

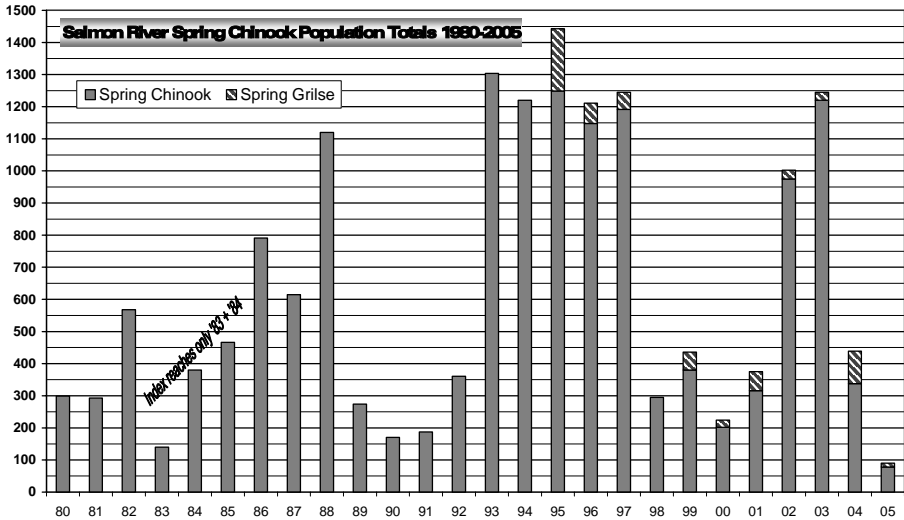
Salmon River Weak Stocks Assessment Program 2005

Final Report

Grant # P0410330

June 1, 2005 through September 30, 2006

Salmon River Restoration Council



Underwater photo of spring Chinook in cold water refugia, taken by SRRC

Table of Contents

I) Executive Summary.....	page 3
II) Background and Total of Fund Source Expended.....	page 4
III) Task Accomplishments.....	page 5
IV) Summary Discussion.....	page 6
A) Methodology.....	page 7
B) Spring Chinook.....	page 8
C) Coho Salmon.....	page 14
D) Winter and Summer Steelhead.....	page 18
V) Recommendations.....	page 20
VI) Measurables.....	page 21
VII) Acknowledgements.....	page 23
VIII) References.....	page 24
IX) Appendices	

I) Executive Summary

The Salmon River Restoration Council (SRRC) was funded by the California Department of Fish and Game (CDFG) to monitor and assess fish species within the Salmon River referred to as “weak stocks”. The CDFG Coho Recovery Strategy, Klamath Fisheries Management Council, the Klamath Fisheries Task Force (TF), and the National Research Council all have identified the need for further research related to abundance, habitat requirements, and limiting factors for weak stocks in the Salmon River.

Through the Salmon River Community Weak Stocks Assessment program, the SRRC has provided information to regulating agencies that is critical to the survival of the diverse fisheries occurring in the Salmon River subbasin. This program continues to provide baseline data, as well as expanding data sets for the under studied species of the Klamath and Salmon Rivers.

The program has focused on the assessment of freshwater life stages of “weak stocks” species, such as spring Chinook, coho salmon and steelhead trout. The program has identified the presence of these species within the sub-basin and documented their habitat use throughout the basin.

The Salmon River Restoration Council (SRRC) has performed the tasks identified in our cooperative agreement for the Salmon River Community Weak Stocks Assessment Program for fiscal year 2005 (FY 05). In the Salmon River subbasin the SRRC has continued to provide leadership in heightening stakeholder awareness and enlisting support from many of the stakeholders to help recover the anadromous fisheries and their related resources. The SRRC’s mission is to assess, protect, restore, and maintain the Salmon River ecosystems, focusing on the restoration of the anadromous fisheries resources.

Tasks in this project have been performed in cooperation with the CDFG, U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS), Karuk Tribe, Yurok Tribe, and the Klamath Salmon Anglers and Guides Association (KSAGA). This collaborative approach has been a major component of the program, providing technical oversight, as well as on the ground assistance.

This project addresses and seeks to fill data gaps for weak stocks. Providing this kind of information may prove invaluable to the recovery of the fisheries resource as cited by the National Research Council report Threatened and Endangered Species of the Klamath River (2003).

“A small but growing stakeholder group is cooperating with state and federal agencies and tribal interests in the Salmon River basin. High priority has been placed on monitoring of salmon and steelhead runs, improvements in riparian habitat, management of fuels, and assessment and rehabilitation of logging roads (Elder et al. 2002). Given proper funding and agency participation, these efforts may be sufficient to improve conditions for coho and other salmon and steelhead in the watershed.”

II) Background

The Salmon River Restoration Council (SRRC) has implemented and completed the tasks and projects set forth in the Salmon River Community Weak Stocks Assessment Program (Weak Stocks Program). The tasks in this program involve monitoring species distribution and life history, including identification of selected habitat requirements for weak stocks. This type of data is currently lacking throughout the Klamath basin. Through this program, SRRC has provided critical data that is otherwise unavailable or unobtainable to research projects in the Pacific Northwest.

The Salmon River's year round clarity and SRRC's close proximity to survey areas has enabled us to provide sound and efficient data sets that are rare and valued by fisheries managers. SRRC's winter and summer steelhead surveys are a prime example of this. SRRC provides CDFG with the only trend data set for the entire Klamath Basin. This data is then used by the California Fish and Game Commission to set regulations on the take of steelhead for Northern California and Southern Oregon.

Other examples of the value of weak stocks program data are the identification of spring Chinook holding or refugia areas and juvenile coho rearing areas. The identification of these sensitive areas has lead to protection from disturbance of the large scale, dredge mining operations occurring on the lower Salmon River.

Through the weak stocks program, the SRRC has collected data on life history, population size, range and health of target species. Fisheries technicians have collected the data from SRRC, tribes, agencies and trained community volunteers. The Karuk Tribe, CDFG, USFS, National Oceanic and Atmospheric Administration (NOAA) Fisheries, and USFWS have provided technical oversight and review. The (KSAGA), and the Salmon River Spring Chinook Voluntary Recovery Group have acted through this project to further coordination between stakeholders in the recovery of anadromous fisheries. These groups and others, such as the TF Technical Work Group and the Klamath Basin Fish Health Assessment Team, have directed the goals of this project and will be involved in its review and further development.

The overwhelming support for the program within the surrounding community along with increased support from agencies and tribes, has afforded us the ability to complete the project tasks under budget. Staff and community volunteer services contributed \$27,614.33 to the program. There was also contributed mileage and other operating expenses of \$5,843.43. Expenditures for matching agreements during the period 06/01/2005 to 06/01/2006 were \$17,508.28. In kind services and mileage of agency and tribal specialist are valued at \$2,197.95 and the total in kind was \$53,163.97 more than double the match requirement. Please see Appendix O for a detailed breakdown of expenditures and In kind by line item.

The monitoring and assessment projects in the program that have been completed through funding provided by the CDFG are discussed further in the project summaries, and tasks accomplishments sections of this report. Raw data sets and Global Information System (GIS) maps are also provided in spreadsheet format in the appendices of the report.

The SRRC tracks its restoration work in various ways such as: through the SRRC annual work plan development and review, restoration project reports, photo points, etc.

