

Scott River Adult Coho Spawning Ground Surveys 2008-2009 Season



Report Prepared by Brannon Walsh
Technical editing by Danielle Yokel
Siskiyou Resource Conservation District

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Abstract

In 2008-2009, adult coho spawning ground surveys were continued in the Scott River Watershed in order to expand current knowledge of the endangered fishery. A total of 33.75 miles were surveyed (15.85 miles on the mainstem and 17.90 miles on tributaries). Surveys consisted of trained crews walking established reaches either instream or on the bank in order to collect information concerning lives, carcasses, and redds. Effort was made to survey reaches weekly. However, some reaches were surveyed only once during the spawning season. Streams that were surveyed include: Scott River Tailings, Scott River Reach 15, the East Fork Scott River, Grouse Creek, South Fork Scott River, Sugar Creek, French-Miners Creek, Etna Creek, Patterson Creek, Kidder Creek, Shackleford-Mill Creek, Kelsey Creek, Canyon Creek, Tompkins Creek, Wildcat Creek, Boulder Creek, and Scott Bar Mill. The survey season lasted from November 25th, 2008–January 9th, 2009. During this period a total of 24 redds, 4 carcasses, and 4 live fish were identified. Due to the overlap of timing of coho and Chinook spawning, in some locations it is not possible positively assign a species to a redd. Although numbered tags were applied to carcasses throughout the survey effort, an insufficient amount were recaptured (<25) to accurately perform Patterson or Schaefer population estimates.

Introduction

Coho salmon (*Oncorhynchus kisutch*) in the Klamath River Basin, the Southern Oregon-Northern California Coast ESU, were listed as threatened by the National Marine Fisheries Service in 1997. In 2001, the State of California began considering a listing of the species as threatened, and in August of 2004, the California Fish and Game Commission acted to add the coho to the list of endangered and threatened species. The listing became effective March 30th, 2005.

Adult coho spawning ground surveys have been performed annually in the Scott River Watershed since the winter of 2001. These surveys began as a cooperative effort between local landowners, agencies, and concerned volunteers. At that time it was recognized that baseline population and distribution data were needed in order to implement and assess effective restoration efforts.

Project Objectives

- 1.) Document the presence of coho salmon within the historic range of distribution and in tributaries not previously documented within the Scott River system.
- 2.) Survey “Index Reaches”, as delineated in the 2001-2002 survey, once per week, or as survey conditions (e.g. flow) allow.
- 3.) Document distribution of adult coho spawning by brood year. Document the upper extent of spawning in each tributary where coho salmon are observed.
- 4.) Determine the run timing and duration of adult coho spawning in the Scott River.
- 5.) Collect two (2) sets of tissue samples for DNA analysis to understand the genetic relationship of the Scott River coho salmon to other stocks and collect two sets of scale

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samples to understand the life history of the Scott River coho salmon. One set of tissue and scale samples will go to NOAA Fisheries and one to CDFG. In addition, otoliths will be collected and submitted to CDFG for life history analysis.

- 6.) Determine additional site specific information as they relate to spawning: redd composition, substrate composition, temperature, and stream gradient.
- 7.) Perform mark and recapture on carcasses to determine escapement numbers.

Project Location

The 2008/09 survey effort took place in the Scott River Watershed, a sub-basin of the Klamath River Basin. The Scott River is located in Siskiyou County, CA. The legal description of the mouth of the Scott River is T45N R10W Sec 6.

Survey Locations

Adult coho spawning ground surveys were completed in the Scott River mainstem, and in the following tributaries: South Fork, Sugar Creek, French-Miners Creek, French Creek, Etna Creek, Patterson Creek, Kidder Creek, Shackleford-Mill Creek, Shackleford Creek, Kelsey Creek, Canyon Creek, and Thompkins Creek. Some reaches were not surveyed during the season due to flow conditions, or a lack of access. Streams not surveyed at all due to flow barriers include: Moffet Creek, Indian Creek, Patterson Creek (Fort Jones), and Rattlesnake Creek.

See Table I. Survey Schedule for a description of reaches surveyed.

