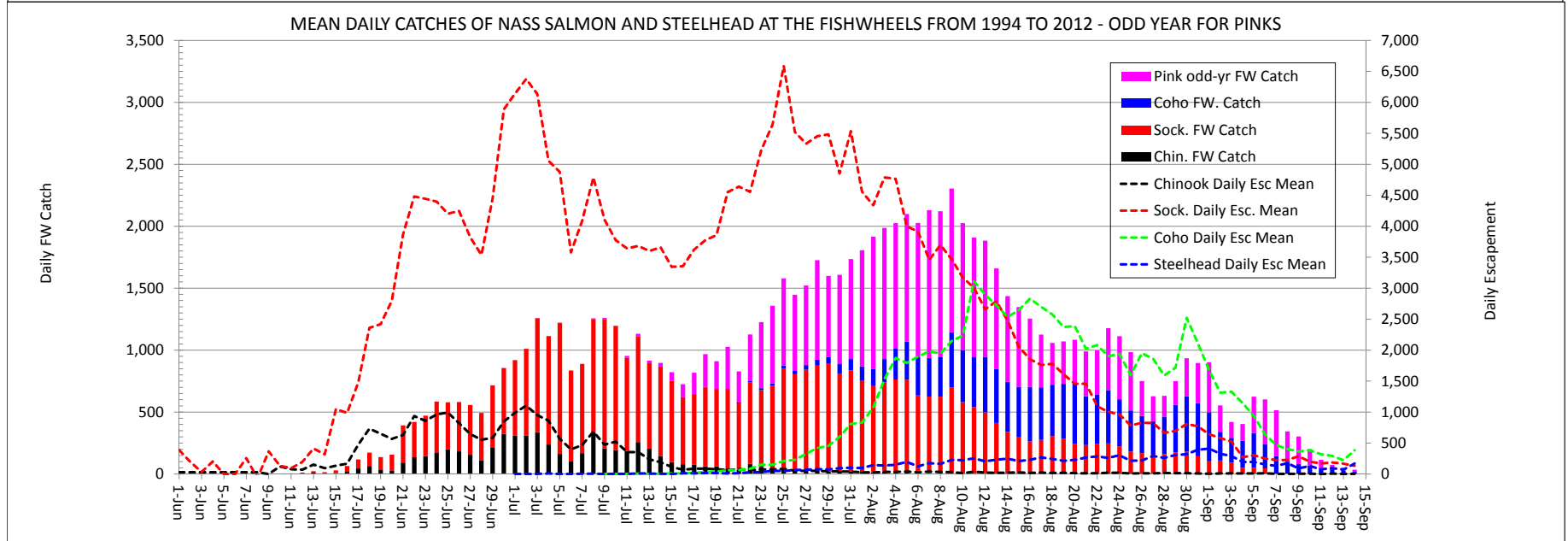
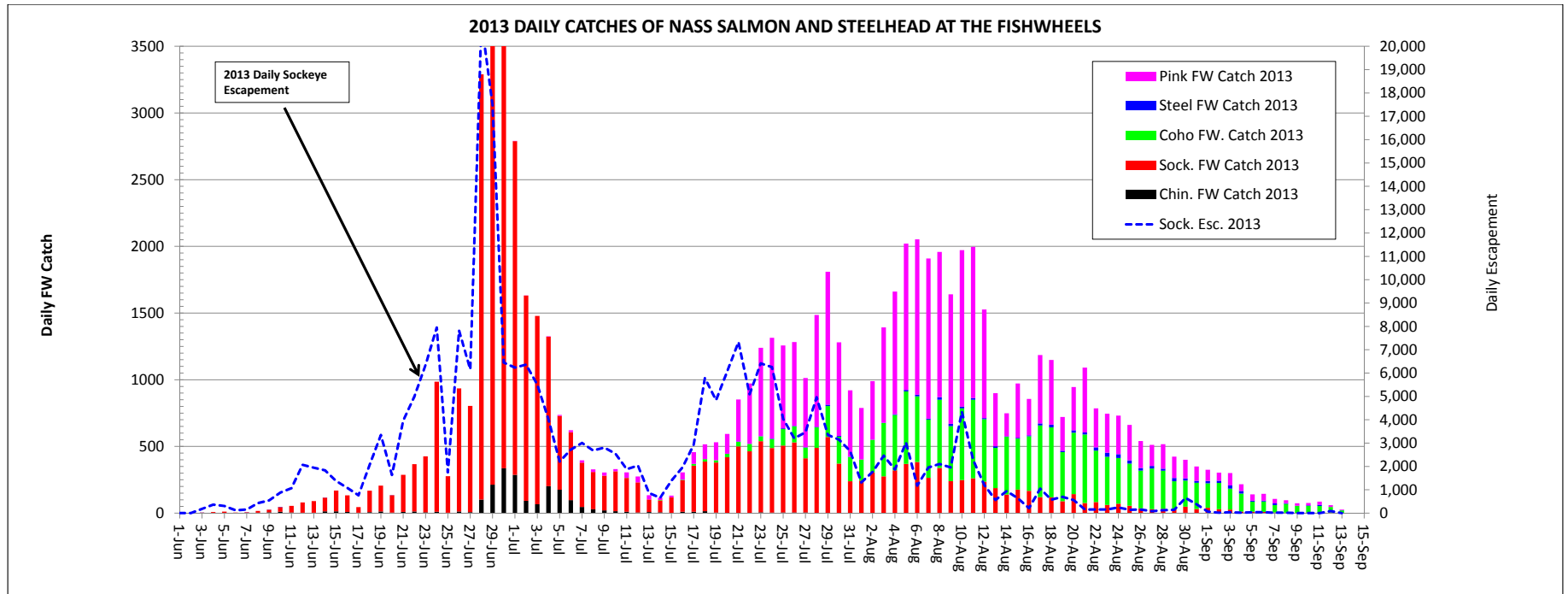
2013 Nass Fishwheel Catches

