Juvenile Salmonid Monitoring on the Mainstem Trinity River, California, 2015

Nathan J. Harris, Paul Petros and William D. Pinnix

YUROK TRIBAL
FISHERIES PROGRAM
Po Box 36
Willow Creek, CA 95573
(530) 629-3333

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

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Nathan J. Harris[1], Paul Petros[2], William D. Pinnix[3]

[1]*Yurok Tribal Fisheries Program*
P.O. Box 36, Willow Creek, California 95573

[2]*Hoopa Valley Tribal Fisheries Department*
P.O. Box 417, Hoopa, CA 95546

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

Executive Summary —This report presents juvenile salmonid emigration monitoring data collected in 2015 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 (TRRP) 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 monitoring period. Monitoring at WCRST is conducted to estimate juvenile salmonid population size and emigration timing during the monitoring period. In 2015, one rotary screw trap was operated at PTRST from January 9 through August 27, with successful sampling for 147 days of the 231-day sampling period. At WCRST, three rotary screw traps were operated from March 16 through August 25, with successful sampling for 107 days of the 163-day monitoring period.

Age of salmonid outmigrants, mean length by week, migration rates, and hatchery contributions were estimated. Catch data were also 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 1,898,953 (SD = 177,154; CV = 0.093*)* naturally-produced age-0 Chinook Salmon and 943,214 (SD = 37,642, CV = 0.040) age-0 hatchery Chinook Salmon passed the site between January 9 and August 27. At WCRST between March 16 and August 25, an estimated 880,976 (SD = 78,745; CV = 0.089) naturally-produced age-0 Chinook Salmon and 633,216 (SD = 51,491; CV = 0.081) age-0 hatchery Chinook Salmon passed the site.

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) 25 (June 18-June 24), which occurred before the TRRP

management target date of July 9. The estimate of the week in which 80% of the natural Coho Salmon smolt population passed the WCRST was WOY 19 (May 7-May 13), which occurred prior to the TRRP management target date of June 4. The estimate of the week in which 80% of the natural Steelhead smolt population passed the WCRST, was WOY 20 (May 14-May 20), which occurred prior to 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 2015 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.

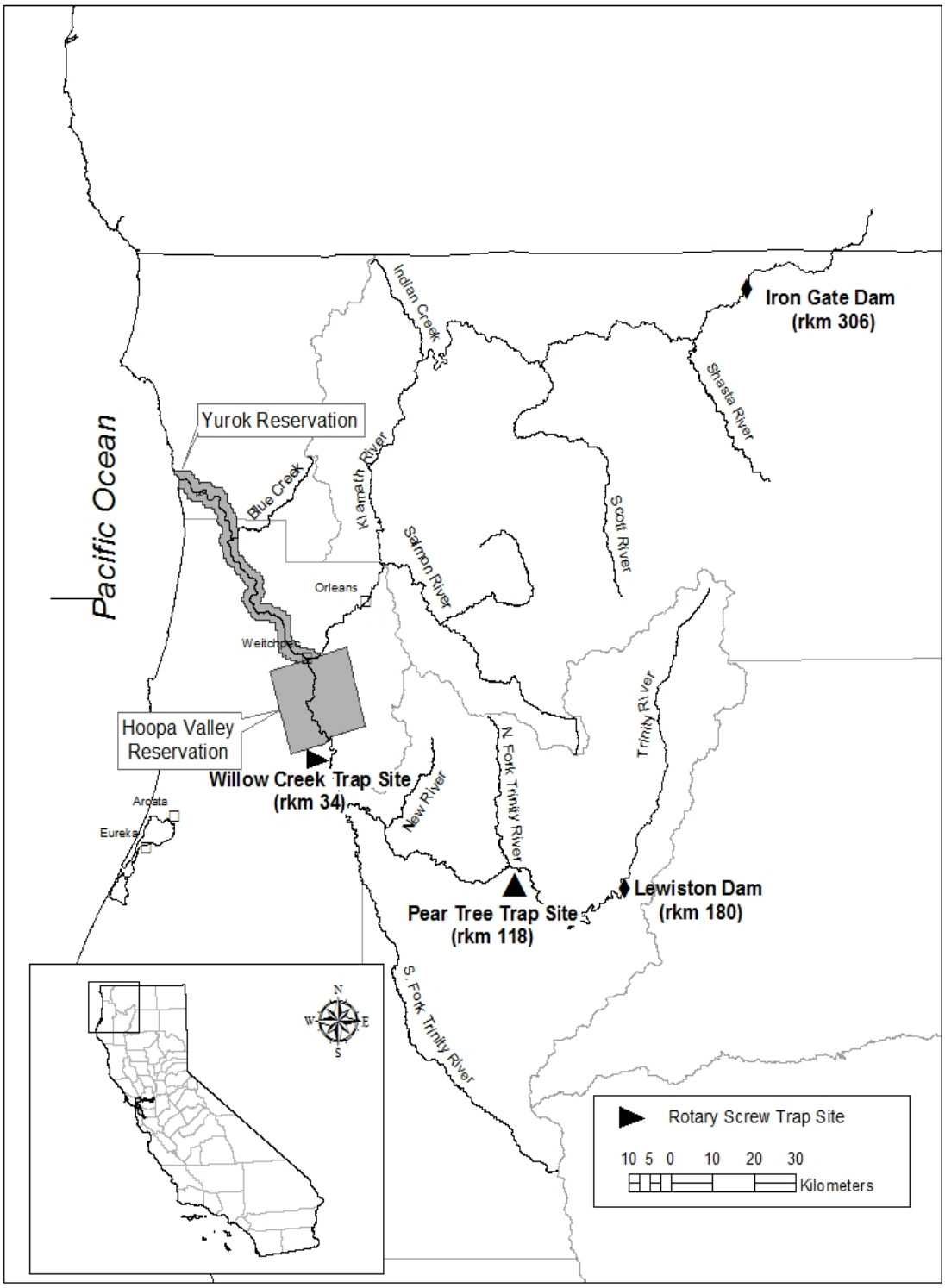


Figure 1. Location of the Trinity River Rotary Screw Trap sites near Willow Creek (rkm 34) and Pear Tree Gulch (rkm 118), California, operated jointly by the Yurok Tribal Fisheries Program, U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Hoopa Valley Tribal Fisheries Department.

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 2015, trapping at PTRST began in the second week of January and trapping at WCRST was initiated in mid-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	01/01	18	04/30	35	08/27
2	01/08	19	05/07	36	09/03
3	01/15	20	05/14	37	09/10
4	01/22	21	05/21	38	09/17
5	01/29	22	05/28	39	09/24
6	02/05	23	06/04	40	10/01
7	02/12	24	06/11	41	10/08
8	02/19	25	06/18	42	10/15
9	02/26	26	06/25	43	10/22
10	03/05	27	07/02	44	10/29
11	03/12	28	07/09	45	11/05
12	03/19	29	07/16	46	11/12
13	03/26	30	07/23	47	11/19
14	04/02	31	07/30	48	11/26
15	04/09	32	08/06	49	12/03
16	04/16	33	08/13	50	12/10
17	04/23	34	08/20	51	12/17
				52	12/24

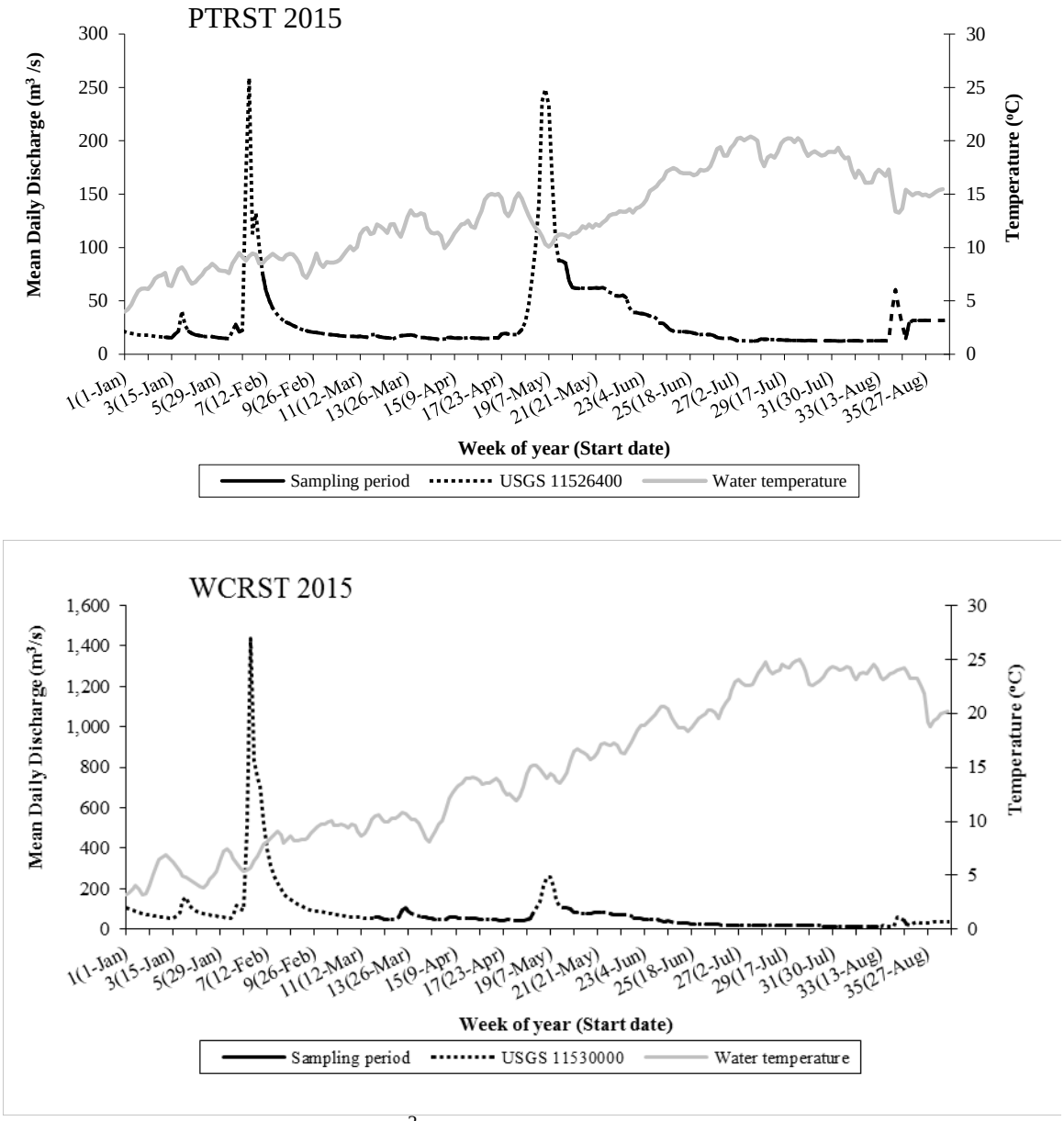


Figure 2. Mean daily discharge (m^3/s) as recorded near Helena (U.S. Geological Survey Water Resource gage station #11-526400) and Hoopa (U.S. Geological Survey Water Resource gage station #11-530000), California, and mean daily water temperatures (^oC) recorded at USGS gage #11-526400 and the Willow Creek Rotary Screw Trap (WCRST) in 2015. Heavy line on discharge plot indicates sampling period, dotted line on discharge plot indicates no sampling.

Table 2. Period and duration of 2015 monitoring and percent of time sampled at Pear Tree Rotary Screw Trap site (PTRST) and Willow Creek Rotary Screw Trap site (WCRST). 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)	9 Jan – 27 Aug	147	231	63.6%
Distinct Days		9 Jan – 27 Aug	147	231	63.6%
WCRST	1 (2.4m)	20 Mar – 14 Aug	89	148	60.1%
WCRST	2 (2.4m)	16 Mar – 25 Aug	105	163	64.4%
WCRST	3 (2.4m)	16 Mar – 21 Aug	103	159	64.8%
Distinct Days		16 Mar – 25 Aug	107	163	65.6%

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% and 89% 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 1,176,606 and 350,240 at PTRST and WCRST, respectively (Figure 3; Table 6; Appendix 1 and 2). The age-0 hatchery Chinook Salmon abundance indices were 180,452 at PTRST and 202,434 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 164 and 242, respectively, at PTRST. At WCRST the age-1 Chinook Salmon indices were 17 natural and no hatchery fish.

Age-0 naturally-produced Coho Salmon abundance indices were 14,114 and 449 at PTRST and WCRST, respectively (Figure 4; Table 6; Appendix 3 and 5). The abundance indices for age-1 naturally-produced Coho Salmon were 6,961 and 2,375 at PTRST and WCRST, respectively. Abundance indices of hatchery age-1 Coho Salmon were 5,873 and 11,734 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 83,802 and 11,072, respectively (Figure 5; Table 6; Appendix 5 and 6). Abundance indices of age-0 and age-1 Steelhead at WCRST were 4,428 and 6,842, respectively (Table 6; Appendix 6). Abundance indices of hatchery age-1 Steelhead were 11,864 at PTRST and 37,441 at WCRST. The Age-2 Steelhead abundance index was 604 at PTRST and 6,472 at WCRST.

Table 3. Juvenile salmonid catch totals in 2015 for trapping at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), on the Trinity River, California, operated jointly 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	12,286	17	66,948	26	NA	79,277
PTRST	Coho Salmon	NA	619	403	415	NA	1,437
PTRST	Steelhead	NA	1,165	3,275	633	43	5,116
WCRST	Chinook Salmon	33,951	0	25,981	1	NA	59,933
WCRST	Coho Salmon	NA	775	37	174	NA	986
WCRST	Steelhead	NA	2,279	561	517	497	3,854

Table 4. California Department of Fish and Game, Trinity River Hatchery juvenile salmonid releases, 2015. AD-clipped = adipose fin clipped fish.

