Juvenile Salmonid Monitoring On the Mainstem Trinity River, California, 2012

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

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Juvenile Salmonid Monitoring on the Mainstem Trinity River, California, 2012

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Abstract.—This report presents juvenile salmonid emigration monitoring data conducted in 2012 at both Pear Tree Bar (PTRST; river kilometer [rkm] 118) and Willow Creek (WCRST; rkm 34), California on the mainstem Trinity River. 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 2012, three rotary screw traps were operated at PTRST from January 12 through September 14, with successful sampling for 215 of the 247 day sampling period. At WCRST three rotary screw traps were operated in 2012 from March 5 through August 31, with successful sampling for 147 days of the 179 day sampling period.

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

Juvenile salmonid emigration target dates were developed by the Trinity River Restoration Program (TRRP) to assess at what date 80% of the juvenile salmonid population had reached Willow Creek and to help manage water temperatures in the mainstem Trinity River. The estimate of the week in which 80% of the juvenile Chinook salmon population passed WCRST, as inferred from the proportional discharge based abundance index was Week of the Year (WOY) 29 (July 10-July 15), which occurred after 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 22 (May 28-June 3), which occurred prior to the TRRP management target date of June 4. The estimate of the week in which 80% of the steelhead smolt population passed the WCRST, as inferred from proportional discharge based abundance indices, was WOY 21 (May 15 – May 21), which occurred prior to the TRRP management target date of May 22.

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 12 and September 14, an estimated 4,987,106 (SD=240,428; CV = 0.05) naturally-produced age-0 Chinook salmon and 515,471 (SD = 45,025, CV = 0.09) age-0 hatchery Chinook salmon passed the site. At WCRST between March 5 and August 31, an estimated 3,512,974 (SD = 412,303; CV = 0.12) naturally-produced age-0 Chinook salmon and 429,533 (SD = 35,628; CV = 0.08) age-0 hatchery Chinook salmon passed the site.

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, the new thermal regimes, and restoration efforts. Information collected by this project is needed to addresses 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 TRRP restoration efforts because these studies focus on the early freshwater life-history phase which is directly affected by instream conditions and management actions.

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 2012 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 Gulch (PTRST) and Willow Creek (WCRST) on the mainstem Trinity River (Figure 1). 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. In addition, it is intended that this basic information will be used by the TRRP to develop a salmon production model for the Trinity River.

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.

Harris, N., P. Petros, and W.D. Pinnix. 2012. Juvenile Salmonid Monitoring on the Main-stem 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.

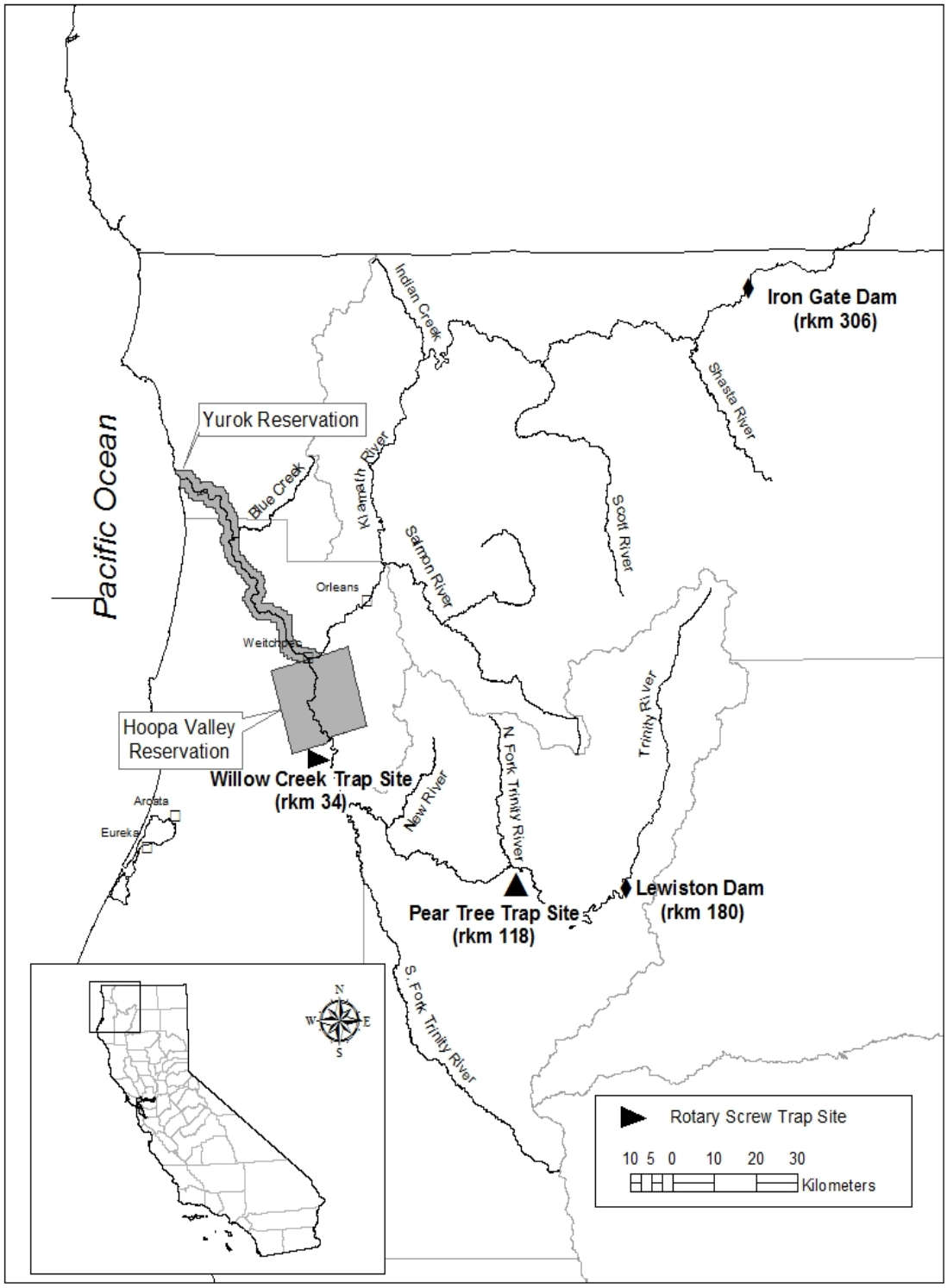


Figure 1. Location of the Trinity River rotary screw trap sites near Willow Creek (rkm 34) and Pear Tree Gulch (rkm 118), California, operated by the Yurok Tribal Fisheries Program, U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Hoopa Valley Tribal Fisheries Department.

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.

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 2012, trapping at PTRST began in the second week of January and trapping at WCRST was initiated the first week of 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. This allowed comparable data to be collected for inter-annual comparisons in emigration timing (duration and peak) and abundance. 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.

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.

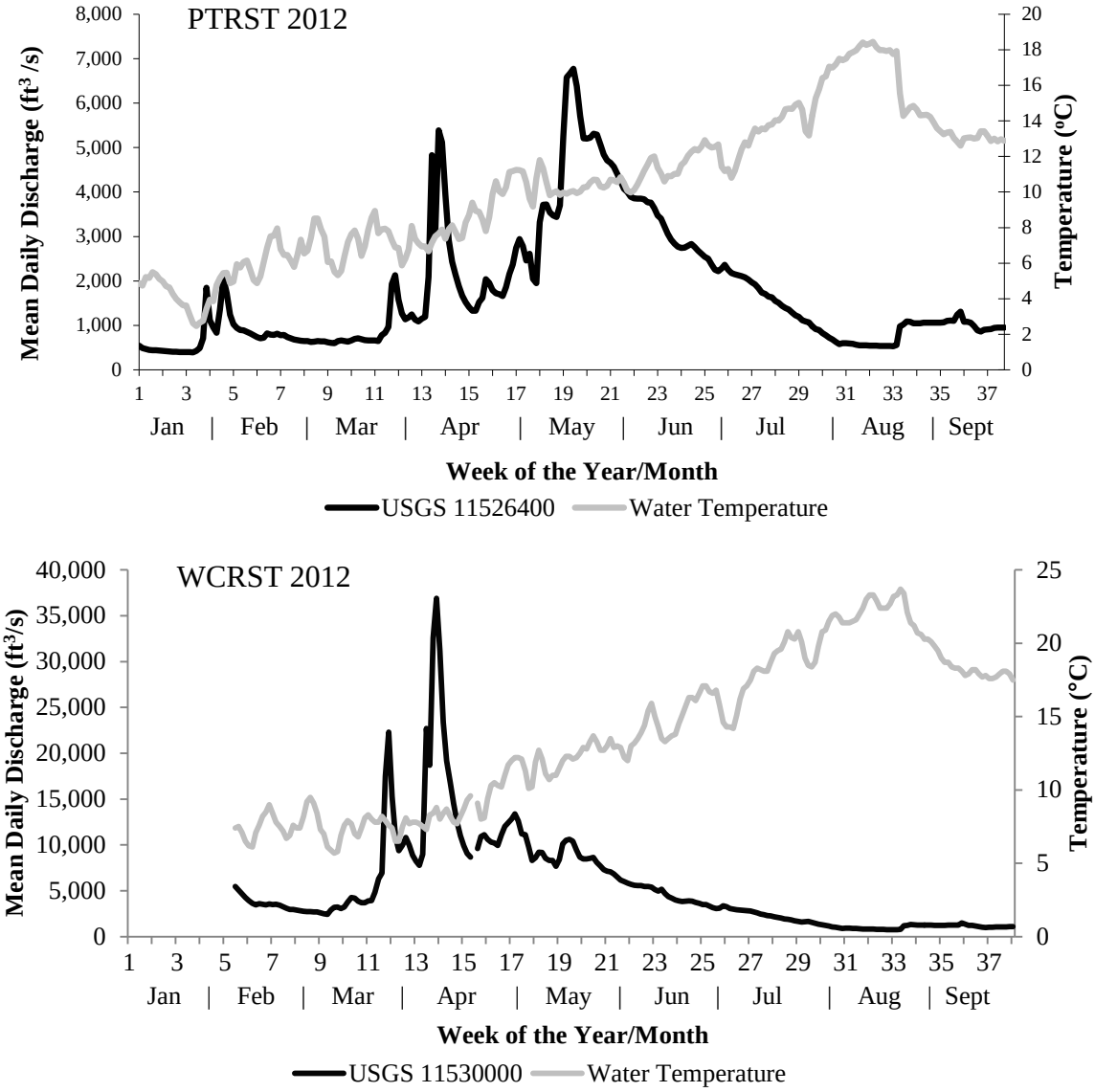


Figure 2. Mean daily discharge (ft^3/s) as recorded near Helena, California (US Geological Survey Water Resource gage station #11-526400) and Hoopa (HPA; US Geological Survey Water Resource gage station #11-530000), California and mean daily water temperatures (^oC) recorded at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST) in 2012.

Abundance Indices

The proportional discharge based abundance indices for natural age-0 Chinook salmon were approximately 1.33 million and 1.11 million at PTRST and WCRST, respectively (Figure 3; Table 6; Appendix 1 & 2). The age-0 hatchery Chinook salmon abundance indices were approximately 0.104 million at PTRST and 0.171 million at WCRST. It is unclear what caused the PTRST abundance index for hatchery Chinook salmon to be less than the WCRST estimate. Because natural age-0 Chinook salmon were captured on the first day of trap operation in 2012, 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 2012 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)	12-Jan - 14 Sep	215	247	87%
PTRST	2 (2.4m)	28-Jan - 9 Jul	72	164	44%
PTRST	3(1.5m)	2 Feb - 26 Aug	100	215	46%
Distinct Days		12 Jan - 14 Sep	215	247	87%
WCRST	1 (2.4m)	05 Mar – 31 Aug	135	179	75%
WCRST	2 (2.4m)	05 Mar – 31 Aug	147	179	82%
WCRST	3 (2.4m)	05 Mar – 31 Aug	119	179	66%
Distinct Days		05 Mar – 31 Aug	147	179	82%

Table 3. Juvenile salmonid catch totals in 2012 for trapping at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34), on the Trinity River, California, operated by the Hoopa Valley Tribal Fisheries Department, U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office and the Yurok Tribal Fisheries Program. Hatchery fish totals are expanded catch based on adipose fin clip rate. NA = Not Applicable (i.e. no fish of a particular age class exist in the Trinity River).