III) Task Accomplishments

During the 2005 fiscal year the SRRC performed all Tasks outlined in the Statement of Work, Exhibit A of this agreement, including fulfilling its commitment for In-Kind Services. The participation of the CA Dept. of Fish & Game funds in the facilitation of workshops has been acknowledged on signs, flyers, written communications, event notices, our web site, and in SRRC presentations. Any habitat improvements done under the terms of this contract (#P0410330) have been done in accordance with techniques described in the *California Salmonid Stream Habitat Restoration Manual* and have been pre-approved by the Department's Project Manager. The identification of activities associated with each Task is provided in the following text for Tasks 1 through 5, including Appendices Items. Some of the tasks were also supported by the Klamath Task Force, Karuk Tribe and US Forest Service, as well as by private contributions.

Task 1: Conduct or participate under the oversight and assistance of U.S. Forest Service and Karuk Tribal biologists, in the anadromous salmonid fisheries and water quality surveys (listed below) throughout the Salmon River Hydrologic Area (HA) of the Klamath River Hydrologic Unit. The Grantee will also develop and coordinate community volunteer participation in these surveys.

- **Salmon River Fish Work Group Meetings:** The SRRC held 6 fisheries monitoring coordination meetings. Attendees included, USFS, CDFG, USFWS, Karuk Hoopa and Yurok tribes, North Coast Regional Water Quality Control Board, KSAGA, Mid Klamath Watershed Council, NOAA Fisheries, Siskiyou and Humboldt Board of Supervisors, Humboldt State University and, community members. These meetings served to coordinate monitoring projects relating to the target species of this program. On December 2nd 2005 the SRRC held the Spring Salmon Summit in Orleans Ca. at the Karuk Tribe Community Center. Fifty eight people attended the summit which lasted six hours. Panelists and attendees discussed ongoing and proposed efforts by the aforementioned agencies to recover spring Chinook salmon in the Salmon River basin and in the Klamath basin as a whole. The compiled notes from the mtg. and attendees are included in appendix P of this report.
- **The Salmon River spring Chinook Voluntary Recovery Group:** During the project period the SRRC held two Voluntary spring Chinook Recovery Group meetings in cooperation with the USFS, CDFG, NCRWQCB, the Karuk and Yurok Tribes, USFWS, and NOAA Fisheries. The group acts to coordinate Salmon River spring Chinook research and has developed a limiting factors analysis for the species included in appendix A of the report.

Task 2, 3, and, 4: Conduct spring Chinook salmon and summer steelhead population snorkel surveys to determine adult upstream run timing and summer holding locations in

the Salmon River basin. Conduct spawning, carcass, and redd surveys throughout the basin for spring Chinook salmon, coho salmon, and winter steelhead. The presence of juvenile and adult salmonids observed during snorkel and spawning surveys will be noted. Information on species, life stage, number, location, and date and time of observation will be recorded.

- Spring Chinook: Through this program the SRRC enlisted 804 volunteer hours towards the assessment and protection of spring Chinook. Research and monitoring projects included spring Chinook run timing assessments, the Salmon River Cooperative spring Chinook Population Dives, carcass and redd surveys, disease and mortality assessments, refugia monitoring and Otolith research.
- Winter and Summer Steelhead: Through this program the SRRC enlisted 404 volunteer hours towards the assessment and protection of winter steelhead. Research and monitoring projects included, winter steelhead spawning and redd surveys, and the Klamath Salmon Anglers and Guides Association Steelhead Monitoring Program. The CDFG Steelhead Research and Monitoring Program provided technical and field assistance.
- Coho Salmon: Through this program the SRRC enlisted 555 volunteer hours towards the assessment and protection of coho within the Salmon River. Research and monitoring projects included Salmon River juvenile coho presence / absence surveys and Salmon River adult coho spawning and redd surveys completed in cooperation with the USFS and CDFG.

Task 5: Water quality monitoring will include water temperature, turbidity, and flow measurements made at six key sites spread out in the Salmon River Basin.

- The SRRC placed temperature loggers in key refugia areas for spring Chinook and juvenile salmonids; loggers were also placed in the main river channel near refugia areas. Spring Chinook refugia areas were monitored throughout the summer for fish density and correlations between temperature and density this data will be included in a report soon to be released by the Karuk Tribe and SRRC. Flow measurements were taken for tributaries where spring Chinook or juvenile salmonids had congregated. Turbidity measurements were made at these key sites and are expressed in terms of water clarity in the summary discussion.

IV) Summary Discussion

A. Methodology

Task 1: Conduct or participate under the oversight and assistance of U.S. Forest Service and Karuk Tribal biologists, in the anadromous salmonid fisheries and water quality surveys (listed below) throughout the Salmon River Hydrologic Area (HA) of the Klamath River Hydrologic Unit. The Grantee will also develop and coordinate community volunteer participation in these surveys.

Tasks and objectives of the Salmon River Weak Stocks Program were performed in cooperation with the aforementioned agencies, tribes, and organizations. USFS, and Karuk Tribal Biologists provided oversight. Nat Pennington, Fisheries Program Coordinator for SRRC directed on-the-ground monitoring projects and also serves to document the programs activities.

SRRC held 5 trainings to increase community knowledge of fisheries monitoring activities within the basin. Training workshops were offered for topics such as winter steelhead surveys, juvenile salmonid identification, spring Chinook and summer steelhead dives, and coho surveys and identification.

SRRC used protocol from CDFG and USFWS for sampling and monitoring activities. Example data sheets and survey maps are included in the appendices of this document. Survey crews consisted of SRRC fisheries technicians, and Karuk Tribal biologists and fisheries technicians. Most surveys were completed with gear either provided by this project or as in kind donation from SRRC. Publications and mailers were used to coordinate with the community and agencies. We have included an example of a flyer for the coho surveys in appendix B of this report.

Winter steelhead surveys in major tributaries of the Salmon River were performed by SRRC, Karuk Tribe, and USFS fisheries technicians from February – April 2006, and were in cooperation with CDFG. Data was recorded using CDFG protocol and GPS units provided by this project. Surveys were completed by snorkeling the river and walking streambeds looking for live steelhead, carcasses, and redds. Applicable data fields identified in the protocol included: numbers of fish observed, number of redds observed, location of fish and redds, redd length and width, habitat type, and temperature data.

Spring Chinook spawning surveys in the upper South and North Forks of the Salmon River were performed by SRRC, Karuk Tribe, and USFS fisheries technicians from September 15 – October 15, 2005, and were done in cooperation with CDFG. Data was recorded using CDFG protocol and GPS units provided by this project. Spawning surveys were completed by snorkeling the river and walking streambeds looking for live Chinook, carcasses and redds. The protocol was developed from the Klamath River Cooperative Chinook Spawning and Carcass Surveys Protocol (CDFG). Several fields were added to this protocol including disease infection information, and GPS location of redds. These new fields were added out of a desire to better understand disease in Salmon River spring Chinook and its relationship to spawning success. Other data fields in the protocol included: numbers of fish observed, number of redds observed, location of fish and redds, redd length and width, habitat type, carcass fork length in mm., sex, scars, percent of eggs spawned, scale samples and temperature data. Two sets of scale samples were collected for each carcass when enough scales were available. These samples are analyzed by Al Olsen of the USFS and George Kautsky of the Klamath Fisheries Management Council and Hoopa Tribe. Information from scale analysis is used to classify fish length by age and is helpful in determining life history as well as cohort reconstruction and run size predictions.

