

Juvenile Salmonid Monitoring on the Mainstem Trinity River, California, 2016

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Executive Summary — This report presents juvenile salmonid emigration monitoring data collected in 2016 at both the Pear Tree rotary screw trap site (PTRST; river kilometer [rkm] 118) and the Willow Creek rotary screw trap site (WCRST; rkm 34) near Willow Creek, California, on the mainstem Trinity River. Information collected by this project contributes to assessing the effectiveness of the Trinity River Restoration Program's habitat and flow management actions in restoring salmonid populations of the Trinity River. Monitoring at PTRST is conducted to estimate juvenile salmonid population size passing the site during the sampling season. Monitoring at WCRST is conducted to estimate juvenile salmonid population size and emigration timing during the monitoring period. In 2016, one rotary screw trap was operated at PTRST from January 5 through August 27, with successful sampling for 151 days of the 236-day sampling period. At WCRST, three rotary screw traps were operated from March 30 through August 26, with successful sampling for 99 days of the 150-day sampling period.

Age of salmonid outmigrants, mean length by week, migration rates, and hatchery contributions were estimated. Catch data were used to calculate proportional discharge-based abundance indices for juvenile Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon (*O. kisutch*), and Steelhead (*O. mykiss*). Catch data of other fishes are also presented.

Weekly stratified mark-recapture population estimates of emigrating age-0 Chinook Salmon were calculated for both naturally and hatchery-produced sub-populations. At PTRST an estimated 888,313 (SD = 140,342; CV = 0.158) naturally-produced age-0 Chinook Salmon and 814,361 (SD = 92,226, CV = 0.113) age-0 hatchery Chinook Salmon passed the site between January 3 and August 20. At WCRST between March 20 and August 20, an estimated 791,407 (SD = 38,537; CV = 0.049) naturally-produced age-0 Chinook Salmon and 740,748 (SD = 36,025; CV = 0.049) age-0 hatchery Chinook Salmon passed the site.

Juvenile salmonid emigration target dates to assess at what date 80% of the juvenile salmonid population had reached Willow Creek, and to help manage water temperatures in the mainstem Trinity River. The estimate of the week in which 80% of the juvenile

Chinook Salmon population passed WCRST, as inferred from the proportional discharge-based abundance index, was Week of the Year WOY 28 (July 10 – July 16), which occurred after the TRRP management target date of July 9. The estimate of the week in which 80% of the natural Coho Salmon age-1+ population passed the WCRST was WOY 20 (May 15-May 21), which occurred prior to the TRRP management target date of June 4. The estimate of the week in which 80% of the natural Steelhead age-1+ population passed the WCRST was WOY 21 (May 22 – May 28), which occurred by the TRRP management target date of May 22.

Introduction

This report presents annual data collected to: (1) evaluate the production of juvenile Chinook Salmon (*Oncorhynchus tshawytscha*) from the upper 65 kilometers of the mainstem Trinity River below Lewiston Dam, the primary restoration reach of the Trinity River Restoration Program (TRRP); and (2) provide data to enable evaluation of the production and outmigrant timing of juvenile salmonids through the lower Trinity River in response to managed flow releases, thermal regimes, and restoration efforts. Information collected by this project is needed to address TRRP Integrated Assessment Plan objective 3, and sub-objective 3.2 (TRRP and ESSA 2009):

Objective 3: Restore and maintain natural production of anadromous fish populations.

Sub-objective 3.2: Increase freshwater production of anadromous fish.

Juvenile salmonid emigration from the mainstem Trinity River has been monitored since 1989 with rotary screw traps. This data series report summarizes the outmigrant monitoring data collected in 2016 cooperatively by the U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Hoopa Valley Tribal Fisheries Department, and Yurok Tribal Fisheries Program at Pear Tree (PTRST) and Willow Creek (WCRST) on the mainstem Trinity River (Figure 1). The intent of this data series report is to provide timely dissemination of data to local managers, for inclusion in agency databases, and provide basic biological information to evaluate the effectiveness of habitat restoration and flow management actions undertaken by the TRRP to restore the fishery resources of the Trinity River (USDOI 2000). In addition to quantifying salmonid outmigrant production and timing, fish condition and hatchery/natural composition of the outmigrant populations are assessed.

A technical report synthesizing multi-year datasets developed by this project will be periodically published to evaluate trends in outmigrant salmonid production, outmigrant timing, hatchery/natural contribution and condition/health. Monitoring emigrating juvenile salmonid populations in conjunction with habitat availability and suitability studies is expected to provide a direct evaluation of TRRP restoration efforts because these studies focus on the early freshwater life-history phase which is directly affected by instream conditions and management actions. In addition, it is intended that this basic information will be used by the TRRP to aid in development of a salmon production model for the Trinity River.

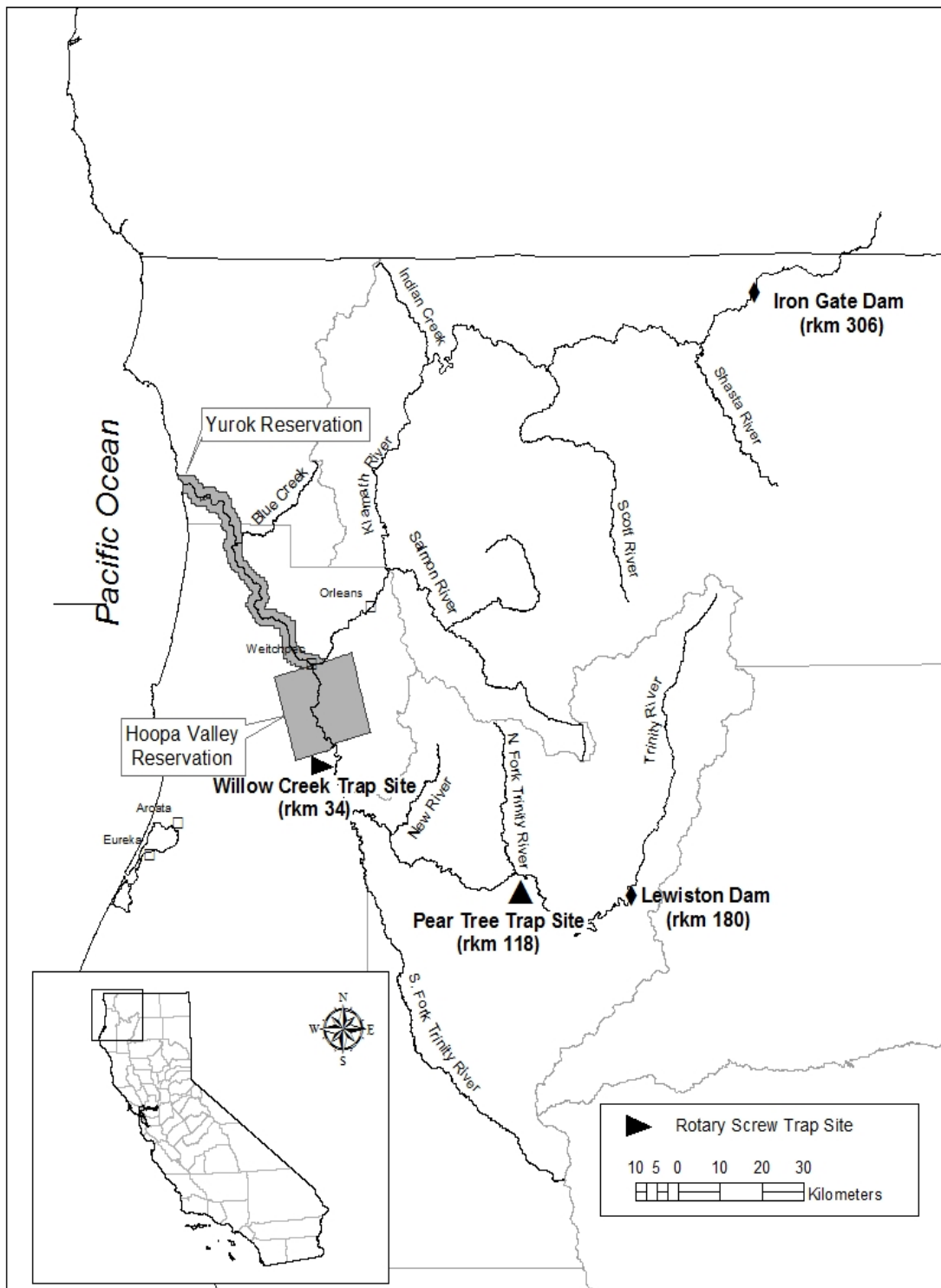


Figure 1. Location of the Trinity River Rotary Screw Trap sites near Willow Creek (rkm 34) and Pear Tree Gulch (rkm 118), California, operated by the Yurok Tribal Fisheries Program, U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Hoopa Valley Tribal Fisheries Department.

Methods

For details on background, study site, and monitoring methods for the data presented in this report, the reader is referred to the 2009 Trinity River Juvenile Salmonid Outmigrant Monitoring Report by Harris et al. (2012).

Results

Data are grouped by Week of the Year (WOY; Table 1). Graphs of water temperature and discharge through the sampling periods are presented in Figure 2.

Sampling Efforts

In 2016, trapping at PTRST began in the first week of January and trapping at WCRST was initiated in late March (Table 2). Sampling occurred at both sites in each sampling week, although occasionally traps were not run for complete sample weeks. To ensure that the greatest portion of the natural Chinook Salmon emigration, as well as portions of the hatchery and natural Coho Salmon (*O. kisutch*) and Steelhead (*O. mykiss*) smolt emigration were sampled, efforts were made to install the traps as early as possible and continue sampling throughout the summer. Sampling at PTRST has occurred between early January and late August since 2007, and sampling at Willow Creek has occurred from March through August since 2005. It is important for readers to note that without sampling year-round, portions of annual production are excluded from estimates and indices presented in this report

Table 1. Week of the Year (WOY) and corresponding first calendar date.

WOY	Week Beginning	WOY	Week Beginning	WOY	Week Beginning
1	1-Jan	18	1-May	35	28-Aug
2	10-Jan	19	8-May	36	4-Sep
3	17-Jan	20	15-May	37	11-Sep
4	24-Jan	21	22-May	38	18-Sep
5	31-Jan	22	29-May	39	25-Sep
6	7-Feb	23	5-Jun	40	2-Oct
7	14-Feb	24	12-Jun	41	9-Oct
8	21-Feb	25	19-Jun	42	16-Oct
9	28-Feb	26	26-Jun	43	23-Oct
10	6-Mar	27	3-Jul	44	30-Oct
11	13-Mar	28	10-Jul	45	6-Nov
12	20-Mar	29	17-Jul	46	13-Nov
13	27-Mar	30	24-Jul	47	20-Nov
14	3-Apr	31	31-Jul	48	27-Nov
15	10-Apr	32	7-Aug	49	4-Dec
16	17-Apr	33	14-Aug	50	11-Dec
17	24-Apr	34	21-Aug	51	18-Dec
				52	25-Dec

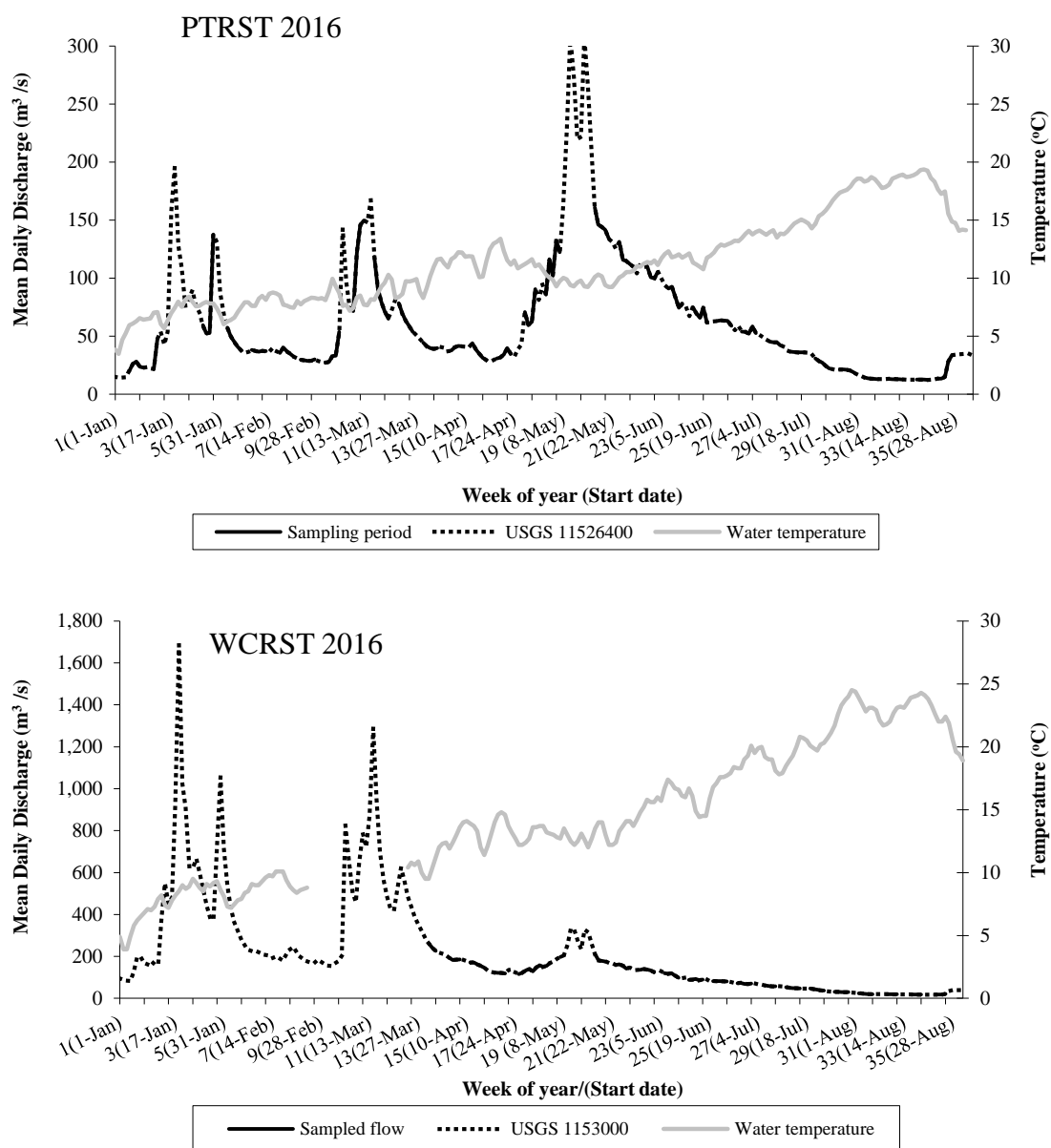


Figure 2. Mean daily discharge (m^3/s) as recorded near Helena (U.S. Geological Survey Water Resource gage station #11-526400) and Hoopa (U.S. Geological Survey Water Resource gage station #11-530000), California, and mean daily water temperatures ($^{\circ}\text{C}$) recorded at USGS gage #11-526400 and the Willow Creek Rotary Screw Trap (WCRST) in 2016. USGS gage #11-526400 is located approximately 100 m downstream of the Pear Tree Rotary Screw Trap (PTRST). Heavy line on discharge plot indicates sampling period, dotted line on discharge plot indicates no sampling.