Site	Species	Hatchery Age-0	Hatchery Age-1+	Natural Age-0	Natural Age-1+	Natural Age-2+	Total
PTRST	Chinook salmon	8,045	0	94,246	88	NA	102,378
PTRST	coho salmon	NA	222	592	360	NA	1,174
PTRST	steelhead	NA	182	1,473	624	31	2,310
WCRST	Chinook salmon	20,264	8	96,203	154	NA	116,629
WCRST	coho salmon	NA	2,349	126	767	NA	3,242
WCRST	steelhead	NA	1,789	72	1,796	453	4,110

Table 4. California Department of Fish and Game, Trinity River Hatchery juvenile salmonid releases, 2012. AD-clipped = adipose fin clipped fish.

Species[1]	Release Season	Number Released	Percentage AD-clipped or Marked	Release Dates
Chinook salmon	Spring	2,593,001	22.22%	06/01 - 06/15
Chinook salmon	Fall	1,313,583	22.95%	10/01 - 10/17
coho salmon[2]	Spring	491,741	99.87%	03/15 - 03/26
steelhead	Spring	731,105	99.63%	03/15 - 03/26

1. Chinook salmon releases include both spring-run and fall-run races released in the spring and fall release seasons.
2. Coho salmon were marked with a right maxillary clip.

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, 2012.

Common name	Species	Life stage	PTRST Catch (n)	WCRST Catch (n)
Lamprey	*Entosphenus spp.*	Ammocete	3,214	2,453
		Eyed juvenile	162	30
		Adult	2	55
Sucker	*Catostomus spp.*		141	2,161
Speckled dace	*Rhinichthys osculus*		298	157
Threespine stickleback	*Gasterosteus aculeatus*		23	50
Golden shiner	*Notemigonus crysoleucas*		1	4
Sculpin	*Cottus spp.*		0	91
Green sturgeon	*Acipenser medirostris*		0	11
Brown trout	*Salmo trutta*	Juvenile	802	31
Sunfish	*Lepomis spp.*		0	3
Sockeye salmon	*Oncorhynchus nerka*		2	38
Season Total			4,645	5,084

Table 6. Juvenile salmonid proportional discharge based abundance indices, at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2012. 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	103,542	0	1,328,180	850	NA	1,432,571
PTRST	coho salmon	NA	2,599	7,458	4,414	NA	14,471
PTRST	steelhead	NA	2,670	24,354	8,045	636	35,705
WCRST	Chinook	171,004	559	1,110,050	5,640	NA	1,287,253
WCRST	coho salmon	NA	67,284	1,991	17,311	NA	86,586
WCRST	steelhead	NA	56,492	712	54,900	14,155	126,259

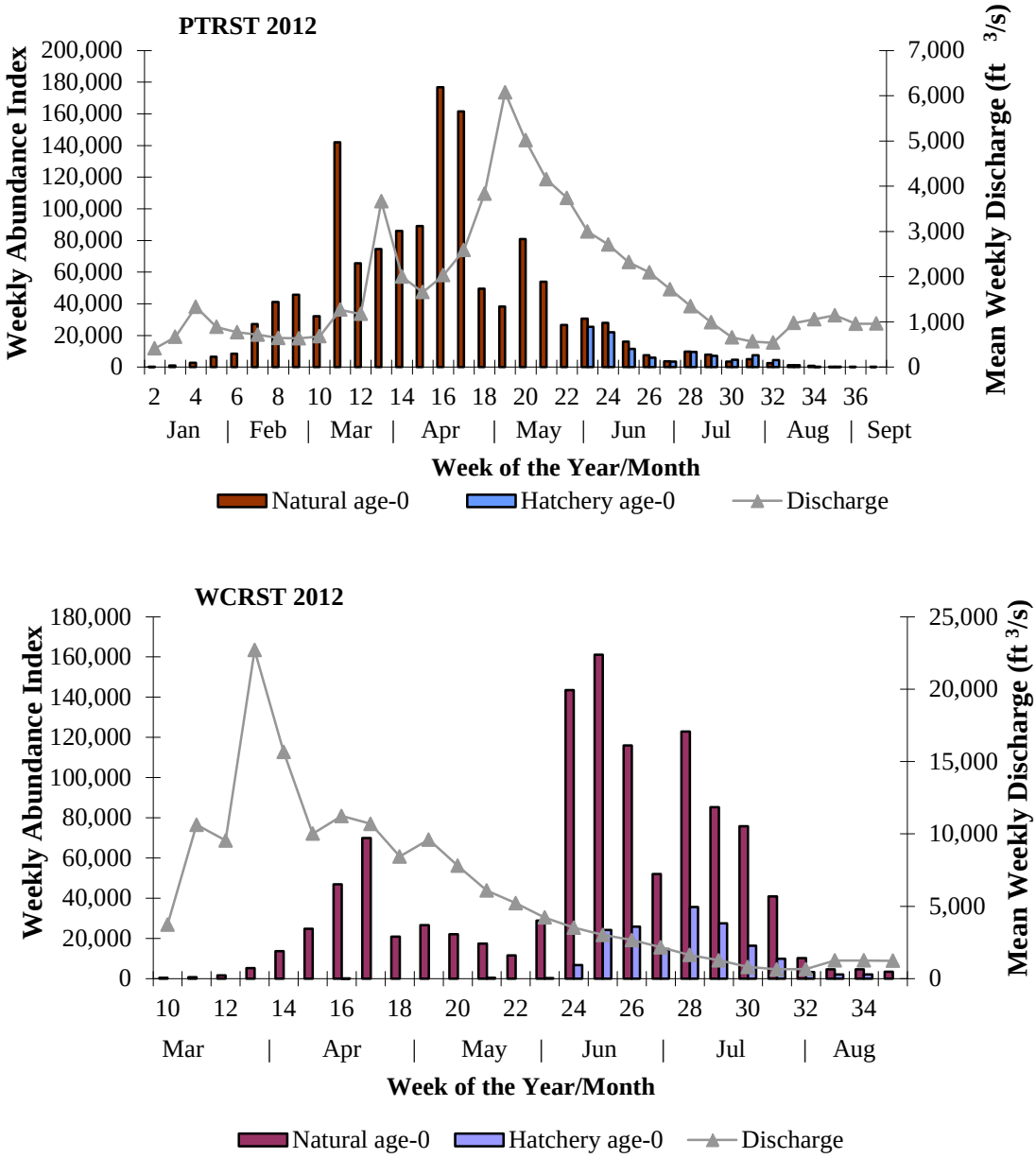


Figure 3. Weekly proportional discharge based abundance indices for natural age-0 and hatchery age-0 Chinook salmon captured at Pear Tree Rotary Screw Trap (PTRST; rkm 118) and Willow Creek Rotary Screw Trap (WCRST; rkm 34) in 2012. Mean daily discharge (ft^3/s) was recorded by U.S. Geological Survey Water Resource gage station #11-526400, near Helena, California, and U.S. Geological Survey Water Resource gage station #11-530000 at Hoopa, California. Please note differences in scale of axes.

The proportional discharge based abundance indices for age 1+ naturally produced coho salmon were 4,414 and 17,311 fish at the PTRST and WCRST, respectively (Figure 4; Table 6; Appendix 3 & 4). The age-0 naturally produced coho salmon abundance indices were 7,458 and 1,991 for PTRST and WCRST, respectively. The abundance indices for hatchery age-1 coho salmon were 2,599 and 67,284 for PTRST and WCRST, respectively. Future analyses will attempt to explain this difference.

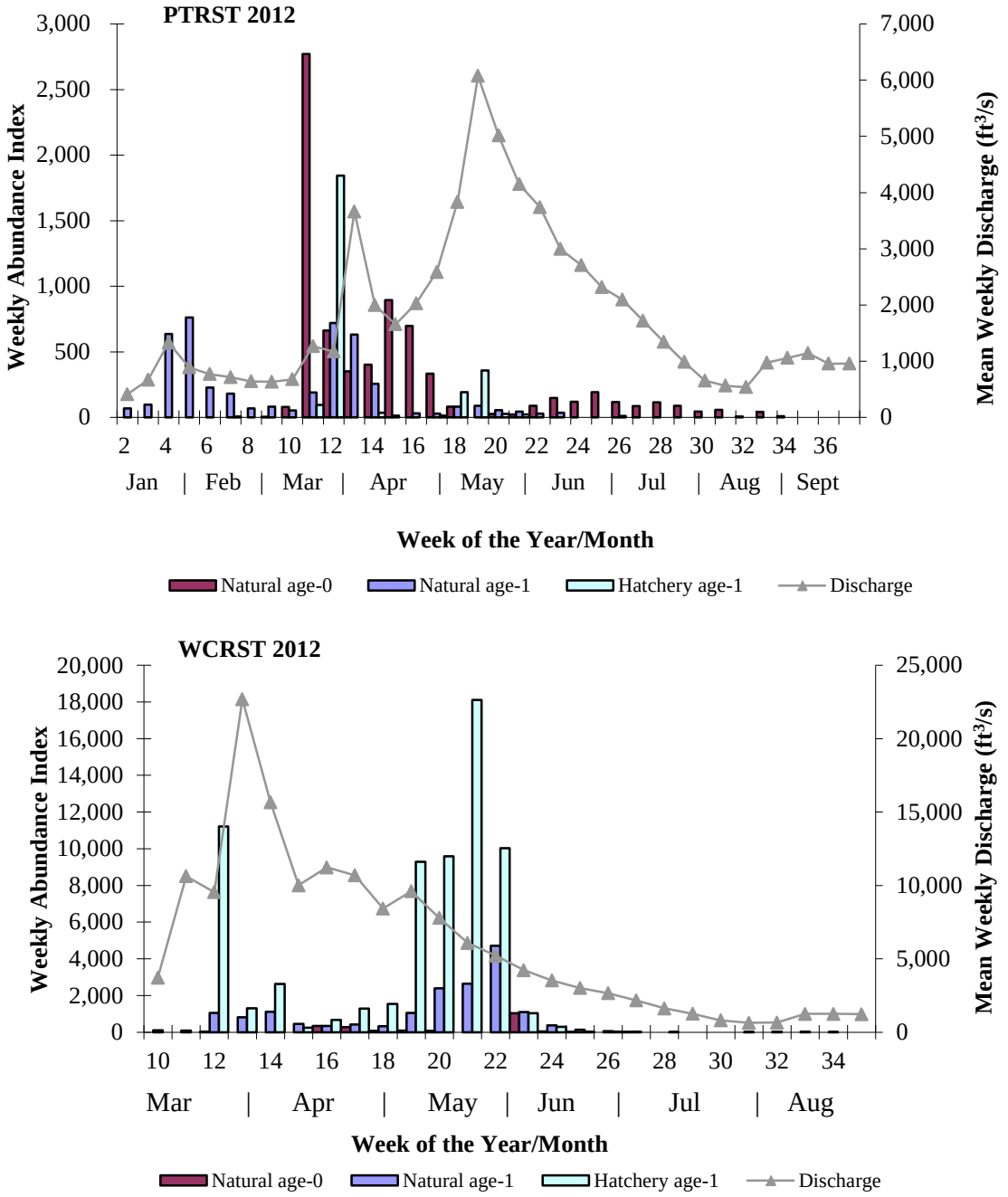


Figure 4. Weekly proportional discharge based abundance indices for natural age-0, natural age-1, and hatchery age-1 coho salmon captured at Pear Tree Rotary Screw Trap (PTRST, rkm 118) and Willow Creek Rotary Screw Trap (WCRST, rkm 34) in 2012. Mean daily discharge (ft^3/s) was recorded by U.S. Geological Survey Water Resource gage station #11-526400, near Helena, California, and U.S. Geological Survey Water Resource gage station #11-530000 at Hoopa, California. Please note differences in scale of axes.

Because natural age-1+ coho salmon were 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 fall emigration age-0 coho salmon is not accounted for because sampling typically ends in late August.

At the PTRST site, proportional discharge based abundance indices of natural age-0 and age-1 steelhead were 24,354 and 8,045, respectively (Figure 5; Table 6; Appendix 5). Abundance indices of age-0 and age-1 steelhead at WCRST were 712 and 54,900, respectively (Figure 5; Table 6; Appendix 6). Abundance indices of hatchery age-1 steelhead were 2,670 at PTRST and 56,792 at WCRST; again showing the unexplained pattern of higher values for the lower trapping site. Future analyses will attempt to explain this difference.

As with coho salmon, the sampling period at both trap sites misses portions of each respective steelhead population that emigrated prior to or after trapping operations. Additionally, any outmigration of steelhead that may occur in the fall is not accounted for because sampling typically ends in late August. It is thought that age-0 steelhead captured in traps are simply redistributing through the basin and not actively emigrating to the ocean.

