Tulalip Tribes Natural Resources Department Report

SKYKOMISH RIVER JUVENILE SALMON OUT-MIGRATION STUDY PROGRESS REPORT

February – June 2018

by
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2018

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i. Acknowledgements
The 2018 Skykomish River Juvenile Salmon Out-Migrant Study was made possible by the following funding sources:

- NOAA Pacific Coastal Salmon Recovery Funds
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- Pacific Salmon Commission

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1. Introduction

In May of 1999, the National Marine Fisheries Service (NMFS) listed the Puget Sound Chinook salmon as threatened under the federal Endangered Species Act (ESA). This listing included Chinook salmon from the Snohomish River Basin (Skykomish and Snoqualmie populations). Similarly, decreases in many runs of Puget Sound Coho salmon have resulted in a designation as a species of concern under ESA. The recovery of these species depends upon improving the effectiveness of habitat, harvest, and hatchery management across the basin. In order to achieve such improved effectiveness, additional information is necessary to fill important data gaps within the Snohomish system, including information on Chinook and Coho salmon abundance, productivity, spatial structure, and diversity (Snohomish Basin Salmonid Recovery Technical Committee, 2005). Information about the trends and inter-annual variability in these population parameters is critical to inform salmon recovery efforts, provides basic information on the productivity and capacity of the system, and can lead to significant improvements in harvest management modeling and run forecasting. Additionally, the monitoring of production and survival along with other physical, chemical, and biological conditions provides a means to evaluate recovery actions, habitat conditions, and potential ecological trajectories in the basin**.**

A key project helping to provide information on Snohomish salmon populations has been the operation of two rotary screw traps in the Skykomish and Snoqualmie rivers. Over the last 12 years, these projects involved trapping and enumerating juvenile Chinook and Coho salmon (as well as several un-targeted species) as they emigrate from the Snohomish River Basin to the Puget Sound. The goals of these trapping efforts are to estimate Chinook and Coho salmon natural production, migration patterns, and freshwater survival. These goals are accomplished through the direct quantification of juvenile salmon emigrations, evaluation of trap efficiency, and assessment of influential environmental attributes (Kubo, Finley, Nelson, 2013).

The Tulalip Tribes (TTT) trapping project has been classified on a multi-agency basis as a project of high priority for monitoring juvenile salmonids in the Snohomish River basin. TTT has worked in close collaboration with the Bureau of Indian Affairs (BIA), Washington Department of Fish and Wildlife (WDFW), NOAA Fisheries, University of Washington (UW), Long Live the Kings (LLTK), Seattle City Light (SCL), U.S. Geological Survey (USGS), Northwest Indian Fisheries Commission (NWIFC), and other agencies to aid in better co-management of Snohomish basin salmon and steelhead stock assessment monitoring and run forecasting. Cooperative management agreements and in-kind contributions have been made to these agencies regularly from TTT in order to better assist in monitoring the status and trends of Snohomish Basin salmonid stocks.

2. Skykomish River Trapping Site Location and Characteristics

The Skykomish river trap site is located at river mile 26.5 of the Skykomish River (Figure 1). The wetted width of the Skykomish River at this point is ~325 ft. during the spring out-migration period and the channel's bank full width is ~490 ft. The channel's maximum depth at the site is ~5 ft. at summer low-flow level and approaches ~18.5 ft. at bank full depth. Summer low-flow at this location is ~3,030 cfs and mean annual discharge is ~4,070 cfs. The channel gradient is < 1% and substrate is principally gravel and cobble. When fishing; the trap is positioned in the thalweg of river, near the center of the channel. Land use adjacent to the project site is principally agriculture; however, riparian vegetation is relatively intact (with some supplemental plantings). Existing riparian vegetation is primarily cottonwood and alder and planted riparian vegetation includes cedar and spruce. At the immediate trapping site, the right-bank is composed of a gravel bar adjacent to a cottonwood stand. The left bank is just downstream of a hardened section (i.e. riprapped) with planted riparian vegetation integrated into a cottonwood stand. Adjacent to the stand is an active farm. (Kubo, Finley, Nelson, 2013).

Figure 1: Aerial photograph of the trap site at river mile 26.5 on the Skykomish River. The red dot indicates the approximate trap fishing position.

