

Juvenile Salmonid Monitoring on the Mainstem Trinity River, California, 2010

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Abstract.-- This report presents juvenile salmonid emigration monitoring data on the mainstem Trinity River, California conducted in 2010 at Pear Tree Bar (PTRST; river kilometer [rkm] 118) and Willow Creek (WCRST; rkm 34). Monitoring at PTRST is conducted to estimate juvenile salmonid population size passing PTRST during the sampling season. Monitoring at WCRST is conducted to estimate juvenile salmonid population size and emigration timing during the monitoring period. In 2010, two rotary screw traps were operated at PTRST from January 21 through August 26, with successful sampling for 203 of the 218 day sampling period. At WCRST three rotary screw traps were operated in 2010 from March 9 through August 26, with successful sampling for 159 days of the 170 day sampling period.

Age of salmonid outmigrants, length frequency distributions, migration rates, and hatchery contributions were estimated. Catch data were used to calculate flow 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 between January 21 and August 26, an estimated 1,525,536 (SD = 137,719; CV = 0.09) naturally-produced age-0 Chinook salmon and 534,044 (SD = 67,943; CV = 0.13) age-0 hatchery Chinook salmon passed the site. At WCRST between March 9 and August 26, an estimated 3,414,795 (SD = 706,598; CV = 0.21) naturally-produced age-0 Chinook salmon and 1,158,482 (SD = 195,637; CV = 0.17) age-0 hatchery Chinook salmon passed the site.

Juvenile salmonid emigration target dates were developed as part of the flow recommendations contained in the Trinity River Flow Evaluation to assess at what date 80% of the juvenile salmonid population had left the Trinity River and provides information for managing 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 flow based abundance index was Week of the Year (WOY) 28 (July 2-July 9), which occurred prior to the TRRP management target date of July 9. The estimate of the week in which 80% of the steelhead smolt population passed the WCRST, as inferred from flow based abundance indices, was WOY 21 (May 15 – May 21), which occurred prior to the TRRP management target date of May 22. The estimate of the week in which 80% of the natural coho salmon smolt population passed the WCRST was WOY 24 (June 5-June 12), which occurred after the TRRP management target date of June 4.

Introduction

This report presents annual data collected to: (1) evaluate the production of juvenile salmonids, primarily 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) evaluate the production and outmigrant timing of juvenile salmonids through the lower Trinity River in response to managed flow releases, the new thermal regimes, and restoration efforts. Information collected by this project is needed to address TRRP Integrated Assessment Plan objective 3, 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.

In addition to quantifying salmonid outmigrant production and timing, fish condition and hatchery/natural composition of the outmigrants are assessed. The intent of this data series report is to provide timely dissemination of data to local managers and for inclusion in agency databases. 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 restoration efforts because these studies focus on the early freshwater life-history phase which is directly affected by instream conditions and management actions.

For details on background, study sites, and monitoring methods for data presented in this report, the reader is referred to the 2009 Trinity River Juvenile Salmonid Outmigrant Monitoring Report.

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.

Summary

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 2010 cooperatively by the Arcata Fish and Wildlife Office, Hoopa Valley Tribal Fisheries Department, and Yurok Tribal Fisheries Program at Pear Tree Gulch (PTRST) and Willow Creek (WCRST) on the mainstem Trinity River (Figure 1). Data are grouped by Week of the Year (WOY; Table 1) to aid in cross year comparisons. Graphs of water temperature and discharge through the sampling periods are presented in Figure 2. It is intended that this information will provide basic biological information that can be used by managers to evaluate the effectiveness of habitat restoration efforts, especially flow regimes recommended in the Record of Decision (USDOI 2000), in restoring the fishery resources of the Trinity River.

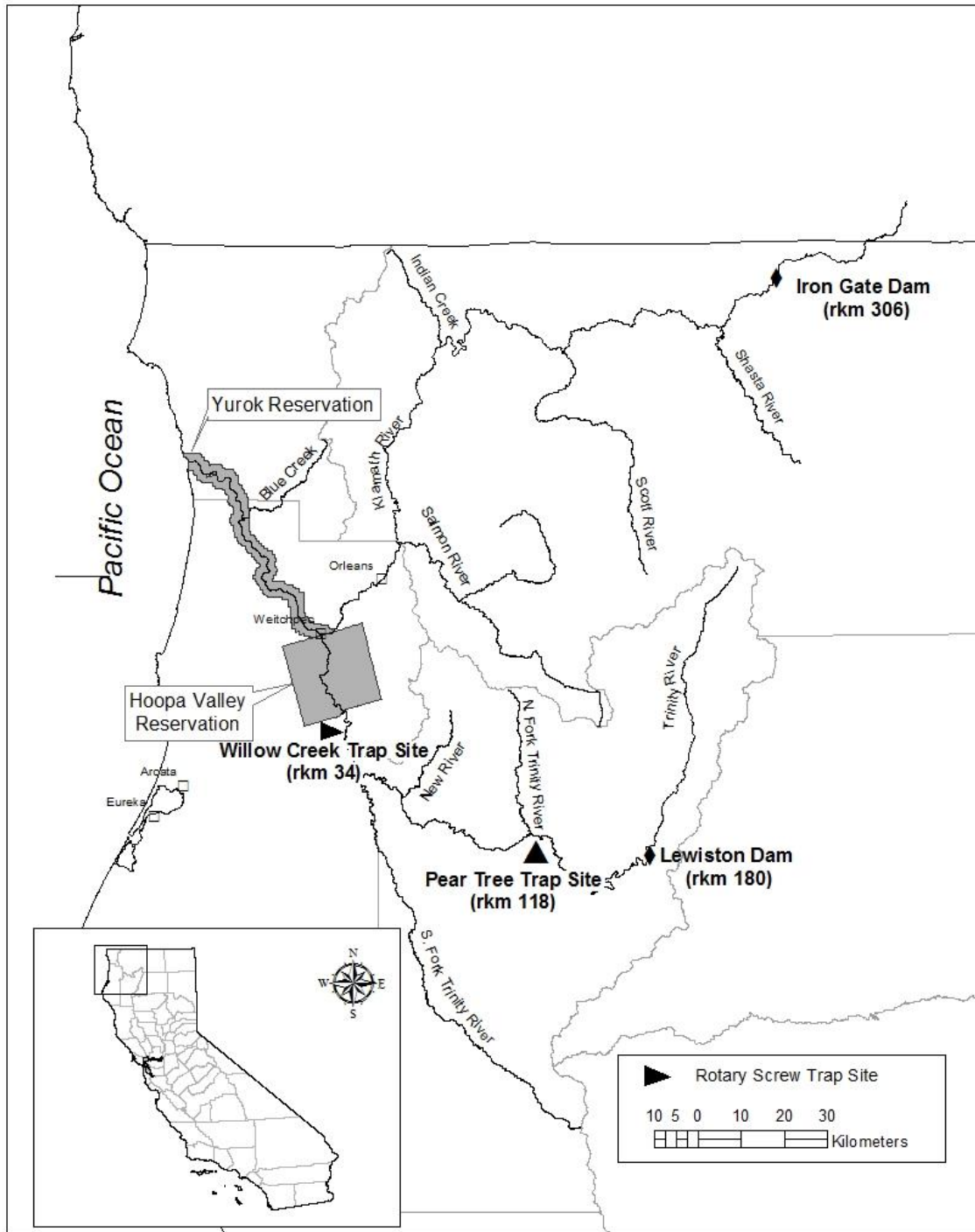


Figure 1. Location of the Trinity River rotary screw trap sites near Willow Creek (rkm 34) and Pear Tree Gulch (rkm 118), California, operated by the Yurok Tribal Fisheries Program, United States Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Hoopa Valley Tribal Fisheries Department.

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

Sampling Efforts

In 2010, trapping at PTRST began in the third week of January and trapping at WCRST was initiated the second week of March (Table 2). Sampling occurred at both sites in each week of the sampling period, although occasionally traps were not run each day of each sample week. 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 sufficiently sampled, efforts were made to install the traps as early as possible and sampling continued throughout the summer. This allows comparable data, especially similar time periods, to be collected for inter-annual comparisons in emigration timing (duration and peak) and abundance. Additionally, it is important to point out that sampling a portion of the year (i.e. the spring/summer season) samples only a portion of the annual production, and all estimates of production refer only to the sampling period.

Catch Totals

Catch totals of the primary salmonids of interest (Chinook salmon, coho salmon and steelhead) are presented in Table 3. Hatchery salmonid releases are presented in Table 4. Catch totals of other fish species are presented in Table 5.

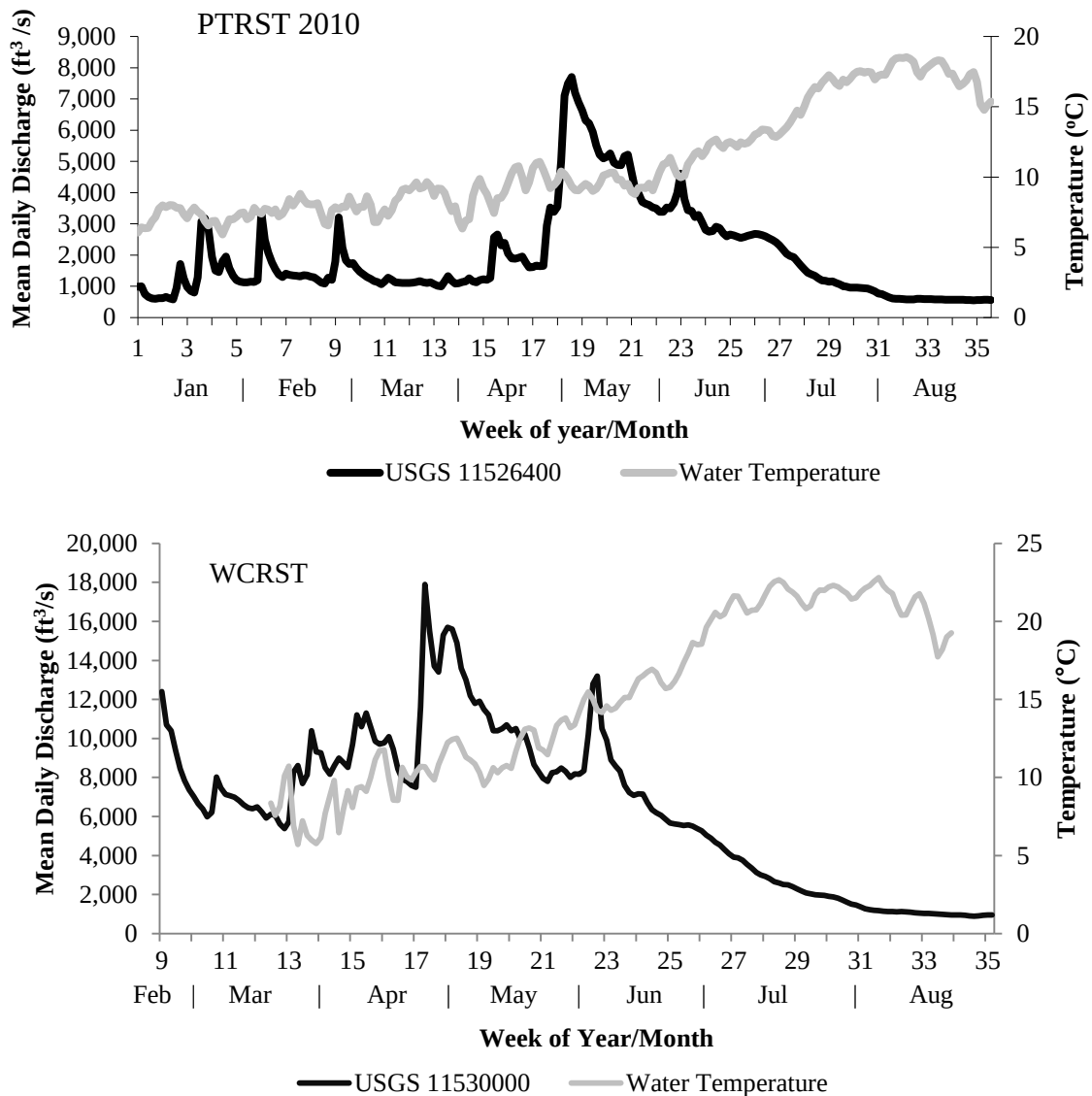


Figure 2. Mean daily discharge (ft³/s) as recorded at Pear Tree Bar (US Geological Survey Water Resource gauge station #11-526400) and Hoopa (HPA; US Geological Survey Water Resource gauge station #11-530000), California and mean daily water temperatures (°C) recorded at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) in 2010.