Species	Release Season	Number Released	Percentage AD-clipped or Marked	Release Dates
Chinook Salmon[1]	Spring	2,337,891	24.4	06/01 - 06/15
Chinook Salmon[1]	Fall	1,423,201	24.2	10/01 - 10/15
Coho Salmon[2]	Spring	287,720	98.9	03/15 - 03/23
Steelhead	Spring	434,381	99.6	04/15 – 04/27

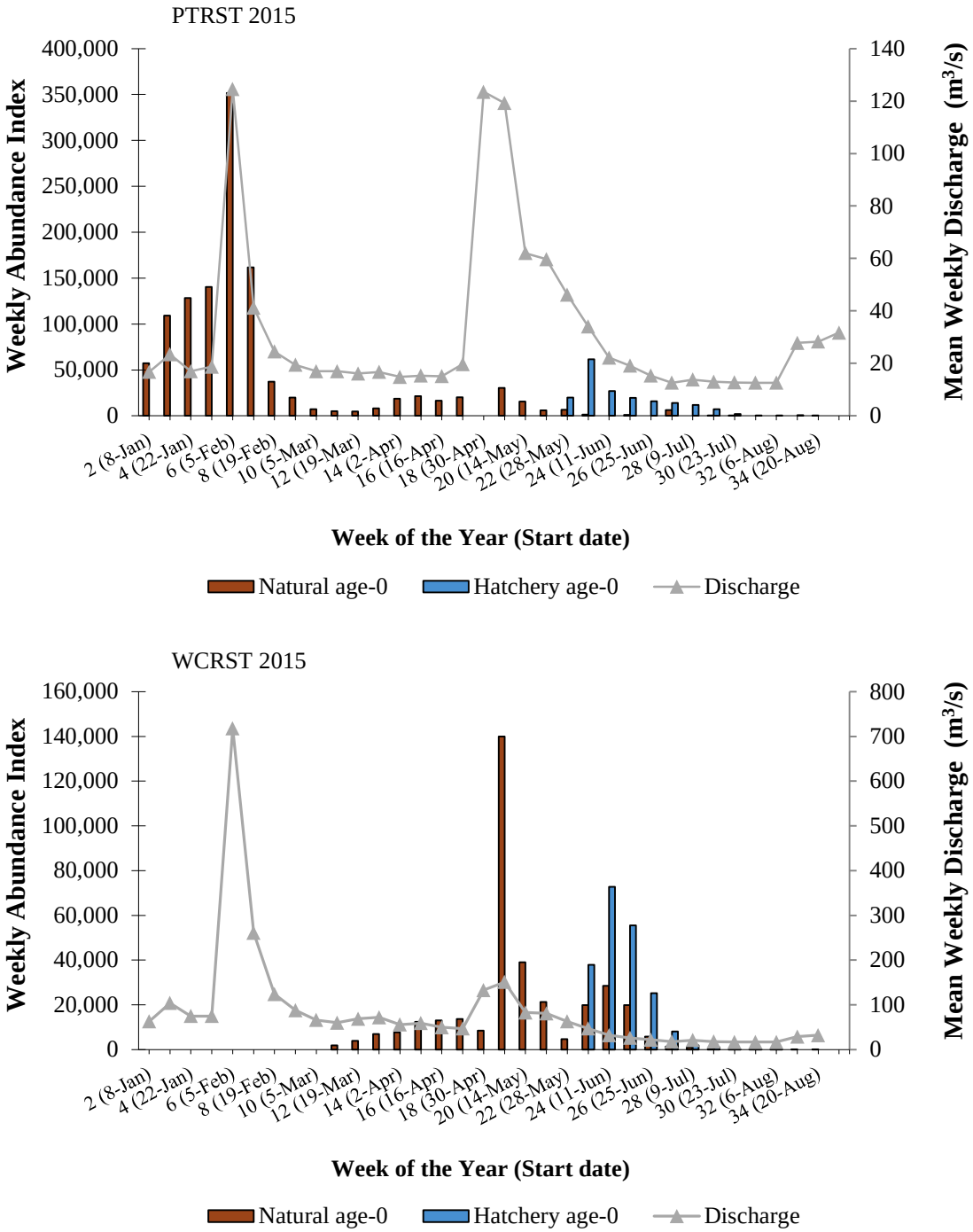
[1]Chinook Salmon releases includes both spring-run and fall-run races.
[2]Coho Salmon were marked with a right maxillary clip.

Table 5. Catch totals of non-target species captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) on the mainstem Trinity River, California, 2015.

Common name	Species	Life stage	PTRST Catch	WCRST Catch
Lamprey	*Entosphenus* spp.	Ammocete	6,924	1,951
		Eyed-juvenile	246	17
		Adult	1	9
Sucker	*Catostomus* spp.		809	7,618
Speckled Dace	*Rhinichthys osculus*		1078	1,650
Three-Spine Stickleback	*Gasterosteus aculeatus*		301	59
Golden Shiner	*Notemigonus crysoleucas*		2	12
Sculpin	*Cottus* spp.		1	202
Brown Trout	*Salmo trutta*	Juvenile	1,847	75
Sunfish	*Lepomis* spp.		1	7
Sockeye Salmon	*Oncorhynchus nerka*	Juvenile	7	30
Fathead Minnow	*Pimephales promelas*	Juvenile	0	6
Bullhead	*Ameiurus* spp.		0	1
Frog/tadpole			17	34
Season Total			11,234	11,671

Table 6. Juvenile salmonid proportional discharge-based abundance indices at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2015. 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	180,452	164	1,176,606	242	NA	1,357,464
PTRST	Coho Salmon	NA	5,873	14,114	6,961	NA	26,948
PTRST	Steelhead	NA	11,864	83,802	11,072	604	107,342
WCRST	Chinook Salmon	202,434	0	350,240	17	NA	552,691
WCRST	Coho Salmon	NA	11,734	449	2,375	NA	14,558
WCRST	Steelhead	NA	37,441	4,428	6,842	6,472	55,183



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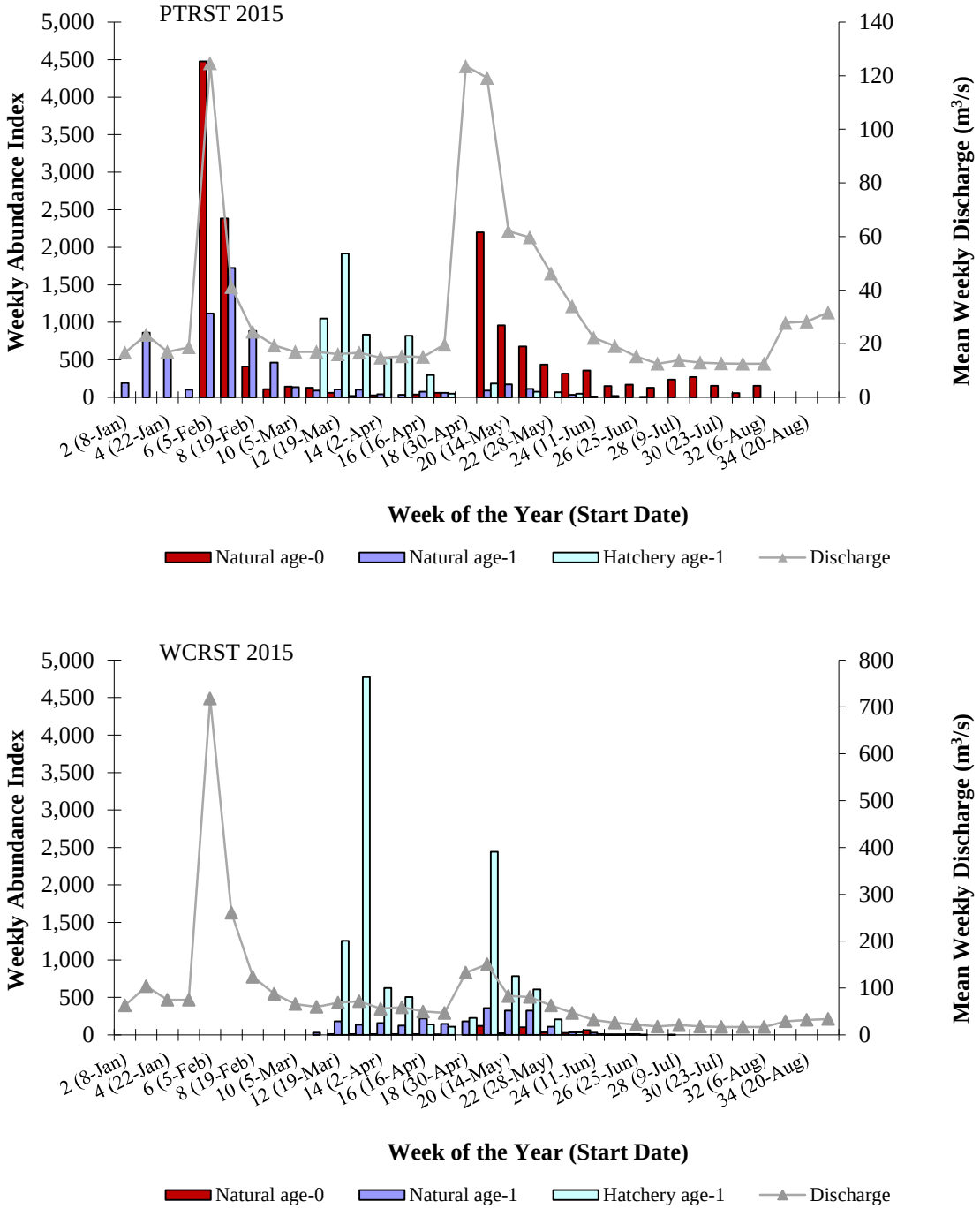

Figure 4. Weekly proportional discharge-based abundance indices for natural age-0, natural age-1, and hatchery age-1 Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) in 2015.

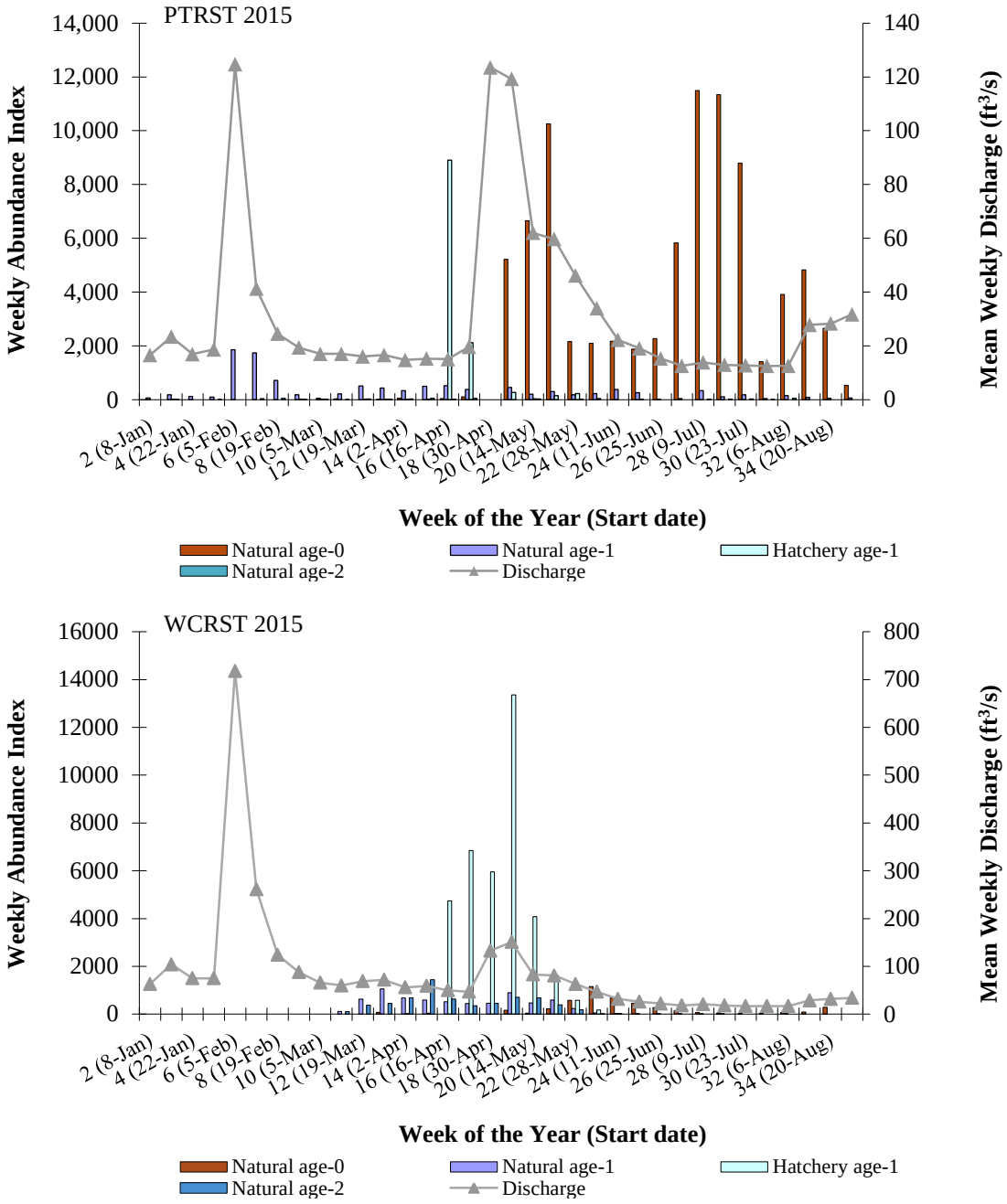

Figure 5. Weekly proportional discharge-based abundance indices for natural age-0, natural age-1, natural age-2, and hatchery age-1 Steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) in 2015.