	GW		GW Total	GH			GH Total		Grand Total
Data	FW1	FW2		FW3	FW4	FW5	FW6		
<b>Chin-adult catch</b>	<b>156</b>	<b>456</b>	<b>612</b>	<b>395</b>	<b>0</b>	<b>632</b>	<b>342</b>	<b>1,369</b>	<b>1,981</b>
Chin-tagged	142	426	568	312	0	489	285	1,086	1,654
Chin-recaps	16	12	28	50	0	123	75	248	276
Chin-Jacks	135	212	347	275	0	433	291	999	1346
Sum of CH Harv	0	0	0	0	0	0	0	0	0
<b>Sockeye-adult catch</b>	<b>4,492</b>	<b>8,355</b>	<b>12,847</b>	<b>8,333</b>	<b>0</b>	<b>11,020</b>	<b>6,984</b>	<b>26,337</b>	<b>39,184</b>
Sockeye-tagged	2,558	4,544	7,102	0	0	0	0	0	7,102
Sockeye-recaps	224	145	369	178	0	315	200	693	1062
Sockeye_jacks	668	1185	1853	1464	0	3261	1737	6462	8315
Sum of Sk Harv	0	0	0	2006	0	1978	1106	5090	5090
<b>Coho-adult catch</b>	<b>2,638</b>	<b>1,733</b>	<b>4,371</b>	<b>2,065</b>	<b>0</b>	<b>5,455</b>	<b>2,664</b>	<b>10,184</b>	<b>14,555</b>
Coho-tagged	1,982	1,440	3,422	0	0	0	0	0	3,422
Coho-recaps	79	66	145	48	0	244	97	389	534
Coho-jack	26	22	48	138	0	376	179	693	741
Sum of CO Harv	0	0	0	1076	0	3026	1527	5629	5629
<b>Steel-adult catch</b>	<b>36</b>	<b>100</b>	<b>136</b>	<b>106</b>	<b>0</b>	<b>266</b>	<b>104</b>	<b>476</b>	<b>612</b>
Steel-Adipose marked	35	95	130	98	0	237	96	431	561
Steel-unmarked	1	5	6	8	0	29	8	45	51
Steel-recap-total	4	4	8	14	0	45	8	67	75
<b>Pacific Lamprey-catch</b>	<b>29</b>	<b>29</b>	<b>58</b>	<b>79</b>	<b>0</b>	<b>319</b>	<b>111</b>	<b>509</b>	<b>567</b>
Lamprey-tagged	27	25	52	47	0	225	67	339	391
Lamprey-released	2	4	6	32	0	94	44	170	176
Lamprey-recaps	0	0	0	3	0	9	6	18	18
River Lamprey	0	0	0	0	0	0	0	0	0
<b>Pink-adult-catch</b>	<b>8265</b>	<b>6338</b>	<b>14603</b>	<b>2235</b>	<b>0</b>	<b>5929</b>	<b>2034</b>	<b>10198</b>	<b>24801</b>
<b>Chum-adult-catch</b>	<b>18</b>	<b>16</b>	<b>34</b>	<b>6</b>	<b>0</b>	<b>8</b>	<b>4</b>	<b>18</b>	<b>52</b>
Chum-tagged	17	14	31	7	0	8	5	20	51
Chum-punched	0	0	0	1	0	0	0	1	1
Chum-recaps	0	0	0	5	0	1	2	8	8
<b>Dolly Varden</b>	<b>58</b>	<b>90</b>	<b>148</b>	<b>4</b>	<b>0</b>	<b>9</b>	<b>8</b>	<b>21</b>	<b>169</b>
<b>Pike Minnow</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>33</b>	<b>0</b>	<b>74</b>	<b>23</b>	<b>130</b>	<b>137</b>
<b>Whitefish sp.</b>	<b>6</b>	<b>16</b>	<b>22</b>	<b>22</b>	<b>0</b>	<b>50</b>	<b>17</b>	<b>89</b>	<b>111</b>
<b>Cutthroat sp.</b>	<b>31</b>	<b>39</b>	<b>70</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>9</b>	<b>79</b>
<b>Rainbow Trout</b>	<b>17</b>	<b>19</b>	<b>36</b>	<b>4</b>	<b>0</b>	<b>18</b>	<b>9</b>	<b>31</b>	<b>67</b>
<b>Peamouth Chub</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>0</b>	<b>28</b>	<b>6</b>	<b>42</b>	<b>46</b>
<b>Sculpin</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>1</b>	<b>17</b>	<b>21</b>
<b>Sucker</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>4</b>	<b>10</b>	<b>12</b>
<b>Red-Side Shiner</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>9</b>	<b>9</b>
Sum of chin_smolt	15	6	21	3	0	6	11	20	41
Sum of co_smolt	24	17	41	11	0	6	16	33	74
Sum of sk_smolt	18	3	21	4	0	6	3	13	34