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Table I. Survey Schedule						
Watershed	Reach Description	Begin Mile	End Mile	# of Surveys	Survey Crew	Total Miles
Mill Cr. (Scott Bar)						
Lower	Lowest ½ mile up of Mill Creek	0.4	0	0		0
Upper	From RM 2.5 to RM 1.8	2.5	1.8	0		0
Tompkins Creek						
Lower.	Lowest 1.25 miles of Thompkins Creek	1.8	0	0		0
Upper	From USFS road # 46N64 crossing to Potato Patch	2	1	1	CDFG	1.0
Middle Creek	Lowest .4 miles of Middle Creek	0.4	0	0		0
Kelsey Creek	Lower Kelsey from barrier to mouth	0.6	0	4	RCD	0.6
Kelsey Spawning	Spawning channel	0.2	0	4	RCD	0.2
Canyon Creek	From the uppermost Maurer property line to the mouth of Canyon Creek	1.1	0	2	RCD/QVIR	1.1
Boulder Creek	County bridge to mouth	0.2	0	1	RCD/QVIR	0.2
Shackleford-Mill Creek						
Lower Shackleford-Mill	From Milepost 2 on Dangel lane to mouth (expanded reach)	2.17	0	3	RCD	2.17
Upper Shackleford	Below the falls	5	4.5	1	QVIR	0.5
Lower Mill	From the QV road bridge to road crossing ~ 300 meters below conf of Shackleford (expanded reach)	1.6	0	2	RCD	1.6
Middle Mill	From the Quartz Valley Rd bridge to above Emigrant Cr.	3.1	1.7	0		0
Emmigrant Creek(trib to Mill)	Confluence with Mill Creek to County Road	0.1	0	0		0
Upper Mill Creek	From county road crossing to 1/2 mile above	3.8	3.3	1	RCD	0.5
Kidder Creek						
Lower	Below Hwy 3 bridge			2	RCD	1.1
Middle	Above Hwy 3 bridge outside of Greenview			0		0
Upper	Upper FGS property			1	RCD	0.5

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Watershed	Reach Description	Begin Mile	End Mile	Survey Schedule	Survey Crew	Total Miles
Patterson(Etna)						
Lower	Confluence of Johnson and Patterson Creek to 1/2 mile below Hwy 3(Note this reach is split with lack of access in the center)	1.05 1.5	0 1.25		0	0
Mid (FGS)	From Upper Youngs Diversion to Hwy 3 (New Reach)	6.2	4.6	1		1.6
Upper (FGS)	From the Falls down	7.9	7.6	1	RCD	0.3
Etna Creek						
Lower	200 yards below Highway 3 to mouth (New Reach)	2.25	0	0		0
Middle	From Etna City Diversion to End of FGS property above town; Schmalenberg and Mattson Property near Ruffy Gap	5.2 4.1	4.6 3.7	1	RCD	1
Upper	From Mill Creek to Alder Creek	8	6.35	0		0
Ruffy Gap (Trib to Etna)	area above mouth	0.2	0	0		0
French Creek						
Lower	Hwy 3 to mouth (New Reach 2003)	0.7	0	4	RCD	0.7
Middle	Confluence w/Miners to bottom of Tobias. (Expanded Reach)	2.43	0.8	4	RCD	1.63
North Fork Area	From below North Fork to confluence of French and Miners	3.43	2.43	0		0
Paynes Creek Area	French Creek from 1/4 mile above Paynes Creek to 1/4 mile below (New Reach)	5.25	4.75	0		0
Duck Lake Area	Above and below mouth of Duck Lake	6.3	5.8	0		0
Miners Creek	Confluence with French Creek to upper Phelps Property(above second Miners Cr. Road bridge) Expanded Reach in 2003	0.9	0	1	RCD	0.9
Watershed	Reach Description	Begin	End	Survey	Survey	Total
Paynes Cr.	Lowest .2 miles	0.2	0	0		0
North Fork French Cr.	Timber Products	0.7	0	0		0
Tailings	From .30 miles below Wildcat Cr.	55	52.25	2	RCD	2.75
Scott Reach 14	SVID to Horn Lane				RCD	3.4
Scott Reach 15	Fay Lane to SVID				RCD	3.5
Scott Reach 6					CDFG	3.4
Sugar Creek						

Crew training

Crew training was organized by the California Dept. of Fish and Game (CDFG) and the Siskiyou RCD. Training was held on December 3rd at the Siskiyou RCD office in Etna. Training included: Fish ID, tissue and scale sampling techniques, identification of marks and tags that have been applied throughout the Klamath Basin, GPS use and naming conventions, data sheets, and redd identification. See **Appendix A. Training Materials**.

All Siskiyou RCD crew members participated in both the Adult Chinook Spawning Ground Surveys and the Scott River Adult Coho Spawning Ground Surveys in previous years. Thus, the SRCD feels confident in the accuracy of coho observations made early in the 2008/2009 Coho survey season.

Spawning Ground and Carcass Surveys

Stream surveys were completed by a two person field crew. A stream survey is completed by walking instream, or on the bank (to avoid disturbing Redds) beginning upstream and moving downstream. Crew members walk on opposite sides of the stream, looking for redds and fish. The location of any fish, redd, or carcass was recorded by GPS, and noted on the data sheet. In addition, flagging was hung at Redds to mark for the next survey crew, preventing double counting of redds. Carcasses are processed and then chopped to prevent double counting. Tissue and scale samples were taken from a subset of carcasses, and the species, sex, forklength, and any marking recorded on the data sheet. Additionally, otoliths were collected from a subset of carcasses sampled. One member of each crew had a State of California Scientific Collection Permit.