Coho surveys were performed in suspected habitat by SRRC, Karuk Tribe, and USFS fisheries technicians in November – January 2005-2006, and were in cooperation with CDFG. Data was recorded using CDFG protocol and GPS units provided by this project. Juvenile coho surveys were done while snorkeling. Adults were surveyed by walking streambeds looking for live adults, carcasses and redds. Adult coho survey protocol involved recording data on: numbers of fish observed, number of redds observed, location of fish and redds, redd length and width, habitat type, carcass fork length in mm., sex, scars, percent of eggs spawned, tissue samples for genetic analysis by CDFG, scale samples and temperature data.

B. Spring Chinook

This years Spring Chinook timing, holding, and population surveys took place from May through August 2005. The initial surveys involved two snorkel surveys of the lower Salmon River (Brannon's Bar to the Mouth) in May and June 2005 to determine run timing and the head of the spring Chinook run. Through the Spring Chinook run timing and holding surveys SRRC enlisted \$1299.83 worth of volunteer effort in the form of survey divers, support and an additional \$900.00 donation in the form of raft rental.

The Spring Chinook run timing surveys have taken place since 2002. The surveys involve 3- 4 surveyors with 2 swimming in the river and one person in a raft or cataraft as a safety. The entire stretch of river is surveyed from Brannon's Bar to the mouth of the river. The divers are trained and experienced in snorkel survey techniques. Spring Chinook observed during the survey are enumerated by the rower and recorded by sub sections of the reach. Surveyors reported that visibility was good for all but one survey day and were confident that they had seen the majority of Spring Chinook that were present. This year was a below average year for the Salmon River Spring Chinook run. This affected the number of fish that were observed and therefore affected the amount representing the Head of the run. The last 3 years data showing the head of the Spring Chinook run is put into graph form and shown in Chart 1. The data has been compiled, analyzed, and QA/QC checked. This data is currently available for revue at www.srrc.org upon request. An example of press outreach for the recovery of spring Chinook and other fisheries in the Salmon River can be found in appendix C. The distribution of the spring Chinook on the Salmon River from 1990 until 2005 is also shown in Chart 2.

Chart 1

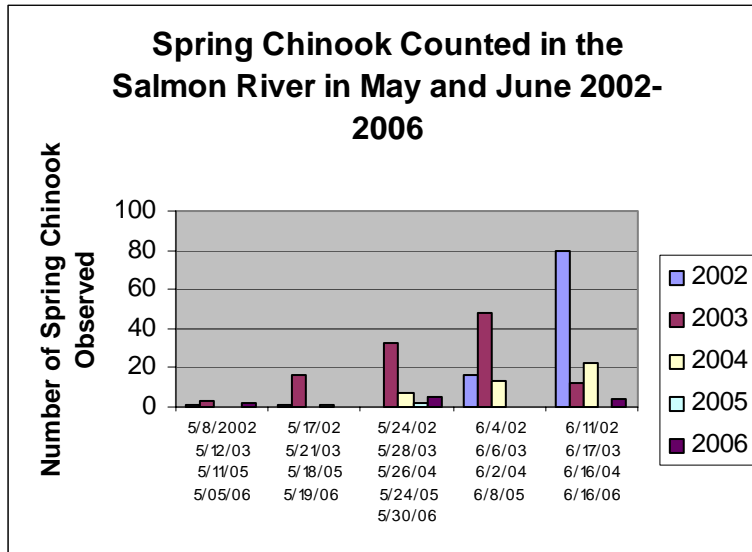
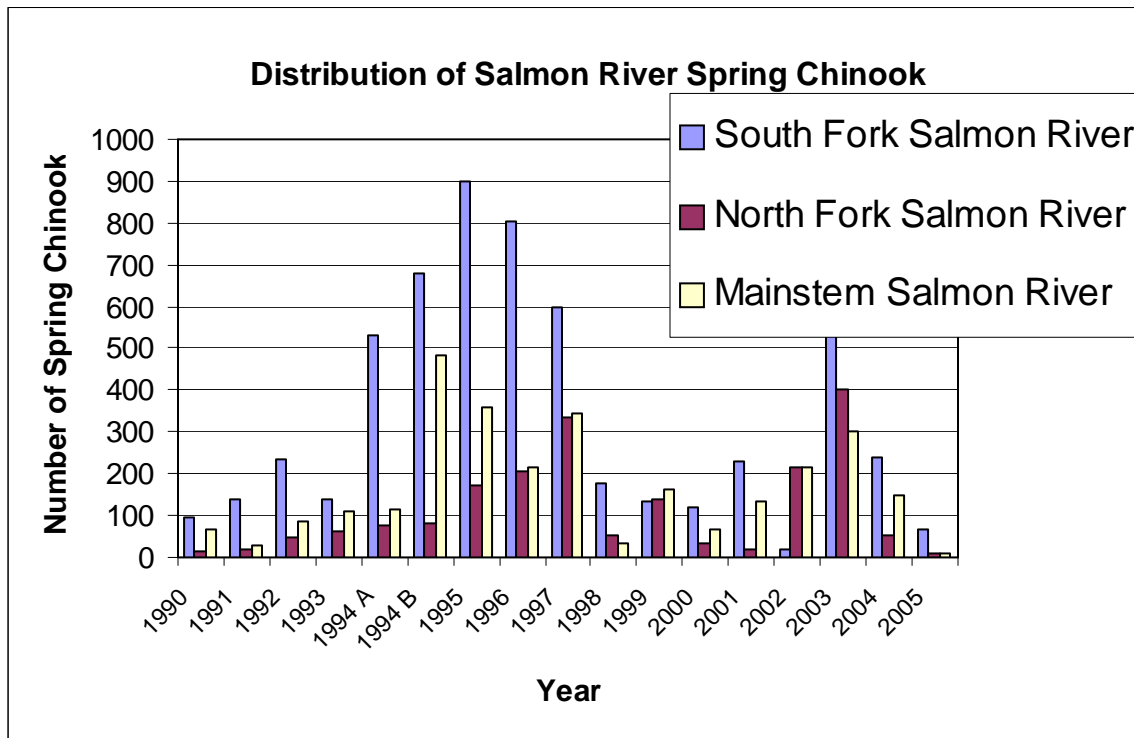


Chart 2



The Cooperative Salmon River Spring Chinook and Summer Steelhead Dives event successfully assessed the population of spring Chinook salmon present in the Salmon River for the 2005 season. The event enlisted and involved a total of 58 dive participants and an additional 15 event staff or family member participants. Training was provided for first year participants in which 30 agency and community participants attended. A

training video was produced by the Salmon River Restoration Council, Karuk Tribe and the Mid-Klamath Watershed Council and was shown at the training and during the event. Food for the event was provided by the Salmon River Restoration Council and consisted of two dinners and two breakfasts. The Karuk Tribe contributed food services consisting of a traditional salmon bake, which was a highlight of the event. The Forks of Salmon School donated the use of its kitchen and cafeteria facilities for the event. An educational presentation was provided for all participants. Green Sturgeon, Spring Chinook, and Summer Steelhead were the presentation topics. The presenters were Eric Wiseman, USFWS Fish Health Center, and Josh Strange, Yurok Tribe Fisheries Biologist presented on radio telemetry of Spring Chinook, and Nat Pennington, SRRC Fisheries Program Coordinator. The USFS Klamath National Forest and USFS Six Rivers National Forest donated camping and bathroom facilities. The USFS Klamath National Forest also coordinated the collection compilation of data. A total of 90 Spring Chinook were observed. Spring Chinook numbers this year were the lowest since data collection began, as shown in Chart 3 below. The total volunteer days contributed towards this event are shown below in Table 1. The complete data set for reaches surveyed during the event is shown below in Table 2.