Chinook Salmon Population Estimation

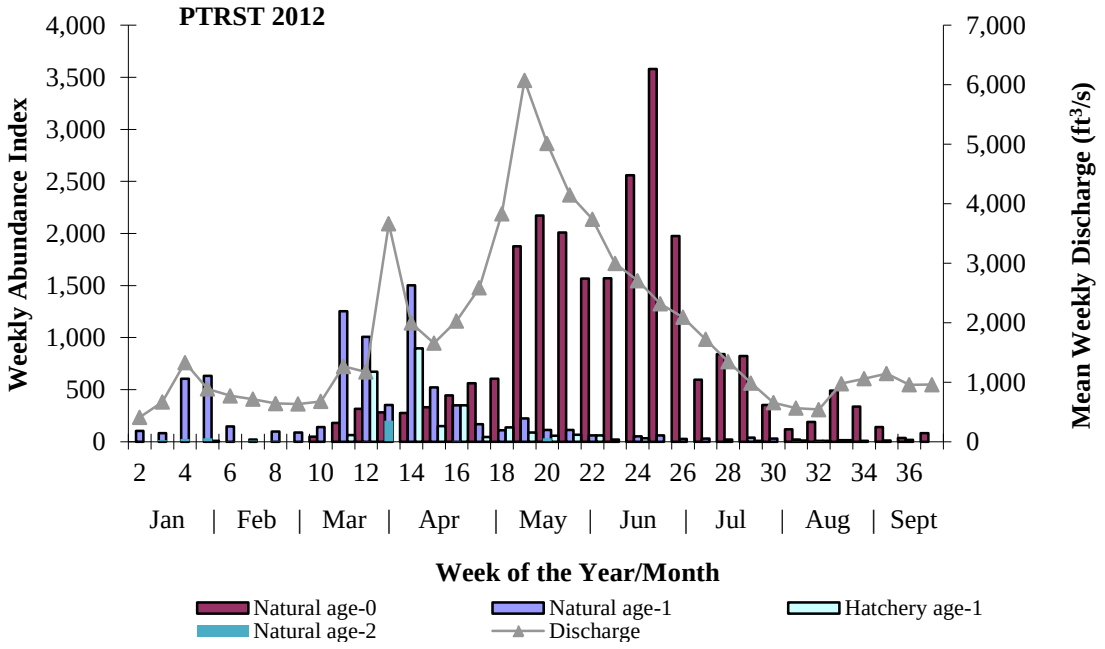
During the 2012 sampling season, freeze branded hatchery Chinook salmon marked at Trinity River Hatchery and delivered to the trap sites were used to estimate trap efficiency for generating population estimates during the sampling period (Appendix 7 & 8). Weekly stratified mark-recapture population estimates of emigrating age-0 Chinook salmon were calculated for both naturally and hatchery-produced sub-populations. At PTRST between January 12 and September 14, an estimated 4,987,106 (SD=240,428; CV = 0.05) naturally-produced age-0 Chinook salmon and 515,471 (SD = 45,025, CV = 0.09) age-0 hatchery Chinook salmon passed the site. At WCRST between March 5 and August 31, an estimated 3,512,974 (SD = 412,303; CV = 0.12) naturally-produced age-0 Chinook salmon and 429,533 (SD = 35,628; CV = 0.08) age-0 hatchery Chinook salmon passed the site.

Hatchery/Natural Contribution

Chinook salmon were captured at PTRST and WCRST throughout the 2012 sampling season with the spring/summer emigration dominated by naturally-produced fish comprising 93% and 86%, respectively, of the total proportional discharge based abundance indices (Appendix 1 & 2) and 90% and 88%, respectively, of the trap efficiency based population estimate (Appendix 7 & 8).

The age-1 coho salmon emigration was composed primarily of naturally-produced fish at PTRST, comprising 63% of the total age-1 proportional discharge based index in 2012 (Appendix 3), and dominated by hatchery-produced fish at WCRST, comprising 80% of the total age-1 proportional discharge based index in 2012 (Appendix 4).

Based on proportional discharge based abundance indices at PTRST and WCRST, the age-1 hatchery steelhead hatchery produced fish comprised 25% (Appendix 5) and 51% (Appendix 6), of the total age-1 abundance indices, respectively.



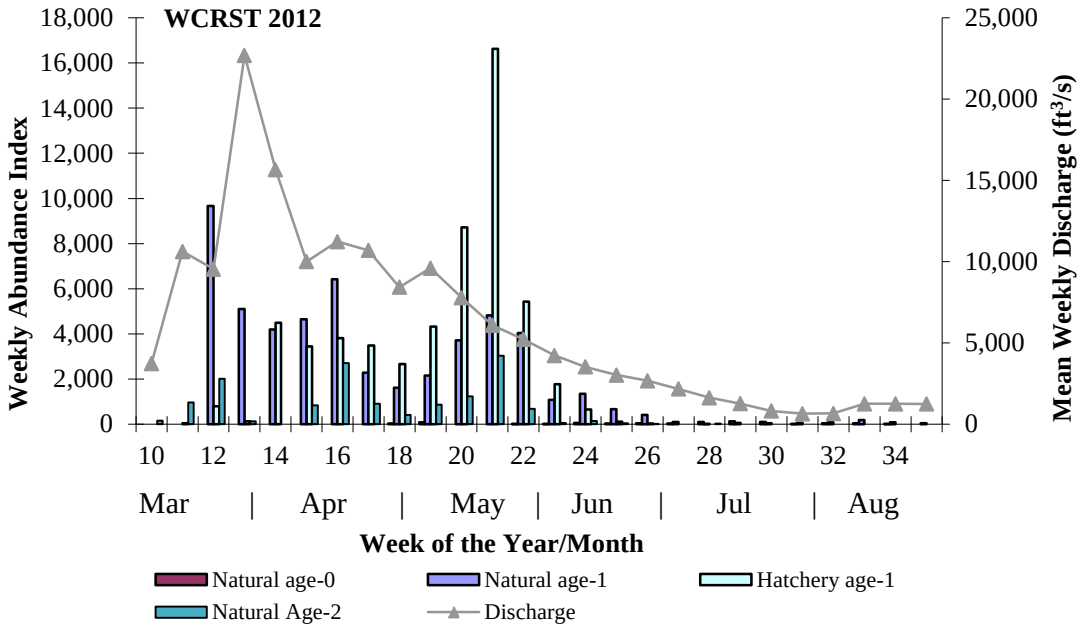


Figure 5. Weekly proportional discharge based abundance indices for natural age-0, natural age-1, natural age-2, and hatchery age-1 steelhead captured at Pear Tree Rotary Screw Trap (PTRST, rkm 118) and Willow Creek Rotary Screw Trap (WCRST, rkm 34) in 2012. Mean daily discharge (ft^3/s) was recorded by U.S. Geological Survey Water Resource gage station #11-526400, near Helena, California, and U.S. Geological Survey Water Resource gage station #11-530000 at Hoopa, California. Please note differences in scale of axes.

Outmigrant Timing

The Chinook salmon population in the Trinity River is composed of both naturally-produced and hatchery-produced fish of both spring and fall races. The vast majority of juveniles during the spring/summer emigration period emigrate as age-0 fish, with the natural and hatchery emigration periods overlapping (Table 7; Appendix 1 & 2). The week marking the cumulative passage of 80% of the natural juvenile Chinook salmon population at WCRST, as inferred from the proportional discharge based abundance index, was WOY 29 (July 10-July 15), which occurred after the TRRP management target date of July 9 (TRRP and ESSA 2009). Based on proportional discharge based abundance indices, the natural age-0 Chinook salmon emigration had two peaks at PTRST in WOY 11 and 16, and peaked at WCRST occurring in WOY 25. The hatchery age-0 Chinook salmon emigration peaked in WOY 23 at PTRST and WOY 28 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 rearing juveniles. Natural age-1 coho salmon emigrated through the Trinity River at PTRST and WCRST beginning prior to trap installation and continued through mid-July in 2012, 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. The week marking the cumulative passage of 80% of the naturally produced age-1 coho population at WCRST, as inferred from the proportional discharge based index, was WOY 22 (May 28-June 3), 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 11 at PTRST and WOY 23 at WCRST. Natural age-1 coho salmon emigration peaked in WOY 5 at PTRST and WOY 22 at WCRST. Hatchery coho salmon emigration peaked in WOY 12 at PTRST and WOY 21 at WCRST.

The steelhead populations (summer, fall, and winter races) in the Trinity River are composed of 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, and in July for age-0 fish. Age-1 or older 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. The week marking the cumulative passage of 80% of the natural steelhead smolt population at WCRST, as inferred from proportional discharge based abundance indices, was WOY 21 (May 15 – May 21), which occurred prior to the TRRP management target date of May 22 (TRRP and ESSA 2009). Natural age-0 steelhead emigration peaked in WOY 25 at PTRST and WOY 29 at WCRST. Natural age-1 steelhead emigration peaked in WOY 14 at PTRST and WOY 12 at WCRST. Hatchery steelhead emigration peaked in WOY 14 at PTRST and WOY 21 at WCRST.

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), 2012. 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	2-37	5-19	23-35	16	5	23
PTRST	coho salmon	9-34	2-26	11-21	11	5	12
PTRST	steelhead	10-37	2-36	11-33	25	14	14
WC	Chinook salmon	10-35	10-22	23-35	25	12	28
WC	coho salmon	12-27	10-34	12-28	23	22	21
WC	steelhead	18-34	10-35	11-26	30	12	21

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 determine the origin unmarked individuals, clipped and non-clipped juvenile Chinook salmon were pooled in weekly mean calculations. Weekly mean condition factor of juvenile Chinook salmon generally increased through the season at Pear Tree and decreased at Willow Creek. 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 remained level through the season. Weekly mean condition factor of steelhead generally remained level through the sampling 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, United States Fish and Wildlife Service, Arcata Fish and Wildlife Office, and the Yurok Tribal Fisheries Program, 2012.

Site	Species	Date First Released	Date First Captured	# of Days	Maximum Migration Rate
PTRST	Chinook salmon	06/01/2012	6/05/2012	4	16 rkm/day
PTRST	coho salmon	03/15/2012	3/17/2012	2	32 rkm/day
PTRST	steelhead	03/15/2012	3/18/2012	3	21 rkm/day
WCRST	Chinook salmon	06/01/2012	06/07/2012	6	18 rkm/day
WCRST	coho salmon	03/15/2012	03/20/2012	5	22 rkm/day
WCRST	steelhead	03/15/2012	03/20/2012	5	22 rkm/day

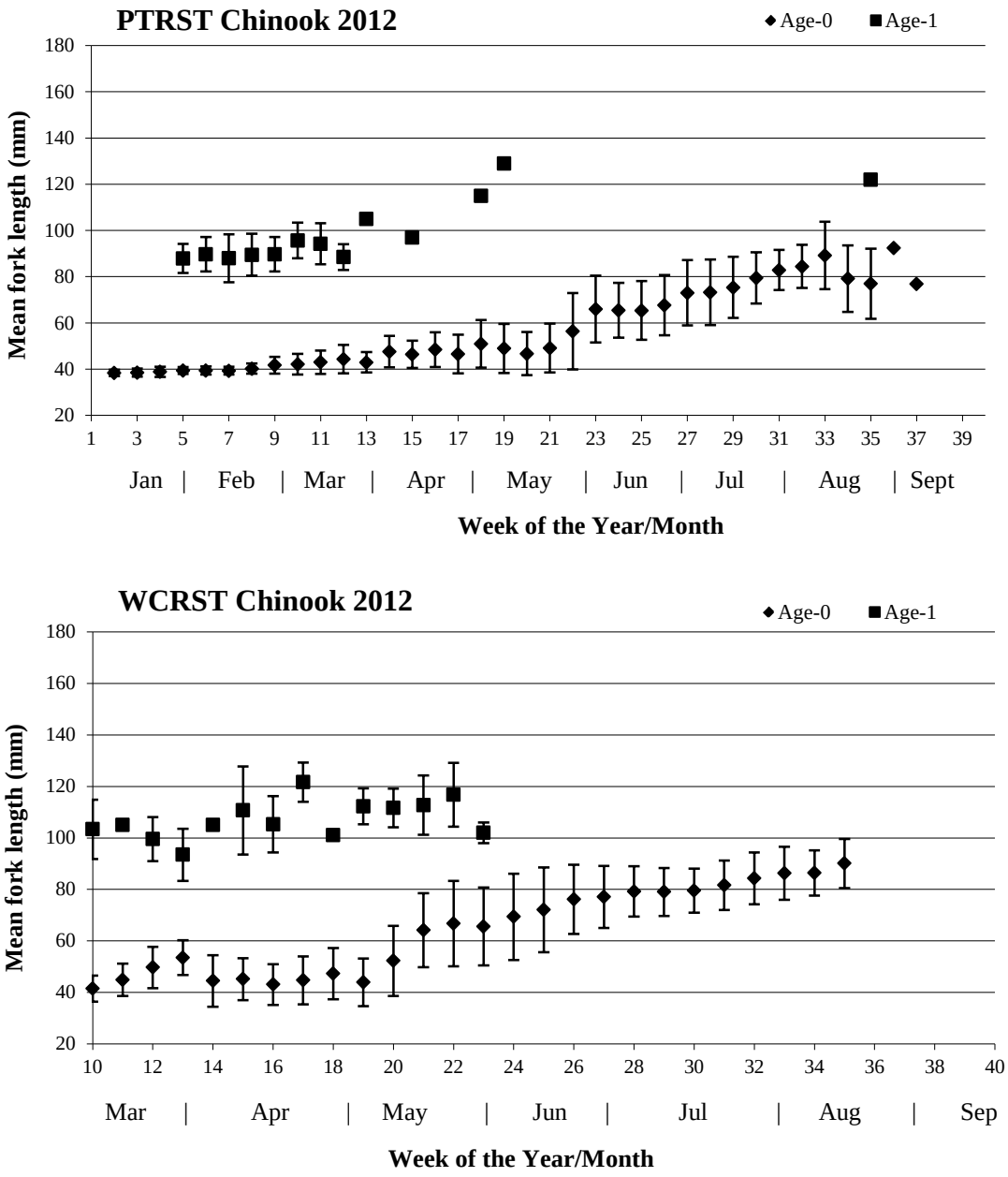


Figure 6. Weekly mean fork lengths of age-0 and age-1 Chinook salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2012. Error bars represent one standard deviation of the mean.