During redd surveys, the following data was collected from redds, if it did not disturb the spawning fish: redd length, width, pott depth, and substrate composition. Substrate composition categories are: Sand (<.2 cm), small gravel (.2-5 cm), large gravel (6-9 cm), small cobble (10-13 cm), and large cobble (> 13 cm).

See **Appendix A** for sample datasheets.

Biological Sample Collection

Tissue samples were collected by clipping a one cm² piece of operculum tissue. Samples were placed in absorptive paper, and placed into labeled envelopes. Scale samples were collected below the dorsal fin, but above the lateral line. Samples were collected by scraping with a knife blade in the direction from head to tail. Scale samples were placed in a labeled scale envelope. When possible, both left and right otoliths were collected using a pocket knife. The otoliths were then cleaned, dried, and placed in a labeled envelope.

GPS data collection

Hand-held Global Positioning System (GPS) units were used to record the location of the beginning and end of each survey reach, and location of each carcass, redd, and live fish identified. However, large concentrations of redds within ten meters of each other received only one GPS point. Only carcasses which were sampled were marked, and live fish sightings were

grouped. The exception to this was if the fish or carcass was found in a unique location, or beyond the upper extent previously observed. In that case a GPS point was taken.

GPS waypoints were assigned an ID based on a stream code, sequential number, and a letter code denoting carcass (C), redd (R), or live fish (F).

Ex.) F C 04 C = French Creek # 4 Carcass

In addition, the GPS coordinates in Lat/Long were recorded on the field data sheet, along with the ID code assigned to that datapoint. See **Appendix A** for further detail on naming conventions.

Fish ID and Mark Identification

Fish ID

Positive identification of coho salmon was a crucial step in conducting the spawning ground surveys, and the collection of the tissue and scale samples. Morgan Knechtle, CDFG, provided hatchery carcasses of all three species (coho, chinook, steelhead) present in the Scott River Watershed, to ensure that the crew was fully aware of key identifying features.

The following characteristics are used to identify coho salmon:

Gums: Coho salmon have white gums at the base of the teeth only, typically the rest of the gum is gray.

Spots: These spots are black in color and can vary from circular to irregularly shaped spots. Both sexes have spots on the back, dorsal fin, and upper lobe of the caudal fin, with no spots on the lower lobe.

Color: Many coho salmon, both male and female, can exhibit extremely brilliant pink to red coloration of the lower 2/3 of the body.

Kype: Both males and females can have a fairly pronounced kype

Nares: Nares are enlarged and white in coloration. This characteristic is useful in identification of live fish due to the visibility.

Caudal Peduncle: the caudal peduncle is thicker than that of a Chinook. This is most noticeable when picking up a carcass, making it difficult to hold in one hand.

Anal Fin: The anal fin of coho salmon have 12-17 rays, and the outermost rays are longer than the inner rays, which is not the case with Chinook or steelhead.

Sex: Males generally are larger, have larger hooked kypes, and brilliant pink to red coloration. To verify the sex the anal opening was squeezed to determine the presence of milt (male) or eggs (female).

Origin: Hatchery fish are identified by either the lack of an adipose fin, or by a maxillary clip. (Right maxillary clip = Trinity River Hatchery, Left maxillary clip = Iron Gate Hatchery) Adipose clipped fish have the snout removed and submitted to CDFG for coded-wire tag recovery.

Mark Identification

During this season, many tags were applied to Klamath River adult coho by various agencies throughout the Klamath Basin.

Mark and Recapture

Mark and recapture surveys were conducted throughout the survey universe using the same methods as those completed by CDFG during the annual Fall Chinook Spawning Ground Surveys. Individually numbered tags were applied to each fresh carcass found during each survey. Tags are applied to the inside lower right jaw. The tag number applied was recorded on the field data sheet. All carcasses were inspected for tags upon retrieval. Recaptured carcasses were recorded on the field data sheet. However, because of the low number of both marks and recaptures, estimates could not be completed.

Temperature Data

Stream temperature data was collected in the East Fork, Sugar Creek, French Creek, Mill Creek (shack), and the South Fork during the survey period. Data collection was done using Onset HoboTemps continuous dataloggers. Data was collected at hourly intervals.

Cooperators

The following entities cooperated in the survey effort:

California Dept. of Fish and Game
National Oceanic Atmospheric Administration
Natural Resource Conservation Service
United States Fish and Wildlife Service
United States Forest Service
Scott Valley Landowners
Quartz Valley Indian Reservation

Results

Run timing and duration of coho spawning.