Table 2. Period and duration of 2016 spring/summer monitoring and percent of time sampled at Pear Tree Rotary Screw Trap site (PTRST; rkm 118) and Willow Creek Rotary Screw Trap site (WCRST; rkm 34). Distinct days are total number of days sampled with at least one trap.

Site	Trap	Start-End dates	Days Trapped	Days possible	Trapping Rate
PTRST	1 (2.4m)	5 Jan – 27 Aug	151	236	64.0%
Distinct Days		5 Jan – 27 Aug	151	236	64.0%
WCRST	1 (2.4m)	20 Mar – 4 Aug	85	128	66.4%
WCRST	2 (2.4m)	5 Apr – 26 Aug	93	144	64.6%
WCRST	3 (2.4m)	5 Apr – 26 Aug	89	144	61.8%
Distinct Days		20 Mar – 26 Aug	99	150	66.0%

Catch Totals

Catch totals of the primary salmonids of interest (Chinook Salmon, Coho Salmon, and Steelhead) are presented in Table 3. Chinook Salmon were the most commonly captured salmonid at both sites, comprising approximately 91.6% and 94.8% of the total anadromous salmonid catch at PTRST and WCRST, respectively. Hatchery salmonid releases from Trinity River Hatchery (TRH) are presented in Table 4. Catch totals of other fish species are presented in Table 5.

Abundance Indices

The proportional discharge-based abundance indices for natural age-0 Chinook Salmon were 830,845 and 396,513 at PTRST and WCRST, respectively (Figure 3; Table 6; Appendix 1, 2). The age-0 hatchery Chinook Salmon abundance indices were 209,196 at PTRST and 404,374 at WCRST. Natural age-0 Chinook Salmon were captured on the first day of trap operation at both sites, indicating that some age-0 Chinook Salmon emigrated prior to trap installation. Age-1 hatchery and age-1 natural Chinook Salmon abundance indices were 61 and 118, respectively, at PTRST. At WCRST there were no age-1 Chinook Salmon captured, natural or hatchery.

Age-0 naturally-produced Coho Salmon abundance indices were 5,248 and 1,613 at PTRST and WCRST, respectively (Figure 4; Table 6; Appendix 3, 4). The abundance indices for age-1 naturally-produced Coho Salmon were 1,271 and 1,151 at PTRST and WCRST, respectively. Abundance indices of hatchery age-1 Coho Salmon were 2,160 and 14,029 at PTRST and WCRST, respectively. Natural age-1 Coho Salmon were captured at the beginning of the sampling period at both trap sites, indicating that portions of each respective population emigrated prior to trap installation.

At PTRST, abundance indices of natural age-0 and age-1 Steelhead were 20,321 and 17,061, respectively (Figure 5; Table 6; Appendix 5). Abundance indices of age-0 and age-1 Steelhead at WCRST were 13,134 and 10,194, respectively (Table 6; Appendix 6). Abundance indices of hatchery age-1 Steelhead were 5,061 at PTRST and 42,562 at WCRST. The Age-2 Steelhead abundance index was 2,601 at PTRST and 3,477 at

WCRST. Sampling periods at both trap sites missed portions of each respective population that emigrated prior to or after trapping operations.

Table 3. Juvenile salmonid catch totals in 2016 for trapping at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34), on the Trinity River, California, operated by the Hoopa Valley Tribal Fisheries Department, U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Yurok Tribal Fisheries Program. Hatchery fish totals are expanded catch based on adipose fin clip rate. NA = Not Applicable (i.e., no fish of a particular age class exist in the Trinity River).

Site	Species	Hatchery Age-0	Hatchery Age-1+	Natural Age-0	Natural Age-1+	Natural Age-2+	Total
PTRST	Chinook Salmon	12,738	3	20,324	4	NA	33,069
PTRST	Coho Salmon	NA	93	160	39	NA	292
PTRST	Steelhead	NA	197	1,741	704	87	2,729
WCRST	Chinook Salmon	40,308	0	27,773	0	NA	68,081
WCRST	Coho Salmon	NA	181	88	32	NA	301
WCRST	Steelhead	NA	1,857	1,077	382	119	3,435

Table 4. California Department of Fish and Game, Trinity River Hatchery juvenile salmonid releases, 2016. AD-clipped = adipose fin clipped fish.

Species	Release Season	Number Released	Percentage AD- clipped or Marked	Release Dates
Chinook Salmon ¹	Spring	2,964,069	24.5	06/01 - 06/15
Chinook Salmon ¹	Fall	538,579	24.6	10/01 - 10/15
Coho Salmon ²	Spring	230,488	98.9	03/15 - 03/22
Steelhead	Spring	453,842	99.6	03/15 - 04/26

¹Chinook Salmon releases includes both spring-run and fall-run races.

²Coho Salmon were marked with a right maxillary clip.

Table 5. Catch totals of non-target fish species captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) on the mainstem Trinity River, California, 2016.

Common name	Species	Life stage	PTRST Catch	WCRST Catch
Lamprey	<i>Entosphenus</i> spp.	Ammocoete	8,008	1,457
		Eyed		
		juvenile	31	15
		Adult	88	36
Sucker	<i>Catostomus</i> spp.		1,021	2,276
Speckled Dace	<i>Rhinichthys osculus</i>		828	300
Three-Spine Stickleback	<i>Gasterosteus aculeatus</i>		97	27
Golden Shiner	<i>Notemigonus crysoleucas</i>		14	4
Sculpin	<i>Cottus</i> spp.		0	41
Green Sturgeon	<i>Acipenser medirostris</i>	Juvenile	0	28
Brown Trout	<i>Salmo trutta</i>	Juvenile	323	11
Sunfish	<i>Lepomis</i> spp.		0	3
Sockeye Salmon	<i>Oncorhynchus nerka</i>	Juvenile	6	16
Fathead Minnow	<i>Pimephales promelas</i>	Juvenile	0	7
Bullhead	<i>Ameiurus</i> spp.		0	1
Chum Salmon	<i>Oncorhynchus keta</i>		0	0
Season Total			10,416	4,222

Table 6. Juvenile salmonid proportional discharge-based abundance indices at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. NA = Not Applicable (i.e., no fish of a particular age class exist in the Trinity River).

Site	Species	Hatchery Age-0	Hatchery Age-1	Natural Age-0	Natural Age-1	Natural Age-2+	Total
PTRST	Chinook Salmon	209,196	61	830,845	118	NA	1,040,220
PTRST	Coho Salmon	NA	2,160	5,248	1,271	NA	8,679
PTRST	Steelhead	NA	5,061	20,321	17,061	2,601	45,044
WCRST	Chinook Salmon	404,374	0	396,513	0	NA	800,887
WCRST	Coho Salmon	NA	14,029	1,613	1,151	NA	16,793
WCRST	Steelhead	NA	42,562	13,134	10,194	3,477	69,367

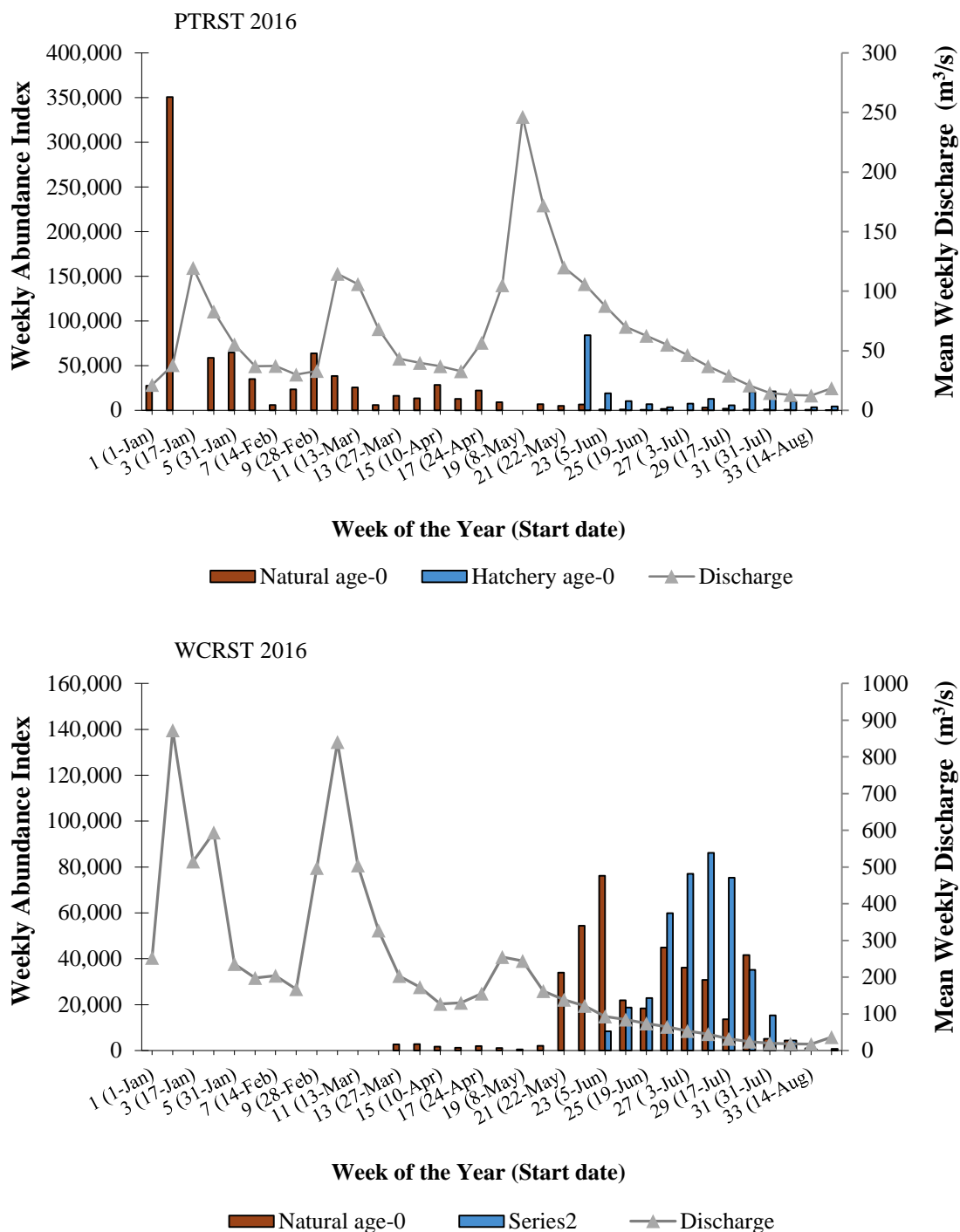


Figure 3. Weekly proportional discharge-based abundance indices for natural age-0 and hatchery age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34) in 2016.

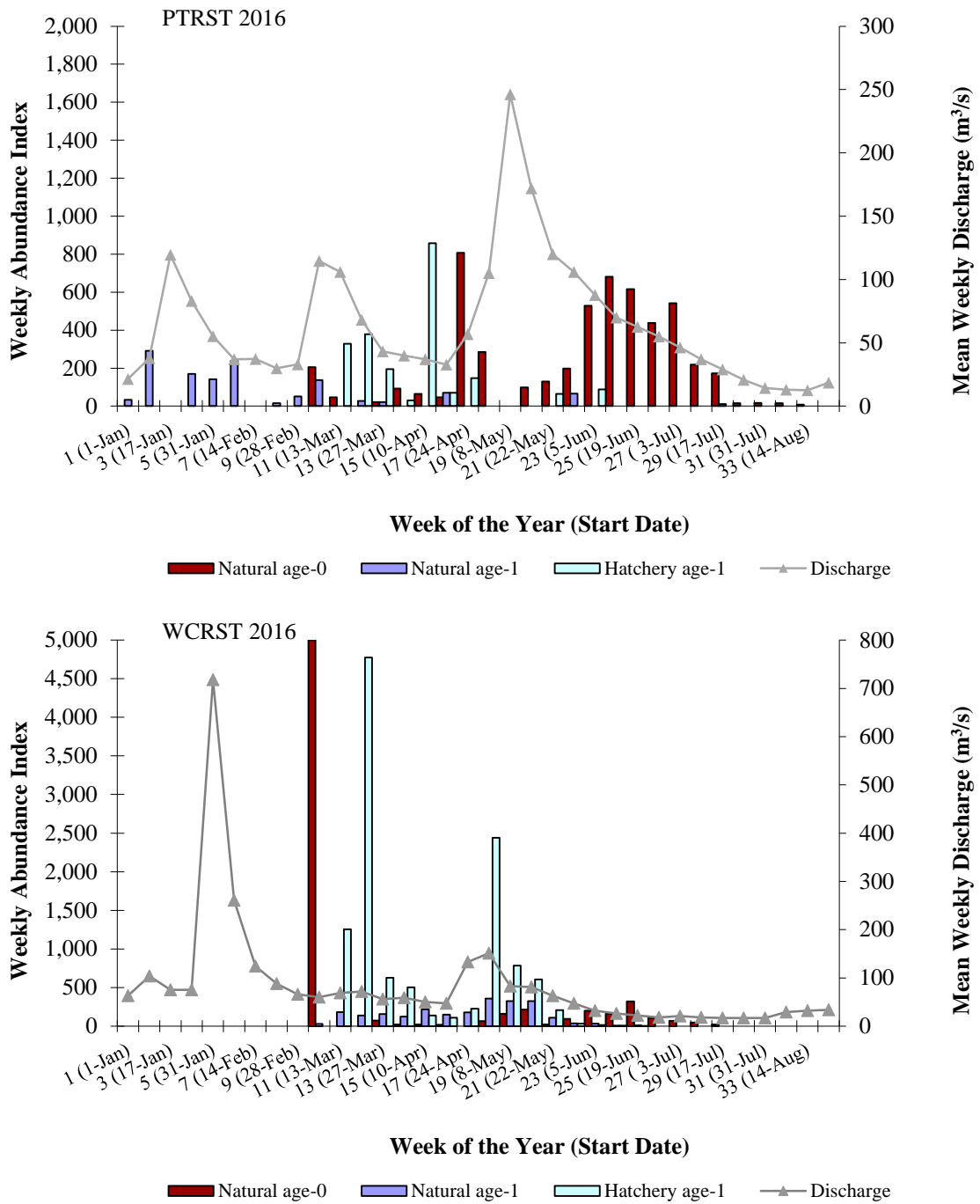


Figure 4. Weekly proportional discharge-based abundance indices for natural age-0, natural age-1, and hatchery age-1 Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST, rkm 118) and Willow Creek Rotary Screw Trap (WCRST, rkm 34) in 2016.