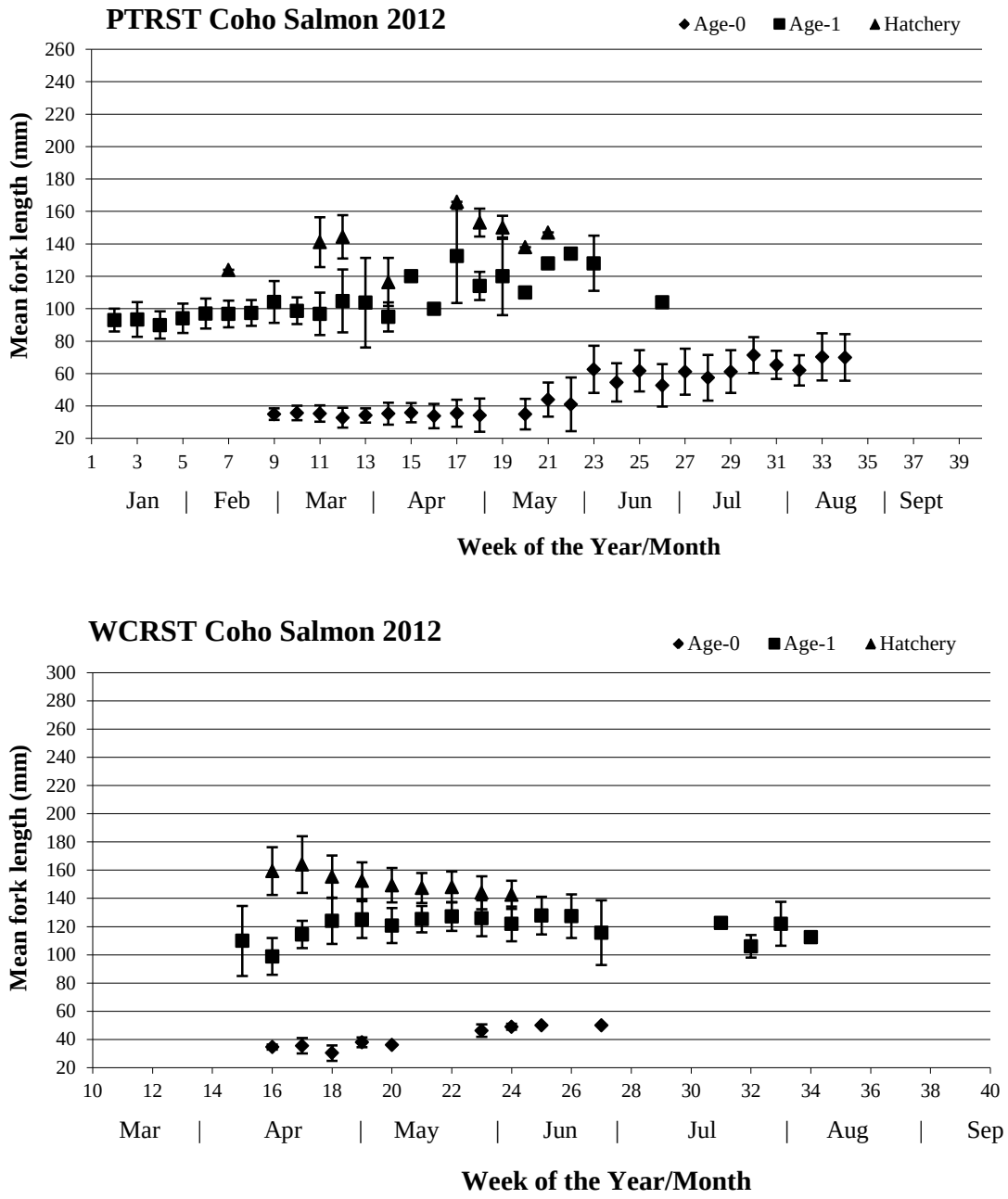


Figure 7. Weekly mean fork lengths for natural age-0, natural age-1, and hatchery coho salmon captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2012. Error bars represent one standard deviation of the mean.

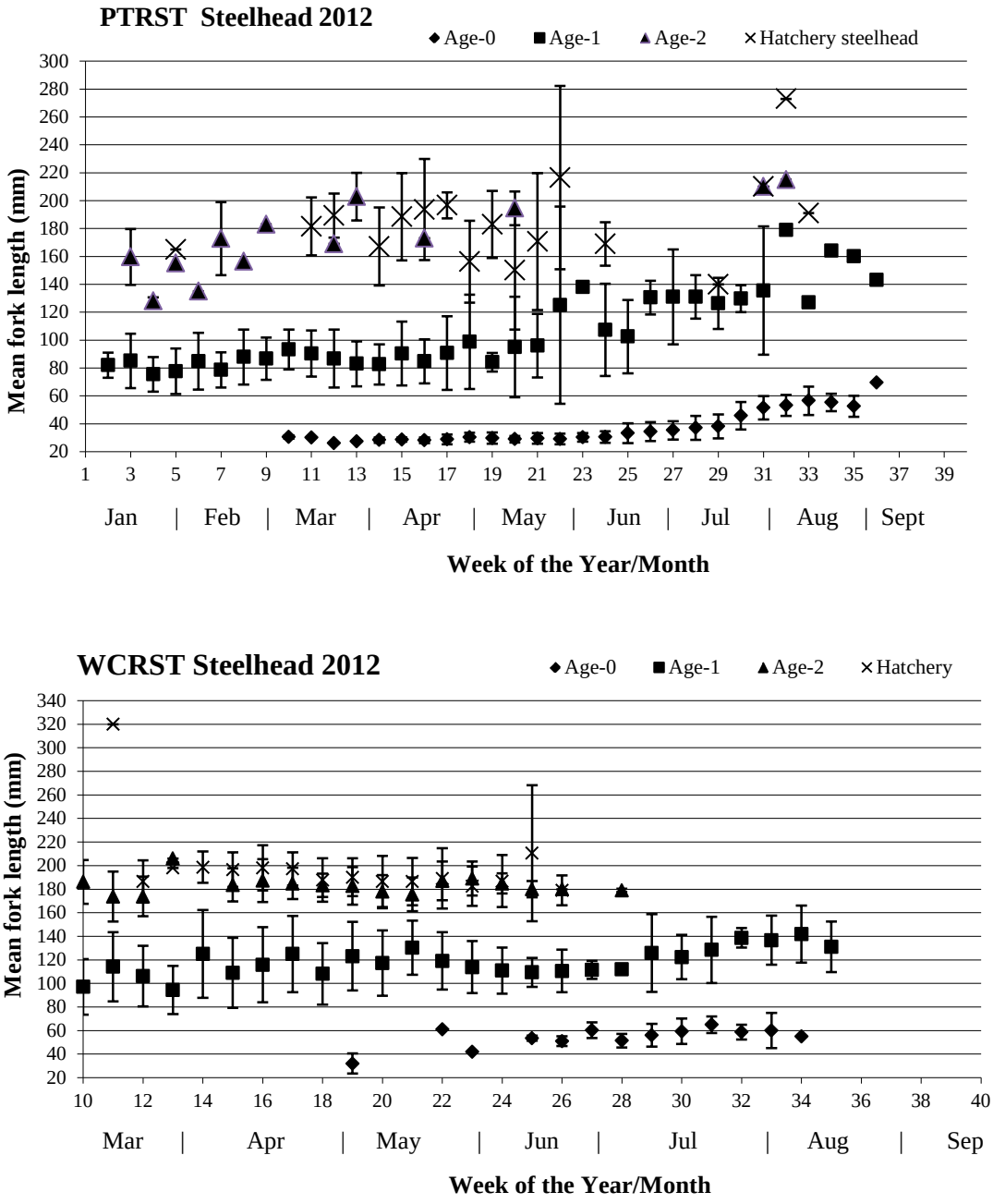


Figure 8. Weekly mean fork lengths for natural age-0, age-1, age-2, and hatchery age-1 steelhead captured at Pear Tree Rotary Screw Trap (PTRST) and Willow Creek Rotary Screw Trap (WCRST), 2012. Error bars represent one standard deviation of the mean.

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Acknowledgements

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Appendices

Appendix 1. Trinity River at Pear Tree rotary screw trap site weekly Chinook salmon catches, and abundance indices, 2012. NC = no clip, AD = adipose fin clip. Hatchery fish captured before WOY 23 were assumed to be age-1.

		Mean	Trap	Weekly Chinook Salmon Catch						Weekly Chinook Salmon Index Totals					
Week	Week	Daily	Days	Hatchery			Natural		Catch	Hatchery			Natural		Index
Starting	of Year	Discharge	Sampled	NC	AD	Age-1[1]	Age-0	Age-1	Total	NC	AD	Age-1	Age-0	Age-1	Total
01/08/2012	2	412	1	0	0	0	6	0	6	0	0	0	210	0	210
01/15/2012	3	667	6	0	0	0	116	0	116	0	0	0	1,039	0	1,039
01/22/2012	4	1,330	6	0	0	0	185	0	185	0	0	0	2,803	0	2,803
01/29/2012	5	888	9	0	0	0	785	14	799	0	0	0	6,514	116	6,630
02/05/2012	6	771	7	0	0	0	929	11	940	0	0	0	8,525	101	8,626
02/12/2012	7	716	13	0	0	0	3,735	7	3,742	0	0	0	27,265	51	27,316
02/19/2012	8	642	10	0	0	0	4,728	12	4,740	0	0	0	41,144	104	41,248
02/26/2012	9	635	16	0	0	0	7,203	13	7,216	0	0	0	45,685	82	45,767
03/05/2012	10	678	14	0	0	0	4,795	10	4,805	0	0	0	32,196	67	32,263
03/12/2012	11	1,267	14	0	0	0	13,387	9	13,396	0	0	0	142,057	96	142,153
03/19/2012	12	1,173	14	0	0	0	6,830	8	6,838	0	0	0	65,565	77	65,642
03/26/2012	13	3,663	6	0	0	0	1,062	1	1,063	0	0	0	74,672	70	74,742
04/02/2012	14	1,996	12	0	0	0	4,698	0	4,698	0	0	0	86,003	0	86,003
04/09/2012	15	1,656	14	0	0	0	6,475	1	6,476	0	0	0	89,174	14	89,188
04/16/2012	16	2,030	14	0	0	0	11,150	0	11,150	0	0	0	176,818	0	176,818
04/23/2012	17	2,587	14	0	0	0	10,636	0	10,636	0	0	0	161,465	0	161,465
04/30/2012	18	3,833	10	0	0	0	1,810	1	1,811	0	0	0	49,615	27	49,642
05/07/2012	19	6,074	10	0	0	0	856	1	857	0	0	0	38,269	45	38,314
05/14/2012	20	5,014	14	0	0	0	2,869	0	2,869	0	0	0	80,968	0	80,968
05/21/2012	21	4,149	14	0	0	0	2,368	0	2,368	0	0	0	54,044	0	54,044
05/28/2012	22	3,740	10	0	0	0	900	0	900	0	0	0	26,600	0	26,600
06/04/2012	23	2,996	14	1,057	302	0	1,641	0	3,000	19,747	5,642	0	30,659	0	56,048
06/11/2012	24	2,709	14	1,017	290	0	1,646	0	2,953	17,216	4,919	0	27,954	0	50,089
06/18/2012	25	2,319	14	594	173	0	1,087	0	1,854	9,034	2,581	0	16,046	0	27,661
06/25/2012	26	2,093	14	364	103	0	572	0	1,039	4,683	1,338	0	7,472	0	13,493
07/02/2012	27	1,720	10	188	54	0	258	0	500	2,751	786	0	3,737	0	7,274
07/09/2012	28	1,344	14	770	220	0	1,022	0	2,012	7,434	2,124	0	9,867	0	19,425
07/16/2012	29	986	14	678	194	0	982	0	1,854	5,485	1,567	0	7,922	0	14,974
07/23/2012	30	655	10	475	136	0	480	0	1,091	3,563	1,018	0	3,588	0	8,169
07/30/2012	31	565	6	598	171	0	506	0	1,275	5,911	1,689	0	4,996	0	12,596
08/06/2012	32	539	7	427	122	0	309	0	858	3,511	1,003	0	2,540	0	7,054
08/13/2012	33	975	8	68	20	0	89	0	177	1,008	288	0	1,253	0	2,549
08/20/2012	34	1,059	13	8	2	0	88	0	98	67	19	0	834	0	920
08/27/2012	35	1,144	11	11	3	0	28	0	41	123	35	0	318	0	475
09/03/2012	36	956	6	0	0	0	5	0	5	0	0	0	88	0	88
09/10/2012	37	959	4	0	0	0	10	0	10	0	0	0	275	0	275
Total			387	6,255	1,790	0	94,246	88	102,378	80,533	23,009	0	1,328,180	850	1,432,571

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

Appendix 2. Trinity River at Willow Creek rotary screw trap site weekly Chinook salmon catches, and abundance indices, 2012. NC = no clip, AD = adipose fin clip. Hatchery fish captured before WOY 23 were assumed to be age-1.