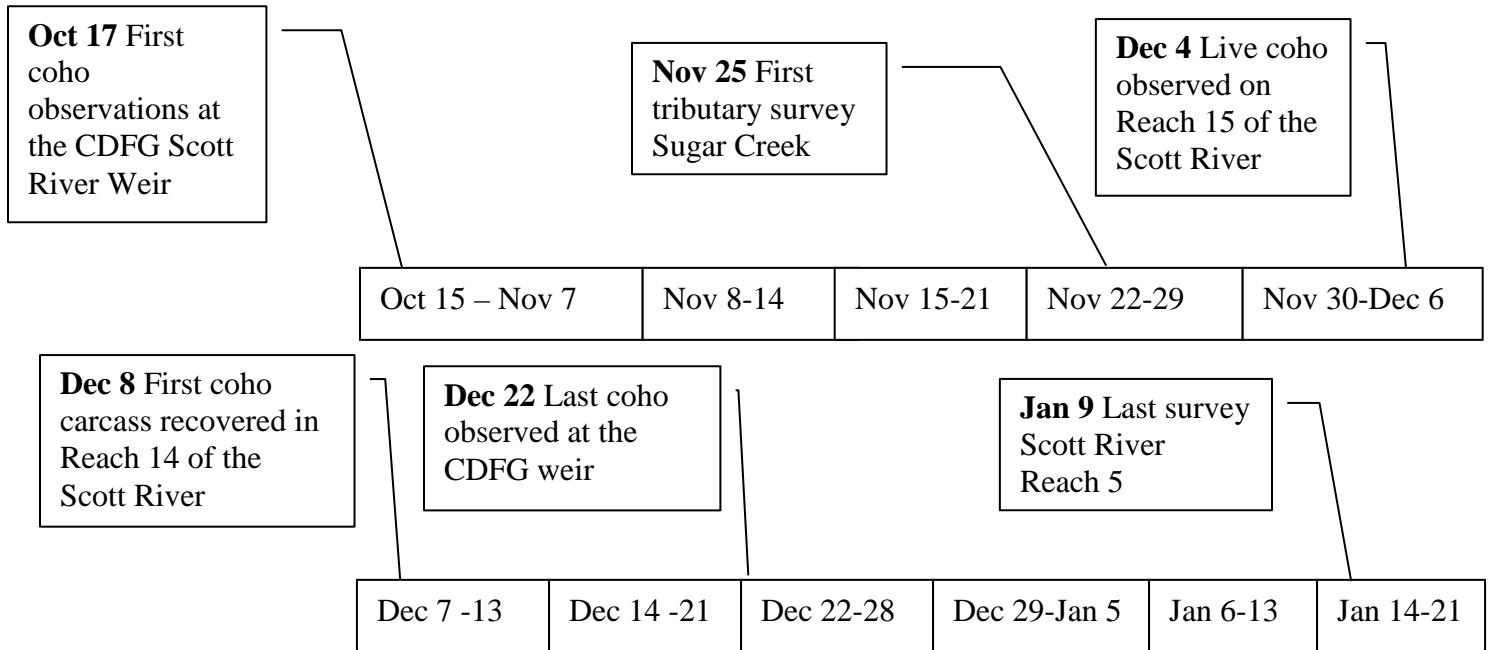


Figure I. Adult coho run timing in the Scott River – 2008/09

Initial coho sightings

The first sighting of live coho adults in the Scott River was on October 17th, 2008, at the Scott River Weir, just upstream of Indian Scotty Campground (CDFG). By December 4th, RCD crews had identified live coho in Reach 14 on the mainstem Scott River and by December 9th, 2008 live fish had been documented in lower French Creek.

Summary

The fall of 2008 marked the return of one of two severely depressed brood years of coho salmon in the Klamath River. The small numbers of fish entering the watershed coupled with below average precipitation and poor distribution resulted in very few observations. Two small rain events occurred during the survey season. In late October, flows increased to approximately 250 cfs and allowed coho to enter the Valley reaches of the Scott River. Coho presence was confirmed on December 4th on reach 15 of the Scott River mainstem. Again in early January, flows increased to above 500 cfs; however, from personal communications made with SRCD staff and others, this event was too small and too short lived to allow access into many

tributaries. Shackleford Creek was reported to be accessible only intermittently during the coho run. Patterson Creek was observed to be completely disconnected until early March.

Redd Survey Results

The survey season lasted from November 25th, 2008– January 9th, 2009. During this period a total of 24 redds, 4 carcasses, and 4 live fish were identified. In reaches surveyed weekly some fish were likely double counted. This is because fish generally spawn for several days, and could still be on the redd during the next survey.

Due to lack of access, staffing, or connectivity several reaches were not surveyed including: Clarks Creek, East Fork Scott River, Middle Mill, Emmigrant Creek, Middle Kidder, Lower Etna Creek, Ruffy Gap, Upper French (Duck Lake Area), Upper French (Upper bridge to Horse Range), Horse Range Creek, Indian Creek, Johnson Creek, Kangaroo Creek, Moffett Creek, North Fork French, Meamber Gulch, Lower Patterson Creek, Patterson Creek (Fort Jones), Wildcat Creek, Scott Bar Mill and Rail Creek.