Hatchery/Natural Contribution

Chinook Salmon were captured throughout the 2015 sampling season with the emigration dominated by naturally-produced fish comprising 87% and 63%, respectively, of the total proportional discharge-based abundance indices (Appendix 1 and 2) at PTRST and WCRST.

Natural origin Coho Salmon smolts comprised 54% of the total age-1 proportional discharge-based index at PTRST in 2015 (Appendix 3). At WCRST, age-1 Coho Salmon emigrants of hatchery origin comprised 83% of the total age-1 proportional discharge-based index in 2015 (Appendix 4).

Based on proportional discharge-based abundance indices at PTRST and WCRST, age-1 hatchery Steelhead comprised 51% (Appendix 5) and 85% (Appendix 6) of the total age-1 abundance indices at each respective site.

Chinook Salmon Population Estimation

During the 2015 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 and 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 1,898,953 (SD = 177,154; CV = 0.0933) naturally-produced age-0 Chinook Salmon and 943,214 (SD = 37,642, CV = 0.040) age-0 hatchery Chinook Salmon passed the site between January 9 and August 27. At WCRST between March 16 and August 25, an estimated 880,976 (SD = 78,745; CV = 0.089) naturally-produced age-0 Chinook Salmon and 633,216 (SD = 51,491; CV = 0.081) 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 emigration period emigrate as age-0 fish, with the natural and hatchery emigration periods overlapping (Table 7; Appendix 1 and 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 25 (June 18 – June 24), which occurred before 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 6, and peaked at WCRST in WOY 19. Hatchery age-0 Chinook Salmon emigration peaked in WOY 23 at PTRST and WOY 24 at WCRST.

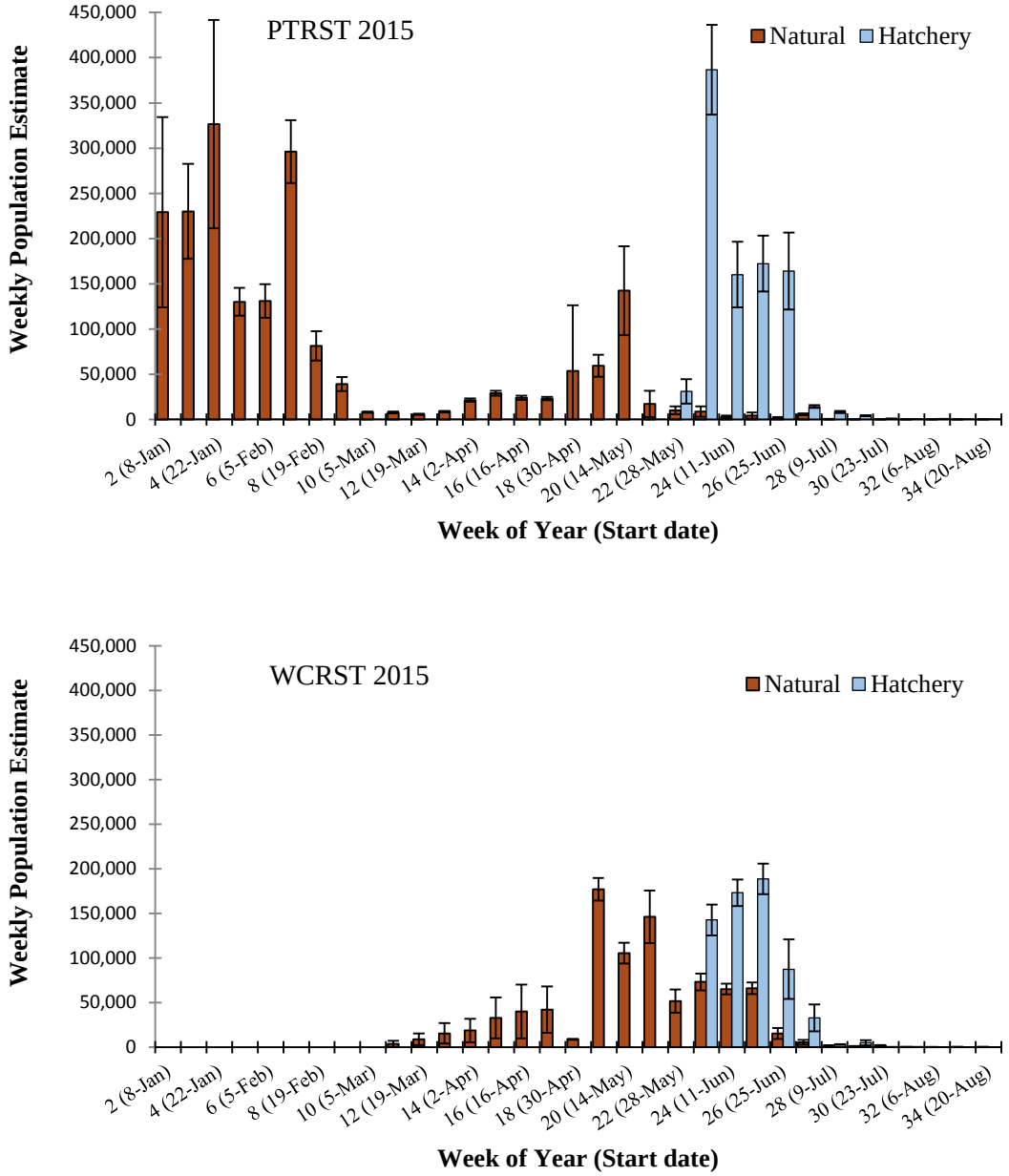

Figure 6. Weekly mark-recapture population estimates of natural age-0 and hatchery age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) in 2015. Error bars represent one standard deviation of the mean weekly estimate.

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), 2015. Values represent week of the year.

		Emigration Duration			Emigration Peak		
Site	Species	Natural Age-0	Natural Age-1+	Hatchery	Natural Age-0	Natural Age-1+	Hatchery
PTRST	Chinook Salmon	2-34	4-17	22-33	6	15	23
PTRST	Coho Salmon	6-32	2-25	11-26	6	7	12
PTRST	Steelhead	11-35	2-35	3-25	28	6	16
WCRST	Chinook Salmon	11-34	17	23-32	19	17	24
WCRST	Coho Salmon	12-28	11-26	12-26	19	19	13
WCRST	Steelhead	13-34	11-32	14-24	23	13	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 through mid-June (WOY 25) at PTRST, and late June (WOY 26) at WCRST. Hatchery age-1 Coho Salmon abruptly emigrated from the upper river after release from TRH (Table 7; Appendix 3). Interpretation of the data 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 19 (May 7-May 13), which occurred prior to the TRRP management target date of June 4 (TRRP and ESSA 2009). Natural age-0 Coho Salmon emigration peaked in WOY 6 at PTRST and WOY 19 at WCRST. Natural age-1 Coho Salmon emigration peaked in WOY 7 at PTRST and WOY 19 at WCRST. Hatchery Coho Salmon emigration peaked in WOY 12 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 from March through mid-July at WCRST, and from January through August at PTRST. The majority of hatchery-produced age-1 Steelhead passed both sites by late May. 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 20 (May 14 – May 20), which occurred prior to the TRRP management target date of May 22 (TRRP and ESSA 2009). Natural age-0 Steelhead emigration peaked in WOY 28 at PTRST and WOY 23 at WCRST. Natural age-1 Steelhead emigration peaked in WOY 6 at PTRST and WOY 13 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 generally increased through the season at both PTRST and WCRST (Figure 7; Appendix 9 and 10). Age-1 Chinook Salmon captured from WOY 2 to WOY 12 at PTRST included hatchery fish released in 2014 that greatly influenced mean fork lengths, but sample size was too small to reveal a weekly trend. Only one age-1 Chinook Salmon was captured at WCRST.

Natural age-0 Coho Salmon fork lengths generally increased through the sampling season at both PTRST and WCRST (Figure 8, Appendix 9 and 10). Hatchery age-1 Coho Salmon fork lengths showed no weekly trend at either trapping site. Natural age-1 Coho Salmon fork lengths sampled at PTRST remained relatively consistent from WOY 2 to WOY 10, then showed a general increase through the remainder of the season. Natural age -1 Coho fork lengths at WCRST showed no discernible trend until WOY 18 when they increased gradually until WOY 26.

Natural age-0 and age-1 Steelhead fork lengths generally increased through the sampling season at both sites (Figure 9; Appendix 11, 12). At WCRST, hatchery Steelhead showed no trend, while age-2 average fork lengths declined slightly through the season.

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, 2015.

Site	Species	Date First Released	Date First Captured	# of Days	Maximum Migration Rate
PTRST	Chinook Salmon	06/01/2015	06/02/2015	1	64 rkm/day
PTRST	Coho Salmon	03/15/2015	03/17/2015	2	32 rkm/day
PTRST	Steelhead	04/15/2015	04/17/2015	2	32 rkm/day
WCRST	Chinook Salmon	06/01/2015	06/05/2015	4	37 rkm/day
WCRST	Coho Salmon[1]	03/15/2015	03/20/2015	5	29 rkm/day
WCRST	Steelhead[2]	04/15/2015	04/16/2015	1	146 rkm/day

[1]Trapping started on March 16, when fish may have already passed, although unlikely.
[2]Hatchery Steelhead appeared in catches prior to April 15, which are likely hatchery fish from the 2014 release.

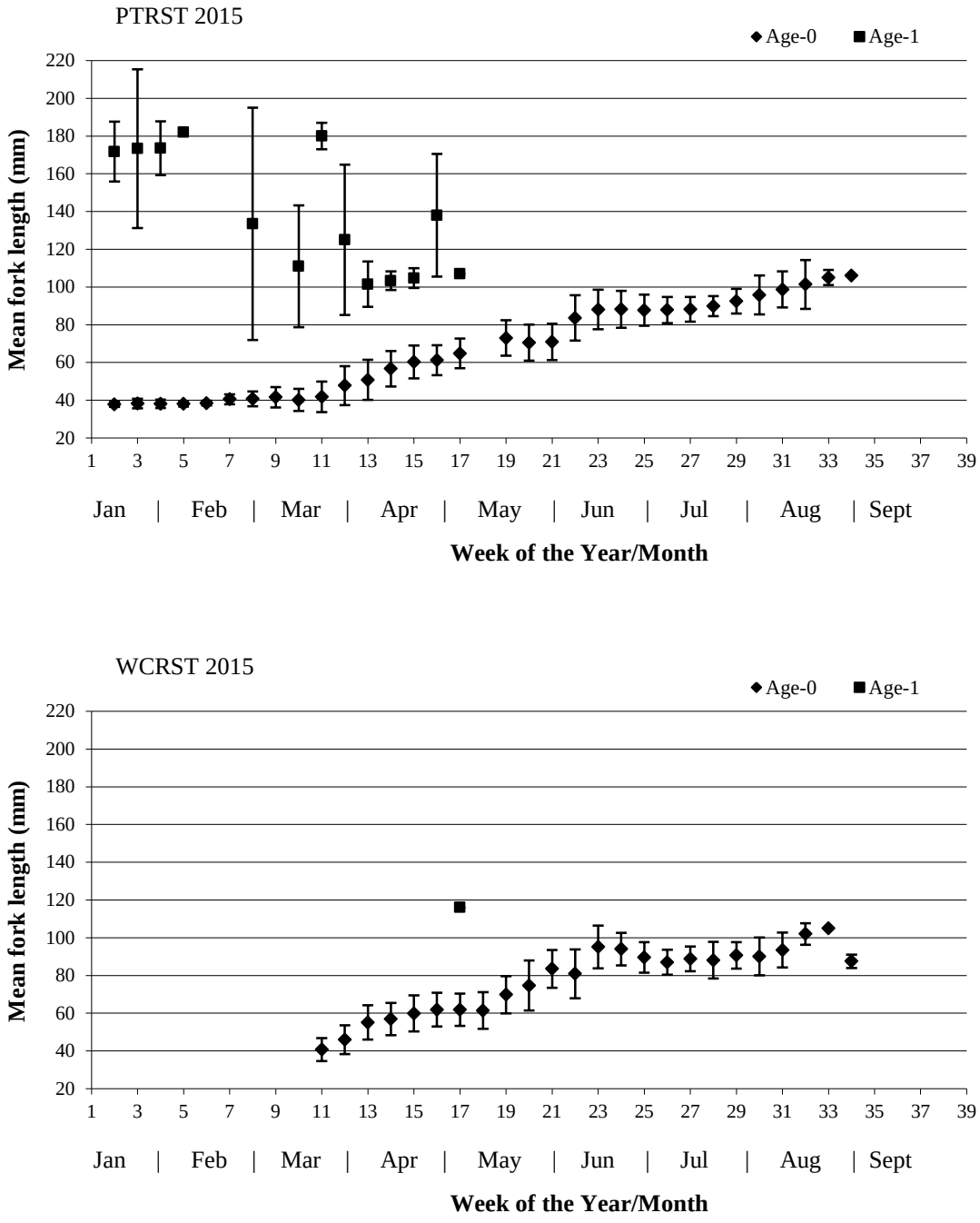

Figure 7. Weekly mean fork lengths of age-0 and age-1 Chinook Salmon (pooled natural and hatchery) captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2015. Error bars represent one standard deviation of the mean.