	Week	Mean	Trap	Weekly Chinook Salmon Catch						Weekly Chinook Salmon Index Totals					
Week	of	Daily	Days	Hatchery			Natural		Catch	Hatchery			Natural		Index
Starting	Year	Discharge	Sampled	NC	AD	Age-1[1]	Age-0	Age-1	Total	NC	AD	Age-1	Age-0	Age-1	Total
03/05/2012	10	3,721	18	0	0	0	28	12	40	0	0	0	406	170	576
03/12/2012	11	10,626	8	0	0	0	23	1	24	0	0	0	768	44	812
03/19/2012	12	9,543	18	0	0	0	53	44	97	0	0	0	1,590	1,441	3,031
03/26/2012	13	22,693	5	0	0	0	43	7	50	0	0	0	5,173	837	6,010
04/02/2012	14	15,667	7	0	0	0	75	1	76	0	0	0	13,608	126	13,734
04/09/2012	15	10,009	12	0	0	0	316	3	319	0	0	0	24,778	120	24,898
04/16/2012	16	11,233	13	0	0	4	632	12	648	0	0	175	46,414	581	47,170
04/23/2012	17	10,690	12	0	0	0	806	3	809	0	0	0	69,887	147	70,034
04/30/2012	18	8,432	20	0	0	0	693	1	694	0	0	0	20,908	26	20,934
05/07/2012	19	9,600	19	0	0	0	714	18	732	0	0	0	26,084	512	26,596
05/14/2012	20	7,793	21	0	0	0	964	13	977	0	0	0	21,968	247	22,215
05/21/2012	21	6,088	13	0	0	4	577	23	604	0	0	384	17,213	1,142	18,739
)5/28/2012	22	5,217	17	0	0	0	775	12	787	0	0	0	11,968	197	12,165
)6/04/2012	23	4,226	21	21	6	0	2,556	4	2,587	208	60	0	28,754	50	29,072
06/11/2012	24	3,528	21	487	139	0	12,531	0	13,157	5,245	1,499	0	143,464	0	150,208
06/18/2012	25	3,021	21	2,114	604	0	16,813	0	19,531	18,897	5,398	0	161,095	0	185,390
06/25/2012	26	2,667	21	2,467	705	0	12,562	0	15,734	20,898	5,970	0	115,947	0	142,815
07/02/2012	27	2,165	15	1,152	329	0	4,837	0	6,318	11,429	3,265	0	52,024	0	66,718
07/09/2012	28	1,629	15	2,482	709	0	10,198	0	13,389	27,980	7,993	0	122,872	0	158,845
07/16/2012	29	1,263	15	2,694	770	0	9,862	0	13,326	21,389	6,110	0	85,228	0	112,727
07/23/2012	30	810	15	2,041	583	0	11,328	0	13,952	12,719	3,633	0	75,806	0	92,158
07/30/2012	31	638	15	1,351	386	0	6,622	0	8,359	7,745	2,213	0	40,935	0	50,893
08/06/2012	32	656	15	385	110	0	1,502	0	1,997	2,501	715	0	10,269	0	13,485
08/13/2012	33	1,255	14	266	76	0	611	0	953	1,848	528	0	4,690	0	7,066
08/20/2012	34	1,252	15	224	64	0	605	0	893	1,642	469	0	4,705	0	6,816
08/27/2012	35	1,237	15	77	22	0	477	0	576	506	144	0	3,496	0	4,146
Total			401	15,761	4,503	8	96,203	154	116,629	133,007	37,997	559	1,110,050	5,640	1,287,253

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

Appendix 3. Trinity River at Pear Tree rotary screw trap site weekly coho salmon catches, and abundance indices, 2012. 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	Natural		Catch	Hatchery	Natural		Index
				R-MAX	Age-0	Age-1	Total	R-MAX	Age-0	Age-1	Total
01/08/2012	2	412	1	0	0	2	2	0	0	70	70
01/15/2012	3	667	6	0	0	11	11	0	0	99	99
01/22/2012	4	1,330	6	0	0	42	42	0	0	636	636
01/29/2012	5	888	9	0	0	92	92	0	0	763	763
02/05/2012	6	771	7	0	0	25	25	0	0	229	229
02/12/2012	7	716	13	1	0	25	26	7	0	182	189
02/19/2012	8	642	10	0	0	8	8	0	0	70	70
02/26/2012	9	635	16	0	1	13	14	0	6	82	88
03/05/2012	10	678	14	0	12	8	20	0	81	54	135
03/12/2012	11	1,267	14	9	261	18	288	96	2,770	191	3,057
03/19/2012	12	1,173	14	192	69	75	336	1,843	662	720	3,225
03/26/2012	13	3,663	6	0	5	9	14	0	352	633	985
04/02/2012	14	1,996	12	2	22	14	38	37	403	256	696
04/09/2012	15	1,656	14	0	65	1	66	0	895	14	909
04/16/2012	16	2,030	14	0	44	2	46	0	698	32	730
04/23/2012	17	2,587	14	1	22	2	25	15	334	30	379
04/30/2012	18	3,833	10	7	3	3	13	192	82	82	356
05/07/2012	19	6,074	10	8	0	2	10	358	0	89	447
05/14/2012	20	5,014	14	1	1	2	4	28	28	56	112
05/21/2012	21	4,149	14	1	1	2	4	23	23	46	92
05/28/2012	22	3,740	10	0	3	1	4	0	89	30	119
06/04/2012	23	2,996	14	0	8	2	10	0	149	37	186
06/11/2012	24	2,709	14	0	7	0	7	0	119	0	119
06/18/2012	25	2,319	14	0	13	0	13	0	194	0	194
06/25/2012	26	2,093	14	0	9	1	10	0	117	13	130
07/02/2012	27	1,720	10	0	6	0	6	0	87	0	87
07/09/2012	28	1,344	14	0	12	0	12	0	116	0	116
07/16/2012	29	986	14	0	11	0	11	0	89	0	89
07/23/2012	30	655	10	0	6	0	6	0	45	0	45
07/30/2012	31	565	6	0	6	0	6	0	59	0	59
08/06/2012	32	539	7	0	1	0	1	0	8	0	8
08/13/2012	33	975	8	0	3	0	3	0	43	0	43
08/20/2012	34	1,059	13	0	1	0	1	0	9	0	9
08/27/2012	35	1,144	11	0	0	0	0	0	0	0	0
09/03/2012	36	956	6	0	0	0	0	0	0	0	0
09/10/2012	37	959	4	0	0	0	0	0	0	0	0
Total			387	222	592	360	1,174	2,599	7,458	4,414	14,471

Appendix 4. Trinity River at Willow Creek rotary screw trap site weekly coho salmon catches, and abundance indices, 2012. R-MAX = right maxillary clip.

	Week	Mean	Trap	Weekly Coho Salmon Catches				Weekly Coho Salmon Indices			
Week	of	Daily	Days	Hatchery	Natural		Catch	Hatchery	Natural		Index
Starting	Year	Discharge	Sampled	R-MAX	Age-0	Age-1	Total	R-MAX	Age-0	Age-1	Total
03/05/2012	10	3,721	17	0	0	6	6	0	0	109	109
03/12/2012	11	10,626	9	0	0	2	2	0	0	86	86
03/19/2012	12	9,543	17	354	0	35	389	11,220	28	1,051	12,299
03/26/2012	13	22,693	4	11	0	7	18	1,302	0	823	2,125
04/02/2012	14	15,667	7	19	0	8	27	2,636	0	1,113	3,749
04/09/2012	15	10,009	11	6	0	11	17	248	0	461	709
04/16/2012	16	11,233	12	14	6	7	27	675	343	339	1,357
04/23/2012	17	10,690	12	26	6	10	42	1,288	280	420	1,988
04/30/2012	18	8,432	19	49	3	10	62	1,537	81	326	1,944
05/07/2012	19	9,600	19	285	3	30	318	9,282	91	1,047	10,420
05/14/2012	20	7,793	20	413	2	102	517	9,583	56	2,422	12,061
05/21/2012	21	6,088	12	450	0	79	529	18,108	0	2,639	20,747
05/28/2012	22	5,217	17	601	0	297	898	10,025	0	4,712	14,737
06/04/2012	23	4,226	21	89	99	95	283	1,039	1,042	1,107	3,188
06/11/2012	24	3,528	20	27	4	35	66	290	42	367	699
06/18/2012	25	3,021	20	2	2	14	18	20	17	134	171
06/25/2012	26	2,667	20	2	0	6	8	21	0	53	74
07/02/2012	27	2,165	15	0	1	3	4	0	11	32	43
07/09/2012	28	1,629	13	1	0	0	1	10	0	0	10
07/16/2012	29	1,263	15	0	0	0	0	0	0	0	0
07/23/2012	30	810	15	0	0	0	0	0	0	0	0
07/30/2012	31	638	15	0	0	2	2	0	0	13	13
08/06/2012	32	656	14	0	0	3	3	0	0	21	21
08/13/2012	33	1,255	14	0	0	3	3	0	0	22	22
08/20/2012	34	1,252	14	0	0	2	2	0	0	14	14
08/27/2012	35	1,237	15	0	0	0	0	0	0	0	0
Total			387	2,349	126	767	3,242	67,284	1,991	17,311	86,586

Appendix 5. Trinity River at Pear Tree rotary screw trap site weekly steelhead catches, and abundance indices, 2012. AD = adipose fin clip.