Table II. Results by Reach, documents the redds, carcasses, and live fish identified during the survey season.

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Table II. Results by Reach 2008-2009						
Stream	Reach Description		Mileage	Live Fish^a	Carcass^a	Redds
Boulder Creek (Scott)	Lower	Lower Bridge to Scott	0.20	0	0	0
Canyon Creek (INDEX)	Lower	Lower 1.1 miles	1.10	0	0	1UNK
Clarks Creek		TP property	NS	NS	NS	NS
East Fork -Lower Masterson (INDEX)		~ 1 mile above Grouse Cr. To below Grouse	NS	NS	NS	NS
East Fork Upper Masterson		Above Rail Creek to Kangaroo Creek	NS	NS	NS	NS
East Fork*	Upper	Gregg Ranch	NS	NS	NS	NS
Emmigrant (trib to Mill)	Lower	Mouth up	NS	NS	NS	NS
Etna*	Lower	Hwy 3 to mouth	NS	NS	NS	NS
Etna	Middle	Split Reach (formerly Lower Etna)	1	0	0	0
Etna	Upper	Mill Creek to City Diversion	NS	NS	NS	NS
French Creek	Lower	Hwy 3 to mouth	0.70	1UNK	0	3
French Cr. (INDEX)	MID	From confluence with Miners down	0.80	0	0	7UNK
French Creek	Middle	From bottom of Mid-to just above Hwy 3	0.83	0	0	5UNK
French Creek	Upper	Upper Bridge to Horse Range	NS	NS	NS	NS
French Creek*	Upper	Paynes Creek area	NS	NS	NS	NS
French Creek*	Upper	Duck Lake area	NS	NS	NS	NS
French Creek		Below N Fork to mouth of Miners	NS	NS	NS	NS
Grouse Creek (trib to East Fork)	Lower		NS	NS	NS	NS
Horse Range Cr. (trib to French)			NS	NS	NS	NS
Indian Creek	Upper		NS	NS	NS	NS
Johnson Creek	Upper		NS	NS	NS	NS
Kangaroo	Middle	USFS	NS	NS	NS	NS
Kangaroo*	Lower		NS	NS	NS	NS
Kelsey Creek		Barrier to mouth	0.60	0	0	3UNK
Kelsey Spawning Channel		USFS artificial spawning channel	0.20	0	0	0
Kidder Creek	Lower	Below Hwy 3	1.10	0	0	0
Kidder Creek	Middle	Mid Kidder - above Hwy 3	NS	NS	NS	NS
Kidder Creek	Upper	Upper FGS	0.50	0	0	0
McAdams			NS	NS	NS	NS
Meamber Gulch	Lower		NC	NS	NS	NS
Middle Creek	Lower		NS	NS	NS	NS

a, - for index reaches, live fish counts and carcass counts could not be separated from the overall reach on that stream. Total counts are referred to under the 2004 reach designation.

NC= Not connected, NA = No access, NS = not surveyed

* = New reach in 2004

Shaded reaches surveyed in 2001-2002

Scott River Adult Coho Spawning Ground Surveys 2008-2009

Stream	Reach Description		Mileage	Live Fish ^a	Carcass ^a	Redds
Mill Creek (Shackleford)	Middle	Above Quartz Valley Road Bridge	NS	NS	NS	NS
Mill Creek (Shackleford)	Upper	Lowest FGS to Bridge	0.50	0	0	0
Mill Creek (Shackleford)	Lower a	Lower .6 miles of Mill Creek	0.60	0	0	0
Mill Creek (Shackleford)*	Lower b	From Quartz Valley Rd Bridge to top of Lower a	1.00	0	0	0
Miners Creek	Lower a	lowest .3 mi	0.3	0	0	0
Miners Creek	Lower b	Upper Phelps to top of Lower a	0.60	0	0	0
Moffet Creek	Middle	USFS	NC	NC	NC	NC
North Fork French	Lower		NS	NS	NS	NS
Patterson*	Lower		NC	NC	NC	NC
Patterson	Middle	Lower FGS to Hwy 3	1.60	0	0	0
Patterson	Upper	Uppermost FGS from Falls down	0.30	0	0	0
Patterson (Fort Jones)	Lower		NC	NC	NC	NC
Rail Creek	Upper	USFS	NS	NS	NS	NS
Rattlesnake Creek	Upper		NC	NC	NC	NC
Ruffy Gap (trib to Etna)		Lowest	NC	NC	NC	NC
Scott Bar Mill	Lower	Lower	NS	NS	NS	NS
Scott Bar Mill	Upper	Upper	NS	NS	NS	NS
Shackleford - 2004*	Lower	Mile 2 to Lower Bridge	1.67	0	0	0
Shackleford	Lower	Lower Bridge to Scott	0.50	0	0	0
Shackleford	Upper	Shackleford at the falls	0.50	0	0	0
Tompkins Creek	Lower	Mouth up	NS	NS	NS	NS
Tompkins Creek	Upper	Low water crossing to Potatoe Patch	1.00	0	0	0
South Fork (Index)	Lower	USFS	0.40	0	0	0
South Fork (INDEX)	Upper	Above Fox Creek to Boulder Creek	1.90	0	0	1
Sugar Creek (INDEX)	Lower	Hwy 3 to mouth	0.70	0	0	0
Sugar Creek	Upper	From Upper FGS bridge to CattleGuard	2.10	0	0	0
Scott River Mainstem	Reach 6		3.40	1	1	4
Scott River Mainstem	Reach 7		-	0	0	0
Scott River Mainstem	Reach 13		-	0	0	0
Scott River Mainstem	Reach 12		-	0	1	0
Scott River Mainstem	Reach 14		3.40	0	1	0
Scott River Mainstem	Reach 15		3.50	2	1	0
Scott River Tailings		Rm 53.45-52.35	1.10	0	0	0
Scott River Talings- 2004*		Rm 55-53.45	1.65	0	0	0
Wildcat		Lower 2 miles	NS	NS	NS	NS
Totals			33.75	4	4	24

