

Scott River Fall Chinook Spawning Ground Surveys



Photo 1. Male and Female Chinook Carcass, November 10th 2014 (Siskiyou RCD).

Work Completed by the
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for the
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Introduction

The Scott River is an important spawning tributary for natural fall run Chinook in the Klamath Basin. Since 1992, escapement estimates have been completed in the Scott River through cooperative Adult Chinook Spawning Ground surveys organized by the California Department of Fish and Wildlife (CDFW) and the United States Forest Service (USFS). The objective of these surveys is to collect information on run parameters including the timing, duration, age composition, hatchery contribution and redd distribution. The monitoring of this independent population provides valuable trend data including escapement estimates which are utilized by the Pacific Fisheries Management Council for the allocation of Klamath Basin fall run Chinook.

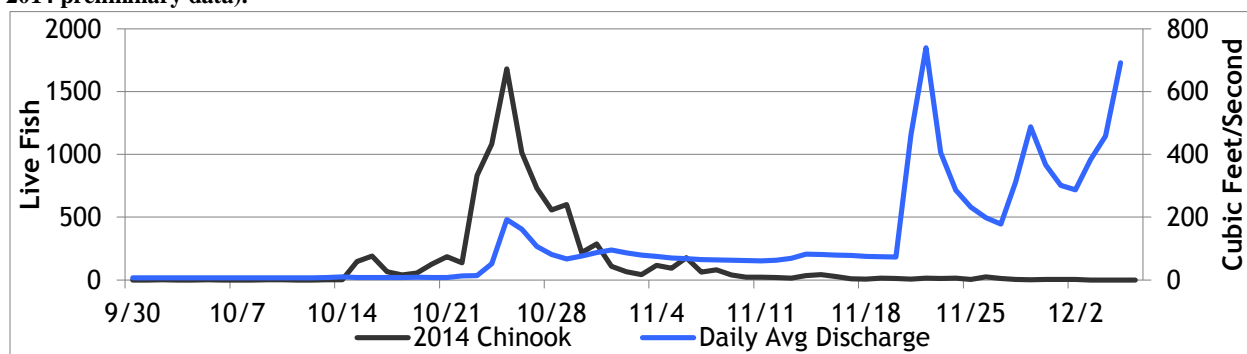
Surveys

The Annual Chinook Spawning Ground Survey Training was held at Indian Scott Campground on October 7th 2014. All RCD crews and Etna High School students who participated in the surveys attended the training event. RCD crews conducted Chinook spawning ground surveys from October 28th through December 2nd 2014. This included a minimum of bi-weekly surveys of Index Reaches 12 through 15 and sections of Reach 16 as landowner access permitted. Surveys were also completed on French Creek, Sugar Creek, Shackleford Creek, Mill Creek and the East Fork of the Scott River. Map 1 indicates the index reach breaks and the tributary reaches surveyed. Jim Morris, a former high school teacher, led a crew of 2-4 Etna High School students on several occasions. All surveys were carried out following protocols and procedures detailed in the Klamath Basin Cooperative Spawning Ground Survey 2014 Training Manual.