3. Summary of activities completed during the sampling season.

On February 12th, 2018 installation of the rotary screwtrap began and full trapping operations commenced on February 20th. The 2018 season ended on June 14th. The trap was operated for approximately 836 hours over 85 business days within a 17 week period from Statistical Week 8 – Statistical Week 24. 325 of those hours were fished at night representing 39% of total trapping effort. A total of 18 sampling events (both schedule cancellations, and unscheduled potential sampling days) were ultimately cancelled due to unfavorable sampling conditions. During the sampling season 104,269 salmon and trout were captured, counted and released. Of those fish, Pink salmon totaled 78,314 accounting for 75% of the total salmonid catch for 2018. Captured unmarked Chinook included 4,407 sub-yearlings and 79 yearlings. The number of Chinook sub-yearlings caught at the Skykomish River trap has varied widely from year to year, with this years' total approximately 227% higher than the project average (2004-20178 average; 1,938). Captured unmarked Coho included 239 sub-yearlings and 1,583 yearlings. The number of unmarked Coho yearlings caught in 2018 was 36% lower than the project average (2004-2018 average: 4,343) (Table 1). During the trapping and handling process a total of 20 salmonid mortalities were reported, of which 20 were unmarked Chinook. Mortality as a percentage of the total sub-yearling Chinook catch was approximately 0.45% (Table 7).

Year	Effort (Hours)	0+ Chinook	1+ Coho	Chinook CPUE	Coho CPUE
2000	308.5	1287	5972	4.17	19.36
2001	900.6	1786	5512	1.98	6.12
2002	671.7	1093	8851	1.63	13.18
2003	992.1	3394	8713	3.42	8.78
2004	1071	951	13949	0.89	13.02
2005	944.3	2411	3082	2.55	3.26
2006	1125.3	2928	6218	2.60	5.53
2007	446.8	1348	3882	3.02	8.69
2009	686.6	1650	1410	2.40	2.05
2010	1045.8	1989	1245	1.90	1.19
2011	666.8	765	1798	1.15	2.70
2012	1015.7	1323	3005	1.30	2.96
2013	1217.77	2446	4443	2.01	3.65
2014	888.2	1354	2625	1.52	2.96
2015	1078.7	1418	1596	1.31	1.48
2016	1031.5	490	2137	0.48	2.07
2017	843.4	3838	2154	4.55	2.55
2018	836	4407	1583	5.27	1.89
Project Average	*876*	*1938*	*4343*	2.34	5.64

Table 1. Annual sampling effort and catch totals for unmarked Sub-yearling Chinook and yearling Coho at the Skykomish River rotary screwtrap 2000-2017.

Efficiency testing and results.

A total of 10 trap efficiency tests (6 with Chinook sub-yearlings, and 4 with Coho yearlings) were conducted on 10 different days throughout the 20178 sampling season. During these tests, groups of hatchery origin juvenile salmon were collected from Wallace River Hatchery, marked with biological dye, and released approximately one mile upstream of the trap site. These releases were conducted weekly throughout the duration of the sampling season until the maximum allowable number of Chinook and Coho available from the hatchery had been reached unless the river was deemed unfishable due to flow conditions. Following each release the trap was operated continuously (except during debris removal) for a minimum of 36 hours. Efficiency calculations are expressed as the percentage of captured dyed fish in relation to the total number of dyed fish released. The results of these tests are still being evaluated, but preliminary calculations suggest that the trap was operating at an efficiency rate of 1.70% for Chinook sub-yearlings and 1.15% for Coho yearlings during the 2018 sampling season (Table 2). Both Chinook sub-yearling and Coho yearling efficiency rates in 2018 were slightly higher than documented seasonal averages (2001-2018 average: 1.36%; Chinook and 1.10%; Coho). During the 2018 season, trapping equipment was inspected and monitored frequently and the trap was found to be in fully operational condition with no escape paths detected and no major equipment malfunctions. A limited number of Coho 1+ releases were conducted both due to environmental difficulties (extremely warm spring weather) as well as a limited number of fish available for releases.