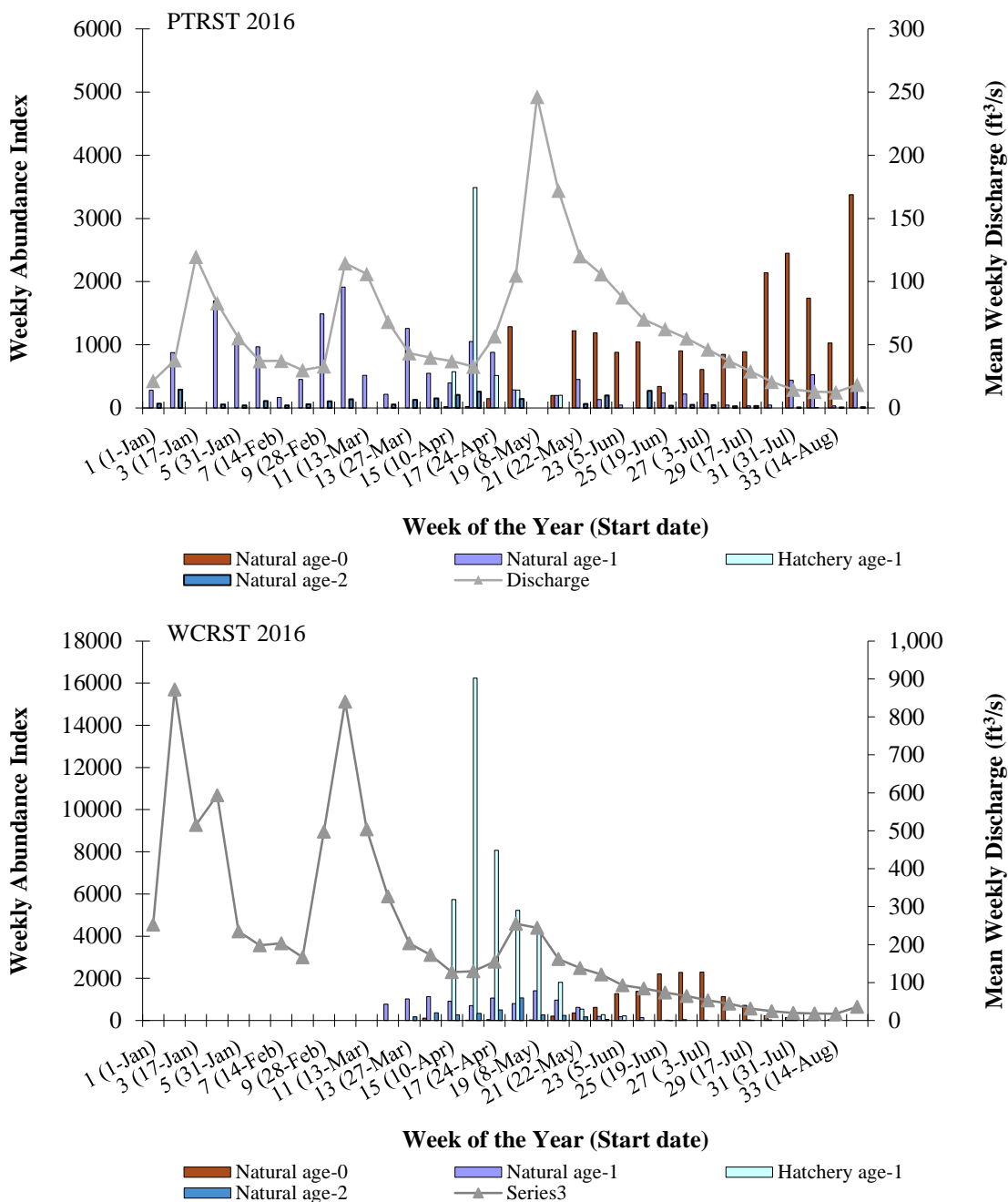


Figure 5. Weekly proportional discharge-based abundance indices for natural age-0, natural age-1, natural age-2, and hatchery age-1 Steelhead captured at Pear Tree Rotary Screw Trap (PTRST, rkm 118) and Willow Creek Rotary Screw Trap (WCRST, rkm 34) in 2016.

Hatchery/Natural Contribution

Chinook Salmon were captured at PTRST and WCRST throughout the 2016 sampling season with the spring/summer emigration dominated by naturally-produced fish at PTRST, comprising 79.9% of the total proportional discharge-based abundance indices. At WCRST, hatchery and natural chinook were nearly equal in abundance, with naturally-produced fish comprising 49.5% of the index (Appendix 1, 2).

Age-1 Coho Salmon smolts were predominantly hatchery origin at PTRST and comprised 63% of the total age-1 proportional discharge-based index in 2016 (Appendix 3). At WCRST, age-1 Coho Salmon emigrants of hatchery origin comprised 83.5% of the total age-1 proportional discharge-based index in 2016 (Appendix 4).

Based on proportional discharge-based abundance indices at PTRST and WCRST, age-1 hatchery Steelhead comprised 22.8% (Appendix 5) and 80.1% (Appendix 6), respectively, of the total age-1 abundance indices at each respective site.

Chinook Salmon Population Estimation

During the 2016 sampling season, freeze-branded and photonicallly-marked hatchery Chinook Salmon were delivered to the trap sites to estimate weekly trap efficiencies for generating population estimates (Appendix 7, 8). Weekly stratified mark-recapture population estimates of emigrating age-0 Chinook Salmon were calculated for both naturally and hatchery-produced sub-populations (Figure 6). At PTRST an estimated 888,313 (SD = 140,342; CV = 0.158) naturally-produced age-0 Chinook Salmon and 814,361 (SD = 92,226, CV = 0.113) age-0 hatchery Chinook Salmon passed the site between January 3 and August 20. At WCRST between March 20 and August 20, an estimated 791,407 (SD = 38,537; CV = 0.049) naturally-produced age-0 Chinook Salmon and 740,748 (SD = 36,025; CV = 0.049) age-0 hatchery Chinook Salmon passed the site.

Outmigrant Timing

The Chinook Salmon population in the Trinity River is composed of both naturally-produced and hatchery-produced fish of both spring and fall races. The vast majority of juveniles during the spring/summer emigration period emigrate as age-0 fish, with the natural and hatchery emigration periods overlapping (Table 7; Appendix 1, 2). The week marking the cumulative passage of 80% of the natural juvenile Chinook Salmon population at WCRST, as inferred from the proportional discharge-based abundance index, was WOY 28 (July 10 – July 16), which occurred after the TRRP management target date of July 9 (TRRP and ESSA 2009). Based on proportional discharge-based abundance indices, natural age-0 Chinook Salmon emigration peaked at PTRST in WOY 2, and peaked at WCRST in WOY 23. Hatchery age-0 Chinook Salmon emigration peaked in WOY 22 at PTRST and WOY 28 at WCRST.

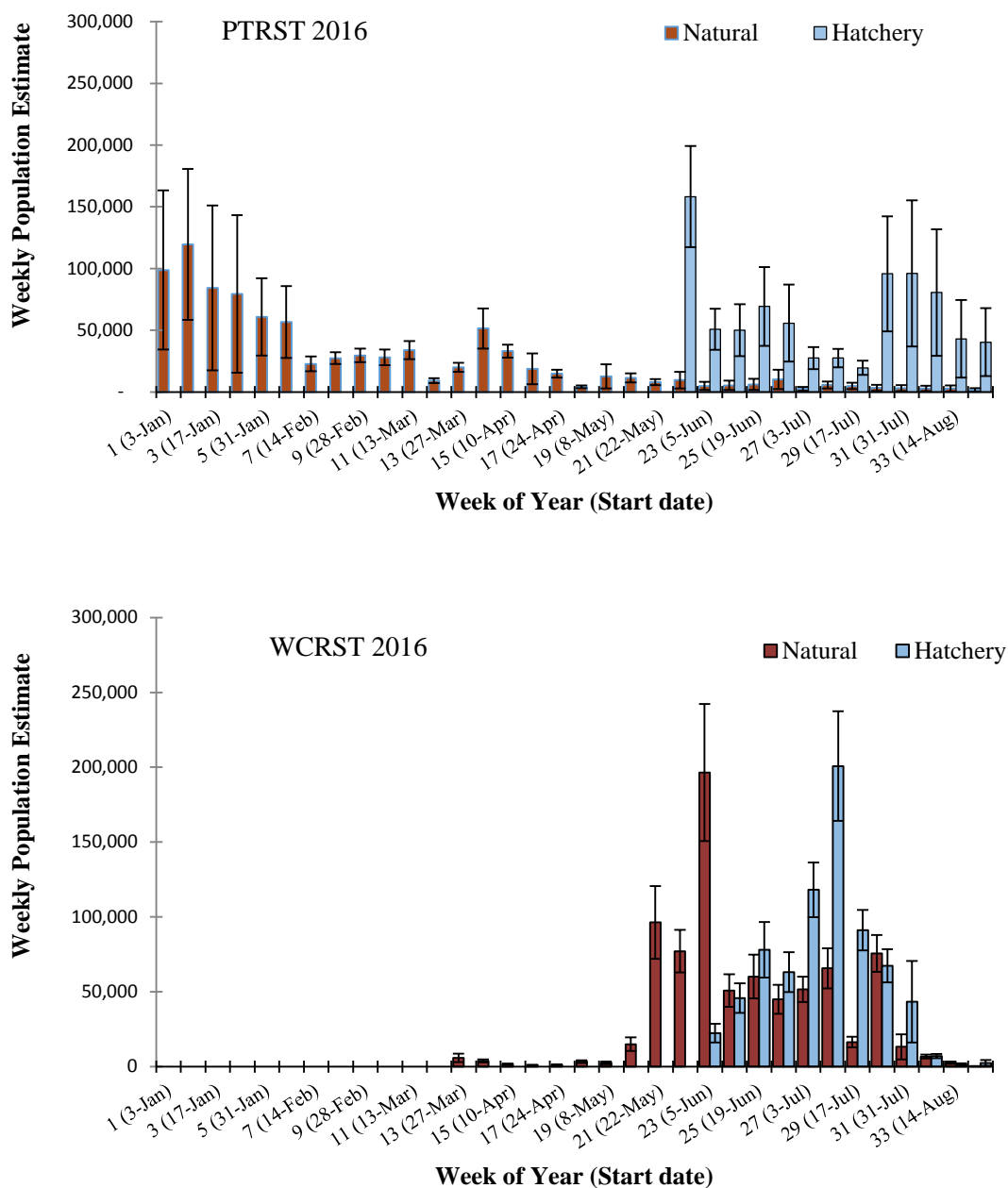


Figure 6. Weekly mark-recapture population estimates of natural age-0 and hatchery age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34) in 2016. Error bars represent one standard deviation of the mean weekly estimate.

Table 7. Juvenile salmonid emigration duration and peak as inferred from proportional discharge-based abundance indices at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. Values represent week of the year.

Site	Species	Emigration Duration			Emigration Peak		
		Natural Age-0	Natural Age-1+	Hatchery	Natural Age-0	Natural Age-1+	Hatchery
PTRST	Chinook Salmon	1-34	1-16	22-34	2	9	22
PTRST	Coho Salmon	10-33	1-29	11-23	17	2	15
PTRST	Steelhead	15-34	1-34	15-32	34	10	16
WCRST	Chinook Salmon	13-34	N.A.	23-34	23	N.A.	28
WCRST	Coho Salmon	14-30	13-32	13-26	26	20	13
WCRST	Steelhead	15-34	13-34	16-34	28	20	17

The Coho Salmon population in the Trinity River is composed of both naturally-produced and hatchery populations. The vast majority of Trinity River Coho Salmon emigrate to the ocean as age-1 smolts while the emigration of age-0 fish is presumably a redistribution of rearing juveniles. Natural age-1 Coho Salmon were captured in the first week of sampling at both sites and emigration continued through mid-July (WOY 29) at PTRST, and early August (WOY 32) at WCRST. Installation of traps at WCRST was delayed by high flows until the final days of March and potentially missed a large pulse of hatchery Coho (Table 7; Appendix 3). Interpretation of data and past experience suggests that the sampling period did not encompass the entire naturally-produced age-1 Coho Salmon emigration. The week marking the cumulative passage of 80% of the naturally-produced age-1 Coho Salmon population at WCRST, as inferred from the abundance index, was WOY 20 (May 15-May 21), which occurred prior to the TRRP management target date of June 4 (TRRP and ESSA 2009). Natural age-1 Coho Salmon emigration peaked in WOY 2 at PTRST and WOY 20 at WCRST. Hatchery Coho Salmon emigration peaked in WOY 15 at PTRST and WOY 13 at WCRST.

The Steelhead populations in the Trinity River are composed of both natural populations that exhibit highly variable juvenile life history patterns, as well as a hatchery-produced component. The bulk of age-0 Steelhead were captured from early May through August at WCRST and PTRST (Table 6, Appendix 5, 6). Age-1 or older natural Steelhead were present throughout the sampling period at PTRST and WCRST. The majority of hatchery-produced age-1 Steelhead passed PTRST by mid-May and passed WCRST by mid-June. The week marking the cumulative passage of 80% of the natural Steelhead smolt population at WCRST, as inferred from the proportional discharge-based abundance index, was WOY 21 (May 22 – May 28), which occurred by the TRRP management target date of May 22 (TRRP and ESSA 2009). Natural age-0 Steelhead emigration peaked in WOY 34 at PTRST and WOY 28 at WCRST. Natural age-1 Steelhead emigration peaked in WOY 10 at PTRST and WOY 20 at WCRST. Hatchery Steelhead emigration peaked in WOY 16 at PTRST and WOY 17 at WCRST.

Migration Rate

Maximum migration rates of salmonids released from TRH are presented in Table 8. These values should be considered maximums, as hatchery fish are released on a volitional basis (Table 4).

Fish Size

Age-0 Chinook Salmon weekly mean fork was static from weeks 1 through 9, apparently due to continued fry emergence, then increased through the remainder of the season at PTRST (Figure 7; Appendix 9, 10). Age-0 Chinook Salmon weekly mean fork length increased steadily at WCRST through early June and stabilized through the summer with the arrival of hatchery fish. Age-1 Chinook Salmon captured from WOY 1 to WOY 16 at PTRST included hatchery fish released in 2015 that greatly influenced mean fork lengths but sample size was too small to reveal a weekly trend. No age-1 Chinook Salmon were captured at WCRST.

Natural age-0 Coho Salmon fork lengths generally increased through the sampling season at both PTRST and WCRST (Appendix 9, 10). Hatchery age-1 Coho Salmon fork lengths showed no weekly trend at either trapping site. Hatchery age-1 Coho Salmon fork lengths showed no seasonal trend at WCRST. Natural age-1 Coho Salmon fork lengths sampled at PTRST and WCRST showed no discernable seasonal trend, likely due to inadequate sample size.

Natural age-0, age-1 and age-2+ Steelhead fork lengths generally increased through the sampling season at PTRST (Figure 9; Appendix 11, 12). At WCRST, age-0 and age-1 Steelhead fork lengths increased as the season progressed, although age-2+ Steelhead fork remained fairly stable. Hatchery Steelhead showed no trend at either site.

Table 8. Juvenile salmonid maximum migration rate from Trinity River Hatchery to Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) sampling sites, operated by the Hoopa Valley Tribal Fisheries Department, U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Yurok Tribal Fisheries Program, 2016.

