

ROCK CREEK-CRESTA PROJECT (FERC No. 1962)
BACKPACK ELECTROFISHING SURVEYS
OF SHALLOW-WATER HABITATS – OCTOBER 2005

Prepared for:



DRAFT FINAL REPORT

Prepared by:

Tim Salamunovich
Thomas R. Payne & Associates
P.O. Box 4678
890 L Street
Arcata, California 95521
(707) 822-8478

November 30, 2005

Data Report – Notice to Readers

This monitoring data report is part of Pacific Gas and Electric Company's ongoing effort to meet the study requirements of Condition 7 of the Rock Creek – Cresta Project License (FERC No. 1962). This report is part of a 15-year monitoring effort conducted in consultation with the Ecological Resources Committee (ERC) organized under the Rock Creek – Cresta Relicensing Settlement Agreement. This report has been submitted to the ERC for review and comment. This report may contain observations made by the authors that may not reflect the opinion of all ERC members. However, as this data report is part of an on-going long-term study effort, it is not the intent, after this second year, to present conclusions or recommendations on the overall impacts (positive, negative, or neutral) of base flow or recreational stream flow or pulse flow release scenarios. Any recommendations within this 2005 report relate to changes in backpack electrofishing efforts for the final year (2006) of the initial three year study (2004-2006), and any conclusions focus on comparisons with the 2002 and California Department of Fish and Game's 1982-1986 backpack efforts and to the fishery criteria identified in the Rock Creek-Cresta Operating License and Settlement Agreement.

Table of Contents

Notice to Readers	i
Table of Contents	ii
List of Figures and Tables	iii
List of Appendices	iv
Introduction	1
Study Area/Study Sites	3
Methods	9
Physical Site Data Collection	9
Electrofishing	10
Results	13
Physical Site Data Collection	15
Bear Ranch Creek Site	15
Grizzly Creek Site	17
Indian Jim School Site	17
Granite Creek Site	17
Rodgers Flat Site	18
Electrofishing	19
Discussion	39
Conclusions	48
Recommendations	50
Literature Cited	51

List of Figures and Tables

Figures

1. Map of Pacific Gas and Electric Company's NFFR hydroelectric facilities	4
2. Map of Rock Creek-Cresta electrofishing sites	5
3. Stream flow records for Cresta and Rock Creek reaches during October 2005 electrofishing	14
4. Length-frequency data for rainbow trout by study site	21
5. Condition factor-frequency data for rainbow trout by study site	23
6. Length-frequency data for hardhead by study site	25
7. Length-frequency data for Sacramento pikeminnow by study site	26
8. Length-frequency data for Sacramento sucker by study site	27
9. Length-frequency data for smallmouth bass by study site	29
10. Length-frequency data for riffle sculpin by study site	30
11. Length-frequency data for prickly sculpin by study site	31
12. Relative species abundance by study site	35
13. Relative species biomass by study site	38
14. Length-frequency data for rainbow trout in the Rock Creek Reach 1986, 2002, 2004, and 2005	45
15. Stream flow records for Cresta and Rock Creek reaches for Water Years 2000 through 2005	49

Tables

1. Settlement Agreement fish population monitoring schedule	2
2. Summary of habitat mapping data for Rock Creek-Cresta Project area	7
3. Study site name, reach location, and predominant habitat	8
4. Summary of habitat and water quality measurements	16
5. Fish species collected during October 2005 surveys	19
6. 2002 rainbow trout age-length data and TRPA composite	20
7. Estimated 2005 rainbow trout age class distribution	22
8. Removal-depletion patterns and electrofishing statistics	32
9. Fish species mean weights and biomass estimates	36
10. Population estimates and mean weights summary for 1986, 2002, 2004, and 2005 Rock Creek-Cresta electrofishing surveys	41
11. Comparison of standardized abundance estimates for 1986, 2002, 2004, and 2005 Rock Creek-Cresta electrofishing surveys	42
12. Comparison of standardized biomass estimates for 1986, 2002, 2004, and 2005 Rock Creek-Cresta electrofishing surveys	43
13. Comparison of estimated rainbow trout age class distribution patterns for 2004 and 2005	47

List of Appendices

Appendix

- A - Rock Creek-Cresta Relicensing Settlement Agreement Minimum Flow Schedules
- B - October 2005 Habitat Characteristic Data Sheets
- C - October 2005 Electrofishing Data Sheets
- D - MicroFish 3.0 and Program CAPTURE Output for the October 2005 Electrofishing Data

Introduction

In September 2000, Pacific Gas and Electric Company (PG&E) in concert with state and federal resource agencies, and numerous with other recreational and environmental groups signed the Rock Creek-Cresta Relicensing Settlement Agreement (SA). The SA attempts to strike a balance between continued hydropower generation from the Rock Creek-Cresta Hydroelectric Project (Federal Energy Regulatory Commission [FERC] Project No. 1962) and ecological and recreational restoration of the North Fork Feather River (NFFR).

The SA specified a 15-year schedule of changes to the Project base flows (see Appendix A) with a goal of providing “*an excellent trout fishery and functioning ecosystem to all naturally occurring species*”. The “excellent” trout fishery is defined in the SA as a fishery that includes:

- a wild rainbow trout population composed of at least four age classes
- recreational fish catches made up of 80% wild trout / 20% non-game fish
- average wild trout caught >9.7 inches fork length
- availability to recreational anglers of rainbow trout >17 inches in length
- harvestable component of wild trout population of 595 pounds per mile
- wild trout in the recreational catch having a biomass of 62 pounds per acre
- minimum angler catch rates of one trout per hour of effort (including catch and release)

In order to evaluate progress toward this goal over a range of three, 5-year base flow adjustments during the first 15 years of its operating license, PG&E agreed to conduct periodic fish population monitoring in the Cresta and Rock Creek reaches of the North Fork Feather River during the last three years of each 5-year period. The SA specifies that this monitoring will include backpack electrofishing in riffle and glide habitats fashioned after similar studies conducted during the 1980’s by the California Department of Fish and Game (CDFG 1988). The SA stipulates that the fish population monitoring should be conducted during the late summer/fall periods at specified annual intervals (Table 1). A first year effort to provide a baseline measure of fish populations prior to the initial base flow adjustment was completed in 2002 (ECORP 2003).

Table 1. Electrofishing fish population monitoring schedule as specified in the Rock Creek- Cresta Relicensing Settlement Agreement.

Year	Anticipated Calendar Year	RCCSA base flow schedule year ¹	Status
1	2002	First year of first 5-yr flow period	Completed & reported in ECORP 2003
3-5	2004-2006	3 rd -5 th years of first 5-yr flow period	2004 survey completed & reported in Salamunovich 2005; 2005 survey completed & reported in this document; 2006 surveys to be completed over next two years
8-10	2009-2011	3 rd -5 th years of second 5-yr flow period	Future studies
13-15	2014-2016	3 rd -5 th years of third 5-yr flow period	Future studies

1/ The 5-year base flow periods specified in Section II (River Flow Management) of the Rock Creek-Cresta Relicensing Settlement Agreement (see Appendix A of this report).

Thomas R. Payne and Associates was contracted to conduct the shallow-water habitat electrofishing surveys for years three through five (2004-2006; Table 1). The goal of the studies is to characterize the fishery population (e.g., species composition, abundance, biomass, length frequencies, etc.) from selected sample sites in several shallow-water areas of the Cresta and Rock Creek reaches that can be sampled repetitively using backpack electrofishing techniques. The long-term hypothesis being tested, as outlined in the SA, is that programmatic increases in the base flows from the Rock Creek-Cresta Project will result in a corresponding increase in the quantity and quality of the trout population of the North Fork Feather River. The results of the monitoring will also reflect population responses of fish species other than trout to the base flow changes. Summer base flows during the 2002-2004 time periods were above the minimum ‘normal water year’ levels of 180 cfs and 220 cfs for the Rock Creek and Cresta river reaches, respectively. This report provides the results from the second of three consecutive years of backpack electrofishing surveys conducted in association with other concurrent 3-year monitoring efforts (e.g., snorkeling surveys and angler surveys). All of these long-term surveys are designed to help assess the responses of the aquatic community to the base flow changes over the 15-year period.

Study Area/Study Sites

The Rock Creek-Cresta Hydroelectric Project is located on the NFFR in Butte and Plumas Counties. The Project is a vital part of PG&E's NFFR hydropower system, where stored water, mainly from Lake Almanor, produces electricity through a series of nine powerhouses before entering Lake Oroville (Figure 1).

The Rock Creek–Cresta Project consists of the Rock Creek Dam and Powerhouse and the Cresta Dam and Powerhouse. Water (3,300 cfs maximum) is diverted from the Rock Creek Reservoir through the Rock Creek Powerhouse and is discharged into the Cresta Reservoir. The 8.5 mile-long section of the NFFR bypassed by this portion of the project is referred to as the Rock Creek Reach (Figure 2). From Cresta Reservoir, flow (maximum of 3,800 cfs) is diverted through the Cresta Powerhouse and into the Poe Reservoir. The 4.9 mile-long section of the river between Cresta Dam and powerhouse is known as the Cresta Reach of the NFFR (Figure 2).

The Bucks Creek Project (FERC No. 619) discharges water from the Bucks and Grizzly Creek basins into the lower portion of the Rock Creek Reach about one mile upstream of the Rock Creek Powerhouse (Figure 2). Major tributaries to the NFFR in the Project area include Opapee, Milk Ranch, Chambers, Granite, Bucks, Rock, Grizzly, and Bear Ranch creeks.

The Rock Creek-Cresta Project reaches of the North Fork Feather River are considered to be within an ecological transition area between the rainbow trout zone and the pikeminnow-sucker-hardhead zone (Moyle 2002). Moyle et al. (1983) described fish populations in the project area as a mixture of native and introduced species including, rainbow trout (*Oncorhynchus mykiss*), Sacramento sucker (*Catostomus occidentalis*), Sacramento pikeminnow (*Ptychocheilus grandis*), hardhead (*Mylopharodon conocephalus*), riffle sculpin (*Cottus gulosus*), smallmouth bass (*Micropterus dolomieu*), and brown trout (*Salmo trutta*). Prickly sculpin (*Cottus asper*) are known to occur in the

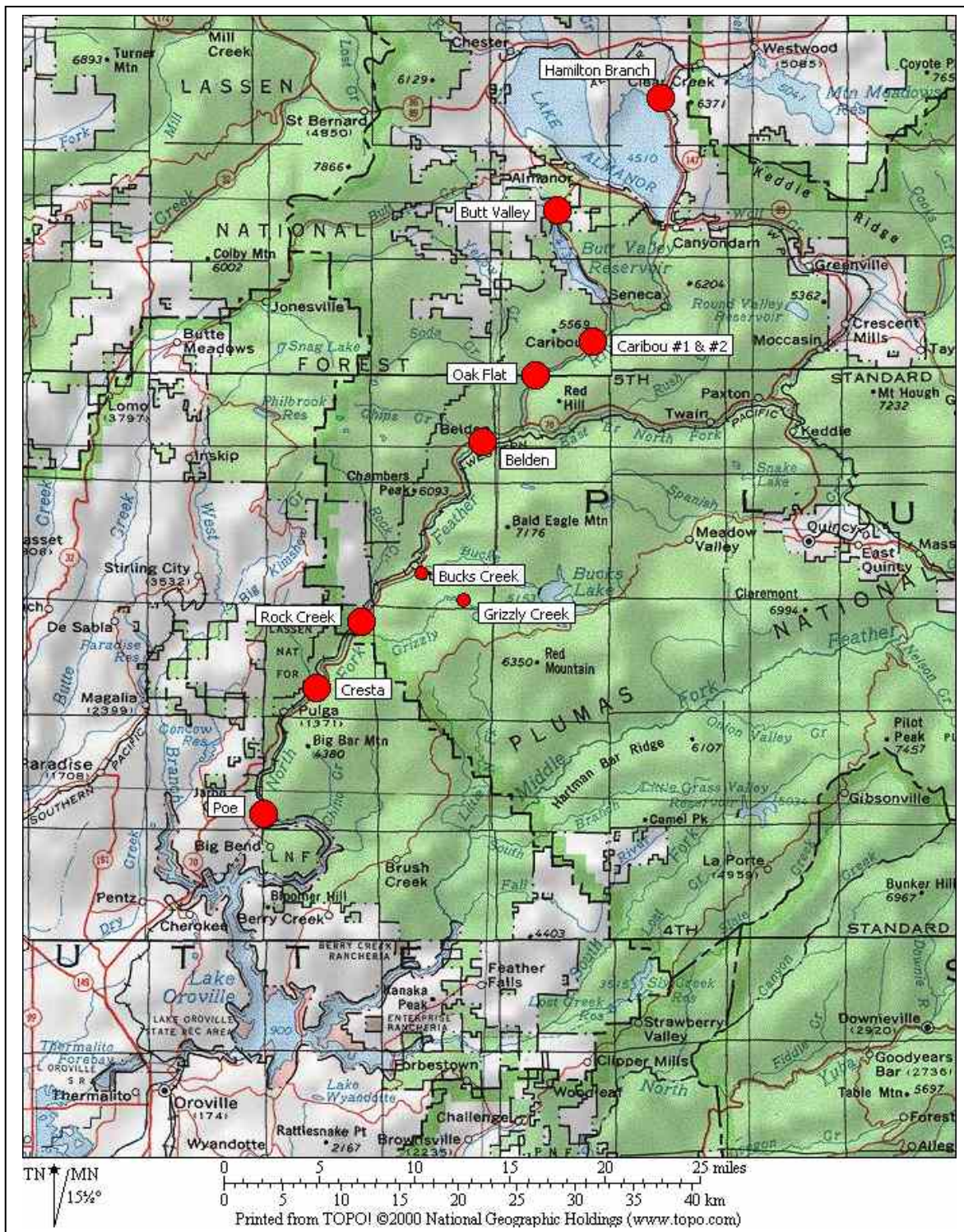


Figure 1. Map showing Pacific Gas and Electric Company's North Fork Feather River hydroelectric facilities including the Rock Creek-Cresta Project (FERC No. 1962)

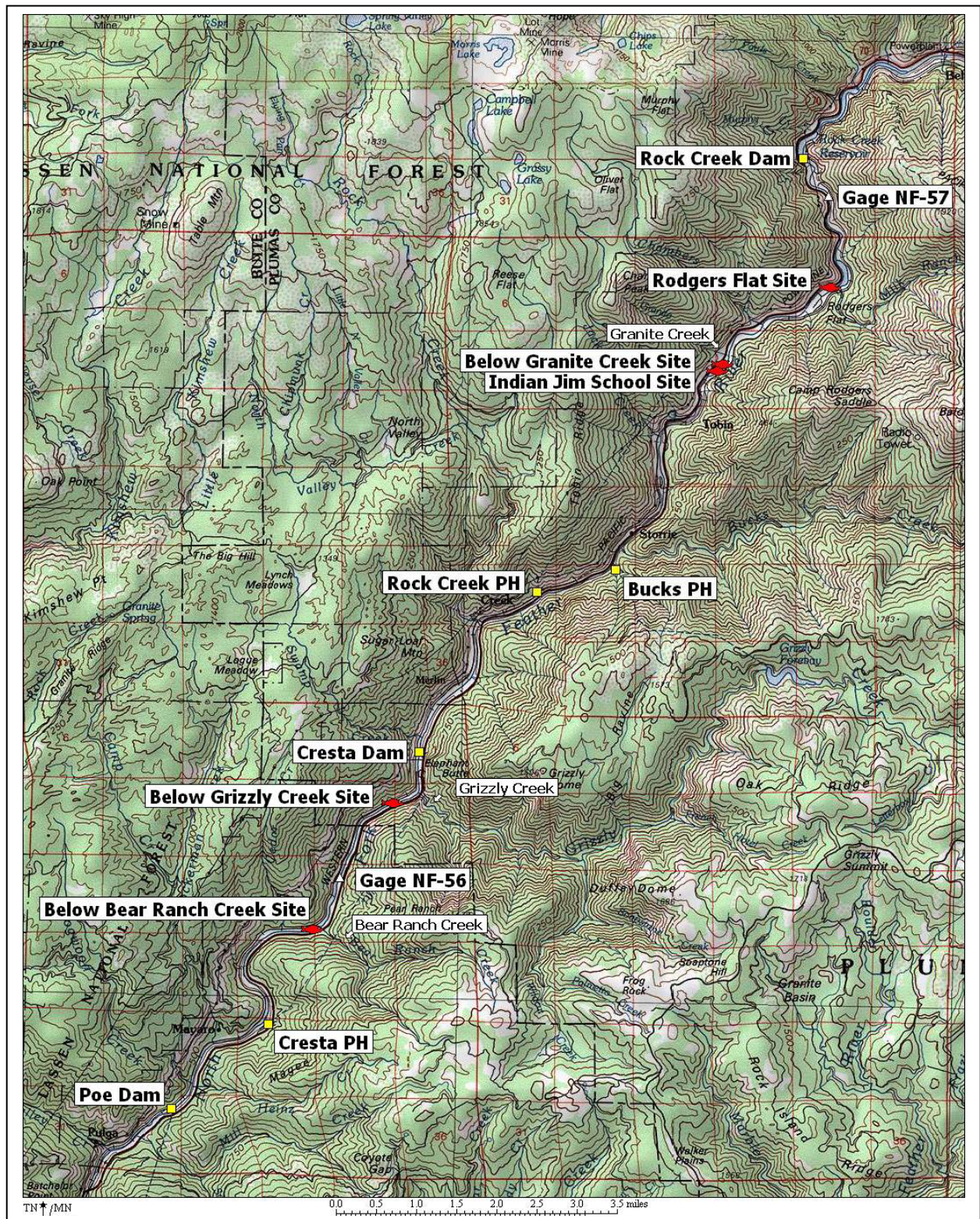


Figure 2. Location of the five shallow-water electrofishing sites (red fish symbols) in the Rock Creek-Cresta Project area of the North Fork Feather River. Location of project facilities shown by yellow squares, stream gage sites shown by white triangles.

project area (ECORP 2003; Salamunovich 2004a). Other species such as Sacramento perch (*Archoplites interruptus*), common carp (*Cyprinus carpio*), and wakasagi (or pond smelt, *Hypomesus nipponensis*) are may also be present on occasion, after periodically washing out of Lake Almanor (Moyle et al. 1983).