Chart 3

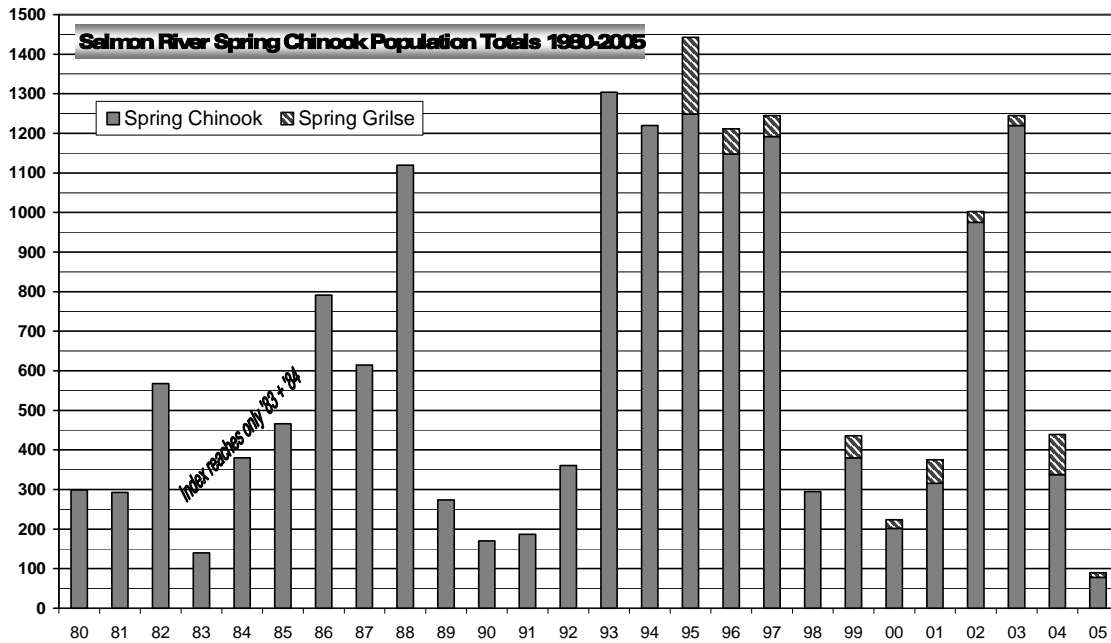


Table 1

Event Name	Start Date	# Volunteer Attendees	Description
Sp Chin Survey 05 Training	7/19/2005	31	Annual Spring Chinook, Summer Steelhead Survey, Training Day
Sp Chin Survey 05 Training	7/20/2005	59	Annual Spring Chinook, Summer Steelhead Survey, Survey Day One
Sp Chin Survey 05 Training	7/21/2005	11	Annual Spring Chinook, Summer Steelhead Survey, Survey Day Two

Table 2

Reach	Date	Miles Surveyed	Spring Chinook Adults	Spring Chinook Jacks	Steelhead Adults	Steelhead 1/2 pounders
Mainstem						
Wooley - Mouth	7/21/2005	4.5	0	0	1	2
Grants - Wooley	7/21/2005	5	0	0	1	0
Nordheimer - Grants	7/21/2005	4	0	1	0	7
Forks - Nordheimer	7/20/2005	4.5	3	0	5	9
South Fork						
Henry Bell - Forks	7/20/2005	3	2	0	4	6
O'Farrill - Henry Bell	7/20/2005	2	1	0	0	2
Indian - O'Farrill	7/20/2005	2.5	7	1	3	10
Matthews - Indian	7/20/2005	3	1	0	0	2
French - Matthews	7/20/2005	4	16	2	3	9
Cecil - French	7/20/2005	4	1	1	0	3
INDEX: Timber Gulch - Limestone Gulch	7/20/2005	3	2	0	0	9
Petersburg - Cecil	7/20/2005	4	20	2	8	16
Blindhorse - Petersburg	7/20/2005	3	9	4	6	10
Little South Fork - Blindhorse	7/20/2005	3	0	0	0	0
North Fork						
MP 4 - Forks	7/20/2005	4	0	0	0	13
INDEX: China Point - Deadhorse Gulch	7/20/2005	3	0	0	1	6
MP 8 -MP 4	7/20/2005	4	1	0	0	4
MP 12 - MP 8	7/20/2005	4	3	0	2	8
MP 16 - MP 12	7/20/2005	4	1	0	3	3
White's Gulch - MP 16	7/20/2005	2	0	0	0	0
Idlewild - White's Gulch	7/20/2005	2.5	5	0	0	7
Mule Bridge - Idlewild	7/20/2005	3	0	0	1	1
Big Creek - Mule Bridge	7/20/2005	3	0	0	0	0

SRRC Salmon River Weak Stocks Assessment Program Contract # P0410330

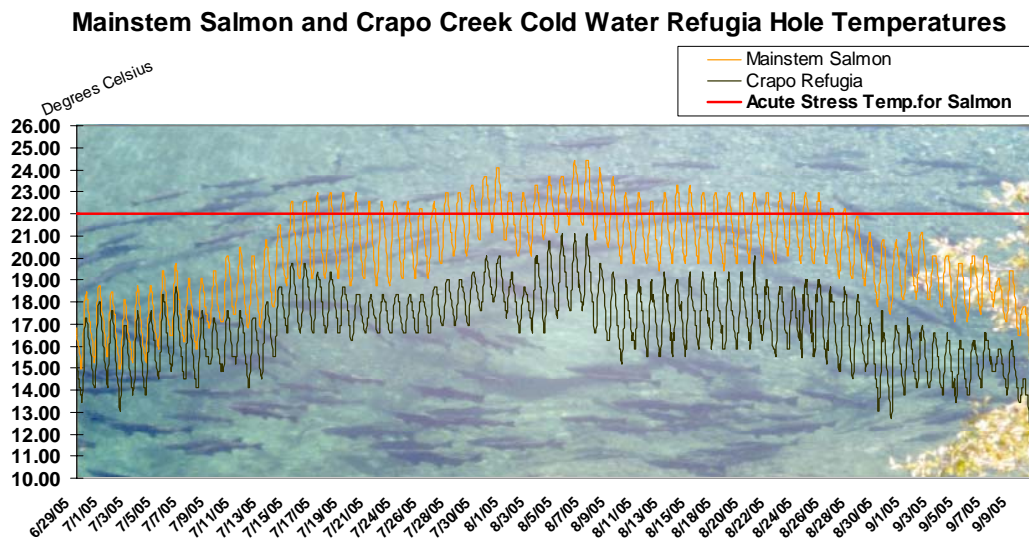
East Fork						
George's - Confluence	7/20/2005	2	0	0	0	5
Shadow - George's	7/20/2005	2.5	0	0	0	2
Wooley Creek						
	8/23/2005	9.5	6	1	39	11
TOTAL*		77.5	78	12	77	145

INDEX reach fish counts are split from the reaches they are contained in, not counted twice.

South Fork INDEX is a section of reach 'Cecil to French'. North Fork INDEX is the end of reach 'MP 8 - MP 4' and the beginning of 'MP 4 - Forks'.