Year	River	Release Date	0+ CK Eff	1+ CO Eff
2018	Skykomish	3/7/2018	***1.95%***	
2018	Skykomish	3/13/2018	***2.10%***	
2018	Skykomish	3/21/2018	***4.30%***	
2018	Skykomish	3/27/2018	***0.85%***	
2018	Skykomish	4/10/2018	***0.35%***	
2018	Skykomish	4/18/2018	***0.65%***	
2018	Skykomish	5/2/2018		***1.05%***
2018	Skykomish	5/30/2018		***1.45%***
2018	Skykomish	6/6/2018		***1.02%***
2018	Skykomish	6/13/2018		***1.09%***
		2016 Avg. Total	1.70%	1.15%

Table 2. Efficiency Release dates, species, and capture percentages for the Skykomish River smolt trap, 2018.

In 2015 Snohomish County Public Utility District (PUD) began conducting similar efficiency releases at their smolt trap on the Sultan River. The Sultan trap site is approximately 7.8 river miles upstream from the Skykomish trap and is located on the Sultan River approximately 0.2 river miles upstream from the confluence of the Sultan and Skykomish. The Snohomish PUD trap was not in operation during the 2018 season due to suspension of the project by PUD. Trapping is scheduled to recommence at the Sultan trap site beginning in 2019. Due to this lapse in sampling no efficiency data is available from the PUD Sultan trap site for 2018.

Catch Per Unit of Effort (CPUE) analysis.
A preliminary review of the data reveals that CPUE for 0+ Chinook demonstrated two distinct peaks in SW 11 and 13, respectively with the peak in SW 13 being slightly higher at approximately 17 fish per hour encountered. Following the CPUE peak for 0+ Chinook in SW 13, catches dropped off before a much smaller secondary peak was seen in week 17 (Figure 3). The 2018 peak outmigration timing for sub-yearling Chinook was consistent with observed seasonal norms occurring between SW11 and SW17 for all recorded years. The sub-yearling Chinook outmigration occurred over a relatively extended period, while migration for unmarked Coho yearlings was more abbreviated, taking place over a 8 week period from SW16 to 23. The peak for Coho yearlings occurred during SW19 when approximately 11 fish per hour were captured. The timing of the yearling Coho outmigration is very consistent from year to year, and the 2018 data is consistent with monitoring trends observed since the beginning of trap operations in 2001. In all years the peak outmigration occurred between SW18 and SW22, as was observed in the 2018 sampling season. Table 7 shows a monthly breakdown of catch numbers for all species and Table 5 shows calendar weeks and the corresponding dates.