Supplementation of the Rock Creek-Cresta trout populations using hatchery strains has been conducted with little regularity and limited success. In 1966-67 and 1977, several plants of hatchery-reared rainbow and brown trout were made into the project area following extensive chemical treatments aimed at reducing the non-game fish populations (Flint 1980; Moyle et al. 1983). Between 1981 and 1986, the California Department of Fish and Game (CDFG) conducted an experimental trout stocking program in the Rock Creek-Cresta reaches; however, the program was discontinued after limited success due to poor habitat and lack of availability of strains resistant to the protozoan parasite, *Ceratomyxa shasta* (CDFG 1988). While CDFG continues to regularly stock hatchery trout in the NFFR upstream of the East Branch confluence (Belden area), the Rock Creek and Cresta reaches are no longer stocked, and the flowing, non-reservoir areas are currently managed as a wild trout fishery under “catch and release” regulations.

The NFFR in the project reaches is a relatively high-gradient river contained in a steep-walled canyon. At the current summer base flows (220 cfs in the Cresta Reach and 180 cfs in the Rock Creek Reach), the river in the project area is composed primarily of relatively long deeper-water habitats such as pools and runs that are separated by shorter shallow-water glide and riffle habitats (Table 2).

Most of the gradient drop occurs over the short stretches of riffle habitat. This predominance of deep-water habitats in the project area limits the amount of wadeable, shallow-water habitats that can be sampled using backpack electrofishing equipment. The study’s goal to sample habitat distances 200-400 feet in length further constrains the availability of suitable sample sites in the project area.

Table 2. Number, lengths in feet (total/mean), and percentage of total distance for various habitat types identified during habitat mapping of the main channel areas of the Cresta and Rock Creek reaches.

Habitat Type	N	Total length	Mean length	% Total Reach
Cresta Reach (Discharge = 275 cfs)				
Low gradient riffle	17	1,781	104.8	7.1
High gradient riffle	27	3,349	124.0	13.4
Run	43	7,420	172.6	29.7
Shallow pool	11	3,859	350.9	15.4
Deep pool (<10ft)	14	8,596	614.0	34.4
Rock Creek Reach (Discharge = 257 cfs)				
Low gradient riffle	26	3,263	125.5	7.3
High gradient riffle	59	7,597	128.8	16.9
Run	67	13,566	202.5	30.2
Shallow pool	26	8,299	319.2	18.5
Deep pool (<10ft)	22	12,166	553.0	27.1

The study plan provided by PG&E specified that, at a minimum, the same four sites be sampled during the 2002-2016 monitoring period. The intent of this site “loyalty” stipulation was to allow comparisons of current fish population levels to “recent” historical levels in the mid 1980’s (CDFG 1988). This prerequisite was complicated by the fact that high flows in February 1986 resulted in altered stream channel (and fish habitat) conditions during the CDFG multi-year studies (CDFG 1988). A second complicating factor was one of the sites monitored in 2002 and repeated in 2004, was in fact, not one of the original CDFG sites (Stuart Moock, pers. comm.). In 1986, CDFG sampled a shallow-water glide-riffle area between the USFS James Lee Campground and Indian Jim School (CDFG 1988). In 2002 and 2004 an area downstream of the CDFG 1986 site and adjacent to Indian Jim School was sampled. Even at reduced flows, this Indian Jim School site barely qualifies as “shallow-water” habitat. This area was characterized as deep run/shallow pool habitat, with depths throughout large areas of the reach exceeding 4.5 feet, which make backpack electrofishing and netting both dangerous and marginally effective. In order to minimize site discrepancies between the historic and the current habitat conditions and to sample a shallow-water area that was more representative of the “historical” site in a safer

and more effective manner, it was decided to sample an additional shallow-water site adjacent downstream of the James Lee Campground (abandoned after 1997 floods) and upstream of Indian Jim School in 2005. This “new” site was dubbed the Granite Creek site by virtue of its location about 0.1 miles downstream of the NFFR/Granite Creek confluence. The intent of adding the site in 2005 was to sample all three Rock Creek sites (Indian Jim School, Granite Creek, and Rodgers Flat) with an eye to discontinuing future efforts at the Indian Jim School Site because sampling safety and effectiveness issues as well as the non-representative nature of this site to either shallow-water habitat or previous historical survey areas.

Following the original PG&E study plan guidelines, the upper and lower boundaries of each study site surveyed during the October 2002 (ECORP 2003) and November 2004 (Salamunovich 2005) were relocated the day prior to the 2005 sampling using photos and Global Positioning System (GPS) coordinates. Stuart Mooock (PG&E Project Coordinator) was involved in the original 1986 CDFG sampling and was present for selecting the Granite Creek site.

The five shallow-water sites sampled during 2005 represented a predominantly run/glide habitat and combination riffle/glide habitat from the Cresta and the Rock Creek reaches (Table 3; Figure 2). The study sites were named for easily recognizable physical or geographic features in the vicinity and generally follow the conventions used in the first year baseline monitoring report (ECORP 2003).

Table 3. Name, project reach location, and predominant shallow-water habitat type for the five shallow-water electrofishing sites sampled during the October 2005 surveys.

Site name	Project Reach	Predominant habitat
Bear Ranch Creek	Cresta	Run
Grizzly Creek	Cresta	Run/riffle
Indian Jim School	Rock Creek	Run
Granite Creek	Rock Creek	Run/riffle
Rodgers Flat	Rock Creek	Pocket water

Methods

Physical Site Data Collection

Habitat dimensions, habitat characteristics, and water quality parameters were measured at all electrofishing sites at the time they were sampled. All data were recorded on standardized data forms (Appendix B).

The length of each site was measured to the nearest foot from the bottom boundary to the top boundary using a hip chain. Stream width to the nearest 0.1 foot was measured at a minimum of eleven locations along the sampling station using a surveyors tape. The average of these measurements was used to determine the mean width at each station, which was used in combination with reach length to estimate a total sample area. Depth measurements (to the nearest 0.05 foot) were made using a survey stadia rod at $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ distance across each of the width cross-sections to estimate the average depth for the entire sample station. The maximum depth within each of the stations was also recorded using the deepest reading made within the particular survey unit. Stream gradient over the length of each site was measured using a hand-level and the stadia rod placed on the stream bottom.

Habitat characteristics within each of the survey stations were also recorded at the time of sampling. The percentages of different habitat types (pool, run, riffle, or pocket water) comprising the station were visually estimated, along with the percentages of various substrate types (fines [$<2\text{mm}$], sand [$2\text{-}7\text{mm}$], gravel [$8\text{-}75\text{mm}$], cobble [$76\text{-}300\text{mm}$], boulder [$>300\text{ mm}$] and bedrock). The percent of the site available as fish cover was also estimated using the same categories reported in ECORP (2003), which included surface turbulence, instream object cover, undercut bank, and overhanging vegetation within 48" of the water surface. The surface area of suitable trout spawning gravels in the study site was also estimated.

Water temperature was recorded at the time the stations were sampled. Other water quality parameters were also measured, including conductivity ($\mu\text{S}/\text{cm}$), specific conductivity (temperature standardized conductivity), salinity (ppt), and dissolved oxygen concentrations (mg/L), and percent saturation. The water quality parameters were measured using recently-calibrated Yellow Spring Instruments[®] handheld meters (Models 30 and 550).

To aid in relocating stations during future efforts, the top and bottom boundaries along each bank were denoted using high-visibility surveyors flagging. The flagging was hung near the water's edge as well as further up the bank. In addition, orange plastic squares with flagging were attached to trees well up the bank at the top and bottom boundaries of each site. In addition, sites were photographed from multiple vantage points, and the latitude and longitude of the top and bottom boundaries were determined using a handheld GPS receiver.

Electrofishing

Estimation of the abundance and population characteristics of resident fish in the shallow water areas of the Cresta and Rock Creek reaches of the North Fork Feather River was conducted using multiple-pass removal-depletion by backpack electrofishing.

Prior to sampling, stream flows from Cresta and Rock Creek dams were reduced to levels judged to provide safe wading conditions at the sample sites. The study sites were isolated with 1/2-inch (1.27 mm) mesh block nets to prevent immigration or emigration of fish during sampling. Five to six shocking teams (i.e., one shocker and one netter) moved upstream in concert across a unified front during each sampling pass. The shockers used portable backpack electrofishers to stun fish, which were captured by the netters using either 1/8-inch or 1/4-inch mesh dip nets. All captured fish were removed to one of several available 5-gallon live buckets that were towed on small plastic tote-barges by additional netters. All live buckets were filled with river water and equipped with a small bait bucket

aerator. Fish in the live buckets were periodically transferred to a 1/8-inch mesh netted live box located in the river outside of the study site and away from the electric field.

The battery-powered backpack electrofishers used during these surveys included Smith-Root® Models Type VII, 11A, 12A, 12B, and LR-24. A gas-powered Model 15-B backpack electrofisher was also used at the Grizzly Creek and Granite Creek sites. A minimum of three passes of equal effort were made by the electrofishing teams within each reach. Teams maintained their same position across the stream channel for each pass. The target for the three-pass data was to provide a population estimate for rainbow trout with a standard error that was ten percent (or less) of that estimate. After the third pass, the trout capture data was used to generate the population statistics on a laptop computer using MicroFish 3.0 (Van Deventer and Platts 1989). If the population estimate and standard error criterion was met, no additional passes were made. If it was not, another pass was made and the new estimate and standard error were evaluated.

Following each pass, captured fish were identified, measured and weighed. Prior to handling, fish were anesthetized in a weak CO₂ solution using commercially available effervescent pain-relief tablets (two tablets: 3/4 gallons of clean river water). All fish were measured to the nearest millimeter fork length (FL) [or total length (TL) for sculpin species] and weighed on an electronic scale. Fish smaller than 200 mm in length were typically weighed to the nearest 0.1 gram; larger fish were weighed to the nearest gram. Fish measurement data and notes were recorded on standardized data sheets (Appendix C).

During processing, fish were inspected for any distinguishing marks (fin clips) or features (e.g. hook scars, deformed fins, tumors; fungus, etc.), which were duly noted on the data sheets. All mortalities were also noted on the data sheets.

The Rodgers Flat site contained a side channel area that was electrofished separately, following each pass in the main channel. All effort, catches, and habitat data were recorded separately for the side channel and main channel areas.

Scale samples were taken from most captured trout for use in future age and growth determinations. In November 2004 scales were removed from the right side between the dorsal fin and lateral line as specified in DeVries and Frie (1996). To minimize the potential for collecting regenerated scales from repeat captures, scale samples were collected from the left side of captured trout during the October 2005 survey. The scale samples were stored in labeled scale envelopes. Trout from which scale samples were taken were also noted on the data sheets to allow for cross referencing length/weight data in the event of potential omissions or confusion from the notes on the scale envelopes.

After processing fish, were placed in an aerated bucket of cool river water and allowed to recover. Fish in the recovery bucket were regularly transferred to a 1/8-inch mesh netted live box located in the river outside the study site. All fish were held in live boxes until fully recovered from the shocking and handling. After the completion of the survey, all fish were distributed back to size-appropriate habitat areas of the study site.

The length data was used to generate site-specific length-frequency histograms for each species. These plots show the size structure of the population, which tends to be related to the age structure of the specific population.

The multiple-pass capture data were used to generate a population estimate and 95 percent confidence interval for each species using the maximum-likelihood estimator from the microcomputer software program MicroFish 3.0 (Van Deventer and Platts 1989).

MicroFish 3.0 cannot provide a population estimate if only a single fish is captured from all passes combined, or if all the fish are captured on the first pass. In these rare cases, the Zippin estimator from the software program CAPTURE (White et al. 1978) was used to calculate the population estimate and associated error. Both software programs generate probability-of-capture estimates based upon capture patterns. The capture probability estimate, which varies between zero and one, is a measure of sampling efficiency, with values greater than 0.40 being generally indicative of effective sampling (White et al. 1982).

Fulton's Condition Factor (K) was calculated for rainbow trout using the formula of Baggenal and Tesch (1978). The condition factor compares the length and weight relationship of individual fish to assess their physical condition (Everhart et al. 1975). Higher condition factors indicate heavier fish for a given length. A value of 1.0 is generally considered normal for a healthy population of trout.

The population estimate data was used to generate abundance and biomass estimates. The abundance estimates were standardized to common indices (fish/mile and fish/acre) to facilitate comparisons between unequal length/area sites within and between years. Biomass estimates for each species at each station were calculated as the product of the estimated fish population and the mean weight of that species captured during electrofishing divided by the surface area of the river at sampled at that site. Biomass estimates were also calculated using several indices (e.g. kilograms/hectare, pounds/acre) to facilitate comparison with earlier surveys.

Results

The electrofishing surveys of the Cresta and Rock Creek reaches of the NFFR were conducted from October 4-8, 2005. Detailed plots of the stream flows in the Cresta Reach (Gage NF-56) and Rock Creek Reach (Gage NF-57) during the 2005 electrofishing surveys

are presented in Figure 3. The mean daily discharge recorded at Cresta Reach stream gage during the shallow-water electrofishing was stable at 72 cfs. Immediately following the completion of the Cresta Reach electrofishing surveys, stream flows below Cresta Dam were raised back to levels above the minimum flow of 220cfs.

During the late-afternoon of October 5, the releases from Rock Creek Dam were reduced to accommodate the electrofishing surveys in the Rock Creek Reach on October 6-8 (Figure 3). The stream flow during the Rock Creek sampling was very stable and averaged 63 cfs during our surveys at the Indian Jim School, Granite Creek, and Rodgers Flat sites.

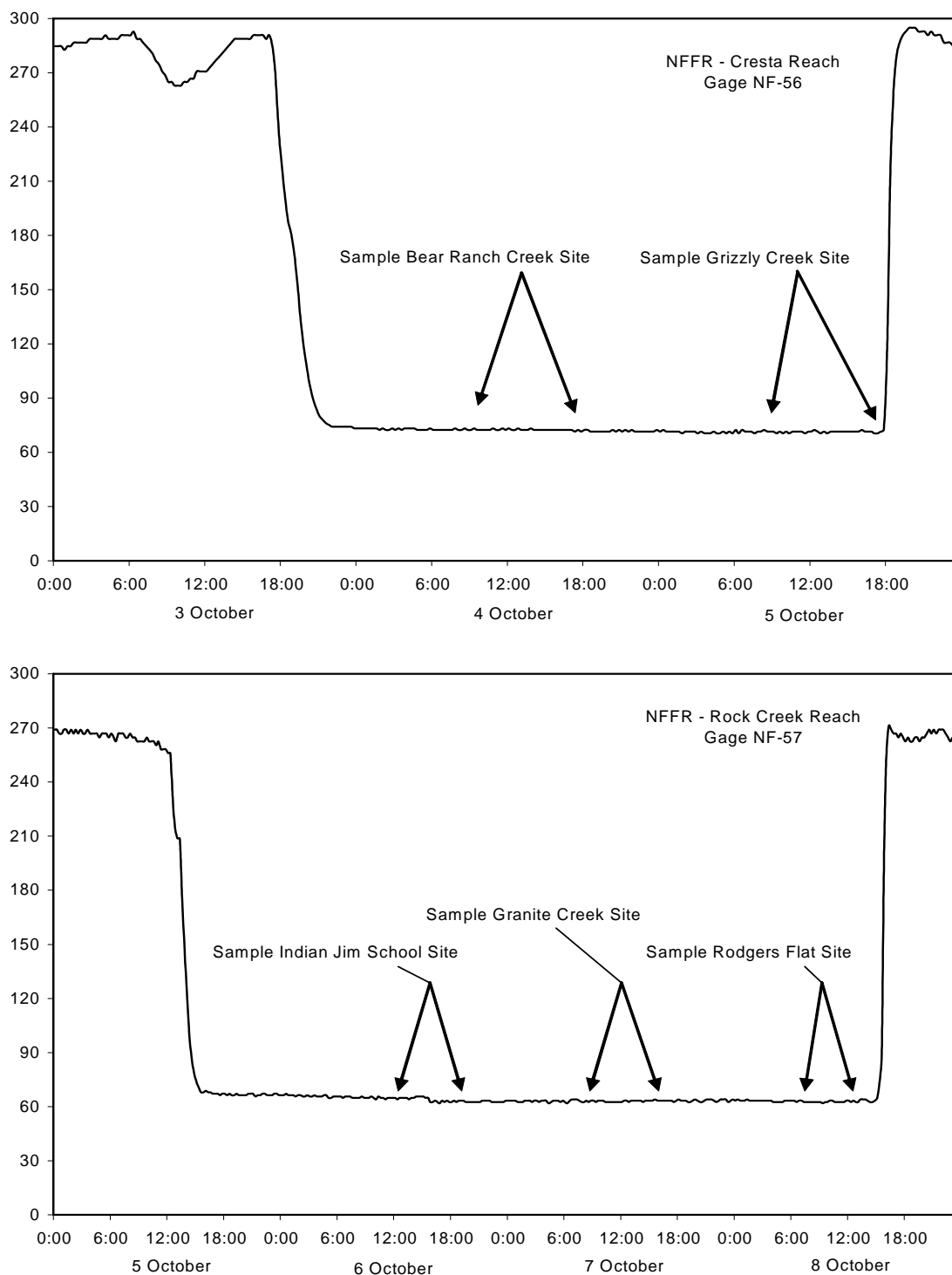


Figure 3. Stream flow records for the Cresta (top) and Rock Creek (bottom) study reaches during the October 2005 backpack electrofishing surveys. Data provided by PG&E.

