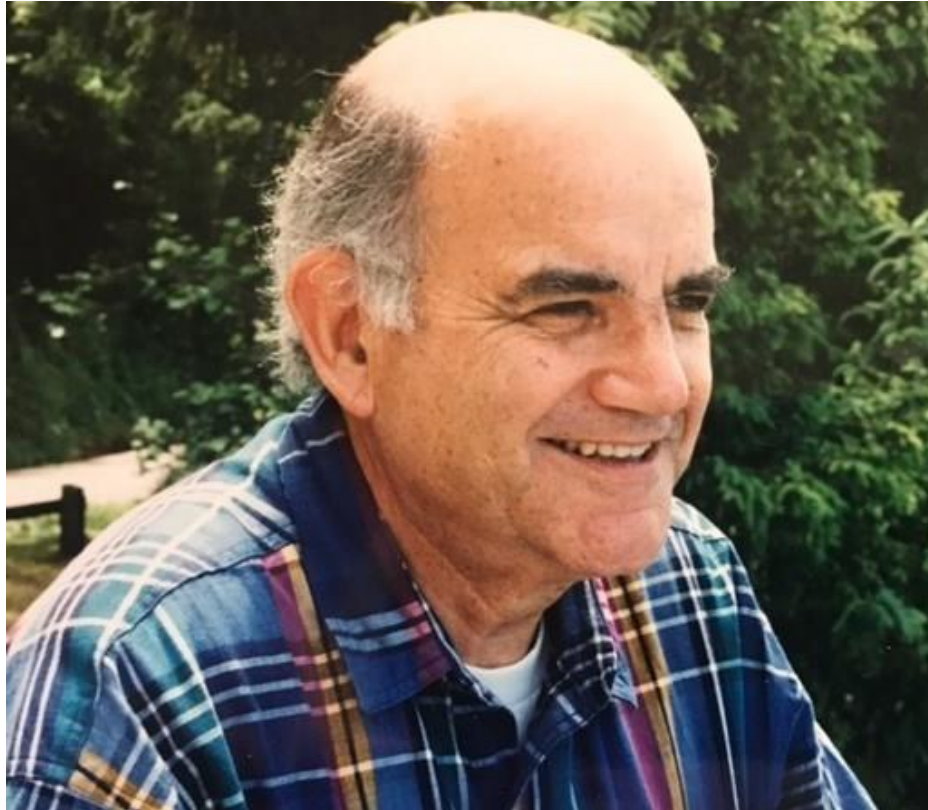


Juvenile Salmonid Monitoring in the Mainstem Trinity River, California, 2017*

Paul Petros, William D. Pinnix, and Oshun A. O'Rourke



HOOPA VALLEY
TRIBAL FISHERIES
DEPARTMENT
P.O. Box 417
Hoopa, CA 95546
(530) 625-4267

U.S. FISH AND
WILDLIFE SERVICE
ARCATA FISH AND
WILDLIFE OFFICE
1655 Heindon Road
Arcata, CA 95521
(707) 822-7201

YUOK TRIBAL
FISHERIES PROGRAM
P.O. Box 36
Willow Creek, CA 95573
(530) 629-3333



February 2026

*Dedicated to the Memory of Alfred Andreoli for his loved the Trinity River and whose support made this project possible.



Funding for this study was provided by the U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office and the Trinity River Restoration Program.

Disclaimer: The mention of trade names or commercial products in this report does not constitute endorsement or recommendation for use by the Federal government.

The Arcata Fish and Wildlife Office Fisheries Program reports its study findings through two publication series. The **Arcata Fisheries Data Series** was established to provide timely dissemination of data to local managers and for inclusion in agency databases. The **Arcata Fisheries Technical Reports** publishes scientific findings from single and multi-year studies that have undergone more extensive peer review and statistical testing. Additionally, some study results are published in a variety of professional fisheries journals.

Key words: Trinity River, salmon, downstream migrant trapping, Chinook Salmon, Coho Salmon, steelhead, abundance index, juvenile salmon, rotary screw trap.

The correct citation for this report is:

Petros, P., W. D. Pinnix, and O. A. O'Rourke. 2026. Juvenile Salmonid Monitoring in the Mainstem Trinity River, California, 2017. Hoopa Valley Tribal Fisheries Department, Yurok Tribal Fisheries Program, and U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office. Arcata Fisheries Data Series Report Number DS 2026-71, Arcata, California.

Table of Contents

	page
List of Tables	iv
List of Figures	iv
List of Appendices	v
Introduction.....	2
Methods.....	2
Results.....	2
<i>Sampling Efforts</i>	2
<i>Catch Totals</i>	5
<i>Abundance Indices</i>	5
<i>Hatchery/Natural Contribution</i>	11
<i>Chinook Salmon Population Estimation</i>	11
<i>Outmigrant Timing</i>	11
<i>Migration Rate</i>	13
<i>Fish Size</i>	14
<i>Fish Condition</i>	18
References.....	22
Acknowledgements.....	22
Appendices.....	23

List of Tables

	page
Table 1. Week of the Year (WOY) and corresponding first calendar date.	2
Table 2. Period and duration of 2017 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).	5
Table 3. Juvenile salmonid catch totals in 2017 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.	6
Table 4. California Department of Fish and Game, Trinity River Hatchery juvenile salmonid releases, 2017.	6
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, 2017.	7
Table 6. Juvenile salmonid proportional discharge-based abundance indices at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017.	7
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), 2017. Values represent week of the year.	13
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, 2017.	14

List of Figures

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.	1
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 2017.	4
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 2017.	8
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 2017.....	9
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 2017.	10
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 2017.....	12
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), 2017.....	15
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), 2017.	16
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), 2017.	17
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), 2017.....	19
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), 2017.	20
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), 2017.	21

List of Appendices

Appendix 1. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Chinook Salmon catches and abundance indices, 2017.....	24
Appendix 2. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Chinook Salmon catches and abundance indices, 2017	25
Appendix 3. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Coho Salmon catches and abundance indices, 2017 (R-MAX = right maxillary clip).....	26

Appendix 4. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Coho Salmon catches and abundance indices, 2017	27
Appendix 5. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly steelhead catches and abundance indices, 2017	28
Appendix 6. Trinity River at Willow Creek Rotary crew Trap site (WCRST) weekly steelhead catches and abundance indices, 2017	29
Appendix 7. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly age-0 Chinook Salmon population estimate input and results, 2017	30
Appendix 8. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly age-0 Chinook Salmon population estimate input and results, 2017.....	31
Appendix 9. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Chinook Salmon and Coho Salmon fork lengths, 2017.	32
Appendix 10. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Chinook Salmon and Coho Salmon fork lengths, 2017.	33
Appendix 11: Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly steelhead fork lengths, 2017.....	34
Appendix 12: Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly steelhead fork lengths, 2017.	35
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, 2017.	36
Appendix 14. Fulton's condition factor (K) for natural age-1 Coho Salmon from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2017.....	37
Appendix 15. Fulton's condition factor (K) for natural age-1+ steelhead from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2017.....	38

Juvenile Salmonid Monitoring in the Mainstem Trinity River, California, 2017

Paul Petros¹, William D. Pinnix², and Oshun A. O'Rourke³

¹*Hoopa Valley Tribal Fisheries Department
P.O. Box 417, Hoopa, California 95546*

²*U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office
1655 Heindon Road, Arcata, California 95521*

³*Yurok Tribal Fisheries Program
P.O. Box 36, Willow Creek, California 95573*

Executive Summary — This report presents juvenile salmonid emigration monitoring data collected in 2017 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 from 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 2017, one rotary screw trap was operated at PTRST from January 25 through August 25, with successful sampling for 128 days of the 214-day sampling period. At WCRST, three rotary screw traps were operated from April 11 through September 1, with successful sampling for 85 days of the 144-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 1,024,260 (95% Credible Interval (CI): [598,556, 1,698,668]) naturally produced age-0 Chinook Salmon and 252,570 (95% CI: [118,661, 421,047]) age-0 hatchery Chinook Salmon passed the site between January 22 and August 27. At WCRST between April 9 and September 3, an estimated 807,106 (95% CI: [637,137, 1,021,849]) naturally produced age-0 Chinook Salmon and 636,108 (95% CI: [388,945, 969,416]) 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 29 (July 16–22), which occurred after the TRRP management target date of July 4. The estimate of the week in which 80% of the natural Coho Salmon age-1+ population passed the WCRST was WOY 16 (April 16–22). The estimate of the week in which 80% of the natural steelhead age-1+ population passed the WCRST was WOY 21 (May 21–27).

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 2017 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.

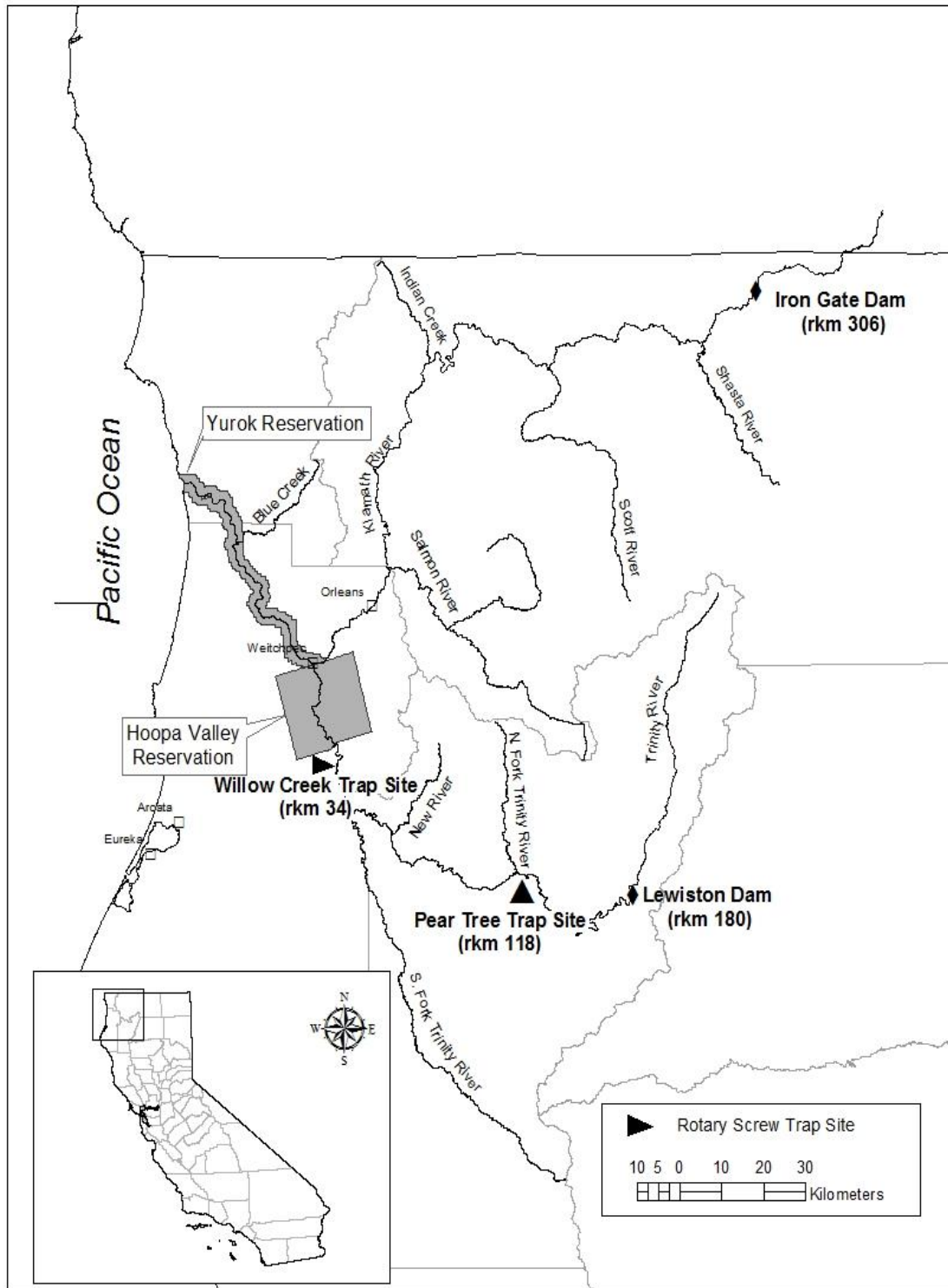


Figure 1. Location of the Trinity River Rotary Screw Trap sites near Willow Creek (rkm 34) and Pear Tree Gulch (rkm 118), California, operated by the Yurok Tribal Fisheries Program, U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Hoopa Valley Tribal Fisheries Department.