a, - for index reaches, live fish counts and carcass counts could not be separated from the overall reach on that stream. Total counts are referred to under the 2004 reach designation.

NC= Not connected, NA = No access, NS = not surveyed

* = New reach in 2004

Shaded reaches surveyed in 2001-2002

Flow Conditions

Flow conditions were below average throughout the survey period. In late October, a small rain event increased flows to 250 cfs and allowed coho to enter the Valley reaches of the Scott River. Coho presence in the Valley was confirmed on December 4th on reach 15 of the Scott River mainstem. Another small rain event occurred in early January and increased flows to above 500 cfs; however, access to many tributaries remained poor.

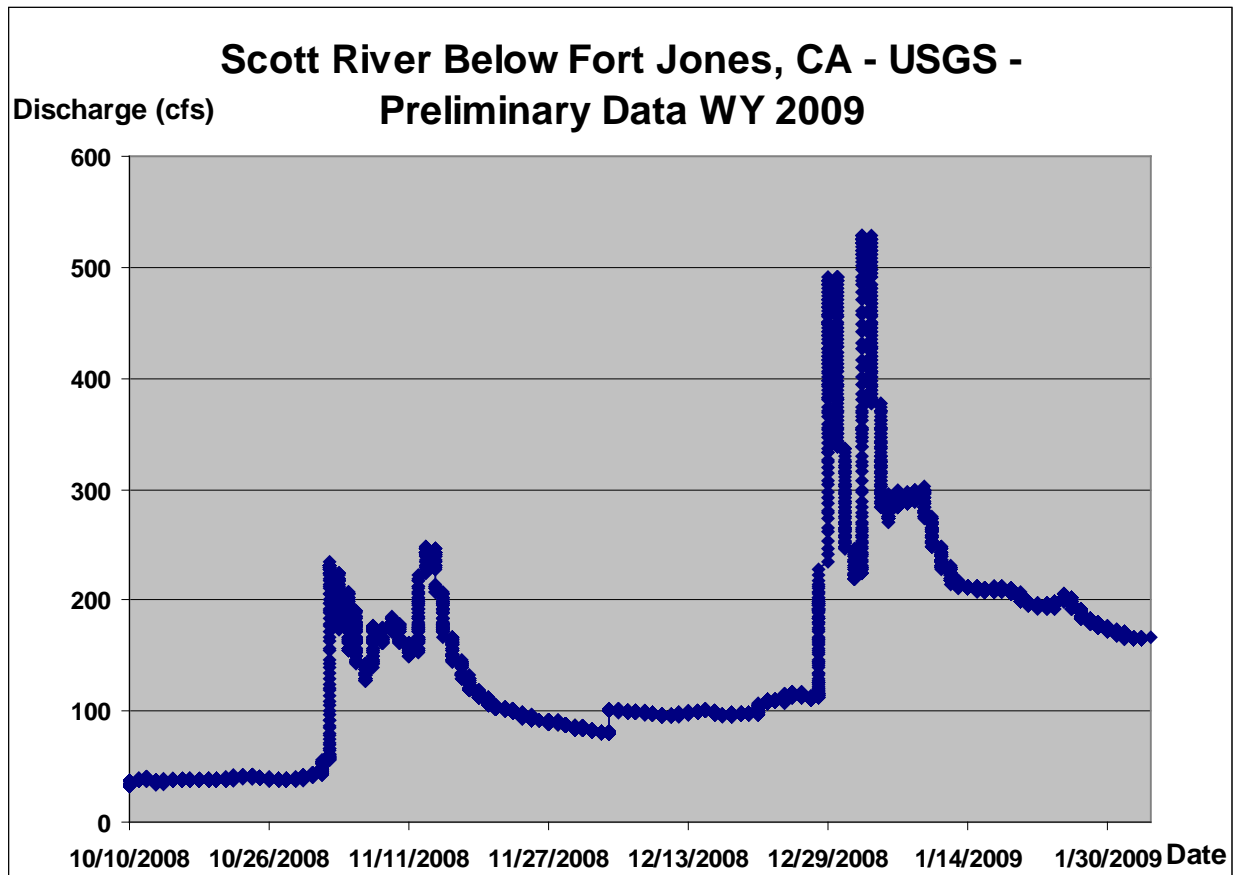


Figure II. Streamflow at USGS gauge during survey period. (Note: USGS data is preliminary only.)

Biological Sample Collection

A total of 4 coho carcasses were recovered in the Scott River Watershed. Of those identified, 2 were male and 2 were female. Tissue, scale and otolith samples were taken from each carcass recovered.

CDFG Scott River Weir