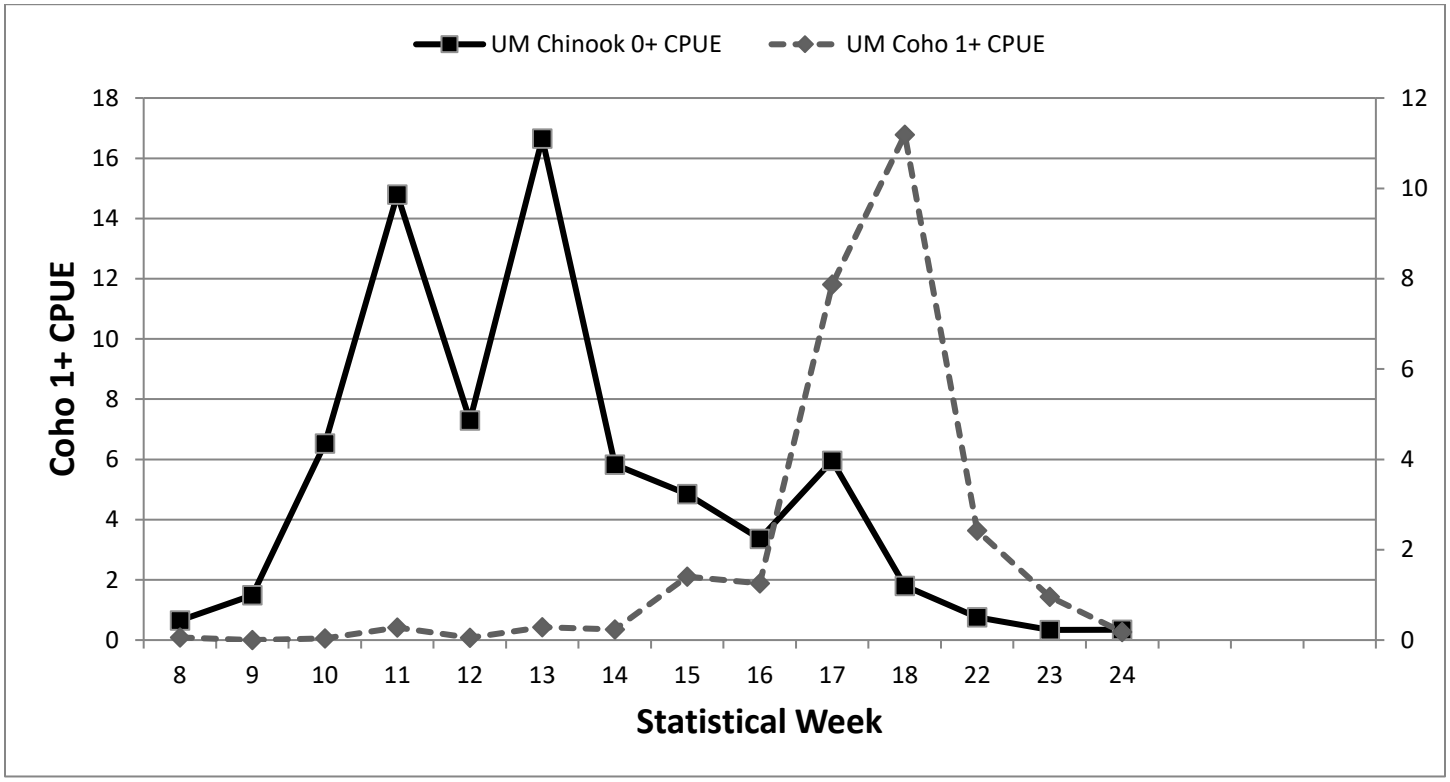

Figure 3. Chinook sub-yearling (age 0+) and coho (1+) migration patterns observed at the Skykomish River trap, February, 20th – June 14th, 2018.

In general, average salmonid CPUE and total catch on the Skykomish trap have exhibited seasonal variability throughout the duration of the project due to fluctuating sampling conditions and the strength of a given years outmigrant cohort. Analysis of seasonal CPUE averages for sub-yearling Chinook indicate that the catch rates in 2018 was over two times the project average (2018 CPUE; 5.27, Project Average CPUE; 2.34), and the 2018 sampling season was the all-time project high for Chinook sub-yearling CPUE (Figure 4). Taking into account seasonal variability and sampling conditions, the total annual catch and CPUE for sub-yearling Chinook seem to display annual variability, but no clear positive or negative trend. In 2007 the trap was moved upstream from RM 23 to its current location at RM 26.5. This relocation likely plays a direct role in lower overall encounters at the smolt trap from 2007 to present. This is likely due to the exclusion of the Woods Creek drainage from the sample, as well as decreasing the overall drainage area sampled.

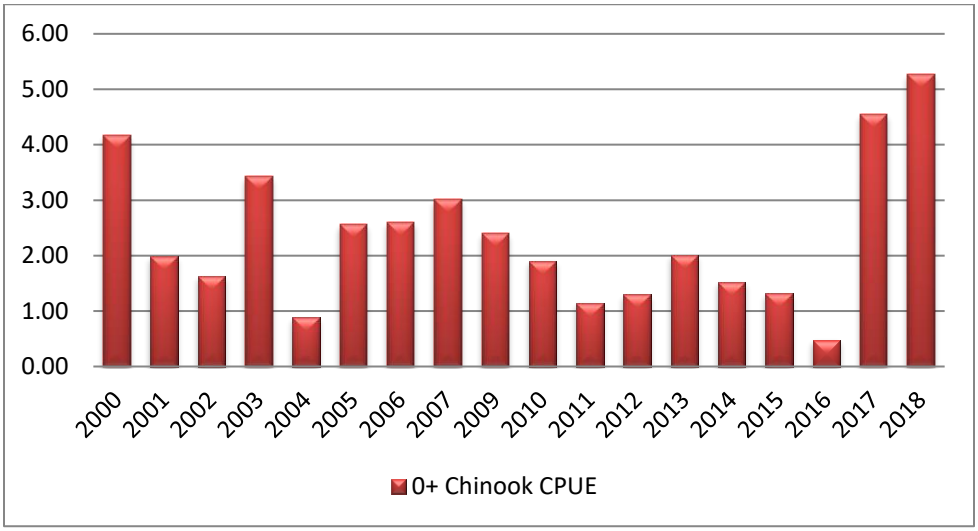

Figure 4. Sub-yearling Chinook average CPUE at the Skykomish trap; 2001-2018.