Site	Species	Date First Released	Date First Captured	# of Days	Maximum Migration Rate
PTRST	Chinook Salmon	06/01/2016	06/02/2016	1	64 rkm/day
PTRST	Coho Salmon	03/15/2016	03/19/2016	4	16 rkm/day
PTRST	Steelhead	04/15/2016	04/16/2016	1	64 rkm/day
WCRST	Chinook Salmon	06/01/2016	06/07/2016	6	25 rkm/day
WCRST	Coho Salmon	03/22/2016	03/30/2016 ¹	8	18 rkm/day
WCRST	Steelhead	04/15/2016	04/18/2016	3	49 rkm/day

¹Trapping started on March 30, when fish may have already passed.

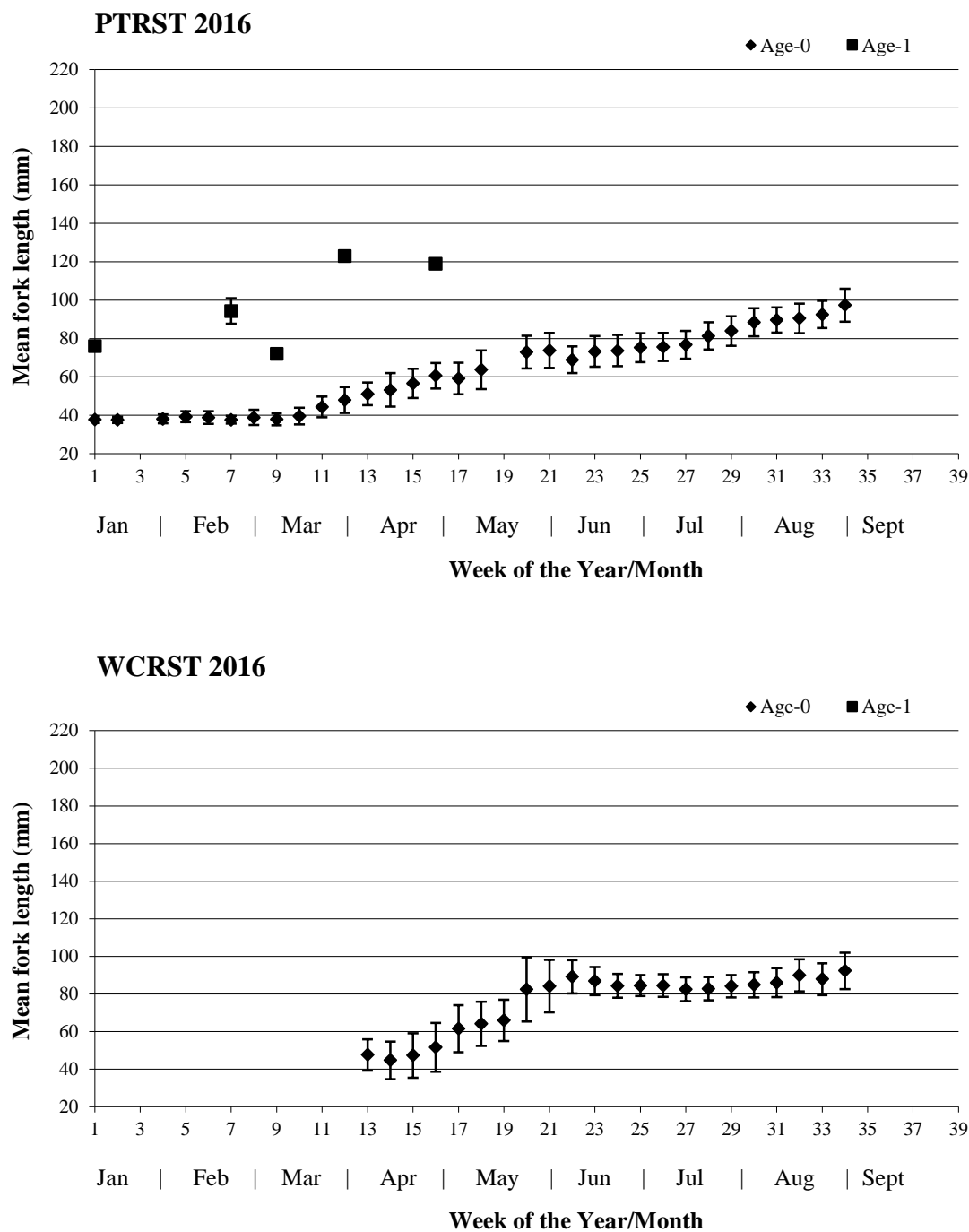


Figure 7. Weekly mean fork lengths of age-0 and age-1 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. Error bars represent one standard deviation of the mean.

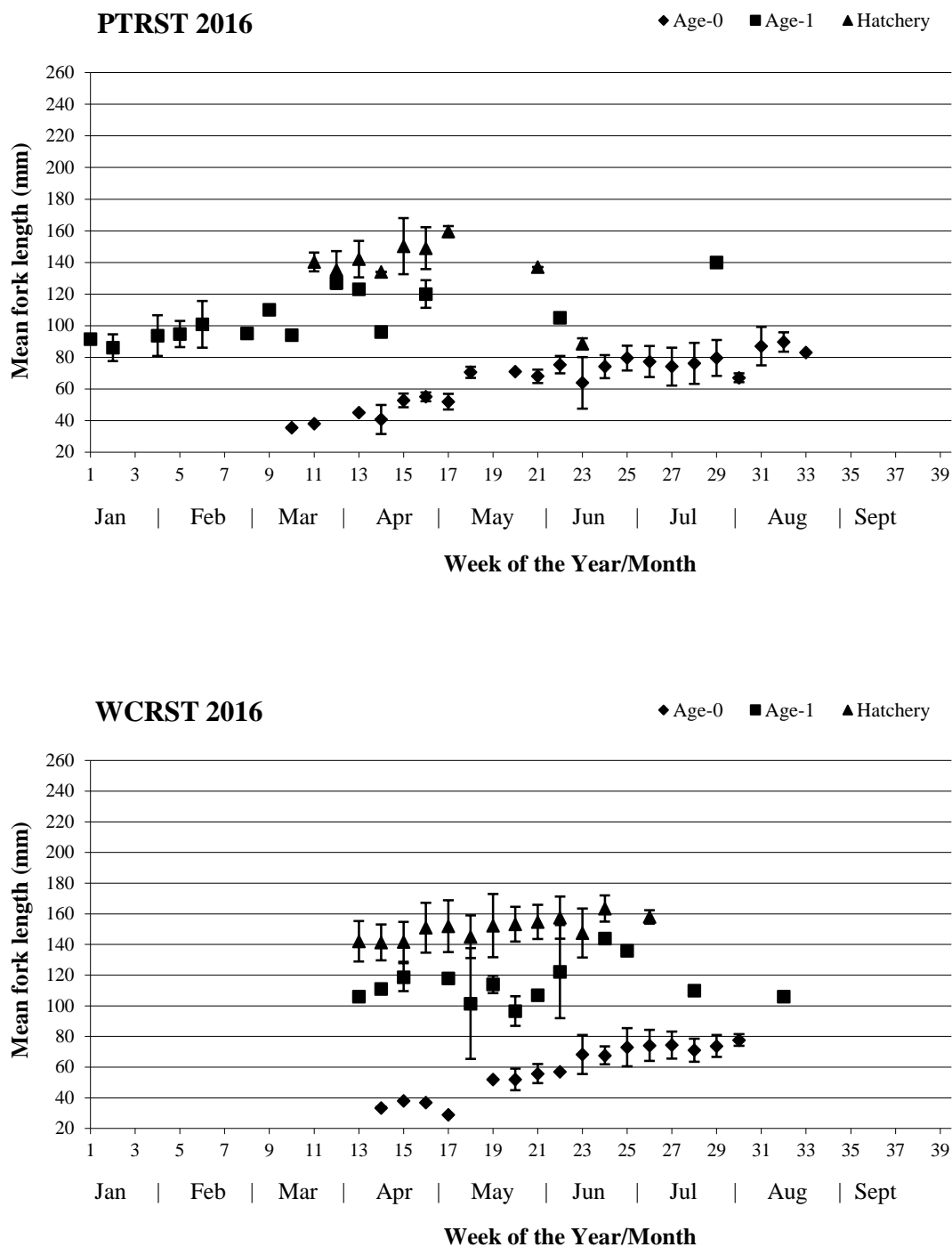


Figure 8. Weekly mean fork lengths for natural age-0, natural age-1, and hatchery Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. Error bars represent one standard deviation of the mean.

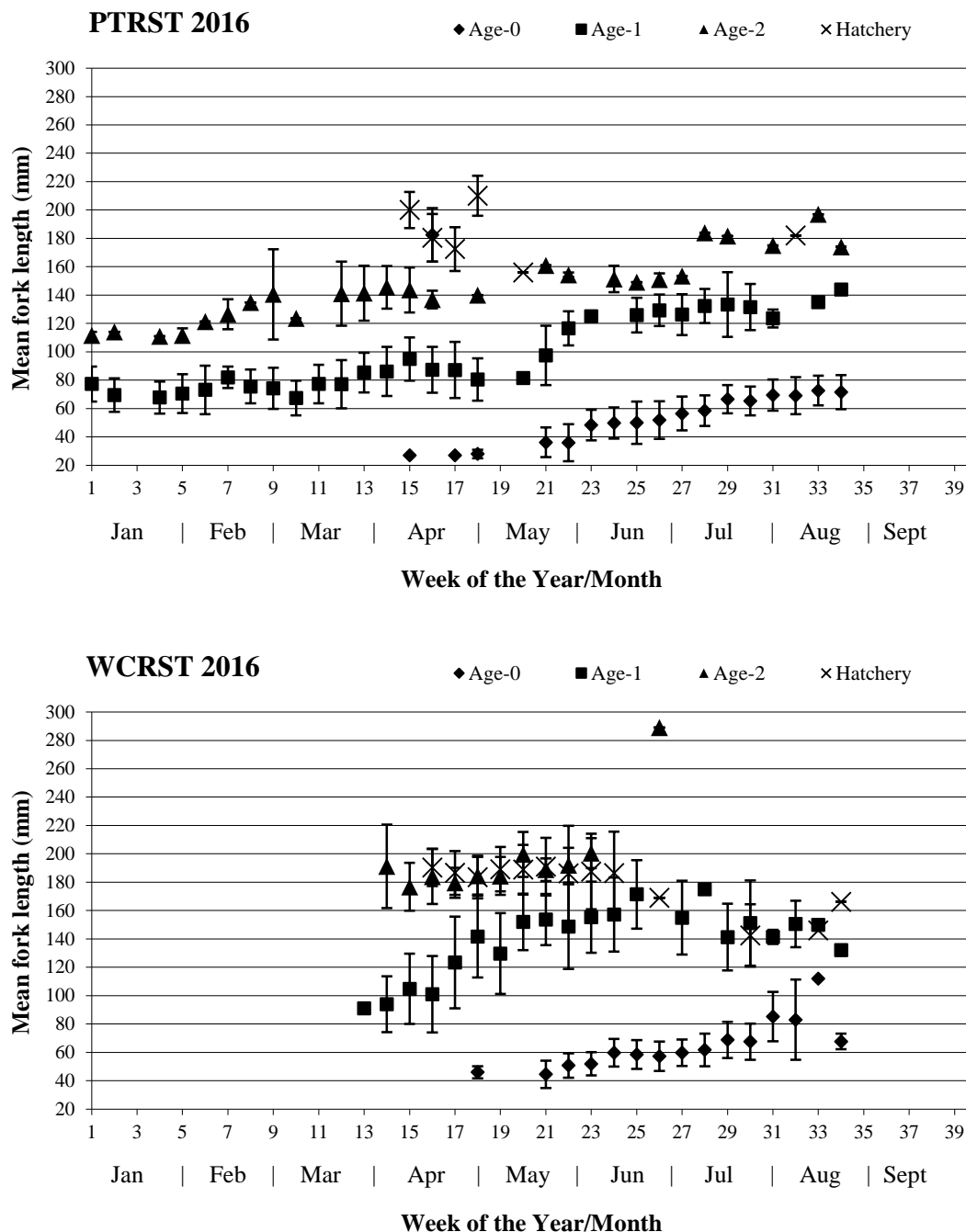


Figure 9. Weekly mean fork lengths for natural age-0, age-1, age-2, and hatchery age-1 Steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. Error bars represent one standard deviation of the mean.

Fish Condition

Fulton's condition factor ($K = 100,000 * (\text{weight} / \text{length}^3)$) was calculated on a subsample of age-0 (pooled natural and hatchery) Chinook Salmon larger than 50 mm (Figure 10, Appendix 13), age-1 natural Coho Salmon (Figure 11, Appendix 14), and age 1+ natural Steelhead (Figure 12, Appendix 15). Due to the inability to determine the origin of unmarked individuals, clipped and non-clipped juvenile Chinook Salmon were pooled in weekly mean calculations.

At both PTRST and WCRST weekly mean condition factor of juvenile Chinook Salmon increased slightly at the beginning of the season and then remained relatively stable through the remainder of the season.

There were only 39 age-1 natural Coho captured at PTRST and 32 age-1 natural Coho captured at WCRST. Due to the low sample sizes, a seasonal trend was not identifiable.

At PTRST, weekly mean condition factor of natural age-1+ Steelhead was variable with no apparent seasonal trend. At WCRST weekly mean condition of age-1+ Steelhead increased slightly through the season.