Week Starting	Week of Year	Mean Flow	Trap Days Sampled	Weekly Steelhead Catch					Weekly Steelhead Abundance Indices				
				Hatchery	Natural			Catch	Hatchery	Natural			Index
				AD	Age-0	Age-1	Age 2+	Total	AD	Age-0	Age-1	Age 2+	Total
01/08/2012	2	412	1	0	0	3	0	3	0	0	105	0	105
01/15/2012	3	667	6	0	0	9	3	12	0	0	81	27	108
01/22/2012	4	1,330	6	0	0	40	3	43	0	0	606	45	651
01/29/2012	5	888	9	1	0	76	7	84	8	0	631	58	697
02/05/2012	6	771	7	0	0	16	1	17	0	0	147	9	156
02/12/2012	7	716	13	0	0	3	3	6	0	0	22	22	44
02/19/2012	8	642	10	0	0	11	2	13	0	0	96	17	113
02/26/2012	9	635	16	0	0	14	1	15	0	0	89	6	95
03/05/2012	10	678	14	0	7	21	0	28	0	47	141	0	188
03/12/2012	11	1,267	14	6	17	118	0	141	64	180	1,252	0	1,496
03/19/2012	12	1,173	14	70	33	105	1	209	672	317	1,008	10	2,007
03/26/2012	13	3,663	6	0	4	5	5	14	0	281	352	352	985
04/02/2012	14	1,996	12	49	15	82	0	146	897	275	1,501	0	2,673
04/09/2012	15	1,656	14	11	24	38	0	73	151	331	523	0	1,005
04/16/2012	16	2,030	14	22	28	22	1	73	349	444	349	16	1,158
04/23/2012	17	2,587	14	3	37	11	0	51	46	562	167	0	775
04/30/2012	18	3,833	10	5	22	4	0	31	137	603	110	0	850
05/07/2012	19	6,074	10	2	42	5	0	49	89	1,878	224	0	2,191
05/14/2012	20	5,014	14	2	77	4	2	85	56	2,173	113	56	2,398
05/21/2012	21	4,149	14	3	88	5	0	96	68	2,008	114	0	2,190
05/28/2012	22	3,740	10	2	53	2	0	57	59	1,566	59	0	1,684
06/04/2012	23	2,996	14	0	84	1	0	85	0	1,569	19	0	1,588
06/11/2012	24	2,709	14	2	151	3	0	156	34	2,561	51	0	2,646
06/18/2012	25	2,319	14	0	240	4	0	244	0	3,581	60	0	3,641
06/25/2012	26	2,093	14	0	152	2	0	154	0	1,974	26	0	2,000
07/02/2012	27	1,720	10	0	41	2	0	43	0	596	29	0	625
07/09/2012	28	1,344	14	0	87	2	0	89	0	840	19	0	859
07/16/2012	29	986	14	1	102	5	0	108	8	824	40	0	872
07/23/2012	30	655	10	0	47	4	0	51	0	352	30	0	382
07/30/2012	31	565	6	1	12	2	1	16	10	119	20	10	159
08/06/2012	32	539	7	1	23	1	1	26	8	189	8	8	213
08/13/2012	33	975	8	1	34	1	0	36	14	490	14	0	518
08/20/2012	34	1,059	13	0	36	1	0	37	0	338	9	0	347
08/27/2012	35	1,144	11	0	12	1	0	13	0	139	12	0	151
09/03/2012	36	956	6	0	2	1	0	3	0	35	18	0	53
09/10/2012	37	959	4	0	3	0	0	3	0	82	0	0	82
Total			387	182	1,473	624	31	2,310	2,670	24,354	8,045	636	35,705

Appendix 6. Trinity River at Willow Creek rotary screw trap site weekly steelhead catches, and abundance indices, 2012. AD = adipose fin clip.

			Trap	Steelhead Weekly Catch					Steelhead Weekly Abundance Indices				
Week	Week	Mean	Days	Hatchery	Natural			Catch	Hatchery	Natural			Index
Starting	of Year	Flow	Sampled	AD	Age-0	Age-1	Age-2+	Total	AD	Age-0	Age-1	Age-2+	Total
03/05/2012	10	3,721	17	0	0	46	10	56	0	0	685	156	841
03/12/2012	11	10,626	9	1	0	36	24	61	44	0	1,482	957	2,483
03/19/2012	12	9,543	17	24	0	315	64	403	792	0	9,668	2,017	12,477
03/26/2012	13	22,693	4	1	0	42	1	44	119	0	5,096	119	5,334
04/02/2012	14	15,667	7	24	0	30	0	54	4,485	0	4,188	0	8,673
04/09/2012	15	10,009	11	34	0	93	18	145	3,445	0	4,643	829	8,917
04/16/2012	16	11,233	12	71	0	117	52	240	3,806	0	6,420	2,699	12,925
04/23/2012	17	10,690	12	69	0	46	17	132	3,485	0	2,285	909	6,679
04/30/2012	18	8,432	19	89	1	54	13	157	2,667	27	1,614	408	4,716
05/07/2012	19	9,600	19	146	3	71	30	250	4,319	82	2,146	869	7,416
05/14/2012	20	7,793	20	349	0	162	60	571	8,719	0	3,707	1,230	13,656
05/21/2012	21	6,088	12	436	0	137	86	659	16,632	0	4,815	3,038	24,485
05/28/2012	22	5,217	17	318	1	242	45	606	5,433	16	4,032	672	10,153
06/04/2012	23	4,226	21	154	1	92	9	256	1,772	10	1,079	48	2,909
06/11/2012	24	3,528	20	60	3	125	16	204	649	50	1,345	137	2,181
06/18/2012	25	3,021	20	11	3	65	5	84	104	31	657	39	831
06/25/2012	26	2,667	20	2	5	39	1	47	21	46	403	8	478
07/02/2012	27	2,165	15	0	3	9	0	12	0	31	95	0	126
07/09/2012	28	1,629	13	0	8	2	2	12	0	99	18	20	137
07/16/2012	29	1,263	15	0	14	7	0	21	0	118	57	0	175
07/23/2012	30	810	15	0	15	5	0	20	0	101	34	0	135
07/30/2012	31	638	15	0	3	9	0	12	0	18	56	0	74
08/06/2012	32	656	14	0	6	11	0	17	0	41	77	0	118
08/13/2012	33	1,255	14	0	5	25	0	30	0	35	182	0	217
08/20/2012	34	1,252	14	0	1	11	0	12	0	7	81	0	88
08/27/2012	35	1,237	15	0	0	5	0	5	0	0	35	0	35
Total			387	1,789	72	1,796	453	4,110	56,492	712	54,900	14,155	126,259

Appendix 7. Trinity River at Pear Tree rotary screw trap site weekly age-0 Chinook salmon population estimate input and results, 2012.

Week Starting	Week of Year	Sampling Fraction[1]	Catch NC	Catch AC	Marks Released	Marks Recaptured	Recapture Rate	Estimated Natural	SD Natural	Estimated Hatchery	SD Hatchery
01/08/2012	2	0.14	6	0	0	0	----	2,853	2,055	0	0
01/15/2012	3	0.86	116	0	0	0	----	8,576	4,846	0	0
01/22/2012	4	0.71	185	0	0	0	----	17,853	9,713	0	0
01/29/2012	5	1.00	785	0	0	0	----	46,742	26,276	0	0
02/05/2012	6	1.00	929	0	0	0	----	61,687	35,124	0	0
02/12/2012	7	1.00	3,735	0	0	0	----	149,448	49,162	0	0
02/19/2012	8	0.71	4,728	0	0	0	----	181,059	63,778	0	0
02/26/2012	9	1.00	7,203	0	988	66	0.0668	119,456	14,277	0	0
03/05/2012	10	1.00	4,795	0	1,470	51	0.0347	146,248	19,858	0	0
03/12/2012	11	1.00	13,387	0	1,462	68	0.0465	296,484	31,610	0	0
03/19/2012	12	1.00	6,830	0	1,512	50	0.0331	222,482	31,827	0	0
03/26/2012	13	0.43	1,062	0	446	16	0.0359	85,033	20,822	0	0
04/02/2012	14	0.86	4,698	0	1,540	37	0.0240	240,134	34,745	0	0
04/09/2012	15	1.00	6,475	0	0	0	----	300,908	97,943	0	0
04/16/2012	16	1.00	11,150	0	2,675	45	0.0168	628,209	86,297	0	0
04/23/2012	17	1.00	10,636	0	2,071	44	0.0212	509,827	77,974	0	0
04/30/2012	18	0.71	1,810	0	3,623	11	0.0030	579,325	158,004	0	0
05/07/2012	19	0.71	856	0	0	0	----	140,065	71,790	0	0
05/14/2012	20	1.00	2,869	0	4,140	57	0.0138	211,389	27,170	0	0
05/21/2012	21	1.00	2,368	0	4,282	49	0.0114	203,610	27,409	0	0
05/28/2012	22	0.71	900	0	4,149	54	0.0130	100,144	13,713	163,567	38,691
06/04/2012	23	1.00	2,698	302	4,262	29	0.0068	240,093	52,513	116,118	20,637
06/11/2012	24	1.00	2,663	290	3,505	32	0.0091	178,911	31,099	52,478	8,567
06/18/2012	25	1.00	1,681	173	2,812	38	0.0135	87,137	13,497	54,618	16,934
06/25/2012	26	1.00	936	103	2,460	17	0.0069	81,663	21,075	14,311	2,491
07/02/2012	27	0.71	446	54	1,976	49	0.0248	18,384	3,130	25,881	3,541
07/09/2012	28	1.00	1,792	220	1,858	66	0.0355	33,034	4,222	17,844	2,036
07/16/2012	29	1.00	1,660	194	2,954	134	0.0454	24,477	2,449	17,646	2,472
07/23/2012	30	1.00	955	136	2,346	74	0.0315	17,700	2,508	27,619	4,170
07/30/2012	31	0.86	1,104	171	1,353	37	0.0273	23,630	3,887	13,078	2,614
08/06/2012	32	1.00	736	122	561	21	0.0374	10,081	2,132	11,173	4,035
08/13/2012	33	0.57	157	20	564	1	0.0018	14,081	4,809	629	283
08/20/2012	34	1.00	96	2	803	28	0.0349	2,899	658	337	174
08/27/2012	35	0.86	38	2	1,082	41	0.0379	1,146	290	136	141
09/03/2012	36	0.43	5	0	0	0	----	1,102	664	35	61
09/10/2012	37	0.29	10	0	0	0	----	1,236	810	0	0
	Total		100,500	1,789	54,894	1115	0.0203	4,987,106	240,428	515,471	45,025

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

Appendix 8. Trinity River at Willow Creek rotary screw trap site weekly age-0 Chinook salmon population estimate input and results, 2012.

Week Starting	Week of Year	Sampling Fraction[1]	Catch NC	Catch AD-Clip	Marks Released	Marks Recaptured	Recapture Rate	Estimated Natural	SD Natural	Estimated Hatchery	SD Hatchery
03/05/2012	10	0.86	28	0	969	27	0.028	1,085	281	---	---
03/12/2012	11	0.43	23	0	933	68	0.073	857	149	---	---
03/19/2012	12	0.81	50	0	909	0	0.000	5,663	3,501	---	---
03/26/2012	13	0.24	43	0	849	3	0.004	28,264	11,139	---	---
04/02/2012	14	0.33	74	0	821	0	0.000	45,857	29,651	---	---
04/09/2012	15	0.57	316	0	842	0	0.000	100,721	72,910	---	---
04/16/2012	16	0.62	633	0	872	1	0.001	273,328	122,025	---	---
04/23/2012	17	0.57	808	0	870	1	0.001	361,725	171,136	---	---
04/30/2012	18	0.95	695	0	1,485	7	0.005	173,505	55,434	---	---
05/07/2012	19	0.90	702	0	0	---	---	164,396	80,157	---	---
05/14/2012	20	1.00	946	0	0	---	---	124,334	64,191	---	---
05/21/2012	21	0.62	567	0	1,733	15	0.009	105,939	24,912	---	---
05/28/2012	22	0.81	772	0	1,604	7	0.004	157,050	47,815	---	---
06/04/2012	23	1.00	2,574	6	2,862	146	0.051	52,521	4,420	556	209
06/11/2012	24	0.95	12,982	136	2,455	198	0.081	164,981	10,890	7,205	766
06/18/2012	25	1.00	18,767	630	2,396	132	0.055	305,134	24,715	45,514	4,019
06/25/2012	26	1.00	14,978	693	1,996	118	0.059	226,112	20,020	48,693	4,676
07/02/2012	27	0.71	5,959	328	1,970	75	0.038	192,931	20,980	51,189	5,961
07/09/2012	28	0.71	12,564	704	1,940	79	0.041	339,829	39,013	91,307	10,689
07/16/2012	29	0.71	12,522	767	1,432	104	0.073	198,285	19,750	59,511	6,075
07/23/2012	30	0.71	13,358	583	959	93	0.097	171,408	15,326	34,511	3,317
07/30/2012	31	0.71	7,946	383	970	143	0.147	67,694	5,441	15,375	1,358
08/06/2012	32	0.71	1,883	110	527	26	0.049	51,107	9,954	14,686	2,970
08/13/2012	33	0.67	867	76	499	10	0.020	44,469	11,260	20,756	5,326
08/20/2012	34	0.71	829	64	0	---	---	49,960	28,936	19,825	11,031
08/27/2012	35	0.71	547	22	0	---	---	105,818	96,866	20,404	18,753
	Total		111,433	4,502	29,893	1,253	0.042	3,512,974	412,303	429,533	35,628

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

Appendix 9. Trinity River at Pear Tree rotary screw trap site weekly Chinook salmon and coho salmon fork lengths, 2012.