Yearling Coho catch rates dropped off significantly starting in 2009, and in 2010 the lowest documented average CPUE of 1.19 occurred (Figure 5). The overall decline in Coho catch rates is likely primarily due to the relocation of the trap site to RM 26.5 in 2007 below the Woods Creek drainage. Woods Creek is a very effective Coho producing waterbody, and has been excluded from the data following the traps relocation in 2007. 2008 data is not present due to unforeseen complications that halted the Skykomish trap operations in 2008. Since 2009, yearling Coho catch rates have remained fairly consistent both in total catch and CPUE. In 2018 the average yearling Coho CPUE was slightly lower however fairly consistent with project averages since the relocation of the site in 2007. The 2018 1+ Coho CPUE was approximately 20% lower than documented averages at 2.35 yearling Coho per hour sampled (Post-2007 project average CPUE; 2.35 fish per hour). Yearling Coho annual catch and CPUE seem to display annual variability, but no clear positive or negative trend. CPUE's have been fairly consistent year over year since the traps relocation in 2007 with 2010 being the lowest recorded year (1.19) and 2013 being the highest (3.65).

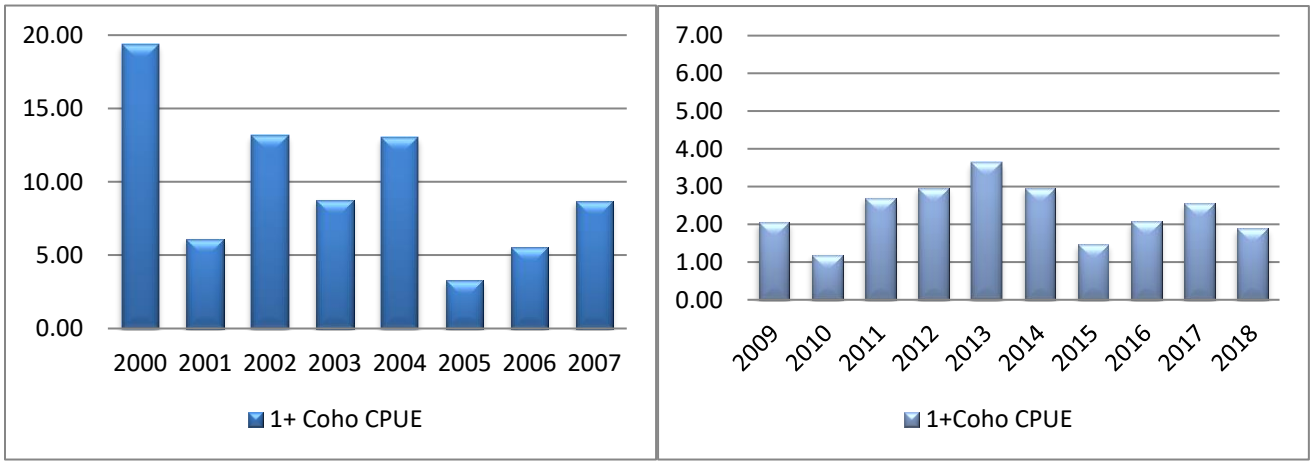

Figure 5. Yearling Coho average CPUE at the Skykomish trap by year; 2000-2018.

3.1 Additional Studies

Genetic Mark Recapture Parentage Assignment - WDFW

Beginning in 2012 under a funded cooperative management agreement with WDFW, TTT began assisting in a basinwide genetic mark and recapture (GMR) study being conducted by WDFW. DNA samples were collected at the Skykomish trap site for genetic parentage-assignment analyses of juvenile Chinook salmon in an attempt to further evaluate stock-specific production estimates and abundance. Under the WDFW GMR project protocol all unmarked (adipose intact) Chinook (both 0+ and 1+ size classes) caught in the trap were caudal clipped for DNA sampling.