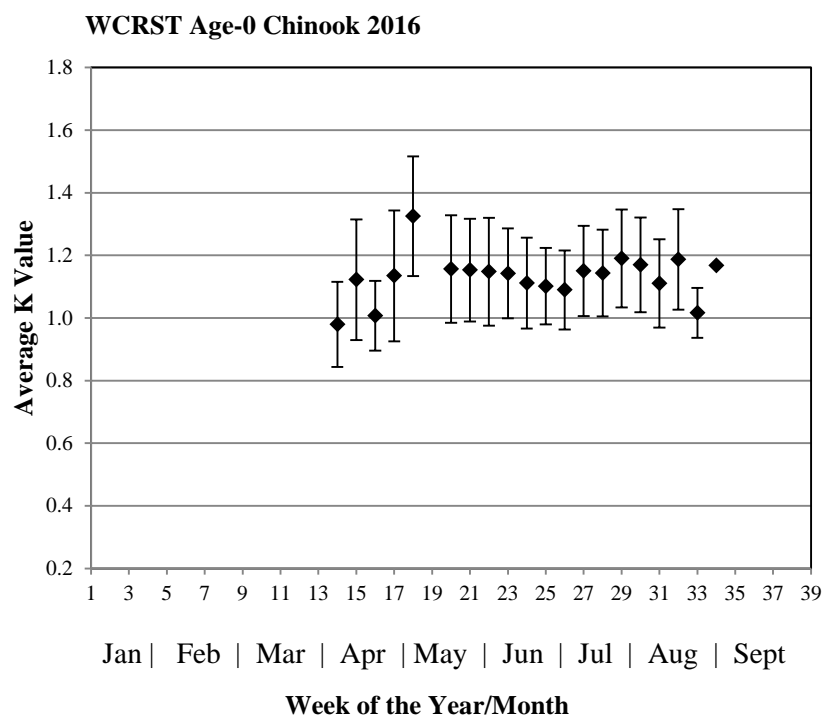
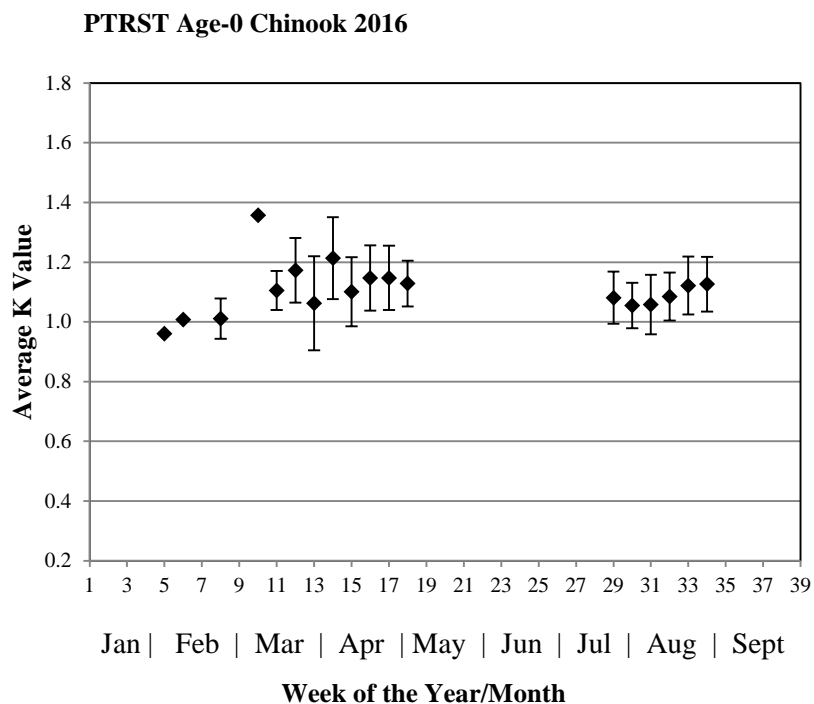


Figure 10. Weekly mean K value for pooled hatchery and natural age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. Error bars represent one standard deviation of the mean.

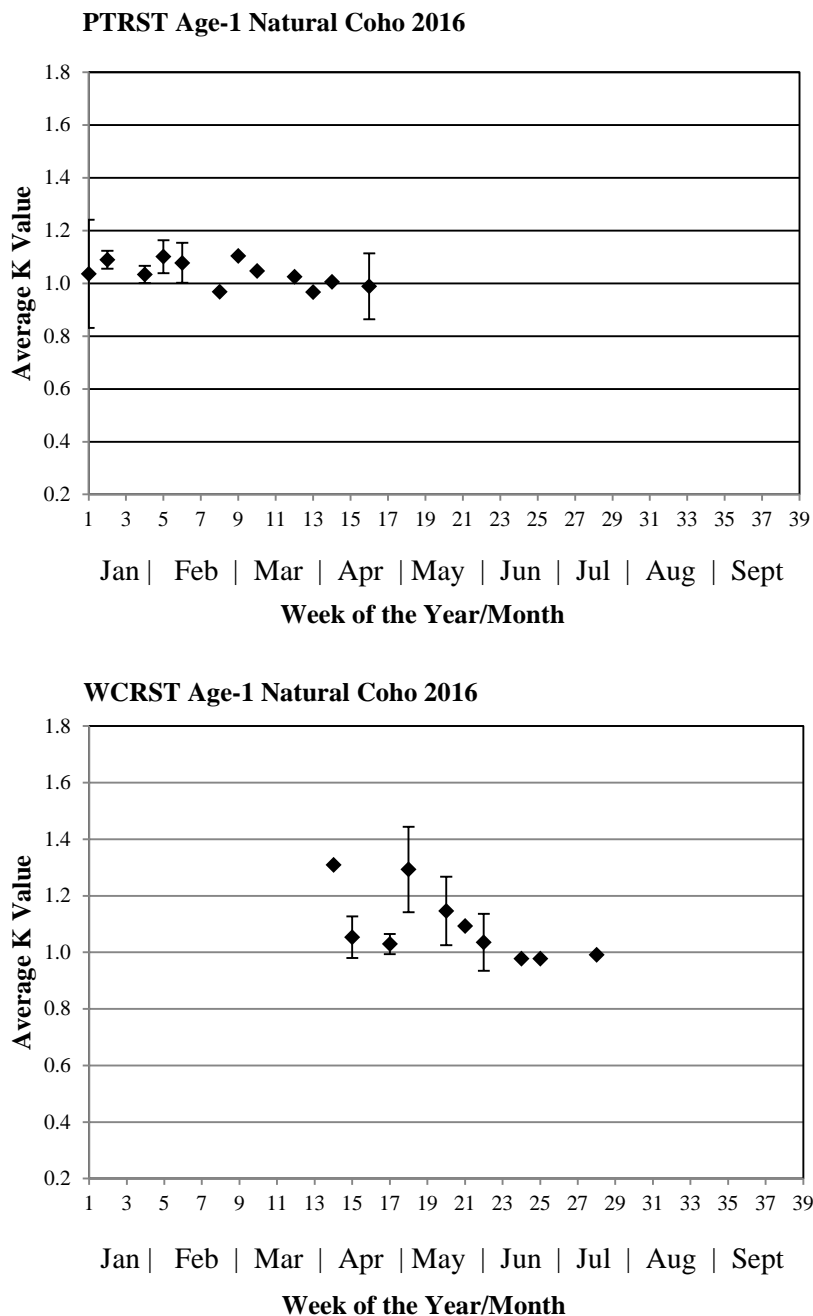


Figure 11. Weekly mean K value for natural age-1 Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. Error bars represent one standard deviation of the mean.

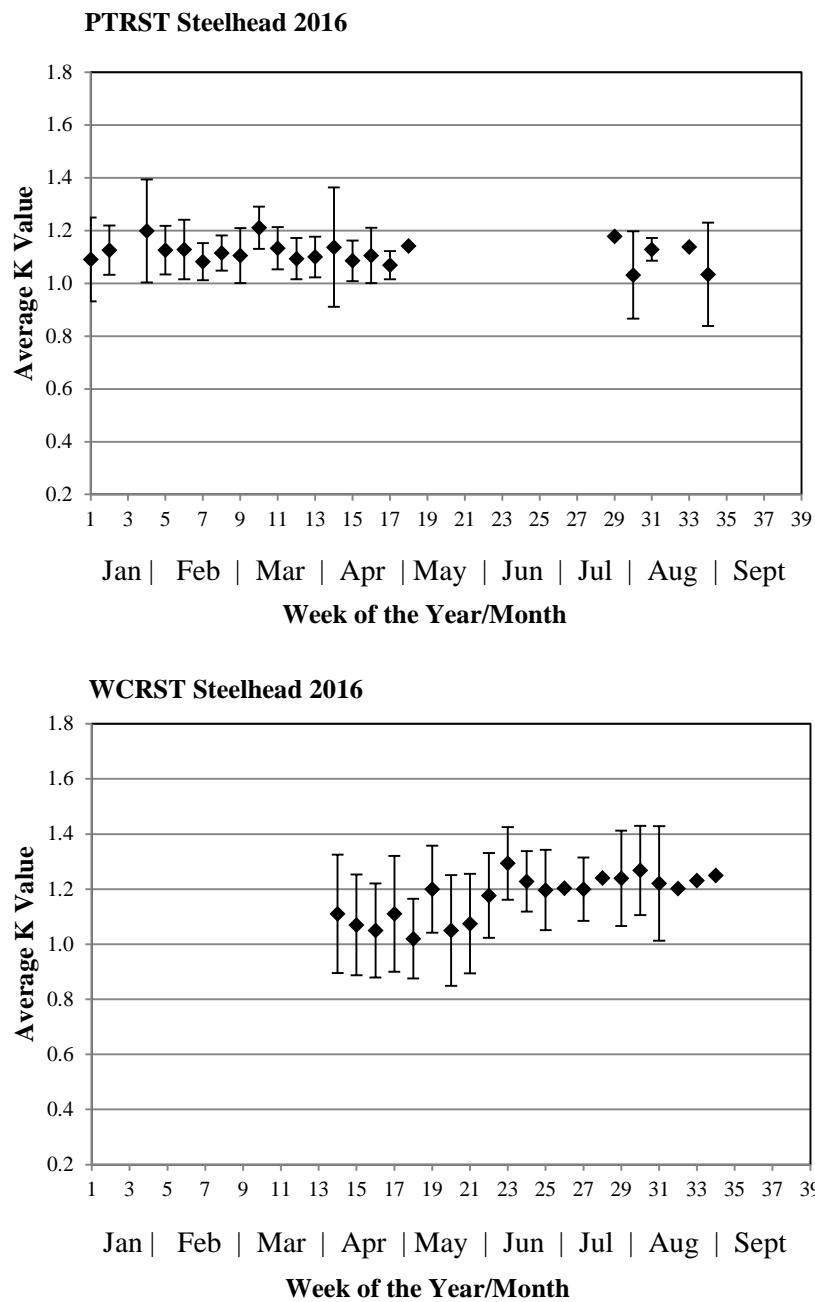


Figure 12. Weekly mean K value for natural age-1+ Steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2016. Error bars represent one standard deviation of the mean.

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Acknowledgements

Special thanks to Al Andreoli, for allowing access through his property at the WCRST. In addition, the partners greatly appreciate the California Department of Fish and Wildlife and the Trinity River Hatchery staff for providing juvenile Chinook Salmon and facilitating mark-recapture efforts.

Appendices

Appendix 1. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Chinook Salmon catches and abundance indices, 2016 (NC = no clip, AD = adipose fin clip).

Week Starting	Week of Year	Mean Daily Discharge m ³ /s	Trap Days Sampled	Weekly Chinook Salmon Catch						Weekly Chinook Salmon Index					
				Hatchery			Natural		Catch Total	Hatchery			Natural		Index Total
				NC	AD	Age-1	Age-0	Age-1		NC	AD	Age-1	Age-0	Age-1	
1/1/2016	1	21.4	5	0	0	0	1,669	1	1,670	0	0	0	27,634	17	27,651
1/10/2016	2	37.9	2	0	0	0	2,409	0	2,409	0	0	0	350,714	0	350,714
1/17/2016	3	119.6	0	---	---	---	---	---	---	---	---	---	---	---	---
1/24/2016	4	83.0	4	0	0	0	1,041	0	1,041	0	0	0	58,702	0	58,702
1/31/2016	5	55.2	5	0	0	0	3,196	0	3,196	0	0	0	64,592	0	64,592
2/7/2016	6	37.0	5	0	0	0	1,910	0	1,910	0	0	0	34,915	0	34,915
2/14/2016	7	37.3	4	0	0	3	283	0	286	0	0	61	5,771	0	5,832
2/21/2016	8	29.9	6	0	0	0	1,546	0	1,546	0	0	0	23,277	0	23,277
2/28/2016	9	33.0	5	0	0	0	1245	1	1246	0	0	0	63,821	51	63,872
3/6/2016	10	114.6	5	0	0	0	561	0	561	0	0	0	38,336	0	38,336
3/13/2016	11	106.0	5	0	0	0	547	0	547	0	0	0	25,613	0	25,613
3/20/2016	12	68.2	5	0	0	0	218	1	219	0	0	0	5,896	27	5,923
3/27/2016	13	43.2	5	0	0	0	746	0	746	0	0	0	16,175	0	16,175
4/3/2016	14	39.8	4	0	0	0	595	0	595	0	0	0	13,370	0	13,370
4/10/2016	15	37.1	5	0	0	0	1,783	0	1,783	0	0	0	28,323	0	28,323
4/17/2016	16	32.8	5	0	0	0	552	1	553	0	0	0	12,918	23	12,941
4/24/2016	17	56.7	4	0	0	0	301	0	301	0	0	0	22,122	0	22,122
5/1/2016	18	105.0	5	0	0	0	63	0	63	0	0	0	8,986	0	8,986
5/8/2016	19	246.3	0	---	---	---	---	---	---	---	---	---	---	---	---
5/15/2016	20	172.0	5	0	0	0	69	0	69	0	0	0	6,834	0	6,834
5/22/2016	21	120.1	5	0	0	0	75	0	75	0	0	0	4,827	0	4,827
5/29/2016	22	105.9	4	940	312	0	119	0	1,371	63,505	20,641	0	6,556	0	90,702
6/5/2016	23	87.7	5	313	107	0	35	0	455	14,488	4,709	0	828	0	20,025
6/12/2016	24	70.0	5	146	56	0	47	0	249	7,827	2,544	0	942	0	11,313
6/19/2016	25	62.5	5	142	49	0	27	0	218	5,160	1,677	0	625	0	7,462
6/26/2016	26	55.0	5	100	33	0	64	0	197	2,471	803	0	1,521	0	4,795
7/3/2016	27	46.3	4	230	82	0	22	0	334	5,688	1,851	0	0	0	7,539
7/10/2016	28	37.1	5	667	217	0	212	0	1096	9,744	3,167	0	3086	0	15,997
7/17/2016	29	29.0	5	361	127	0	187	0	675	4,230	1,375	0	1703	0	7,308
7/24/2016	30	20.8	5	2073	684	0	145	0	2902	15519	5044	0	836	0	21399
7/31/2016	31	14.4	5	2552	918	0	425	0	3895	15999	5200	0	865	0	22064
8/7/2016	32	13.0	5	1444	480	0	142	0	2066	7424	2413	0	549	0	10386
8/14/2016	33	12.5	4	323	105	0	65	0	493	2498	812	0	502	0	3812
8/21/2016	34	18.5	5	203	74	0	25	0	302	3326	1081	0	6	0	4413
Totals			151	9,494	3,244	3	20,324	4	33,069	157,879	51,317	61	830,845	118	1,040,220

Appendix 2. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Chinook Salmon catches and abundance indices, 2016 (NC = no clip, AD = adipose fin clip).