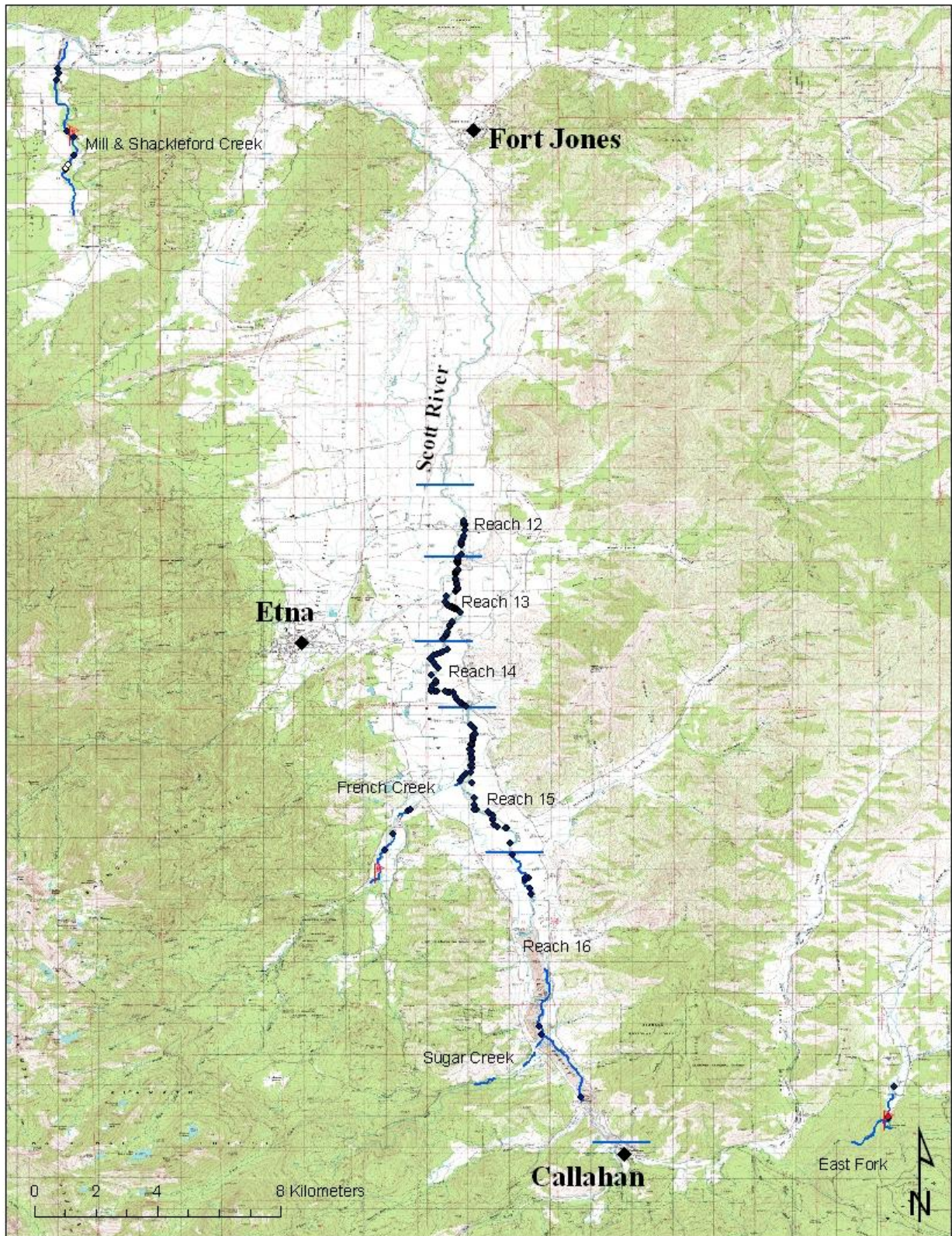
Lives

CDFW operates a counting station on the Scott River at river mile 18.2 near the downstream edge of the valley. A total of 9,052 Chinook were recorded passing through the video weir from October 2nd through December 2nd 2014 (Knechtle and Chesney 2015, preliminary data, Graph 1). However, the valley portion of the Scott River did not connect with the canyon until rains from October 22nd through October 24th 2014 increased flows. The USGS streamflow gage at river mile 21 climbed from < 20 cfs on October 24th to over 200 cfs on October 26th 2014 (USGS, 2014 preliminary data). Therefore, the 2,800 Chinook that passed through the counting station on or before October 24th did not have immediate access to valley spawning ground (Knechtle and Chesney 2015, preliminary data). Chinook were documented between Eller Lane (Blacks Bridge) and Fay Lane on the first RCD surveys completed October 28th 2014 (Table 1). Live Chinook were observed by surveyors in the valley reaches of the Scott River through December 1st 2014 (Table 1).

Graph 1. Live Chinook Counted at the CDFW video weir and Scott River streamflow (Knechtle and Chesney 2015, USGS 2014 preliminary data).



Map 1. Chinook Redds Documented (Siskiyou RCD).