		ChinookSalmon*										Natural Coho Salmon										Hatchery Coho Salmon				
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
01/08/2012	2	6	38.3	36	40	1.37	---	---	---	---	---	---	---	---	---	---	2	93.0	88	98	7.07	---	---	---	---	---
01/15/2012	3	95	38.5	33	43	1.72	---	---	---	---	---	---	---	---	---	---	11	93.4	81	112	10.72	---	---	---	---	---
01/22/2012	4	38	38.9	34	42	2.18	---	---	---	---	---	---	---	---	---	---	37	89.9	73	116	8.42	---	---	---	---	---
01/29/2012	5	162	39.4	34	44	1.49	14	87.9	76	99	6.32	---	---	---	---	---	92	94.1	60	116	9.04	---	---	---	---	---
02/05/2012	6	210	39.5	33	44	1.74	11	89.7	75	103	7.48	---	---	---	---	---	25	97.0	75	118	9.26	---	---	---	---	---
02/12/2012	7	390	39.3	34	45	1.70	7	88.0	73	99	10.39	---	---	---	---	---	25	96.8	73	111	8.25	1	124	124	124	---
02/19/2012	8	300	40.3	35	53	2.25	12	89.5	75	104	9.03	---	---	---	---	---	8	97.4	89	115	8.00	---	---	---	---	---
02/26/2012	9	480	41.7	27	57	3.64	13	89.7	79	103	7.42	1	35.0	35	35	---	13	104.2	91	138	12.90	---	---	---	---	---
03/05/2012	10	420	42.1	36	59	4.47	9	95.7	85	106	7.70	12	35.7	30	37	2.02	8	98.8	88	108	8.29	---	---	---	---	---
03/12/2012	11	403	43.0	35	62	5.02	9	94.2	78	110	8.84	190	35.3	25	40	1.91	18	96.8	76	133	13.08	9	141	120	177	15.36
03/19/2012	12	420	44.3	33	68	6.12	8	88.5	82	99	5.53	37	32.8	21	40	4.73	24	104.8	80	165	19.43	65	144	108	184	13.33
03/26/2012	13	120	43.0	37	57	4.39	1	105.0	105	105	---	5	34.2	34	35	0.45	9	103.8	34	125	27.63	---	---	---	---	---
04/02/2012	14	357	47.6	33	66	6.79	---	---	---	---	---	21	35.3	26	47	5.15	14	94.9	80	110	8.99	2	117	106	127	14.85
04/09/2012	15	420	46.4	35	66	5.93	1	97.0	97	97	---	56	35.9	27	45	3.01	1	120.0	120	120	---	---	---	---	---	---
04/16/2012	16	420	48.4	35	74	7.49	---	---	---	---	---	38	33.9	26	39	3.84	2	100.0	100	100	0.00	---	---	---	---	---
04/23/2012	17	365	46.6	31	81	8.36	---	---	---	---	---	22	35.6	33	38	1.40	2	132.5	112	153	28.99	1	166	166	166	####
04/30/2012	18	309	51.0	35	85	10.27	1	115.0	115	115	---	3	34.3	34	35	0.58	3	114.0	104	120	8.72	7	153	142	170	8.65
05/07/2012	19	294	49.0	31	86	10.62	1	129.0	129	129	---	---	---	---	---	---	2	120.0	103	137	24.04	8	150	140	160	7.14
05/14/2012	20	367	46.7	34	86	9.35	---	---	---	---	---	1	35.0	35	35	---	2	110.0	110	110	0.00	1	138	138	138	---
05/21/2012	21	436	49.1	34	93	10.56	---	---	---	---	---	1	44.0	44	44	---	2	128.0	126	130	2.83	1	147	147	147	---
05/28/2012	22	312	56.4	35	103	16.54	---	---	---	---	---	3	41.0	35	51	8.72	1	134.0	134	134	---	---	---	---	---	---
06/04/2012	23	674	66.0	37	104	14.51	---	---	---	---	---	8	62.6	45	86	13.66	2	128.0	116	140	16.97	---	---	---	---	---
06/11/2012	24	699	65.4	38	105	11.86	---	---	---	---	---	7	54.6	40	65	7.81	---	---	---	---	---	---	---	---	---	---
06/18/2012	25	587	65.4	34	105	12.70	---	---	---	---	---	13	61.7	48	83	9.99	---	---	---	---	---	---	---	---	---	---
06/25/2012	26	429	67.7	38	104	13.02	---	---	---	---	---	8	52.8	36	69	12.99	1	104.0	104	104	---	---	---	---	---	---
07/02/2012	27	333	73.1	40	110	14.11	---	---	---	---	---	6	61.2	56	64	2.79	---	---	---	---	---	---	---	---	---	---
07/09/2012	28	549	73.2	41	117	14.16	---	---	---	---	---	12	57.4	47	66	5.60	---	---	---	---	---	---	---	---	---	---
07/16/2012	29	539	75.4	36	113	13.20	---	---	---	---	---	11	61.2	51	76	8.58	---	---	---	---	---	---	---	---	---	---
07/23/2012	30	420	79.4	40	118	11.09	1	94.0	94	94	---	6	71.3	55	91	13.54	---	---	---	---	---	---	---	---	---	---
07/30/2012	31	345	82.9	45	104	8.70	---	---	---	---	---	6	65.3	57	70	4.89	---	---	---	---	---	---	---	---	---	---
08/06/2012	32	235	84.4	37	113	9.33	---	---	---	---	---	1	62.0	62	62	---	---	---	---	---	---	---	---	---	---	---
08/13/2012	33	165	89.2	51	128	14.60	---	---	---	---	---	3	70.3	69	72	1.53	---	---	---	---	---	---	---	---	---	---
08/20/2012	34	98	79.2	22	120	14.39	---	---	---	---	---	1	70.0	70	70	---	---	---	---	---	---	---	---	---	---	---
08/27/2012	35	40	77.0	46	113	15.14	1	122.0	122	122	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
09/3/2012	36	5	92.4	78	111	14.36	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
09/10/2012	37	10	76.9	62	119	17.36	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

*Natural and Hatchery combined.

Appendix 10. Trinity River at Willow Creek rotary screw trap site weekly Chinook salmon and coho salmon fork lengths, 2012.

		Chinook Salmon*										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
03/05/2012	10	52	41	32	54	5.09	12	103	76	115	11.48	0	0	0	0	----	6	83	68	98	10.53	0	0	0	0	----
03/12/2012	11	89	45	26	58	6.30	1	105	105	105	----	0	0	0	0	----	2	105	95	115	14.14	0	0	0	0	----
03/19/2012	12	49	50	35	70	8.03	44	100	85	127	8.59	0	0	0	0	----	35	103	75	175	19.96	265	152	124	240	16.07
03/26/2012	13	41	54	42	67	6.73	7	93	80	111	10.11	0	0	0	0	----	7	103	90	120	10.85	11	143	127	170	12.59
04/02/2012	14	33	44	23	77	10.03	1	105	105	105	----	0	0	0	0	----	2	106	105	107	1.41	3	150	146	158	6.66
04/09/2012	15	227	45	31	72	8.12	3	111	91	122	17.10	0	0	0	0	----	11	110	89	182	24.82	6	154	135	183	17.27
04/16/2012	16	258	43	34	98	7.91	12	105	90	120	10.93	6	35	32	37	1.75	7	99	78	115	13.06	13	159	140	200	16.99
04/23/2012	17	268	45	29	79	9.31	3	122	115	130	7.64	6	36	31	46	5.50	10	114	98	131	9.67	26	164	135	212	20.10
04/30/2012	18	412	47	34	85	9.97	1	101	101	101	----	3	30	25	36	5.51	10	124	105	155	16.37	48	155	129	195	14.94
05/07/2012	19	360	44	32	88	9.26	18	112	101	126	6.98	3	38	34	40	3.46	28	125	105	175	12.99	212	152	124	215	13.12
05/14/2012	20	483	52	33	92	13.65	13	112	101	126	7.48	1	36	36	36	----	102	121	86	172	12.45	278	149	122	220	12.24
05/21/2012	21	357	64	36	95	14.35	23	113	98	140	11.55	0	0	0	0	----	79	125	102	145	9.40	221	147	125	185	10.62
05/28/2012	22	424	67	37	98	16.58	9	117	100	145	12.36	0	0	0	0	----	221	127	94	155	10.16	278	148	122	198	10.93
06/04/2012	23	714	66	38	109	15.13	4	102	100	108	4.00	71	46	37	59	4.42	94	126	102	171	12.72	86	144	106	187	11.66
06/11/2012	24	946	69	35	110	16.73	0	0	0	0	----	4	49	47	52	2.16	34	122	103	160	12.38	26	143	120	158	10.02
06/18/2012	25	1151	72	40	116	16.45	0	0	0	0	----	1	50	50	50	----	14	128	105	150	13.34	2	144	138	149	7.78
06/25/2012	26	1284	76	38	115	13.43	0	0	0	0	----	0	0	0	0	----	6	127	107	145	15.40	2	148	120	175	38.89
07/02/2012	27	782	77	40	115	12.08	0	0	0	0	----	1	50	50	50	----	3	116	100	142	22.94	0	0	0	0	----
07/09/2012	28	918	79	41	107	9.79	0	0	0	0	----	0	0	0	0	----	0	0	0	0	----	1	145	145	145	----
07/16/2012	29	849	79	37	113	9.34	0	0	0	0	----	0	0	0	0	----	0	0	0	0	----	0	0	0	0	----
07/23/2012	30	829	80	48	112	8.53	0	0	0	0	----	0	0	0	0	----	0	0	0	0	----	0	0	0	0	----
07/30/2012	31	667	82	45	111	9.56	0	0	0	0	----	0	0	0	0	----	2	123	120	125	3.54	0	0	0	0	----
08/06/2012	32	479	84	52	120	10.07	0	0	0	0	----	0	0	0	0	----	3	106	100	115	7.94	0	0	0	0	----
08/13/2012	33	398	86	52	120	10.28	0	0	0	0	----	0	0	0	0	----	3	122	112	140	15.62	0	0	0	0	----
08/20/2012	34	441	86	46	118	8.81	0	0	0	0	----	0	0	0	0	----	2	113	110	115	3.54	0	0	0	0	----
08/27/2012	35	343	90	50	138	9.57	0	0	0	0	----	0	0	0	0	----	0	0	0	0	----	0	0	0	0	----

*Natural and Hatchery combined.

Appendix 11. Trinity River at Pear Tree rotary screw trap site weekly steelhead fork lengths, 2012.

		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
01/08/2012	2	----	----	----	----	----	3	82	73	91	9	----	----	----	----	----	----	----	----	----	----
01/15/2012	3	----	----	----	----	----	9	85.1	53	110	19.51	3	159.7	140	180	20.01	----	----	----	----	----
01/22/2012	4	----	----	----	----	----	36	75.4	51	108	12.43	3	128	126	131	2.6	----	----	----	----	----
01/29/2012	5	----	----	----	----	----	74	77.6	53	120	16.33	7	155.1	143	180	12.4	1	165	165	165	----
02/05/2012	6	----	----	----	----	----	16	84.8	62	122	20.35	1	135	135	135	----	----	----	----	----	----
02/12/2012	7	----	----	----	----	----	3	78.7	65	90	12.66	3	172.7	145	197	26.2	----	----	----	----	----
02/19/2012	8	----	----	----	----	----	11	87.9	68	133	19.66	2	156.5	148	165	12	----	----	----	----	----
02/26/2012	9	----	----	----	----	----	14	86.7	62	122	15.15	1	183	183	183	----	----	----	----	----	----
03/05/2012	10	7	30.6	29	32	1.13	21	93.3	71	133	14.36	----	----	----	----	----	----	----	----	----	----
03/12/2012	11	3	30	30	30	0	118	90.4	62	151	16.46	----	----	----	----	----	6	181.5	156	216	20.75
03/19/2012	12	1	26	26	26	----	92	86.8	50	145	20.69	1	169	169	169	----	46	189.3	145	220	15.78
03/26/2012	13	4	27.3	27	28	----	5	83	57	96	16.17	5	202.8	186	223	17	----	----	----	----	----
04/02/2012	14	10	28.3	26	31	----	82	82.6	57	137	14.46	----	----	----	----	----	49	167.1	103	207	27.92
04/09/2012	15	24	28.7	27	32	----	38	90.4	60	162	22.88	----	----	----	----	----	11	188.5	120	225	31.19
04/16/2012	16	25	28.2	22	32	----	22	84.8	61	125	15.86	1	173	173	173	----	21	193.6	97	253	36.28
04/23/2012	17	37	28.9	24	40	----	11	90.7	61	152	26.46	----	----	----	----	----	3	196.7	189	207	9.29
04/30/2012	18	22	30.4	27	38	----	4	98.8	75	147	33.73	----	----	----	----	----	5	156.2	122	185	29.37
05/07/2012	19	41	29.7	25	42	----	5	84.2	73	90	6.65	----	----	----	----	----	2	183	166	200	24.04
05/14/2012	20	65	28.9	26	42	2.41	4	95	70	148	36.05	2	194.5	186	203	12	2	150	120	180	42.43
05/21/2012	21	88	29.5	26	51	3.81	5	96	75	125	22.81	----	----	----	----	----	3	170.7	122	220	49
05/28/2012	22	53	29.1	25	53	3.78	2	125	75	175	70.71	----	----	----	----	----	2	216.5	170	263	65.76
06/04/2012	23	84	30.3	26	41	3.14	1	138	138	138	----	----	----	----	----	----	----	----	----	----	----
06/11/2012	24	150	30.5	26	51	4.09	3	107.3	74	140	33.01	----	----	----	----	----	2	169	158	180	15.56
06/18/2012	25	193	33.3	25	60	7.11	4	102.5	72	125	26.34	----	----	----	----	----	----	----	----	----	----
06/25/2012	26	110	34.4	26	57	6.75	2	130.5	122	139	12.02	----	----	----	----	----	----	----	----	----	----
07/02/2012	27	41	35.3	27	56	6.58	2	131	107	155	33.94	----	----	----	----	----	----	----	----	----	----
07/09/2012	28	84	37.1	25	58	8.64	2	131	120	142	15.56	----	----	----	----	----	----	----	----	----	----
07/16/2012	29	102	38.1	21	67	8.51	5	126.4	108	149	18.32	----	----	----	----	----	1	140	140	140	----
07/23/2012	30	47	45.7	27	69	9.87	4	129.8	119	141	9.71	----	----	----	----	----	----	----	----	----	----
07/30/2012	31	12	51.5	33	64	8.32	2	135.5	103	168	45.96	1	210	210	210	----	1	210	210	210	----
08/06/2012	32	18	53.2	39	73	7.58	1	179	179	179	----	1	215	215	215	----	1	273	273	273	----
08/13/2012	33	34	56.5	36	73	10.17	1	127	127	127	----	----	----	----	----	----	1	191	191	191	----
08/20/2012	34	33	55.3	45	72	6.26	1	164	164	164	----	----	----	----	----	----	----	----	----	----	----
08/27/2012	35	11	52.5	39	64	7.51	1	160	160	160	----	----	----	----	----	----	----	----	----	----	----
09/03/2012	36	2	69.5	63	76	9.19	1	143	143	143	----	----	----	----	----	----	----	----	----	----	----
09/10/2012	37	3	55	46	61	7.94	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Appendix 12. Trinity River at Willow Creek rotary screw trap site weekly steelhead fork lengths, 2012.