Week Starting	Week of Year	Mean Daily Discharge m ³ /s	Trap Days Sampled	Weekly Chinook Salmon Catch						Weekly Chinook Salmon Index					
				Hatchery			Natural		Catch Total	Hatchery			Natural		Index Total
				NC	AD	Age-1	Age-0	Age-1		NC	AD	Age-1	Age-0	Age-1	
3/27/2016	13	327.4	3	0	0	0	11	0	11	0	0	0	2,732	0	2,732
4/3/2016	14	203.4	12	0	0	0	71	0	71	0	0	0	2,853	0	2,853
4/10/2016	15	172.4	15	0	0	0	68	0	68	0	0	0	1,684	0	1,684
4/17/2016	16	127.3	15	0	0	0	61	0	61	0	0	0	1,245	0	1,245
4/24/2016	17	130.0	14	0	0	0	93	0	93	0	0	0	1,964	0	1,964
5/1/2016	18	154.9	15	0	0	0	52	0	52	0	0	0	1,074	0	1,074
5/8/2016	19	254.6	4	0	0	0	8	0	8	0	0	0	532	0	532
5/15/2016	20	243.9	11	0	0	0	72	0	72	0	0	0	2,035	0	2,035
5/22/2016	21	161.8	15	0	0	0	1,141	0	1,141	0	0	0	33,985	0	33,985
5/29/2016	22	138.1	13	0	0	0	1,880	0	1,880	0	0	0	54,394	0	54,394
6/5/2016	23	121.4	15	258	84	0	3,363	0	3,705	6,330	2,061	0	76,225	0	84,616
6/12/2016	24	92.8	15	911	296	0	2,314	0	3,521	14,132	4,592	0	21,918	0	40,642
6/19/2016	25	84.5	15	1,311	426	0	2,711	0	4,448	17,226	5,598	0	18,396	0	41,220
6/26/2016	26	73.9	15	3,277	1,065	0	6,529	0	10,871	45,201	14,690	0	44,856	0	104,747
7/3/2016	27	64.4	12	4,972	1,616	0	8,064	0	14,652	58,136	18,895	0	36,177	0	113,208
7/10/2016	28	53.2	15	6,830	2,220	0	10,060	0	19,110	64,988	21,123	0	30,734	0	116,845
7/17/2016	29	44.7	15	7,218	2,346	0	8,709	0	18,273	56,851	18,478	0	13,665	0	88,994
7/24/2016	30	31.9	14	3,750	1,219	0	8,578	0	13,547	26,571	8,637	0	41,586	0	76,794
7/31/2016	31	24.6	11	1,495	486	0	2,097	0	4,078	11,575	3,763	0	5,126	0	20,464
8/7/2016	32	19.8	7	308	100	0	713	0	1,121	3,285	1,067	0	4,319	0	8,671
8/14/2016	33	18.5	8	31	10	0	116	0	157	370	119	0	1,013	0	1,502
8/21/2016	34	17.7	8	57	22	0	54	0	133	495	191	0	0	0	686
Totals			267	30,418	9,890	0	27,773	0	68,081	305,160	99,214	0	396,513	0	800,887

Appendix 3. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Coho Salmon catches and abundance indices, 2016 (R-MAX = right maxillary clip).

Week Starting	Week of Year	Mean Daily Discharge m ³ /s	Trap Days Sampled	Weekly Coho Salmon Catch				Weekly Coho Salmon Index			
				Hatchery	Natural		Catch	Hatchery	Natural		Index
				R-MAX	Age-0	Age-1	Total	R-MAX	Age-0	Age-1	Total
1/1/2016	1	21.4	5	0	0	2	2	0	0	33	33
1/10/2016	2	37.9	2	0	0	2	2	0	0	291	291
1/17/2016	3	119.6	0	---	---	---	---	---	---	---	---
1/24/2016	4	83.0	4	0	0	3	3	0	0	169	169
1/31/2016	5	55.2	5	0	0	7	7	0	0	141	141
2/7/2016	6	37.0	5	0	0	13	13	0	0	238	238
2/14/2016	7	37.3	4	0	0	0	0	0	0	0	0
2/21/2016	8	29.9	6	0	0	1	1	0	0	15	15
2/28/2016	9	33.0	5	0	0	1	1	0	0	51	51
3/6/2016	10	114.6	5	0	3	2	5	0	205	137	342
3/13/2016	11	106.0	5	7	1	0	8	328	47	0	375
3/20/2016	12	68.2	5	14	0	1	15	379	0	27	406
3/27/2016	13	43.2	5	9	1	1	11	195	22	22	239
4/3/2016	14	39.8	4	1	3	1	5	31	92	0	123
4/10/2016	15	37.1	5	54	4	0	58	858	64	0	922
4/17/2016	16	32.8	5	3	2	3	8	70	47	70	187
4/24/2016	17	56.7	4	2	11	0	13	147	808	0	955
5/1/2016	18	105.0	5	0	2	0	2	0	285	0	285
5/8/2016	19	246.3	0	---	---	---	---	---	---	---	---
5/15/2016	20	172.0	5	0	1	0	1	0	99	0	99
5/22/2016	21	120.1	5	1	2	0	3	64	129	0	193
5/29/2016	22	105.9	4	0	3	1	4	0	198	66	264
6/5/2016	23	87.7	5	2	12	0	14	88	528	0	616
6/12/2016	24	70.0	5	0	15	0	15	0	681	0	681
6/19/2016	25	62.5	5	0	18	0	18	0	616	0	616
6/26/2016	26	55.0	5	0	18	0	18	0	438	0	438
7/3/2016	27	46.3	4	0	24	0	24	0	542	0	542
7/10/2016	28	37.1	5	0	15	0	15	0	219	0	219
7/17/2016	29	29.0	5	0	16	1	17	0	173	11	184
7/24/2016	30	20.8	5	0	2	0	2	0	15	0	15
7/31/2016	31	14.4	5	0	3	0	3	0	17	0	17
8/7/2016	32	13.0	5	0	3	0	3	0	15	0	15
8/14/2016	33	12.5	4	0	1	0	1	0	8	0	8
8/21/2016	34	18.5	5	0	0	0	0	0	0	0	0
Total			151	93	160	39	292	2,160	5,248	1,271	8,679

Appendix 4. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Coho Salmon catches and abundance indices, 2016 (R-MAX = right maxillary clip).

Week Starting	Week of Year	Mean Daily Discharge m ³ /s	Trap Days Sampled	Weekly Coho Salmon Catch				Weekly Coho Salmon Index			
				Hatchery	Natural		Catch	Hatchery	Natural		Index
				R-MAX	Age-0	Age-1	Total	R-MAX	Age-0	Age-1	Total
3/27/2016	13	327.4	3	38	0	1	39	10,001	0	264	10,265
4/3/2016	14	203.4	12	18	2	1	21	676	72	53	801
4/10/2016	15	172.4	15	8	1	3	12	175	21	64	260
4/17/2016	16	127.3	15	15	1	0	16	288	20	0	308
4/24/2016	17	130.0	14	20	1	1	22	538	18	18	574
5/1/2016	18	154.9	15	26	0	4	30	526	0	78	604
5/8/2016	19	254.6	4	7	1	2	10	466	67	130	663
5/15/2016	20	243.9	11	20	4	12	36	564	161	324	1,049
5/22/2016	21	161.8	15	11	5	1	17	412	214	57	683
5/29/2016	22	138.1	13	6	1	3	10	159	21	102	282
6/5/2016	23	121.4	15	4	4	0	8	98	94	0	192
6/12/2016	24	92.8	15	5	11	1	17	83	199	25	307
6/19/2016	25	84.5	15	0	10	1	11	0	161	16	177
6/26/2016	26	73.9	15	3	21	0	24	43	322	0	365
7/3/2016	27	64.4	12	0	9	0	9	0	105	0	105
7/10/2016	28	53.2	15	0	8	1	9	0	70	8	78
7/17/2016	29	44.7	15	0	6	0	6	0	48	0	48
7/24/2016	30	31.9	14	0	3	0	3	0	20	0	20
7/31/2016	31	24.6	11	0	0	0	0	0	0	0	0
8/7/2016	32	19.8	7	0	0	1	1	0	0	12	12
8/14/2016	33	18.5	8	0	0	0	0	0	0	0	0
8/21/2016	34	17.7	8	0	0	0	0	0	0	0	0
Total			267	181	88	32	301	14,029	1613	1,151	16,793

Appendix 5. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Steelhead catches and abundance indices, 2016 (AD = adipose fin clip).

Week Starting	Week of Year	Mean Daily Discharge m ³ /s	Trap Days Sampled	Weekly Steelhead Catch					Weekly Steelhead Index				
				Hatchery	Natural			Catch	Hatchery	Natural			Index
				AD	Age-0	Age-1	Age-2+	Total	AD	Age-0	Age-1	Age-2+	Total
1/1/2016	1	21.4	5	0	0	17	4	21	0	0	281	66	347
1/10/2016	2	37.9	2	0	0	6	2	8	0	0	874	291	1165
1/17/2016	3	119.6	0	---	---	---	---	---	---	---	---	---	---
1/24/2016	4	83.0	4	0	0	30	1	31	0	0	1692	56	1748
1/31/2016	5	55.2	5	0	0	54	2	56	0	0	1,091	40	1,131
2/7/2016	6	37.0	5	0	0	53	6	59	0	0	969	110	1,079
2/14/2016	7	37.3	4	0	0	8	2	10	0	0	163	41	204
2/21/2016	8	29.9	6	0	0	30	4	34	0	0	452	60	512
2/28/2016	9	33.0	5	0	0	29	2	31	0	0	1487	103	1590
3/6/2016	10	114.6	5	0	0	28	2	30	0	0	1913	137	2050
3/13/2016	11	106.0	5	0	0	11	0	11	0	0	515	0	515
3/20/2016	12	68.2	5	0	0	8	2	10	0	0	216	54	270
3/27/2016	13	43.2	5	0	0	58	6	64	0	0	1258	130	1388
4/3/2016	14	39.8	4	0	0	28	6	34	0	0	549	153	702
4/10/2016	15	37.1	5	36	1	25	13	75	572	16	397	207	1,192
4/17/2016	16	32.8	5	149	1	45	11	206	3,487	23	1053	257	4,820
4/24/2016	17	56.7	4	7	2	12	0	21	514	147	882	0	1543
5/1/2016	18	105.0	5	2	9	2	1	14	285	1,284	285	143	1,997
5/8/2016	19	246.3	0	---	---	---	---	---	---	---	---	---	---
5/15/2016	20	172.0	5	2	2	2	0	6	198	198	198	0	594
5/22/2016	21	120.1	5	0	19	7	1	27	0	1,223	450	64	1,737
5/29/2016	22	105.9	4	0	18	2	3	23	0	1,191	132	198	1,521
6/5/2016	23	87.7	5	0	20	1	0	21	0	880	44	0	924
6/12/2016	24	70.0	5	0	23	0	6	29	0	1,045	0	273	1,318
6/19/2016	25	62.5	5	0	10	7	1	18	0	342	240	34	616
6/26/2016	26	55.0	5	0	37	9	2	48	0	901	219	49	1,169
7/3/2016	27	46.3	4	0	27	10	2	39	0	609	226	45	880
7/10/2016	28	37.1	5	0	58	3	2	63	0	847	44	29	920
7/17/2016	29	29.0	5	0	82	3	3	88	0	888	32	32	952
7/24/2016	30	20.8	5	0	290	6	0	296	0	2,138	44	0	2,182
7/31/2016	31	14.4	5	0	432	77	1	510	0	2,447	436	6	2,889
8/7/2016	32	13.0	5	1	346	104	0	451	5	1,739	523	0	2,267
8/14/2016	33	12.5	4	0	133	4	1	138	0	1,028	31	8	1,067
8/21/2016	34	18.5	5	0	231	25	1	257	0	3375	365	15	3755
Total			151	197	1,741	704	87	2,729	5,061	20,321	17,061	2601	45,044

Appendix 6. Trinity River at Willow Creek Rotary crew Trap site (WCRST) weekly Steelhead catches and abundance indices, 2016 (AD = adipose fin clip).

Week Starting	Week of Year	Mean Daily Discharge m ³ /s	Trap Days Sampled	Weekly Steelhead Catch					Weekly Steelhead Index				
				Hatchery	Natural			Catch	Hatchery	Natural			Index
				AD	Age-0	Age-1	Age-2+	Total	AD	Age-0	Age-1	Age-2+	Total
3/27/2016	13	327.4	3	0	0	3	0	3	0	0	777	0	777
4/3/2016	14	203.4	12	0	0	27	5	32	0	0	1019	179	1,198
4/10/2016	15	172.4	15	0	4	50	16	70	0	112	1131	365	1,608
4/17/2016	16	127.3	15	293	0	46	14	353	5,740	0	907	265	6,912
4/24/2016	17	130.0	14	819	1	37	19	876	16,237	18	711	347	17,313
5/1/2016	18	154.9	15	398	2	54	25	479	8,068	42	1068	501	9,679
5/8/2016	19	254.6	4	78	0	12	16	106	5,229	0	798	1071	7,098
5/15/2016	20	243.9	11	145	1	47	8	201	4,326	26	1418	268	6,038
5/22/2016	21	161.8	15	70	5	33	8	116	1,806	213	973	239	3,231
5/29/2016	22	138.1	13	20	12	20	5	57	544	366	621	179	1,710
6/5/2016	23	121.4	15	12	27	8	2	49	281	629	200	52	1,162
6/12/2016	24	92.8	15	13	75	10	0	98	223	1280	185	0	1688
6/19/2016	25	84.5	15	1	91	9	0	101	0	1377	138	0	1515
6/26/2016	26	73.9	15	1	158	0	1	160	15	2209	0	11	2235
7/3/2016	27	64.4	12	0	197	4	0	201	0	2284	47	0	2331
7/10/2016	28	53.2	15	0	233	1	0	234	0	2300	8	0	2308
7/17/2016	29	44.7	15	0	143	2	0	145	0	1130	15	0	1145
7/24/2016	30	31.9	14	2	97	5	0	104	14	724	32	0	770
7/31/2016	31	24.6	11	0	14	4	0	18	0	216	27	0	243
8/7/2016	32	19.8	7	3	9	7	0	19	61	142	89	0	292
8/14/2016	33	18.5	8	1	3	1	0	5	9	26	9	0	44
8/21/2016	34	17.7	8	1	5	2	0	8	9	40	21	0	70
Total			267	1,857	1077	382	119	3,435	42,562	13,134	10,194	3,477	69,367

Appendix 7. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly age-0 Chinook Salmon population estimate input and results, 2016 (NC = no clip, AD = adipose fin clip).