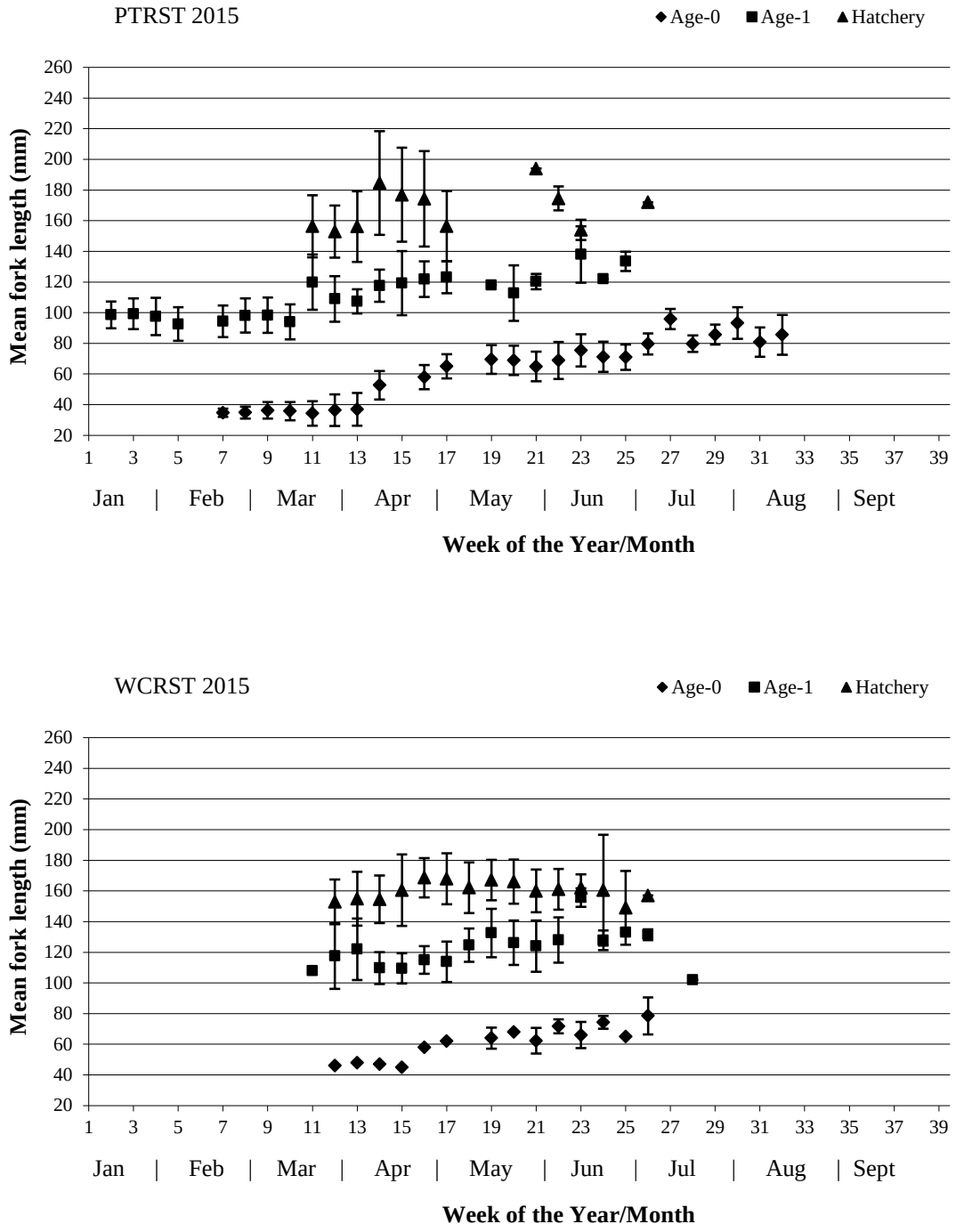

Figure 8. Weekly mean fork lengths for natural age-0, natural age-1, and hatchery Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2015. Error bars represent one standard deviation of the mean.

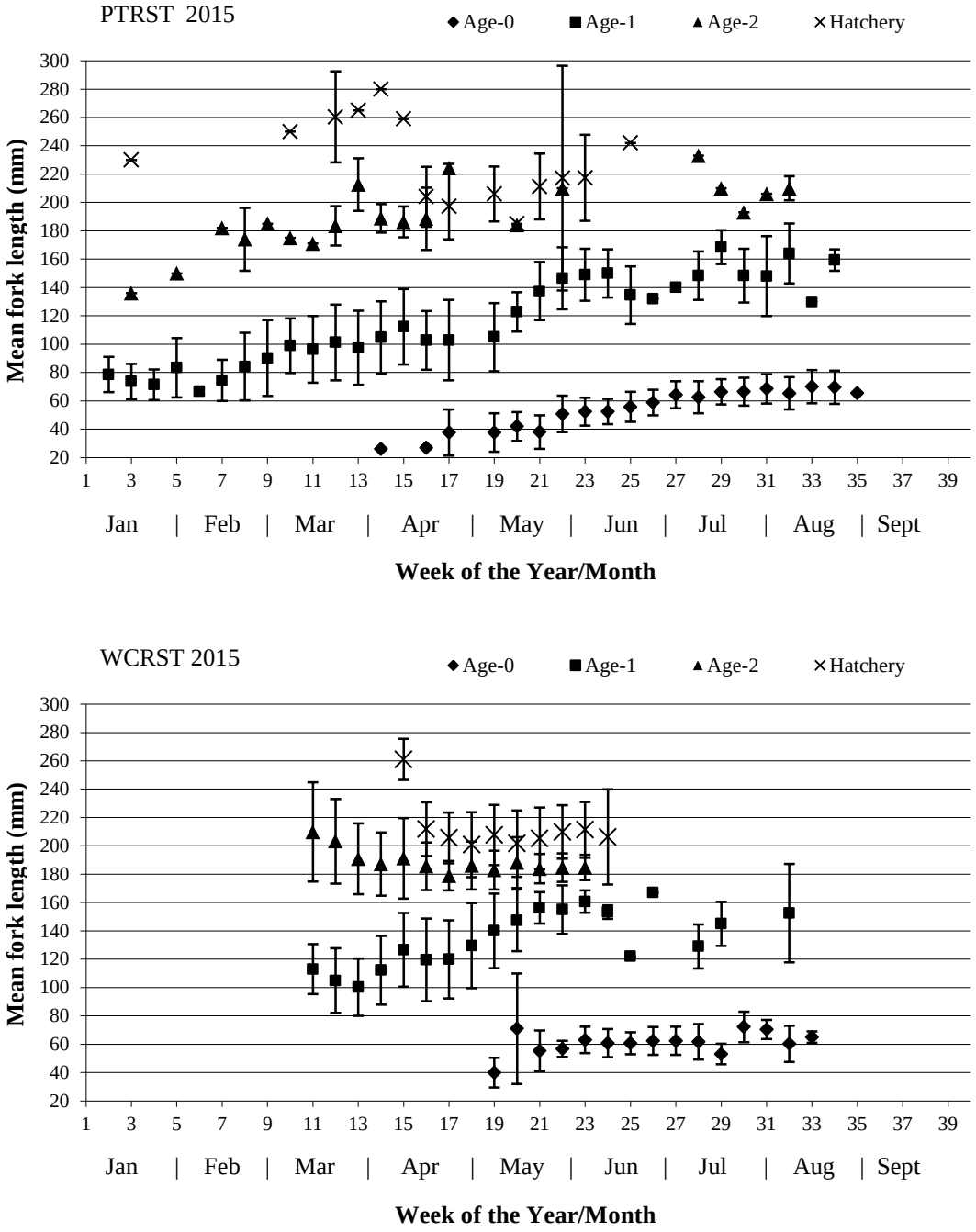

Figure 9. Weekly mean fork lengths for natural age-0, age-1, age-2, and hatchery age-1 Steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2015. Error bars represent one standard deviation of the mean.

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 PTRST weekly mean condition factor of age-0 Chinook Salmon and was variable with no apparent trend. At WCRST there was no apparent trend in age-0 Chinook Salmon condition.

Weekly mean condition factor of natural age-1 Coho Salmon decreased slightly prior to WOY 17 at PTRST and was variable with no apparent trend for the remainder of the season. At WCRST, there appeared to be a slight decline in condition through the season.

At PTRST, weekly mean condition factor of natural age-1+ Steelhead decreased slightly between WOY 2 and WOY 16, and was variable with no apparent trend for the remainder of the season. At WCRST weekly mean condition of age-1+ Steelhead showed a great deal of variation with no apparent trend through 2015.

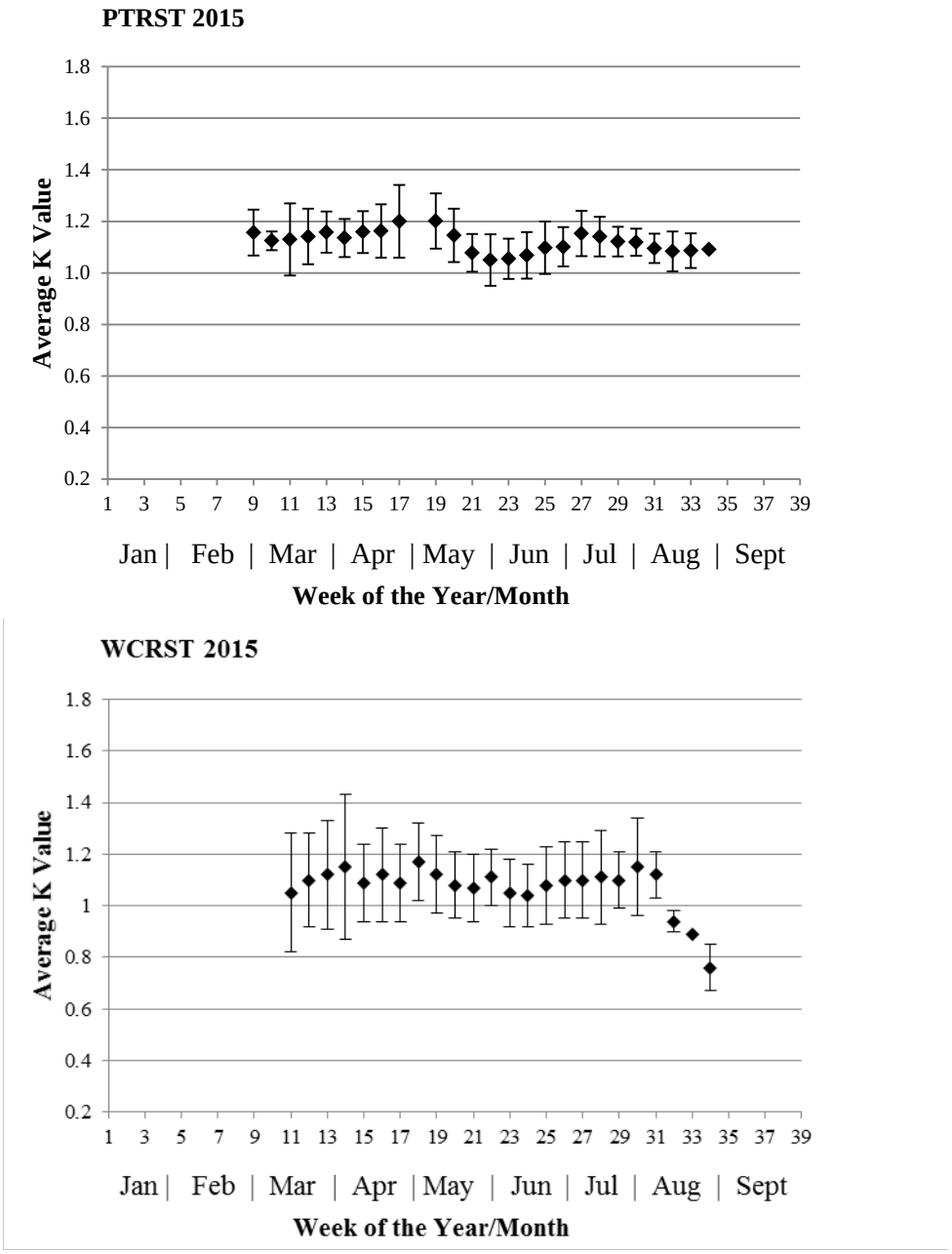

Figure 10. Weekly mean K value for pooled hatchery and natural age-0 Chinook Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2015. Error bars represent one standard deviation of the mean.