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 2017, trapping at PTRST began in the last week of January and trapping at WCRST was initiated in early April (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	30-Apr	35	27-Aug
2	8-Jan	19	7-May	36	3-Sep
3	15-Jan	20	14-May	37	10-Sep
4	22-Jan	21	21-May	38	17-Sep
5	29-Jan	22	28-May	39	24-Sep
6	5-Feb	23	4-Jun	40	1-Oct
7	12-Feb	24	11-Jun	41	8-Oct
8	19-Feb	25	18-Jun	42	15-Oct
9	26-Feb	26	25-Jun	43	22-Oct
10	5-Mar	27	2-Jul	44	29-Oct
11	12-Mar	28	9-Jul	45	5-Nov
12	19-Mar	29	16-Jul	46	12-Nov
13	26-Mar	30	23-Jul	47	19-Nov
14	2-Apr	31	30-Jul	48	26-Nov
15	9-Apr	32	6-Aug	49	3-Dec
16	16-Apr	33	13-Aug	50	10-Dec
17	23-Apr	34	20-Aug	51	17-Dec
				52	24-Dec

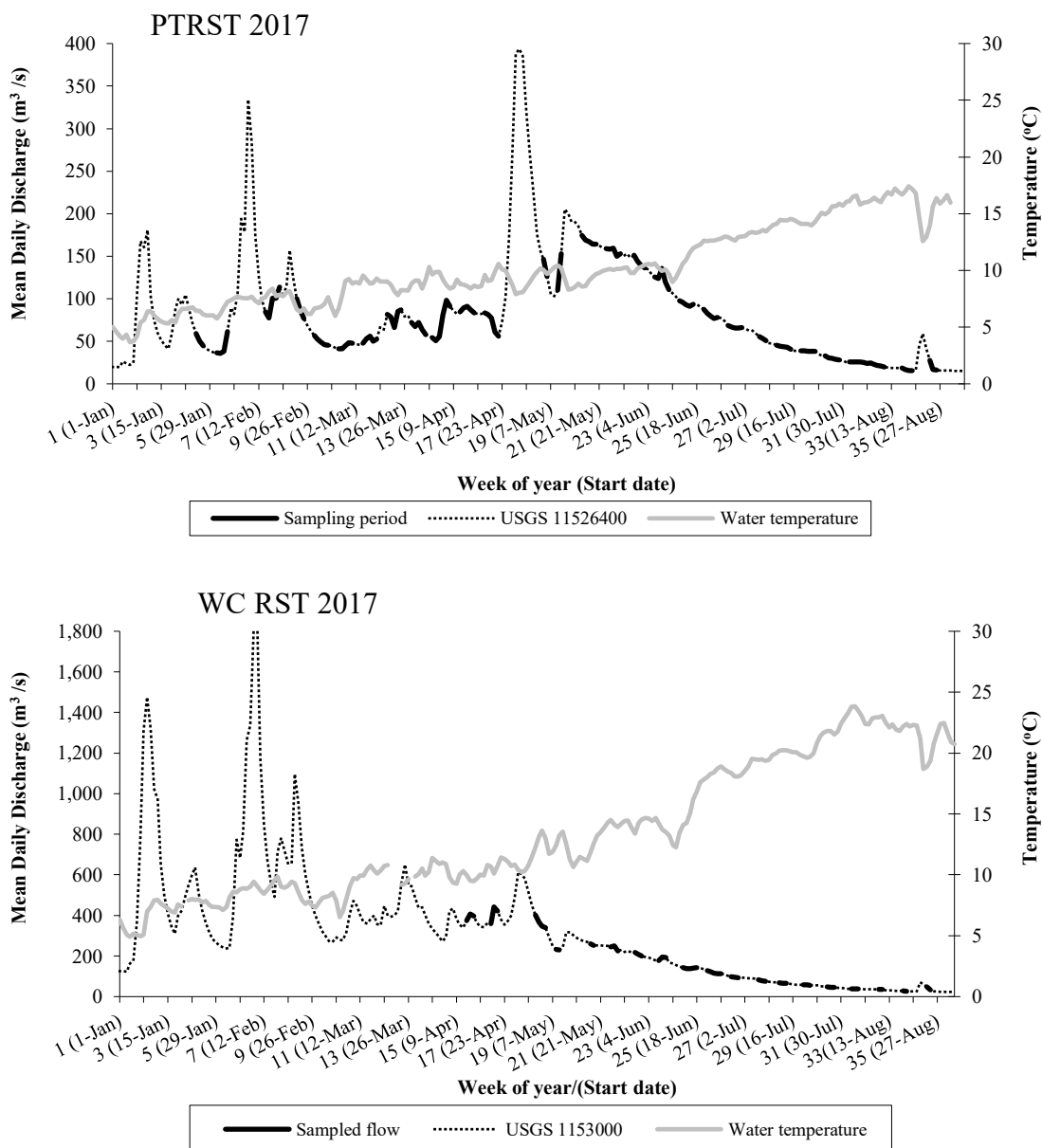


Figure 2. Mean daily discharge (m^3/s) as recorded near Helena (U.S. Geological Survey Water Resource gage station #11-526400) and Hoopa (U.S. Geological Survey Water Resource gage station #11-530000), California, and mean daily water temperatures ($^{\circ}\text{C}$) recorded at USGS gage #11-526400 and the Willow Creek Rotary Screw Trap (WCRST) in 2017. USGS gage #11-526400 is located approximately 100 m downstream of the Pear Tree Rotary Screw Trap (PTRST). The bolded sections on discharge series indicate sampled flows and the lightly dotted sections indicate non-sampled flows.

Table 2. Period and duration of 2017 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)	Jan 25 – Aug 26	128	214	59.8%
Distinct Days		Jan 25 – Aug 26	128	214	59.8%
WCRST	1 (2.4m)	Apr 11 – Aug 22	73	134	54.5%
WCRST	2 (2.4m)	Apr 11 – Sep 1	70	144	48.6%
WCRST	3 (2.4m)	Apr 18 – Sep 1	58	137	42.3%
Distinct Days		Apr 11 – Sep 1	85	144	59.0%

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 84% and 95% 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 183,736 and 172,195 at PTRST and WCRST, respectively (Figure 3; Table 6; Appendix 1, 2). The age-0 hatchery Chinook Salmon abundance indices were 55,525 at PTRST and 115,746 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 were not captured at PTRST or WCRST in 2017.

Age-0 naturally produced Coho Salmon abundance indices were 1,895 and 570 at PTRST and WCRST, respectively (Figure 4; Table 6, Appendix 3, Appendix 4). The abundance indices for age-1 naturally produced Coho Salmon were 2,629 and 2,392 at PTRST and WCRST, respectively. Abundance indices of hatchery age-1 Coho Salmon were 5,445 and 5,757 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 13,108 and 17,142, respectively (Figure 5; Table 6; Appendix 5). Abundance indices of age-0 and age-1 steelhead at WCRST were 5,718 and 11,889, respectively (Table 6; Appendix 6). Abundance indices of hatchery age-1 steelhead were 2,460 at PTRST and 17,951 at WCRST. The age-2 steelhead abundance index was 795 at PTRST and 515 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 2017 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	2,221	0	4,527	0	NA	6,748
PTRST	Coho Salmon	NA	186	38	66	NA	290
PTRST	Steelhead	NA	35	512	432	11	990
WCRST	Chinook Salmon	9,470	0	11,678	0	NA	21,148
WCRST	Coho Salmon	NA	118	9	31	NA	158
WCRST	Steelhead	NA	298	279	377	7	961

Table 4. California Department of Fish and Game, Trinity River Hatchery juvenile salmonid releases, 2017. AD-clipped = adipose fin clipped fish.

Species	Release season	Number released	Percentage AD-clipped or marked	Release dates
Chinook Salmon ¹	Spring	1,102,710	24.6	06/16 - 06/23
Chinook Salmon ²	Fall	1,466,056	24.5	10/12 - 10/26
Coho Salmon ²	Spring	261,101	99.9	03/16 - 04/12
Steelhead	Spring	174,153	98.7	4/15

¹Chinook Salmon release includes only fall-run race.

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, 2017.

Common name	Species	Life stage	PTRST catch	WCRST catch
Lamprey	<i>Entosphenus</i> spp.	Ammocoete	1,525	435
		Eyed juvenile	61	0
		Adult	35	16
Sucker	<i>Catostomus</i> spp.		289	632
Speckled Dace	<i>Rhinichthys osculus</i>		219	63
Three-Spine Stickleback	<i>Gasterosteus aculeatus</i>		11	10
Golden Shiner	<i>Notemigonus crysoleucas</i>		9	0
Sculpin	<i>Cottus</i> spp.		0	9
Green Sturgeon	<i>Acipenser medirostris</i>	Juvenile	0	23
Brown Trout	<i>Salmo trutta</i>	Juvenile	89	10
Sunfish	<i>Lepomis</i> spp.		0	2
Sockeye Salmon	<i>Oncorhynchus nerka</i>	Juvenile	16	33
Fathead Minnow	<i>Pimephales promelas</i>	Juvenile	0	4
Bullhead	<i>Ameiurus</i> spp.		0	4
Chum Salmon	<i>Oncorhynchus keta</i>		0	0
American Shad	<i>Alosa sapidissima</i>		0	1

Table 6. Juvenile salmonid proportional discharge-based abundance indices at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017. 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	55,525	0	183,736	0	NA	239,261
PTRST	Coho Salmon	NA	5,445	1,895	2,629	NA	9,969
PTRST	Steelhead	NA	2,460	13,108	17,142	795	33,505
WCRST	Chinook Salmon	115,746	0	172,195	0	NA	287,941
WCRST	Coho Salmon	NA	5,757	570	2,392	NA	8,719
WCRST	Steelhead	NA	17,951	5,718	11,889	515	36,073

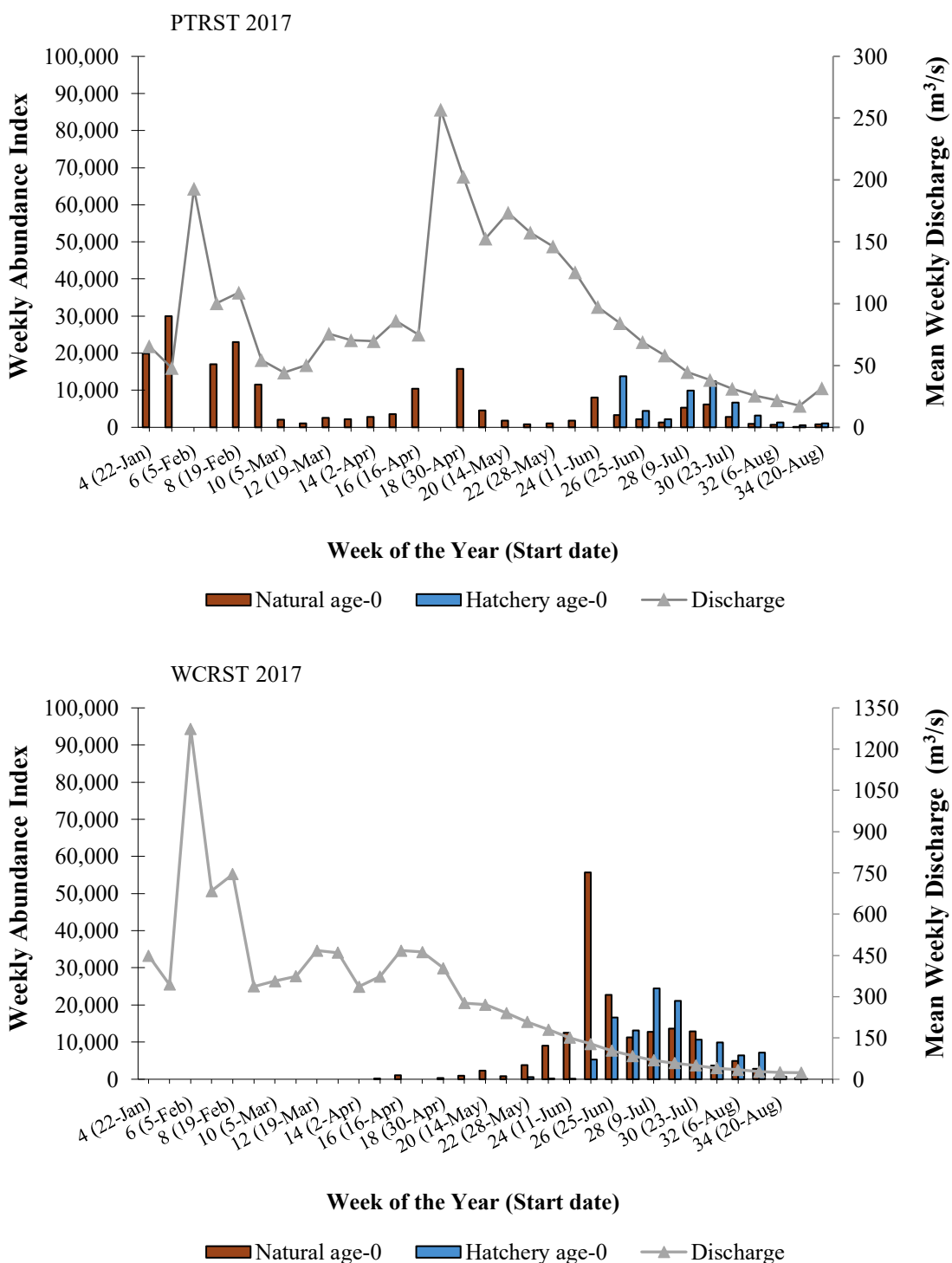


Figure 3. Weekly proportional discharge-based abundance indices for natural age-0 and hatchery age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34) in 2017.