In 2018, juvenile Chinook salmon were captured in eight-foot screw traps operated at RM 25 on the Skykomish River. Captured individuals were netted from the live box and held in five-gallon buckets. Fish were placed into a dishpan where they were identified to species, and examined for marks (adipose fin clips, CWT). Unmarked/untagged Chinook were measured and FL recorded in millimeters. For DNA parentage analysis, a small piece of caudal fin tissue was collected from a random subset of unmarked/untagged subyearling Chinook juveniles encountered at the trap (samples were taken from the first 100 individuals encountered in a given shift). These samples were immediately stored in 95% ethanol at ambient temperatures. Unlike previous years, only a subset of sub-yearlings were sampled. In previous seasons an attempt was made to collect samples from all individuals encountered. Due to very high catches and proportionally high CPUE during peak periods, the sampling load was overwhelming for survey crews at times resulting in a need to curtail the amount of samples being taken. Further, it was indicated that a project goal for samples is around 1,500 individuals in a given year, our goal was to surpass that mark, as well as select a representative sample set throughout the duration of the season. Unmarked and untagged subyearling Chinook were presumed to be of natural-origin given that all regional hatchery Chinook production is marked through a combination of adipose fin clips and CWTs, less a very small proportion that end up not being marked due to clip and tag loss (Seamons, et. al, 2015). In 2018, approximately 2,534 upper-caudal DNA samples were taken from a mix of sub-yearling and yearling unmarked Chinook juveniles. This number is the second highest dating back to beginning of the GMR study at the Skykomish in 2012, and the total number of sub-yearling Chinook encountered at the trap in 2018 represents an all-time project high.

Skykomish River	
Year	**Chinook Samples Taken**
2012	1,345
2013	2,324
2014	1,333
2015	1,444
2016	566
2017	3,555
2018	2,534
Total to Date	13,101

Table 6. GMR Sample Totals 2012-2018.

4. Project status and difficulties.

In terms of trap operation the 2018 trapping season presented considerable difficulties, particularly during the spring later in the sampling season. Record snowpack coupled with record lowland precipitation resulted in frequently high and unstable sampling conditions, particularly throughout the month of May, 2018. In total, 6 scheduled sampling events were cancelled due to unsafe/unfavorable fishing conditions (i.e. high debris and discharge levels beyond threshold operation limits of the equipment), and an additional 12 potential sampling events/dates that were never scheduled were also missed due to a sustained unfishable river state throughout much of the month of May These missed sampling events would have potentially equated to approximately 200+ hours of fishing effort that was ultimately missed in 2018. As a function of total trapping effort these 200 hours represent approximately 24% of the total 836 hours that the Skykomish trap was fished effectively in 2018. During SW 16 on Monday, 4/16 one scheduled sampling shift was ultimately cancelled due to unfavorable river conditions at the Skykomish site. Normal operation re-commenced later in SW 16 on Tuesday, April 17th. Hydrologic conditions remained fairly stable until the beginning of May in SW 19 when considerable rainfall resulted in extremely erratic and unstable river conditions that persisted continuously from 05/06 – 05/25/2018. Sampling was suspended for a total of 3 statistical sampling weeks beginning in SW 19 on Monday, May 7th and sampling did not recommence until the beginning of SW 22 on Tuesday, May 29th. During this three week time period hydrologic conditions did infrequently drop below the maximum operating threshold of approximately 10,000 cfs, however these periods within the sampling threshold were fleeting, and the unstable nature of the river made sampling inadvisable. During this time period the maximum high for the Skykomish river was 18,000 cfs and this peak was reached on Wednesday, May 9th. The trap fished without incident following this event for 3 more statistical sampling weeks until project cessation in SW 24 on Thursday, June 14th.