The summertime temperatures in the Salmon often reach stressful levels for Chinook salmon in the months of July and August. Spring Chinook can be at risk of disease infection and eventual mortality during these periods. Through the weak stocks program SRRC has monitored and identified key refugia locations within the Salmon River where spring Chinook hold in the summer. These locations are critical to spring Chinook as they spend the summer in fresh water. Threats to these key sites like recreational mining are being monitored and eliminated, by SRRC coordination, with specific user groups like the New 49ers mining association. Data was collected for the Boulder Gulch refugia and the Crapo Creek refugia. Temperature data for the Crapo refugia, charted with the mainstem Salmon River temperature, as well as the stress threshold for Salmonids, is shown in chart 4 below.

Chart 4



The SRRC, USFWS and Karuk tribe were funded by the task force to collect and analyze otoliths of Salmon River spring Chinook. This project was implemented in March of 2005. The otoliths were collected from juveniles and adult carcasses during the spring

Chinook redd surveys. The otoliths are given to the USFWS to be analyzed. The growth rings that are imbedded in the otoliths can be used to identify conditions and growth rates for Salmon River spring Chinook and may also allow for selective harvest to avoid harvest of particular stocks. To this date two reports were completed by USFWS relating to the samples provided by this program; USFWS Arcata Fisheries Technical Report Microstructural Natal Signature of Spring Chinook Salmon Otoliths from the Salmon River Drainage, Northern California AFWO-TR01-05, and USFWS Arcata fisheries Technical Report - The Identification of Migratory Juvenile Spring Chinook Salmon via Rotary screw trap on the Salmon River, California. These reports provide, amongst other things, that spring Chinook salmon from the Salmon River can be identified in the Klamath River or the ocean through the use of the otolith microstructural signature. A third report on studies performed on adult spring Chinook otoliths is in draft. This report will provide information on life history of the Salmon River spring Chinook. Both final reports are provided to CDFG on Compact Discs along with this report.

The Salmon River cooperative spring Chinook salmon carcass and redd surveys took place from September 14th – October 14th 2005. The surveys were performed through funding from this program and volunteer or cooperative support from the USFS Orleans and Salmon River Ranger Districts, USFWS, the Karuk Tribe and the California Dept. of Fish and Game- Klamath River Project. The Salmon River Restoration Council (SRRC) held survey training on September 14th at the Cecilville Community Club. Each survey crew consisted of at least two surveyors trained in survey protocol, redd and fish identification. Crews recorded the location of fish and redds, redd length and width, habitat type, carcass fork length in mm., sex, scars, percent of eggs spawned, scale samples and temperature data. Two sets of scale samples were collected for each carcass when enough scales were available. Redds were recorded with GPS units and carcasses were measured, sex determined, and analyzed for signs of disease. During disease assessments, trained fish technicians examine the carcasses for external characteristics of Columnaris, Icthy, and C. Shasta. During the 2003 survey season examination of 179 spring Chinook carcasses revealed that 53% had Columnaris lesions. In 2004 examination of 9 spring Chinook carcasses revealed that 62% had Columnaris lesions and in 2005 examination of 13 spring Chinook carcasses revealed that 46% had Columnaris lesions. This information has been provided to the USFWS California Nevada Fish Health Center and the Klamath Basin Fish Health Assessment Team. Spring Chinook data and GIS maps showing GPS redd locations are in appendix D and E of the report. The Surveys took place on 16 continuous miles of the South Fork Salmon River and 8 continuous miles of the North Fork. Repeat surveys occurred on most reaches. A total of 66 miles of the South and North Fork Salmon River were surveyed including repeat surveys. A total of 77 redds were surveyed and mapped during the 2005 season. A total of 13 carcasses were examined for biological information and sample collection. Data from the 2005 spring Chinook carcass and redd surveys is presented in summary format below. A publication distributed by SRRC as an informational flyer for volunteers and cooperators is included in appendix F of this report.

Table 3

SRRC Salmon River Weak Stocks Assessment Program Contract # P0410330

SRRC Weak Stocks Cooperative Spring Chinook Survey Carcass Data Tables '05										
Total percentage of Spring Chinook carcasses with signs of Columnaris Infection=										46%
Fish Scar Codes: 1=lamprey, 2=gill net, 3=hook, 4=otter bite					Disease Assessment Codes: 1=Columnaris, 2=Icth, 3=C. Shasta					
#	Species:	Sex M/F	Fork Length	Spawned Y/N	Scales Y/N	Fin Clip Y/N	Otolith Y/N	Tissue Y/N	Scar #	Disease #
Adam Jacobs, Petey Brucker				9/23/2005		Stream: South Fork Salmon River Reach: Taylor Creek - Cecil Creek				
1	SPCH	M	71	Y	Y	N	Y	Y	N	None
2	SPCH	M	64	Y	Y	N	N	Y	N	1
Nat Pennington, Laurissa Gough				9/30//2005		Stream: South Fork Salmon River Reach: Cecil Creek to French Creek				
1	SPCH	F	69	Y	Y	N	Y	N	N	1
Irie Swift, Candace Wase				10/4/2005		Stream: South Fork Salmon River Reach: Blind Horse Creek to Petersburg				
1	SPCH	F	54	Y	Y	N	Y	Y	N	1
Susan Corum, Eileen Williams				10/7/2005		Stream: South Fork Salmon River Reach: Cecil Creek to French Creek				
1	SPCH	M	73	Y	N	N	N	N	N	None
Nat Pennington, Candace Wase				10/7/2005		Stream: South Fork Salmon River Reach: Blind Horse Creek to Petersburg				
1	SPCH	M	87	Y	Y	N	Y	Y	4	None
2	SPCH	F	48	Y	Y	N	Y	N	N	None
Nat Pennington, Bill Souza				10/11/2005		River: South Fork Salmon Reach: Cecil Creek -French Creek				
1	SPCH	M	35	Y	N	N	N	N	1	1
2	SPCH	F	82	Y	Y	N	Y	N	N	1
Susan Corum, Alex Corum				10/4/2005		Stream: South Fork Salmon River Reach: Blind Horse Creek to Petersburg				
1	SPCH	M	80	Y	Y	N	Y	N	N	None
2	SPCH	F	71	Y	Y	N	N	Y	N	None
3	SPCH	M	50	Y	Y	N	Y	Y	N	None
Kris Denny, Bill Souza				10/11/2005		River: South Fork Salmon Reach: Cecil Creek -French Creek				
1	SPCH	F	75	Y	Y	N	Y	Y	N	1

C. Coho Salmon

The SRRC in cooperation with CDFG, Karuk Tribe, USFS and USFWS has completed three years of coho presence / absence surveys in suspected areas and tributaries of the Salmon River. These surveys were successful in identifying coho salmon in areas where coho were not previously documented within the subbasin. The 2005 – 2006 spawning season run size was smaller than the previous year. SRRC and cooperators made no adult

coho observations in November and December 2005. The Data from the Salmon River 2002 – 2006 coho surveys is located in appendix G of this report.

Through this program the SRRC and Karuk Tribe performed presence / absence and cold water refugia studies on major tributaries to the Salmon River. These surveys were performed in August during a period of hot weather. Cold water refugia use by juvenile salmon and steelhead was high. Coho were present in several streams higher in the basin than had previously been identified. Protocol adopted from the CDFG 10 pool protocol was utilized for presence / absence surveys. On August 5th 2005 the Karuk Tribe and SRRC initiated a study to identify key cold water refugia areas in the Salmon River for coho salmon and spring Chinook. The following is an outline of the study plan.