Abundance Indices

The flow based abundance indices for natural age-0 Chinook salmon were approximately 0.59 million and 1.01 million at PTRST and WCRST, respectively (Figure 3; Table 6; Appendix 1 & 2). The age-0 hatchery Chinook salmon abundance indices were 0.13 million at PTRST and 0.35 million at WCRST. It is unclear what caused the PTRST abundance index for hatchery Chinook salmon to be less than the WCRST estimate. This discrepancy was also observed in the mark-recapture population estimates. Because natural age-0 Chinook salmon were captured on the first day of trap operation in 2010, it is possible that a portion of the early spring natural age-0 Chinook salmon emigrated prior to trap installation.

Table 2. Period and duration of 2010 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). Combined value is 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)	21 Jan- 26 Aug	200	218	92%
PTRST	2 (1.5m)	03 Feb- 26 Aug	181	205	88%
Combined		21 Jan- 26 Aug	203	218	93%
WCRST	1 (2.4m)	09 Mar- 26 Aug	159	170	94%
WCRST	2 (2.4m)	09 Mar- 26 Aug	155	170	91%
WCRST	3 (2.4m)	10 Mar- 26 Aug	128	169	76%
Combined		09 Mar- 26 Aug	159	170	94%

Table 3. Juvenile salmonid catch totals in 2010 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, United States Fish and Wildlife Service, Arcata Fish and Wildlife Office and the Yurok Tribal Fisheries Program. 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	11,326	16	38,624	151	NA	50,117
PTRST	coho salmon	NA	55	218	353	NA	626
PTRST	steelhead	NA	2,359	971	1,565	83	4,978
WCRST	Chinook salmon	33,724	0	80,574	33	NA	114,331
WCRST	coho salmon	NA	274	48	61	NA	381
WCRST	steelhead	NA	967	686	396	13	2,062

Table 4. California Department of Fish and Game, Trinity River Hatchery juvenile salmonid releases, 2010. AD-clipped = adipose fin clipped fish.

Species ¹	Release Season	Number Released	Percentage AD-clipped or Marked	Release Dates
Chinook salmon	Spring	2,637,317	24.8%	06/01 - 06/08
Chinook salmon	Fall	1,370,095	24.8%	10/01 - 10/09
coho salmon	Spring	414,214	99.7%	04/06 - 04/08
steelhead	Spring	833,377	100.0%	03/15 - 03/30

1. Chinook salmon releases include both spring-run and fall-run races released in the spring and fall release seasons.

Table 5. Catch totals of non-target fish species captured at Pear Tree Rotary Screw Trap site (PTRST) and Willow Creek Rotary Screw Trap site (WCRST) on the mainstem Trinity River, California, 2010.

Common name	Species	Life stage	PTRST Catch(n)	WCRST Catch (n)
Lamprey	<i>Entosphenus spp.</i>	Ammocete	5,794	3,915
		Eyed juvenile	67	152
		Adult	4	1
Sucker	<i>Catostomus spp.</i>		671	3464
Speckled dace	<i>Rhinichthys osculus</i>		776	287
Threespine stickleback	<i>Gasterosteus aculeatus</i>		93	119
Golden shiner	<i>Notemigonus crysoleucas</i>		16	5
Brown trout	<i>Salmo trutta</i>		1,050	47
Sockeye salmon	<i>Oncorhynchus nerka</i>		0	23
Chum salmon	<i>Oncorhynchus keta</i>		0	1
Smallmouth bass	<i>Micropterus dolimieu</i>		1	0
Green sturgeon	<i>Acipenser medirostris</i>		0	153
American shad	<i>Alosa sapidissima</i>		0	2
Golden shiner	<i>Notemigonus crysoleucas</i>		0	5
Flathead minnow	<i>Pimephales promelas</i>		0	20
Prickly sculpin	<i>Cottus asperimus</i>		0	89
Coastrange sculpin	<i>Cottus aleuticus</i>		0	44
Marbled sculpin	<i>Cottus kolyensis</i>		0	8
Green sunfish	<i>Lepomis cyanellus</i>		0	18
Season Total			8,472	8,353

Table 6. Juvenile salmonid flow based abundance indices, at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2010.

Site	Species	Hatchery Age-0	Hatchery Age-1	Natural Age-0	Natural Age-1+	Natural Age-2+	Total
PTRST	Chinook	127,334	148	594,780	2,531	NA	724,793
PTRST	coho salmon	NA	950	2,981	6,567	NA	10,498
PTRST	steelhead	NA	18,145	13,066	21,710	794	53,715
WCRST	Chinook	352,767	0	1,006,720	1,194	NA	1,360,681
WCRST	coho salmon	NA	13,175	1,900	2,448	NA	17,523
WCRST	steelhead	NA	41,280	6,760	15,316	545	63,901

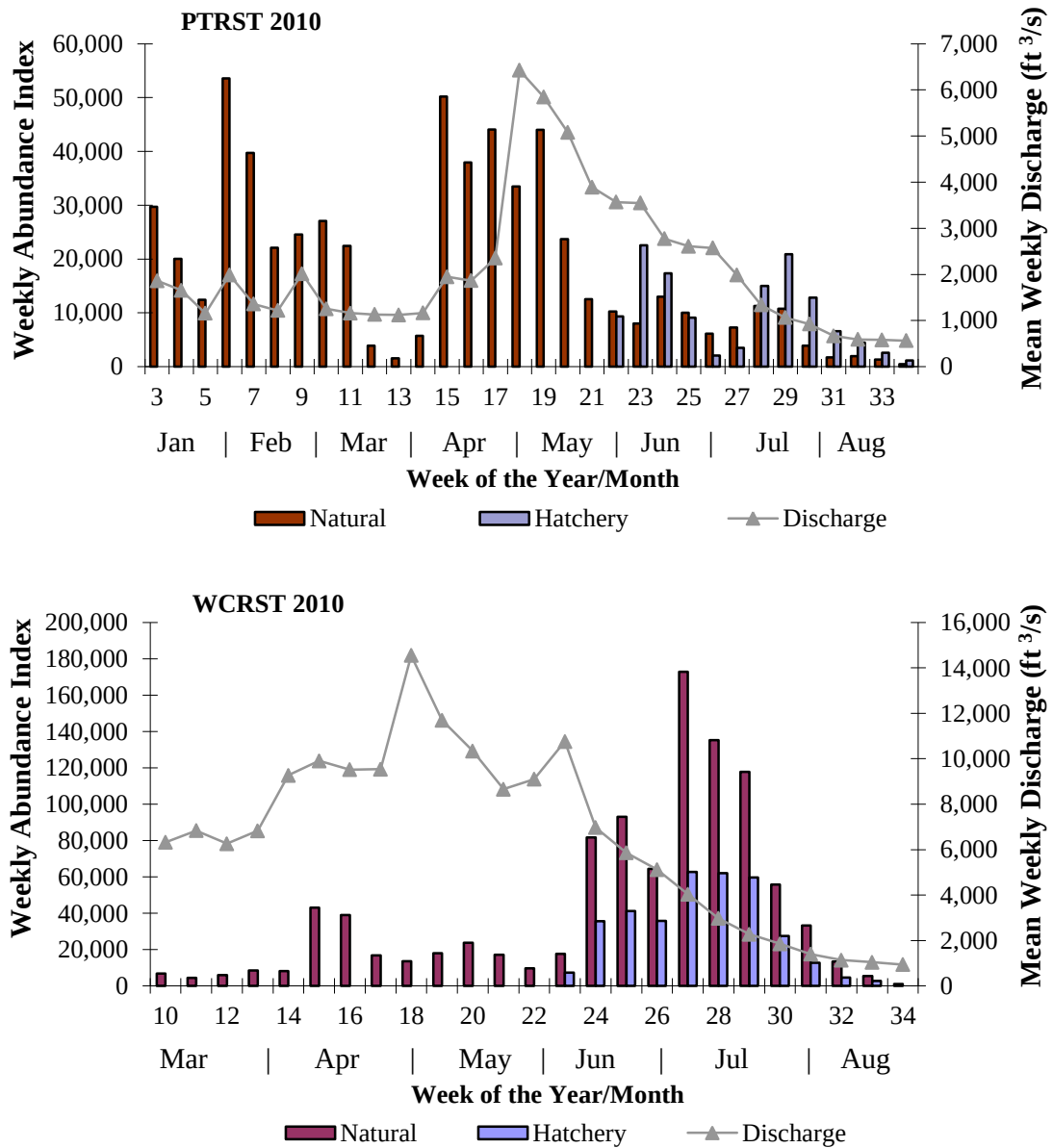


Figure 3. Weekly proportional discharge based abundance indices for natural age-0 and hatchery age-0 Chinook salmon captured at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34) in 2010. Mean daily discharge (ft³/s) was recorded near Helena, California (US Geological Survey Water Resource gauge station #11-526400) and at Hoopa, California (US Geological Survey Water Resource stream gage station #11-530000). Please note differences in scale of axes.

The flow based abundance indices for age 1+ naturally produced coho salmon were 6,567 and 2,448 fish at the PTRST and WCRST, respectively (Figure 4; Table 6; Appendix 3 & 4). The age-0 naturally produced coho salmon abundance indices were 2,981 and 1,900 for PTRST and WCRST, respectively. The abundance indices for hatchery age-1 coho salmon were 950 and 13,175 for PTRST and WCRST, respectively. Similar to the Chinook salmon hatchery abundance indices, the value for age-1 hatchery coho salmon

for the WCRST was greater than that for PTRST for an unknown reason. Since natural age-1+ coho salmon are captured at the beginning of the sampling period at both trap sites, it is likely that portions of each respective population emigrated prior to trap installation. Additionally, any outmigration that may occur in the fall of age-0 coho salmon is not accounted for because sampling typically ends in late August.

For the PTRST, flow based abundance indices for natural age-0 and age-1 steelhead were 13,066 and 21,710, respectively (Figure 5; Table 6; Appendix 5). The abundance indices for age-0 and age-1 steelhead at the WCRST were 6,760 and 15,316, respectively (Figure 5; Table 6; Appendix 6). The abundance indices for hatchery age-1 steelhead were 18,145 for the PTRST and 41,280 for the WCRST; again showing the unexplained pattern of higher values for the lower trapping site. As with coho salmon, the sampling period at both trap sites misses portions of each respective population that emigrated prior to or after trapping operations. Additionally, any outmigration that may occur in the fall of age-0 coho salmon is not accounted for because sampling typically ends in late August.

Chinook Salmon Population Estimation

During the 2010 sampling season, marked hatchery Chinook salmon were used to estimate capture efficiency to generate population estimates during the sampling period (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. At PTRST between January 21 and August 26, an estimated 1,525,536 (SD=137,719; CV = 0.09) naturally-produced age-0 Chinook salmon and 534,044 (SD = 67,943; CV = 0.13) age-0 hatchery Chinook salmon passed the site. At WCRST between March 9 and August 26, an estimated 3,414,795 (SD = 706,598; CV = 0.21) naturally-produced age-0 Chinook salmon and 1,158,482 (SD = 195,327; CV = 0.17) age-0 hatchery Chinook salmon passed the site.

It is likely that the WCRST estimate of naturally produced Chinook was higher in part due to recruitment of juvenile Chinook salmon from tributaries (i.e. North Fork Trinity River, South Fork Trinity River, and Willow Creek) and mainstem spawning below PTRST, but we cannot account for why the hatchery estimate was higher at WCRST compared to PTRST. Future analyses will attempt to explain this difference.

Hatchery/Natural Contribution

Chinook salmon were captured at PTRST and WCRST throughout the 2010 sampling season with the spring/summer emigration dominated by naturally-produced fish comprising 82% and 74%, respectively, of the total flow based abundance indices (Appendix 1 & 2).