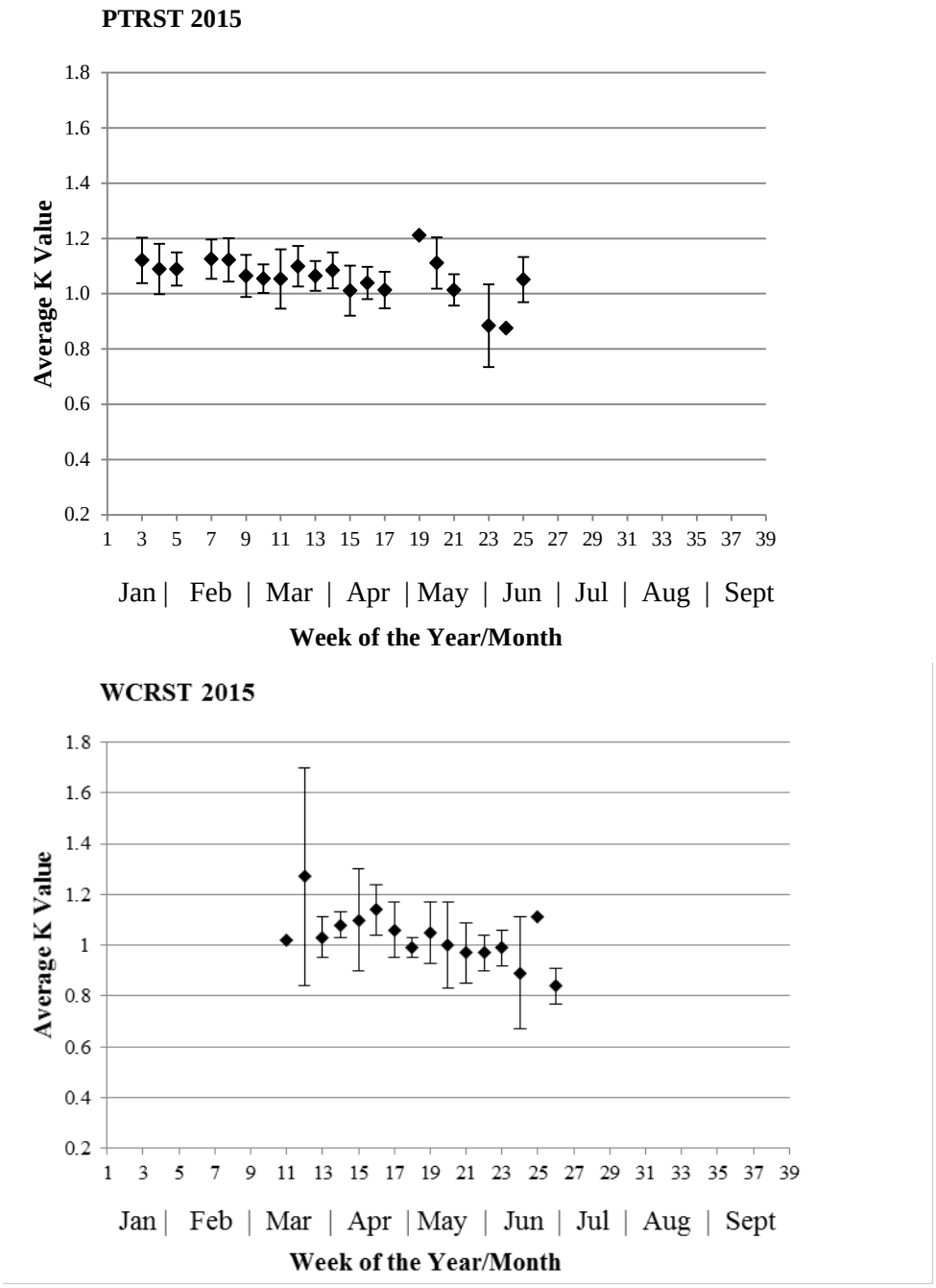

Figure 11. Weekly mean K value for natural age-1 Coho Salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2015. Error bars represent one standard deviation of the mean.

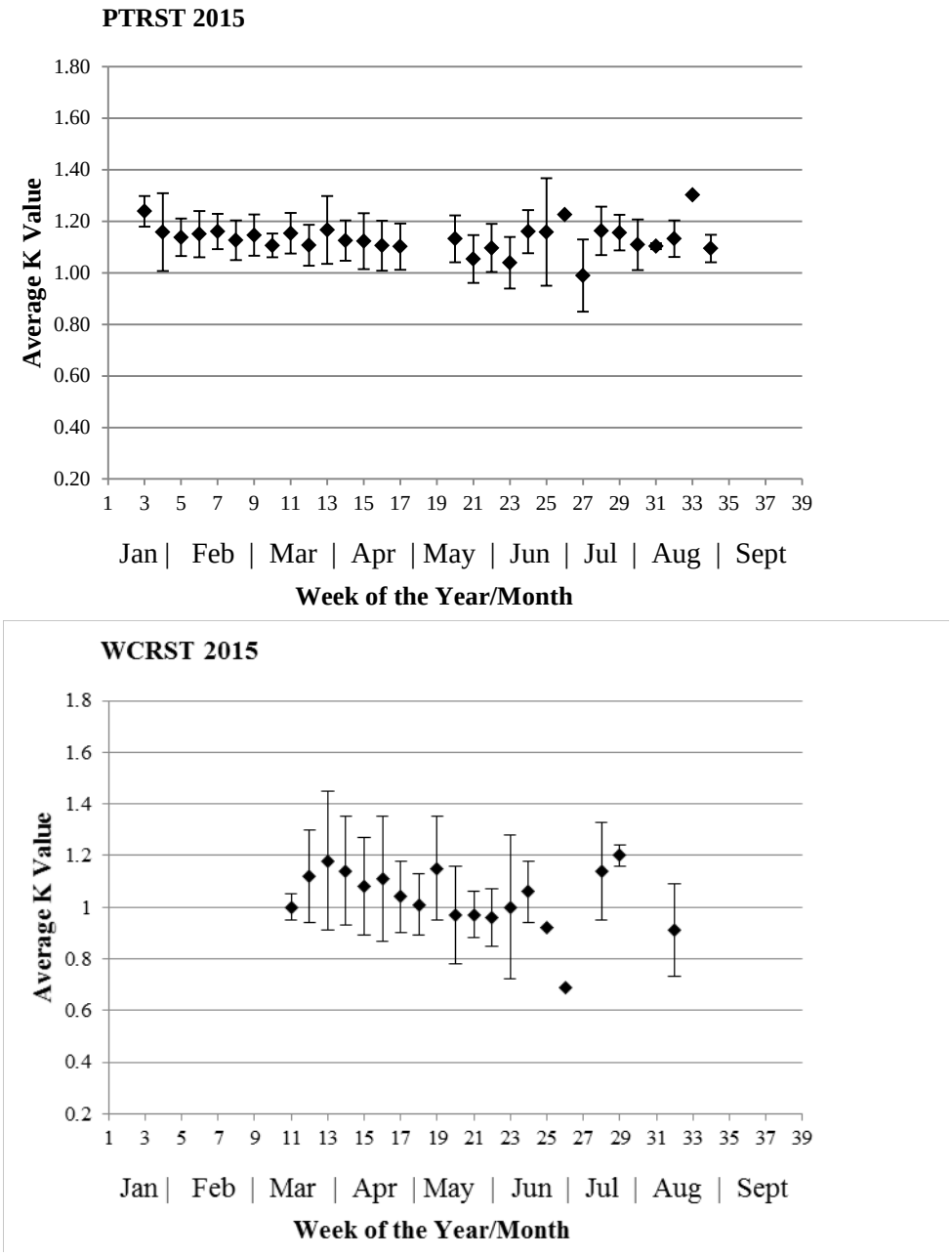

Figure 12. Weekly mean K value for natural age-1+ Steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2015. Error bars represent one standard deviation of the mean.

References

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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 pp.

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, 2015 (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	Hatchery			Natural		Index
				NC	AD	Age-1	Age-0	Age-1	Total	NC	AD	Age-1	Age-0	Age-1	Total
1/8/2015	2	16.7	3	0	0	4	4,518	0	4,522	0	0	51	57,401	0	57,452
1/15/2015	3	23.4	5	0	0	3	10,257	0	10,260	0	0	32	109,304	0	109,336
1/22/2015	4	17	5	0	0	0	13,864	4	13,868	0	0	0	128,369	37	128,406
1/30/2015	5	18.7	5	0	0	0	13,781	1	13,782	0	0	0	140,487	10	140,497
2/5/2015	6	124.6	2	0	0	0	1,885	0	1,885	0	0	0	351,715	0	351,715
2/12/2015	7	41.2	4	0	0	0	5,526	0	5,526	0	0	0	161,841	0	161,841
2/19/2015	8	24.5	5	0	0	0	2,741	2	2,743	0	0	0	37,335	27	37,362
2/26/2015	9	19.4	5	0	0	0	1,801	0	1,801	0	0	0	19,852	0	19,852
3/5/2015	10	17	5	0	0	4	735	2	741	0	0	29	7,352	14	7,395
3/12/2015	11	17	5	0	0	0	509	2	511	0	0	0	5,006	20	5,026
3/19/2015	12	16.1	5	0	0	6	531	0	537	0	0	52	4,690	0	4,742
3/26/2015	13	16.7	5	0	0	0	903	2	905	0	0	0	8,210	18	8,228
4/2/2015	14	14.8	5	0	0	0	2,206	3	2,209	0	0	0	18,698	25	18,723
4/9/2015	15	15.3	5	0	0	0	2,500	7	2,507	0	0	0	21,567	60	21,627
4/16/2015	16	15.1	5	0	0	0	1,786	2	1,788	0	0	0	16,605	19	16,624
4/23/2015	17	19.7	5	0	0	0	1,674	1	1,675	0	0	0	20,160	12	20,172
4/30/2015	18	123.5	0	---	---	---	---	---	---	---	---	---	---	---	---
5/7/2015	19	119.2	4	0	0	0	332	0	332	0	0	0	30,396	0	30,396
5/14/2015	20	62	5	0	0	0	458	0	458	0	0	0	15,711	0	15,711
5/21/2015	21	59.7	4	0	0	0	156	0	156	0	0	0	5,863	0	5,863
5/28/2015	22	46.2	5	662	199	0	292	0	1,153	15,245	4,582	0	6,719	0	26,546
6/4/2015	23	34	5	2,858	859	0	78	0	3,795	47,329	14,225	0	1,291	0	62,845
6/11/2015	24	22.2	5	1,707	560	0	0	0	2,267	20,272	6,650	0	0	0	26,922
6/18/2015	25	19.1	5	1,527	459	0	95	0	2,081	15,132	4,548	0	941	0	20,621
6/25/2015	26	15.3	5	1,486	481	0	0	0	1,967	12,103	3,918	0	0	0	16,021
7/2/2015	27	12.6	3	506	152	0	287	0	945	10,833	3,256	0	6,154	0	20,243
7/9/2015	28	13.8	5	343	104	0	0	0	447	8,999	2,728	0	0	0	11,727
7/16/2015	29	13	5	203	61	0	19	0	283	5,507	1,655	0	518	0	7,680
7/23/2015	30	12.7	5	47	14	0	12	0	73	1,437	432	0	384	0	2,253
7/30/2015	31	12.6	5	26	10	0	0	0	36	356	137	0	0	0	493
8/6/2015	32	12.6	4	9	5	0	0	0	14	276	153	0	0	0	429
8/13/2015	33	27.8	3	6	2	0	0	0	8	509	170	0	0	0	679
8/20/2015	34	28.3	4	0	0	0	2	0	2	0	0	0	37	0	37
8/27/2015	35	31.7	1	0	0	0	0	0	0	0	0	0	0	0	0
Totals			147	9,380	2,906	17	66,948	26	79,277	137,998	42,454	164	1,176,606	242	1,357,464

Appendix 2. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Chinook Salmon catches and abundance indices, 2015 (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		Total	Hatchery			Natural		Index
				NC	AD	Age-1	Age-0	Age-1	Catch	NC	AD	Age-1	Age-0	Age-1	Total
3/12/2015	11	60	6	0	0	0	64	0	64	0	0	0	1850	0	1,850
3/19/2015	12	69	14	0	0	0	313	0	313	0	0	0	3,958	0	3,958
3/26/2015	13	72	15	0	0	0	610	0	610	0	0	0	6,917	0	6,917
4/2/2015	14	56	13	0	0	0	682	0	682	0	0	0	7,743	0	7,743
4/9/2015	15	59	15	0	0	0	1,208	0	1,208	0	0	0	12,475	0	12,475
4/16/2015	16	50	15	0	0	0	1,369	0	1,369	0	0	0	13,041	0	13,041
4/23/2015	17	47	14	0	0	0	1,556	1	1,557	0	0	0	13,650	8	13,658
4/30/2015	18	133	6	0	0	0	330	0	330	0	0	0	8,451	0	8,451
5/7/2015	19	151	6	0	0	0	3,560	0	3,560	0	0	0	139,909	0	139,909
5/14/2015	20	83	12	0	0	0	2,042	0	2,042	0	0	0	39,080	0	39,080
5/21/2015	21	81	15	0	0	0	1,633	0	1,633	0	0	0	21,335	0	21,335
5/28/2015	22	63	14	0	0	0	369	0	369	0	0	0	4,630	0	4,630
6/4/2015	23	47	15	3,355	1,018	0	2,302	0	6,675	29,074	8,821	0	19,947	0	57,842
6/11/2015	24	32	15	8,352	2,534	0	4,224	0	15,110	55,806	16,931	0	28,465	0	101,202
6/18/2015	25	26	15	8,794	2,668	0	4,151	0	15,613	42,557	12,912	0	19,928	0	75,397
6/25/2015	26	22	14	3,998	1,213	0	980	0	6,191	19,321	5,862	0	5,769	0	30,952
7/2/2015	27	18	12	1038	315	0	237	0	1,590	6,266	1,901	0	1,430	0	9,597
7/9/2015	28	21	15	307	93	0	235	0	635	1,426	433	0	1,056	0	2,915
7/16/2015	29	18	15	191	58	0	36	0	285	814	247	0	167	0	1,228
7/23/2015	30	17	15	3	1	0	57	0	61	13	4	0	242	0	259
7/30/2015	31	17	15	7	2	0	14	0	23	29	9	0	60	0	98
8/6/2015	32	17	15	3	1	0	1	0	5	6	2	0	14	0	22
8/13/2015	33	29	3	0	0	0	1	0	1	0	0	0	21	0	21
8/20/2015	34	32	3	0	0	0	7	0	7	0	0	0	102	0	102
Totals			297	26,048	7,903	0	25,981	1	59,933	155,312	47,122	0	350,240	8	552,682

Appendix 3. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Coho Salmon catches and abundance indices, 2015 (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
1/8/2015	2	16.7	3	0	0	15	15	0	0	191	191
1/15/2015	3	23.4	5	0	0	81	81	0	0	863	863
1/22/2015	4	17	5	0	0	57	57	0	0	528	528
1/30/2015	5	18.7	5	0	0	10	10	0	0	102	102
2/5/2015	6	124.6	2	0	24	6	30	0	4,478	1,120	5,598
2/12/2015	7	41.2	4	0	79	60	139	0	2,385	1,725	4,110
2/19/2015	8	24.5	5	0	30	65	95	0	409	885	1,294
2/26/2015	9	19.4	5	0	10	42	52	0	110	463	573
3/5/2015	10	17	5	0	13	11	24	0	143	136	279
3/12/2015	11	17	5	107	13	9	129	1,052	128	89	1,269
3/19/2015	12	16.1	5	217	7	12	236	1,917	62	106	2,085
3/26/2015	13	16.7	5	92	2	11	105	836	18	100	954
4/2/2015	14	14.8	5	61	3	5	69	517	25	42	584
4/9/2015	15	15.3	5	95	0	4	99	820	0	35	855
4/16/2015	16	15.1	5	32	4	8	44	298	37	74	409
4/23/2015	17	19.7	5	4	5	5	14	48	60	60	168
4/30/2015	18	123.5	0	---	---	---	---	---	---	---	---
5/7/2015	19	119.2	4	2	24	1	27	183	2,197	92	2,472
5/14/2015	20	62	5	0	28	5	33	0	960	172	1,132
5/21/2015	21	59.7	4	2	18	3	23	75	676	113	864
5/28/2015	22	46.2	5	3	19	0	22	69	437	0	506
6/4/2015	23	34	5	3	19	2	24	50	315	33	398
6/11/2015	24	22.2	5	0	30	1	31	0	356	12	368
6/18/2015	25	19.1	5	0	15	2	17	0	149	20	169
6/25/2015	26	15.3	5	1	21	0	22	8	171	0	179
7/2/2015	27	12.6	3	0	6	0	6	0	129	0	129
7/9/2015	28	13.8	5	0	9	0	9	0	236	0	236
7/16/2015	29	13	5	0	10	0	10	0	271	0	271
7/23/2015	30	12.7	5	0	5	0	5	0	154	0	154
7/30/2015	31	12.6	5	0	4	0	4	0	55	0	55
8/6/2015	32	12.6	4	0	5	0	5	0	153	0	153
8/13/2015	33	27.8	3	0	0	0	0	0	0	0	0
8/20/2015	34	28.3	4	0	0	0	0	0	0	0	0
8/27/2015	35	31.7	1	0	0	0	0	0	0	0	0
Total			147	619	403	415	1,437	5,873	14,114	6,961	26,948

Appendix 4. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Coho Salmon catches and abundance indices, 2015 (R-MAX = right maxillary clip).