Immediately following the electrofishing surveys, the flows from Rock Creek Dam were raised back to levels above the minimum flow level of 180 cfs.

Physical Site Data Collection

The habitat and water quality measurements were conducted at each site following the first electrofishing pass while the remaining crews were processing the captured fish. Copies of the actual data sheets are contained in Appendix B. A summary of the habitat measurements and variables are presented in Table 4.

By the time of early October sampling, water temperatures were relatively cool ($<60^{\circ}\text{F}$), while dissolved oxygen concentrations were relatively high ($>9.0\text{ mg/L}$) at most of the study sites (Table 3). This combination of moderate water temperature and high dissolved oxygen levels likely contributed to the low electrofishing/handling mortality noted during our 2005 surveys (0.4 percent for trout; 2.0 percent overall). Water conductivity was relatively low at all the sites, especially in the Cresta Reach where it was less than $80\mu\text{S/cm}$.

Bear Ranch Creek Site

The top of this 374-foot long site was located in the Cresta Reach about 211 feet downstream of the mouth of Bear Ranch Creek (Figure 2). During our survey, this site encompassed 0.62 acres (0.25 hectares) and was predominantly run habitat (Table 4; Appendix B). The site had a relatively low gradient (0.5 percent) and the substrate was dominated by boulder and cobble. Instream object cover was identified as the dominant cover type. No suitable deposits of trout spawning gravels were noted in the low flow channel at this site during our survey.

Table 4. Summary of habitat and water quality measurements during the October 2005 Rock Creek-Cresta electrofishing surveys.

Site	Date	Length (ft)	Mean Width (ft)	Area (ft ²)	Mean Depth (ft)	Max Depth (ft)	Gradient (%)	Water Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat.)
Bear Ranch Creek	4 Oct	374	72.2	26,999.4	1.9	5.9	0.5	13.0	71.2	6.8	65.0
Grizzly Creek	5 Oct	303	91.3	27,669.4	1.1	3.3	1.3	12.6	75.3	9.9	93.4
Indian Jim School	6 Oct	308	56.4	17,368.4	2.5	6.3	0.8	13.4	91.8	9.8	94.2
Granite Creek	7 Oct	352	84.9	29,894.4	1.2	4.2	1.1	13.0	92.5	9.5	90.8
Rodgers Flat											
Main channel	8 Oct	231	70.2	16,218.3	1.8	3.9	0.6	15.3	104.0	9.8	98.4
Side channel	8 Oct	136	16.9	2,297.2	0.6	1.8	no data	no data	no data	no data	no data

Grizzly Creek Site

This 303-foot long site was located in the Cresta Reach about 0.5 miles downstream of the mouth of Grizzly Creek (Figure 2). This study site was the widest and shallowest of the five electrofishing sites (Table 4). During our survey, this site encompassed 0.64 acres (0.26 hectares) and was classified as primarily a mixture of run and riffle habitats with some pocket water (Appendix B). The substrate in this relatively low gradient site (1.25 percent) was dominated by boulder and cobble. Instream object cover was identified as the dominant cover type. Relatively little trout spawning material, approximately 209 ft² or <0.8 percent of the total surface area, was noted in the low flow channel at this site during our survey.

Indian Jim School Site

This 308-foot long Rock Creek Reach site was located adjacent to the now-abandoned Indian Jim Elementary School (Figure 2). The top of this site is located 892 feet downstream of the mouth of Granite Creek. During our survey, this site encompassed 0.40 acres (0.16 hectares) and was predominantly deep run habitat (Appendix B). This low gradient site (<1 percent) was the deepest and narrowest of the five sites sampled during 2005 (Table 4). Large portions of this reach had depths exceeding 4 feet, and the maximum depth was over 6 feet. The substrate at the school site was dominated by boulder and cobble, while instream object cover was identified as the primary cover type. No significant patches of trout spawning gravel were noted in the low flow channel at this site during our survey.

Granite Creek Site

This 352-foot long site was located in the Rock Creek Reach immediately upstream of the Indian Jim School Site, and in fact shared a common boundary. The upstream boundary of the Granite Creek site was 536 feet downstream of the mouth of Granite Creek (Figure 2). This study site was relatively wide and shallow and it possessed a split channel along about half its length (Table 4). During our survey, this site encompassed 0.69 acres (0.28

hectares) and was classified as primarily a mixture of run and riffle habitats with some pocket water (Appendix B). The substrate in this relatively low gradient site (1.14 percent) was dominated by boulder and cobble. Instream object cover was identified as the dominant cover type. A negligible amount of trout spawning material (approximately 3 ft²) was identified in the low flow channel at this site during our survey. This site was added to the 2005 survey since it more closely approximated the historical CDFG sample site and possessed more shallow-water habitat characteristics compared to the Indian Jim School site just downstream.

Rodgers Flat Site

This 231-foot long site was located in the Rock Creek Reach near Rodgers Flat (Figure 2). The top block net was about 370 feet downstream of the mouth of Milk Ranch Creek. The site contained 136 feet of side channel habitat that was sampled separately from the main channel. The side channel was located at the bottom end of a substantial north bank side channel that entered the main channel 105 feet upstream of the bottom block net and extended beyond the upstream portion of the study site.

During our survey, the main channel area encompassed 0.37 acres (0.15 hectares) and was classified primarily as pocket water habitat (Table 4; Appendix B). The side channel area was 0.05 acres (0.02 hectares) and was primarily shallow pool habitat. The main channel was relatively low gradient (0.6 percent). The streambed of both the main and side channel areas was almost exclusively made up of large boulder elements. These large boulders provided the dominant fish cover in the main channel, while overhanging vegetation was the dominant fish cover in the narrow side channel area. Very little trout spawning material, approximately, 31 ft² in the main channel and 25 ft² in the side channel, was identified in the low flow channel at this site during our survey.

Electrofishing

The October 2005 survey collected a total of 2,259 fish from seven species (Table 5). Sacramento sucker were the most abundant species captured at three of the five sample sites and accounted for 34.2 percent of the overall total catch. Riffle sculpin was the second most abundant species in the total catch (27.7 percent), and numerically dominated the fish captures at the Granite Creek and Rodgers Flat sites. Rainbow trout were relatively abundant both the Grizzly and Granite creek sites and was tied with hardhead as the third most abundant species in the overall catch data. Sacramento pikeminnow (8.3 percent) and smallmouth bass (4.7 percent) were relatively minor components of the overall catch. Prickly sculpin was the least abundant species at most sites and contributed only 2.0 percent of the overall catch. Copies of the actual data sheets are contained in Appendix C.

Table 5. Fish species collected at the five Rock Creek-Cresta Project electrofishing sample sites, October 2005.

Fish Species	Bear Ranch Cr.	Grizzly Cr.	Ind. Jim School	Granite Cr.	Rodgers Flat		Total Fish
					Main Ch.	Side Ch.	
Rainbow trout	38	72	25	86	34	6	261
Hardhead	0	104	78	71	4	4	261
Sacramento pikeminnow	2	82	27	71	2	3	187
Sacramento sucker	155	318	242	51	6	0	772
Smallmouth bass	89	9	4	0	4	1	107
Riffle sculpin	104	184	56	228	49	4	625
Prickly sculpin	2	10	8	21	4	1	46
Site Total	390	779	440	528	103	19	2,259

Scales were collected from 256 rainbow trout ranging in size from 55 to 396 mm FL during the 2005 survey. None of the scale samples were examined for this report, since scale analysis and age/growth determination were not included in the original scope of work. Previous work has suggested that mean length of rainbow trout at annulus II formation was significantly greater for years with higher minimum flows in the Rock Creek and Cresta reaches (CDFG 1988). Comparison of the age-length data from the 2005 surveys with past and future data may be helpful in determining potential benefits of raising the base flows in

the project area. The 2005 scale samples are archived and may be made available for future age/growth studies.

Length-frequency analysis for rainbow trout captured at the various sites shows that smaller size classes dominated the two Cresta Reach sites compared to the three Rock Creek sites, where larger sized fish tended to constitute a larger percentage of the total trout catch (Figure 4).

Pending a decision on repeating age-length analysis using the October 2005 scales, we must rely on the 2002 age-length data (Table 6) to assign the 2005 data to various age class categories. Since the 2002 age categories are discontinuous (e.g., what age class would a 150 mm FL fish at Bear Creek be as it falls outside both the reported 1+ and 2+ data?), we constructed a composite and continuous age-length relationship from the 2002 data (i.e., the “composite” column in the Table 6). It is a composite because it combines data from all four sites and it is continuous since it extends the discontinuous size categories into continuous, non-over-lapping categories.

Table 6. Age-length data for rainbow trout captured at the four Rock Creek-Cresta electro-fishing sites sampled in October 2002 (ECORP 2003) and TRPA composite.

Age Class	Size range in millimeters				
	<u>Bear Creek</u>	<u>Grizzly Creek</u>	<u>Indian Jim</u>	<u>Rodgers Flat</u>	<u>Composite</u>
0+	64-91	66-91	84-92	60	<95
1+	97-129	93-146	160	94-123	95-160
2+	202-312	167-258	220-248	162-290	161-299
3+	318-355	300-353	291-353	326-364	300-360
4+	361-385	383			>360

The composite age-length relationship from Table 6 was used to estimate the age distribution for rainbow trout captured during the October 2005 electrofishing survey (Table 7).

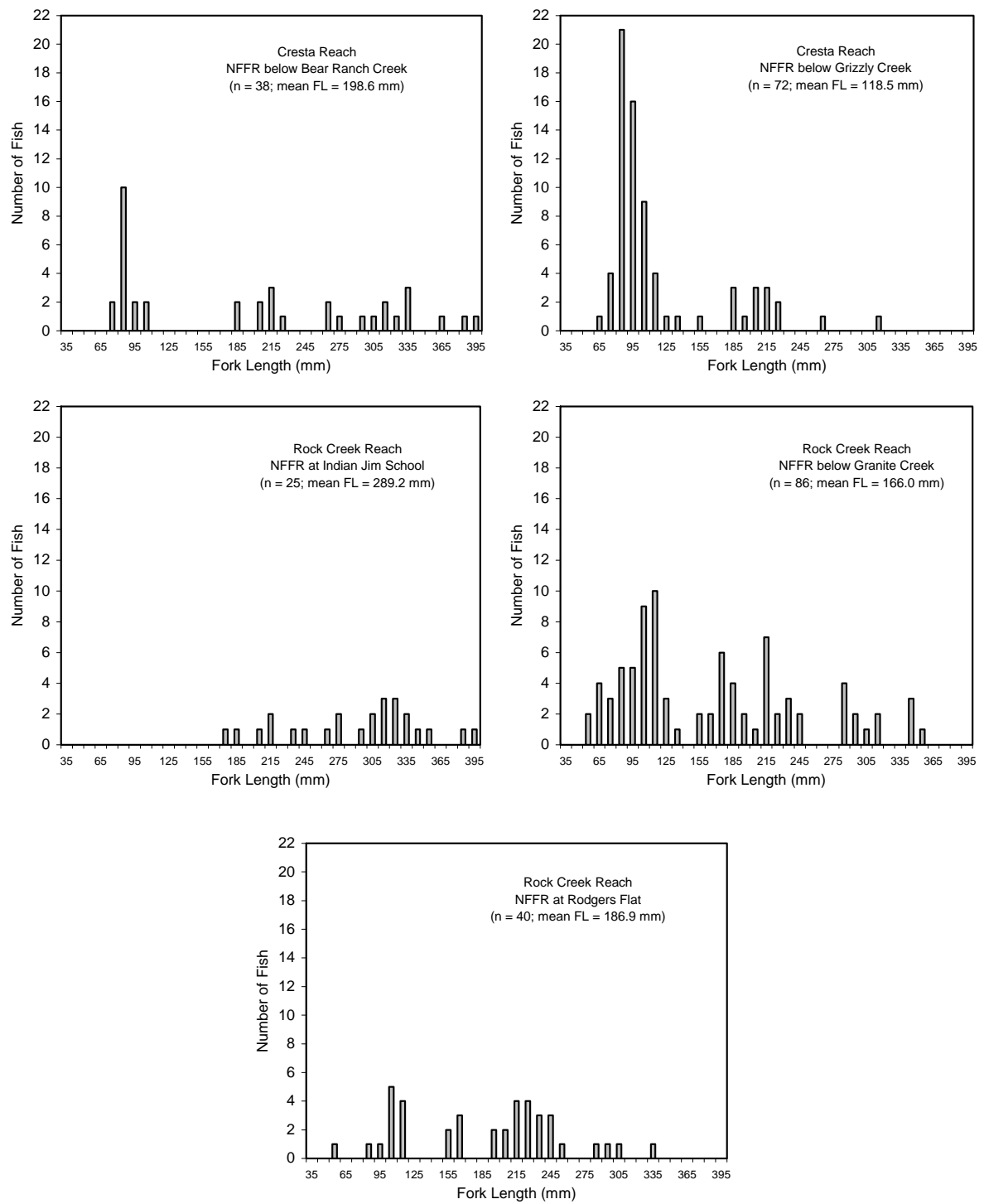


Figure 4. Length-frequency data for rainbow trout captured during the October 2005 Rock Creek-Cresta electrofishing survey.

Table 7. Estimated rainbow trout age class distributions at the five Rock Creek-Cresta sites surveyed in October 2005 based upon the TRPA composite age-length data derived from the 2002 age-length analysis from ECORP (2003).

Age Class	Number of rainbow trout					
	Bear Creek	Grizzly Creek	Indian Jim	Granite Creek	Rodgers Flat	Total
0+	13	34	0	16	2	65
1+	3	24	0	28	13	68
2+	12	13	11	35	23	94
3+	7	1	12	7	2	29
4+	3	0	2	0	0	5

Examination of the estimated age class distribution suggested that the normal and expected pattern of young-of-the-year (0+) fish dominating the trout populations was only exhibited at the Grizzly Creek Site in the Cresta Reach (Table 7). At the remaining four sites, age 2+ fish (2003 cohort) tended to dominate the rainbow trout populations. At the Indian Jim School Site, the 2+ and 3+ age classes (2003 and 2002 cohorts) composed the largest fraction of the trout population, with no younger trout represented among the capture data.

Two adipose-clipped rainbow trout were captured during the October 2005 survey. Both marked trout were captured at the Granite Creek site and their sizes (fork lengths: 176 mm and 217 mm) suggested they were both age-2+ trout from 2003 cohort (Table 6). These two marked trout were most likely marked as part of a downstream migrant monitoring program conducted each spring and summer since 2003 (Kossow 2004). Over the past three years this program has marked and released over 440 trout (2003&2004 only) captured in downstream migrant traps from Opapee, Granite, Milk Ranch, and Chambers creeks in the Rock Creek Reach of the NFFR since 2003. Unfortunately the marking program has employed a single adipose clip for multiple age classes of trout released from all the tributary traps each year, making it impossible know either which tributary these trout may have migrated from or how long they may have been residing in the mainstem NFFR.

Inspection of the condition factor-frequencies indicate that the trout populations at all the sites are in good condition (Figure 5). The average condition factors for trout from the five study sites were all above 1.0, with only 2.7 percent of the calculated condition values less than this threshold.