Salmon River Thermal Refugia Study Plan Karuk Fisheries and Salmon River Restoration Council -2005

Purpose

Locate, inventory and characterize all thermal refugia sites in the Salmon River Mainstem, South Fork and North Fork.

Objectives

- Determine life stage and species usage at SR thermal refugia site
- Characterized habitat quality and complexity of each site
- Determine extent and area of refugia sites
- Develop ArcView GIS layer including refugia sites
- Determine stability and habitat control features of each site

Biological Characteristics

Preliminary snorkel surveys were conducted in the afternoon hours (2pm-6pm) at each potential site to determine general fish usage and quality of the site. Primary sites were distinguished after completion of the preliminary assessments. Primary sites were determined based on fish numbers (>100 juveniles or >5 adults), species (sthd, chin., coho, suckers, dace) and life stage present (adult, 0+, 1+).

Fish Usage

Fish holding positions and locations were mapped during each observation. Fish usage was enumerated by one crew member then checked again by another crew member. One crew member can cover two close proximity primary sites during one observation day. Ex. Nordhiemer Creek and Crapo or Wooley Creek and Butler Creek or Knownothing Creek and Methodist Creek

Physical Characteristics

A map sketch was drawn for each site with labels that identify the area of the cold water influence. Digital photographs were taken from various view points. Under water video and digital photos were also taken. A paragraph was written in the field that described the physical characteristics of the site.

Temperature

Temperature was taken using a YSI or Hydro Lab Quanta digital probe that measured to the nearest hundred. During each snorkel observation temperature was recorded for the mainstem above the refugia, the cold water source or tributary, top of refugia , bottom of refugia , and middle of refugia. Exact time was recorded with each temperature recorded.

GIS

Using a Garmin or Tremble Unit, points were collected for each site where juvenile coho were observed and are included in a base map shown below.

Equipment Used

- Dive and Snorkel Set up
- Digital Camera
- YSI or Hand held Quanta
- Data sheets
- Tape and Stadia Rod
- Arial Photos and Topo Base Maps of each site

This study was designed to identify key thermal refugia areas of the Salmon River to better understand refugia use by salmonids in the basin and protect these areas from disturbance. The Chart below displays summary data from the study relating to juvenile coho presence / absence and refugia use by juvenile coho. This data has been presented to the CDFG and was used to develop mining regulations that would decrease the impacts of dredge mining on the key cold water refugia areas for coho salmon listed in table 4 below. A total of 27 tributaries and the associated refugia areas were surveyed during the study. Data sheets and physical characteristic maps for each creek and refugia area are included in appendix H of this report. A map of the refugia sites used by juvenile coho is included below; a larger version is located in appendix I of this report. Photographs of adult and juvenile coho are included in appendix J of this report.

Table 4

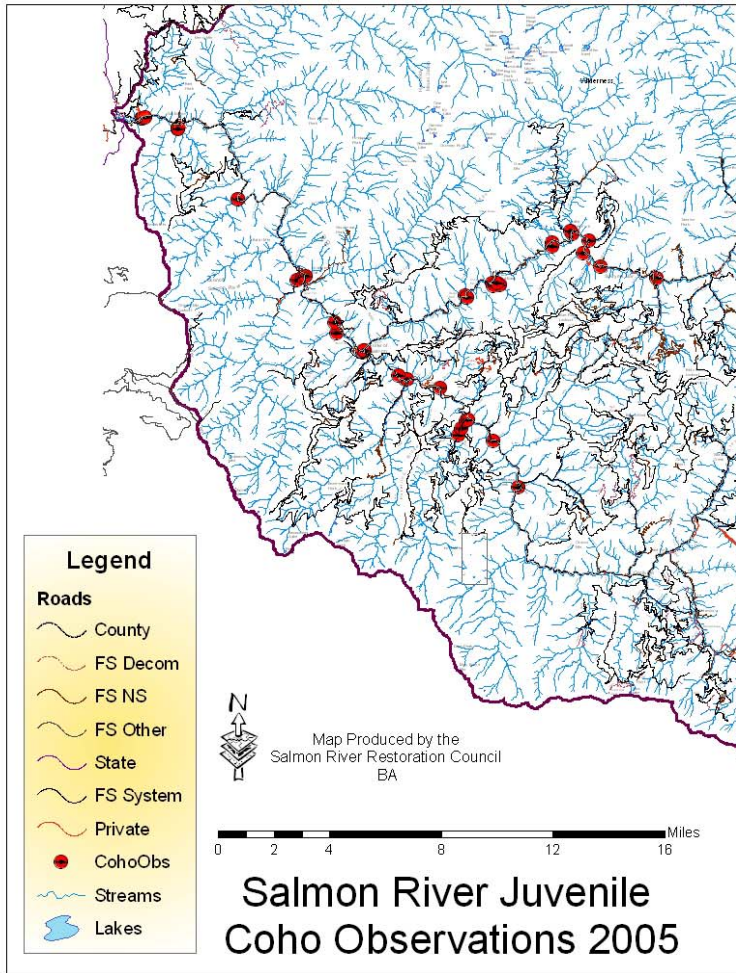
Salmon River juvenile coho salmon presence/absence and refugia use assessment summary - 2005

Stream Name	Watershed	Date/Time	Coho in Refugia	Coho in Stream
Horn Creek	Mainstem	8/11,1400	No	No
Shiltos creek	North Fork	8/11,1400	Yes	No
Nordheimer	Mainstem	8/19,1205	No	No

SRRC Salmon River Weak Stocks Assessment Program Contract # P0410330

Somes Creek	Mainstem	8/12,1500	No	No
Butler Creek	Mainstem	8/12,1240	Yes	No
Monty Creek	Mainstem	8/12,1426	No	No
Little N. Fork	North Fork	8/11,1350	Yes	Yes
Jackass Creek	North Fork	8/11,1256	Yes	No
Merrill Creek	Mainstem	8/19,1430	Yes	No
Bloomer Springs	Mainstem	8/19,1254	No	No
Jessup Creek	North Fork	8/11,1522	No	N/A
McNiel Creek	South Fork	8/11,1200	No	N/A
Know Nothing Creek	South Fork	8/11,N/A	N/A	No
Kelly's Bar	North Fork	8/11,1434	No	Yes
Matthews	South Fork	8/19,1200	Yes	No
Plummer	South Fork	8/19,1310	No	No
St Clair	South Fork	8/19,1400	No	No
N. Russian	North Fork	8/11,1530	No	No
S. Russian	North Fork	8/11,1620	No	No
Whites	North Fork	8/11,1400	No	No
Cronan Gluch	North Fork	8/11,1508	No	Yes
Big Creek	North Fork	8/11,1151	Yes	Yes
Jones Gulch	North Fork	8/11,1409	Yes	Yes
Eddy's	North Fork	8/11,1300	Yes	No
Black Bear	South Fork	8/12,1600	No	No
Methodist Creek	South Fork	8/12,1245	Yes	Yes
Olsen Gulch	North Fork	8/11,1245	Yes	Yes
coho present			11	7