		Natural Steelhead															Hatchery Steelhead				
	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
03/05/2012	10	0	----	----	----	----	44	97	69	160	23.6	10	186	159	218	18.6	0	----	----	----	----
03/12/2012	11	0	----	----	----	----	36	114	64	155	29.4	23	174	150	228	21.3	1	320	320	320	----
03/19/2012	12	0	----	----	----	----	272	106	52	156	25.7	63	174	150	246	16.9	22	187	145	210	17.9
03/26/2012	13	0	----	----	----	----	40	94	67	162	20.5	1	206	206	206	----	1	198	198	198	----
04/02/2012	14	0	----	----	----	----	10	125	72	169	37.3	0	----	----	----	----	6	199	183	219	13.2
04/09/2012	15	0	----	----	----	----	86	109	65	174	29.8	18	184	170	212	14.1	21	197	175	230	14.7
04/16/2012	16	0	----	----	----	----	97	116	67	167	31.9	51	187	163	237	18.3	68	198	150	248	19.1
04/23/2012	17	0	----	----	----	----	45	125	77	169	32.3	17	185	170	215	13.2	69	197	161	227	14.2
04/30/2012	18	0	----	----	----	----	47	108	70	165	26.2	13	183	170	199	9.92	87	188	130	228	18.5
05/07/2012	19	2	32	26	38	8.49	56	123	75	168	29.1	30	183	154	217	15.9	143	190	152	232	16
05/14/2012	20	0	----	----	----	----	147	117	75	175	27.7	56	178	152	209	14	268	187	142	310	21.7
05/21/2012	21	0	----	----	----	----	82	130	85	169	23.1	78	176	152	220	14.2	230	186	130	320	20.1
05/28/2012	22	1	61	61	61	----	211	119	79	169	24.4	39	187	168	240	16.5	240	189	150	315	25.6
06/04/2012	23	1	42	42	42	----	89	114	80	173	22.1	4	189	177	210	14.5	154	182	142	221	16.7
06/11/2012	24	0	----	----	----	----	123	111	79	170	19.7	12	185	170	196	8.5	58	187	146	310	22
06/18/2012	25	2	54	52	55	2.12	61	109	85	135	12.3	4	180	175	190	6.78	11	211	150	330	57.8
06/25/2012	26	4	51	47	55	4.08	37	111	85	162	18	1	180	180	180	----	2	179	170	188	12.7
07/02/2012	27	3	60	56	68	6.66	9	112	97	122	7.68	0	----	----	----	----	0	----	----	----	----
07/09/2012	28	8	51	45	62	5.68	1	112	112	112	----	2	179	178	180	1.41	0	----	----	----	----
07/16/2012	29	14	56	43	76	9.57	7	126	100	196	33	0	----	----	----	----	0	----	----	----	----
07/23/2012	30	15	59	40	80	10.7	5	122	110	155	18.9	0	----	----	----	----	0	----	----	----	----
07/30/2012	31	2	65	60	70	7.07	7	128	102	188	28	0	----	----	----	----	0	----	----	----	----
08/06/2012	32	4	59	50	65	6.29	3	139	132	148	8.33	0	----	----	----	----	0	----	----	----	----
08/13/2012	33	3	60	45	75	15	3	137	120	160	20.8	0	----	----	----	----	0	----	----	----	----
08/20/2012	34	1	55	55	55	----	8	142	109	185	24.3	0	----	----	----	----	0	----	----	----	----
08/27/2012	35	0	----	----	----	----	5	131	112	165	21.4	0	----	----	----	----	0	----	----	----	----

Appendix 13. Fulton's condition factor (K) for age-0 Chinook salmon with FL>50mm from the Pear Tree and Willow Creek rotary screw trap sites, 2012.

		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
01/15/2012	3	0	---	---	---	---	---
01/22/2012	4	0	---	---	---	---	---
01/29/2012	5	0	---	---	---	---	---
02/05/2012	6	0	---	---	---	---	---
02/12/2012	7	0	---	---	---	---	---
02/19/2012	8	0	---	---	---	---	---
02/26/2012	9	3	0.92	0.31	---	---	---
03/05/2012	10	21	1.01	0.10	0	---	---
03/12/2012	11	12	1.03	0.11	0	---	---
03/19/2012	12	19	0.89	0.09	24	1.17	0.26
03/26/2012	13	13	1.02	0.13	19	1.13	0.25
04/02/2012	14	52	1.08	0.11	6	1.16	0.15
04/09/2012	15	53	1.00	0.12	57	1.17	0.20
04/16/2012	16	38	0.89	0.08	38	1.26	0.66
04/23/2012	17	45	1.08	0.19	62	1.13	0.19
04/30/2012	18	100	1.08	0.11	106	1.13	0.33
05/07/2012	19	34	0.99	0.09	66	1.29	0.16
05/14/2012	20	76	0.99	0.07	172	1.18	0.23
05/21/2012	21	67	1.06	0.13	255	1.20	0.18
05/28/2012	22	97	1.10	0.11	307	1.25	0.14
06/04/2012	23	146	1.08	0.09	477	1.30	0.20
06/11/2012	24	107	1.04	0.08	468	1.16	0.24
06/18/2012	25	149	1.09	0.12	428	1.09	0.14
06/25/2012	26	159	1.05	0.08	524	1.10	0.15
07/02/2012	27	99	1.06	0.07	396	1.16	0.22
07/09/2012	28	82	1.08	0.11	358	1.20	0.18
07/16/2012	29	171	1.19	0.13	390	1.07	0.17
07/23/2012	30	155	1.08	0.08	382	1.02	0.17
07/30/2012	31	60	1.07	0.08	318	1.05	0.23
08/06/2012	32	60	1.10	0.09	293	1.03	0.19
08/13/2012	33	0	---	---	281	1.07	0.27
08/20/2012	34	0	---	---	197	1.09	0.19
08/27/2012	35	0	---	---	289	1.04	0.22
09/03/2012	36	0	---	---	----	---	---
09/10/2012	37	0	---	---	----	---	---

Appendix 14. Fulton's condition factor (K) for age-1 coho salmon from the Pear Tree and Willow Creek Rotary screw trap sites, 2012.

		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
01/15/2012	3	11	0.99	0.03	---	---	---
01/22/2012	4	26	1.05	0.14	---	---	---
01/29/2012	5	75	1.05	0.09	---	---	---
02/05/2012	6	24	1.05	0.07	---	---	---
02/12/2012	7	26	1.06	0.08	---	---	---
02/19/2012	8	8	1.02	0.06	---	---	---
02/26/2012	9	13	0.97	0.16	---	---	---
03/05/2012	10	8	1.08	0.05	6	1.09	0.13
03/12/2012	11	26	1.09	0.12	2	0.96	0.10
03/19/2012	12	31	1.12	0.10	300	1.16	0.12
03/26/2012	13	4	1.19	0.03	18	1.17	0.16
04/02/2012	14	15	1.14	0.12	5	1.17	0.07
04/09/2012	15	0	---	---	17	1.15	0.14
04/16/2012	16	2	1.15	0.00	17	1.10	0.16
04/23/2012	17	1	1.14	---	36	1.11	0.11
04/30/2012	18	3	1.04	0.05	55	1.05	0.26
05/07/2012	19	2	1.19	0.05	236	1.11	0.09
05/14/2012	20	1	1.66	---	331	1.03	0.19
05/21/2012	21	0	---	---	295	1.03	0.15
05/28/2012	22	0	---	---	487	1.08	0.10
06/04/2012	23	2	1.06	0.05	188	1.15	0.19
06/11/2012	24	0	---	---	60	1.05	0.13
06/18/2012	25	0	---	---	17	1.08	0.29
06/25/2012	26	1	1.23	---	8	1.09	0.12
07/02/2012	27	0	---	---	4	1.20	0.06
07/09/2012	28	0	---	---	1	1.06	---
07/16/2012	29	0	---	---	2	0.85	0.08
07/23/2012	30	0	---	---	3	0.84	0.16
07/30/2012	31	0	---	---	3	0.83	0.11
08/06/2012	32	0	---	---	2	0.95	0.03
08/13/2012	33	0	---	---	---	---	---
08/20/2012	34	0	---	---	---	---	---
08/27/2012	35	0	---	---	---	---	---
09/03/2012	36	0	---	---	---	---	---
09/10/2012	37	0	---	---	---	---	---

Appendix 15. Fulton's condition factor (K) for natural age-1+ steelhead from the Pear Tree and Willow Creek rotary screw trap sites, 2012.

		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
01/15/2012	3	11	1.02	0.11	---	---	---
01/22/2012	4	32	1.07	0.17	---	---	---
01/29/2012	5	62	1.05	0.06	---	---	---
02/05/2012	6	14	1.02	0.18	---	---	---
02/12/2012	7	6	1.16	0.25	---	---	---
02/19/2012	8	12	1.11	0.07	---	---	---
02/26/2012	9	15	1.22	0.29	---	---	---
03/05/2012	10	19	1.10	0.10	6	1.09	0.13
03/12/2012	11	113	1.15	0.09	2	0.96	0.10
03/19/2012	12	43	1.21	0.21	299	1.16	0.12
03/26/2012	13	5	1.26	0.12	18	1.17	0.16
04/02/2012	14	81	1.18	0.11	5	1.17	0.07
04/09/2012	15	34	1.15	0.14	17	1.15	0.14
04/16/2012	16	23	1.17	0.15	17	1.10	0.16
04/23/2012	17	11	1.07	0.11	36	1.11	0.11
04/30/2012	18	4	1.18	0.37	55	1.05	0.26
05/07/2012	19	3	1.40	0.19	236	1.11	0.09
05/14/2012	20	3	1.75	0.33	331	1.03	0.19
05/21/2012	21	3	1.41	0.39	295	1.03	0.15
05/28/2012	22	1	1.00	---	487	1.08	0.10
06/04/2012	23	0	---	---	177	1.13	0.11
06/11/2012	24	0	---	---	59	1.06	0.13
06/18/2012	25	1	1.71	---	16	1.06	0.28
06/25/2012	26	2	1.10	0.10	8	1.09	0.12
07/02/2012	27	0	---	---	3	1.21	0.07
07/09/2012	28	2	1.11	0.10	1	1.06	---
07/16/2012	29	2	1.11	0.04	0	---	---
07/23/2012	30	2	1.12	0.13	0	---	---
07/30/2012	31	1	1.07	---	2	0.85	0.08
08/06/2012	32	0	---	---	3	0.84	0.16
08/13/2012	33	0	---	---	3	0.83	0.11
08/20/2012	34	0	---	---	2	0.95	0.03
08/27/2012	35	0	---	---	0	---	---
09/03/2012	36	0	---	---	0	---	---
09/10/2012	37	0	---	---	---	---	---