Week Starting	Week of Year	Mean Daily Discharge m^3/s	Trap Days Sampled	Weekly Coho Salmon Catches				Weekly Coho Salmon Indices			
				Hatchery	Natural		Catch	Hatchery	Natural		Index
				R-MAX	Age-0	Age-1	Total	R-MAX	Age-0	Age-1	Total
3/12/2015	11	60	6	0	0	1	1	0	0	30	30
3/19/2015	12	69	14	98	1	14	113	1,256	10	181	1,447
3/26/2015	13	72	15	367	1	11	379	4,774	11	137	4,922
4/2/2015	14	56	13	50	1	13	64	627	10	157	794
4/9/2015	15	59	15	48	1	12	61	504	10	125	639
4/16/2015	16	50	15	14	1	23	38	139	10	217	366
4/23/2015	17	47	14	12	1	17	30	108	8	148	264
4/30/2015	18	133	6	9	0	7	16	226	0	180	406
5/7/2015	19	151	6	62	3	9	74	2,441	119	359	2,919
5/14/2015	20	83	12	43	1	20	64	785	24	325	1,134
5/21/2015	21	81	15	46	8	25	79	606	101	325	1,032
5/28/2015	22	63	14	17	3	9	29	209	35	109	353
6/4/2015	23	47	15	4	3	4	11	34	25	35	94
6/11/2015	24	32	15	2	10	5	17	13	66	31	110
6/18/2015	25	26	15	2	1	1	4	8	6	6	20
6/25/2015	26	22	14	1	2	2	5	4	10	10	24
7/2/2015	27	18	12	0	0	0	0	0	0	0	0
7/9/2015	28	21	15	0	0	1	1	0	4	0	4
7/16/2015	29	18	15	0	0	0	0	0	0	0	0
7/23/2015	30	17	15	0	0	0	0	0	0	0	0
7/30/2015	31	17	15	0	0	0	0	0	0	0	0
8/6/2015	32	17	15	0	0	0	0	0	0	0	0
8/13/2015	33	29	3	0	0	0	0	0	0	0	0
8/20/2015	34	32	3	0	0	0	0	0	0	0	0
Totals			297	775	37	174	986	11,734	449	2,375	14,558

Appendix 5. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Steelhead catches and abundance indices, 2015 (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
1/8/2015	2	16.7	3	0	0	5	0	5	0	0	64	0	64
1/15/2015	3	23.4	5	1	0	18	1	20	11	0	192	11	214
1/22/2015	4	17.0	5	0	0	13	0	13	0	0	120	0	120
1/30/2015	5	18.7	5	0	0	10	1	11	0	0	102	10	112
2/5/2015	6	124.6	2	0	0	10	0	10	0	0	1,866	0	1,866
2/12/2015	7	41.2	4	0	0	48	1	49	0	0	1,746	43	1,789
2/19/2015	8	24.5	5	0	0	53	4	57	0	0	722	54	776
2/26/2015	9	19.4	5	1	0	17	1	19	11	0	187	11	209
3/5/2015	10	17.0	5	1	0	7	2	10	14	0	57	22	93
3/12/2015	11	17.0	5	0	4	22	1	27	0	39	216	10	265
3/19/2015	12	16.1	5	3	0	58	4	65	26	0	512	35	573
3/26/2015	13	16.7	5	1	2	48	3	54	9	18	436	27	490
4/2/2015	14	14.8	5	1	6	40	4	51	8	51	339	34	432
4/9/2015	15	15.3	5	1	0	58	6	65	9	0	500	52	561
4/16/2015	16	15.1	5	958	5	56	2	1,021	8,907	46	521	19	9,493
4/23/2015	17	19.7	5	176	9	32	5	222	2,120	108	385	60	2,673
4/30/2015	18	123.5	0	---	---	---	---	---	---	---	---	---	---
5/7/2015	19	119.2	4	3	57	5	0	65	275	5,219	458	0	5,952
5/14/2015	20	62.0	5	1	194	6	1	202	34	6,655	206	34	6,929
5/21/2015	21	59.7	4	4	273	8	0	285	150	10,260	301	0	10,711
5/28/2015	22	46.2	5	10	94	8	1	113	230	2,164	184	23	2,601
6/4/2015	23	34.0	5	3	127	14	0	144	50	2,103	232	0	2,385
6/11/2015	24	22.2	5	0	183	32	0	215	0	2,173	380	0	2,553
6/18/2015	25	19.1	5	1	190	26	0	217	10	1,883	258	0	2,151
6/25/2015	26	15.3	5	0	279	1	0	280	0	2,272	8	0	2,280
7/2/2015	27	12.6	3	0	272	2	0	274	0	5,826	43	0	5,869
7/9/2015	28	13.8	5	0	438	13	1	452	0	11,491	341	26	11,858
7/16/2015	29	13.0	5	0	418	4	1	423	0	11,344	109	27	11,480
7/23/2015	30	12.7	5	0	285	6	1	292	0	8,798	185	31	9,014
7/30/2015	31	12.6	5	0	103	3	1	107	0	1,411	41	14	1,466
8/6/2015	32	12.6	4	0	128	5	2	135	0	3,918	153	61	4,132
8/13/2015	33	27.8	3	0	57	1	0	58	0	4,834	85	0	4,919
8/20/2015	34	28.3	4	0	143	3	0	146	0	2,652	56	0	2,708
8/27/2015	35	31.7	1	0	8	1	0	9	0	537	67	0	604
Total			147	1,165	3,275	633	43	5,116	11,864	83,802	11,072	604	107,342

Appendix 6. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Steelhead catches and abundance indices, 2015 (AD = adipose fin clip).

	Week	Mean Daily	Trap	Weekly Steelhead Catches					Weekly Steelhead Indices				
Week	of	Discharge	Days	Hatchery	Natural			Catch	Hatchery	Natural			Index
Starting	Year	m^3/s	Sampled	AD	Age-0	Age-1	Age-2+	Total	AD	Age-0	Age-1	Age-2+	Total
3/12/2015	11	60	6	0	0	4	4	8	0	0	110	110	220
3/19/2015	12	69	14	0	0	43	29	72	0	0	627	378	1,005
3/26/2015	13	72	15	0	8	90	39	137	0	87	1,061	435	1,583
4/2/2015	14	56	13	2	0	57	60	119	21	0	675	683	1,379
4/9/2015	15	59	15	4	0	57	139	200	39	0	594	1,438	2,071
4/16/2015	16	50	15	541	0	56	67	664	4,745	0	521	637	5,903
4/23/2015	17	47	14	763	0	50	40	853	6,850	0	445	357	7,652
4/30/2015	18	133	6	238	0	18	18	274	5,955	0	455	455	6,865
5/7/2015	19	151	6	337	4	23	18	382	13,358	159	903	709	15,129
5/14/2015	20	83	12	202	3	28	36	269	4,075	39	472	680	5,266
5/21/2015	21	81	15	124	18	46	30	218	1,624	230	598	386	2,838
5/28/2015	22	63	14	46	45	20	14	125	582	580	239	179	1,580
6/4/2015	23	47	15	19	133	6	3	161	172	1,156	53	25	1,406
6/11/2015	24	32	15	3	102	4	0	109	20	673	24	0	717
6/18/2015	25	26	15	0	94	1	0	95	0	455	4	0	459
6/25/2015	26	22	14	0	55	2	0	57	0	274	8	0	282
7/2/2015	27	18	12	0	24	1	0	25	0	145	5	0	150
7/9/2015	28	21	15	0	15	3	0	18	0	64	14	0	78
7/16/2015	29	18	15	0	13	5	0	18	0	55	21	0	76
7/23/2015	30	17	15	0	6	0	0	6	0	27	0	0	27
7/30/2015	31	17	15	0	9	0	0	9	0	39	0	0	39
8/6/2015	32	17	15	0	14	3	0	17	0	63	13	0	76
8/13/2015	33	29	3	0	4	0	0	4	0	91	0	0	91
8/20/2015	34	32	3	0	14	0	0	14	0	291	0	0	291
Totals			297	2279	561	517	497	3854	37441	4428	6842	6472	55183

Appendix 7. Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly age-0 Chinook Salmon population estimate input and results, 2015 (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
1/8/2015	2	0.43	4518	0	0	---	---	229,205	105,090	0	---
1/15/2015	3	0.71	10257	0	0	---	---	230,152	52,406	0	---
1/22/2015	4	0.71	13864	0	0	---	---	326,456	115,056	0	---
1/30/2015	5	0.71	13,781	0	1,002	152	0.15	130,121	15,301	0	---
2/5/2015	6	0.29	1885	0	987	49	0.05	131,030	18,652	0	---
2/12/2015	7	0.57	5,526	0	1,469	48	0.03	296,149	34,879	0	---
2/19/2015	8	0.71	2,741	0	426	20	0.05	81,321	16,189	0	---
2/26/2015	9	0.71	1,801	0	422	27	0.06	39,270	7,821	0	---
3/5/2015	10	0.71	735	0	967	125	0.13	8,232	726	0	---
3/12/2015	11	0.71	509	0	710	68	0.10	7,794	945	0	---
3/19/2015	12	0.71	531	0	699	92	0.13	5,882	615	0	---
3/26/2015	13	0.71	903	0	782	116	0.15	8,686	809	0	---
4/2/2015	14	0.71	2,206	0	759	111	0.15	21,367	1,874	0	---
4/9/2015	15	0.71	2,500	0	794	96	0.12	29,160	2,730	0	---
4/16/2015	16	0.71	1,786	0	800	85	0.11	23,916	2,398	0	---
4/23/2015	17	0.71	1,674	0	1,498	154	0.10	23,164	1,835	0	---
4/30/2015	18	0.00	---	---	---	---	---	53,659	72,775	0	---
5/7/2015	19	0.57	332	0	2,446	22	0.01	59,503	12,060	0	---
5/14/2015	20	0.71	458	0	1,842	4	0.002	142,389	49,266	0	---
5/21/2015	21	0.57	156	0	978	0	0.00	17,355	14,571	0	---
5/28/2015	22	0.71	954	199	1,751	2	0.001	10,163	4,307	31,005	13,531
6/4/2015	23	0.71	2,936	859	1,353	17	0.01	8,768	5,700	386,715	49,685
6/11/2015	24	0.71	1,707	560	1,075	20	0.02	2,652	1,822	160,192	36,379
6/18/2015	25	0.71	1,622	459	1,104	17	0.02	4,457	3,388	172,289	30,915
6/25/2015	26	0.71	1,486	481	1,124	17	0.02	1,577	1,258	164,201	42,454
7/2/2015	27	0.43	793	152	864	94	0.11	5,761	905	14,363	1,566
7/9/2015	28	0.71	343	104	818	60	0.07	386	279	8,451	1,141
7/16/2015	29	0.71	222	61	752	68	0.09	244	197	4,216	570
7/23/2015	30	0.71	59	14	817	94	0.12	89	78	838	140
7/30/2015	31	0.71	26	10	817	114	0.14	23	24	350	62
8/6/2015	32	0.57	9	5	0	---	---	11	22	388	273
8/13/2015	33	0.43	6	2	821	116	0.14	5	11	129	32
8/20/2015	34	0.57	2	0	0			5	20	79	94
Total			76,328	2,906	27,877	1,788	0.06	1,898,953	177,154	943,214	37,642

[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, 2015 (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
3/12/2015	11	0.43	64	0	928	111	0.12	3,752	3,534	0	---
3/19/2015	12	0.71	313	0	1,443	161	0.11	8,860	6,649	0	---
3/26/2015	13	0.71	610	0	1,401	260	0.19	15,481	11,555	0	---
4/2/2015	14	0.71	682	0	1,442	151	0.11	18,701	13,272	0	---
4/9/2015	15	0.71	1,208	0	1,483	210	0.14	32,854	23,078	0	---
4/16/2015	16	0.71	1,369	0	1,454	159	0.11	40,165	30,113	0	---
4/23/2015	17	0.71	1,556	0	1,393	154	0.11	42,136	25,927	0	---
4/30/2015	18	0.43	330	0	4,888	434	0.09	8,760	500	0	---
5/7/2015	19	0.43	3,560	0	4,089	190	0.05	177,127	12,717	0	---
5/14/2015	20	0.71	2,042	0	2,924	79	0.03	105,482	11,741	0	---
5/21/2015	21	0.71	1,633	0	1,425	20	0.01	146,214	29,579	0	---
5/28/2015	22	0.71	369	0	1,499	14	0.01	51,620	13,084	0	---
6/4/2015	23	0.71	5,657	1,018	1,507	67	0.04	73,123	9,356	142,612	17,431
6/11/2015	24	0.71	12,576	2,534	1,509	135	0.09	65,170	6,014	173,203	14,887
6/18/2015	25	0.71	12,945	2,668	1,349	115	0.09	66,144	6,511	188,695	16,990
6/25/2015	26	0.71	4,978	1,213	1,515	32	0.02	15,430	6,125	87,423	33,283
7/2/2015	27	0.57	1,275	315	988	8	0.01	5,344	2,687	32,830	15,066
7/9/2015	28	0.71	542	93	969	186	0.19	1,720	261	3,046	330
7/16/2015	29	0.71	227	58	895	2	0.00	826	544	5,004	2,887
7/23/2015	30	0.71	60	1	870	214	0.25	1,450	979	237	170
7/30/2015	31	0.71	21	2	1,058	102	0.10	207	71	132	65
8/6/2015	32	0.71	4	1	986	87	0.09	68	30	27	21
8/13/2015	33	0.14	1	0	982	0	0.00	130	102	6	13
8/20/2015	34	0.43	7	0	1,040	0	0.00	214	191	2	11
Total			52,029	7,903	38,037	2,891	0.08	880,976	78,745	633,216	51,491

[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, 2015.