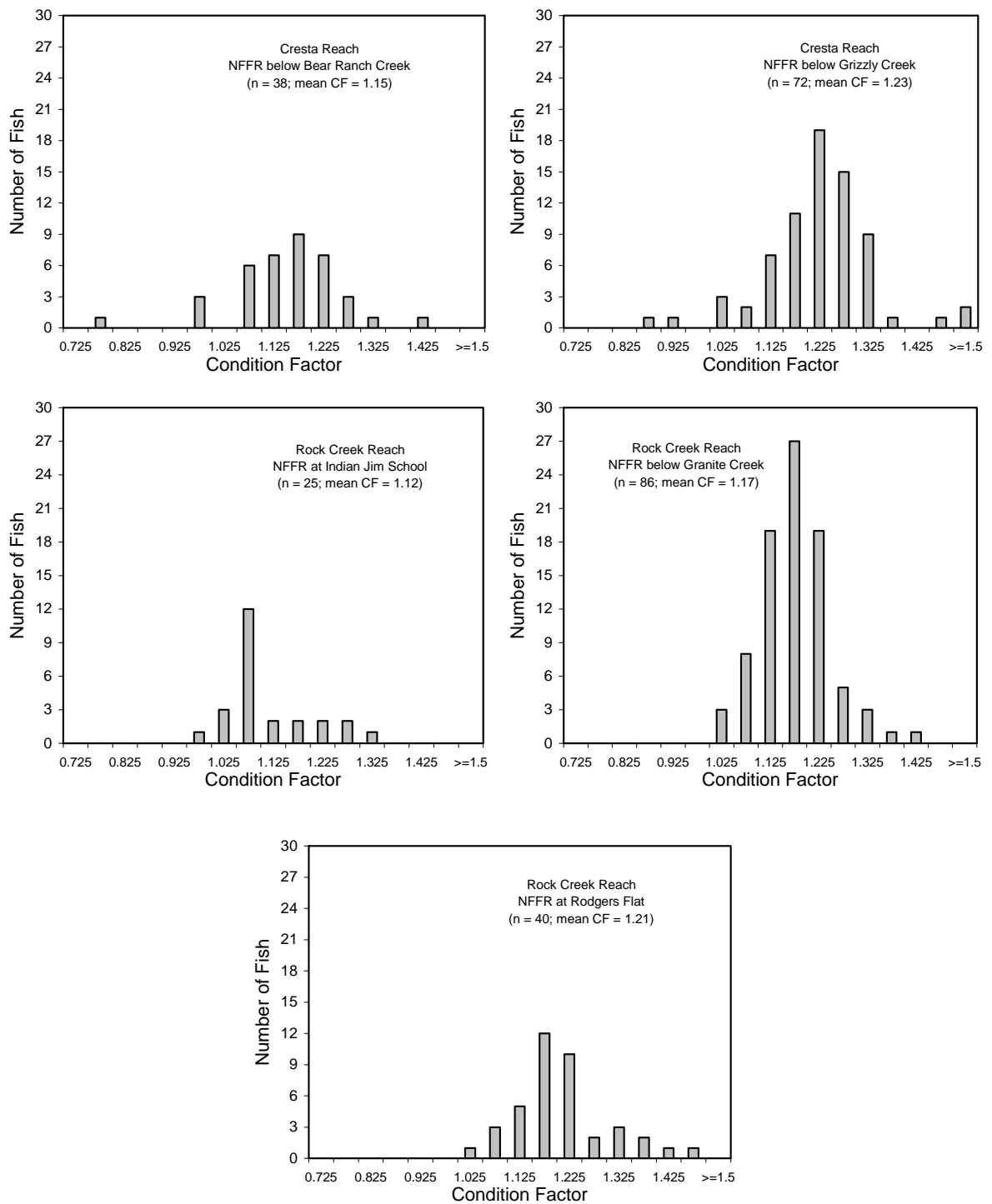


Figure 5. Condition factor-frequency data for rainbow trout captured during the October 2005 Rock Creek-Cresta electrofishing survey.

Length-frequencies for hardhead captured at the various sites indicate that while hardhead were present at four of the five sample sites, the larger-sized juveniles (probably 1-2 year old fish) were present only at the Rock Creek sites (Figure 6). Hardhead abundance was greatest at the Grizzly Creek Site, but all the minnows appeared to be young-of-the-year fish. The Indian Jim School site exhibited the widest size range for hardhead. No adult-sized hardhead (≥ 300 mm) were captured at any of the shallow-water sites sampled. Adult hardhead have been reported to prefer the deeper pool areas of streams (Moyle 2002). Large adult hardhead were observed at the Indian Jim site during snorkel surveys conducted in September 2005 (unpublished data); however, none were captured at the site several weeks later during the October electrofishing survey. The larger adult hardhead probably migrated to deeper habitat areas in response to declining seasonal water temperatures or perhaps in response to the stream flow reductions associated with our electrofishing surveys.

Sacramento pikeminnow were present at all five survey sites (Table 5). Inspection of pikeminnow length-frequency distribution by site show that only young-of-the-year fish were captured at the Cresta sample sites, while fry, juvenile, and adult sized pikeminnow were captured at the Rock Creek sites (Figure 7)

Sacramento sucker were captured at all five sample sites (Table 5). Suckers dominated the catches at both Cresta Reach sites, where they were mostly young-of-the-year fish that were residing along the shallow margins and backwater areas (Figure 8). Suckers were the most abundant species captured at the Indian Jim School site in the Rock Creek Reach, where a wide range of size classes were present. The sucker population at this site was dominated by adult fish in the 360 to 450 mm FL size range, which Moyle (2002) suggested were 7 to 10 year-old fish.

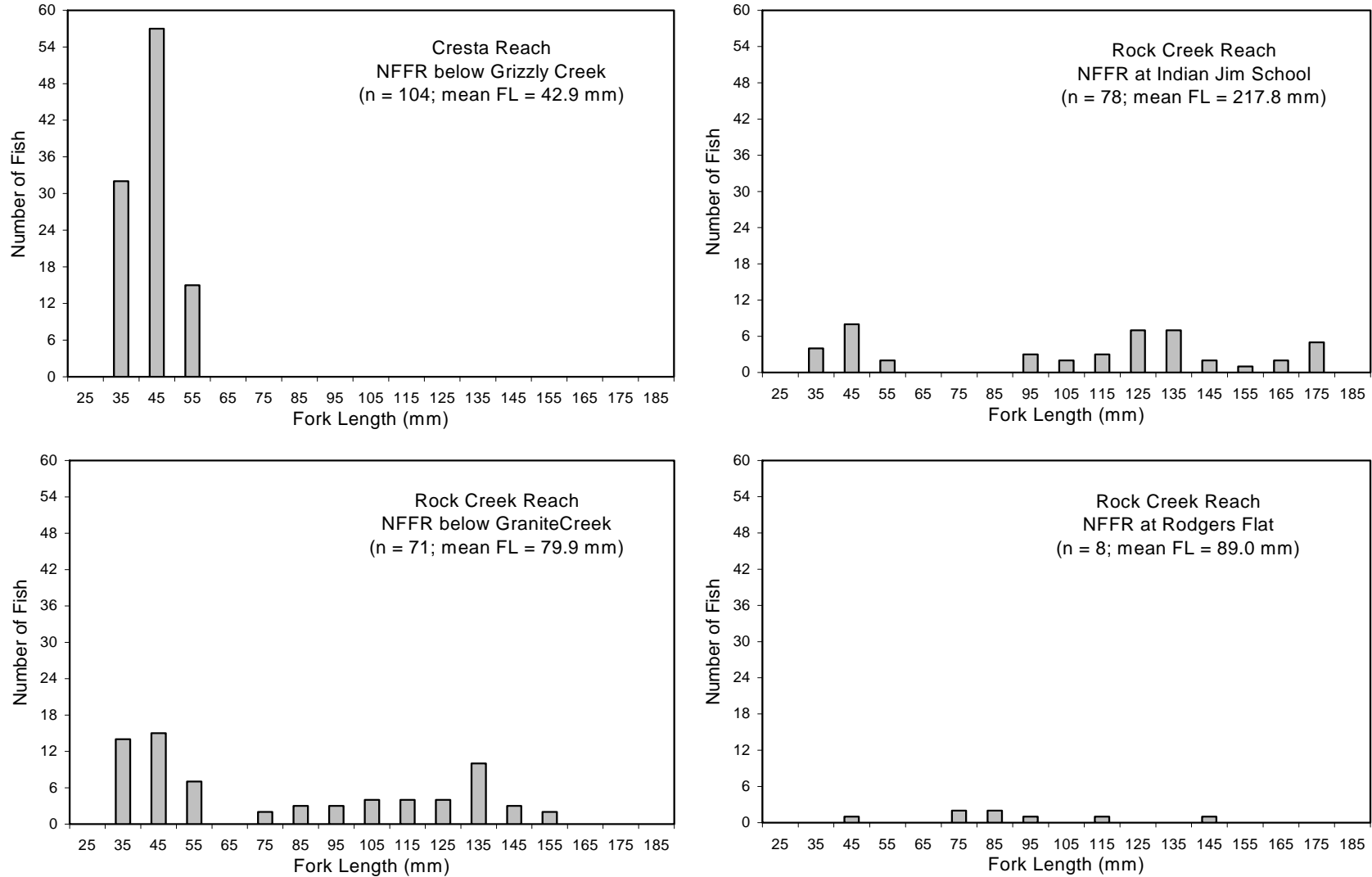


Figure 6. Length-frequency data for hardhead captured during the October 2005 Rock Creek-Cresta electrofishing survey.

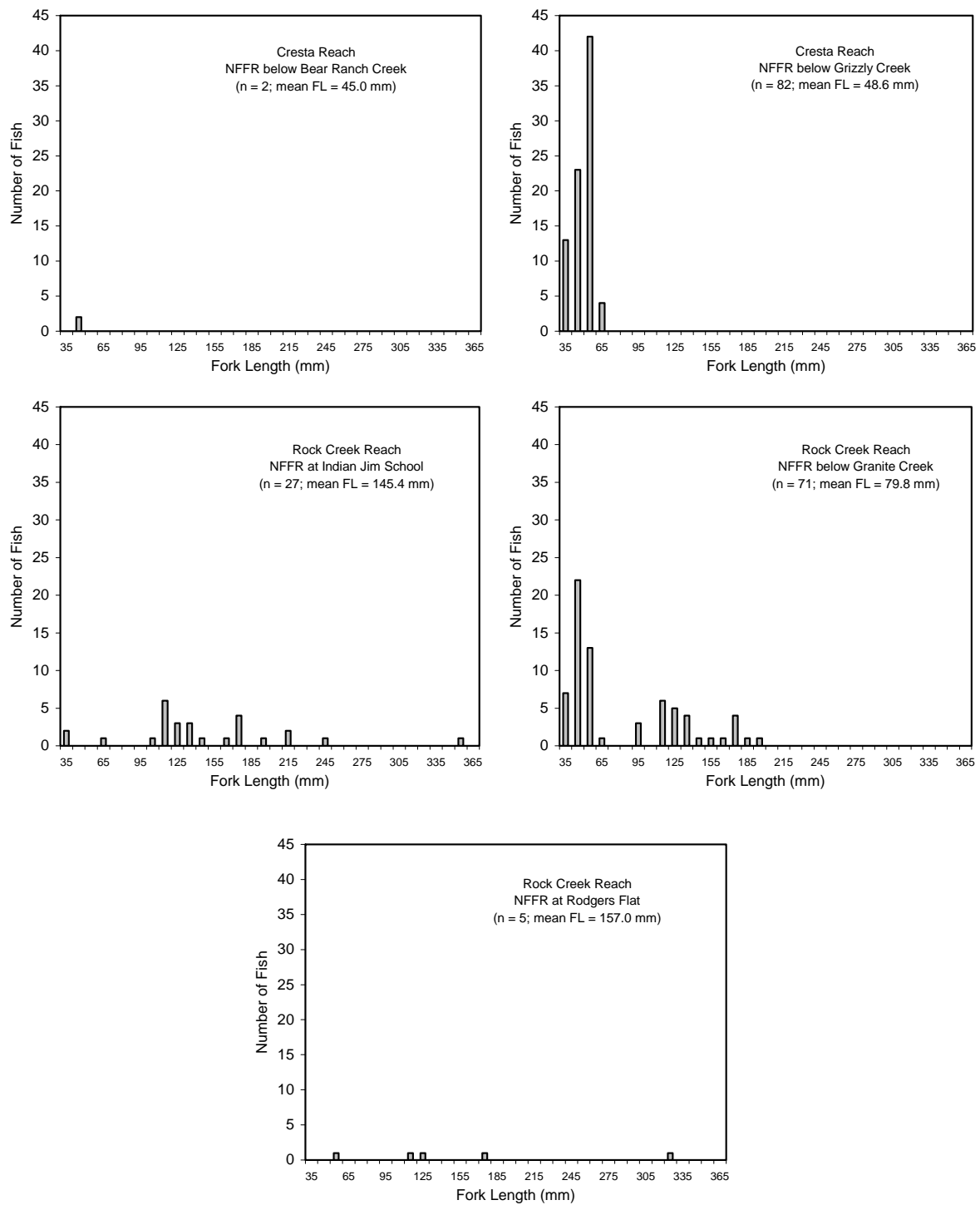


Figure 7. Length-frequency data for Sacramento pikeminnow captured during the October 2005 Rock Creek-Cresta electrofishing survey.

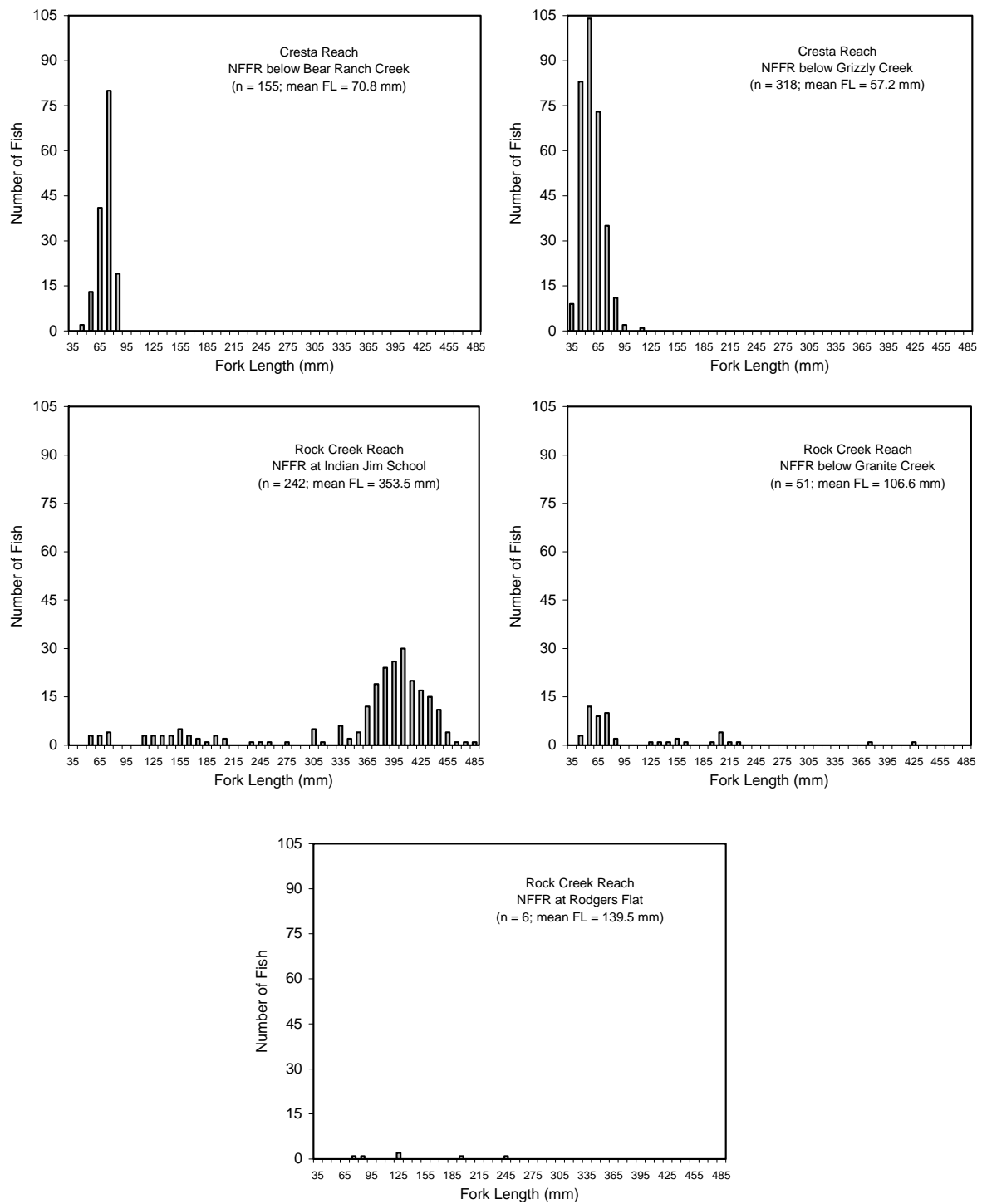


Figure 8. Length-frequency data for Sacramento sucker captured during the October 2005 Rock Creek-Cresta electrofishing survey.

Smallmouth bass were present at both of the Cresta Reach sites and two of the three Rock Creek sites (Table 5). No smallmouth bass were among the fish captured at the Granite Creek Site. Two size classes, representing young-of-the-year and juvenile bass were captured at the Bear Ranch Creek site in the Cresta Reach (Figure 9). Only young-of-the-year sized fish were captured at the remaining three sites.

Riffle sculpin were present at all five of the electrofishing sites (Table 5). This small benthic fish was the most abundant species captured at the Granite Creek and Rodgers Flat sites in the Rock Creek Reach, and was the second most abundant species at the Bear Ranch Creek and Grizzly Creek sites in the Cresta Reach. The length-frequency data for this species suggest that 2-3 size classes (and presumably age classes) of fish are present at all the sites (Figure 10). Fish in the 80-99 mm size range clearly dominated the sculpin populations at all five survey sites. This dominant size class appears to be juvenile fish from the 2004 cohort, which dominated the populations last year as young-of-the-year (Salamunovich 2005).

Prickly sculpin, while present all sample sites, were only a minor component of the fish populations (Table 5). Two distinct size and age classes were present at three of the electrofishing sites (Figure 11).

The MicroFish 3.0 (or CAPTURE) output, including the population estimates and associated statistics for each species at each site can be found in Appendix D. The model output is summarized below in Table 8.