In the fall of 2008, the California Department of Fish and Game (CDFG) operated a weir and camera flume just upstream of Indian Scotty campground. Recording began on 10/02/08 and the first coho was recorded on 10/17/08. The last coho was recorded migrating past the weir on

12/22/08 and the weir was removed on 12/27/08. The preliminary total count of coho observed at the weir stands at 62. (Weir summary data, provide by. Morgan Knechtle, CDFG)

Stream Temperature

Stream temperature data was collected at hourly intervals during the late fall/winter of 2008/2009 in several tributaries including: Lower East Fork, Lower South Fork, Lower Sugar, Mid-French, and Lower Mill. Temperatures in the selected tributaries varied significantly. Shackleford-Mill Creek is on average 2-4 °C warmer than all others measured. Sugar Creek, South Fork, East Fork and French Creek approach 0 °C during the coldest months. The effects of stream temperature on adult spawners are very much unknown. However, stream temperature plays a large role on the incubation and emergence rate of juvenile salmon.

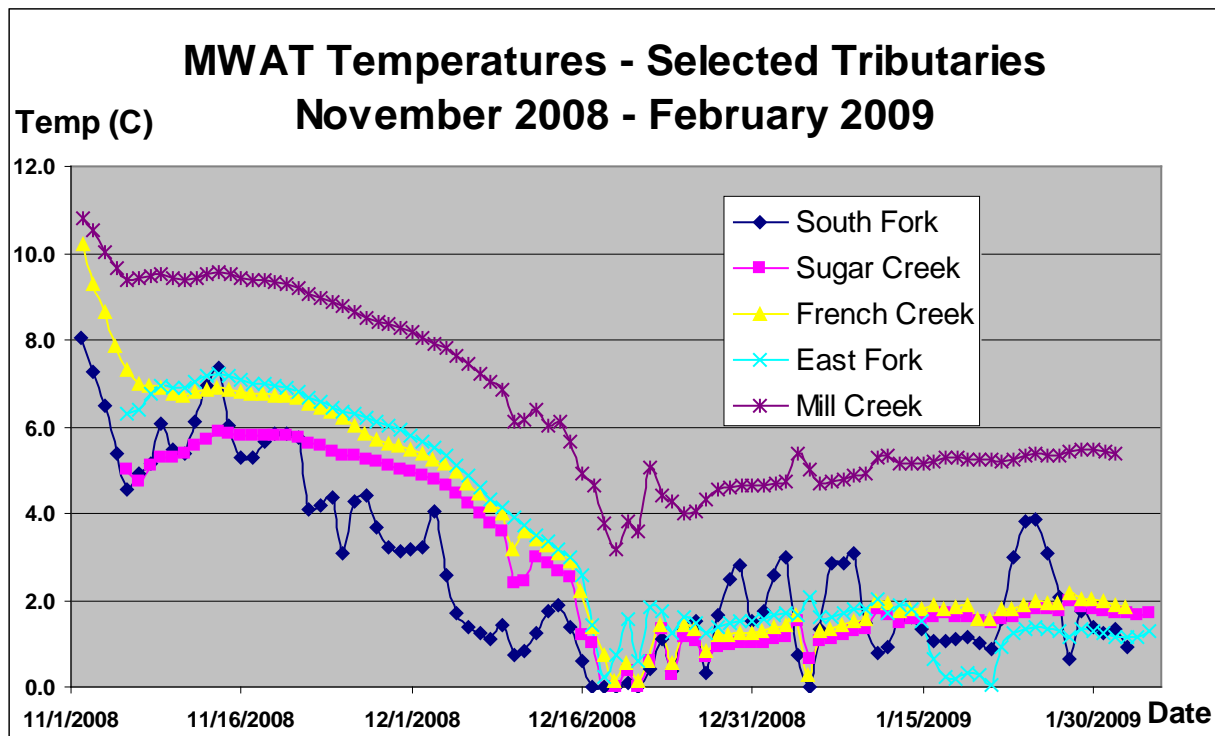


Figure V. MWAT Temperatures for Selected Tributaries

Site Specific Factors

During redd surveys, redd dimensions (length, width, pott depth), and substrate composition were measured when it would not cause disturbance to the spawning fish.