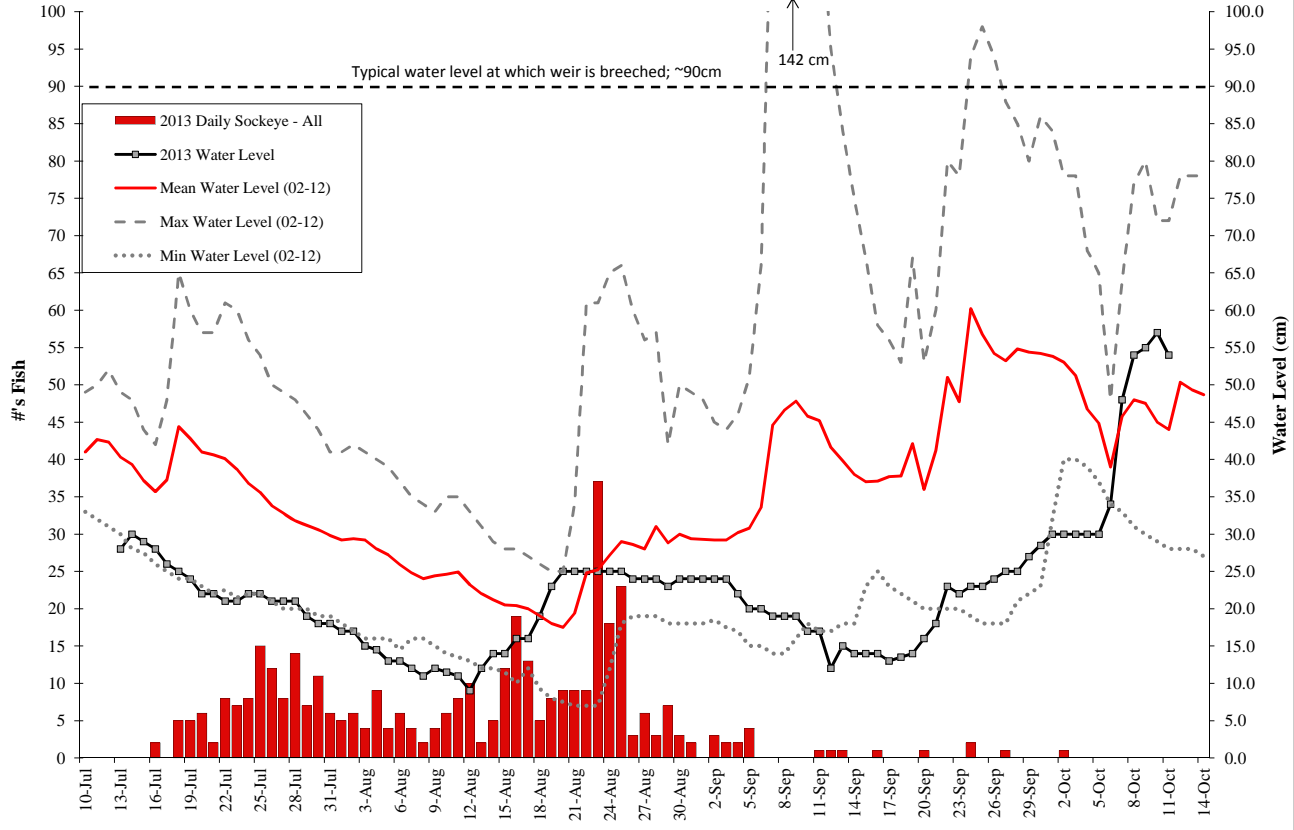


# Daily Water Level at Gitwinksihlkw Fishwheels 2013





Kwinageese River Weir Daily Sockeye - All counts versus water level, 2013.



Kwinageese River Weir Daily Chinook, Coho and Steelhead - All counts versus water level, 2013.