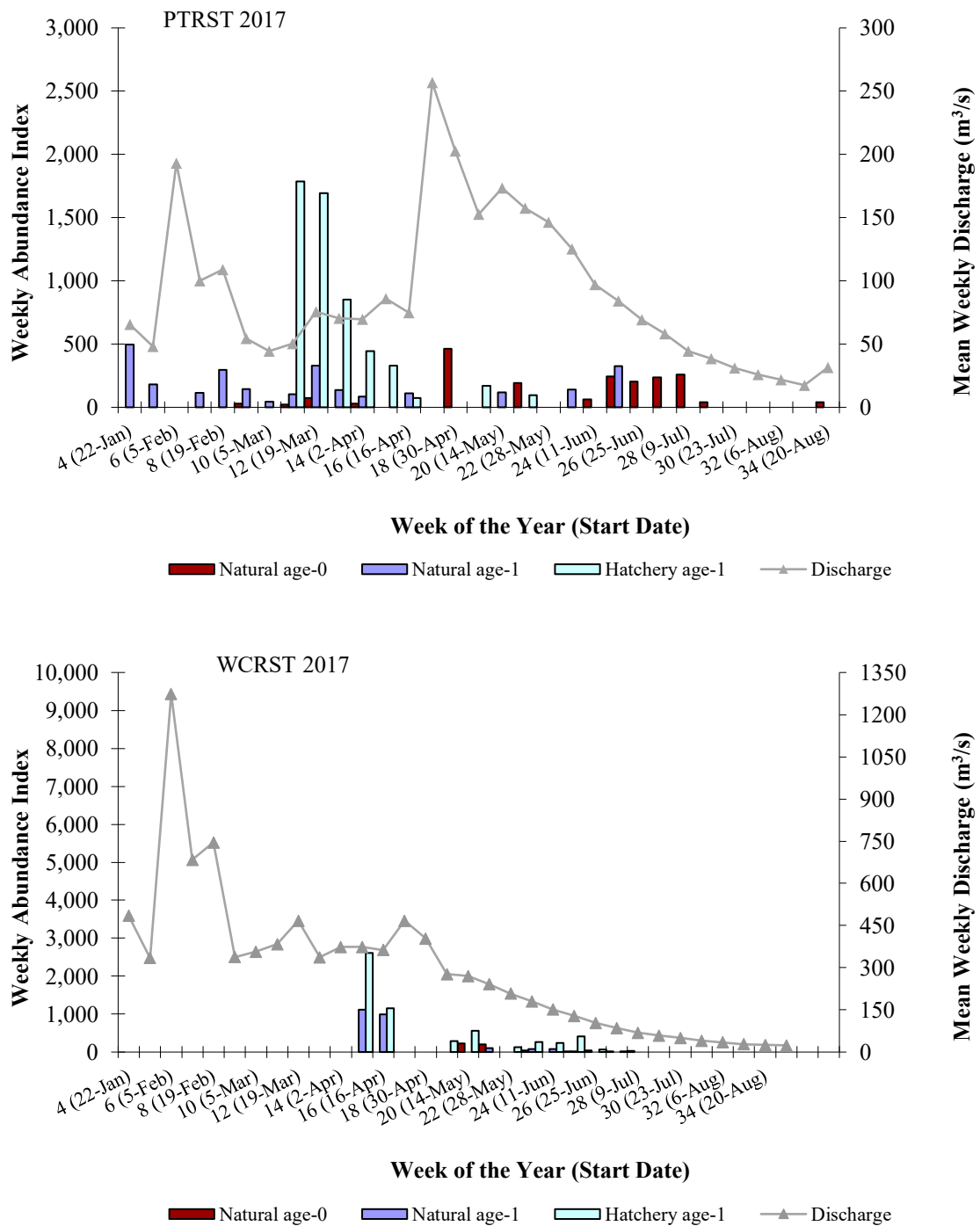


Figure 4. Weekly proportional discharge-based abundance indices for natural age-0, natural age-1, and hatchery age-1 Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST, rkm 118) and Willow Creek Rotary Screw Trap (WCRST, rkm 34) in 2017.

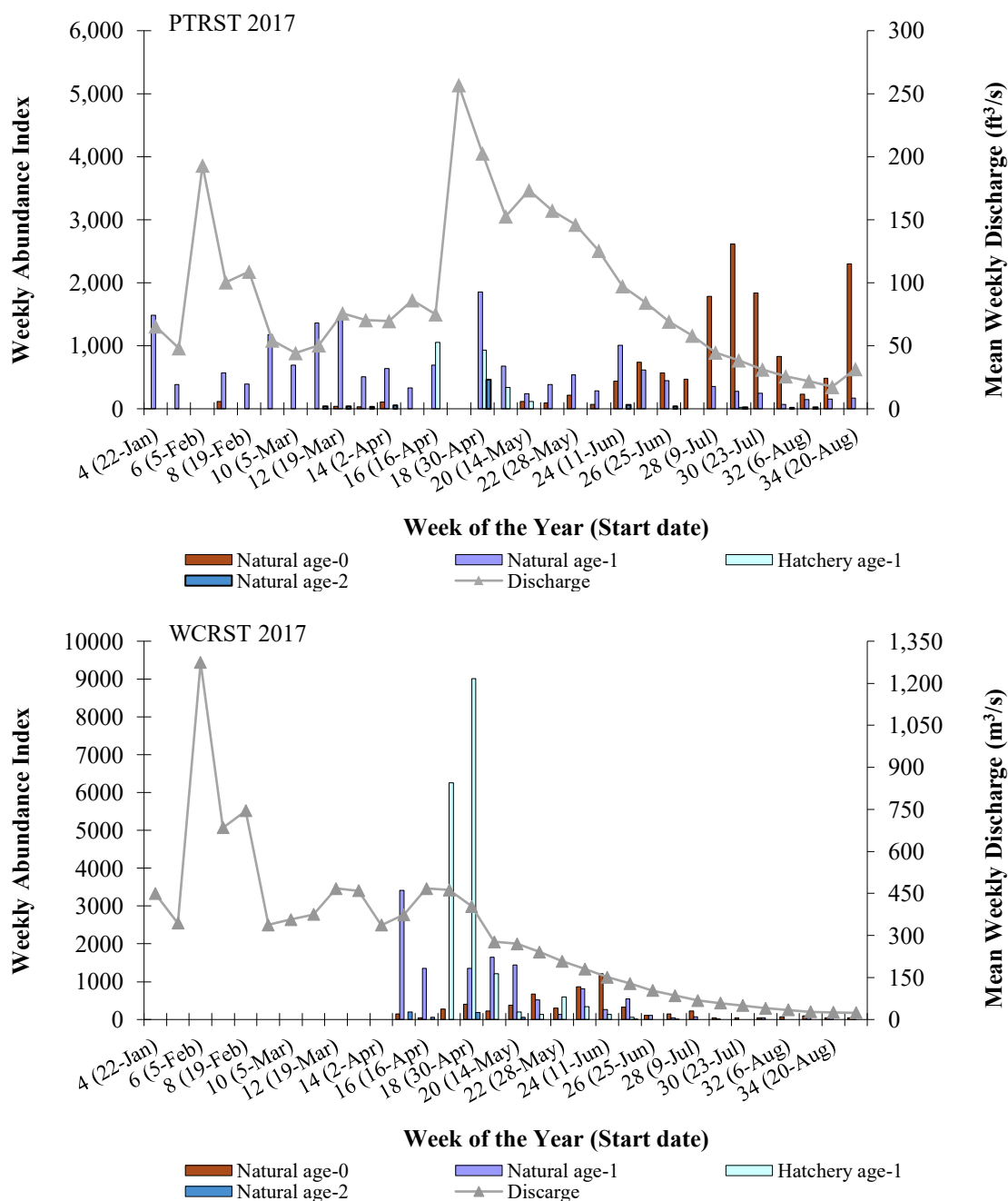


Figure 5. Weekly proportional discharge-based abundance indices for natural age-0, natural age-1, natural age-2, and hatchery age-1 steelhead captured at Pear Tree Rotary Screw Trap (PTRST, rkm 118) and Willow Creek Rotary Screw Trap (WCRST, rkm 34) in 2017.

Hatchery/Natural Contribution

Chinook Salmon were captured at PTRST and WCRST throughout the 2017 sampling season with the spring/summer emigration dominated by naturally produced fish at PTRST, comprising 76.8% of the total proportional discharge-based Chinook Salmon abundance index. At WCRST, hatchery and natural Chinook Salmon were more proportional in abundance, with naturally produced fish comprising 60% of the index (Appendix 1, 2).

Age-1 Coho Salmon smolts were predominantly hatchery origin at PTRST and comprised 67.4% of the total age-1 proportional discharge-based index in 2017 (Appendix 3). At WCRST, age-1 Coho Salmon emigrants of hatchery origin comprised 66.1% of the total age-1 proportional discharge-based index in 2017 (Appendix 4).

Based on proportional discharge-based abundance indices at PTRST and WCRST, age-1 hatchery steelhead comprised 12.5% (Appendix 5) and 60.2% (Appendix 6), respectively, of the total age-1 steelhead abundance indices at each respective site.

Chinook Salmon Population Estimation

During the 2017 sampling season, freeze-branded and photonically-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 1,024,260 (95% Credible Interval (CI): [598,556, 1,698,668]) naturally produced age-0 Chinook Salmon and 252,570 (95% CI: [118,661, 421,047]) age-0 hatchery Chinook Salmon passed the site between January 22 and August 27. At WCRST between April 9 and September 3, an estimated 807,106 (95% CI: [637,137, 1,021,849]) naturally produced age-0 Chinook Salmon and 636,108 (95% CI: [388,945, 969,416]) 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 29 (July 16 – July 22), which occurred after the TRRP management target date of July 4 (TRRP and ESSA 2009).

Based on proportional discharge-based abundance indices, natural age-0 Chinook Salmon emigration peaked during WOY 5 at PTRST and WOY 25 at WCRST. Hatchery age-0 Chinook Salmon emigration peaked in WOY 25 at PTRST and WOY 28 at WCRST.

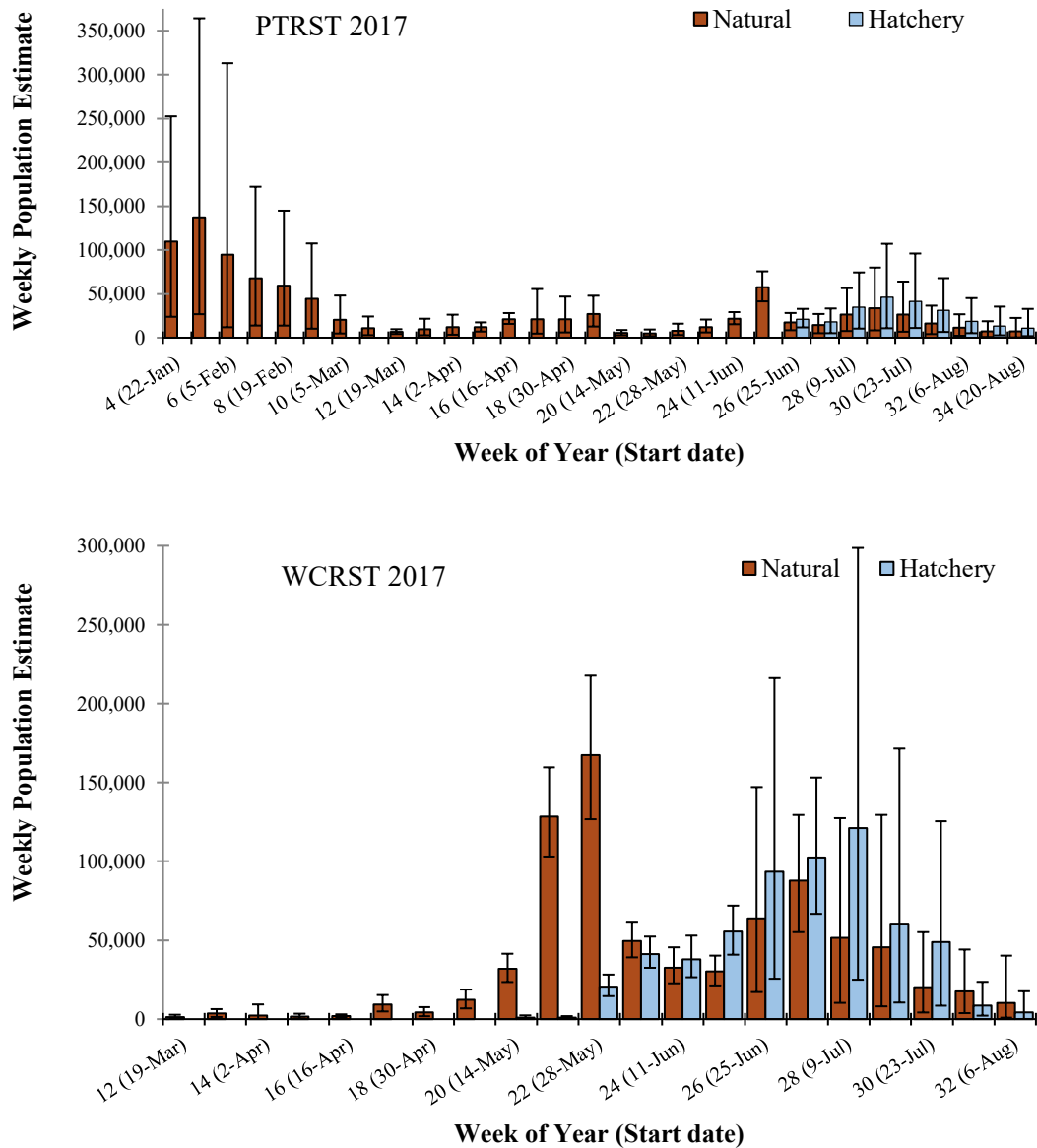


Figure 6. Weekly mark-recapture population estimates of natural age-0 and hatchery age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34) in 2017. Error bars represent the 95% credible interval of the weekly estimate.

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), 2017. 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	4-34	NA	25-34	5	NA	25
PTRST	Coho Salmon	9-34	4-25	11-21	18	4	11
PTRST	Steelhead	7-34	4-34	16-29	29	18	16
WCRST	Chinook Salmon	15-35	NA	25-35	25	NA	28
WCRST	Coho Salmon	21-28	15-25	15-27	20	15	15
WCRST	Steelhead	15-35	15-35	18-28	25	15	19

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 into June (WOY 25) at PTRST, and WCRST (WOY 25). Trapping at WCRST was delayed by high flows until early April and potentially missed a large pulse of hatchery Coho Salmon (Table 7; Appendix 4). 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 24 (June 11–17). Natural age-1 Coho Salmon emigration peaked in WOY 4 at PTRST and WOY 15 at WCRST. Hatchery Coho Salmon emigration peaked in WOY 11 at PTRST and WOY 15 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 25 (June 18 – June 24). Natural age-0 steelhead emigration peaked in WOY 29 at PTRST and WOY 25 at WCRST. Natural age-1 steelhead emigration peaked in WOY 10 at PTRST and WOY 25 at WCRST. Hatchery steelhead emigration peaked in WOY 16 at PTRST and WOY 19 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 length at PTRST was static from week 4 through week 8, apparently due to continued fry emergence, then increased through the remainder of the season (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 were not captured at PTRST or WCRST in 2017.