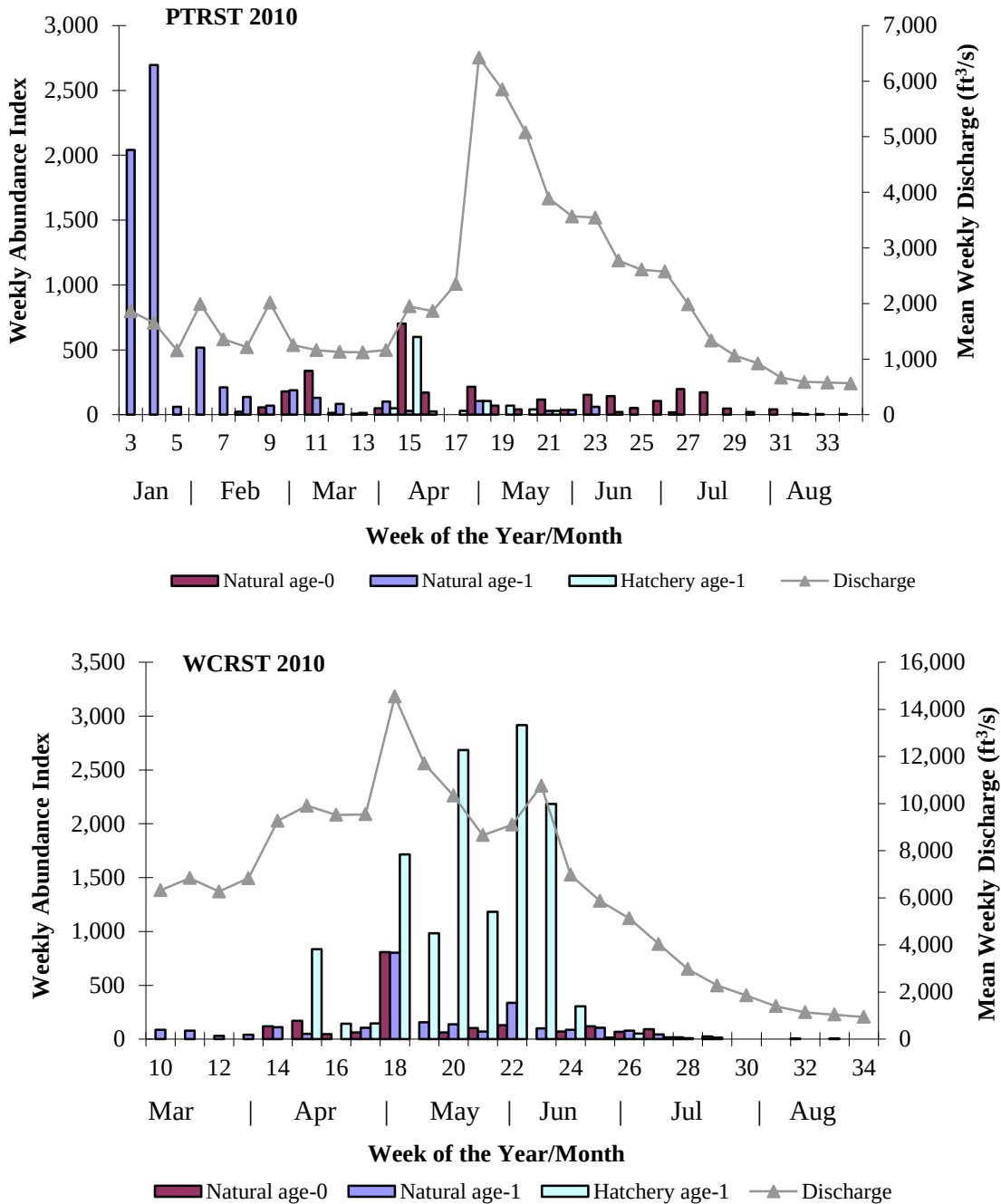


Figure 4. Weekly proportional discharge based abundance indices for natural age-0, natural age-1, and hatchery age-1 coho salmon captured at Rear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) in 2010. Mean daily discharge (ft³/s) was recorded by US Geological Survey Water Resource gauge station #11-526400, near Helena (rkm 118), California, and US Geological Survey Water Resource gauge station #11-530000 at Hoopa (rkm 34), California. Please note differences in scale of axes.

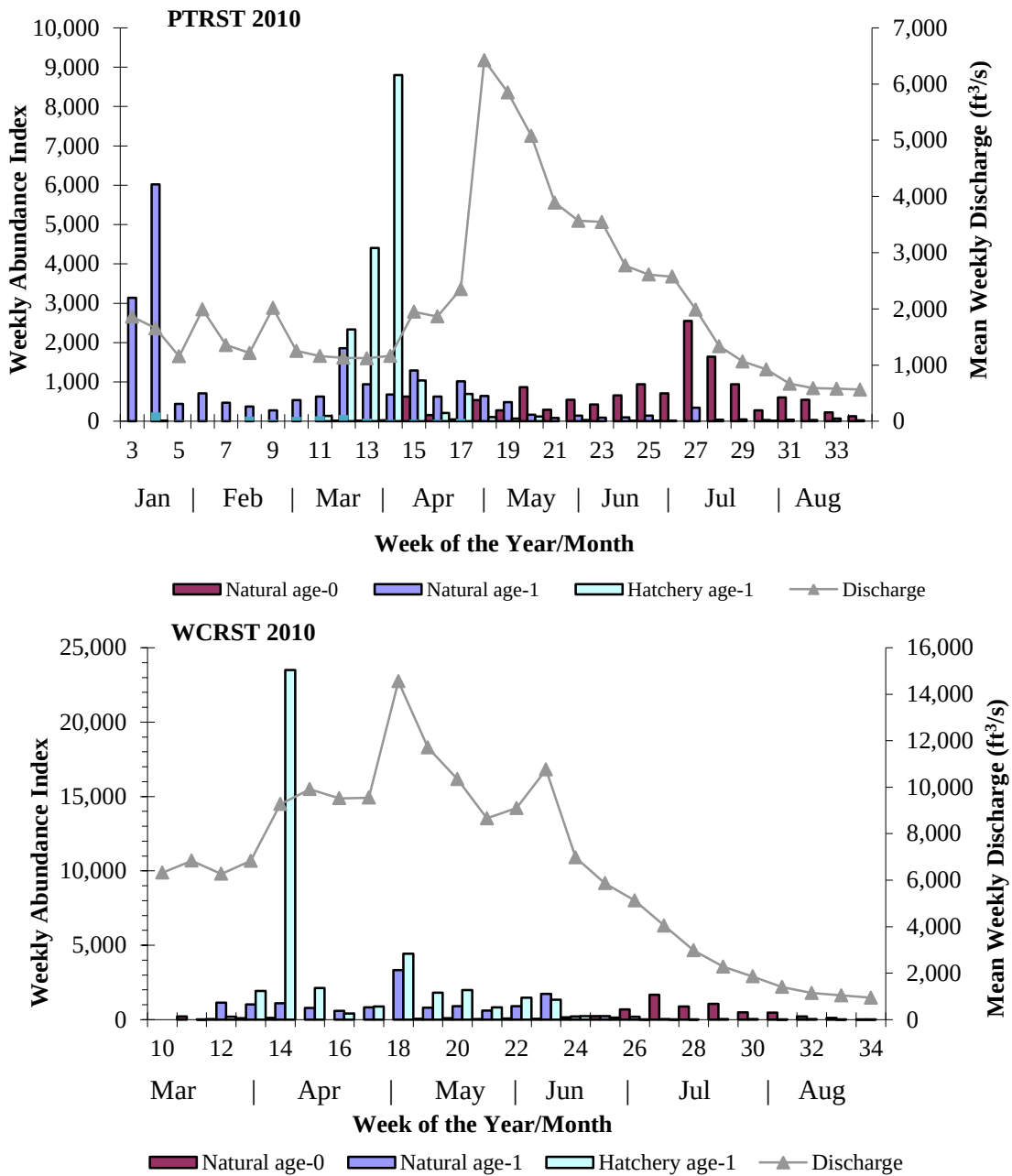


Figure 5. Weekly proportional discharge based abundance indices for natural age-0, natural age-1+, and hatchery age-1 steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) in 2010. Mean daily discharge (ft³/s) was recorded by US Geological Survey Water Resource gauge station #11-526400, near Helena (rkm 118), California, and US Geological Survey Water Resource gauge station #11-530000 at Hoopa (rkm 34), California. Please note differences in scale of axes.

The age-1 coho salmon emigration was composed primarily of naturally-produced fish at PTRST, comprising 87% of the total flow based index in 2010 (Appendix 3), and dominated by hatchery-produced fish at WCRST, comprising 84% of the total age-1 flow based index in 2010 (Appendix 4).

Based on flow based abundance indices at PTRST and WCRST, the age-1 steelhead index was composed primarily of hatchery fish, equaling 46% (Appendix 5) and 73% (Appendix 6), respectively of the total age-1 abundance indices.

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 flow based abundance index, was WOY 28 (July 2 - July 9), which occurred prior to the TRRP management target date of July 9. The natural age-0 Chinook salmon emigration had two peaks at PTRST in WOY 6 and 15, and had 2 peaks at WCRST in WOY 15 and 27. The hatchery age-0 Chinook salmon emigration peaked in WOY 23 at PTRST and WOY 27 at WCRST.

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 juveniles rearing in the mainstem. Natural age-1 coho salmon emigrated through the Trinity River at PTRST and WCRST beginning prior to trap installation and continued through late July in 2010, while hatchery age-1 coho salmon emigrated following their release in early April through early July (Table 7; Appendix 3 & 4). Interpretation of the data suggests that the sampling period did not encompass the entire naturally-produced age-1 coho salmon emigration period at WCRST. It is possible that these naturally-produced age-1 coho salmon spend extended rearing in the Trinity Basin and emigrate in the late fall as larger individuals. The week marking the cumulative passage of 80% of the naturally produced age-1 coho population at WCRST, as inferred from the flow based index, was WOY 24 (June 5 - June 12), which occurred after the TRRP management target date of June 4. Natural age-0 coho salmon emigration peaked in WOY 15 at PTRST and WOY 18 at WCRST. Natural age-1 coho salmon emigration peaked in WOY 4 at PTRST and WOY 18 at WCRST. Hatchery coho salmon emigration peaked in WOY 15 at PTRST and WOY 22 at WCRST.

The steelhead populations (summer, fall, and winter races) 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. All age classes of steelhead were generally captured throughout the sampling season at PTRST and WCRST, with peaks in abundance occurring during the early portion of sampling for age-1+ fish and in July for age-0 fish. Age-1+ natural steelhead were present throughout the sampling period (Table 7; Appendix 5 & 6). The majority of hatchery-produced age-1 steelhead emigrated by the end of June. As with coho salmon smolts, it is likely that naturally produced age-0 and age-1+ steelhead exhibit extended rearing in the Trinity Basin and emigrate in the

Table 7. Juvenile salmonid emigration duration and peak as inferred from flow based abundance indices, at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2010. 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	3-34	3-34	22-34	6 / 15	4	23
PTRST	coho salmon	8-34	3-32	14-26	15	4	15
PTRST	steelhead	12-34	3-34	4-30	27	4	14
WCRST	Chinook salmon	10-34	10-33	23-34	15/ 27	10	27
WCRST	coho salmon	14-29	10-29	15-27	18	18	22
WCRST	steelhead	11-34	10-34	11-27	27	18	14

fall/winter as larger individuals. The week marking the cumulative passage of 80% of the natural steelhead smolt population at WCRST, as inferred from flow based abundance indices, was WOY 21 (May 15 - May 21), which occurred prior to the TRRP management target date of May 22. Natural age-0 steelhead emigration peaked in WOY 27 at PTRST and WOY 27 at WCRST. Natural age-1+ steelhead emigration peaked in WOY 4 at PTRST and WOY 18 at WCRST. Hatchery steelhead emigration peaked in WOY 14 at PTRST and WOY 14 at WCRST.

Migration Rate

Maximum migration rates of all salmonids are presented in Table 8. These values should be considered maximums, as hatchery fish are released on a volitional basis from the Trinity River Hatchery.

Fish Size

Chinook salmon fork lengths generally increased through the season at both PTRST and WCRST (Figure 6; Appendix 9 & 10).

Natural coho salmon fork lengths generally increased through the sampling season at both PTRST and WCRST (Figure 7; Appendix 9 & 10), however, hatchery coho salmon fork lengths generally decreased through the sampling season at WCRST.

Natural steelhead fork lengths generally increased through the sampling season at both PTRST and WCRST (Figure 8; Appendix 11 & 12), however, hatchery steelhead fork lengths generally decreased through the sampling season at WCRST.

Fish Condition

Fulton's condition factor ($K = 100,000 * (\text{weight} / \text{length}^3)$) was calculated on a subsample of age-0 Chinook salmon larger than 50 mm (Appendix 13), age-1 coho salmon (Appendix 14), and age 1+ steelhead (Appendix 15). Due to the inability to

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, United States Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Yurok Tribal Fisheries Program, 2010.

Site	Species	Date First Released	Date First Captured	# of Days	Maximum Migration Rate
PTRST	Chinook salmon	06/01/2010	06/02/2010	1	64 rkm/day
PTRST	coho salmon	04/06/2010	04/08/2010	2	32 rkm/day
PTRST	steelhead	03/15/2010	03/17/2010	2	32 rkm/day
WCRST	Chinook salmon	06/01/2010	06/07/2010	6	18 rkm/day
WCRST	coho salmon	04/06/2010	04/09/2010	3	37 rkm/day
WCRST	steelhead	03/15/2010	03/21/2010	6	18 rkm/day

determine if an unmarked Chinook salmon was of hatchery origin, all juvenile Chinook salmon are pooled in weekly mean calculations. Weekly mean condition factor of juvenile Chinook salmon generally increased through the season. Coho salmon condition factor data presented are hatchery and natural combined due to the small sample size of natural origin coho salmon. Weekly mean condition factor of juvenile coho salmon generally decreased through the season. Weekly mean condition factor of steelhead generally decreased through the first week of May, then showed a slight increase followed by a slight decrease in following weeks.