The population estimates and their associated confidence intervals appear to be reasonably good for most species at most sites, especially for rainbow trout. Our sampling goal of obtaining a standard error of the population estimate for rainbow trout that was ≤ 10 percent of the population estimate after three electrofishing passes was met at three of the five sites (Appendix D). A fourth pass was required at the Rodgers Flat site (main channel area only) to meet this threshold for rainbow trout (Table 8).

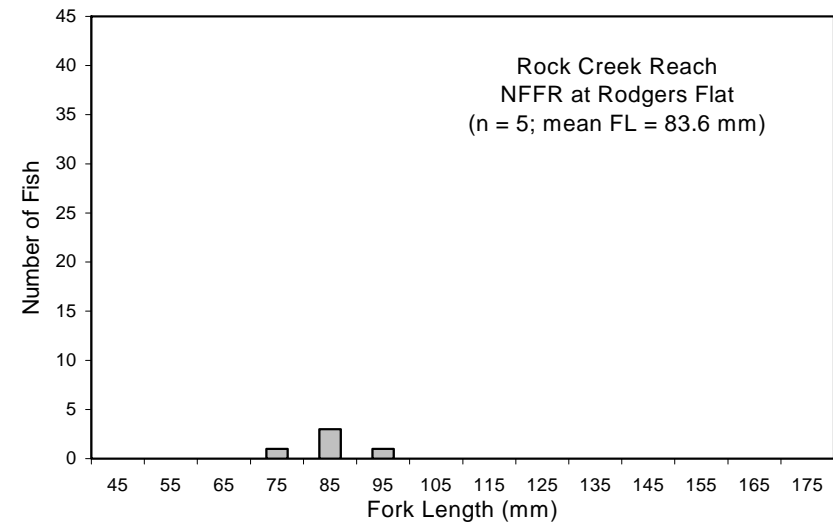
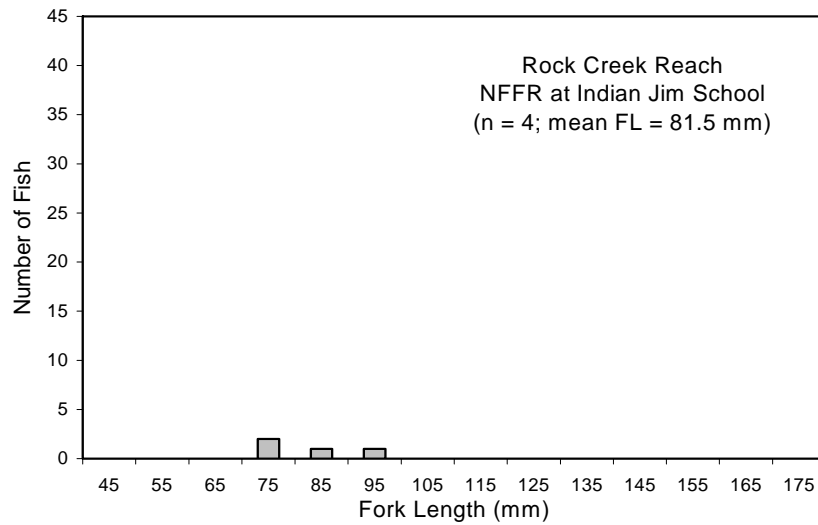
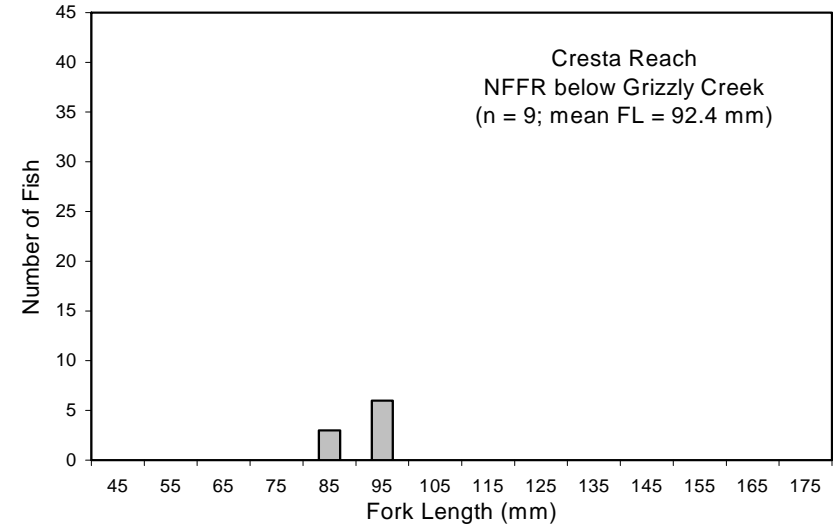
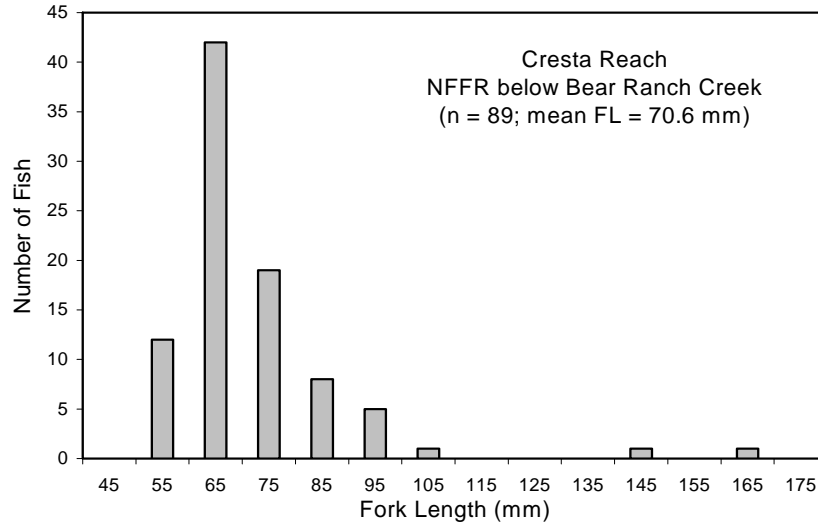


Figure 9. Length-frequency data for smallmouth bass captured during the October 2005 Rock Creek-Cresta electrofishing survey.

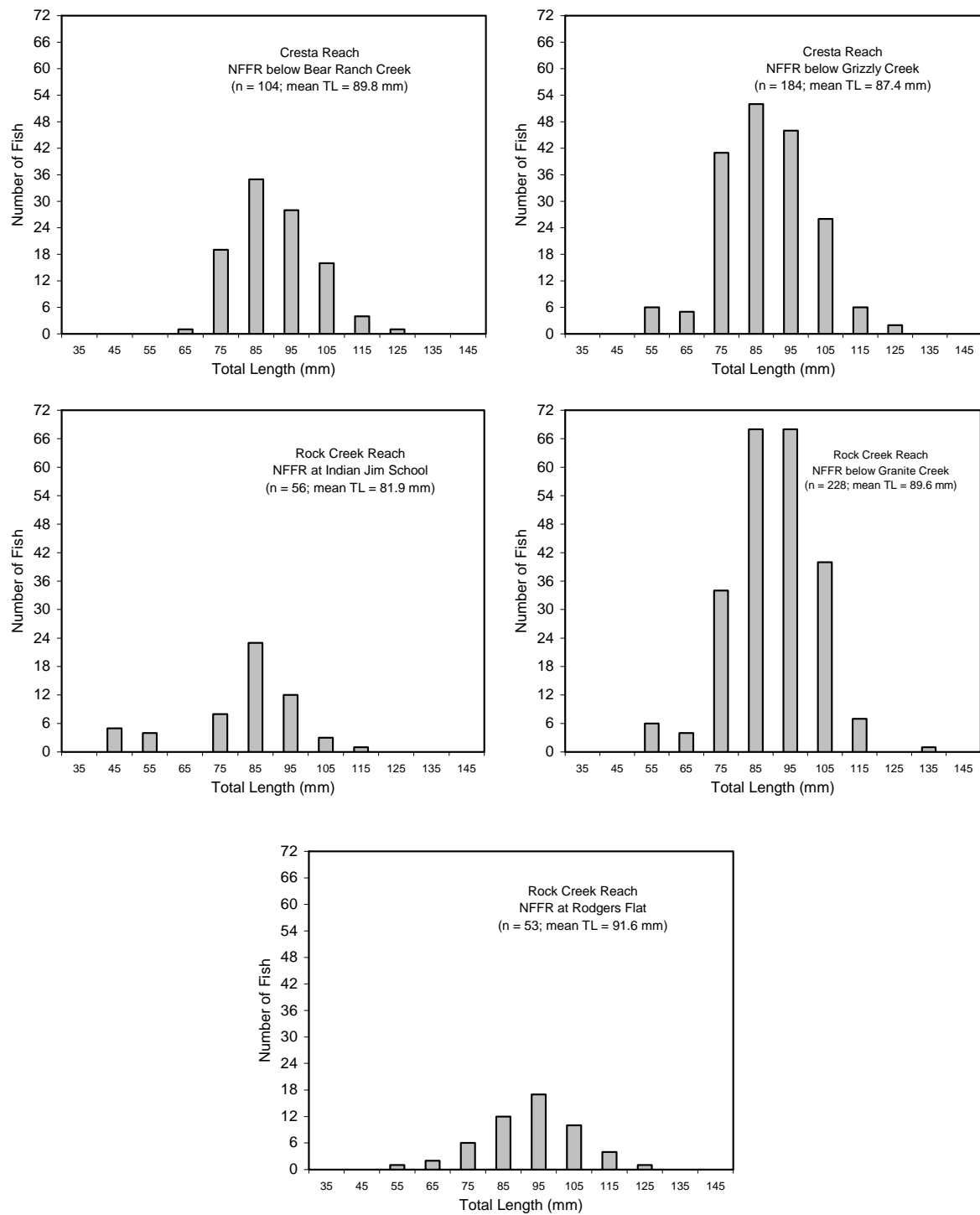


Figure 10. Length-frequency data for riffle sculpin captured during the October 2005 Rock Creek-Cresta electrofishing survey.

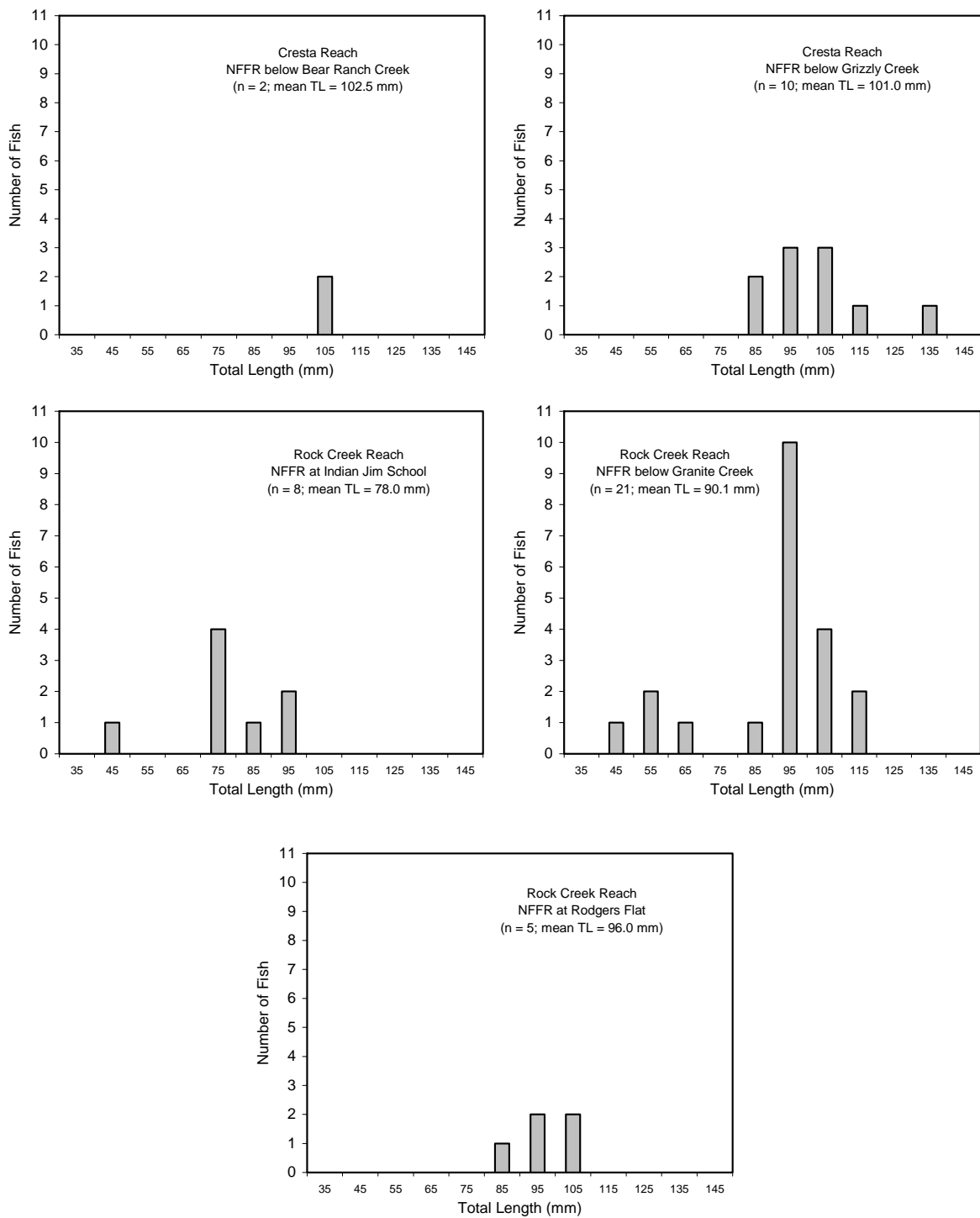


Figure 11. Length-frequency data for prickly sculpin captured during the October 2005 Rock Creek-Cresta electrofishing survey.

Table 8. Multiple pass removal-depletion patterns and electrofishing statistics for various fish species captured at the five shallow-water Rock Creek-Cresta sites sampled using backpack electrofishers in October 2005. Unless noted, all estimates were generated using the program MicroFish 3.0.

Species	Removal Pattern	Total Catch	Population Estimate	Probability of Capture Estimate
<u>NFFR below Bear Ranch Creek</u>				
Rainbow trout	20 – 14 – 4	38	42 ± 8	0.528 ± 0.217
Sacramento pikeminnow*	2 – 0 – 0	2	2 ± 1	0.9998
Sacramento sucker	90 – 43 – 22	155	174 ± 17	0.518 ± 0.106
Smallmouth bass	42 – 31 – 16	89	116 ± 32	0.382 ± 0.168
Riffle sculpin	63 – 28 – 13	104	113 ± 11	0.562 ± 0.122
Prickly sculpin	1 – 0 – 1	2	2 ± 13	0.500 ± 6.593
<u>NFFR below Grizzly Creek</u>				
Rainbow trout	39 – 23 – 10	72	82 ± 13	0.497 ± 0.162
Hardhead	69 – 16 – 19	104	113 ± 11	0.562 ± 0.122
Sacramento pikeminnow	28 – 31 – 23	82	272 ± 510	0.112 ± 0.238
Sacramento sucker	175 – 89 – 54	318	378 ± 36	0.458 ± 0.080
Smallmouth bass	4 – 3 – 2	9	10 ± 6	0.474 ± 0.550
Riffle sculpin	91 – 63 – 30	184	230 ± 37	0.413 ± 0.112
Prickly sculpin	0 – 4 – 6	10	50 ± 504	0.068 ± 0.742
<u>NFFR at Indian Jim School</u>				
Rainbow trout	8 – 6 – 6 – 4 – 1	25	29 ± 9	0.316 ± 0.218
Hardhead	29 – 22 – 17 – 6 – 4	78	85 ± 10	0.384 ± 0.114
Sacramento pikeminnow	15 – 8 – 2 – 1 – 1	27	27 ± 1	0.587 ± 0.174
Sacramento sucker	142 – 55 – 26 – 14 – 5	242	245 ± 5	0.568 ± 0.056
Smallmouth bass	2 – 2 – 0 – 0 – 0	4	4 ± 0	0.667 ± 0.661
Riffle sculpin	26 – 16 – 9 – 4 – 1	56	57 ± 3	0.505 ± 0.124
Prickly sculpin	4 – 2 – 1 – 0 – 1	8	8 ± 2	0.500 ± 0.393
<u>NFFR below Granite Creek</u>				
Rainbow trout	53 – 22 – 11	86	93 ± 9	0.570 ± 0.133
Hardhead	28 – 13 – 30	71	355 ± 1,235	0.071 ± 0.267
Sacramento pikeminnow	57 – 6 – 8	71	72 ± 3	0.740 ± 0.110
Sacramento sucker	29 – 17 – 5	51	55 ± 7	0.567 ± 0.176
Riffle sculpin	103 – 73 – 52	228	349 ± 96	0.297 ± 0.116
Prickly sculpin	12 – 7 – 2	21	22 ± 4	0.600 ± 0.272
<u>NFFR at Rodgers Flat – Main Channel</u>				
Rainbow trout	18 – 6 – 6 – 4	34	37 ± 7	0.447 ± 0.199
Hardhead	3 – 1 – 0 – 0	4	4 ± 0	0.800 ± 0.595
Sacramento pikeminnow	0 – 1 – 1 – 0	2	2 ± 13	0.400 ± 5.741
Sacramento sucker	2 – 0 – 3 – 1	6	8 ± 13	0.261 ± 0.685
Smallmouth bass	3 – 0 – 1 – 0	4	4 ± 1	0.667 ± 0.721
Riffle sculpin	22 – 9 – 11 – 7	49	61 ± 19	0.329 ± 0.184
Prickly sculpin	3 – 1 – 0 – 0	4	4 ± 0	0.800 ± 0.595

Table 8. Multiple pass removal-depletion patterns and electrofishing statistics for various fish species captured at the five shallow-water Rock Creek-Cresta sites sampled using backpack electrofishers in October 2005. Unless noted, all estimates were generated using the program MicroFish 3.0. (continued)

Species	Removal Pattern	Total Catch	Population Estimate	Probability of Capture Estimate
<u>NFFR at Rodgers Flat – Side Channel</u>				
Rainbow trout*	6 – 0 – 0	6	6 ± 1	0.99994
Hardhead	1 – 3 – 0	4	4 ± 3	0.571 ± 1.028
Sacramento pikeminnow	1 – 1 – 1	3	3 ± 5	0.500 ± 1.823
Smallmouth bass**	0 – 1 – 0	1	1**	Unknown
Riffle sculpin	2 – 1 – 1	4	4 ± 3	0.571 ± 1.028
Prickly sculpin*	1 – 0 – 0	1	1 ± 1	0.9996

* Estimate derived using Program CAPTURE

** No population estimate available with this removal pattern; population of 1 assumed

At the Indian Jim School site, five electrofishing passes were made (Table 8). After the fifth pass, the standard error as a percentage of the trout population estimate (15.7 percent) still exceeded our ten percent goal. However, given the slight discrepancy, the diminishing daylight conditions for continued effective sampling, and the tremendous physical effort required to complete each pass in the deeper lanes of this reach, a decision was made to forgo attempting to make a sixth pass.