Natural age-0 Coho Salmon fork lengths generally increased as the season progressed at PTRST. Natural age-0 Coho Salmon fork lengths did not follow an obvious trend at WCRST, presumably due to small sample size (Appendix 9, 10). Hatchery age-1 Coho Salmon fork lengths showed no weekly or seasonal trend at either trapping site. Natural age-1 Coho Salmon fork lengths sampled at PTRST showed a seasonal increase but weekly means were quite variable. WCRST natural age-1 Coho Salmon showed no discernable seasonal trend, likely due to inadequate sample size.

Natural age-0 and age-1 steelhead fork lengths generally increased through the sampling season at PTRST (Figure 9; Appendix 11, 12). Age-2 steelhead fork lengths at PTRST remained relatively consistent throughout the season. At WCRST, age-0 steelhead fork lengths increased as the season progressed, age-1 steelhead showed a slight decrease in fork length in the middle of the season and increase at the end of the season, and age-2+ steelhead fork length 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, 2017.

Site	Species	Date first released	Date first captured	Number of days	Maximum migration rate (rkm/day)
PTRST	Chinook Salmon ¹	06/16/2017	06/20/2017 ¹	4	16
PTRST	Coho Salmon	03/16/2017	03/17/2017	1	64
PTRST	Steelhead	04/22/2017	04/26/2017	4	16
WCRST	Chinook Salmon	06/16/2017	06/21/2017	5	29
WCRST	Coho Salmon ²	03/16/2017	04/12/2017 ²	30	5
WCRST	Steelhead	04/26/2017	05/02/2017	3	49

¹Pear tree was not sampling on 6/18 and 6/19 and likely missed the first passing hatchery Chinook Salmon.

²Trapping started on 3/15 and likely missed the first hatchery Coho Salmon passing the site.

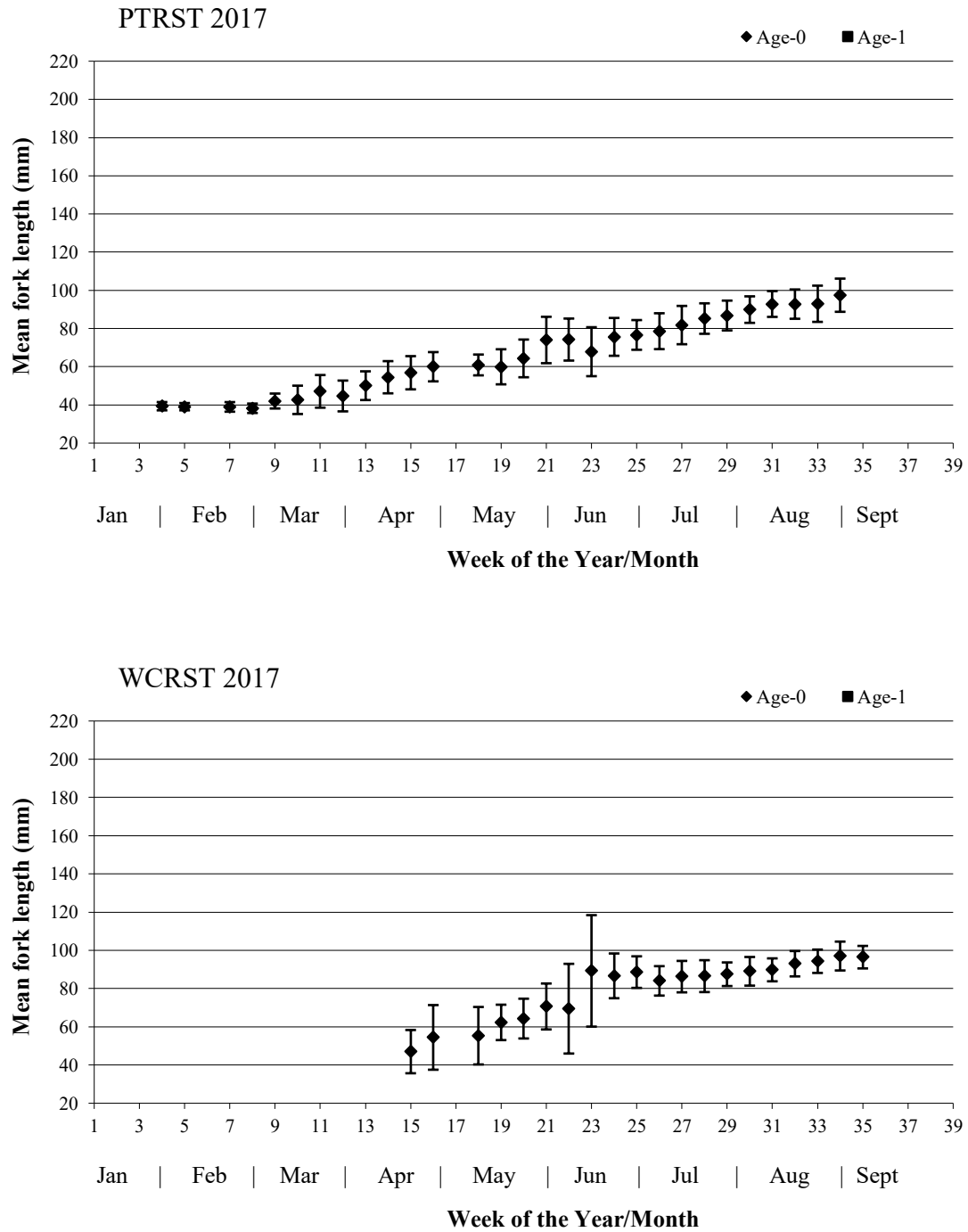


Figure 7. Weekly mean fork lengths of age-0 and age-1 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017. Error bars represent one standard deviation of the mean.

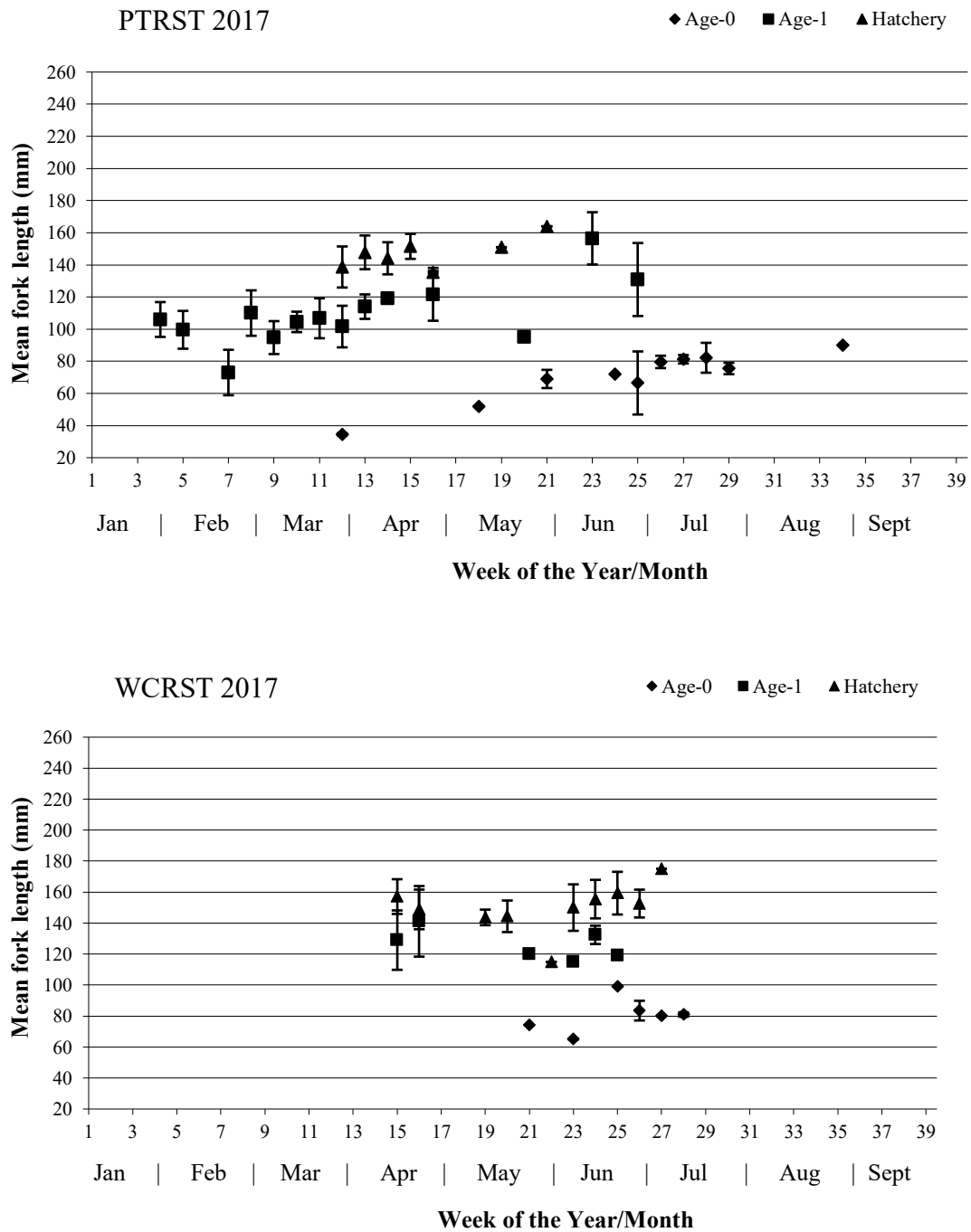


Figure 8. Weekly mean fork lengths for natural age-0, natural age-1, and hatchery Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017. Error bars represent one standard deviation of the mean.

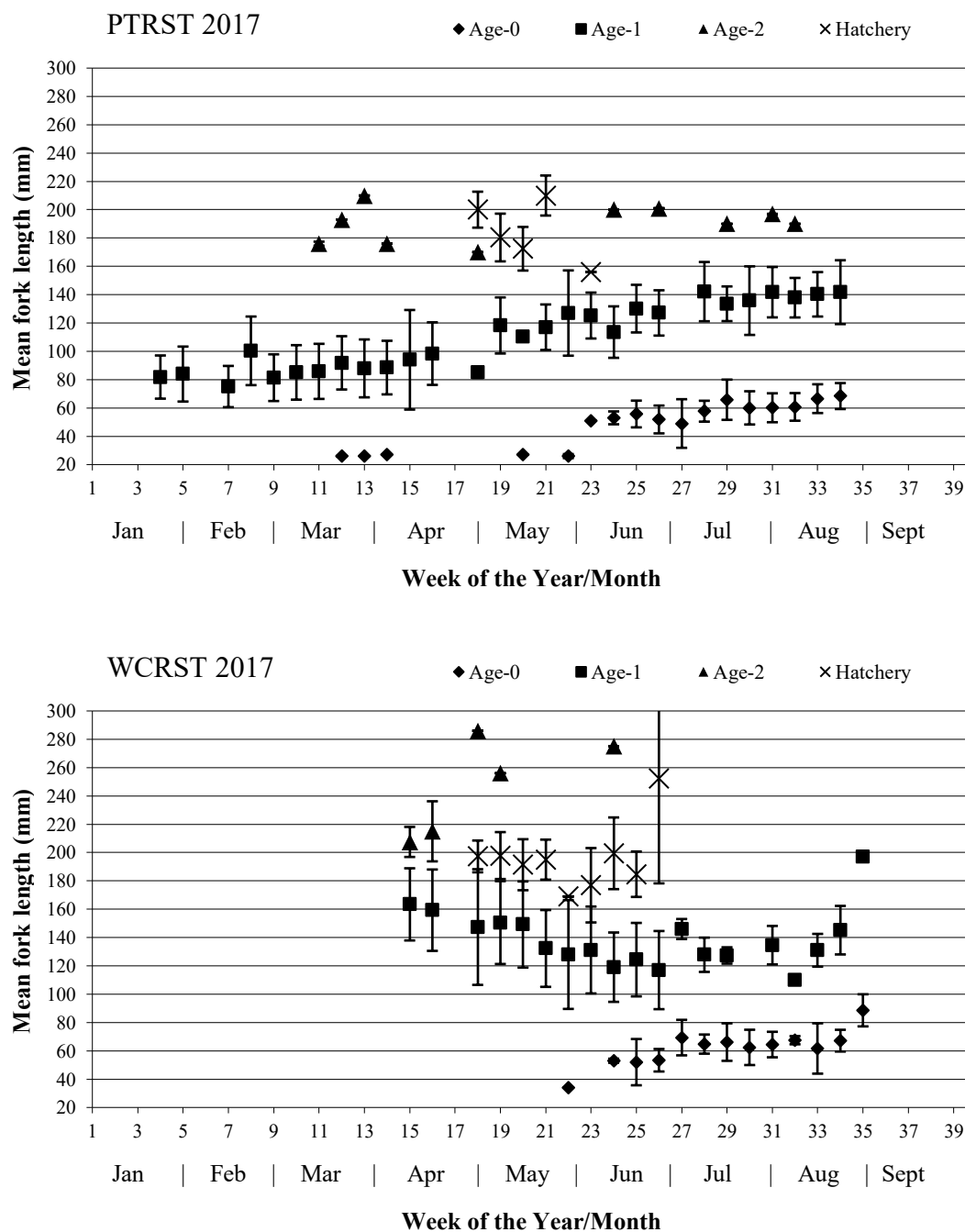


Figure 9. Weekly mean fork lengths for natural age-0, age-1, age-2, and hatchery age-1 steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017. Error bars represent one standard deviation of the mean.