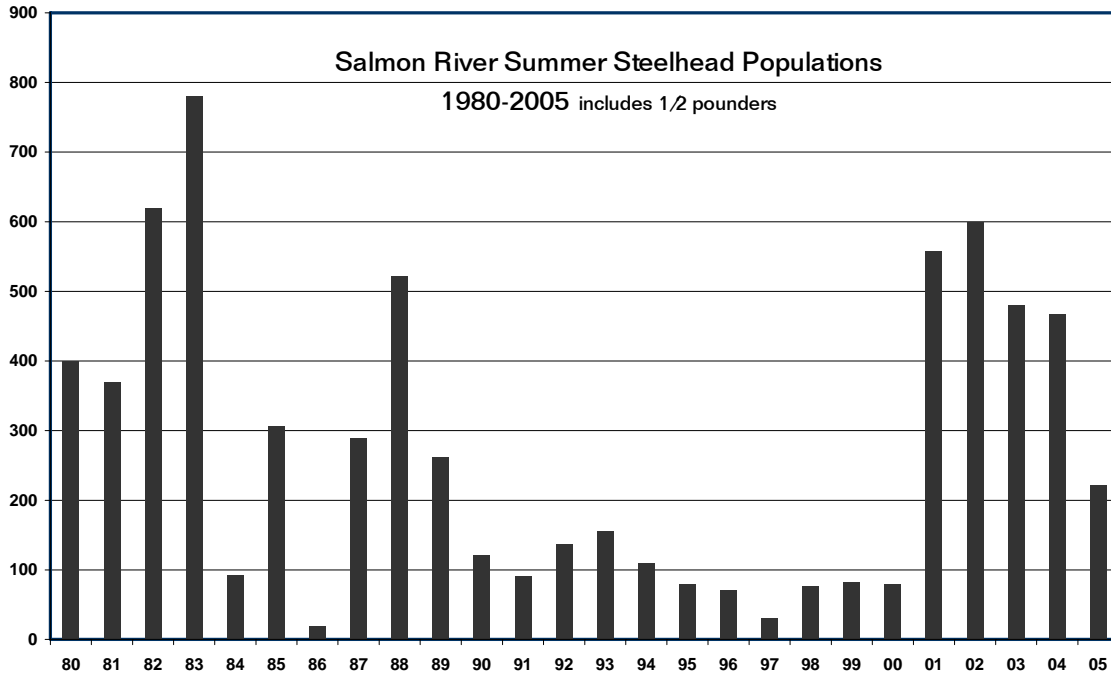
Map 1



D. Winter and Summer Steelhead

The Cooperative Salmon River Spring Chinook and Summer Steelhead Dives event successfully assessed the population of summer steelhead present in the Salmon River for the 2005 season. The event enlisted and involved a total of 58 dive participants and an additional 15 event staff or family member participants. Training was provided for first year participants in which 30 agency and community participants attended. A training video was produced by the Salmon River Restoration Council, Karuk Tribe and the Mid-Klamath Watershed Council and was shown at the training and during the event. A total of 145 half pounder steelhead (14 – 18 in.) and 77 adult steelhead were observed during the survey. The total volunteer days contributed towards this event are shown above in Table 1. The complete data set for reaches surveyed during the event is shown above in Table 2. The 25 year trend data set for summer steelhead maintained by the SRRC is shown in chart 5.

Chart 5



During the 2006 winter and summer steelhead spawning season SRRC and cooperators performed 25 stream surveys to identify presence / absence and population trends of steelhead in the Salmon River and tributaries. SRRC and cooperators have performed these surveys since 1999. Project cooperators include; USFS, CDFG, USFWS, NOAA, and the Karuk Tribe. Training was held on March 8th at the Forks of Salmon Community Club. The Data from these surveys, the GIS map, and an example of a steelhead data sheet can be found in appendices K-M. Four experienced crews of 2 people worked with the tribes and agencies to conduct 6 days of spawning surveys. Starting in mid March, and going until the beginning of May, surveys were conducted once a week. Bill Chesney, CDFG Steelhead Research and Monitoring Project (SRAMP) provided technical assistance and protocol oversight. Many volunteer participants are veteran fisherman with knowledge of current and historical range and species distributions. Trained crews assessed the condition of proposed and recently removed fish barriers, assessing the success and /or potential benefits of fish passage projects. Focus was placed on barriers that are proposed for removal or have already been removed by CDFG.

Table 5

SRRC Salmon River Weak Stocks Assessment Program Contract # P0410330

Salmon River Restoration Council, Weak Stocks Assessment Program

Cooperative Winter Steelhead Redd Survey Results

South Fork	1999 Redds	2000 Redds	2001 Redds	2002 Redds	2003 Redds	2004 Redds	2005 Redds	# of '99-'05 Surveys	2006 Redds	# of 2006 Surveys	Total Redds surveyed 99-'06'
East Fork	24	36	15	N/A	10	8	2	13	2	1	97
Knownothing	17	6	0	N/A	1	13	10	17	0	2	47
St.Clare		2	0	4	9	5	8	11	6	1	34
Blindhorse-Petersburg	N/A	N/A	0	N/A	18	5	5	6	0	0	28
Blacks Gulch Creek	N/A	N/A	0	0	0	N/A	N/A	2	0	0	0
Petersburg-Cecil Creek	5	16	0	N/A	12	9	6	9	0	1	48
Black Bear	7	0	0	N/A	1	2	3	11	0	1	13
Indian Creek	N/A	0	N/A	N/A	0	0	0	4	0	1	0
Negro Creek	N/A	0	N/A	N/A	2	0	0	4	0	0	2
Crawford Creek	1	N/A	0	0	23	12	9	9	0	1	45
Methodist	2	3	0	0	0	6	7	17	3	2	21
Matthews	N/A	N/A	N/A	0	0	0	0	4	0	0	0
Cecil Creek	0	N/A	N/A	N/A	0	0	1	4	0	0	0
Plummer Creek	N/A	N/A	0	N/A	11	5	4	4	0	0	20
Hotelling Creek	N/A	N/A	N/A	0	0	N/A	N/A	5	0	0	0
Mainstem	1999 Redds	2000 Redds	2001 Redds	2002 Redds	2003 Redds	2004 Redds	2005 Redds	# of '99-'01 Surveys	2006 Redds	# of 2006 Surveys	Total Redds surveyed 99-'06'
Butler Creek	N/A	2	0	3	0	0	0	6	1	2	6
Merrill Creek	N/A	N/A	N/A	0	9	3	2	10	0	2	14
Somes Creek	N/A	N/A	N/A	N/A	0	N/A	N/A	0	0	0	0
1mi. North Fork to Nordhiemer	N/A	N/A	6	N/A	0	N/A	N/A	1	0	0	6
Nordhiemer Creek	2	15	0	N/A	0	13	9	12	0	1	40
Crapo	N/A	N/A	N/A	0	0	N/A	N/A	1	0	0	0
North Fork	1999 Redds	2000 Redds	2001 Redds	2002 Redds	2003 Redds	2004 Redds	2005 Redds	# of '99-'01 Surveys	2006 Redds	# of 2006 Surveys	Total Redds surveyed 99-'06'
North Russian (3mile-Mouth)	10	23	0	3	6	9	4	15	3	2	58
Specimen (LogJam-Mouth)	1	9	0	3	23	4	7	16	0	0	60
Little NF (Specimen-Mouth)	4	5	0	N/A	12	6	8	11	0	2	35
Kelly's Gulch	N/A	N/A	N/A	0	0	0	0	5	0	1	0
Jackass	0	N/A	N/A	N/A	0	0	1	4	0	1	1
South Russian	N/A	N/A	N/A	N/A	0	0	0	3	0	0	0
White's Gulch	N/A	N/A	N/A	4	0	1	0	5	0	1	5
Eddys Gulch	N/A	N/A	0	N/A	0	3	2	4	0	1	5
Mule Br. - Whites	1	2	N/A	N/A	3	N/A	N/A	6	0	0	6
Redd & Survey Totals 99' - 06'	74	119	21	17	140	104	88	219	15	23	591