Less confidence and larger potential errors were generally associated with the estimates derived for small young-of-the-year minnows at several sample sites, especially pikeminnow at the Grizzly Creek site and hardhead at the Granite Creek site (Table 8). Large confidence intervals and lower relative probabilities of capture were also generally observed for prickly sculpin at both the Cresta Reach sites. Despite sculpin being abundant at most sites, their benthic nature, cryptic coloration, and tendency to sink quickly to the

bottom made them difficult to capture at most of the study sites, especially in the deeper areas, or among the interstitial spaces that dominated the streambed at all the sample sites.

The calculated population estimates for each species were examined as the relative population abundance at each site (Figure 12). At the Bear Ranch Creek site suckers

dominated the estimated population abundance followed by smallmouth bass and riffle sculpin. At the Grizzly Creek site, suckers also dominated the projected fish populations, followed by pikeminnow and riffle sculpin. At both these Cresta sites rainbow trout contributed less than ten percent of the total number of fish in the reaches. Several interesting differences between the two Cresta Reach sites is the absence of hardhead at the Bear Ranch Creek site compared to the Grizzly Creek site where this minnow made up numerically about ten percent of the estimated population. An opposite distributional trend in relative abundance was exhibited by smallmouth bass, which comprised less than one percent of the estimated fish population at the Grizzly Creek site, but over twenty-five percent of the fish population at the Bear Ranch Creek site.

The relative species abundances are comparatively different at the three Rock Creek Reach sites (Figure 12). At the Indian Jim School site, suckers made up over 53 percent of the fish population, with hardhead and riffle sculpin each contributing over ten percent. Rainbow trout made up less than seven percent of the Indian Jim fish population. At the Granite Creek site, hardhead and riffle sculpin each contributed about 37 percent of the estimated fish population, with rainbow trout making up less than ten percent. At the Rodgers Flat site, riffle sculpin were the dominant fish in main channel populations, making up over fifty percent of the estimated population. Rainbow trout made up nearly equal proportions of the Rodgers Flat site main channel and side channel fish populations (about 31 to 33 percent). The relative species abundance in the Rodgers Flat side channel area also had near equal contributions from three species that included riffle sculpin (22 percent), hardhead (22 percent), and pikeminnow (17 percent).

The various site-specific biomass estimates (and associated confidence intervals) derived from the population data and the mean weight for each fish species are presented in Table 9. Rainbow trout contributed the largest proportion of the total biomass (43 to 73 percent) at four of the five main channel sites and the Rodgers Flat side channel site (Figure 13). At the Indian Jim School site, the relatively low numbers of trout, combined with the abundance of large suckers, resulted in biomass estimates that were dominated by suckers,

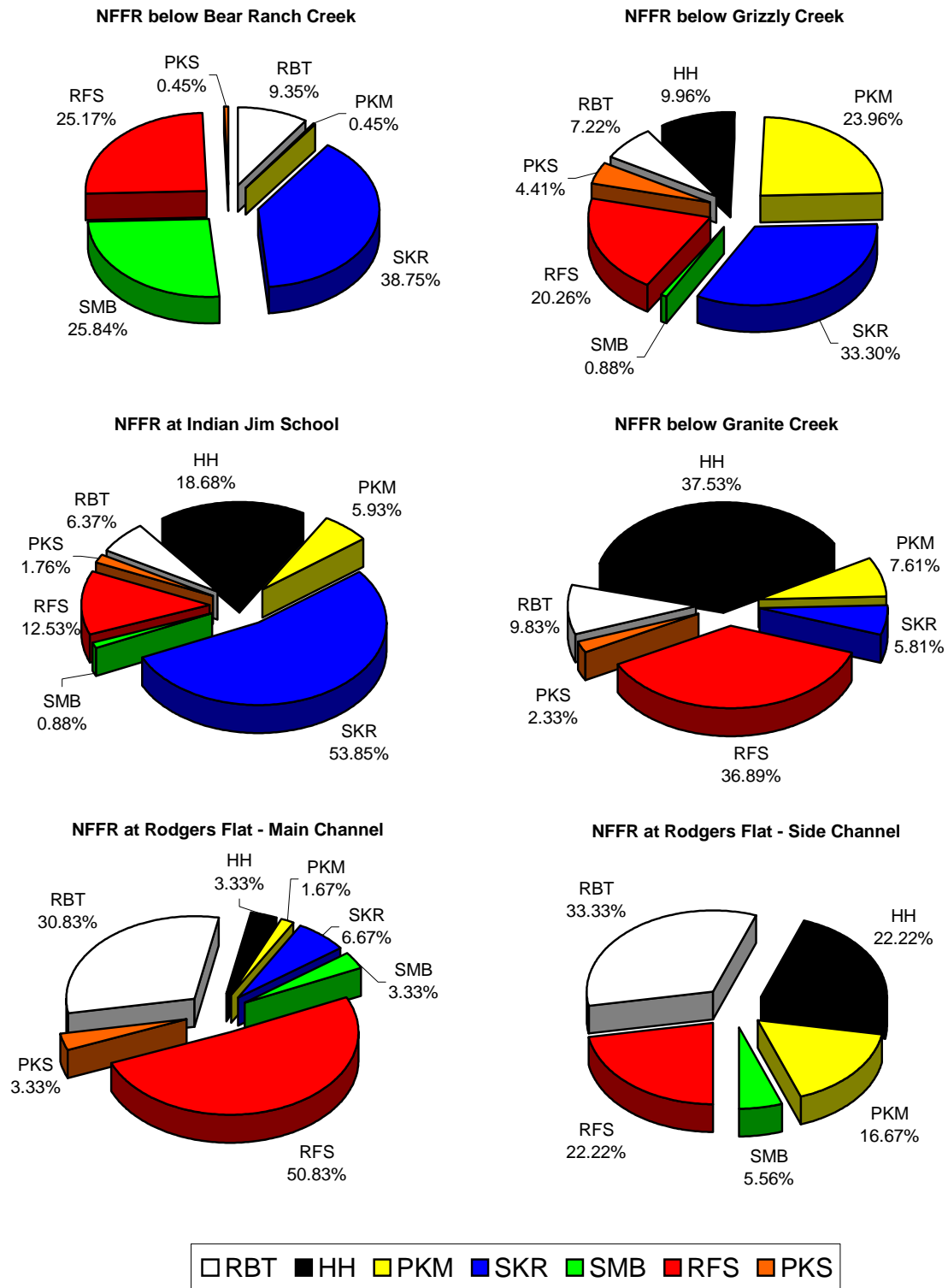


Figure 12. Relative species abundance presented as percentage of total study reach population estimates at the various Rock Creek-Cresta study reaches during the October 2005 backpack electrofishing surveys.

Table 9. Mean weights and biomass estimates (with 95% confidence intervals) by species based upon mean weights of captured fish, multiple pass removal-depletion population estimates, and the physical dimensions of the five shallow-water Rock Creek-Cresta sites sampled using backpack electrofishers in October 2005.

Species	Mean weight (grams)	Reach Biomass Estimate (Kg)	Biomass Estimate (Kg/300 feet)	Biomass Estimate (Kg/mile)	Biomass Estimate (Pounds/mile)	Biomass Estimate (Kg/hectare)	Biomass Estimate (Pounds/acre)
<u>NFFR below Bear Ranch Creek</u>							
Rainbow trout	163.68	6.8746 ± 1.3094	5.5144 ± 1.0504	97.0526 ± 18.4862	213.95 ± 40.75	27.4060 ± 5.2202	24.45 ± 4.66
Sacramento pikeminnow	0.80	0.0016 ± 0.0008	0.0013 ± 0.0006	0.0226 ± 0.0113	0.05 ± 0.02	0.0064 ± 0.0032	0.01 ± 0.00
Sacramento sucker	4.83	0.8404 ± 0.0821	0.6741 ± 0.0659	11.8648 ± 1.1592	26.16 ± 2.56	3.3504 ± 0.3273	2.99 ± 0.29
Smallmouth bass	6.50	0.7540 ± 0.2080	0.6048 ± 0.1668	10.6447 ± 2.9365	23.47 ± 6.47	3.0059 ± 0.8292	2.68 ± 0.74
Riffle sculpin	9.85	1.1131 ± 0.1084	0.8928 ± 0.0869	15.7136 ± 1.5296	34.64 ± 3.37	4.4373 ± 0.4319	3.96 ± 0.39
Prickly sculpin	13.10	0.0262 ± 0.1703	0.0210 ± 0.1366	0.3699 ± 2.4042	0.82 ± 5.30	0.1044 ± 0.6789	0.09 ± 0.61
Total		9.6098 ± 1.8790	7.7084 ± 1.5072	135.6682 ± 26.5271	299.08 ± 224.74	38.3104 ± 7.4908	34.18 ± 6.68
<u>NFFR below Grizzly Creek</u>							
Rainbow trout	37.13	3.0447 ± 0.4827	3.0145 ± 0.4779	53.0555 ± 8.4112	116.96 ± 18.54	11.8439 ± 1.8777	10.57 ± 1.68
Hardhead	0.77	0.0870 ± 0.0085	0.0861 ± 0.0084	1.5162 ± 0.1476	3.34 ± 0.33	0.3385 ± 0.0329	0.30 ± 0.03
Sacramento pikeminnow	1.16	0.3155 ± 0.5916	0.3124 ± 0.5857	5.4982 ± 10.3091	12.12 ± 22.73	1.2274 ± 2.3014	1.10 ± 2.05
Sacramento sucker	2.61	0.9866 ± 0.0940	0.9768 ± 0.0930	17.1919 ± 1.6373	37.90 ± 3.61	3.8378 ± 0.3655	3.42 ± 0.33
Smallmouth bass	12.77	0.1277 ± 0.0766	0.1264 ± 0.0759	2.2253 ± 1.3352	4.91 ± 2.94	0.4968 ± 0.2981	0.44 ± 0.27
Riffle sculpin	9.82	2.2586 ± 0.3633	2.2362 ± 0.3597	39.3578 ± 6.3315	86.76 ± 13.96	8.7861 ± 1.4134	7.84 ± 1.26
Prickly sculpin	15.67	0.7835 ± 7.8977	0.7757 ± 7.8195	13.6531 ± 137.6229	30.10 ± 303.39	3.0479 ± 30.7223	2.72 ± 27.41
Total		7.6036 ± 9.5144	7.5283 ± 9.4202	132.4979 ± 165.7948	292.09 ± 365.49	29.5782 ± 37.0113	26.39 ± 33.02
<u>NFFR at Indian Jim School</u>							
Rainbow trout	299.18	8.6762 ± 2.6926	8.4509 ± 2.6227	148.7352 ± 46.1592	327.89 ± 101.76	53.7682 ± 16.6867	47.97 ± 14.89
Hardhead	301.15	25.5978 ± 3.0115	24.9329 ± 2.9333	438.8186 ± 51.6257	967.38 ± 113.81	158.6341 ± 18.6628	141.53 ± 16.65
Sacramento pikeminnow	48.32	1.3046 ± 0.0483	1.2708 ± 0.0471	22.3653 ± 0.8283	49.30 ± 1.83	8.0851 ± 0.2994	7.21 ± 0.27
Sacramento sucker	719.64	176.3118 ± 3.5982	171.7323 ± 3.5047	3,022.4880 ± 61.6834	6,663.07 ± 135.98	1,092.6378 ± 22.2987	974.81 ± 19.89
Smallmouth bass	8.45	0.0338 ± 0.0000	0.0329 ± 0.0000	0.5794 ± 0.0000	1.28 ± 0.00	0.2095 ± 0.0000	0.19 ± 0.00
Riffle sculpin	7.11	0.4053 ± 0.0213	0.3947 ± 0.0208	6.9475 ± 0.3657	15.32 ± 0.81	2.5115 ± 0.1322	2.24 ± 0.12
Prickly sculpin*	6.41	0.0513 ± 0.0128	0.0499 ± 0.0125	0.8791 ± 0.2198	1.94 ± 0.48	0.3178 ± 0.0794	0.28 ± 0.07
Total		212.3808 ± 9.3848	206.8644 ± 9.1410	3,640.813 ± 160.8821	8,026.17 ± 354.66	1,316.164 ± 58.1593	1,174.23 ± 51.89

Table 9. Mean weights and biomass estimates (with 95% confidence intervals) by species based upon mean weights of captured fish, multiple pass removal-depletion population estimates, and the physical dimensions of the five shallow-water Rock Creek-Cresta sites sampled using backpack electrofishers in October 2005. (continued)

Species	Mean weight (grams)	Reach Biomass Estimate (Kg)	Biomass Estimate (Kg/300 feet)	Biomass Estimate (Kg/mile)	Biomass Estimate (Pounds/mile)	Biomass Estimate (Kg/hectare)	Biomass Estimate (Pounds/acre)
<u>NFFR below Granite Creek</u>							
Rainbow trout	92.71	8.6220 ± 0.8344	7.3483 ± 0.7111	129.3305 ± 12.5159	285.11 ± 27.59	31.0438 ± 3.0042	27.70 ± 2.68
Hardhead	9.49	3.3690 ± 11.7202	2.8713 ± 9.9888	50.5343 ± 175.8023	111.40 ± 387.56	12.1300 ± 42.1986	10.82 ± 37.65
Sacramento pikeminnow	10.26	0.7387 ± 0.0308	0.6296 ± 0.0262	11.0808 ± 0.4617	24.43 ± 1.02	2.6598 ± 0.1108	2.37 ± 0.10
Sacramento sucker	60.44	3.3242 ± 0.4231	2.8331 ± 0.3606	49.8630 ± 6.3462	109.92 ± 13.99	11.9688 ± 1.5233	10.68 ± 1.36
Riffle sculpin	9.62	3.3574 ± 0.9235	2.8614 ± 0.7871	50.3607 ± 13.8528	111.02 ± 30.54	12.0883 ± 3.3251	10.78 ± 2.97
Prickly sculpin	10.22	0.2248 ± 0.0409	0.1916 ± 0.0348	3.3726 ± 0.6132	7.43 ± 1.35	0.8095 ± 0.1472	0.72 ± 0.13
Total		19.6361 ± 13.9728	16.7353 ± 11.9086	294.5418 ± 209.5920	649.32 ± 462.05	70.7002 ± 50.3093	63.08 ± 44.88
<u>NFFR at Rodgers Flat (Main Channel)</u>							
Rainbow trout	122.11	4.5181 ± 0.8548	5.8676 ± 1.1101	103.2702 ± 19.5376	227.66 ± 43.07	29.9849 ± 5.6728	26.75 ± 5.06
Hardhead	9.18	0.0367 ± 0.0000	0.0477 ± 0.0000	0.8393 ± 0.0000	1.85 ± 0.00	0.2437 ± 0.0000	0.22 ± 0.00
Sacramento pikeminnow	182.50	0.3650 ± 2.3725	0.4740 ± 3.0812	8.3429 ± 54.2286	18.39 ± 119.55	2.4224 ± 15.7455	2.16 ± 14.05
Sacramento sucker	60.22	0.4818 ± 0.7829	0.6257 ± 1.0167	11.0117 ± 17.8939	24.28 ± 39.45	3.1973 ± 5.1956	2.85 ± 4.64
Smallmouth bass	9.15	0.0366 ± 0.0092	0.0475 ± 0.0119	0.8366 ± 0.2091	1.84 ± 0.46	0.2429 ± 0.0607	0.22 ± 0.05
Riffle sculpin	11.26	0.6869 ± 0.1914	0.8920 ± 0.2486	15.6997 ± 4.3753	34.61 ± 9.65	4.5585 ± 1.2704	4.07 ± 1.13
Prickly sculpin	12.58	0.0503 ± 0.0000	0.0654 ± 0.0000	1.1502 ± 0.0000	2.54 ± 0.00	0.3340 ± 0.0000	0.30 ± 0.00
Total		6.1753 ± 4.2107	8.0199 ± 5.4684	141.1504 ± 96.2446	311.17 ± 212.17	40.9835 ± 27.9450	36.56 ± 24.93
<u>NFFR at Rodgers Flat (Side Channel)</u>							
Rainbow trout	26.33	0.1580 ± 0.0263	0.3485 ± 0.0581	6.1333 ± 1.0222	13.52 ± 2.25	7.4023 ± 1.2337	6.60 ± 1.10
Hardhead	10.10	0.0404 ± 0.0303	0.0891 ± 0.0668	1.5685 ± 1.1764	3.46 ± 2.59	1.8930 ± 1.4197	1.69 ± 1.27
Sacramento pikeminnow	21.40	0.0642 ± 0.1070	0.1416 ± 0.2360	2.4925 ± 4.1541	5.49 ± 9.16	3.0081 ± 5.0136	2.68 ± 4.47
Smallmouth bass	9.00	0.0090 ± 0.0090	0.0199 ± 0.0199	0.3494 ± 0.3494	0.77 ± 0.77	0.4217 ± 0.4217	0.38 ± 0.38
Riffle sculpin	11.65	0.0466 ± 0.0350	0.1028 ± 0.0771	1.8092 ± 1.3569	3.99 ± 2.99	2.1835 ± 1.6376	1.95 ± 1.46
Prickly sculpin*	10.80	0.0108 ± 0.0108	0.0238 ± 0.0238	0.4193 ± 0.4193	0.92 ± 0.92	0.5060 ± 0.5060	0.45 ± 0.45
Total		0.3290 ± 0.2184	0.7257 ± 0.4817	12.7722 ± 8.4783	28.16 ± 18.69	15.4146 ± 10.2324	13.75 ± 9.13