Biological Samples

All carcasses encountered (with the exception of those that were inaccessible) were inventoried and then chopped to indicate that they had been handled. Surveyors recorded the fork length, sex, and presence of hatchery markings (if any). They also checked females for evidence of prespawn mortality. A total of 1,220 Chinook carcasses were handled and inventoried by RCD field technicians over the season (Table 1).

RCD personnel were permitted by CDFW for the biological sampling of 1,000 Fall Run Chinook. Samples were initially taken from all carcasses that were handled. However, when the total number of sampled fish approached 900, every carcass continued to be inventoried but only fresh carcasses were sampled. A total of 954 carcasses were sampled for scales (Table 1). Tissue and otolith samples were also gathered from selected carcasses, generally the first fish encountered per reach on each survey day. All samples were submitted to CDFW – Yreka for further distribution and analysis. For the purpose of this report, the upper extent of Chinook presence in the tributaries has been defined by the documentation of carcasses rather than redds because the species can be reliably determined. Chinook carcasses were found 2.5 miles up Shackleford Creek, 2.8 miles up French Creek and 6.3 miles up the East Fork of the Scott River. These findings are indicated by red flags on Map 1.

On November 12th 2014, a single male carcass with a fork Length of 100 cm was found on Reach 12 with a clipped adipose fin. The head was taken to CDFW – Yreka for recovery of the coded wire tag, which confirmed the origin of the fish to be Iron Gate Hatchery.

Redds

Flagging was not utilized during the Chinook run so all visible redds were counted on each survey. Redds were not recorded on some of the initial surveys (last week of October) because they were incomplete at this time. Positional information, in the form of GPS coordinates, were collected on selected surveys of Index Reaches twice during the survey season. An attempt was made to gather GPS coordinates on all tributary surveys to alleviate double counting, however, this was not achieved across the watershed. Table 1 shows the surveys for which GPS coordinates were gathered for redds and indicates those that have been included on Map 1.

Summary of Redd Counts

There was heavy spawning observed within index reaches 12-15 (Eller Lane to Fay Lane) as shown on Map 1. It must be noted that GPS coordinates were collected differently for some of the reaches. For Reach 14 and 15 coordinates were gathered for all “spawning sites” with a record of the number of redds in the immediate vicinity, however, for Reach 12 and 13 a waypoint was taken for each individual redd. Although, the difference in resolution between those reaches is not discernable on a map of the scale included in this report the Siskiyou RCD plans on standardizing positional data collection on future surveys. A total of 18 Chinook redds were documented throughout Reach 16, however, GPS coordinates are not available for all of these sites.

No evidence of Chinook spawning was documented on Sugar Creek (Table 1).

A total of 3 Chinook redds were found up the East Fork of the Scott River (Table 1).

Unfortunately, coordinates were not collected on initial surveys of French Creek dated November 14th 2014, when the bulk of the Chinook redds were documented. Follow-up surveys on November 28th and December 4th may have counted previously observed redds. Based on these limitations the Siskiyou RCD estimates that within the surveyed sections of French Creek there were 28 (± 3) Chinook redds in the Middle Reach and 20 (± 2) Chinook redds in the Lower Reach.

GPS coordinates were collected on all surveys completed on Mill and Shackleford Creek. The first survey on November 26th 2014 was complicated by active spawning of both Chinook and coho adults. Surveyors took notes to differentiate redds by species but some could not be allocated with certainty. On Shackleford Creek the Siskiyou RCD documented 6 Chinook redds on the Middle Reach and 2 Chinook redds on the Lower Reach. There were also 3 redds located within the lower 1/3 km of Mill Creek that were characteristic of Chinook but could not be assigned with confidence. They are located above the most upstream Chinook carcass that was found and are indicated with an open circle on Map 1.

Conclusions

Since there were Chinook holding in the canyon until flows connected the valley, the spawning season was concentrated temporally. The video weir data shows that the majority (89%) of Chinook passed through the counting station on or before November 1st 2014 (Knechtle and Chesney, 2015). As soon as fish has access to the Scott Valley reaches they came in large numbers, spawned and died with reasonable synchronization.