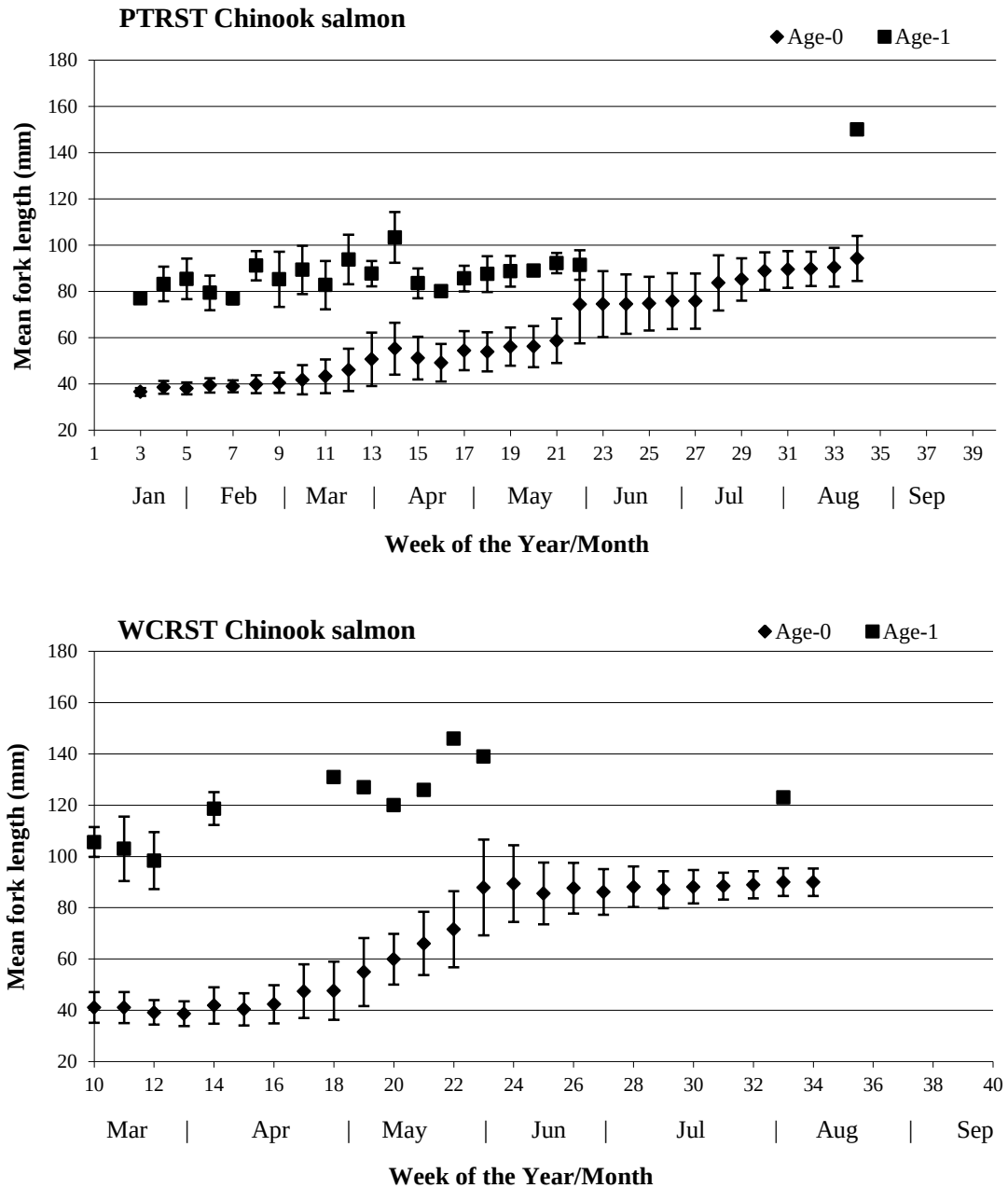


Figure 6. Weekly mean fork lengths of age-0 and age-1 Chinook salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2010. Error bars represent one standard deviation of the mean.

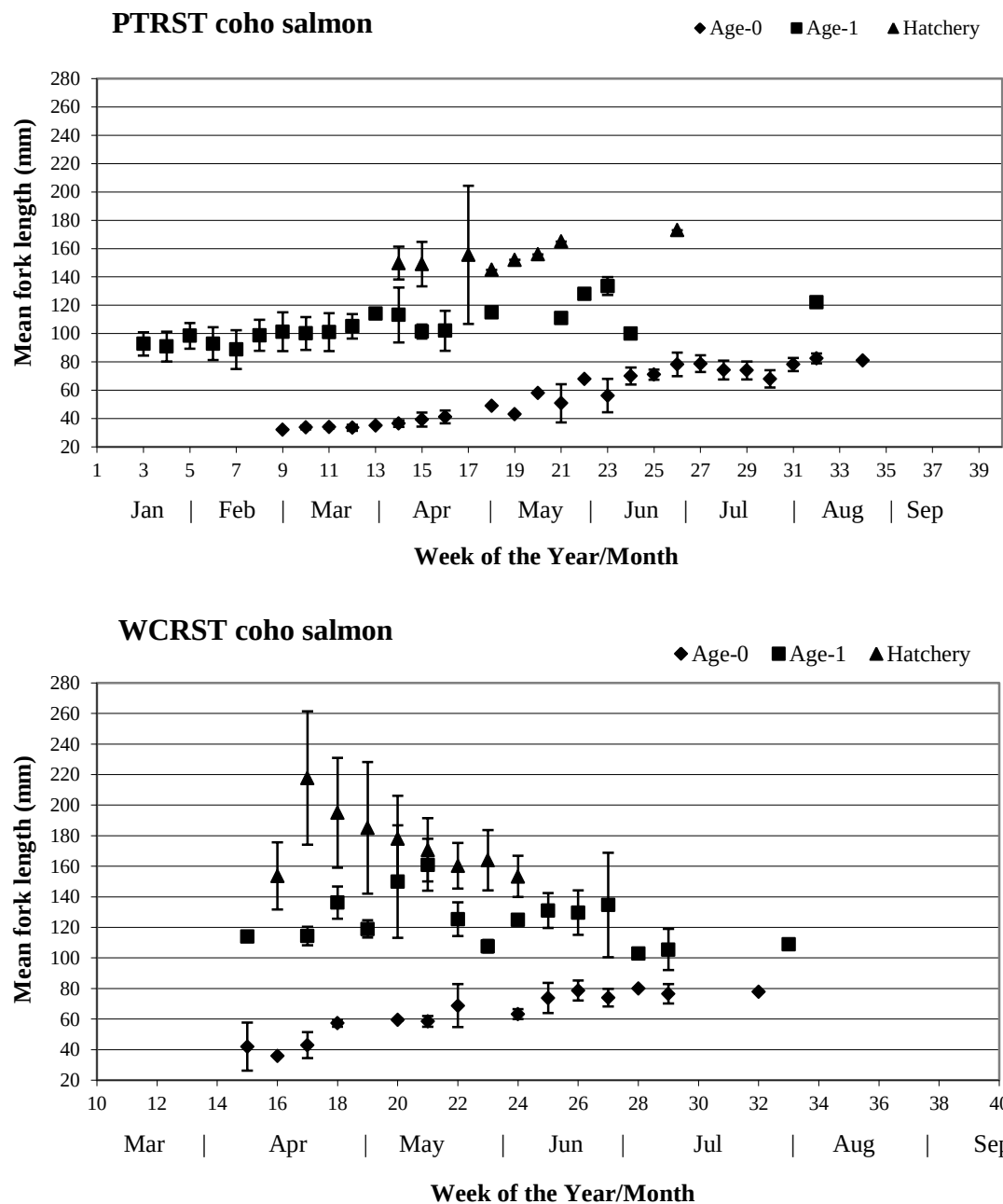


Figure 7. Weekly mean fork lengths for natural age-0, natural age-1, and hatchery coho salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2010. Error bars represent one standard deviation of the mean.

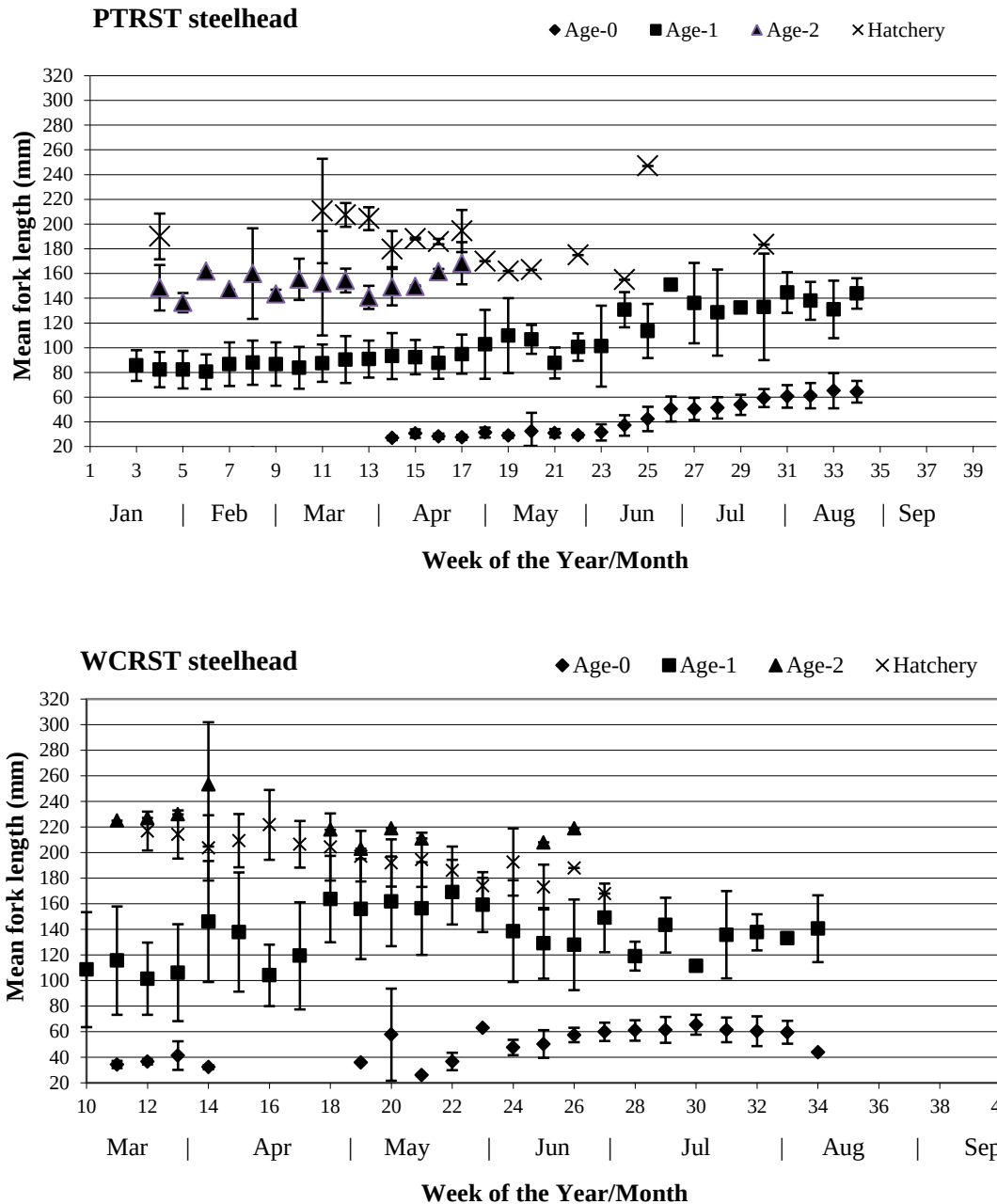


Figure 8. Weekly mean fork lengths for natural age-0, age-1, age-2, and hatchery age-1 steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2010. Error bars represent one standard deviation of the mean.

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Acknowledgements

Special thanks to Al Andreoli, for allowing access through his property at the WCRST.

Appendices

Appendix 1. Trinity River at Pear Tree rotary screw trap weekly Chinook salmon catches, and abundance indices, 2010. NC = no clip, AD = adipose fin clip. Hatchery fish captured before WOY 23 were assumed to be age-1.