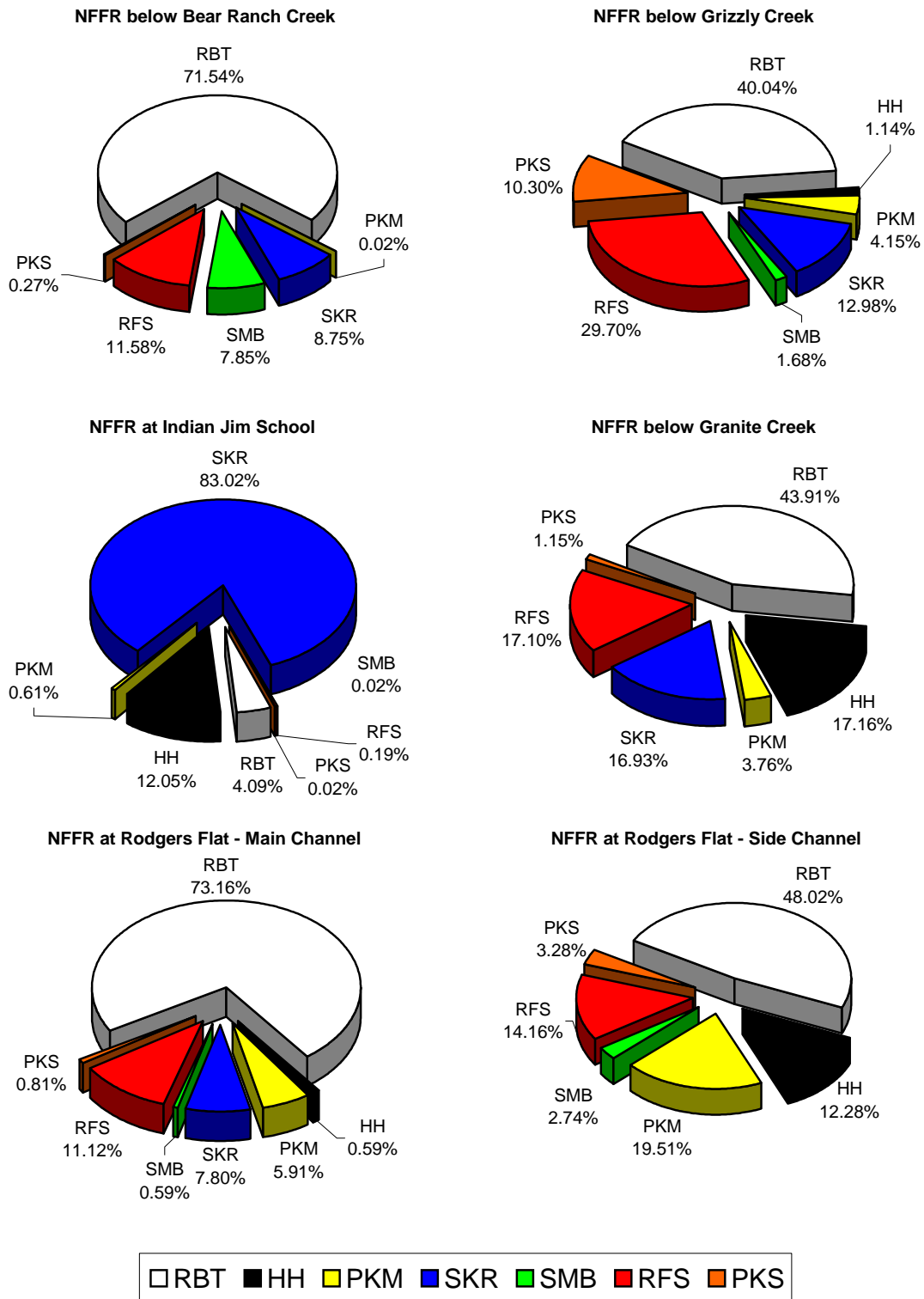


Figure 13. Relative species biomass presented as percentage of total study reach population biomass estimates at the various Rock Creek-Cresta study reaches during the October 2005 backpack electrofishing surveys.

which made up over 83 percent of fish biomass. Rainbow trout contributed about four percent of the total fish biomass at the Indian Jim School site.

In terms of standardized biomass indices, the Indian Jim School site had the largest fish biomass with 8,026.2 pounds/mile and 1,174.2 pounds/acre (Table 9). The Indian Jim School site also had the largest biomass indices for rainbow trout at 327.9 pounds/mile and 48.0 pounds/acre.

The Granite Creek site had the next highest total fish biomass indices, with 649.3 pounds/mile and 63.1 pounds/acre (Table 9). The biomass indices for rainbow trout at the Granite Creek site were 285.1 pounds/mile and 27.7 pounds/acre.

The Rodgers Flat main channel area, the Bear Ranch Creek site and the Grizzly Creek site ranked as the third through fifth highest total fish biomass estimate sites, respectively (Table 9). These three sites exhibited near equal total fish biomass estimates with 311.2, 299.1, and 292.1 pounds/mile, which equated to 36.6, 34.2, and 26.7 pounds/acre. The rainbow trout biomass indices for these same three sites were 227.7, 214.0, and 117.0 pounds/mile, which equated to 26.8, 24.5, and 10.6 pounds/acre.

In comparison, the Rodgers Flat side channel area had very low fish biomass indices, 28.2 pounds/mile and 13.8 pounds/acre (Table 9). The rainbow trout biomass indices for the side channel area were also comparatively small at 13.5 pounds/mile and 6.6 pounds/acre.

Discussion

The October 2005 fish population sampling in the Cresta and Rock Creek reaches of the NFFR demonstrated that under reduced flow conditions multiple-pass removal-depletion sampling using electrofishing techniques can produce resident fish population estimates in shallow-water habitat with tight confidence intervals and a high probability of accuracy. The electrofishing survey showed the fall 2005 resident fish population in the Project area to be numerically dominated by Sacramento sucker and riffle sculpin. In terms of biomass,

rainbow trout dominated the fish populations at both Cresta Reach sites and the Granite Creek and Rodgers Flat sites in the Rock Creek Reach. The catch of numerous large mature suckers at the Indian Jim School site of the Rock Creek Reach resulted in this species dominating the biomass statistics at this site.

Comparison of the present survey results with other recent surveys demonstrates some interesting between year differences (Tables 10, 11, and 12). We have limited our comparisons to those made at roughly equivalent sample sites, which includes the 2004 TRPA survey (Salamunovich 2005), the 2002 ECORP survey (ECORP 2003), and the CDFG 1986 survey (CDFG 1988). Earlier surveys (Flint 1980; Moyle et al. 1983; CDFG 1988) included additional and different sample areas and will not be discussed in this report. In our 2005 survey we added the Granite Creek site as a comparable site to the 1986 CDFG “between James Lee Campground and School” site, and so have limited our comparison to these two surveys. Alternatively, we have only compared the Indian Jim School sites to the 2002-2005 efforts, which included the same survey area.

Brown trout, which were captured during the 1986 electrofishing survey, were not observed during any of the more recent surveys. It should be noted that brown trout were stocked in the project area for five year period from 1980 through 1984 (CDFG 1988). Wild forms of this non-native trout still occur in the basin, mainly in the upper portions of some of the tributaries (Salamunovich and Berg 2002a, 2002b). While brown trout have been occasionally documented in the Project area during recent creel surveys (Garcia and Associates 2003; Meadowbrook Conservation Services 2005), displacement snorkel surveys (Salamunovich 2004a, 2004b), and fish population snorkel surveys (Mark Allen, pers. comm.), they appear to be very rare in the Rock Creek-Cresta reaches of the NFFR.

Our October 2005 rainbow trout estimates showed about a fifty percent decline in abundance compared to the 2004 data at three of the four comparable sites (Table 10). Only at the Indian Jim School site was the 2005 abundance estimate greater than the 2004 estimate. Our 2005 rainbow trout estimates were more comparable to the fall 2002

Table 10. Population and mean weight summary for various species sampled by electro-fishing at five shallow-water sites sampled variously during 1986 (CDFG 1988), 2002 (ECORP 2003), 2004 (Salamunovich 2005), and 2005 (this report).

Site	Population Estimate (N)				Mean Weight (grams)			
	1986	2002	2004	2005	1986	2002	2004	2005
<u>Brown trout</u>								
Bear Creek	1	0	0	0	52.0	---	---	---
Grizzly Creek	0	0	0	0	---	---	---	---
Indian Jim School	---	0	0	0	---	---	---	---
Granite Creek	0	---	---	0	---	---	---	---
Rodgers Flat	1	0	0	0	795.0	---	---	---
<u>Rainbow trout</u>								
Bear Creek	92*	27	110	42	40.6	169.0	76.4	163.7
Grizzly Creek	144*	86	154	82	35.0	67.7	51.4	37.1
Indian Jim School	---	23	15	29	---	239.3	280.7	299.2
Granite Creek	184*	---	---	93	19.0	---	---	92.7
Rodgers Flat	93*	33	86	42	24.7	164.4	112.3	107.8
<u>Hardhead</u>								
Bear Creek	195	33	87	0	1.0	2.6	1.5	---
Grizzly Creek	24	1	1	113	0.7	1.4	1.4	0.8
Indian Jim School	---	130	96	85	---	49.9	18.5	301.2
Granite Creek	128	---	---	355	2.1	---	---	9.5
Rodgers Flat	68	0	16	8	1.1	---	14.6	9.6
<u>Sacramento pikeminnow</u>								
Bear Creek	76	43	13	2	2.7	6.9	31.0	0.8
Grizzly Creek	54	6	4	272	1.1	5.7	6.4	1.2
Indian Jim School	---	39	22	27	---	32.9	21.2	48.3
Granite Creek	404	---	---	72	1.5	---	---	10.3
Rodgers Flat	75	16	6	5	11.4	26.1	21.4	85.8
<u>Sacramento sucker</u>								
Bear Creek	679	15	91	174	65.8	6.5	6.9	4.8
Grizzly Creek	356	17	54	378	2.5	134.8	75.5	2.6
Indian Jim School	---	44	79	245	---	731.1	679.3	719.6
Granite Creek	1,770	---	---	55	21.5	---	---	60.4
Rodgers Flat	384	6	13	8	85.2	443.8	93.2	60.2
<u>Smallmouth bass</u>								
Bear Creek	1	13	28	116	14.0	22.3	---	6.5
Grizzly Creek	0	0	4	10	---	---	---	12.8
Indian Jim School	---	0	2	4	---	---	---	8.45
Granite Creek	0	---	---	0	---	---	---	---
Rodgers Flat	0	1	4	5	---	14.4	---	9.1
<u>Sculpin**</u>								
Bear Creek	25	50	522	115		10.4	6.6	9.9
Grizzly Creek	2	258	522	280		8.9	6.7	10.1
Indian Jim School	---	141	152	65	---	9.1	3.7	7.0
Granite Creek	279	---	---	371		---	---	9.7
Rodgers Flat	70	46	67	70		13.4	9.8	11.4

* 1986 DFG rainbow trout data includes hatchery fish

** 1986 DFG data did not identify sculpin to species

Table 11. Standardized abundance estimates for various fish species at the five Rock Creek-Cresta shallow-water study sites sampled by electrofishing during 1986 (CDFG 1988), 2002 (ECORP 2003), 2004 (Salamunovich 2005), and 2005 (this report). CDFG 1986 data included hatchery trout and did not identify species of sculpin. Rodgers Flat 2004 and 2005 estimates include combined main and side channel data.

Estimated number per mile																	
Species	Bear Creek				Grizzly Creek				Indian Jim School			Granite Creek		Rodgers Flat			
	1986	2002	2004	2005	1986	2002	2004	2005	2002	2004	2005	1986	2005	1986	2002	2004	2005
Brown trout	14.4	0	0	0	0	0	0	0	0	0	0	0	0	23.32	0	0	0
Rainbow trout	1,322.0	395.0	1,570.6	592.9	2,461.9	1,537.8	2,710.4	1,428.9	406.8	269.4	497.1	2,667.7	1,395.0	2,169.1	829.8	1,988.6	960.0
Hardhead	2,802.0	482.8	1,242.2	0	415.3	17.9	17.6	1,969.1	2,299.1	1,724.1	1,457.1	1,855.8	5,325.0	1,586.0	0	365.7	182.9
Sac. pikeminnow	1,092.1	629.1	185.6	28.2	934.5	107.3	70.4	4,739.8	689.7	395.1	462.9	5,857.4	1,080.0	1,749.3	402.3	137.1	114.3
Sac. Sucker	9,756.7	219.5	1,299.3	2,456.5	6,160.5	304.0	950.4	6,586.9	778.1	1,418.8	4,200.0	25,622.5	825.0	8,956.4	150.9	297.1	182.9
Smallmouth bass	14.4	190.2	399.8	1,637.7	0	0	70.4	174.3	0	35.92	68.6	0	0	0	25.2	91.4	114.3
Sculpin	359.2	731.5	7,453.1	1,623.5	34.61	4,613.5	9,187.2	4,879.2	2,493.6	2,729.8	1,114.	4,045.1	5,565.0	1,632.7	1,156.7	1,531.4	1,600.0
All fish	15,360.6	2,648.1	12,150.6	6,338.8	10,036.8	6,580.4	13,006.4	19,778.2	6,667.3	6,573.1	7,800.0	40,088.6	14,190.0	16,116.8	2,564.9	4,411.4	3,154.3

Estimated number per acre																	
Species	Bear Creek				Grizzly Creek				Indian Jim School			Granite Creek		Rodgers Flat			
	1986	2002	2004	2005	1986	2002	2004	2005	2002	2004	2005	1986	2005	1986	2002	2004	2005
Brown trout	2.26	0	0	0	0	0	0	0	0	0	0	0	0	2.25	0	0	0
Rainbow trout	207.76	43.60	173.37	67.76	267.81	139.50	242.81	129.09	60.56	40.78	72.73	220.63	135.51	209.44	95.61	208.90	98.81
Hardhead	440.37	53.29	137.12	0	44.63	1.62	1.57	177.90	342.27	260.98	213.18	153.25	517.28	153.14	0	38.42	18.82
Sac. pikeminnow	171.63	69.43	20.49	3.23	100.43	9.73	6.31	428.21	102.68	59.81	67.72	483.71	104.91	168.90	46.36	14.41	11.76
Sac. Sucker	1,533.38	24.22	143.43	280.73	662.08	27.58	85.14	595.09	115.85	214.77	614.46	2,119.21	80.14	864.77	17.38	31.22	18.82
Smallmouth bass	2.26	20.99	44.13	187.15	0	0	6.31	15.74	0	5.44	10.03	0	0	0	2.90	9.60	11.76
Sculpin	56.46	80.74	822.74	185.54	3.72	418.51	823.04	440.80	371.23	413.23	163.02	334.05	540.59	157.64	133.27	160.88	164.68
All fish	2,414.11	292.27	1,341.28	724.40	1,078.67	596.94	1,165.17	1,786.83	992.58	995.00	1,141.14	3,310.52	1,378.44	1,556.14	295.52	463.43	324.66

Table 12. Standardized biomass estimates for various fish species at the five Rock Creek-Cresta shallow-water study sites sampled by electrofishing during 1986 (CDFG 1988), 2002 (ECORP 2003), 2004 (Salamunovich 2005), and 2005 (this report). CDFG 1986 data included hatchery trout and did not identify species of sculpin. Rodgers Flat 2004 and 2005 estimates include combined main and side channel data