References

- Knechtle, M. and Chesney, D. 2015. 2014 Scott River Salmon Studies Final Report. California Department of Fish and Wildlife, Northern Region. Available at 1625 South Main Street Yreka Ca. 96097
- U.S. Geological Survey (USGS). 2014. Discharge records for Scott River Gage 11519500 near Fort Jones. http://waterdata.usgs.gov/usa/nwis/inventory/?site_no=11519500&agency_cd=USGS

Table 1. Summary of Chinook Spawning Ground Surveys Completed by the Siskiyou Resource Conservation District, 2014 Fall

| Date | Stream | Reach | Lives | Redds | Carcasses | | GPS | Notes |
|----------|--------------|---------------|-------|-------|-------------|---------|--------|--|
| | | | | | Inventoried | Sampled | | |
| 10/28/14 | Scott River | R15 | 329 | NR | 0 | 0 | | Redds incomplete, not recorded |
| 10/28/14 | Scott River | R14 | 323 | NR | 0 | 0 | | Redds incomplete, not recorded |
| 10/28/14 | Scott River | R12 | 94 | NR | 0 | 0 | | Redds incomplete, not recorded |
| 10/28/14 | Scott River | R13 | 173 | NR | 0 | 0 | | Redds incomplete, not recorded |
| 10/30/14 | Scott River | R14 | 322 | 87 | 1 | 1 | | Redds still under construction |
| 10/30/14 | Scott River | R15 | 506 | 86 | 0 | 0 | | |
| 10/30/14 | Scott River | R13 | 257 | NR | 1 | 1 | | |
| 10/30/14 | Scott River | R12 | 118 | NR | 1 | 1 | | |
| 11/3/14 | Scott River | R15 | 466 | 57 | 17 | 17 | | |
| 11/3/14 | Scott River | R14 | 365 | 44 | 7 | 7 | | |
| 11/3/14 | Scott River | R12 | 110 | NR | 3 | 3 | | |
| 11/3/14 | Scott River | R13 | 373 | NR | 4 | 4 | | |
| 11/6/14 | Scott River | R15 | 311 | 161 | 66 | 66 | ✓Map 2 | 1 carcass inaccessible |
| 11/6/14 | Scott River | R12 | 66 | 56 | 15 | 15 | ✓Map 2 | |
| 11/6/14 | Scott River | R13 | 151 | 152 | 36 | 36 | ✓Map 2 | |
| 11/7/14 | Scott River | R14 | 226 | 138 | 100 | 100 | ✓Map 2 | 4 carcasses inaccessible |
| 11/10/14 | Scott River | R14 | 131 | 211 | 126 | 126 | | 6 carcasses inaccessible |
| 11/10/14 | Scott River | R13 | 105 | NR | 96 | 96 | | |
| 11/10/14 | Scott River | R12 | 83 | NR | 24 | 24 | | |
| 11/11/14 | Scott River | R15 | 144 | 195 | 134 | 134 | | 10 carcasses inaccessible |
| 11/12/14 | Scott River | 16, rkm 80-82 | 26 | 17 | 51 | 49 | | 2 carcass inaccessible, 1 carcass predation unable to sample |
| 11/12/14 | Scott River | R12 | 78 | NR | 61 | 61 | | |
| 11/12/14 | Scott River | R13 | 82 | NR | 49 | 49 | | |
| 11/14/14 | French Creek | Middle | 27 | 25 | 16 | 8 | | |
| 11/14/14 | French Creek | Lower | | 18 | | | | |
| 11/14/14 | Scott River | R15 | 101 | 196 | 69 | 31 | | 13 carcasses not inventoried, either predation or inaccessible |