Week Starting	Week of Year	Sampling Fraction ¹	Catch NC	Catch AD	Marks Released	Marks Recapture Rate	Recapture Rate	Estimated Natural	SD Natural	Estimated Hatchery	SD Hatchery
1/3/2016	1	0.71	1,669	0	---	---	---	98,759	55,896	---	---
1/10/2016	2	0.29	2,409	0	---	---	---	119,498	61,810	---	---
1/17/2017	3	0.00	---	---	---	---	---	84,312	67,794	---	---
1/24/2016	4	0.57	1,041	0	---	---	---	79,399	60,571	---	---
1/31/2016	5	0.71	3,196	0	---	---	---	60,877	25,399	---	---
2/7/2016	6	0.71	1,910	0	1,226	123	0.10	56,627	15,831	---	---
2/14/2016	7	0.57	283	0	1,823	42	0.02	22,743	3,614	---	---
2/21/2016	8	0.86	1,546	0	1,480	100	0.07	27,382	2,657	---	---
2/28/2016	9	0.71	1,245	0	1,468	89	0.06	29,606	3,114	---	---
3/6/2016	10	0.71	561	0	1,998	57	0.03	27,994	3,688	---	---
3/13/2016	11	0.71	547	0	2,978	67	0.02	33,939	4,210	---	---
3/20/2016	12	0.71	218	0	2,568	89	0.03	9,273	1,103	---	---
3/27/2016	13	0.71	746	0	1,662	89	0.05	20,015	2,110	---	---
4/3/2016	14	0.57	595	0	964	17	0.02	51,473	10,307	---	---
4/10/2016	15	0.71	1,783	0	1,696	128	0.08	33,105	2,899	---	---
4/17/2016	16	0.71	552	0	1,754	160	0.09	18,753	9,046	---	---
4/24/2016	17	0.57	301	0	2,073	74	0.04	14,934	1,798	---	---
5/1/2016	18	0.71	63	0	3,245	75	0.02	4,152	638	---	---
5/8/2016	19	0.00	---	---	---	---	---	12,744	9,259	---	---
5/15/2016	20	0.71	69	0	3,923	32	0.01	11,399	2,178	---	---
5/22/2016	21	0.71	75	0	2,902	38	0.01	8,055	1,464	---	---
5/29/2016	22	0.57	1,059	312	2,756	35	0.01	9,628	4,359	158,209	23,931
6/5/2016	23	0.71	348	107	1,717	21	0.01	4,865	2,191	50,753	10,571
6/12/2016	24	0.71	193	56	1,495	11	0.01	5,399	2,677	50,039	15,514
6/19/2016	25	0.71	169	49	1,450	2	0.00	6,142	3,426	69,273	18,021
6/26/2016	26	0.71	164	33	1,244	3	0.00	10,257	5,893	55,741	22,576
7/3/2016	27	0.57	252	82	1,083	25	0.02	2,515	1,109	27,526	5,940
7/10/2016	28	0.71	879	217	870	42	0.05	5,710	1,540	27,479	4,321
7/17/2016	29	0.71	548	127	906	37	0.04	4,931	1,415	19,548	3,584
7/24/2016	30	0.71	2,218	684	1,013	173	0.17	3,343	1,824	95,789	31,111
7/31/2016	31	0.71	2,977	918	1,033	110	0.11	3,108	1,843	96,072	42,059
8/7/2016	32	0.71	1,586	480	946	106	0.11	2,800	1,832	80,532	44,016
8/14/2016	33	0.57	388	105	855	192	0.22	2,850	1,949	43,021	24,187
8/21/2016	34	0.71	228	74	---	---	---	1,726	1,399	40,379	20,810
Totals			29,818	3,244	47,128	1,937	0.04	888,313	140,342	814,361	92,226

¹ Fraction of possible trap days successfully sampled each week

Appendix 8. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly age-0 Chinook Salmon population estimate input and results, 2016 (NC = no clip, AD = adipose fin clip).

Week Starting	Week of Year	Sampling Fraction ¹	Catch NC	Catch AD	Marks Released	Marks Recaptured	Recapture Rate	Estimated Natural	SD Natural	Estimated Hatchery	SD Hatchery
3/27/2016	13	0.43	11	-	2,925	12	0.00	5,775	1,953	---	---
4/3/2016	14	0.86	71	-	3,069	67	0.02	3,703	590	---	---
4/10/2016	15	0.71	68	-	2,255	129	0.06	1,665	217	---	---
4/17/2016	16	0.71	61	-	3,144	263	0.08	1,030	122	---	---
4/24/2016	17	0.67	93	-	3,049	396	0.13	1,087	100	---	---
5/1/2016	18	0.71	52	-	3,095	68	0.02	3,333	545	---	---
5/8/2016	19	0.29	8	-	5,303	68	0.01	2,476	527	---	---
5/15/2016	20	0.52	72	-	3,448	31	0.01	14,965	2,839	---	---
5/22/2016	21	0.71	1,141	-	2,592	40	0.02	96,290	14,515	---	---
5/29/2016	22	0.62	1,880	-	2,263	89	0.04	77,100	8,063	---	---
6/5/2016	23	0.71	3,363	84	2,352	50	0.02	196,445	27,712	22,357	3,794
6/12/2016	24	0.71	2,314	297	1,844	72	0.04	50,830	6,304	45,749	5,716
6/19/2016	25	0.71	2,711	426	1,576	51	0.03	60,129	8,526	77,984	10,756
6/26/2016	26	0.71	6,529	1,064	619	65	0.11	44,912	5,585	63,107	7,733
7/3/2016	27	0.57	8,064	1,616	1,318	134	0.10	51,577	4,756	118,086	10,139
7/10/2016	28	0.71	10,060	2,220	1,218	77	0.06	65,641	7,814	200,780	21,951
7/17/2016	29	0.71	8,709	2,230	897	132	0.15	16,309	1,941	91,062	7,739
7/24/2016	30	0.71	8,578	1,092	1,109	104	0.09	75,583	6,954	67,335	6,212
7/31/2016	31	0.86	2,097	473	---	---	---	13,212	5,676	43,310	17,919
8/7/2016	32	0.50	713	100	1,060	129	0.12	6,616	727	7,055	760
8/14/2016	33	0.57	116	9	1,045	59	0.06	2,585	491	1,465	380
8/21/2016	34	0.57	54	22	---	---	---	143	179	2,458	2,174
Total			56,765	9,633	44,181	2,036	1	791,407	38,537	740,748	36,025

¹ Fraction of

possible trap days successfully sampled each week

Appendix 9. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Chinook Salmon and Coho Salmon fork lengths, 2016.

Chinook Salmon ¹												Natural Coho Salmon										Hatchery Coho Salmon						
Week of		Age-0					Age-1						Age-0					Age-1						Age-1				
Starting	Year	n	mean	min	max	SD	n	mean	min	max	SD		n	mean	min	max	SD	n	mean	min	max	SD		n	mean	min	max	SD
1/1/2016	1	131	37.8	33	42	1.81	1	76.0	76	76	---		0	---	---	---	---	2	91.5	90	93	2.12		0	---	---	---	---
1/10/2016	2	60	37.7	33	42	1.68	0	---	---	---	---		0	---	---	---	---	2	86.0	80	92	8.49		0	---	---	---	---
1/17/2016	3	0	0.0	0	0	0.00	0	---	---	---	---		0	---	---	---	---	0	---	---	---	---		0	---	---	---	---
1/24/2016	4	90	38.2	33	44	2.29	0	---	---	---	---		0	---	---	---	---	3	93.7	83	108	12.90		0	---	---	---	---
1/31/2016	5	150	39.3	32	50	2.87	0	---	---	---	---		0	---	---	---	---	7	94.7	85	108	8.36		0	---	---	---	---
2/7/2016	6	150	38.9	34	53	3.29	0	---	---	---	---		0	---	---	---	---	13	100.8	72	123	14.76		0	---	---	---	---
2/14/2016	7	95	37.7	34	48	2.04	3	94.3	87	100	6.66		0	---	---	---	---	0	---	---	---	---		0	---	---	---	---
2/21/2016	8	180	38.9	34	60	3.89	0	---	---	---	---		0	---	---	---	---	1	95.0	95	95	---		0	---	---	---	---
2/28/2016	9	150	37.9	32	62	3.11	1	72.0	72	72	---		0	---	---	---	---	1	110.0	110	110	---		0	---	---	---	---
3/6/2016	10	73	39.6	32	52	4.36	0	---	---	---	---		2	35.5	35	36.0	0.71	1	94.0	94	94	---		0	---	---	---	---
3/13/2016	11	127	44.3	35	63	5.34	0	---	---	---	---		1	38.0	38	38.0	---	0	---	---	---	0.00		7	140.3	132	148	5.9
3/20/2016	12	119	47.9	35	69	6.71	1	123.0	123	123	---		0	---	---	---	---	1	127.0	127	127	---		14	135.2	120	155	11.9
3/27/2016	13	120	51.2	36	71	5.96	0	---	---	---	---		1	45.0	45	45.0	---	1	123.0	123	123	---		7	142.1	125	158	11.5
4/3/2016	14	120	53.2	32	78	8.71	0	---	---	---	---		3	40.7	30	46.0	9.24	1	96.0	96	96	---		1	134.0	134	134	---
4/10/2016	15	150	56.7	35	75	7.61	0	---	---	---	---		4	52.8	48	58.0	4.27	0	---	---	---	0.00		26	150.3	119	200	17.7
4/17/2016	16	150	60.6	39	79	6.67	1	119.0	119	119	---		2	55.0	53	57.0	2.83	3	120.0	110	126	8.72		3	149.0	139	164	13.2
4/24/2016	17	120	59.1	36	86	8.24	0	---	---	---	---		11	51.9	43	59.0	4.91	0	---	---	---	0.00		2	159.5	157	162	3.5
5/1/2016	18	60	63.7	47	92	10.14	0	---	---	---	---		2	70.5	68	73.0	3.54	0	---	---	---	0.00		0	---	---	---	---
5/8/2016	19	0	0.0	0	0	0.00	0	---	---	---	---		0	0.0	0	0.0	0.00	0	---	---	---	0.00		0	---	---	---	---
5/15/2016	20	56	72.9	52	90	8.46	0	---	---	---	---		1	71.0	71	71.0	---	0	---	---	---	0.00		0	---	---	---	---
5/22/2016	21	75	73.8	53	94	9.12	0	---	---	---	---		2	68.0	65	71.0	4.24	0	---	---	---	0.00		1	137.0	137	137	---
5/29/2016	22	179	68.9	55	89	6.97	0	---	---	---	---		3	75.3	69	79.0	5.51	1	105.0	105	105	---		0	---	---	---	---
6/5/2016	23	253	73.3	55	98	7.95	0	---	---	---	---		12	63.8	36	91.0	16.30	0	---	---	---	---		2	88.5	86	91	3.5
6/12/2016	24	197	73.7	49	95	8.16	0	---	---	---	---		15	74.1	65	88.0	7.27	0	---	---	---	---		0	---	---	---	---
6/19/2016	25	199	75.3	55	94	7.51	0	---	---	---	---		18	79.5	60	93.0	7.86	0	---	---	---	---		0	---	---	---	---
6/26/2016	26	165	75.6	48	90	7.35	0	---	---	---	---		17	77.3	58	95.0	9.88	0	---	---	---	---		0	---	---	---	---
7/3/2016	27	201	76.7	61	98	7.19	0	---	---	---	---		24	74.1	52	94.0	12.00	0	---	---	---	---		0	---	---	---	---
7/10/2016	28	248	81.4	59	102	7.12	0	---	---	---	---		15	76.1	56	99.0	13.04	0	---	---	---	---		0	---	---	---	---
7/17/2016	29	272	83.9	66	117	7.73	0	---	---	---	---		16	79.6	66	115.0	11.29	1	140.0	140	140	---		0	---	---	---	---
7/24/2016	30	300	88.5	70	111	7.30	0	---	---	---	---		2	67.0	65	69.0	2.83	0	---	---	---	---		0	---	---	---	---
7/31/2016	31	240	89.6	75	109	6.57	0	---	---	---	---		3	87.0	73	95.0	12.17	0	---	---	---	---		0	---	---	---	---
8/7/2016	32	300	90.5	68	118	7.68	0	---	---	---	---		3	89.7	83	95.0	6.11	0	---	---	---	---		0	---	---	---	---
8/14/2016	33	223	92.5	77	117	7.11	0	---	---	---	---		1	83.0	83	83.0	---	0	---	---	---	---		0	---	---	---	---
8/21/2016	34	196	97.3	80	131	8.62	0	---	---	---	---		0	---	---	---	---	0	---	---	---	---		0	---	---	---	---

¹Natural and Hatchery combined

Appendix 10. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Chinook Salmon and Coho Salmon fork lengths, 2016.

Week Starting	Week of Year	Chinook Salmon ¹										Natural Coho Salmon										Hatchery Coho Salmon				
		Age-0					Age-1					Age-0					Age-1					Age-1				
		n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD
3/27/2016	13	11	47.6	36	60	8.36	0	---	---	---	---	0	---	---	---	---	1	106	106	106	---	37	142.1	111	170	13.24
4/3/2016	14	69	44.7	30	70	10.03	0	---	---	---	---	2	33.5	33	34	0.71	1	111	111	111	---	18	141.3	125	165	11.72
4/10/2016	15	59	47.3	27	75	11.77	0	---	---	---	---	1	38	38	38	---	3	118.7	109	127	9.07	7	141.7	122	155	12.97
4/17/2016	16	61	51.6	30	82	12.96	0	---	---	---	---	1	37	37	37	---	0	---	---	---	---	15	151	117	180	16.28
4/24/2016	17	85	61.6	38	89	12.52	0	---	---	---	---	1	29	29	29	---	1	118	118	118	---	7	152	126	176	16.86
5/1/2016	18	45	64.2	39	94	11.74	0	---	---	---	---	0	---	---	---	---	4	101.5	70	139	36.19	23	145	123	185	13.93
5/8/2016	19	8	66	52	86	11.01	0	---	---	---	---	1	52	52	52	---	2	114	110	118	5.66	7	152.3	127	180	20.67
5/15/2016	20	59	82.4	46	109	17.07	0	---	---	---	---	4	52	46	62	6.98	12	96.6	89	125	9.59	18	153.3	124	178	11.37
5/22/2016	21	398	84.2	43	112	13.89	0	---	---	---	---	5	55.8	49	64	6.22	1	107	107	107	---	11	154.7	140	180	11.17
5/29/2016	22	338	89.2	47	113	8.84	0	---	---	---	---	1	57	57	57	---	3	122.3	100	157	30.44	5	157.6	138	174	13.76
6/5/2016	23	526	86.9	49	110	7.52	0	---	---	---	---	4	68.3	55	81	12.69	0	---	---	---	---	4	147.5	130	163	16.01
6/12/2016	24	685	84.3	60	110	6.33	0	---	---	---	---	11	67.7	59	75	5.85	1	144	144	144	---	5	163.4	155	177	8.56
6/19/2016	25	682	84.5	66	110	5.54	0	---	---	---	---	10	73	43	91	12.53	1	136	136	136	---	0	---	---	---	---
6/26/2016	26	741	84.5	62	109	6.01	0	---	---	---	---	17	74.2	53	93	10.15	0	---	---	---	---	3	158	155	163	4.36
7/3/2016	27	713	82.5	67	109	6.31	0	---	---	---	---	9	74.4	64	87	8.86	0	---	---	---	---	0	---	---	---	---
7/10/2016	28	900	82.8	63	108	6.15	0	---	---	---	---	8	71.1	63	85	7.51	1	110	110	110	---	0	---	---	---	---
7/17/2016	29	825	84.1	64	110	5.98	0	---	---	---	---	5	73.8	62	80	7.19	0	---	---	---	---	0	---	---	---	---
7/24/2016	30	587	84.9	56	105	6.78	0	---	---	---	---	3	77.7	75	82	3.79	0	---	---	---	---	0	---	---	---	---
7/31/2016	31	338	86	60	109	7.74	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/7/2016	32	179	89.9	71	116	8.57	0	---	---	---	---	0	---	---	---	---	1	106	106	106	---	0	---	---	---	---
8/14/2016	33	61	87.9	76	107	8.51	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/21/2016	34	72	92.3	80	122	9.66	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---

¹Natural and Hatchery combined.

Appendix 11: Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Steelhead fork lengths, 2016.