Despite the hydrological difficulties in 2018 the catch numbers, particularly for Chinook salmon, where remarkably good. It is likely that a large portion of outmigrating Chinook salmon (and other salmonid species) were missed due to sampling cancellations, and it can be inferred that both the total catch numbers as well as CPUE would have been even higher than what is documented here if so many shifts had not been ultimately cancelled due to river conditions. It is likely that stable late-fall/early-winter hydrology coupled with low temperatures and record breaking mountain snowpack directly resulted in overall favorable rearing conditions for salmon in 2018 resulting in a significantly improved egg to fry survival for most outmigrant cohorts. The timing of the large proportion of missed sampling effort from SW 19 – SW 22 fell after the typically observed peak for sub-yearling Chinook at the sites which typically occurs some time from SW 11-17. Unfortunately, it is likely that a large proportion of the tail end of the Chinook outmigration was likely missed during these 3 consecutive sampling weeks the trap was not fished. More concerning is the coincidence of this missed sampling timeframe with the peak for outmigrant yearling Coho. The peak of the Coho outmigration is generally very consistent year-over-year occurring sometime from SW 18-22. This time period directly overlaps the 3 week period from SW 19-22 when the trap was not fished due to hydrologic instability. Due to this it can be inferred that the total catch numbers as well as CPUE for yearling Coho salmon is likely dramatically lower than what would have been observed if the trap had been fishing around the peak emigration timing from SW 18-22.

Aside from the aforementioned scheduling difficulties, all trapping equipment including the trap itself, the boat, and all associated supplies were in full working order and operated as expected throughout the duration of the 2018 season with no down-time associated directly with equipment failure.

Hydrograph imagery provided by U.S. Geological Survey. http://nwis.waterdata.usgs.gov

2018 Trap Sampling Season				
Year	StatWeek	BegWeek	MidWeek	EndWeek
2018	8	2/18/2018	2/21/2018	2/24/2018
2018	9	2/25/2018	2/28/2018	3/3/2018
2018	10	3/4/2018	3/7/2018	3/10/2018
2018	11	3/11/2018	3/14/2018	3/17/2018
2018	12	3/18/2018	3/21/2018	3/24/2018
2018	13	3/25/2018	3/28/2018	3/31/2018
2018	14	4/1/2018	4/4/2018	4/7/2018
2018	15	4/8/2018	4/11/2018	4/14/2018
2018	16	4/15/2018	4/18/2018	4/21/2018
2018	17	4/22/2018	4/25/2018	4/28/2018
2018	18	4/29/2018	5/2/2018	5/5/2018
2018	19	5/6/2018	5/9/2018	5/12/2018
2018	20	5/13/2018	5/16/2018	5/19/2018
2018	21	5/20/2018	5/23/2018	5/26/2018
2018	22	5/27/2018	5/30/2018	6/2/2018
2018	23	6/3/2018	6/6/2018	6/9/2018
2018	24	6/10/2018	6/13/2018	6/16/2018

Table 5. Statistical weeks and corresponding dates for 2018 sampling season.

5. References

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November, 2018.

Table 1: Skykomish River trap catch and mortalities 2018

(Data is preliminary)

February

	Chinook				Coho						Steelhead											
	Unm 1+	Mark 1+	Unm 0+	Mark 0+	0+	Unm 1+	Mark 1+	Chum	Pink	Sockeye	Unm Smolts	Mark Smolts	Cut. Trout	Rain. Trout	Trout Fry	Dolly/ Bull Trout	Total Salmonid Catch	Juv. Lamp.	Dace spp.	Sculpin spp.	Stickle-back
Day	(28.5 hours of effort)																				
Catch	0	0	4	0	0	0	0	6	104	0	0	0	0	0	0	0	114	0	0	0	0
Morts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Night	(49.3 hours of effort)																				
Catch	0	0	66	0	0	2	0	142	378	0	0	0	0	0	0	0	588	2	6	4	0
Morts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monthly Totals	(77.8 hours of effort)																				
Catch	0	0	70	0	0	2	0	148	482	0	0	0	0	0	0	0	702	2	6	4	0
Morts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

March

	Chinook				Coho						Steelhead											
	Unm 1+	Mark 1+	Unm 0+	Mark 0+	0+	Unm 1+	Mark 1+	Chum	Pink	Sockeye	Unm Smolts	Mark Smolts	Cut. Trout	Rain. Trout	Trout Fry	Dolly/ Bull Trout	Total Salmonid Catch	Juv. Lamp.	Dace spp.	Sculpin spp.	Stickle-back
Day	(77.5 hours of effort)																				
Catch	0	0	348	0	7	2	0	732	4582	0	0	0	0	0	0	0	5671	0	2	0	0
Morts.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Night	(202.0 hours of effort)																				
Catch	1	0	2543	0	41	37	1	8024	31553	0	2	0	1	0	1	0	42204	9	29	17	0
Morts.	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0
Monthly Totals	(279.5 hours of effort)																				
Catch	1	0	2891	0	48	39	1	8756	36135	0	2	0	1	0	1	0	47875	9	31	17	0
Morts.	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0