| Date | Stream | Reach | Lives | Redds | Carcasses | | GPS | Notes |
|----------|-----------------------|-------------------------|-------|-------|-------------|---------|--------|---|
| | | | | | Inventoried | Sampled | | |
| 11/15/14 | Scott River | R14 | 48 | 87 | 79 | 48 | | 3 carcass inaccessible |
| 11/17/14 | Sugar Creek | Middle | 0 | 0 | 0 | 0 | | |
| 11/17/14 | Sugar Creek | Lower | 0 | 0 | 0 | 0 | | |
| 11/17/14 | Scott River | 16, rkm 87-88 | 2 | 9 | 42 | 0 | ✓Map 2 | 2 carcass predation unable to inventory |
| 11/17/14 | Scott River | R13 | 45 | NR | 19 | 19 | | |
| 11/17/14 | Scott River | R12 | 42 | NR | 14 | 14 | | |
| 11/18/14 | East Fork Scott River | China Cove to Masterson | 1 | NR | 1 | 0 | ✓Map 2 | |
| 11/19/14 | Scott River | R13 | 52 | NR | 16 | 16 | | |
| 11/19/14 | Scott River | R12 | 37 | NR | 19 | 19 | | |
| 11/20/14 | Scott River | R15 | 25 | 216 | 65 | 0 | | 4 carcasses inaccessible |
| 11/20/14 | Scott River | R14 | 25 | 187 | 29 | 0 | | 1 carcass inaccessible |
| 11/21/14 | Scott River | 16, rkm 88-90 | 0 | 7 | 6 | 0 | | 1 carcass predation unable to inventory |
| 11/24/14 | Scott River | 16, rkm 86-85 | 0 | 0 | 1 | 0 | | |
| 11/24/14 | Scott River | R12 | 21 | 63 | 3 | 3 | ✓ | |
| 11/24/14 | Scott River | R13 | 5 | 142 | 5 | 5 | ✓ | |
| 11/26/14 | Mill Creek | Lower | 17 | 2* | 0 | 0 | ✓Map 2 | Challenging identifying species of live fish, both Chinook and coho in the system, live count is approximate. |
| 11/26/14 | Shackleford Creek | Middle | | 5 | 1 | 0 | ✓Map 2 | 2 carcasses predation unable to inventory |
| 11/26/14 | Shackleford Creek | Lower | | 2 | 2 | 0 | ✓Map 2 | 4 carcasses predation, unable to inventory |
| 11/27/14 | Sugar Creek | Middle | 0 | 0 | 0 | 0 | | |
| 11/27/14 | Sugar Creek | Lower | 0 | 0 | 0 | 0 | | |

| Date | Stream | Reach | Lives | Redds | Carcasses | | GPS | Notes |
|--------------|-------------------|----------------|--------------|--------------|--------------|------------|--------|---|
| | | | | | Inventoried | Sampled | | |
| 11/28/14 | French Creek | Middle | 0 | 6 | 5 | 0 | ✓Map 2 | 1 carcass predation unable to inventory |
| 12/1/14 | Scott River | R14 | 0 | 90 | 12 | 0 | ✓ | Chinook redds hardly visible anymore |
| 12/1/14 | Scott River | R15 | 2 | 154 | 6 | 0 | ✓ | Chinook redds hardly visible anymore |
| 12/2/14 | Scott River | R16, rkm 80-82 | 0 | 12 | 14 | 0 | ✓Map 2 | 2 carcasses predation unable to inventory |
| 12/3/14 | Shackleford Creek | Middle | 0 | 1 | 2 | 0 | ✓Map 2 | |
| 12/3/14 | Shackleford Creek | Lower | 0 | 0 | 0 | 0 | | |
| 12/3/14 | Mill Creek | Lower | 0 | 1* | 0 | 0 | ✓Map 2 | |
| 12/4/14 | French Creek | Middle | 0 | 0 | 0 | 0 | | |
| 12/4/14 | French Creek | Lower | 0 | 4 | 0 | 0 | ✓Map 2 | |
| 12/10/14 | Mill Creek | Lower | 0 | 0 | 0 | 0 | | |
| 12/10/14 | Shackleford Creek | Middle | 0 | 0 | 1 | 1 | | |
| 12/10/14 | Shackleford Creek | Lower | 0 | 0 | 1 | 0 | | |
| Total | | | 5,289 | 2,428 | 1,220 | 954 | | |

NR = Not Recorded

*indicates possible redds, open circle on maps