		Chinook Salmon[1]										Natural Coho Salmon										Hatchery Coho Salmon				
Week	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
1/8/2015	2	120	37.8	35	41	1.31	4	171.8	150	185	15.88	0	---	---	---	---	15	98.6	84.0	120.0	8.7	0	---	---	---	---
1/15/2015	3	149	38.3	32	52	2.53	3	173.3	125	202	42.10	0	---	---	---	---	80	99.3	73.0	145.0	10.1	0	---	---	---	---
1/22/2015	4	120	38.1	35	55	2.28	4	173.5	156	190	14.27	0	---	---	---	---	47	97.5	75.0	135.0	12.1	0	---	---	---	---
1/30/2015	5	120	38.1	34	43	1.45	1	182.0	182	182	---!	0	---	---	---	---	10	92.6	76.0	110.0	11.0	0	---	---	---	---
2/5/2015	6	30	38.5	36	40	1.22	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
2/12/2015	7	120	40.6	36	53	2.64	0	---	---	---	---	79	34.8	29.0	39.0	1.6	60	94.4	71.0	115.0	10.4	0	---	---	---	---
2/19/2015	8	150	40.7	35	60	3.93	2	133.5	90	177	61.52	29	34.8	33.0	37.0	0.9	65	98.2	70.0	120.0	11.1	0	---	---	---	---
2/26/2015	9	120	41.6	36	69	5.37	0	---	---	---	---	10	36.3	35.0	38.0	1.2	35	98.3	79.0	119.0	11.5	0	---	---	---	---
3/5/2015	10	151	40.2	26	75	5.87	5	111.0	90	168	32.26	13	35.8	29.0	40.0	3.4	11	94.0	82.0	115.0	11.5	0	---	---	---	---
3/12/2015	11	120	41.8	34	75	8.04	2	180.0	175	185	7.07	7	34.3	32.0	39.0	2.3	9	119.9	106.0	159.0	18.0	35	156.3	130	234	20.30
3/19/2015	12	149	47.8	35	84	10.26	7	125.0	92	184	39.82	7	36.4	30.0	46.0	4.8	12	109.0	82.0	134.0	14.8	137	152.9	126	217	16.99
3/26/2015	13	150	50.8	35	79	10.63	2	101.5	93	110	12.02	2	37.0	36.0	38.0	1.4	11	107.4	92.0	120.0	7.9	88	156.2	112	240	23.04
4/2/2015	14	150	56.7	35	83	9.37	3	103.3	100	109	4.93	3	52.7	49.0	56.0	3.5	5	117.6	100.0	127.0	10.5	60	184.6	129	275	33.79
4/9/2015	15	150	60.3	42	87	8.74	7	104.7	100	115	5.22	0	0.0	0.0	0.0	0.0	4	119.3	100.0	148.0	20.8	58	176.9	120	252	30.65
4/16/2015	16	137	61.2	45	86	7.94	2	138.0	115	161	32.53	3	58.0	55.0	61.0	3.0	8	121.9	109.0	145.0	11.5	31	174.2	122	270	31.17
4/23/2015	17	150	64.8	48	88	7.91	1	107.0	107	107	---!	5	65.0	64.0	66.0	1.0	5	123.2	106.0	130.0	10.5	4	156.5	123	175	22.94
4/30/2015	18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5/7/2015	19	90	73.0	53	98	9.40	0	---	---	---	---	16	69.4	49.0	90.0	8.7	1	118.0	118.0	118.0	---	0	---	---	---	---
5/14/2015	20	150	70.5	45	100	9.54	0	---	---	---	---	28	68.9	55.0	80.0	7.2	5	112.8	96.0	138.0	18.2	0	---	---	---	---
5/21/2015	21	112	71.0	43	100	9.66	0	---	---	---	---	18	64.8	48.0	77.0	8.9	3	120.3	115.0	125.0	5.0	1	194.0	194	194	---
5/28/2015	22	148	83.6	58	113	12.02	0	---	---	---	---	20	68.9	57.0	80.0	6.5	0	0.0	0.0	0.0	0.0	2	174.5	169	180	7.78
6/4/2015	23	300	88.1	58	111	10.53	0	---	---	---	---	19	75.4	64.0	97.0	8.0	2	138.0	125.0	151.0	18.4	3	154.0	147	160	6.56
6/11/2015	24	300	88.2	59	114	9.81	0	---	---	---	---	30	71.2	60.0	83.0	6.9	1	122.0	122.0	122.0	---	0	---	---	---	---
6/18/2015	25	300	87.7	63	111	8.31	0	---	---	---	---	14	71.0	61.0	85.0	7.8	2	133.5	129.0	138.0	6.4	0	---	---	---	---
6/25/2015	26	297	87.9	66	133	6.93	0	---	---	---	---	21	79.6	68.0	102.0	11.3	0	---	---	---	---	1	172.0	172	172	---
7/2/2015	27	179	88.2	65	111	6.53	0	---	---	---	---	6	95.8	86.0	110.0	9.7	0	---	---	---	---	0	---	---	---	---
7/9/2015	28	219	89.9	72	107	5.36	0	---	---	---	---	9	79.8	65.0	100.0	9.8	0	---	---	---	---	0	---	---	---	---
7/16/2015	29	198	92.5	77	133	6.55	0	---	---	---	---	10	85.7	66.0	114.0	13.4	0	---	---	---	---	0	---	---	---	---
7/23/2015	30	69	95.8	82	134	10.31	0	---	---	---	---	5	93.2	79.0	103.0	9.4	0	---	---	---	---	0	---	---	---	---
7/30/2015	31	36	98.7	88	140	9.56	0	---	---	---	---	4	80.8	73.0	97.0	11.0	0	---	---	---	---	0	---	---	---	---
8/6/2015	32	13	101.4	72	125	13.00	0	---	---	---	---	5	85.6	79.0	90.0	5.6	0	0.0	0.0	0.0	0.0	0	---	---	---	---
8/13/2015	33	8	105.0	101	114	4.00	0	---	---	---	---	0	---	---	---	0.0	0	0.0	0.0	0.0	0.0	0	---	---	---	---
8/20/2015	34	1	106.0	106	106	---	0	---	---	---	---	0	---	---	---	0.0	0	0.0	0.0	0.0	0.0	0	---	---	---	---
8/27/2015	35	0	---	---	---	---	0	---	---	---	---	0	---	---	---	0.0	0	0.0	0.0	0.0	0.0	0	---	---	---	---

[1]Natural and Hatchery combined

Appendix 10. Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Chinook Salmon and Coho Salmon fork lengths, 2015.

Week	Week of	Chinook Salmon[1]										Natural Coho Salmon										Hatchery Coho Salmon				
		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
3/12/2015	11	61	40.8	30	65	6.10	0	---	---	---	---	0	---	---	---	---	1	108.0	108	108	---	0	---	---	---	---
3/19/2015	12	148	46.0	34	79	7.66	0	---	---	---	---	1	46.0	46	46	---	11	117.5	95	165	21.36	80	152.9	128	194	14.65
3/26/2015	13	142	55.1	35	80	9.11	0	---	---	---	---	1	48.0	48	48	---	10	122.0	92	160	20.04	75	155.0	109	212	17.57
4/2/2015	14	369	56.9	33	77	8.60	0	---	---	---	---	1	47.0	47	47	---	13	109.7	93	126	10.42	49	154.6	132	191	15.49
4/9/2015	15	431	59.9	31	99	9.60	0	---	---	---	---	1	45.0	45	45	---	12	109.5	93	126	9.87	48	160.5	115	250	23.27
4/16/2015	16	411	61.9	36	86	8.93	0	---	---	---	---	1	58.0	58	58	---	23	115.0	98	129	8.95	14	168.6	151	193	12.85
4/23/2015	17	398	61.9	37	93	8.56	1	116.0	116	116	---	1	62.0	62	62	---	17	113.8	96	153	13.20	12	168.0	145	204	16.61
4/30/2015	18	167	61.4	40	94	9.70	0	---	---	---	---	0	---	---	---	---	7	124.6	107	137	10.89	9	162.1	142	200	16.57
5/7/2015	19	180	69.8	46	97	9.83	0	---	---	---	---	3	64.0	60	72	6.93	9	132.6	117	170	15.79	33	167.1	144	210	13.24
5/14/2015	20	360	74.7	41	114	13.19	0	---	---	---	---	1	68.0	68	68	---	20	126.2	104	164	14.51	43	166.1	114	188	14.42
5/21/2015	21	450	83.5	45	105	10.04	0	---	---	---	---	8	62.3	49	79	8.35	25	124.0	91	155	16.65	46	160.0	117	195	13.92
5/28/2015	22	252	80.9	45	104	12.92	0	---	---	---	---	3	71.7	69	77	4.62	9	128.0	109	158	14.79	17	161.1	127	182	13.24
6/4/2015	23	453	95.1	47	120	11.29	0	---	---	---	---	3	66.0	57	74	8.54	3	155.7	150	162	6.03	4	162.0	156	175	8.83
6/11/2015	24	566	94.0	57	116	8.64	0	---	---	---	---	8	74.3	65	78	4.27	5	127.8	120	134	6.42	2	160.5	135	186	36.06
6/18/2015	25	414	89.6	59	115	8.10	0	---	---	---	---	1	65.0	65	65	---	1	133.0	133	133	---	2	149.0	132	166	24.04
6/25/2015	26	408	87.0	61	107	6.66	0	---	---	---	---	2	78.5	70	87	12.02	2	131.5	129	134	3.54	1	157.0	157	157	---
7/2/2015	27	361	88.8	60	110	6.56	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/9/2015	28	300	88.1	55	124	9.68	0	---	---	---	---	0	---	---	---	---	1	102.0	102	102	---	0	---	---	---	---
7/16/2015	29	273	90.7	54	118	6.98	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/23/2015	30	60	90.1	55	117	9.98	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
7/30/2015	31	21	93.5	70	121	9.19	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/6/2015	32	2	102.0	98	106	5.66	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/13/2015	33	1	105.0	105	105	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---
8/20/2015	34	2	87.5	85	90	3.54	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---

[1]Natural and Hatchery combined.

Appendix 11: Trinity River at Pear Tree Rotary Screw Trap site (PTRST) weekly Steelhead fork lengths, 2015.