Table 1: Skykomish River trap catch and mortalities 2018

(Data is preliminary)

April

	Chinook				Coho						Steelhead										
	Unm 1+	Mark 1+	Unm 0+	Mark 0+	0+	Unm 1+	Mark 1+	Chum	Pink	Sockeye	Unm Smolts	Mark Smolts	Cut. Trout	Rain. Trout	Trout Fry	Dolly/ Bull Trout	Total Salmonid Catch	Juv. Lamp.	Dace spp.	Sculpin spp.	Stickle-back
Day (102.7 hours of effort)																					
Catch	14	7	84	0	2	20	0	479	7720	0	0	8	0	0	0	0	8334	0	0	0	0
Morts.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Night (156.5 hours of effort)																					
Catch	3	361	1199	0	135	721	0	6057	31762	0	13	232	1	0	0	0	40484	13	93	14	0
Morts.	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0
Monthly Totals (259.2 hours of effort)																					
Catch	17	368	1283	0	137	741	0	6536	39482	0	13	240	1	0	0	0	48818	13	93	14	0
Morts.	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0

May

	Chinook				Coho						Steelhead										
	Unm 1+	Mark 1+	Unm 0+	Mark 0+	0+	Unm 1+	Mark 1+	Chum	Pink	Sockeye	Unm Smolts	Mark Smolts	Cut. Trout	Rain. Trout	Trout Fry	Dolly/ Bull Trout	Total Salmonid Catch	Juv. Lamp.	Dace spp.	Sculpin spp.	Stickle-back
Day (50.3 hours of effort)																					
Catch	8	7	15	0	0	9	9	37	482	0	0	0	0	1	0	0	568	1	0	0	0
Morts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Night (49.8 hours of effort)																					
Catch	5	0	107	0	33	729	2708	62	1732	0	3	60	0	0	0	0	5439	9	13	8	0
Morts.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Monthly Totals (100.0 hours of effort)																					
Catch	13	7	122	0	33	738	2717	99	2214	0	3	60	0	1	0	0	6007	10	13	8	0
Morts.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0

Table 1: Skykomish River trap catch and mortalities 2018

(Data is preliminary)

June

	Chinook				Coho						Steelhead											
	Unm 1+	Mark 1+	Unm 0+	Mark 0+	0+	Unm 1+	Mark 1+	Chum	Pink	Sockeye	Unm Smolts	Mark Smolts	Cut. Trout	Rain. Trout	Trout Fry	Dolly/ Bull Trout	Total Salmonid Catch	Juv. Lamp.	Dace spp.	Sculpin spp.	Stickle-back
Day (66.3 hours of effort)																					
Catch	9	0	8	18	3	0	7	0	0	0	0	0	0	0	0	0	45	1	0	0	0
Morts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Night (53.3 hours of effort)																					
Catch	39	0	33	648	18	63	2	0	1	0	3	15	0	0	0	0	822	12	9	3	0
Morts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monthly Totals (119.6 hours of effort)																					
Catch	48	0	41	666	21	63	9	0	1	0	3	15	0	0	0	0	867	13	9	3	0
Morts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Totals (836.1 total hours of effort)

	Chinook				Coho						Steelhead											
	Unm 1+	Mark 1+	Unm 0+	Mark 0+	0+	Unm 1+	Mark 1+	Chum	Pink	Sockeye	Unm Smolts	Mark Smolts	Cut. Trout	Rain. Trout	Trout Fry	Dolly/ Bull Trout	Total Salmonid Catch	Juv. Lamp.	Dace spp.	Sculpin spp.	Stickle-back
Catch	79	375	4407	666	239	1583	2727	15539	78314	0	21	315	2	1	1	0	104269	47	152	46	0
Morts.	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0
% Mort	0.00%	0.00%	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	#Num!	0.00%	0.00%	0.00%	0.00%	0.00%	#Num!	0.02%				
% of Total Catch	0.1%	0.4%	4.2%	0.6%	0.2%	1.5%	2.6%	14.9%	74.9%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	99.8%	0.0%	0.1%	0.0%	0.0%