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, age-1 natural Coho Salmon, and age 1+ natural steelhead. Due to the inability to determine the origin of unmarked individuals, clipped and non-clipped juvenile Chinook Salmon were pooled in weekly mean calculations.

Age-0 Chinook Salmon mean weekly condition factors were variable at the onset of sampling and showed no obvious seasonal trend at either site (Figure 10, Appendix 13). Age-1 natural Coho Salmon weekly mean condition factors were variable throughout the season at both PTRST and WCRST (Figure 11, Appendix 14), however, it should be noted that there were several weeks in which only one individual was captured at either site. Weekly mean condition factor of natural age-1+ steelhead showed no obvious trend at either PTRST or WCRST (Figure 12, Appendix 15).

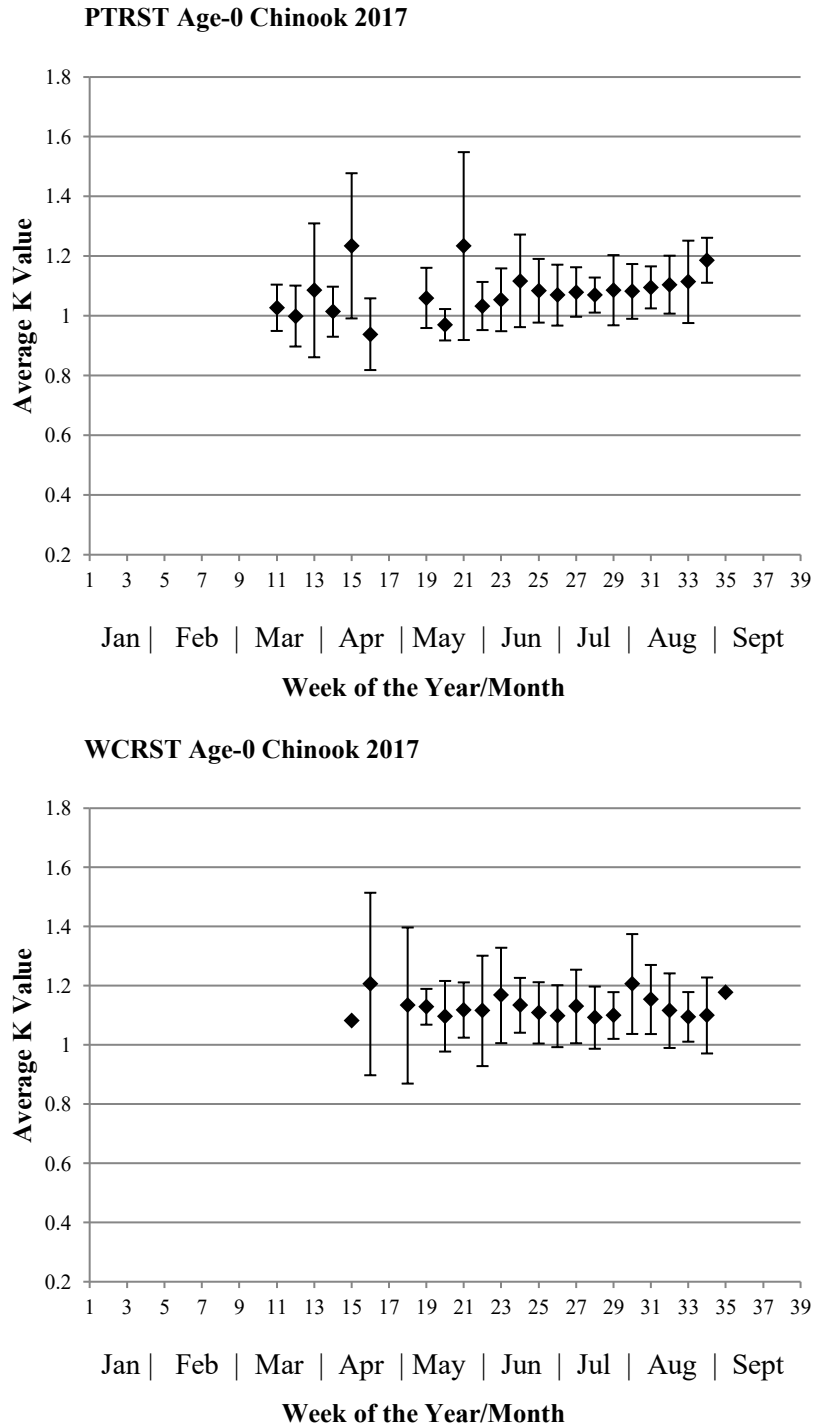


Figure 10. Weekly mean K value for pooled hatchery and natural age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017. Error bars represent one standard deviation of the mean.

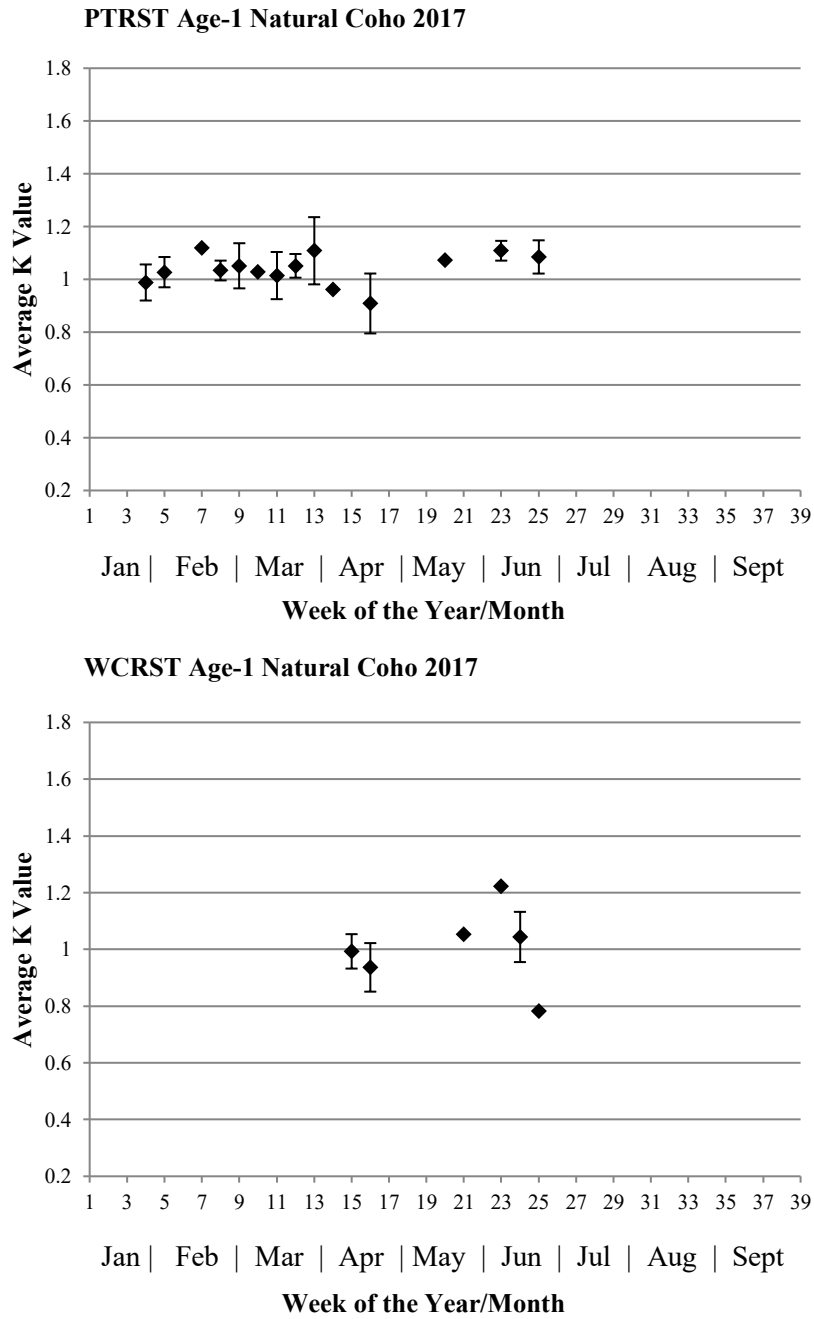


Figure 11. Weekly mean K value for natural age-1 Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017. Error bars represent one standard deviation of the mean.

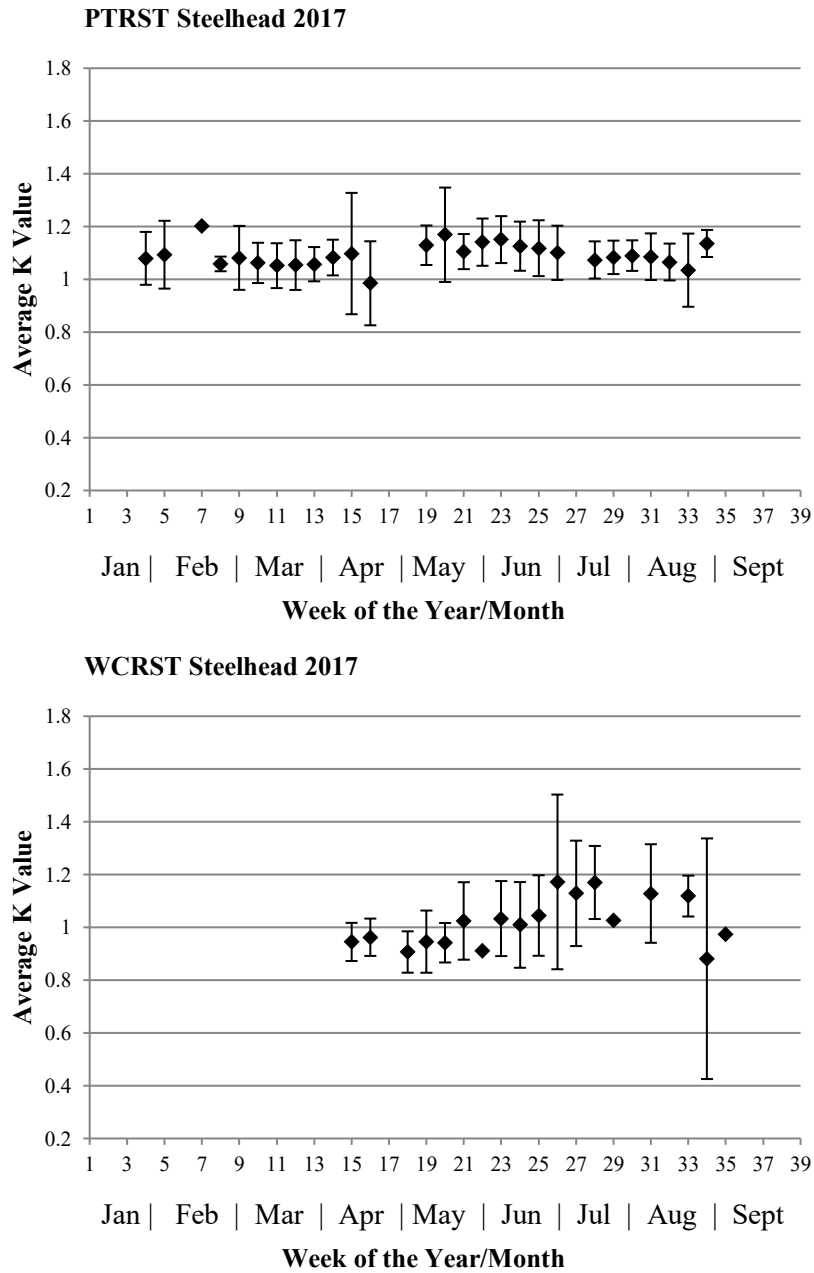


Figure 12. Weekly mean K value for natural age-1+ steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2017. Error bars represent one standard deviation of the mean.

References

- Harris, N., P. Petros, and W. D. Pinnix. 2012. Juvenile Salmonid Monitoring on the Mainstem Trinity River, California, 2009. Yurok Tribal Fisheries Program, Hoopa Valley Tribal Fisheries Department, U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata Fisheries Data Series Report Number DS 2012-27, Arcata, California.
- TRRP and ESSA (Trinity River Restoration Program and ESSA Technologies Ltd.). 2009. Integrated Assessment Plan, Version 1.0 – September 2009. Draft report prepared for the Trinity River Restoration Program, Weaverville, California. 285 p.
- United States Department of the Interior (USDOI). 2000. Record of Decision. Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report. December 2000. 43 p.

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, 2017. NC = no clip, AD = adipose fin clip.