Water Quality Monitoring:

Water Quality Monitoring Relationship: Through this program the SRRC enlisted 155.50 hours in volunteer support toward monitoring water quality in the Salmon River. The SRRC placed temperature loggers in key refugia areas for spring Chinook and juvenile salmonids; loggers were also placed in the main river channel near refugia areas. Spring Chinook refugia areas were monitored throughout the summer for fish density and correlations between temperature and density. Flow measurements were taken for tributaries where spring Chinook or juvenile salmonids had congregated. Turbidity measurements were made at these key sites and are expressed in terms of water clarity in the summary discussion.

The SRRC and cooperators maintain approximately 50 hobo temps in the Salmon River and its tributaries each year, and monitor flow at approximately 20 sites once a month during the summer months. The data is provided to KRIS, Agencies, Tribes, the TMDL process and others.

The Goals of the monitoring program include establishing baseline data, supporting the TMDL process, correlating temperatures with fish behavior, identifying fisheries refugia conditions, and identifying opportunities to improve habitat and involving community members in the monitoring process. With a baseline data set, we can also assess the effectiveness of restoration projects and of land management activities.

Select data sets for key tributaries and reaches of the Salmon River including; the Mainstem Salmon, North Fork, South Fork, East Fork, Little North Fork, and Crapo Creek are included in appendix O of this report. Chart 4 displays the importance of the Crapo cold water refugia for salmonids in mid summer particularly for adult spring Chinook.

The Salmon River is the largest cold-water contributor to the Klamath River. It is listed for temperature impairment under the TMDL process. Temperature monitoring data shows that temperatures are consistently above the stressful level for Salmonids during the summer months. In 2004 temperatures reached a maximum of approximately 25°C in the Mainstem Salmon during the month of July.

The Salmon River Subbasin Restoration Strategy prescribes the development of a long range-monitoring plan for the Salmon River between 2004 - 2008. In order to be effective this plan should include the input of all our collaborators. The release of the Salmon River TMDL should help guide our monitoring efforts for the future.

V) Recommendations

The SRRC and cooperators should continue to monitor key habitats within the basin for presence and abundance of Weak Stocks. Efforts should be continued to protect these habitats.

The SRRC should continue the Weak Stocks Program placing priority on continuous monitoring of areas within the basin with historical and relatively recent data sets.

The SRRC should continue to work with agencies tribes and stakeholders to monitor and restore species in high risk or of high value for fisheries recovery.

The SRRC should continue to create and foster groups like the Salmon River Voluntary Spring Chinook Recovery Team who are working towards collaborative restoration of the Salmon River fisheries resource.

The SRRC should continue to develop individual programs and partnerships, for projects such as: fisheries protection, fish barrier removal, riparian assessment, watershed and restoration monitoring.

The SRRC should continue to enlist community members to serve as program and project managers. SRRC should seek specific funding for each of these programs and projects and develop, expand, and diversify respective funding sources.

The SRRC should continue to foster stakeholder coordinated resource management planning and recovery work groups.

The SRRC should continue to expand the effectiveness of the more recently formed Anadromous Fish Barrier Removal Committee, Roads Stewardship Work Group, Forest and Fire Management Roundtable, and Suction Dredging Awareness Work Group involving as many of the respective stakeholders as possible.

The SRRC should continue to educate and enlist cooperation and support from many more stakeholders, including funding sources, decision makers and experts, regarding the significance of the Salmon River in the recovery of a number of anadromous fish runs in the Klamath Basin and of our local community based effort.

VII) Measureables

- Identify the watershed / sub-basin plan or assessment in which the Project monitoring is identified as a priority

Elder, D., B. Olson, A. Olson, J. Villeponteaux, P. Brucker. 2002 Salmon River Subbasin Restoration Strategy: Steps to Recovery and Conservation of Aquatic Resources. Prepared for the Klamath River Basin Fisheries Task Force, Yreka Fish and

Wildlife Office, Yreka, CA. Available:

<http://www.r5.fs.fed.us/klamath/mgmt/analysis.html>

- Name the priority habitat limiting factors identified in that plan that were addressed by the project monitoring.

1. Water quantity (lack of flow, diversions, runoff)
2. Water quality (temperature, chemistry, turbidity)
3. Riparian dysfunction (lack of shade, nutrients, roughness of elements)
4. Excessive sediment yield (pool and gravel quality)
5. Spawning requirements (passage, gravel, resting areas-pools)
6. Escape cover / shelter (velocity, lack of woody debris, pools)

- Type of monitoring included in the project.

Monitoring involved; snorkel surveys, stream surveys, carcass and redd surveys, temperature monitoring, GPS, downstream migrant trapping and biological sampling of fish carcasses.

- # Of fish blockages identified

Three small fish blockages were identified and removed during the project. Many other larger fish blockages were identified by SRRC before the project began. These have been monitored and assessed and proposals have been developed and submitted by SRRC for their removal.

- # Of miles of suitable habitat above these blockages

Approximately 6 Miles.

- Water Quality limitations addressed by the project.

lack of flow, diversions, runoff, temperature

- Is the project related to key salmon management question regarding salmon recovery and/or sustainability of healthy salmon stocks?

Yes

- Name any comprehensive monitoring strategy/program that the project is a part of.

The SRRC has the most comprehensive monitoring strategy for Salmon River fisheries. SRRC cooperates with all other monitoring strategies that take place within the Salmon River including the CDFG Klamath River Project.

- # of publications produced reporting on key management or restoration data, information, and needs.

A total of nine publications were produced during the grant period.

- Was information gained on salmon stocks that will reduce the risk of over fishing?

Yes

- Does the project focus on sustainability, restoration (where needed) and the maintenance of watershed and salmon population health?

Yes

- # of workshops/training events held with the project.

eight

- # of publications completed and distributed within the project

six

- # of schools or classrooms and other institutions reached within the project

Four public schools

- Include a description of the results of student/teacher evaluations.

No student/teacher evaluations occurred relating to this project.

VII) Acknowledgements

The Salmon River Restoration Council would like to acknowledge the following organizations and individuals for their contributions to the implementation of this project.

The California Dept. of Fish and Game
The Klamath Fisheries Restoration Task Force
The U.S. Fish and Wildlife Service
The U.S. Forest Service, Ukonom and Salmon River Ranger Districts
The Karuk Tribe
The Mid- Klamath Watershed Council
The Klamath Salmon Anglers and Guides Association
The Salmon River Community

VIII) References

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Elder, D., B. Olson, A. Olson, J. Villeponteaux, P. Brucker. 2002 Salmon River Subbasin Restoration Strategy: Steps to Recovery and Conservation of Aquatic Resources. Prepared for the Klamath River Basin Fisheries Task Force, Yreka Fish and Wildlife Office, Yreka, CA. Available:
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Moyle, P.B. 2002. Inland Fishes of California. University of California Press, Berkeley, CA.

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