See **Table III. Site Specific Factors**, for average conditions by reach.

Stream	Reach	Ave Length (M)	Ave Width (M)	Ave Pott Depth (M)	Substrate Dominant/ Sub-dominant	Total Redds Measure d
Canyon	Lower	2.6	1.6	0.1	2/3	1
French	Lower	2.13	1.20	0.36	2/3	3
French	Mid	2.56	1.19	0.19	2/3 & 3/2	6
French	Middle	2.40	1.29	0.13	2/3	6
Kelsey	Lower	2.41	0.35	0.28	2/3	3
Scott	Reach 6	2.50	1.40	0.14	2/3	4
South Fork	Upper	2.50	1.50	0.15	3/4	1

Table III. Site Specific Factors

Mark and Recapture

In 2008/09, mark and recapture efforts were unsuccessful. Crews were unable to tag a sufficient number of fish due to the small number of carcasses recovered. Without a sufficient number of marks and recaptures (<25), Schaeffer and Peterson population estimates could not be completed to a reasonable level of accuracy.

Discussion

Run Timing and Duration

Flows during the 2008-2009 survey period were low until the first rain event on November 1st, 2008. Directly after this rain coho salmon were observed passing through the CDFG weir above Indian Scott campground. The majority of run passed through the were from Nov 11 – 17th, 2008. This timing is consistent with observations made in the past that the coho will begin to migrate upstream with the first significant rain event.

During the 2008-2009 spawning season coho were observed using the same spawning beds as those utilized by Chinook salmon. The overlap spatially and temporally of coho spawning and Chinook

Coho Redds or carcasses were observed in French Creek, Canyon Creek, Kelsey Creek, the South Fork Scott River, and mainstem Scott River Reach 12, 14, and 15. The lack of observed spawning in Shackleford Creek is unusual, as most years coho have been observed utilizing Shackleford and Mill Creeks. However, Shackleford Creek was observed to be only sporadically connected through the 2008-2009 spawning season.

References

California Data Exchange Center – Flow data for Shackleford and French Cr.

<http://cdec.water.ca.gov/cgi-progs/queryF?s=FCC>

<http://cdec.water.ca.gov/cgi-progs/queryF?s=SCK>

United States Geological Survey – Flow data for Fort Jones Gauge

http://waterdata.usgs.gov/ca/nwis/uv/?site_no=11519500

Quigley, D. 2004-2005 Scott River Watershed Adult Coho Spawning Ground Surveys 2005. Siskiyou RCD

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Name	Length (miles)	No_Redds	Redds_per_mile
Upper Scott Bar Mill Creek	0.60	0	0.00
Lower Scott Bar Mill Creek	0.35	1	2.90
Upper Thompkins Creek	1.35	0	0.00
Lower Thompkins Creek	0.46	0	0.00
Middle Creek	0.31	0	0.00
Kelsey Creek	0.62	2	3.23
Canyon Creek	0.88	2	2.27
Boulder Creek	0.16	0	0.00
Upper Mill Creek	0.87	4	4.60
Lower Mill Creek	1.40	57	40.71
Shackleford Creek	2.35	39	16.60
Upper Kidder Creek	0.19	2	10.50
Lower Kidder Creek	1.34	5	3.73
Upper Patterson	0.30	9	30.00
Middle Patterson - above HWY3	1.72	27	15.70
Lower Patterson - below HWY3	0.41	5	12.30
Lower Patterson	1.06	5	4.72
Middle Etna - above Etna Diversion	2.22	0	0.00
Middle Etna - below Etna Diversion	0.67	5	7.46
Upper French Cr. - Paynes Creek Area	0.69	1	1.45
Upper French Cr. - Below North Fork	1.04	3	2.88
Mid French Creek	0.96	10	10.40
Mid French Creek	0.64	10	15.63
Lower French Creek	0.65	9	13.85
Miners Creek	1.06	0	0.00
Miners Creek	0.90	7	7.78
Mid Sugar Creek	2.08	0	0.00
Lower Sugar Creek	0.27	3	11.10
Wildcat Creek	0.75	3	4.00
Scott River - Tailings	3.07	8	2.61
South Fork Scott River	2.54	16	6.30
Lower South Fork Scott River	0.38	1	2.63
East Fork - Above Kangaroo Cr.	2.62	2	0.76
East Fork - Above Grouse Cr.	1.15	16	13.90
East Fork - Below Grouse Cr.	0.63	1	1.59
Grouse Creek	0.88	0	0.00