Week Starting	Week of Year	Mean Daily Discharge m³/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	
1/22/2017	4	65.5	3	0	0	0	455	0	455	0	0	0	19,843	0	19,843
1/29/2017	5	48.1	4	0	0	0	1,164	0	1,164	0	0	0	30,016	0	30,016
2/5/2017	6	193.1	---	---	---	---	---	---	---	---	---	---	---	---	---
2/12/2017	7	100.2	5	0	0	0	300	0	300	0	0	0	17,062	0	17,062
2/19/2017	8	109.0	3	0	0	0	232	0	232	0	0	0	22,993	0	22,993
2/26/2017	9	54.3	5	0	0	0	403	0	403	0	0	0	11,546	0	11,546
3/5/2017	10	44.4	5	0	0	0	93	0	93	0	0	0	2,083	0	2,083
3/12/2017	11	50.2	5	0	0	0	53	0	53	0	0	0	1,113	0	1,113
3/19/2017	12	75.6	5	0	0	0	70	0	70	0	0	0	2,577	0	2,577
3/26/2017	13	70.4	5	0	0	0	65	0	65	0	0	0	2,213	0	2,213
4/2/2017	14	69.6	6	0	0	0	101	0	101	0	0	0	2,757	0	2,757
4/9/2017	15	86.1	5	0	0	0	85	0	85	0	0	0	3,514	0	3,514
4/16/2017	16	74.9	5	0	0	0	288	0	288	0	0	0	10,469	0	10,469
4/23/2017	17	256.7	---	---	---	---	---	---	---	---	---	---	---	---	---
4/30/2017	18	202.6	2	0	0	0	34	0	34	0	0	0	15,769	0	15,769
5/7/2017	19	152.6	3	0	0	0	27	0	27	0	0	0	4,575	0	4,575
5/14/2017	20	173.4	5	0	0	0	15	0	15	0	0	0	1,789	0	1,789
5/21/2017	21	157.4	5	0	0	0	8	0	8	0	0	0	767	0	767
5/28/2017	22	146.2	4	0	0	0	10	0	10	0	0	0	1,071	0	1,071
6/4/2017	23	125.4	5	0	0	0	26	0	26	0	0	0	1,840	0	1,840
6/11/2017	24	97.2	4	0	0	0	128	0	128	0	0	0	8,038	0	8,038
6/18/2017	25	84.2	5	253	83	0	80	0	416	10,324	3,390	0	3,276	0	16,990
6/25/2017	26	69.1	5	82	27	0	55	0	164	3,353	1,101	0	2,234	0	6,688
7/2/2017	27	58.2	3	27	9	0	23	0	59	1,614	530	0	1,328	0	3,472
7/9/2017	28	44.5	5	317	104	0	225	0	646	7,449	2,446	0	5,299	0	15,194
7/16/2017	29	38.5	5	475	156	0	315	0	946	9,352	3,071	0	6,198	0	18,621
7/23/2017	30	31.1	5	283	93	0	160	0	536	5,058	1,661	0	2,856	0	9,575
7/30/2017	31	25.8	5	143	47	0	56	0	246	2,372	779	0	928	0	4,079
8/6/2017	32	21.8	4	49	16	0	33	0	98	1,038	341	0	710	0	2,089
8/13/2017	33	17.5	4	24	8	0	5	0	37	475	156	0	89	0	720
8/20/2017	34	31.6	3	18	6	0	19	0	43	764	251	0	783	0	1,798
Totals			128	1,672	549	0	4,527	0	6,748	41,799	13,726	0	183,736	0	239,261

Appendix 2. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Chinook Salmon catches and abundance indices, 2017. 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	
4/9/2017	15	373.8	7	0	0	0	3	0	3	0	0	0	257	0	257
4/16/2017	16	362.5	7	0	0	0	12	0	12	0	0	0	1,041	0	1,041
4/23/2017	17	467.2	---	---	---	---	---	---	---	---	---	---	---	---	---
4/30/2017	18	403.5	6	0	0	0	3	0	3	0	0	0	280	0	280
5/7/2017	19	277.1	11	0	0	0	12	0	12	0	0	0	898	0	898
5/14/2017	20	270.7	8	0	0	0	30	0	30	0	0	0	2,259	0	2,259
5/21/2017	21	241.1	5	0	0	0	10	0	10	0	0	0	812	0	812
5/28/2017	22	207.7	3	0	0	0	33	0	33	0	0	0	3,869	0	3,869
6/4/2017	23	180.4	8	0	0	0	245	0	245	0	0	0	9,021	0	9,021
6/11/2017	24	151.4	15	0	0	0	899	0	899	0	0	0	12,571	0	12,571
6/18/2017	25	128.4	18	295	97	0	3,723	0	4,115	3,587	1,754	0	55,752	0	61,093
6/25/2017	26	103.8	12	859	282	0	1,386	0	2,527	11,150	5,451	0	22,724	0	39,325
7/2/2017	27	85.0	9	512	168	0	589	0	1,269	8,825	4,314	0	11,265	0	24,404
7/9/2017	28	68.2	12	1,331	437	0	934	0	2,702	16,413	8,024	0	12,829	0	37,266
7/16/2017	29	58.6	12	1,166	383	0	1,046	0	2,595	14,214	6,949	0	13,633	0	34,796
7/23/2017	30	49.8	12	737	242	0	1,182	0	2,161	7,186	3,514	0	12,831	0	23,531
7/30/2017	31	40.4	12	1,157	380	0	581	0	2,118	6,683	3,268	0	3,654	0	13,605
8/6/2017	32	34.4	12	451	148	0	446	0	1,045	4,322	2,113	0	4,870	0	11,305
8/13/2017	33	27.7	12	542	178	0	288	0	1,008	4,794	2,344	0	2,854	0	9,992
8/20/2017	34	25.4	10	70	23	0	219	0	312	454	222	0	425	0	1,101
8/27/2017	35	23.8	9	9	3	0	37	0	49	111	54	0	350	0	515
Totals			200	7,129	2,341	0	11,678	0	21,148	77,739	38,007	0	172,195	0	287,941

Appendix 3. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Coho Salmon catches and abundance indices, 2017.
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
1/22/2017	4	65.5	3	0	0	13	13	0	0	496	496
1/29/2017	5	48.1	4	0	0	7	7	0	0	181	181
2/5/2017	6	193.1	0	---	---	---	---	---	---	---	---
2/12/2017	7	100.2	5	0	0	2	2	0	0	114	114
2/19/2017	8	109.0	3	0	0	3	3	0	0	297	297
2/26/2017	9	54.3	5	0	1	5	6	0	29	143	172
3/5/2017	10	44.4	5	0	0	2	2	0	0	45	45
3/12/2017	11	50.2	5	85	1	5	91	1,785	21	105	1,911
3/19/2017	12	75.6	5	46	2	9	57	1,694	74	331	2,099
3/26/2017	13	70.4	5	25	0	4	29	851	0	136	987
4/2/2017	14	69.6	6	18	1	2	21	446	28	84	558
4/9/2017	15	86.1	5	8	0	0	8	331	0	0	331
4/16/2017	16	74.9	5	2	0	3	5	73	0	109	182
4/23/2017	17	256.7	0	---	---	---	---	---	---	---	---
4/30/2017	18	202.6	2	0	1	0	1	0	464	0	464
5/7/2017	19	152.6	3	1	0	0	1	169	0	0	169
5/14/2017	20	173.4	5	0	0	1	1	0	0	119	119
5/21/2017	21	157.4	5	1	2	0	3	96	192	0	288
5/28/2017	22	146.2	4	0	0	0	0	0	0	0	0
6/4/2017	23	125.4	5	0	0	2	2	0	0	142	142
6/11/2017	24	97.2	4	0	1	0	1	0	63	0	63
6/18/2017	25	84.2	5	0	6	8	14	0	245	327	572
6/25/2017	26	69.1	5	0	5	0	5	0	204	0	204
7/2/2017	27	58.2	3	0	4	0	4	0	235	0	235
7/9/2017	28	44.5	5	0	11	0	11	0	259	0	259
7/16/2017	29	38.5	5	0	2	0	2	0	39	0	39
7/23/2017	30	31.1	5	0	0	0	0	0	0	0	0
7/30/2017	31	25.8	5	0	0	0	0	0	0	0	0
8/6/2017	32	21.8	4	0	0	0	0	0	0	0	0
8/13/2017	33	17.5	4	0	0	0	0	0	0	0	0
8/20/2017	34	31.6	3	0	1	0	1	0	42	0	42
Total			128	186	38	66	290	5,445	1,895	2,629	9,969

Appendix 4. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Coho Salmon catches and abundance indices, 2017. 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
4/9/2017	15	373.8	7	27	0	13	40	2,611	0	1,115	3,726
4/16/2017	16	362.5	7	22	0	8	30	1,153	0	998	2,151
4/23/2017	17	467.2	---	---	---	---	0	---	---	---	---
4/30/2017	18	403.5	6	0	0	0	0	0	0	0	0
5/7/2017	19	277.1	11	4	0	0	4	294	0	0	294
5/14/2017	20	270.7	8	8	0	0	8	564	229	0	793
5/21/2017	21	241.1	5	0	2	1	3	0	200	100	300
5/28/2017	22	207.7	3	1	0	0	1	131	0	0	131
6/4/2017	23	180.4	8	7	1	2	10	266	39	77	382
6/11/2017	24	151.4	15	17	0	6	23	238	0	81	319
6/18/2017	25	128.4	18	26	1	1	28	413	14	21	448
6/25/2017	26	103.8	12	5	2	0	7	68	39	0	107
7/2/2017	27	85.0	9	1	1	0	2	19	21	0	40
7/9/2017	28	68.2	12	0	2	0	2	0	28	0	28
7/16/2017	29	58.6	12	0	0	0	0	0	0	0	0
7/23/2017	30	49.8	12	0	0	0	0	0	0	0	0
7/30/2017	31	40.4	12	0	0	0	0	0	0	0	0
8/6/2017	32	34.4	12	0	0	0	0	0	0	0	0
8/13/2017	33	27.7	12	0	0	0	0	0	0	0	0
8/20/2017	34	25.4	10	0	0	0	0	0	0	0	0
8/27/2017	35	23.8	9	0	0	0	0	0	0	0	0
Total			200	118	9	31	158	5,757	570	2,392	8,719

Appendix 5. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly steelhead catches and abundance indices, 2017AD = adipose fin clip.

Week Starting	Week of Year	Mean Daily Discharge m ³ /s	Trap Days Sampled	Weekly Steelhead Catch					Weekly Steelhead Index				
				Hatchery AD	Natural Age-0	Natural Age-1	Natural Age-2+	Catch Total	Hatchery AD	Natural Age-0	Natural Age-1	Natural Age-2+	Index Total
1/22/2017	4	65.5	3	0	0	36	0	36	0	0	1,488	0	1,488
1/29/2017	5	48.1	4	0	0	15	0	15	0	0	387	0	387
2/5/2017	6	193.1	0	---	---	---	---	---	---	---	---	---	---
2/12/2017	7	100.2	5	0	2	10	0	12	0	114	569	0	683
2/19/2017	8	109.0	3	0	0	4	0	4	0	0	396	0	396
2/26/2017	9	54.3	5	0	0	41	0	41	0	0	1,175	0	1,175
3/5/2017	10	44.4	5	0	0	31	0	31	0	0	694	0	694
3/12/2017	11	50.2	5	0	0	65	2	67	0	0	1,365	42	1,407
3/19/2017	12	75.6	5	0	1	39	1	41	0	37	1,436	37	1,510
3/26/2017	13	70.4	5	0	1	15	1	17	0	34	511	34	579
4/2/2017	14	69.6	6	0	3	18	1	22	0	111	641	56	808
4/9/2017	15	86.1	5	0	0	8	0	8	0	0	331	0	331
4/16/2017	16	74.9	5	29	0	19	0	48	1,054	0	691	0	1,745
4/23/2017	17	256.7	0	---	---	---	---	---	---	---	---	---	---
4/30/2017	18	202.6	2	2	0	4	1	7	928	0	1,855	464	3,247
5/7/2017	19	152.6	3	2	0	4	0	6	339	0	678	0	1,017
5/14/2017	20	173.4	5	1	1	2	0	4	119	119	239	0	477
5/21/2017	21	157.4	5	0	1	4	0	5	0	96	384	0	480
5/28/2017	22	146.2	4	0	2	5	0	7	0	214	535	0	749
6/4/2017	23	125.4	5	0	1	4	0	5	0	71	283	0	354
6/11/2017	24	97.2	4	0	7	16	1	24	0	440	1,005	63	1,508
6/18/2017	25	84.2	5	0	18	15	0	33	0	735	613	0	1,348
6/25/2017	26	69.1	5	0	14	11	1	26	0	571	449	41	1,061
7/2/2017	27	58.2	3	0	8	0	0	8	0	471	0	0	471
7/9/2017	28	44.5	5	0	76	15	0	91	0	1,788	353	0	2,141
7/16/2017	29	38.5	5	1	133	14	1	149	20	2,618	276	20	2,934
7/23/2017	30	31.1	5	0	103	14	0	117	0	1,840	250	0	2,090
7/30/2017	31	25.8	5	0	50	4	1	55	0	829	66	17	912
8/6/2017	32	21.8	4	0	11	7	1	19	0	234	149	21	404
8/13/2017	33	17.5	4	0	25	8	0	33	0	486	156	0	642
8/20/2017	34	31.6	3	0	55	4	0	59	0	2,300	167	0	2,467
Total			128	35	512	432	11	990	2,460	13,108	17,142	795	33,505