Week Starting	Week of Year	Mean Daily Discharge	Trap Days Sampled	Weekly Chinook Catch						Weekly Chinook Index Totals					
				NC	Hatchery AD	Age-1 ¹	Natural Age-0	Age-1	Catch Total	NC	Hatchery AD	Age-1	Natural Age-0	Age-1	Index Total
01/15/10	3	1,863	1	0	0	0	189	1	190	0	0	0	29,681	157	29,838
01/22/10	4	1,654	7	0	0	4	1,369	32	1,405	0	0	60	20,061	468	20,589
01/30/10	5	1,157	7	0	0	0	1,016	10	1,026	0	0	0	12,437	122	12,559
02/05/10	6	1,990	14	0	0	0	3,629	8	3,637	0	0	0	53,600	118	53,718
02/12/10	7	1,357	10	0	0	0	3,001	1	3,002	0	0	0	39,704	13	39,717
02/19/10	8	1,216	14	0	0	4	2,877	14	2,895	0	0	32	22,083	106	22,221
02/26/10	9	2,016	14	0	0	0	1,761	4	1,765	0	0	0	24,541	56	24,597
03/05/10	10	1,253	14	0	0	0	3,010	13	3,023	0	0	0	27,083	117	27,200
03/12/10	11	1,160	14	0	0	0	2,928	7	2,935	0	0	0	22,467	54	22,521
03/19/10	12	1,130	14	0	0	8	567	13	588	0	0	56	3,910	89	4,055
03/26/10	13	1,121	14	0	0	0	225	10	235	0	0	0	1,564	70	1,634
04/02/10	14	1,164	14	0	0	0	797	3	800	0	0	0	5,730	22	5,752
04/09/10	15	1,949	13	0	0	0	3,430	8	3,438	0	0	0	50,200	117	50,317
04/16/10	16	1,864	14	0	0	0	2,886	1	2,887	0	0	0	37,944	13	37,957
04/23/10	17	2,353	12	0	0	0	2,512	5	2,517	0	0	0	44,078	88	44,166
04/30/10	18	6,424	5	0	0	0	312	2	314	0	0	0	33,483	215	33,698
05/07/10	19	5,849	7	0	0	0	632	4	636	0	0	0	44,019	279	44,298
05/14/10	20	5,076	14	0	0	0	574	2	576	0	0	0	23,692	83	23,775
05/21/10	21	3,891	14	0	0	0	431	5	436	0	0	0	12,554	146	12,700
05/28/10	22	3,567	10	193	64	0	283	5	545	7,017	2,319	0	10,234	181	19,751
06/04/10	23	3,546	12	555	183	0	260	0	998	16,930	5,595	0	7,989	0	30,514
06/11/10	24	2,773	14	633	209	0	630	0	1,472	13,024	4,304	0	12,987	0	30,315
06/18/10	25	2,611	14	382	127	0	563	0	1,072	6,851	2,264	0	9,992	0	19,107
06/25/10	26	2,574	14	87	29	0	344	0	460	1,558	515	0	6,100	0	8,173
07/02/10	27	1,986	8	105	35	0	295	0	435	2,624	867	0	7,284	0	10,775
07/09/10	28	1,336	14	1,161	384	0	1,162	0	2,707	11,263	3,722	0	11,253	0	26,238
07/16/10	29	1,064	14	1,993	659	0	1,368	1	4,021	15,687	5,184	0	10,754	8	31,633
07/23/10	30	923	14	1,371	454	0	554	0	2,379	9,647	3,188	0	3,871	0	16,706
07/30/10	31	667	13	826	273	0	290	0	1,389	4,929	1,629	0	1,729	0	8,287
08/06/10	32	590	14	702	232	0	411	0	1,345	3,359	1,110	0	1,968	0	6,437
08/13/10	33	580	10	313	104	0	216	0	633	1,949	644	0	1,329	0	3,922
08/20/10	34	564	14	189	63	0	102	2	356	868	287	0	459	9	1,623
Totals			381	8,510	2,816	16	38,624	151	50,117	95,706	31,628	148	594,780	2,531	724,793

¹Age-1 hatchery Chinook salmon catch is expanded by ad-clip marking rate.

Appendix 2. Trinity River at Willow Creek rotary screw trap weekly Chinook salmon catches, and abundance indices, 2010. NC = no clip, AD = adipose fin clip.

Week Starting	Week of Year	Mean Daily Discharge	Trap Days Sampled	Weekly Chinook Catch					Catch Total	Weekly Chinook Index Totals					Index Total
				NC	Hatchery AD	Age-1 ¹	Natural Age-0	Age-1		NC	Hatchery AD	Age-1	Natural Age-0	Age-1	
03/05/10	10	6,320	8	0	0	0	140	11	151	0	0	0	6,764	483	7,247
03/12/10	11	6,835	17	0	0	0	173	7	180	0	0	0	4,493	156	4,649
03/19/10	12	6,265	21	0	0	0	281	5	286	0	0	0	6,020	102	6,122
03/26/10	13	6,830	17	0	0	0	308	0	308	0	0	0	8,456	0	8,456
04/02/10	14	9,270	17	0	0	0	285	3	288	0	0	0	8,216	95	8,311
04/09/10	15	9,910	10	0	0	0	601	0	601	0	0	0	43,121	0	43,121
04/16/10	16	9,520	17	0	0	0	954	0	954	0	0	0	39,083	0	39,083
04/23/10	17	9,545	15	0	0	0	499	0	499	0	0	0	16,747	0	16,747
04/30/10	18	14,550	11	0	0	0	83	1	84	0	0	0	13,650	98	13,748
05/07/10	19	11,700	14	0	0	0	258	1	259	0	0	0	17,943	88	18,031
05/14/10	20	10,340	21	0	0	0	741	1	742	0	0	0	23,755	32	23,787
05/21/10	21	8,660	21	0	0	0	435	1	436	0	0	0	17,085	37	17,122
05/28/10	22	9,100	20	0	0	0	375	1	376	0	0	0	9,710	42	9,752
06/04/10	23	10,760	10	146	48	0	474	1	669	5,563	1,834	0	17,639	56	25,092
06/11/10	24	6,975	21	1,055	348	0	3,215	0	4,618	26,804	8,840	0	81,769	0	117,413
06/18/10	25	5,865	21	1,880	620	0	5,451	0	7,951	31,053	10,241	0	92,979	0	134,273
06/25/10	26	5,125	21	1,907	629	0	4,554	0	7,090	26,940	8,884	0	64,387	0	100,211
07/02/10	27	4,040	19	3,884	1,281	0	13,870	0	19,035	47,164	15,554	0	172,883	0	235,601
07/09/10	28	2,975	21	4,764	1,571	0	13,993	0	20,328	46,626	15,377	0	135,321	0	197,324
07/16/10	29	2,275	21	5,770	1,903	0	15,089	0	22,762	44,892	14,805	0	117,790	0	177,487
07/23/10	30	1,855	21	3,257	1,074	0	8,678	0	13,009	20,646	6,809	0	55,850	0	83,305
07/30/10	31	1,400	21	1,677	553	0	5,813	0	8,043	9,605	3,167	0	33,257	0	46,029
08/06/10	32	1,140	21	707	233	0	2,720	0	3,660	3,482	1,148	0	13,368	0	17,998
08/13/10	33	1,042	21	454	150	0	1,144	1	1,749	2,127	701	0	5,413	5	8,246
08/20/10	34	943	15	64	21	0	169	0	254	380	125	0	1,021	0	1,526
Total			442	25,565	8,431	0	80,303	33	114,332	265,282	87,485	0	1,006,720	1,194	1,360,681

¹Age-1 hatchery Chinook salmon catch is expanded by ad-clip marking rate.

Appendix 3. Trinity River at Pear Tree rotary screw trap weekly coho salmon catches, and abundance indices, 2010. R-MAX = right maxillary clip.

Week Starting	Week of Year	Mean Daily Discharge	Trap Days Sampled	Weekly coho salmon catches				Weekly coho salmon indices			
				Hatchery R-MAX	Natural Age-0	Natural Age-1	Catch Total	Hatchery R-MAX	Natural Age-0	Natural Age-1	Index Total
01/15/10	3	919	1	0	0	13	13	0	0	2,042	2,042
01/22/10	4	1,639	7	0	0	184	184	0	0	2,696	2,696
01/30/10	5	1,052	7	0	0	5	5	0	0	61	61
02/05/10	6	839	14	0	0	35	35	0	0	517	517
02/12/10	7	742	10	0	0	16	16	0	0	212	212
02/19/10	8	950	14	0	3	18	21	0	23	138	161
02/26/10	9	890	14	0	4	5	9	0	56	70	126
03/05/10	10	853	14	0	20	21	41	0	180	189	369
03/12/10	11	1,353	14	0	44	17	61	0	338	130	468
03/19/10	12	2,409	14	0	2	12	14	0	14	83	97
03/26/10	13	3,121	14	0	1	2	3	0	7	14	21
04/02/10	14	2,604	14	7	7	14	28	50	50	101	201
04/09/10	15	2,281	13	41	48	2	91	600	703	29	1,332
04/16/10	16	1,461	14	0	13	2	15	0	171	26	197
04/23/10	17	1,867	12	2	0	0	2	35	0	0	35
04/30/10	18	1,959	5	1	2	1	4	107	215	107	429
05/07/10	19	8,823	7	1	1	0	2	70	70	0	140
05/14/10	20	7,979	14	1	1	0	2	41	41	0	82
05/21/10	21	5,316	14	1	4	1	6	29	117	29	175
05/28/10	22	4,806	10	0	1	1	2	0	36	36	72
06/04/10	23	4,171	12	0	5	2	7	0	153	61	214
06/11/10	24	3,684	14	0	7	1	8	0	144	21	165
06/18/10	25	3,310	14	0	3	0	3	0	53	0	53
06/25/10	26	3,053	14	1	6	0	7	18	107	0	125
07/02/10	27	2,844	8	0	8	0	8	0	198	0	198
07/09/10	28	2,277	14	0	18	0	18	0	174	0	174
07/16/10	29	1,803	14	0	6	0	6	0	47	0	47
07/23/10	30	1,430	14	0	3	0	3	0	21	0	21
07/30/10	31	1,176	13	0	7	0	7	0	42	0	42
08/06/10	32	844	14	0	2	1	3	0	10	5	15
08/13/10	33	659	10	0	1	0	1	0	6	0	6
08/20/10	34	609	14	0	1	0	1	0	5	0	5
Total			381	55	218	353	626	950	2,981	6,567	10,498

Appendix 4. Trinity River at Willow Creek rotary screw trap weekly coho salmon catches, and abundance indices, 2010.
R-MAX = right maxillary clip.

Week Starting	Week of Year	Mean Daily Discharge	Trap Days Sampled	Weekly coho catches				Weekly coho indices			
				Hatchery R-MAX	Natural Age-0	Natural Age-1	Catch Total	Hatchery R-MAX	Natural Age-0	Natural Age-1	Index Total
03/05/10	10	6,320	8	0	0	2	2	0	0	86	86
03/12/10	11	6,835	17	0	0	3	3	0	0	79	79
03/19/10	12	6,265	21	0	0	1	1	0	0	29	29
03/26/10	13	6,830	17	0	0	1	1	0	0	40	40
04/02/10	14	9,270	17	0	3	3	6	0	118	112	230
04/09/10	15	9,910	10	16	3	1	20	834	171	50	1,055
04/16/10	16	9,520	17	3	1	0	4	143	47	0	190
04/23/10	17	9,545	15	4	2	3	9	146	63	105	314
04/30/10	18	14,550	11	11	3	4	18	1,715	808	802	3,325
05/07/10	19	11,700	14	13	0	2	15	984	0	157	1,141
05/14/10	20	10,340	21	78	2	4	84	2,684	62	137	2,883
05/21/10	21	8,660	21	29	2	2	33	1,182	103	70	1,355
05/28/10	22	9,100	20	85	5	10	100	2,916	130	338	3,384
06/04/10	23	10,760	10	18	0	3	21	2,183	0	99	2,282
06/11/10	24	6,975	21	11	3	4	18	304	72	88	464
06/18/10	25	5,865	21	1	6	5	12	15	120	105	240
06/25/10	26	5,125	21	4	5	6	15	52	69	78	199
07/02/10	27	4,040	19	1	7	3	11	17	91	45	153
07/09/10	28	2,975	21	0	2	1	3	0	17	9	26
07/16/10	29	2,275	21	0	3	2	5	0	24	14	38
07/23/10	30	1,855	21	0	0	0	0	0	0	0	0
07/30/10	31	1,400	21	0	0	0	0	0	0	0	0
08/06/10	32	1,140	21	0	1	0	1	0	5	0	5
08/13/10	33	1,042	21	0	0	1	1	0	0	5	5
08/20/10	34	943	15	0	0	0	0	0	0	0	0
Total			442	274	48	61	381	13,175	1,900	2,448	17,523

Appendix 5. Trinity River at Pear Tree rotary screw trap weekly steelhead catches, and abundance indices, 2010. AD = adipose fin clip.