Week Starting	Week of Year	Natural Steelhead															Hatchery Steelhead				
		Age-0					Age-1					Age-2					Age-1				
		n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD
1/1/2016	1	0	---	---	---	---	17	77.3	54	96	12.26	4	111.5	109	115	2.65	0	---	---	---	---
1/10/2016	2	0	---	---	---	---	6	69.5	52	88	11.86	2	114.0	105	123	---	0	---	---	---	---
1/17/2016	3	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0	---	---	---	---
1/24/2016	4	0	---	---	---	---	20	67.8	47	97	11.28	1	111.0	111	111	---	0	---	---	---	---
1/31/2016	5	0	---	---	---	---	53	70.5	46	104	13.77	2	111.5	108	115	4.95	0	---	---	---	---
2/7/2016	6	0	---	---	---	---	52	73.2	47	108	17.07	6	121.3	109	139	---	0	---	---	---	---
2/14/2016	7	0	---	---	---	---	6	82.0	72	92	7.56	2	126.5	119	134	10.61	0	---	---	---	---
2/21/2016	8	0	---	---	---	---	30	75.6	55	107	11.95	4	134.8	125	144	---	0	---	---	---	---
2/28/2016	9	0	---	---	---	---	29	74.3	55	104	14.47	2	140.5	118	163	31.82	0	---	---	---	---
3/6/2016	10	0	---	---	---	---	13	67.4	56	102	12.23	2	123.5	121	126	---	0	---	---	---	---
3/13/2016	11	0	---	---	---	---	11	77.3	61	102	13.67	0	---	---	---	---	0	---	---	---	---
3/20/2016	12	0	---	---	---	---	8	77.1	55	100	17.06	2	141.0	125	157	22.63	0	---	---	---	---
3/27/2016	13	0	---	---	---	---	56	85.4	63	114	13.98	6	141.3	123	178	19.29	0	---	---	---	---
4/3/2016	14	0	---	---	---	---	28	86.2	60	117	17.27	6	145.5	130	167	15.02	0	---	---	---	---
4/10/2016	15	1	27.0	27	27	---	25	94.9	65	121	15.17	13	143.6	125	170	15.94	10	200.0	185	218	12.69
4/17/2016	16	30	182.4	118	209	18.88	44	87.3	60	123	16.22	11	136.8	129	149	6.21	107	180.3	118	210	16.84
4/24/2016	17	2	27.0	27	27	---	11	87.2	63	123	19.82	0	---	---	---	---	7	172.4	145	189	15.41
5/1/2016	18	9	28.0	25	35	3.04	2	80.5	70	91	14.85	1	140.0	140	140	---	2	210.0	200	220	14.14
5/8/2016	19	0	---	---	---	---	---	---	---	---	---	0	---	---	---	---	0	---	---	---	---
5/15/2016	20	0	---	---	---	---	2	81.5	80	83	2.12	0	---	---	---	---	1	156.0	156	156	---
5/22/2016	21	15	36.2	25	55	10.43	7	97.4	75	131	20.89	1	161.0	161	161	---	0	---	---	---	---
5/29/2016	22	18	35.9	27	65	13.05	2	116.5	108	125	12.02	3	154.3	153	156	1.53	0	---	---	---	---
6/5/2016	23	20	48.4	26	63	10.76	1	125.0	125	125	---	0	---	---	---	---	0	---	---	---	---
6/12/2016	24	23	49.8	27	69	10.91	0	---	---	---	---	6	151.3	140	165	9.37	0	---	---	---	---
6/19/2016	25	10	50.1	29	76	14.93	7	125.9	102	136	12.16	1	149.0	149	149	---	0	---	---	---	---
6/26/2016	26	35	51.8	30	86	13.28	8	129.3	111	140	11.11	2	151.0	148	154	4.24	0	---	---	---	---
7/3/2016	27	27	56.5	32	84	11.95	5	126.2	104	140	14.39	2	153.5	152	155	---	0	---	---	---	---
7/10/2016	28	56	58.5	34	80	10.79	3	132.3	120	144	12.01	2	184.0	158	210	---	0	---	---	---	---
7/17/2016	29	80	66.5	40	90	9.93	3	133.3	107	148	22.85	3	181.7	153	198	---	0	---	---	---	---
7/24/2016	30	148	65.4	41	100	10.13	2	131.5	120	143	16.26	0	---	---	---	---	0	---	---	---	---
7/31/2016	31	161	69.5	45	106	11.00	2	123.5	119	128	6.36	1	175.0	175	175	---	0	---	---	---	---
8/7/2016	32	275	69.1	35	182	12.99	---	---	---	---	---	0	---	---	---	---	1	182.0	182	182	---
8/14/2016	33	128	72.7	53	100	10.40	1	135.0	135	135	---	1	197.0	197	197	---	0	---	---	---	---
8/21/2016	34	206	71.6	46	108	12.01	2	144.0	143	145	1.41	1	174.0	174	174	---	0	---	---	---	---

Appendix 12: Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Steelhead fork lengths, 2016.

Week Starting	Week of Year	Natural Steelhead										Hatchery Steelhead									
		Age-0					Age-1					Age-2+					Age-1				
		n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD
3/27/2016	13	0	---	---	---	---	3	91	89	93	2.00	0	---	---	---	---	0	---	---	---	---
4/3/2016	14	0	---	---	---	---	27	93.9	64	157	19.73	5	191.2	163	234	29.49	0	---	---	---	---
4/10/2016	15	0	---	---	---	---	42	104.8	62	159	24.75	16	176.75	156	216	16.90	0	---	---	---	---
4/17/2016	16	0	---	---	---	---	46	101	62	158	26.89	14	184	161	228	19.34	173	190.4	137	215	13.19
4/24/2016	17	0	---	---	---	---	37	123.38	71	169	32.37	19	179.5	165	198	10.60	211	186.6	120	229	15.45
5/1/2016	18	2	46	43	49	4.24	40	141.68	73	171	28.76	25	184.6	170	224	13.29	175	183.6	140	222	15.12
5/8/2016	19	0	---	---	---	---	12	129.67	94	165	28.51	16	184.4	167	215	13.36	72	189.2	148	220	15.6
5/15/2016	20	0	---	---	---	---	47	152.06	87	178	19.90	8	199.6	183	233	15.84	130	188.8	124	234	17.52
5/22/2016	21	5	44.6	28	53	9.66	33	153.7	120	184	18.09	8	188.8	173	199	8.00	68	190.9	130	243	20.29
5/29/2016	22	11	50.8	37	62	8.64	19	148.68	93	188	29.94	5	192	177	211	12.25	16	186.2	105	222	33.58
6/5/2016	23	27	51.9	28	63	8.19	7	155.29	118	182	25.06	2	200.5	193	208	10.61	12	187.5	129	227	26.64
6/12/2016	24	74	59.8	32	100	9.7	9	157.2	98	187	26.20	0	---	---	---	---	13	186.4	132	242	29.22
6/19/2016	25	88	58.6	40	88	10.15	8	171.4	125	194	24.16	0	---	---	---	---	0	---	---	---	---
6/26/2016	26	136	57.2	33	94	10.34	0	---	---	---	---	1	289	289	289	---	1	169	169	169	---
7/3/2016	27	196	59.8	38	90	9.35	3	155	130	182	26.06	0	---	---	---	---	0	---	---	---	---
7/10/2016	28	204	61.8	34	123	11.51	1	175	175	175	---	0	---	---	---	---	0	---	---	---	---
7/17/2016	29	140	68.8	49	115	12.73	3	141.3	117	164	23.54	0	---	---	---	---	0	---	---	---	---
7/24/2016	30	78	67.6	47	101	12.75	5	151.2	117	184	30.00	0	---	---	---	---	2	142.5	127	158	21.92
7/31/2016	31	3	85.3	72	105	17.39	2	141.5	138	145	4.95	0	---	---	---	---	0	---	---	---	---
8/7/2016	32	5	83	55	116	28.29	6	150.5	131	177	16.36	0	---	---	---	---	0	---	---	---	---
8/14/2016	33	1	112	112	112	---	1	150	150	150	---	0	---	---	---	---	1	146	146	146	---
8/21/2016	34	3	67.7	64	74	5.51	1	132	132	132	---	0	---	---	---	---	1	166	166	166	---

Appendix 13. Fulton's condition factor (K) for pooled natural and hatchery age-0 Chinook Salmon with FL > 50 mm from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2016.

Week Starting	Week of Year	Pear Tree Trap Site			Willow Creek Trap Site		
		n	Average K	Standard Deviation of K	n	Average K	Standard Deviation of K
1/1/2016	1	0	---	---	---	---	---
1/10/2016	2	0	---	---	---	---	---
1/17/2016	3	0	---	---	---	---	---
1/24/2016	4	0	---	---	---	---	---
1/31/2016	5	1	0.96	---	---	---	---
2/7/2016	6	1	1.01	---	---	---	---
2/14/2016	7	0	---	---	---	---	---
2/21/2016	8	3	1.01	0.067	---	---	---
2/28/2016	9	0	---	---	---	---	---
3/6/2016	10	1	1.36	---	---	---	---
3/13/2016	11	9	1.11	0.065	---	---	---
3/20/2016	12	29	1.17	0.108	---	---	---
3/27/2016	13	36	1.06	0.157	0	---	---
4/3/2016	14	63	1.21	0.137	16	0.98	0.136
4/10/2016	15	119	1.10	0.116	23	1.12	0.193
4/17/2016	16	143	1.15	0.109	31	1.01	0.112
4/24/2016	17	57	1.15	0.108	80	1.13	0.209
5/1/2016	18	8	1.13	0.076	23	1.33	0.191
5/8/2016	19	0	---	---	0	---	---
5/15/2016	20	0	---	---	53	1.16	0.172
5/22/2016	21	0	---	---	373	1.15	0.164
5/29/2016	22	0	---	---	294	1.15	0.172
6/5/2016	23	0	---	---	416	1.14	0.144
6/12/2016	24	0	---	---	403	1.11	0.145
6/19/2016	25	0	---	---	319	1.10	0.122
6/26/2016	26	0	---	---	351	1.09	0.126
7/3/2016	27	0	---	---	327	1.15	0.144
7/10/2016	28	0	---	---	391	1.14	0.139
7/17/2016	29	165	1.08	0.088	394	1.19	0.157
7/24/2016	30	300	1.06	0.076	253	1.17	0.151
7/31/2016	31	240	1.06	0.100	193	1.11	0.141
8/7/2016	32	300	1.08	0.080	41	1.19	0.160
8/14/2016	33	223	1.12	0.097	7	1.02	0.080
8/21/2016	34	160	1.13	0.092	50	1.17	0.133

Appendix 14. Fulton's condition factor (K) for natural age-1 Coho Salmon from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2016.

Week Starting	Week of Year	Pear Tree Trap Site			Willow Creek Trap Site		
		n	Average K	Standard Deviation of K	n	Average K	Standard Deviation of K
1/1/2016	1	2	1.04	0.205	---	---	---
1/10/2016	2	2	1.09	0.034	---	---	---
1/17/2016	3	0	---	---	---	---	---
1/24/2016	4	3	1.03	0.033	---	---	---
1/31/2016	5	7	1.10	0.063	---	---	---
2/7/2016	6	13	1.08	0.076	---	---	---
2/14/2016	7	0	---	---	---	---	---
2/21/2016	8	1	0.97	---	---	---	---
2/28/2016	9	1	1.10	---	---	---	---
3/6/2016	10	1	1.05	---	---	---	---
3/13/2016	11	0	---	---	---	---	---
3/20/2016	12	1	1.03	---	---	---	---
3/27/2016	13	1	0.97	---	0	---	---
4/3/2016	14	1	1.01	---	1	1.31	---
4/10/2016	15	0	---	---	3	1.05	0.074
4/17/2016	16	3	0.99	0.125	0	---	---
4/24/2016	17	0	---	---	2	1.03	0.036
5/1/2016	18	0	---	---	4	1.29	0.151
5/8/2016	19	0	---	---	0	---	---
5/15/2016	20	0	---	---	12	1.15	0.121
5/22/2016	21	0	---	---	1	1.09	---
5/29/2016	22	0	---	---	3	1.04	0.101
6/5/2016	23	0	---	---	0	---	---
6/12/2016	24	0	---	---	1	0.98	---
6/19/2016	25	0	---	---	1	0.98	---
6/26/2016	26	0	---	---	0	---	---
7/3/2016	27	0	---	---	0	---	---
7/10/2016	28	0	---	---	1	0.99	---
7/17/2016	29	0	---	---	0	---	---
7/24/2016	30	0	---	---	0	---	---
7/31/2016	31	0	---	---	0	---	---
8/7/2016	32	0	---	---	0	---	---
8/14/2016	33	0	---	---	0	---	---
8/21/2016	34	0	---	---	0	---	---

Appendix 15. Fulton's condition factor (K) for natural age-1+ Steelhead from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2016.

Week Starting	Week of Year	Pear Tree Trap Site			Willow Creek Trap Site		
		n	Average K	Standard Deviation of K	n	Average K	Standard Deviation of K
1/1/2016	1	10	1.09	0.159	---	---	---
1/10/2016	2	8	1.13	0.094	---	---	---
1/17/2016	3	0	---	---	---	---	---
1/24/2016	4	21	1.20	0.195	---	---	---
1/31/2016	5	54	1.13	0.092	---	---	---
2/7/2016	6	56	1.13	0.112	---	---	---
2/14/2016	7	8	1.08	0.070	---	---	---
2/21/2016	8	34	1.11	0.067	---	---	---
2/28/2016	9	31	1.11	0.105	---	---	---
3/6/2016	10	15	1.21	0.080	---	---	---
3/13/2016	11	11	1.13	0.080	---	---	---
3/20/2016	12	9	1.09	0.078	---	---	---
3/27/2016	13	37	1.10	0.077	0	---	---
4/3/2016	14	30	1.14	0.226	12	1.11	0.215
4/10/2016	15	38	1.09	0.077	41	1.07	0.183
4/17/2016	16	52	1.11	0.105	46	1.05	0.171
4/24/2016	17	8	1.07	0.053	37	1.11	0.210
5/1/2016	18	1	1.14	---	40	1.02	0.145
5/8/2016	19	0	---	---	9	1.2	0.158
5/15/2016	20	0	---	---	47	1.05	0.201
5/22/2016	21	0	---	---	1	1.07	0.181
5/29/2016	22	0	---	---	8	1.18	0.154
6/5/2016	23	0	---	---	19	1.29	0.132
6/12/2016	24	0	---	---	61	1.23	0.110
6/19/2016	25	0	---	---	61	1.20	0.146
6/26/2016	26	0	---	---	88	1.20	---
7/3/2016	27	0	---	---	161	1.20	0.115
7/10/2016	28	0	---	---	158	1.24	---
7/17/2016	29	1	1.18	---	131	1.24	0.173
7/24/2016	30	2	1.03	0.166	46	1.27	0.162
7/31/2016	31	2	1.13	0.043	3	1.22	0.208
8/7/2016	32	0	---	---	4	1.20	---
8/14/2016	33	1	1.14	---	1	1.23	---
8/21/2016	34	3	1.03	0.195	3	1.25	---