Appendix 6. Trinity River at Willow Creek Rotary crew Trap site (WCRST) weekly steelhead catches and abundance indices, 2017.
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
4/9/2017	15	373.8	7	0	2	34	2	38	0	149	3,420	201	3,770
4/16/2017	16	362.5	7	0	1	13	2	16	0	47	1,353	53	1,453
4/23/2017	17	467.2	0	---	---	---	---	---	---	---	---	---	---
4/30/2017	18	403.5	6	43	3	10	1	57	6,253	280	1,351	189	8,073
5/7/2017	19	277.1	11	177	3	21	1	202	9,009	401	1,647	0	11,057
5/14/2017	20	270.7	8	17	4	24	0	45	1,206	229	1,444	58	2,937
5/21/2017	21	241.1	5	2	4	10	0	16	205	383	516	0	1,104
5/28/2017	22	207.7	3	1	5	4	0	10	133	677	135	0	945
6/4/2017	23	180.4	8	16	8	24	0	48	592	305	816	0	1,713
6/11/2017	24	151.4	15	28	75	89	1	193	343	868	260	0	1,471
6/18/2017	25	128.4	18	10	79	98	0	187	140	1,217	551	14	1,922
6/25/2017	26	103.8	12	3	21	17	0	41	56	326	105	0	487
7/2/2017	27	85.0	9	0	6	2	0	8	0	114	40	0	154
7/9/2017	28	68.2	12	1	11	6	0	18	14	154	70	0	238
7/16/2017	29	58.6	12	0	17	3	0	20	0	226	12	0	238
7/23/2017	30	49.8	12	0	4	0	0	4	0	44	0	0	44
7/30/2017	31	40.4	12	0	7	5	0	12	0	40	42	0	82
8/6/2017	32	34.4	12	0	4	1	0	5	0	44	0	0	44
8/13/2017	33	27.7	12	0	8	10	0	18	0	77	61	0	138
8/20/2017	34	25.4	10	0	12	5	0	17	0	95	58	0	153
8/27/2017	35	23.8	9	0	5	1	0	6	0	42	8	0	50
Total			200	298	279	377	7	961	17,951	5,718	11,889	515	36,073

Appendix 7. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly age-0 Chinook Salmon population estimate input and results, 2017. 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	95% CI		Estimated Hatchery	95% CI	
									Lower	Upper		Lower	Upper
1/22/2017	4	0.43	455	0	---	---	---	109,422	23,825	252,380	---	---	---
1/29/2017	5	0.57	1,164	0	---	---	---	136,973	26,796	364,208	---	---	---
2/5/2017	6	0.00	---	---	---	---	---	94,639	11,902	313,005	---	---	---
2/12/2017	7	0.71	300	0	2,871	39	0.01	67,908	13,852	172,137	---	---	---
2/19/2017	8	0.43	232	0	3,275	111	0.03	59,062	13,792	144,836	---	---	---
2/26/2017	9	0.71	403	0	1,920	88	0.05	44,196	10,301	107,481	---	---	---
3/5/2017	10	0.71	93	0	2,208	144	0.07	20,160	4,825	48,073	---	---	---
3/12/2017	11	0.71	53	0	2,121	131	0.06	10,897	2,901	24,184	---	---	---
3/19/2017	12	0.71	70	0	2,009	34	0.02	6,602	4,231	9,702	---	---	---
3/26/2017	13	0.71	65	0	1,746	69	0.04	9,624	2,810	21,644	---	---	---
4/2/2017	14	0.86	101	0	1,967	128	0.07	11,992	3,414	26,259	---	---	---
4/9/2017	15	0.71	85	0	1,739	20	0.01	11,756	6,991	17,488	---	---	---
4/16/2017	16	0.71	288	0	2,505	48	0.02	21,287	15,741	28,077	---	---	---
4/23/2017	17	0.00	---	---	---	---	---	21,001	4,661	55,503	---	---	---
4/30/2017	18	0.29	34	0	---	---	---	20,949	6,027	46,889	---	---	---
5/7/2017	19	0.43	27	0	5,150	4	0.00	26,964	12,745	47,898	---	---	---
5/14/2017	20	0.71	15	0	4,370	23	0.01	5,450	2,773	8,777	---	---	---
5/21/2017	21	0.71	8	0	2,568	6	0.00	4,976	1,806	9,380	---	---	---
5/28/2017	22	0.57	10	0	2,016	2	0.00	7,917	3,043	16,022	---	---	---
6/4/2017	23	0.71	26	0	2,707	7	0.00	12,209	6,011	20,719	---	---	---
6/11/2017	24	0.57	128	0	4,279	46	0.01	21,750	15,364	29,172	---	---	---
6/18/2017	25	0.71	416	83	4,281	39	0.01	57,439	41,417	75,690	---	---	---
6/25/2017	26	0.71	164	27	2,855	23	0.01	17,319	8,538	28,179	20,843	11,761	32,879
7/2/2017	27	0.43	59	9	2,396	15	0.01	14,358	5,131	27,028	18,273	5,161	33,304
7/9/2017	28	0.71	646	104	1,526	50	0.03	26,684	7,619	56,449	34,816	10,387	74,414
7/16/2017	29	0.71	946	156	977	37	0.04	33,401	8,419	79,948	46,079	10,777	107,077
7/23/2017	30	0.71	536	93	1,107	31	0.03	26,637	6,819	63,959	41,423	11,075	95,993
7/30/2017	31	0.71	246	47	817	40	0.05	16,196	4,087	36,551	31,016	6,566	67,889
8/6/2017	32	0.57	98	16	1,100	45	0.04	11,188	2,206	26,705	18,422	5,134	45,175
8/13/2017	33	0.57	37	8	839	39	0.05	7,142	816	18,764	13,262	2,731	35,450
8/20/2017	34	0.43	43	6	---	---	---	7,393	342	22,550	10,917	1,784	32,828
Totals			6,748	549	59,349	1,219	0.02	1,024,260	598,557	1,698,668	252,570	118,661	421,047

¹Fraction 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, 2017. 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	95% CI		Estimated Hatchery	95% CI	
									Lower	Upper		Lower	Upper
4/9/2017	15	0.57	3	---	2,933	19	0.01	1,345	284	2,797	---	---	---
4/16/2017	16	0.57	12	---	4,063	19	0.00	3,566	1,372	6,352	---	---	---
4/23/2017	17	---	---	---	---	---	---	2,374	103	9,337	---	---	---
4/30/2017	18	0.57	3	---	4,932	17	0.00	1,598	421	3,469	---	---	---
5/7/2017	19	0.71	12	---	3,388	36	0.01	1,809	866	3,049	---	---	---
5/14/2017	20	0.57	30	---	3,735	16	0.00	9,419	4,885	15,304	---	---	---
5/21/2017	21	0.71	10	---	4,032	16	0.00	4,211	1,855	7,619	---	---	---
5/28/2017	22	0.43	32	1	3,769	22	0.01	12,160	6,801	18,772	---	---	---
6/4/2017	23	0.57	244	1	4,297	58	0.01	31,859	23,529	41,466	963	119	2,406
6/11/2017	24	0.71	2,454	2	2,770	77	0.03	128,344	103,063	159,612	975	239	1,917
6/18/2017	25	0.86	3,330	95	2,343	47	0.02	167,343	126,725	217,683	20,615	14,588	28,233
6/25/2017	26	0.57	2,175	276	1,813	87	0.05	49,720	39,149	61,744	41,376	32,544	52,349
7/2/2017	27	0.43	1,087	167	884	39	0.04	32,541	22,718	45,528	38,023	26,559	52,960
7/9/2017	28	0.57	2,247	427	864	50	0.06	30,281	21,372	40,278	55,385	40,859	71,946
7/16/2017	29	0.57	2,201	378	1,506	104	0.07	63,909	17,180	147,111	93,326	25,607	216,126
7/23/2017	30	0.57	2,218	340	884	21	0.02	87,684	55,156	129,438	102,438	66,756	153,136
7/30/2017	31	0.57	1,700	356	563	48	0.09	51,603	10,336	127,407	121,184	24,998	298,633
8/6/2017	32	0.57	897	145	429	77	0.18	45,686	8,103	129,469	60,506	10,542	171,482
8/13/2017	33	0.57	836	176	---	---	---	20,327	4,224	55,159	48,989	8,537	125,465
8/20/2017	34	0.71	258	22	85	2	0.02	17,488	3,824	44,142	8,663	2,211	23,651
8/27/2017	35	0.71	46	3	46	2	0.04	10,278	941	40,259	4,138	107	17,697
Total			19,795	2,389	43,336	757	0.02	807,106	637,137	1,021,849	636,108	388,945	969,415

¹Fraction 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, 2017.

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
1/22/2017	4	90	39.3	36	48	2.18	0	---	---	---	---	0	---	---	---	---	13	106.0	90	128	10.84	0	---	---	---	---
1/29/2017	5	120	39.1	31	45	1.91	0	---	---	---	---	0	---	---	---	---	7	99.6	81	117	11.76	0	---	---	---	---
2/5/2017	6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/12/2017	7	139	39.0	33	53	2.51	0	---	---	---	---	0	---	---	---	---	2	73.0	63	83	14.14	0	---	---	---	---
2/19/2017	8	90	38.2	27	43	2.47	0	---	---	---	---	0	---	---	---	---	2	110.0	100	120	14.14	0	---	---	---	---
2/26/2017	9	115	42.0	35	55	3.91	0	---	---	---	---	0	---	---	---	---	4	94.8	80	103	10.24	0	---	---	---	---
3/5/2017	10	52	42.7	34	66	7.43	0	---	---	---	---	0	---	---	---	---	2	104.5	100	109	6.36	0	---	---	---	---
3/12/2017	11	29	47.1	27	65	8.55	0	---	---	---	---	0	---	---	---	---	4	106.8	98	125	12.42	0	---	---	---	---
3/19/2017	12	60	44.7	34	70	8.06	0	---	---	---	---	2	34.5	34.0	35.0	0.71	5	101.6	80	111	12.95	44	138.7	110.0	165.0	12.8
3/26/2017	13	59	50.1	35	74	7.52	0	---	---	---	---	0	---	---	---	---	4	114.0	104	122	7.62	25	147.8	123.0	173.0	10.5
4/2/2017	14	65	54.5	40	73	8.43	0	---	---	---	---	0	---	---	---	---	1	119.0	119	119	---	13	144.1	132	163	10.00
4/9/2017	15	68	56.9	37	73	8.69	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	6	151.5	141	160	7.77
4/16/2017	16	147	60.0	39	81	7.66	0	---	---	---	---	0	---	---	---	---	3	121.7	103	134	16.44	2	135.5	135	136	0.71
4/23/2017	17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/30/2017	18	15	60.9	53	75	5.44	0	---	---	---	---	1	52.0	52	52.0	---	0	---	---	---	---	0	---	---	---	---
5/7/2017	19	27	60.0	48	83	9.18	0	---	---	---	---	0	---	---	---	---	0	0.0	0	0	0.00	1	151.0	151	151	---
5/14/2017	20	11	64.4	46	79	9.87	0	---	---	---	---	0	---	---	---	---	1	95.0	95	95	---	0	---	---	---	---
5/21/2017	21	6	74.0	55	90	12.15	0	---	---	---	---	2	69.0	65	73.0	5.66	0	---	---	---	---	1	164.0	164.0	164.0	---
5/28/2017	22	9	74.2	54	90	11.01	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
6/4/2017	23	24	67.9	34	78	12.82	0	---	---	---	---	0	---	---	---	---	2	156.5	145	168	16.26	0	---	---	---	---
6/11/2017	24	81	75.6	38	100	9.90	0	---	---	---	---	1	72.0	72	72.0	---	0	0.0	0	0	0.00	0	---	---	---	---
6/18/2017	25	233	76.7	45	95	7.77	0	---	---	---	---	6	66.5	38	86.0	19.63	8	130.9	106	173	22.71	0	---	---	---	---
6/25/2017	26	159	78.6	54	110	9.39	0	---	---	---	---	5	79.6	74	84.0	3.85	0	---	---	---	---	0	---	---	---	---
7/2/2017	27	53	81.8	51	97	10.03	0	---	---	---	---	4	81.3	79	85.0	2.63	0	---	---	---	---	0	---	---	---	---
7/9/2017	28	251	85.2	39	103	7.98	0	---	---	---	---	11	82.2	61	93.0	9.31	0	---	---	---	---	0	---	---	---	---
7/16/2017	29	236	86.8	65	109	7.81	0	---	---	---	---	2	75.5	73	78.0	3.54	0	---	---	---	---	0	---	---	---	---
7/23/2017	30	240	89.9	60	107	6.94	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/30/2017	31	195	92.9	72	111	6.75	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/6/2017	32	97	92.8	67	107	7.67	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/13/2017	33	37	93.0	55	112	9.49	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/20/2017	34	42	97.5	77	120	8.69	0	---	---	---	---	1	90.0	90	90.0	---	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, 2017.

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
4/9/2017	15	2	47.0	39	55	11.31	0	---	---	---	---	0	---	---	---	---	13	129	86	155	19.16	27	157.1	139	189	11.2
4/16/2017	16	11	54.5	37	94	16.91	0	---	---	---	---	0	---	---	---	---	8	141.13	99	164	22.79	22	148.8	131	188	12.7
4/23/2017	17	---	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
4/30/2017	18	3	55.3	38	65	15.04	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
5/7/2017	19	10	62.3	48	79	9.26	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	3	143.7	139	149	5.0
5/14/2017	20	28	64.3	45	86	10.40	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	8	144.4	130	156	10.1
5/21/2017	21	8	70.6	51	82	12.02	0	---	---	---	---	2	74	74	75	---	1	120	120	120	0	0	---	---	---	---
5/28/2017	22	30	69.5	30	125	23.47	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	1	115.0	115	115	0.0
6/4/2017	23	143	89.3	36	196	29.16	0	---	---	---	---	1	65	65	65	---	1	115	115	115	0	3	150.0	135	165	15.0
6/11/2017	24	329	86.7	50	113	11.71	0	---	---	---	---	0	---	---	---	---	5	132.4	126	141	5.94	17	155.5	140	181	12.4
6/18/2017	25	515	88.6	42	119	8.26	0	---	---	---	---	1	99	99	99	0	1	119	119	119	0	26	159.3	122	189	13.7
6/25/2017	26	360	84.0	57	118	7.70	0	---	---	---	---	2	83.5	79	88	6.36	0	---	---	---	---	5	152.6	141	166	8.9
7/2/2017	27	270	86.3	40	110	8.22	0	---	---	---	---	1	80	80	80	0	0	---	---	---	---	1	175.0	175	175	---
7/9/2017	28	360	86.5	38	107	8.34	0	---	---	---	---	2	81	80	82	1.41	0	---	---	---	---	0	---	---	---	---
7/16/2017	29	330	87.5	62	110	6.18	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/23/2017	30	327	89.0	55	108	7.49	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/30/2017	31	360	89.8	70	110	6.00	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/6/2017	32	346	93.0	70	111	6.64	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/13/2017	33	320	94.3	77	120	6.11	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/20/2017	34	104	97.0	76	130	7.55	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/27/2017	35	46	96.4	87	110	5.89	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---

¹Natural and Hatchery combined.