Week Starting	Week of Year	Mean Flow	Trap Days Sampled	Weekly Steelhead Catch					Weekly Steelhead Abundance Indices				
				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
01/15/10	3	1,863	1	0	0	20	0	20	0	0	3,141	0	3,141
01/22/10	4	1,654	7	1	0	411	11	423	15	0	6,023	161	6,199
01/30/10	5	1,157	7	0	0	36	2	38	0	0	441	24	465
02/05/10	6	1,990	14	0	0	48	1	49	0	0	709	15	724
02/12/10	7	1,357	10	0	0	36	1	37	0	0	476	13	489
02/19/10	8	1,216	14	0	0	49	11	60	0	0	376	84	460
02/26/10	9	2,016	14	0	0	20	2	22	0	0	279	28	307
03/05/10	10	1,253	14	0	0	60	9	69	0	0	540	81	621
03/12/10	11	1,160	14	18	0	82	12	112	138	0	629	92	859
03/19/10	12	1,130	14	339	1	269	16	625	2,338	7	1,855	110	4,310
03/26/10	13	1,121	14	634	2	135	7	778	4,408	14	939	49	5,410
04/02/10	14	1,164	14	1,224	3	95	4	1,326	8,800	22	683	29	9,534
04/09/10	15	1,949	13	71	43	88	2	204	1,039	629	1,288	29	2,985
04/16/10	16	1,864	14	16	12	48	2	78	210	158	631	26	1,025
04/23/10	17	2,353	12	46	3	67	3	119	807	53	1,176	53	2,089
04/30/10	18	6,424	5	1	5	6	0	12	107	537	644	0	1,288
05/07/10	19	5,849	7	1	4	7	0	12	70	279	488	0	837
05/14/10	20	5,076	14	3	21	4	0	28	124	867	165	0	1,156
05/21/10	21	3,891	14	0	10	3	0	13	0	291	87	0	378
05/28/10	22	3,567	10	1	15	4	0	20	36	544	145	0	725
06/04/10	23	3,546	12	0	14	3	0	17	0	428	92	0	520
06/11/10	24	2,773	14	1	32	5	0	38	21	659	103	0	783
06/18/10	25	2,611	14	1	53	8	0	62	18	945	143	0	1,106
06/25/10	26	2,574	14	0	40	1	0	41	0	711	18	0	729
07/02/10	27	1,986	8	0	103	14	0	117	0	2,551	347	0	2,898
07/09/10	28	1,336	14	0	169	4	0	173	0	1,638	39	0	1,677
07/16/10	29	1,064	14	0	120	6	0	126	0	944	47	0	991
07/23/10	30	923	14	2	40	5	0	47	14	281	35	0	330
07/30/10	31	667	13	0	101	7	0	108	0	603	42	0	645
08/06/10	32	590	14	0	115	7	0	122	0	550	34	0	584
08/13/10	33	580	10	0	36	11	0	47	0	223	68	0	291
08/20/10	34	564	14	0	29	6	0	35	0	132	27	0	159
Total			381	2,359	971	1,565	83	4,978	18,145	13,066	21,710	794	53,715

Appendix 6. Trinity River at Willow Creek rotary screw trap weekly steelhead catches, and abundance indices, 2010. AD = adipose fin clip.

Week Starting	Week of Year	Mean Flow	Trap Days Sampled	Hatchery AD	Steelhead Weekly Catch				Steelhead Weekly Abundance Indices				
					Natural Age-0	Age-1	Age-2+	Catch Total	Hatchery AD	Natural			Index Total
										Age-0	Age-1	Age-2+	
03/05/10	10	6,320	8	0	0	18	0	18	0	0	896	0	896
03/12/10	11	6,835	17	1	8	15	1	25	22	203	390	40	655
03/19/10	12	6,265	21	9	2	54	1	66	198	39	1,122	19	1,378
03/26/10	13	6,830	17	63	3	34	1	101	1,924	92	979	37	3,032
04/02/10	14	9,270	17	602	4	28	4	638	23,495	105	946	155	24,701
04/09/10	15	9,910	10	36	0	17	0	53	2,129	0	785	0	2914
04/16/10	16	9,520	17	9	0	14	0	23	413	0	583	0	996
04/23/10	17	9,545	15	27	0	25	0	52	876	0	826	0	1,702
04/30/10	18	14,550	11	34	0	25	1	60	4,430	0	3,229	98	7,757
05/07/10	19	11,700	14	26	1	11	1	39	1,805	56	712	87	2,660
05/14/10	20	10,340	21	58	3	26	1	88	1,980	95	872	37	2,984
05/21/10	21	8,660	21	21	1	14	1	37	817	34	563	43	1,457
05/28/10	22	9,100	20	50	3	31	0	84	1,480	66	892	0	2,438
06/04/10	23	10,760	10	13	1	22	0	36	1,328	56	1,727	0	3,111
06/11/10	24	6,975	21	9	6	8	0	23	231	160	214	0	605
06/18/10	25	5,865	21	7	16	14	1	38	127	238	214	15	594
06/25/10	26	5,125	21	1	51	13	1	66	13	691	187	14	905
07/02/10	27	4,040	19	1	129	2	0	132	12	1,675	25	0	1,712
07/09/10	28	2,975	21	0	94	2	0	96	0	879	17	0	896
07/16/10	29	2,275	21	0	136	4	0	140	0	1,062	31	0	1,093
07/23/10	30	1,855	21	0	75	5	0	80	0	483	32	0	515
07/30/10	31	1,400	21	0	81	3	0	84	0	471	17	0	488
08/06/10	32	1,140	21	0	45	6	0	51	0	221	29	0	250
08/13/10	33	1,042	21	0	25	2	0	27	0	121	10	0	131
08/20/10	34	943	15	0	2	3	0	5	0	13	18	0	31
Total			442	967	686	396	13	2,062	41,280	6,760	15,316	545	63,901

Appendix 7. Trinity River at Pear Tree rotary screw trap weekly age-0 Chinook salmon mark-recapture population estimate inputs and results, 2010.

Week Starting	Week of Year	Sampling Fraction ¹	Catch No Clip	Catch AD-Clip	Marks Released	Marks Recaptured	Recapture Rate	Estimated Natural	SD Natural	Estimated Hatchery	SD Hatchery
01/15/10	3	0.14	189	0	0	0	----	90,575	74,453	----	----
01/22/10	4	1	1,369	0	0	0	----	67,051	48,410	----	----
01/30/10	5	0.86	1,016	0	0	0	----	66,170	39,299	----	----
02/05/10	6	1	3,629	0	0	0	----	41,601	20,093	----	----
02/12/10	7	0.71	3,001	0	0	0	----	41,060	24,295	----	----
02/19/10	8	1	2,877	0	1,338	17	0.013	201,249	37,526	----	----
02/26/10	9	1	1,761	0	3,283	123	0.037	47,448	4,286	----	----
03/05/10	10	1	3,010	0	2,961	142	0.048	63,167	5,169	----	----
03/12/10	11	1	2,928	0	3,716	236	0.064	46,474	3,104	----	----
03/19/10	12	1	567	0	1,816	199	0.110	5,305	417	----	----
03/26/10	13	1	225	0	2,081	195	0.094	2,496	233	----	----
04/02/10	14	1	797	0	1,862	48	0.026	31,716	4,684	----	----
04/09/10	15	1	3,430	0	3,644	355	0.097	35,371	1,866	----	----
04/16/10	16	1	2,886	0	4,218	73	0.017	163,592	18,524	----	----
04/23/10	17	0.86	2,512	0	1,961	105	0.054	55,240	5,273	----	----
04/30/10	18	0.57	312	0	5,780	31	0.005	95,618	16,576	----	----
05/07/10	19	1	632	0	4,459	32	0.007	83,803	14,471	----	----
05/14/10	20	1	574	0	4,367	104	0.024	24,412	2,620	----	----
05/21/10	21	1	431	0	3,505	38	0.011	39,664	6,488	----	----
05/28/10	22	0.71	476	64	2,340	44	0.019	22,015	3,981	21,188	4,200
06/04/10	23	0.86	815	183	2,353	9	0.004	61,404	19,584	186,884	49,299
06/11/10	24	1	1,263	209	4,010	45	0.011	54,205	9,214	73,578	11,476
06/18/10	25	1	945	127	766	8	0.010	57,018	20,123	54,399	19,761
06/25/10	26	1	431	29	1,637	35	0.021	17,033	3,300	6,386	1,700
07/02/10	27	0.57	400	35	1,466	25	0.017	29,979	5,974	14,611	3,348
07/09/10	28	1	2,323	384	1,471	136	0.092	12,775	1,344	17,207	1,676
07/16/10	29	1	3,361	659	1,497	49	0.033	38,380	5,613	74,628	9,733
07/23/10	30	1	1,925	454	1,047	78	0.074	7,567	1,363	25,251	3,129
07/30/10	31	1	1,116	273	996	50	0.050	5,938	1,448	22,678	3,233
08/06/10	32	1	1,113	232	596	45	0.076	5,661	1,118	13,057	2,057
08/13/10	33	0.71	529	104	250	6	0.024	10,358	3,286	21,205	5713.266
08/20/10	34	1	291	63	257	26	0.101	1,192	402	2,975	674.566
			4,7134	2,816	63,677	2,254	0.035	1,525,536	137,719	534,044	67,943

¹Sampling Fraction is the proportion of trap days sampled during the week.

Appendix 8. Trinity River at Willow Creek rotary screw trap weekly age-0 Chinook salmon mark-recapture population estimate inputs and results, 2010.

Week Starting	Week of Year	Sampling Fraction ¹	Catch No Clip	Catch AD-Clip	Marks Released	Marks Recaptured	Recapture Rate	Estimated Natural	SD Natural	Estimated Hatchery	SD Hatchery
03/05/10	10	0.38	140	0	1,904	63	0.03	11,260	1,534	----	----
03/12/10	11	0.81	173	0	1,278	29	0.02	9,964	1,909	----	----
03/19/10	12	1.00	281	0	1,832	61	0.03	9,058	1,264	----	----
03/26/10	13	0.81	308	0	1,851	68	0.04	11,172	1,492	----	----
04/02/10	14	0.81	285	0	1,894	3	0.002	101,880	38,496	----	----
04/09/10	15	0.48	601	0	3,536	12	0.003	257,963	70,266	----	----
04/16/10	16	0.81	954	0	3,930	53	0.01	86,938	11,682	----	----
04/23/10	17	0.71	499	0	4,221	77	0.02	39,797	4,828	----	----
04/30/10	18	0.52	83	0	0	0	----	40,548	25,915	----	----
05/07/10	19	0.67	258	0	5,516	20	0.004	96,206	21,286	----	----
05/14/10	20	1.00	741	0	4,786	75	0.02	48,002	5,676	----	----
05/21/10	21	1.00	435	0	0	0	----	58,552	46,753	----	----
05/28/10	22	0.95	375	0	0	0	----	66,070	40,827	----	----
06/04/10	23	0.48	619	48	1,905	29	0.02	70,299	12,346	28,649	5,545
06/11/10	24	1.00	4,270	348	1,491	38	0.03	131,508	19,502	56,713	8,432
06/18/10	25	1.00	7,331	620	971	34	0.04	167,475	24,475	76,151	11,538
06/25/10	26	1.00	6,461	629	984	18	0.02	261,022	55,336	143,853	30,522
07/02/10	27	0.90	17,754	1,281	982	32	0.03	455,184	63,039	167,554	23,384
07/09/10	28	1.00	18,757	1,571	2,913	64	0.02	614,810	59,415	275,421	26,573
07/16/10	29	1.00	20,859	1,903	1,044	35	0.03	442,575	61,471	222,085	31,160
07/23/10	30	1.00	11,936	1,074	0	0	----	164,890	45,304	81,460	22,440
07/30/10	31	1.00	7,490	553	0	0	----	113,203	43,504	43,044	16,607
08/06/10	32	1.00	3,427	233	0	0	----	89,454	25,973	30,077	8,462
08/13/10	33	1.00	1,598	150	0	0	----	42,098	11,575	21,628	5,534
08/20/10	34	0.71	233	21	0	0	----	24,868	12,734	11,848	5,129
			105,868	8,431	41,038	711	0.02	3,414,795	706,598	1,158,482	195,327

¹Sampling Fraction is the proportion of trap days sampled during the week.

Appendix 9. Trinity River at Pear Tree rotary screw trap weekly Chinook salmon and coho salmon fork lengths, 2010.