		Natural Steelhead															Hatchery Steelhead				
Week	Week of	Age-0					Age-1					Age-2					Age-1				
Starting	Year	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD
1/8/2015	2	0	---	---	---	---	5	78.6	58	91	12.46	0	---	---	---	---	0	---	---	---	---
1/15/2015	3	0	---	---	---	---	18	73.7	55	104	12.43	1	136.0	136	136	---	1	230.0	230	230	---
1/22/2015	4	0	---	---	---	---	12	71.4	52	94	10.82	0	---	---	---	---	0	---	---	---	---
1/30/2015	5	0	---	---	---	---	10	83.4	52	125	20.91	1	150.0	150	150	---	0	---	---	---	---
2/5/2015	6	0	---	---	---	---	4	66.8	65	70	2.36	0	---	---	---	---	0	---	---	---	---
2/12/2015	7	0	---	---	---	---	48	74.4	56	114	14.51	1	182.0	182	182	---	0	---	---	---	---
2/19/2015	8	0	---	---	---	---	52	84.2	57	146	23.87	4	174.0	155	200	22.23	0	---	---	---	---
2/26/2015	9	0	---	---	---	---	13	90.2	60	130	26.75	1	185.0	185	185	---	1	385.0	385	385	---
3/5/2015	10	0	---	---	---	---	7	99.0	77	127	19.26	2	175.0	175	175	---	1	250.0	250	250	---
3/12/2015	11	0	---	---	---	---	22	96.3	57	145	23.48	1	171.0	171	171	---	0	---	---	---	---
3/19/2015	12	0	---	---	---	---	58	101.3	64	158	26.79	4	183.5	175	204	13.87	3	260.3	230	294	32.13
3/26/2015	13	0	---	---	---	---	48	97.5	63	165	26.16	3	212.7	200	234	18.58	1	265.0	265	265	---
4/2/2015	14	6	26.0	25	27	0.63	40	104.8	74	170	25.50	4	188.8	180	201	10.08	1	280.0	280	280	---
4/9/2015	15	0	---	---	---	---	58	112.3	73	167	26.55	6	186.3	177	203	10.93	1	259.0	259	259	---
4/16/2015	16	3	27.0	26	28	1.00	56	102.7	73	161	20.78	2	188.5	173	204	21.92	92	204.1	123	249	21.14
4/23/2015	17	8	37.8	26	75	16.30	32	102.8	61	170	28.37	5	224.2	220	228	2.95	80	197.3	119	265	23.33
4/30/2015	18	---	---	---	---	---	---	---	---	---	---	--	---	---	---	---	---	---	---	---	---
5/7/2015	19	39	37.6	25	86	13.59	5	105.0	88	145	24.02	0	---	---	---	---	3	206.0	184	221	19.47
5/14/2015	20	108	41.9	25	77	10.08	6	122.8	103	137	13.85	1	184.0	184	184	---	1	185.0	185	185	---
5/21/2015	21	121	38.0	25	84	11.80	8	137.5	108	173	20.58	0	---	---	---	---	4	211.3	181	236	23.20
5/28/2015	22	89	50.8	26	95	12.85	8	146.5	113	177	21.79	1	210.0	210	210	---	8	217.3	101	340	79.33
6/4/2015	23	124	52.4	27	80	9.77	14	149.0	123	175	18.40	0	---	---	---	---	3	217.3	190	250	30.35
6/11/2015	24	169	52.4	28	85	8.91	13	150.0	125	174	17.00	0	---	---	---	---	0	---	---	---	---
6/18/2015	25	180	55.8	28	94	10.57	10	134.6	107	176	20.34	0	---	---	---	---	1	242.0	242	242	---
6/25/2015	26	169	58.8	31	85	9.08	1	132.0	132	132	---	0	---	---	---	---	0	---	---	---	---
7/2/2015	27	91	64.3	46	100	9.56	2	140.0	138	142	2.83	0	---	---	---	---	0	---	---	---	---
7/9/2015	28	139	62.6	42	115	11.23	13	148.4	123	170	17.12	1	233.0	233	233	---	0	---	---	---	---
7/16/2015	29	152	66.4	44	108	9.00	4	168.5	151	177	11.85	1	210.0	210	210	---	0	---	---	---	---
7/23/2015	30	151	66.5	48	104	9.86	6	148.3	131	176	18.97	1	193.0	193	193	---	0	---	---	---	---
7/30/2015	31	100	68.6	51	102	10.37	3	148.0	127	180	28.16	1	206.0	206	206	---	0	---	---	---	---
8/6/2015	32	111	65.4	42	99	11.39	3	164.0	148	188	21.17	2	210.0	204	216	8.49	0	---	---	---	---
8/13/2015	33	56	70.1	45	102	11.74	1	130.0	130	130	---	0	---	---	---	---	0	---	---	---	---
8/20/2015	34	98	69.6	45	103	11.72	3	159.3	152	167	7.51	0	---	---	---	---	0	---	---	---	---
8/27/2015	35	8	65.4	44	96	16.30	0	---	---	---	---	0	---	---	---	---	0	---	---	---	---

Appendix 12: Trinity River at Willow Creek Rotary Screw Trap site (WCRST) weekly Steelhead fork lengths, 2015.

		Natural Steelhead															Hatchery Steelhead				
Week	Week of	Age-0					Age-1					Age-2					Age-1				
Starting	Year	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD
3/12/2015	11	0	---	---	---	---	3	113.0	100	133	17.58	4	209.8	163	242	34.97	0	---	---	---	---
3/19/2015	12	0	---	---	---	----	22	104.9	67	149	22.81	29	203.3	153	310	29.85	0	---	---	---	---
3/26/2015	13	1	176.0	176	176	----	74	100.2	67	153	20.20	39	191.3	154	268	25.20	0	---	---	---	---
4/2/2015	14	0	---	---	---	---	54	112.2	71	156	24.15	60	187.1	157	287	22.26	2	345.0	325	365	28.28
4/9/2015	15	0	---	---	---	----	54	126.6	75	156	25.97	139	191.2	156	390	28.44	4	261.0	241	273	14.45
4/16/2015	16	0	---	---	---	----	56	119.6	70	161	29.10	67	185.6	162	250	16.74	90	211.8	154	250	18.99
4/23/2015	17	0	---	---	---	----	49	119.9	78	163	27.63	40	178.9	162	206	10.32	140	205.6	163	290	17.99
4/30/2015	18	0	---	---	---	---	18	129.6	85	165	29.99	18	186.1	165	225	16.97	56	200.8	127	248	22.96
5/7/2015	19	4	40.0	26	49	10.49	23	140.0	88	166	26.29	18	182.9	167	205	13.63	42	207.7	164	268	21.30
5/14/2015	20	3	71.0	26	94	38.97	28	147.4	93	170	21.82	36	188.2	168	236	17.87	110	201.6	137	257	23.44
5/21/2015	21	18	55.4	39	99	14.32	46	156.3	117	169	11.05	30	183.9	171	210	10.34	96	205.2	157	258	21.81
5/28/2015	22	45	56.7	45	70	5.74	19	155.0	110	175	17.12	14	184.6	171	200	10.01	43	209.8	170	255	18.86
6/4/2015	23	120	63.0	47	99	9.34	6	160.7	153	170	7.87	3	184.7	179	195	8.96	19	211.3	184	248	19.65
6/11/2015	24	101	60.7	41	99	9.96	4	153.3	149	160	4.79	0	---	---	---	----	3	206.3	168	230	33.50
6/18/2015	25	92	60.7	39	77	7.74	1	122.0	122	122	---	0	---	---	---	---	0	---	---	---	---
6/25/2015	26	54	62.3	40	99	9.86	1	167.0	167	167	---	0	---	---	---	---	0	---	---	---	---
7/2/2015	27	22	62.4	49	88	9.98	0	---	---	---	---	0	---	---	---	----	0	---	---	---	----
7/9/2015	28	13	61.7	49	87	12.51	3	129.0	111	139	15.62	0	---	---	---	----	0	---	---	---	----
7/16/2015	29	7	53.1	41	61	7.27	2	145.0	134	156	15.56	0	---	---	---	----	0	---	---	---	----
7/23/2015	30	6	72.2	63	93	10.72	0	---	---	---	---	0	---	---	---	----	0	---	---	---	----
7/30/2015	31	8	70.5	61	84	6.76	0	---	---	---	---	0	---	---	---	----	0	---	---	---	----
8/6/2015	32	6	60.2	47	79	12.75	2	152.5	128	177	34.65	0	---	---	---	----	0	---	---	---	----
8/13/2015	33	4	65.0	60	70	4.08	0	---	---	---	---	0	---	---	---	----	0	---	---	---	----
8/20/2015	34	0	---	---	---	---	0	---	---	---	---	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, 2015.

		Pear Tree Trap Site			Willow Creek Trap Site		
Week Starting	Week of Year	n	Average K	Standard Deviation of K	n	Average K	Standard Deviation of K
1/8/2015	2	0	---	---		---	---
1/15/2015	3	0	---	---	0	----	----
1/22/2015	4	0	---	---	0	----	----
1/30/2015	5	0	---	---	0	----	----
2/5/2015	6	0	---	---	0	----	----
2/12/2015	7	0	---	---	0	----	----
2/19/2015	8	0	---	---	0	----	----
2/26/2015	9	7	1.16	0.089	0	----	----
3/5/2015	10	4	1.12	0.036	0	----	----
3/12/2015	11	16	1.13	0.140	4	1.05	0.23
3/19/2015	12	61	1.14	0.107	38	1.10	0.18
3/26/2015	13	42	1.16	0.080	99	1.12	0.21
4/2/2015	14	69	1.14	0.074	248	1.15	0.28
4/9/2015	15	102	1.16	0.081	308	1.09	0.15
4/16/2015	16	131	1.16	0.104	342	1.12	0.18
4/23/2015	17	59	1.20	0.142	319	1.09	0.15
4/30/2015	18	---	---	---	126	1.17	0.15
5/7/2015	19	30	1.20	0.107	160	1.12	0.15
5/14/2015	20	88	1.15	0.104	325	1.08	0.13
5/21/2015	21	110	1.08	0.073	387	1.07	0.13
5/28/2015	22	105	1.05	0.100	227	1.11	0.11
6/4/2015	23	295	1.05	0.078	347	1.05	0.13
6/11/2015	24	299	1.07	0.090	384	1.04	0.12
6/18/2015	25	299	1.10	0.102	255	1.08	0.15
6/25/2015	26	296	1.10	0.076	281	1.10	0.15
7/2/2015	27	179	1.15	0.088	253	1.10	0.15
7/9/2015	28	219	1.14	0.077	196	1.11	0.18
7/16/2015	29	198	1.12	0.058	197	1.10	0.11
7/23/2015	30	69	1.12	0.053	55	1.15	0.19
7/30/2015	31	36	1.09	0.057	19	1.12	0.09
8/6/2015	32	13	1.08	0.077	2	0.94	0.04
8/13/2015	33	8	1.09	0.067	1	0.89	---
8/20/2015	34	1	1.09	---	2	0.76	0.09

Appendix 14. Fulton's condition factor (K) for natural age-1 Coho Salmon from the Pear Tree and Willow Creek Rotary Screw Trap sites, 2015.

		Pear Tree Trap Site			Willow Creek Trap Site		
Week Starting	Week of Year	n	Average K	Standard Deviation of K	n	Average K	Standard Deviation of K
1/8/2015	2	0	---	---			
1/15/2015	3	12	1.12	0.082	0	----	----
1/22/2015	4	19	1.09	0.091	0	----	----
1/30/2015	5	10	1.09	0.060	0	----	----
2/5/2015	6	0	---	---	0	----	----
2/12/2015	7	60	1.13	0.071	0	----	----
2/19/2015	8	65	1.12	0.078	0	----	----
2/26/2015	9	35	1.06	0.076	0	----	----
3/5/2015	10	11	1.05	0.052	0	----	----
3/12/2015	11	9	1.05	0.107	1	1.02	----
3/19/2015	12	12	1.10	0.074	11	1.27	0.43
3/26/2015	13	8	1.06	0.054	10	1.03	0.08
4/2/2015	14	5	1.08	0.065	13	1.08	0.05
4/9/2015	15	4	1.01	0.090	12	1.10	0.20
4/16/2015	16	8	1.04	0.058	23	1.14	0.10
4/23/2015	17	3	1.01	0.066	17	1.06	0.11
4/30/2015	18	---	---	---	7	0.99	0.04
5/7/2015	19	1	1.21	---	9	1.05	0.12
5/14/2015	20	4	1.11	0.093	20	1.00	0.17
5/21/2015	21	3	1.01	0.056	21	0.97	0.12
5/28/2015	22	0	---	---	9	0.97	0.07
6/4/2015	23	2	0.88	0.150	3	0.99	0.07
6/11/2015	24	1	0.88	---	5	0.89	0.22
6/18/2015	25	2	1.05	0.082	1	1.11	----
6/25/2015	26	0	---	---	2	0.84	0.07
7/2/2015	27	0	---	---	0	----	----
7/9/2015	28	0	---	---	0	----	----
7/16/2015	29	0	---	---	0	----	----
7/23/2015	30	0	---	---	0	----	----
7/30/2015	31	0	---	---	0	----	----
8/6/2015	32	0	---	---	0	---	----
8/13/2015	33	0	---	---	0	----	----
8/20/2015	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, 2015.

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
1/8/2015	2	2	1.24	0.059			
1/15/2015	3	5	1.16	0.151	0	----	----
1/22/2015	4	10	1.14	0.073	0	----	----
1/30/2015	5	4	1.15	0.090	0	----	----
2/5/2015	6	48	1.16	0.068	0	----	----
2/12/2015	7	51	1.13	0.077	0	----	----
2/19/2015	8	12	1.15	0.080	0	----	----
2/26/2015	9	7	1.11	0.046	0	----	----
3/5/2015	10	22	1.15	0.079	0	----	----
3/12/2015	11	58	1.11	0.080	3	1.00	0.05
3/19/2015	12	39	1.17	0.131	22	1.12	0.18
3/26/2015	13	27	1.13	0.078	74	1.18	0.27
4/2/2015	14	43	1.12	0.109	53	1.14	0.21
4/9/2015	15	56	1.11	0.097	54	1.08	0.19
4/16/2015	16	19	1.10	0.090	56	1.11	0.24
4/23/2015	17	0	---	---	49	1.04	0.14
4/30/2015	18	---	---	---	18	1.01	0.12
5/7/2015	19	4	1.13	0.091	23	1.15	0.20
5/14/2015	20	8	1.05	0.093	28	0.97	0.19
5/21/2015	21	6	1.10	0.093	43	0.97	0.09
5/28/2015	22	14	1.04	0.100	19	0.96	0.11
6/4/2015	23	13	1.16	0.084	6	1.00	0.28
6/11/2015	24	10	1.16	0.209	4	1.06	0.12
6/18/2015	25	1	1.23	---	1	0.92	---
6/25/2015	26	2	0.99	0.140	1	0.69	---
7/2/2015	27	13	1.16	0.094	0	---	---
7/9/2015	28	4	1.16	0.069	2	1.14	0.19
7/16/2015	29	6	1.11	0.098	2	1.20	0.04
7/23/2015	30	3	1.10	0.012	0	---	---
7/30/2015	31	3	1.13	0.070	0	---	---
8/6/2015	32	1	1.30	---	2	0.91	0.18
8/13/2015	33	0	---	---	0	---	---
8/20/2015	34	0	---	---	0	---	---