Appendix 11: Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly steelhead fork lengths, 2017.

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
1/22/2017	4	0	---	---	---	---	36	81.8	55	131	15.25	0	---	---	---	---	0	---	---	---	---
1/29/2017	5	0	---	---	---	---	15	83.9	51	120	19.41	0	---	---	---	---	0	---	---	---	---
2/5/2017	6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/12/2017	7	0	---	---	---	---	10	75.1	55	101	14.57	0	---	---	---	---	0	---	---	---	---
2/19/2017	8	0	---	---	---	---	3	100.3	83	128	24.21	0	---	---	---	---	0	---	---	---	---
2/26/2017	9	0	---	---	---	---	40	81.4	57	125	16.50	0	---	---	---	---	0	---	---	---	---
3/5/2017	10	0	---	---	---	---	31	85.1	61	148	19.24	0	---	---	---	---	0	---	---	---	---
3/12/2017	11	0	---	---	---	---	62	85.8	50	131	19.45	2	176.0	175	177	1.41	0	---	---	---	---
3/19/2017	12	1	26.0	26	26	---	37	91.8	70	145	18.82	1	193.0	193	193	---	0	---	---	---	---
3/26/2017	13	1	26.0	26	26	---	15	87.9	68	144	20.43	1	210.0	210	210	---	0	---	---	---	---
4/2/2017	14	1	27.0	27	27	---	14	88.5	63	125	18.94	1	176.0	176	176	---	0	---	---	---	---
4/9/2017	15	0	---	---	---	---	8	94.0	56	150	35.16	0	---	---	---	---	0	---	---	---	---
4/16/2017	16	0	---	---	---	---	19	98.4	63	139	22.09	0	---	---	---	---	0	---	---	---	---
4/23/2017	17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/30/2017	18	0	---	---	---	---	4	85.3	82	91	4.03	1	170.0	170	170	---	10	200.0	185	218	12.69
5/7/2017	19	0	---	---	---	---	4	118.3	95	140	19.81	0	---	---	---	---	107	180.3	118	210	16.84
5/14/2017	20	1	27.0	27	27	---	2	110.5	109	112	2.12	0	---	---	---	---	7	172.4	145	189	15.41
5/21/2017	21	0	---	---	---	---	4	117.0	107	141	16.06	0	---	---	---	---	2	210.0	200	220	14.14
5/28/2017	22	2	26.0	25	27	1.41	4	127	91	159	30.11	0	---	---	---	---	0	---	---	---	---
6/4/2017	23	1	51.0	51	51	---	4	125.3	111	148	16.21	0	---	---	---	---	1	156.0	156	156	---
6/11/2017	24	7	53.0	44	58	4.55	16	113.6	83	143	18.17	1	200.0	200	200	---	0	---	---	---	---
6/18/2017	25	18	55.7	27	70	9.44	15	130.1	85	150	16.82	0	---	---	---	---	0	---	---	---	---
6/25/2017	26	14	51.9	36	75	9.83	11	127.1	109	165	15.99	1	201.0	201	201	---	0	---	---	---	---
7/2/2017	27	7	49.0	13	65	17.17	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/9/2017	28	75	57.7	47	99	7.37	15	142.1	107	173	20.91	0	---	---	---	---	0	---	---	---	---
7/16/2017	29	123	65.8	40	98	14.22	14	133.6	115	150	12.25	1	190.0	190	190	---	0	---	---	---	---
7/23/2017	30	100	60.1	39	95	11.73	13	135.8	102	171	24.20	0	---	---	---	---	0	---	---	---	---
7/30/2017	31	50	60.1	37	97	10.22	4	141.8	127	167	17.80	1	197.0	197	197	---	0	---	---	---	---
8/6/2017	32	11	60.7	50	80	9.75	7	137.9	119	164	13.96	1	190.0	190	190	---	0	---	---	---	---
8/13/2017	33	25	66.6	48	95	10.16	8	140.3	122	171	15.69	0	---	---	---	---	0	---	---	---	---
8/20/2017	34	44	68.4	47	91	9.16	4	141.8	116	170	22.54	0	---	---	---	---	0	---	---	---	---

Appendix 12: Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly steelhead fork lengths, 2017.

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
4/9/2017	15	0	---	---	---	---	34	163.4	89	198	25.48	2	207.5	200	215	10.61	0	---	---	---	---
4/16/2017	16	0	---	---	---	---	13	159.3	108	200	28.73	2	215	200	230	21.21	0	---	---	---	---
4/23/2017	17	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
4/30/2017	18	0	---	---	---	---	10	147.4	85	200	40.85	1	286	286	286	---	42	197.3	168	226	11.21
5/7/2017	19	0	---	---	---	---	21	150.6	93	199	29.24	1	256	256	256	---	72	197.9	165	269	16.57
5/14/2017	20	0	---	---	---	---	24	149.2	76	206	30.42	0	---	---	---	---	17	191.4	163	226	18.00
5/21/2017	21	0	---	---	---	---	10	132.3	95	186	27.13	0	---	---	---	---	2	195.0	185	205	14.14
5/28/2017	22	1	34	34	34	---	4	128.0	105	185	38.42	0	---	---	---	---	1	169.0	169	169	---
6/4/2017	23	0	---	---	---	---	24	131.2	80	191	30.68	0	---	---	---	---	12	176.9	118	218	26.26
6/11/2017	24	4	53	52	55	1.41	89	119.1	90	194	24.49	1	275	275	275	---	27	199.5	150	295	25.31
6/18/2017	25	13	52	13	69	16.33	98	124.4	80	218	25.94	0	---	---	---	---	7	184.7	160	205	16.04
6/25/2017	26	9	53.3	44	66	7.94	17	117.0	89	181	27.59	0	---	---	---	---	2	252.5	200	305	74.25
7/2/2017	27	6	69.3	57	87	12.53	2	146.0	141	151	7.07	0	---	---	---	---	0	---	---	---	---
7/9/2017	28	8	64.8	58	77	6.76	6	127.8	110	145	12.11	0	---	---	---	---	0	---	---	---	---
7/16/2017	29	17	66.2	42	90	13.25	3	127.3	124	134	5.77	0	---	---	---	---	0	---	---	---	---
7/23/2017	30	7	62.4	37	75	12.46	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/30/2017	31	7	64.4	54	75	9.02	5	134.6	120	150	13.59	0	---	---	---	---	0	---	---	---	---
8/6/2017	32	4	67.5	65	70	2.89	1	110.0	110	110	---	0	---	---	---	---	0	---	---	---	---
8/13/2017	33	3	61.7	46	81	17.79	10	131.0	110	149	11.58	0	---	---	---	---	0	---	---	---	---
8/20/2017	34	11	67.2	48	75	7.68	5	145.2	130	174	17.14	0	---	---	---	---	0	---	---	---	---
8/27/2017	35	5	88.6	80	102	11.35	1	197.0	197	197	0.00	0	---	---	---	---	0	---	---	---	---

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, 2017.

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
1/22/2017	4	0	---	---	---	---	---
1/29/2017	5	0	---	---	---	---	---
2/5/2017	6	---	---	---	---	---	---
2/12/2017	7	0	---	---	---	---	---
2/19/2017	8	0	---	---	---	---	---
2/26/2017	9	0	---	---	---	---	---
3/5/2017	10	0	---	---	---	---	---
3/12/2017	11	2	1.03	0.078	---	---	---
3/19/2017	12	8	1.00	0.102	---	---	---
3/26/2017	13	24	1.09	0.224	---	---	---
4/2/2017	14	33	1.01	0.084	---	---	---
4/9/2017	15	43	1.23	0.243	1	1.08	--
4/16/2017	16	99	0.94	0.120	7	1.21	0.308
4/23/2017	17	---	---	---	--	--	--
4/30/2017	18	---	---	---	2	1.13	0.264
5/7/2017	19	16	1.06	0.101	8	1.13	0.060
5/14/2017	20	9	0.97	0.053	24	1.10	0.119
5/21/2017	21	5	1.23	0.315	8	1.12	0.093
5/28/2017	22	8	1.03	0.081	25	1.12	0.187
6/4/2017	23	21	1.05	0.105	124	1.17	0.161
6/11/2017	24	80	1.12	0.155	326	1.13	0.093
6/18/2017	25	226	1.08	0.107	511	1.11	0.104
6/25/2017	26	157	1.07	0.102	359	1.10	0.105
7/2/2017	27	52	1.08	0.083	264	1.13	0.124
7/9/2017	28	250	1.07	0.059	358	1.09	0.105
7/16/2017	29	236	1.09	0.118	357	1.10	0.079
7/23/2017	30	240	1.08	0.092	331	1.21	0.169
7/30/2017	31	195	1.10	0.070	360	1.15	0.117
8/6/2017	32	97	1.10	0.097	344	1.12	0.126
8/13/2017	33	36	1.11	0.138	320	1.09	0.084
8/20/2017	34	42	1.19	0.075	104	1.10	0.128
8/27/2017	35	---	---	---	46	1.18	0.106

Appendix 14. Fulton's condition factor (K) for natural age-1 Coho Salmon from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2017.

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
1/22/2017	4	13	0.99	0.068	---	---	---
1/29/2017	5	7	1.03	0.057	---	---	---
2/5/2017	6	---	---	---	---	---	---
2/12/2017	7	1	1.12	---	---	---	---
2/19/2017	8	2	1.03	0.038	---	---	---
2/26/2017	9	4	1.05	0.086	---	---	---
3/5/2017	10	2	1.03	0.002	---	---	---
3/12/2017	11	4	1.01	0.089	---	---	---
3/19/2017	12	5	1.05	0.045	---	---	---
3/26/2017	13	4	1.11	0.127	---	---	---
4/2/2017	14	1	0.96	---	---	---	---
4/9/2017	15	0	---	---	13	1.01	0.065
4/16/2017	16	3	0.91	0.114	8	0.94	0.086
4/23/2017	17	---	---	---	0	---	---
4/30/2017	18	0	---	---	0	---	---
5/7/2017	19	0	---	---	0	---	---
5/14/2017	20	1	1.07	---	0	---	---
5/21/2017	21	0	---	---	1	1.05	---
5/28/2017	22	0	---	---	0	---	---
6/4/2017	23	2	1.11	0.037	2	1.22	---
6/11/2017	24	0	---	---	6	1.06	0.089
6/18/2017	25	8	1.08	0.063	1	0.78	---
6/25/2017	26	0	---	---	0	---	---
7/2/2017	27	0	---	---	0	---	---
7/9/2017	28	0	---	---	0	---	---
7/16/2017	29	0	---	---	0	---	---
7/23/2017	30	0	---	---	0	---	---
7/30/2017	31	0	---	---	0	---	---
8/6/2017	32	0	---	---	0	---	---
8/13/2017	33	0	---	---	0	---	---
8/20/2017	34	0	---	---	0	---	---
8/27/2017	35	---	---	---	0	---	---

Appendix 15. Fulton's condition factor (K) for natural age-1+ steelhead from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2017.

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
1/22/2017	4	36	1.08	0.100	---	---	---
1/29/2017	5	15	1.09	0.128	---	---	---
2/5/2017	6	---	---	---	---	---	---
2/12/2017	7	1	1.20	---	---	---	---
2/19/2017	8	3	1.06	0.028	---	---	---
2/26/2017	9	40	1.08	0.121	---	---	---
3/5/2017	10	31	1.06	0.076	---	---	---
3/12/2017	11	64	1.05	0.085	---	---	---
3/19/2017	12	38	1.05	0.094	---	---	---
3/26/2017	13	16	1.06	0.065	---	---	---
4/2/2017	14	14	1.08	0.068	---	---	---
4/9/2017	15	8	1.10	0.230	32	0.94	0.072
4/16/2017	16	19	0.99	0.159	12	0.96	0.071
4/23/2017	17	---	---	---	---	---	---
4/30/2017	18	0	---	---	7	0.91	0.078
5/7/2017	19	3	1.13	0.075	18	0.95	0.118
5/14/2017	20	1	1.17	0.179	20	0.94	0.075
5/21/2017	21	4	1.11	0.067	6	1.02	0.147
5/28/2017	22	4	1.14	0.090	1	0.91	---
6/4/2017	23	4	1.15	0.089	16	1.03	0.142
6/11/2017	24	17	1.13	0.093	21	1.01	0.162
6/18/2017	25	15	1.12	0.106	33	1.04	0.153
6/25/2017	26	12	1.10	0.103	5	1.17	0.331
7/2/2017	27	0	---	---	2	1.13	0.200
7/9/2017	28	15	1.07	0.070	3	1.17	0.139
7/16/2017	29	15	1.08	0.063	1	1.03	---
7/23/2017	30	13	1.09	0.058	---	---	---
7/30/2017	31	5	1.09	0.088	5	1.13	0.19
8/6/2017	32	8	1.07	0.070	---	---	---
8/13/2017	33	8	1.03	0.139	5	1.12	0.077
8/20/2017	34	4	1.14	0.051	5	0.88	0.456
8/27/2017	35	---	---	---	1	0.97	---