Chinook*												Natural coho										Hatchery coho					
Week	Week	Age-0						Age-1				Age-0				Age-1				Age-1							
Starting	of 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	
01/15/2010	3	30	36.6	32	43	1.7	1	77.0	77	77	2	0	----	----	----	----	13	92.7	81	105	8.3	0	----	----	----	----	
01/22/2010	4	318	38.5	32	51	2.8	36	83.2	60	98	7.4	0	----	----	----	----	163	90.9	68	127	10.6	0	----	----	----	----	
01/30/2010	5	261	38.0	34	50	2.6	10	85.4	70	96	8.7	0	----	----	----	----	5	98.4	87	109	9.0	0	----	----	----	----	
02/05/2010	6	521	39.4	31	54	3.1	8	79.4	63	89	7.5	0	----	----	----	----	35	92.9	74	120	11.5	0	----	----	----	----	
02/12/2010	7	319	38.9	31	50	2.6	1	77.0	77	77	3	0	----	----	----	----	16	88.8	69	115	13.7	0	----	----	----	----	
02/19/2010	8	430	39.9	36	56	3.8	18	91.1	78	105	6.3	0	----	----	----	----	18	98.8	78	117	10.9	0	----	----	----	----	
02/26/2010	9	438	40.5	35	58	4.4	4	85.3	72	101	11.9	2	32.0	32	32	0.0	7	101.3	80	117	13.7	0	----	----	----	----	
03/05/2010	10	435	41.8	35	68	6.3	13	89.3	73	110	10.5	19	33.7	32	38	1.3	21	100.1	77	119	11.6	0	----	----	----	----	
03/12/2010	11	418	43.3	35	67	7.3	7	82.7	70	97	10.5	41	34.0	31	38	1.0	17	101.0	74	121	13.4	0	----	----	----	----	
03/19/2010	12	301	46.1	35	72	9.2	20	93.8	78	115	10.7	2	33.5	32	35	2.1	12	105.2	91	120	8.7	0	----	----	----	----	
03/26/2010	13	205	50.7	35	74	11.5	7	87.7	80	94	5.5	1	35.0	35	35	N/A	2	114.0	113	115	1.4	0	----	----	----	----	
04/02/2010	14	362	55.3	35	78	11.2	3	103.3	91	112	11.0	7	36.4	34	40	2.2	14	113.1	81	170	19.4	7	150	136	170	12	
04/09/2010	15	407	51.1	36	78	9.3	8	83.5	80	99	6.4	48	39.3	30	55	5.0	2	101.5	98	105	4.9	41	149	125	198	16	
04/16/2010	16	487	49.1	30	78	8.2	1	80.0	80	80	----	13	41.2	35	49	4.5	2	102.0	92	112	14.1	0	----	----	----	----	
04/23/2010	17	395	54.4	31	76	8.4	5	85.6	81	95	5.5	0	----	----	----	----	0	----	----	----	----	2	156	121	190	49	
04/30/2010	18	119	53.8	36	78	8.4	2	87.5	82	93	7.8	1	49.0	49	49	N/A	1	115.0	115	115	----	1	145	145	145	----	
05/07/2010	19	264	56.1	40	79	8.3	4	88.8	83	98	6.7	1	43.0	43	43	N/A	0	0.0	0	0	0.0	1	152	152	152	----	
05/14/2010	20	285	56.1	36	82	8.9	2	89.0	88	90	1.4	1	58.0	58	58	N/A	0	0.0	0	0	0.0	1	156	156	156	----	
05/21/2010	21	251	58.7	33	87	9.6	5	92.2	85	95	4.4	4	50.8	39	68	13.5	1	111.0	111	111	----	1	165	165	165	----	
05/28/2010	22	251	74.4	41	116	16.8	5	91.4	83	100	6.4	1	68.0	68	68	N/A	1	128.0	128	128	----	0	----	----	----	----	
06/04/2010	23	440	74.5	44	115	14.3	0	----	----	----	----	5	56.2	40	68	11.8	2	133.5	129	138	6.4	0	----	----	----	----	
06/11/2010	24	527	74.5	34	120	12.8	0	----	----	----	----	7	70.0	62	78	6.0	1	100.0	100	100	----	0	----	----	----	----	
06/18/2010	25	456	74.7	46	116	11.7	0	----	----	----	----	3	71.0	67	74	3.6	0	----	----	----	----	0	----	----	----	----	
06/25/2010	26	281	75.8	41	115	12.1	0	----	----	----	----	6	78.2	70	91	8.3	0	----	----	----	----	1	173	173	173	----	
07/02/2010	27	175	75.8	43	115	11.9	0	----	----	----	----	8	78.8	65	85	5.9	0	----	----	----	----	0	----	----	----	----	
07/09/2010	28	495	83.7	47	123	11.9	0	----	----	----	----	18	74.2	63	87	6.7	0	----	----	----	----	0	----	----	----	----	
07/16/2010	29	698	85.2	48	121	9.2	0	----	----	----	----	6	74.0	62	80	6.3	0	----	----	----	----	0	----	----	----	----	
07/23/2010	30	742	88.8	62	124	8.2	0	----	----	----	----	3	68.0	61	72	6.1	0	----	----	----	----	0	----	----	----	----	
07/30/2010	31	543	89.5	62	115	7.9	0	----	----	----	----	7	78.1	70	83	4.6	0	----	----	----	----	0	----	----	----	----	
08/06/2010	32	485	89.7	64	122	7.4	0	----	----	----	----	2	82.5	80	85	3.5	1	122.0	122	122	----	0	----	----	----	----	
08/13/2010	33	151	90.4	65	125	8.4	0	----	----	----	----	0	0.0	0	0	0.0	0	----	----	----	----	0	----	----	----	----	
08/20/2010	34	313	94.3	60	129	9.8	2	150.0	149	151	1.4	1	81.0	81	81		0	----	----	----	----	0	----	----	----	----	

*Natural and Hatchery combined.

Appendix 10. Trinity River at Willow Creek rotary screw trap weekly Chinook salmon and coho salmon fork lengths, 2010.

Chinook*												Natural coho										Hatchery coho					
Week	Week	Age-0					Age-1					Age-0					Age-1					Age-1					
Starting	of 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	
03/05/10	10	131	41	32	64	6.01	11	106	97	114	5.84	0	----	----	----	----	2	82	81	83	1.41	0	----	----	----	----	
03/12/10	11	173	41	26	63	6.10	7	103	76	112	12.57	0	----	----	----	----	3	110	104	118	7.37	0	----	----	----	----	
03/19/10	12	259	39	26	62	4.80	5	98	90	112	11.10	0	----	----	----	----	1	116	116	116	----	0	----	----	----	----	
03/26/10	13	241	39	33	67	4.85	0	----	----	----	----	0	----	----	----	----	1	117	117	117	----	0	----	----	----	----	
04/02/10	14	175	42	34	72	7.08	3	119	114	126	6.43	3	34	32	36	2.00	3	111	92	126	17.35	0	----	----	----	----	
04/09/10	15	169	40	27	74	6.30	0	----	----	----	----	3	42	31	60	15.72	1	114	114	114	----	16	155	130	181	12.98	
04/16/10	16	393	42	33	84	7.44	0	----	----	----	----	1	36	36	36	----	0	----	----	----	----	3	154	132	176	22.01	
04/23/10	17	371	47	32	90	10.50	0	----	----	----	----	2	43	37	49	8.49	3	114	108	120	6.03	4	218	155	253	43.74	
04/30/10	18	82	48	34	85	11.34	1	131	131	131	----	3	57	56	60	2.31	4	136	128	150	10.53	11	195	142	237	35.99	
05/07/10	19	248	55	35	94	13.23	1	127	127	127	----	0	----	----	----	----	2	119	115	123	5.66	13	185	140	295	43.09	
05/14/10	20	581	60	35	92	9.92	1	120	120	120	----	2	60	59	60	0.71	2	150	124	176	36.77	62	178	135	265	27.95	
05/21/10	21	370	66	40	105	12.28	1	126	126	126	----	2	59	56	61	3.54	2	161	149	173	16.97	26	171	140	220	20.63	
05/28/10	22	220	72	38	110	14.81	1	146	146	146	----	5	69	53	86	14.04	10	125	114	151	11.06	81	160	138	228	14.90	
06/04/10	23	281	88	43	121	18.63	1	139	139	139	----	0	----	----	----	----	3	108	104	112	4.04	10	164	139	208	19.76	
06/11/10	24	761	89	46	125	14.99	0	----	----	----	----	3	63	61	67	3.21	4	125	120	128	3.56	11	153	133	175	13.47	
06/18/10	25	640	86	52	115	12.05	0	----	----	----	----	6	74	65	88	9.91	5	131	115	147	11.47	1	176	176	176	----	
06/25/10	26	596	88	52	116	9.92	0	----	----	----	----	5	79	71	88	6.54	6	130	112	152	14.61	3	160	156	165	4.58	
07/02/10	27	565	86	54	118	8.93	0	----	----	----	----	6	74	68	84	5.76	3	135	103	171	34.24	1	158	158	158	----	
07/09/10	28	688	88	62	126	7.90	0	----	----	----	----	1	80	80	80	----	1	103	103	103	----	0	----	----	----	----	
07/16/10	29	761	87	61	121	7.23	0	----	----	----	----	2	77	72	81	6.36	2	106	96	115	13.44	0	----	----	----	----	
07/23/10	30	780	88	66	128	6.57	0	----	----	----	----	0	----	----	----	----	0	----	----	----	----	0	----	----	----	----	
07/30/10	31	637	88	70	107	5.21	0	----	----	----	----	0	----	----	----	----	0	----	----	----	----	0	----	----	----	----	
08/06/10	32	475	89	73	111	5.26	0	----	----	----	----	1	78	78	78	----	0	----	----	----	----	0	----	----	----	----	
08/13/10	33	305	90	75	113	5.39	1	123	123	123	----	0	----	----	----	----	1	109	109	109	----	0	----	----	----	----	
08/20/10	34	26	90	72	97	5.38	0	----	----	----	----	0	----	----	----	----	0	----	----	----	----	0	----	----	----	----	

*Natural and Hatchery combined.

Appendix 11. Trinity River at Pear Tree rotary screw trap weekly steelhead fork lengths, 2010.

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
01/15/2010	3	0	----	----	----	----	10	85.6	74	115	12.32	0					0	----	----	----	----
01/22/2010	4	0	----	----	----	----	210	82.3	56	125	14.31	11	148.5	126	180	18.45	1	190	190	190	----
01/30/2010	5	0	----	----	----	----	34	82.2	54	110	15.20	2	136.5	131	142	7.78	0	----	----	----	----
02/05/2010	6	0	----	----	----	----	47	80.6	61	115	13.91	1	162	162	162	----	0	----	----	----	----
02/12/2010	7	0	----	----	----	----	36	86.7	60	122	17.69	1	147	147	147	----	0	----	----	----	----
02/19/2010	8	0	----	----	----	----	49	87.9	55	122	17.96	11	160	131	255	36.68	0	----	----	----	----
02/26/2010	9	0	----	----	----	----	16	86.8	62	127	17.49	2	143.5	141	146	3.54	0	----	----	----	----
03/05/2010	10	0	----	----	----	----	60	83.8	57	122	16.89	9	155.2	138	195	16.64	0	----	----	----	----
03/12/2010	11	0	----	----	----	----	80	87.5	64	125	15.13	12	152.2	122	280	42.17	18	211	135	245	24.98
03/19/2010	12	0	----	----	----	----	174	90.4	60	139	19.00	16	154.3	140	169	9.61	220	207	95	274	22.90
03/26/2010	13	0	----	----	----	----	119	90.8	61	132	14.91	7	140.7	130	153	9.30	199	204	160	256	20.03
04/02/2010	14	3	27	25	28	1.73	93	93.2	61	142	18.70	4	149	134	168	14.65	226	180	95	257	30.54
04/09/2010	15	43	30.6	27	41	3.32	87	92.3	72	142	13.92	2	149.5	149	150	0.71	71	188	74	250	35.66
04/16/2010	16	12	28.3	26	34	2.23	46	87.6	64	135	12.85	2	161.5	160	163	2.12	16	186	101	215	30.30
04/23/2010	17	2	27.5	26	29	2.12	66	94.8	68	144	15.77	3	168.3	152	186	17.04	21	194	164	229	18.83
04/30/2010	18	5	31.4	28	37	3.97	4	102.8	73	140	27.80	0	----	----	----	----	1	170	170	170	----
05/07/2010	19	4	29	27	32	2.16	7	109.9	67	153	30.28	0	----	----	----	----	1	162	162	162	----
05/14/2010	20	21	32.5	25	95	14.78	4	106.8	91	118	11.79	0	----	----	----	----	3	163	140	189	24.64
05/21/2010	21	7	30.9	28	38	3.48	3	87.7	75	100	12.50	0	----	----	----	----	0				
05/28/2010	22	15	29.1	27	34	1.77	4	100.5	94	117	11.03	0	----	----	----	----	1	175	175	175	----
06/04/2010	23	14	31.6	25	50	6.47	3	101.3	75	138	32.75	0	----	----	----	----	0				
06/11/2010	24	32	37.2	27	56	8.22	5	130.8	110	150	14.24	0	----	----	----	----	1	155	155	155	----
06/18/2010	25	50	42.4	25	62	9.80	7	113.6	83	144	21.82	0	----	----	----	----	1	247	247	247	----
06/25/2010	26	40	50.5	27	67	10.15	1	151	151	151	----	0	----	----	----	----	0	----	----	----	----
07/02/2010	27	102	50.4	24	70	9.00	3	136	104	169	32.51	0	----	----	----	----	0	----	----	----	----
07/09/2010	28	147	51.4	26	71	8.66	4	128.5	80	162	34.82	0	----	----	----	----	0	----	----	----	----
07/16/2010	29	116	53.8	26	76	8.25	3	132.3	130	136	3.21	0	----	----	----	----	0	----	----	----	----
07/23/2010	30	40	59.3	41	79	7.25	5	133	97	185	43.15	0	----	----	----	----	2	184	165	202	26.16
07/30/2010	31	101	60.6	37	89	9.05	5	144.6	122	165	16.50	0	----	----	----	----	0	----	----	----	----
08/06/2010	32	92	61.2	34	83	10.16	6	138	123	161	15.34	0	----	----	----	----	0	----	----	----	----
08/13/2010	33	19	65.3	38	99	14.17	5	131	102	162	23.15	0	----	----	----	----	0	----	----	----	----
08/20/2010	34	29	64.3	43	82	8.73	6	143.8	128	157	12.24	0	----	----	----	----	0	----	----	----	----

Appendix 12. Trinity River at Willow Creek rotary screw trap weekly steelhead fork lengths, 2010.

Natural steelhead																	Hatchery steelhead				
Week	Week	Age-0					Age-1					Age-2+					Age-1				
Starting	of year	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD	n	mean	min	max	SD
03/05/10	10	0	----	----	----	----	18	109	64	211	44.86	0	----	----	----	----	0	----	----	----	----
03/12/10	11	6	34	31	38	2.73	15	116	79	209	42.27	1	225	225	225	----	1	400	400	400	----
03/19/10	12	2	37	35	38	2.12	54	101	67	191	28.32	1	227	227	227	----	9	217	196	237	15.19
03/26/10	13	3	41	33	54	11.15	34	106	67	198	37.92	1	230	230	230	----	61	214	177	260	18.8
04/02/10	14	4	32	30	34	1.71	26	146	76	210	47.25	4	253	224	326	48.64	222	204	116	257	25.58
04/09/10	15	0	----	----	----	----	17	138	76	197	46.54	0	----	----	----	----	25	209	175	248	20.81
04/16/10	16	0	----	----	----	----	12	104	86	157	23.98	0	----	----	----	----	6	222	177	259	27.29
04/23/10	17	0	----	----	----	----	25	119	76	194	41.9	0	----	----	----	----	27	206	161	233	18.28
04/30/10	18	0	----	----	----	----	25	164	87	200	33.75	1	218	218	218	----	34	204	89	250	26.25
05/07/10	19	1	36	36	36	----	11	156	84	195	39.18	1	203	203	203	----	26	197	156	245	19.76
05/14/10	20	3	58	29	98	35.95	26	162	80	198	35.05	1	219	219	219	----	55	192	150	230	18.51
05/21/10	21	1	26	26	26	----	13	156	94	197	36.2	1	211	211	211	----	21	194	167	254	21.11
05/28/10	22	3	37	29	42	6.81	29	169	102	196	25.31	0	----	----	----	----	46	186	148	225	18.81
06/04/10	23	1	63	63	63	----	17	159	110	182	21.23	0	----	----	----	----	11	174	157	187	10.69
06/11/10	24	6	48	37	53	6.09	6	139	105	192	39.78	0	----	----	----	----	8	193	138	221	26.22
06/18/10	25	16	50	27	60	10.8	12	129	95	173	27.6	1	208	208	208	----	6	173	147	190	17.48
06/25/10	26	50	57	43	72	5.7	11	128	95	183	35.45	1	219	219	219	----	1	188	188	188	----
07/02/10	27	126	60	38	79	7.21	2	149	130	168	26.87	0	----	----	----	----	1	168	168	168	----
07/09/10	28	92	61	38	77	7.99	2	119	111	127	11.31	0	----	----	----	----	0	----	----	----	----
07/16/10	29	133	61	36	82	10.12	3	143	130	168	21.39	0	----	----	----	----	0	----	----	----	----
07/23/10	30	72	65	42	83	7.81	2	112	110	113	2.12	0	----	----	----	----	0	----	----	----	----
07/30/10	31	80	61	42	86	9.66	3	136	114	175	34.12	0	----	----	----	----	0	----	----	----	----
08/06/10	32	42	60	38	80	11.66	6	138	118	157	14.21	0	----	----	----	----	0	----	----	----	----
08/13/10	33	22	60	42	73	8.93	2	133	130	136	4.24	0	----	----	----	----	0	----	----	----	----
08/20/10	34	1	44	44	44	----	2	141	122	159	26.16	0	----	----	----	----	0	----	----	----	----

Appendix 13. Fulton's condition factor (K) for age-0 Chinook salmon from the Pear Tree and Willow Creek rotary screw trap sites.

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
01/15/2010	3	0	---	---	0	---	---
01/22/2010	4	0	---	---	0	---	---
01/30/2010	5	0	---	---	0	---	---
02/05/2010	6	0	---	---	0	---	---
02/12/2010	7	0	---	---	0	---	---
02/19/2010	8	2	0.94	0.04	0	---	---
02/26/2010	9	2	0.97	0.08	0	---	---
03/05/2010	10	28	0.99	0.06	53	0.98	0.38
03/12/2010	11	33	0.98	0.08	22	0.92	0.21
03/19/2010	12	33	1.03	0.19	18	1.01	0.15
03/26/2010	13	33	1.04	0.08	10	1.06	0.09
04/02/2010	14	91	1.01	0.07	19	1.07	0.11
04/09/2010	15	81	1.00	0.07	10	1.04	0.06
04/16/2010	16	26	1.04	0.08	44	1.06	0.12
04/23/2010	17	29	1.08	0.07	126	1.09	0.13
04/30/2010	18	0	---	---	30	1.05	0.06
05/07/2010	19	0	---	---	135	1.06	0.26
05/14/2010	20	0	---	---	422	1.07	0.14
05/21/2010	21	19	0.99	0.06	320	1.08	0.11
05/28/2010	22	198	1.02	0.07	209	1.06	0.16
06/04/2010	23	285	1.04	0.09	227	1.11	0.11
06/11/2010	24	353	1.02	0.11	559	1.07	0.13
06/18/2010	25	410	1.04	0.09	586	1.06	0.12
06/25/2010	26	269	1.06	0.08	534	1.07	0.10
07/02/2010	27	171	1.04	0.08	488	1.07	0.12
07/09/2010	28	492	1.07	0.12	563	1.08	0.27
07/16/2010	29	421	1.05	0.07	536	1.07	0.11
07/23/2010	30	635	1.05	0.07	551	1.08	0.10
07/30/2010	31	181	1.04	0.10	538	1.05	0.09
08/06/2010	32	204	1.07	0.12	512	1.06	0.10
08/13/2010	33	149	1.07	0.13	422	1.06	0.10
08/20/2010	34	183	1.01	0.06	159	1.07	0.09

Appendix 14. Fulton's condition factor (K) for age-1 coho salmon from the Pear Tree and Willow Creek Rotary screw trap sites.

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
01/15/2010	3	13	1.05	0.12	0	---	---
01/22/2010	4	150	1.05	0.08	0	---	---
01/30/2010	5	5	1.04	0.05	0	---	---
02/05/2010	6	29	1.04	0.06	0	---	---
02/12/2010	7	15	1.04	0.08	0	---	---
02/19/2010	8	16	1.03	0.08	0	---	---
02/26/2010	9	5	0.99	0.08	0	---	---
03/05/2010	10	17	1.04	0.06	2	1.02	0.05
03/12/2010	11	16	1.01	0.06	3	0.98	0.06
03/19/2010	12	12	1.09	0.12	1	1.08	---
03/26/2010	13	2	0.98	0.02	1	0.81	---
04/02/2010	14	13	1.01	0.07	3	1.06	0.08
04/09/2010	15	41	1.07	0.07	16	1.07	0.05
04/16/2010	16	2	0.99	0.01	3	1.00	0.03
04/23/2010	17	2	1.07	0.07	6	1.01	0.06
04/30/2010	18	0	---	---	14	1.04	0.13
05/07/2010	19	0	---	---	15	0.97	0.08
05/14/2010	20	0	---	---	64	0.99	0.11
05/21/2010	21	0	---	---	28	0.94	0.13
05/28/2010	22	0	---	---	91	0.97	0.12
06/04/2010	23	2	0.98	0.02	13	1.04	0.13
06/11/2010	24	1	0.90	---	15	1.00	0.08
06/18/2010	25	0	---	---	6	0.97	0.06
06/25/2010	26	0	---	---	9	0.93	0.08
07/02/2010	27	0	---	---	4	0.91	0.07
07/09/2010	28	0	---	---	1	0.84	---
07/16/2010	29	0	---	---	2	0.78	0.16
07/23/2010	30	0	---	---	0	---	---
07/30/2010	31	0	---	---	0	---	---
08/06/2010	32	1	0.89	---	0	---	---
08/13/2010	33	0	---	---	1	0.93	---
08/20/2010	34	0	---	---	0	---	---

Appendix 15. Fulton's condition factor (K) for age-1+ steelhead from the Pear Tree and Willow Creek rotary screw trap sites.

Week Starting	Week of Year	Pear Tree Trap Site						Willow Creek Trap Site					
		Natural Origin			Hatchery Origin			Natural Origin			Hatchery Origin		
		n	Ave K	sd K	n	Ave K	sd K	n	Ave K	sd K	n	Ave K	sd K
01/15/2010	3	10	1.09	0.12	0	---	---	0	---	---	0	---	---
01/22/2010	4	186	1.12	0.11	0	---	---	0	---	---	0	---	---
01/30/2010	5	31	1.09	0.10	0	---	---	0	---	---	0	---	---
02/05/2010	6	41	1.08	0.11	0	---	---	0	---	---	0	---	---
02/12/2010	7	32	1.08	0.09	0	---	---	0	---	---	0	---	---
02/19/2010	8	54	1.05	0.13	0	---	---	0	---	---	0	---	---
02/26/2010	9	14	1.08	0.12	0	---	---	0	---	---	0	---	---
03/05/2010	10	49	1.05	0.10	0	---	---	17	1.08	0.12	0	---	---
03/12/2010	11	92	1.08	0.17	0	---	---	15	1.02	0.10	0	---	---
03/19/2010	12	151	1.05	0.09	0	---	---	55	1.06	0.09	9	1.01	0.06
03/26/2010	13	105	1.06	0.10	0	---	---	35	1.06	0.10	61	0.99	0.13
04/02/2010	14	80	1.03	0.08	0	---	---	29	0.99	0.18	222	1.14	0.78
04/09/2010	15	79	1.03	0.10	0	---	---	17	1.03	0.10	25	0.96	0.07
04/16/2010	16	28	1.02	0.06	0	---	---	12	1.08	0.11	6	0.99	0.12
04/23/2010	17	26	1.12	0.37	0	---	---	25	1.06	0.11	27	0.97	0.26
04/30/2010	18	0	---	---	0	---	---	26	0.98	0.09	34	1.03	0.64
05/07/2010	19	0	---	---	0	---	---	12	0.99	0.11	26	0.91	0.12
05/14/2010	20	0	---	---	0	---	---	27	0.98	0.10	55	0.91	0.07
05/21/2010	21	0	---	---	0	---	---	14	1.02	0.11	21	0.91	0.08
05/28/2010	22	3	0.98	0.05	0	---	---	28	0.96	0.09	46	0.93	0.08
06/04/2010	23	0	---	---	0	---	---	17	1.01	0.10	11	0.97	0.10
06/11/2010	24	0	---	---	0	---	---	6	1.06	0.10	8	1.00	0.19
06/18/2010	25	7	1.07	0.05	0	---	---	13	1.99	2.38	6	1.16	0.26
06/25/2010	26	1	1.09	---	0	---	---	12	1.85	2.75	1	0.97	---
07/02/2010	27	3	1.11	0.05	0	---	---	2	1.06	0.21	1	0.94	---
07/09/2010	28	3	1.05	0.08	0	---	---	2	1.03	0.04	0	---	---
07/16/2010	29	1	1.21	---	0	---	---	3	1.06	0.04	0	---	---
07/23/2010	30	3	0.92	0.10	0	---	---	2	1.21	0.12	0	---	---
07/30/2010	31	3	1.14	0.13	0	---	---	3	1.15	0.11	0	---	---
08/06/2010	32	2	1.03	0.00	0	---	---	6	1.08	0.10	0	---	---
08/13/2010	33	4	1.11	0.23	0	---	---	2	1.05	0.06	0	---	---
08/20/2010	34	4	1.01	0.06	0	---	---	2	1.02	0.07	0	---	---