Estimated pounds per mile																	
Species	Bear Creek				Grizzly Creek				Indian Jim School			Granite Creek		Rodgers Flat			
	1986	2002	2004	2005	1986	2002	2004	2005	2002	2004	2005	1986	2005	1986	2002	2004	2005
Brown trout	1.65	0	0	0	0	0	0	0	0	0	0	0	0	40.88	0	0	0
Rainbow trout	118.35	147.20	264.63	213.95	192.39	229.44	307.18	116.96	214.59	166.69	327.89	111.90	285.11	118.16	300.73	492.26	228.03
Hardhead	6.21	2.77	3.97	0	0.61	0.06	0.05	3.34	252.72	70.43	967.38	8.44	111.40	3.86	0	11.78	3.89
Sac. Pikeminnow	6.49	9.62	12.68	0.05	2.29	1.35	0.99	12.12	49.98	18.42	49.30	19.24	24.43	43.86	23.11	6.47	21.63
Sac. Sucker	1,415.50	3.14	19.88	26.16	33.95	90.34	158.21	37.90	1,254.24	2,124.67	6,663.07	1,216.91	109.92	1,682.54	147.62	61.02	24.28
Smallmouth bass	0.44	9.36	32.94	23.47	0	0	2.34	4.91	0	1.13	1.28	0	0	0	0.80	4.07	2.30
Sculpin	16.41	16.81	108.62	35.46	1.68	89.97	135.21	116.86	50.13	22.01	17.25	40.75	118.46	39.90	34.04	33.16	40.06
All fish	1,565.05	188.90	442.72	299.08	230.92	411.16	603.98	292.09	1,821.66	2,403.35	8,026.17	1,397.25	649.32	1,929.20	506.30	608.76	320.18

Estimated pounds per acre																	
Species	Bear Creek				Grizzly Creek				Indian Jim School			Granite Creek		Rodgers Flat			
	1986	2002	2004	2005	1986	2002	2004	2005	2002	2004	2005	1986	2005	1986	2002	2004	2005
Brown trout	0.26	0	0	0	0	0	0	0	0	0	0	0	0	3.95	0	0	0
Rainbow trout	18.60	16.25	29.21	24.45	20.68	20.81	27.52	10.57	31.95	25.23	47.97	9.24	27.70	11.41	34.65	51.71	23.47
Hardhead	0.98	0.31	0.44	0	0.07	0.01	0.01	0.30	37.62	10.66	141.53	0.70	10.82	0.37	0	1.24	0.40
Sac. Pikeminnow	1.02	1.06	1.40	0.01	0.25	0.12	0.09	1.10	7.44	2.79	7.21	1.59	2.37	4.24	2.66	0.68	2.23
Sac. Sucker	222.47	0.35	2.19	2.99	3.65	8.20	14.17	3.42	186.72	321.62	974.81	100.50	10.68	162.46	17.01	6.41	2.50
Smallmouth bass	0.07	1.03	3.64	2.68	0	0	0.21	0.44	0	0.17	0.19	0	0	0	0.09	0.43	0.24
Sculpin	2.58	1.86	11.99	4.05	0.18	8.16	12.11	10.56	7.46	3.33	2.52	3.37	11.51	3.85	3.92	3.48	4.12
All fish	245.98	20.86	48.87	34.18	24.82	37.30	54.11	26.39	271.19	363.80	1,174.23	115.39	63.08	186.28	58.33	63.95	32.95

estimates and were roughly half the levels noted in 1986 at comparable sites (Tables 10 and 11). However, it should be noted that the 1986 data included hatchery trout, while the more recent data (2002, 2004, and 2005) was based solely on wild trout. Inspection of the mean weight data for rainbow trout captured during these comparative surveys indicates that despite the inclusion of hatchery trout (which are presumably heavier, catchable-sized fish) in the 1986 survey, the trout at the four comparable sites tend to be larger now compared to 1986 (Table 10). Examination of the biomass data confirms this, as there was generally more trout biomass present at three of the four sample sites in 2005 compared to the 1986 survey (Table 12). Only the Grizzly Creek site showed lower rainbow trout biomass estimates in 2005 compared to the 1986 levels.

A large discrepancy between the 1986 and the 2005 trout data occurred at the Granite Creek site (Table 8). In 1986 large numbers (population $N = 184$) of small trout (mean weight = 19 grams) were collected. In 2005 fewer trout were captured at this site (population $N = 93$), but those captured were about five times heavier. The size discrepancy for rainbow trout between the 1986 and the 2002-2005 surveys can be seen when examining the length-frequency data for the Rock Creek sites (Figure 14).

Unfortunately, the 1986 CDFG length-frequency data combined their three Rock Creek Reach sample sites, which included the Rodgers Flat pool site (not a shallow-water backpack electrofishing site). However, it should be noted that only six large rainbow trout (mean weight = 242.2 grams) were captured at this pool site (CDFG 1988). Despite the inclusion of pool catch data in the 1986 length-frequencies, the comparison clearly shows that in 1986 the trout populations at the Rock Creek sites were dominated by small young-of-the-year fish (Figure 14). Conversely, the more recent surveys (2002, 2004, and 2005) suggest the trout populations were composed primarily of larger juvenile and adult-sized fish. Again, we reiterate that some of this apparent difference between the 1986 and the 2002/2004 surveys may be due to different sample areas at the Indian Jim School site, rather than significant changes to the trout populations. However, even with the addition of the shallow-water Granite Creek site in 2005, comparably high levels of trout fry noted in 1986 have not been seen in more recent population surveys.

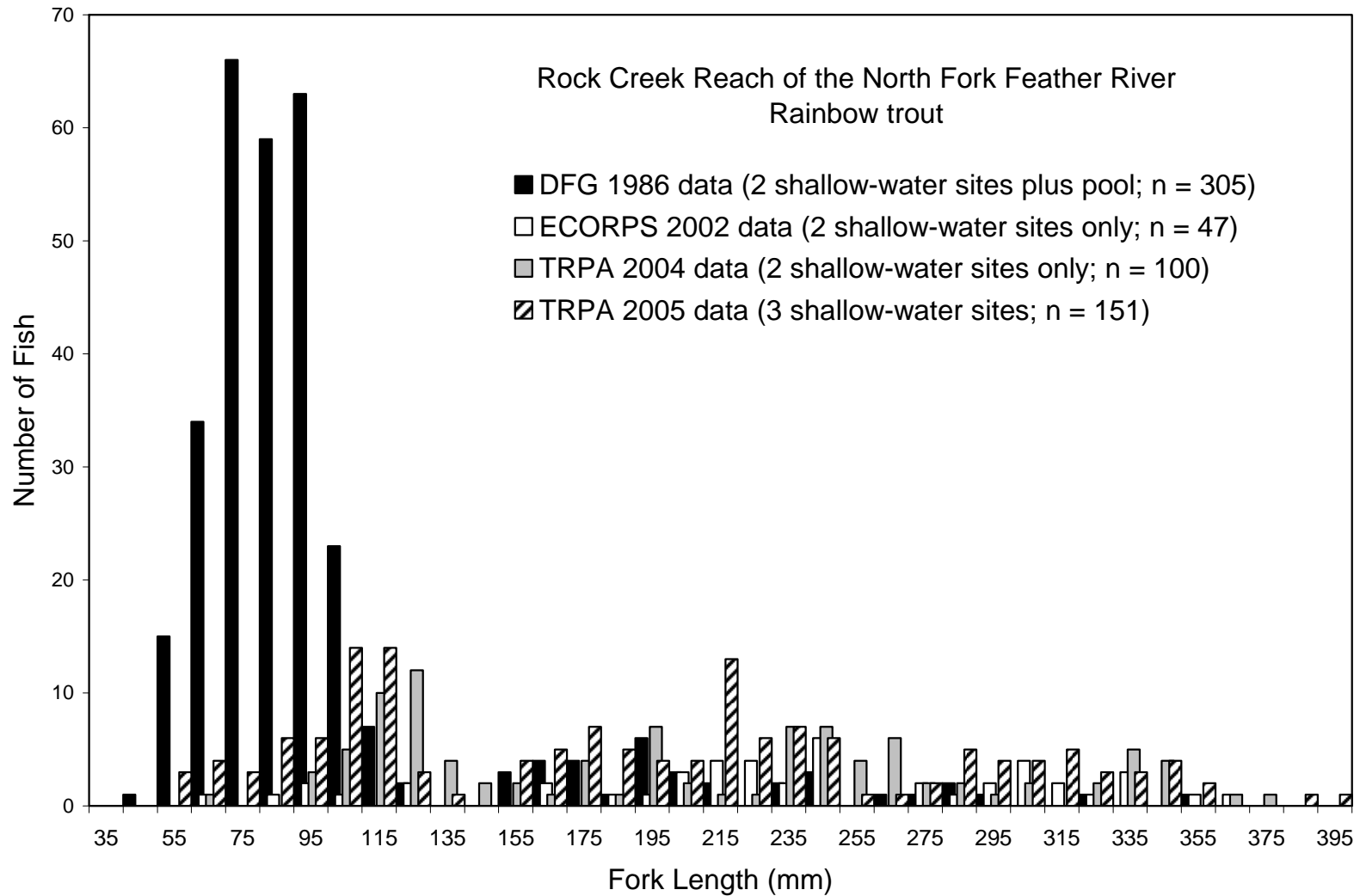


Figure 14. Length-frequency data for rainbow trout captured during four separate late-fall electrofishing surveys of Rock Creek sample sites. Note that the 1986 data includes data from two shallow-water and one pool habitat, the 2002 and 2004 data includes data from two shallow-water habitats only, and the 2005 data includes data from three shallow-water habitat.

Examination of the comparative data also demonstrates a large change in the sucker populations in the Project area. In 1986, suckers dominated the abundance indices at all four shallow-water sites (Table 11) and the biomass indices at three of the sample sites (Table 12). In the October 2005 survey, suckers dominated the numerical indices at only two of the sites (i.e., the Bear Ranch and Grizzly sites) and the biomass indices at none of the four sites sampled in 1986. The 2005 sucker population at the two Cresta Reach sites was composed primarily of small young-of-the-year fish, which resulted in comparatively low biomass indices (Tables 10 and 12).

The abundance and biomass indices for both hardhead and pikeminnow have exhibited variable trends depending on the particular site during recent surveys compared to the 1986 data (Tables 11 and 12). However, the minnows captured during the 2002 through 2005 surveys are typically larger than those observed during the 1986 survey (Table 10). As a result, the biomass estimates (pounds/acre) for the minnows have actually changed little over the intervening years at several of the sites (Table 12)

Another notable change exhibited since 1986 is the apparent increase in the sculpin populations at the Cresta Reach sites. In 1986, sculpin contributed only a small percentage to the numerical abundance and biomass estimates at the Bear Ranch and Grizzly sites; however, the most recent surveys suggest their numbers and biomass have increased (Tables 11 and 12).

Comparison of the 1986-2005 survey data for smallmouth bass indicates that this introduced centrarchid continues to be only a minor component of the Rock Creek-Cresta shallow-water fish populations (Table 10). The relatively large number of young-of-the-year bass captured at the Bear Ranch site in 2005 may indicate a strong year class for this species in the Cresta Reach (Figure 9).

An assumed benefit to raising the base flow in the project area has been that the trout populations in the NFFR would also increase in response to improved habitat conditions. As was discussed earlier, the October 2005 surveys indicated that the rainbow trout populations in the Rock Creek–Cresta Project area were about only half those noted in the late fall of 2004. A between-year comparison of the trout age classes for the four sites sampled in both years generally shows a decline for all the age classes, especially the sub-adult classes (i.e., the 0+ and 1+ age classes, Table 13).

Table 13. Estimated rainbow trout age class distributions at the four Rock Creek-Cresta sites surveyed in both 2004 and 2005 based upon the TRPA composite age-length data derived from the 2002 age-length analysis from ECORP (2003).

Age Class	Number of rainbow trout									
	Bear Ranch		Grizzly		Indian Jim		Rodgers Flat		Total	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
0+	33	13	37	34	0	0	2	2	72	49
1+	24	3	79	24	2	0	35	13	140	40
2+	26	12	15	13	5	11	41	23	87	59
3+	5	7	8	1	6	12	7	2	26	22
4+	1	3	0	0	2	2	0	0	3	5

Were the observed declines just a part of the annual variation in the NFFR trout populations that are masking a long-term improvement that won't be evident for several years? The most consistent and severe declines noted were for the 1+ age class, which represents the 2004 cohort of rainbow trout. This apparently weak 2004 year class was noted in the 2004 surveys by the comparatively small contribution that it made to the overall trout populations. In most trout streams, young-of-the-year fish typically dominate the abundance data, with ever dwindling numbers for each of the older year classes as they age. In 2004, young-of-the-year trout the most abundant age class at only one of the four survey sites (Bear Ranch Creek), and were particularly scarce at the two Rock Creek sites. This same type of pattern was also evident for the 2005 data, where the young-of-the-year age class also appeared to be relatively weak, portending continued declines in future trout populations as this second consecutive weak year class moves through the population cycle.

The trout population levels observed in the NFFR may not be solely controlled by the rearing conditions in the mainstem NFFR, but instead may be a function of the spawning success and juvenile recruitment from the tributaries. In 2005, the highest flows occurred during mid to late May, relatively late in the year compared to previous years (Figure 15). CDFG (1988) estimated that the peak spawning period for rainbow trout in the NFFR and its tributaries was mid-April. The May 2005 peak flows presumably also occurred in the tributaries during the period of rainbow trout egg incubation and may have contributed to the poor incubation conditions (redd scour) in these presumed recruitment areas for fry and juvenile trout that eventually move downstream rear to adults in the mainstem NFFR.

Conclusions

The goals of the 15-year monitoring effort stipulated in the SA are to characterize and track the response of the resident fish populations in the Rock Creek-Cresta Project area to changes in base flows during the first 15 years of the License, and to assess the abundance, biomass, and condition of the wild trout component of the population against the fishery criteria set forth by the SA during the 15-year test period. The calculated condition factors for the 2005 length-weight data suggests the presence of healthy rainbow trout populations at all sites. In terms of the “*excellent trout fishery goals*” defined in the SA, the 2005 data indirectly confirms the achievement of one of the milestones, specifically a wild rainbow trout population composed of at least four age classes. The 2005 length-frequency data shows the presence of multiple size classes for rainbow trout based upon the 2002 scale analysis that correspond to 4 age classes of trout (ECORP 2003).

The 2005 shallow-water survey data suggests that the current trout populations fall short of several of the other SA criteria. The 2005 data does not provide any evidence that large rainbow trout >17 inches (432 mm) are available to the recreational anglers in our five study reaches. The largest trout observed during our survey was a 396 mm FL (15.6 inch) rainbow trout captured at the Indian Jim School site. Despite, this lack of evidence in the shallow-water surveys, observations made during concurrent angler creel and fish population snorkel surveys indicate the presence of large trout >17 inches in both the Cresta

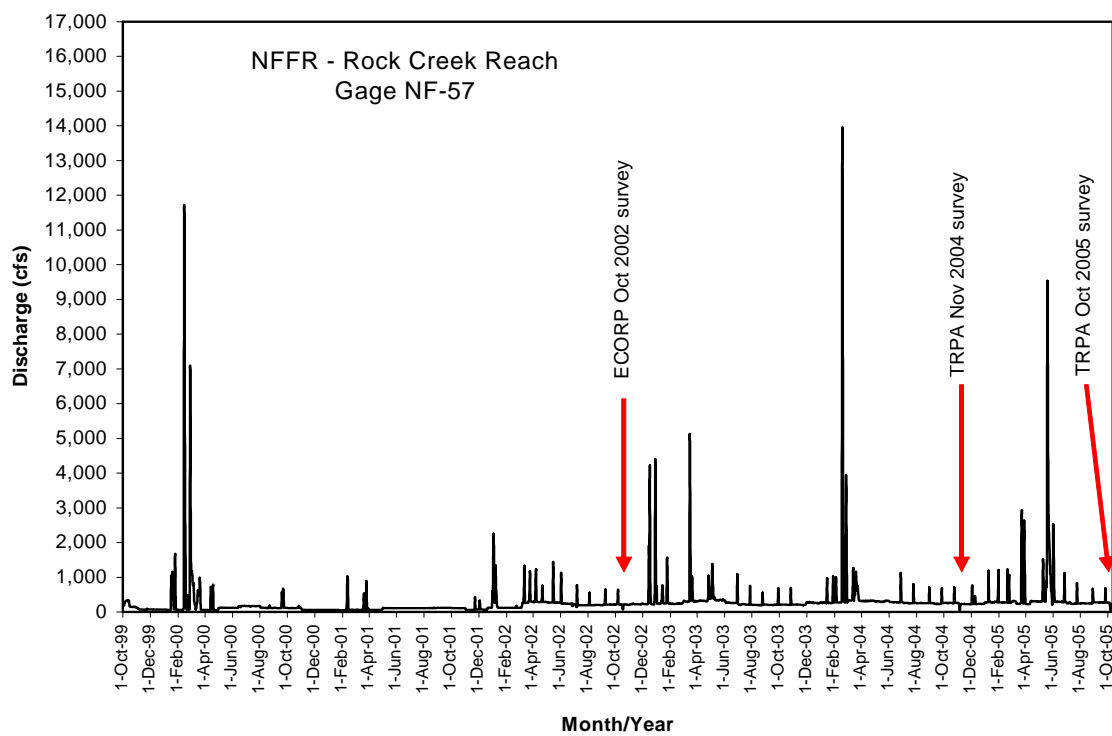
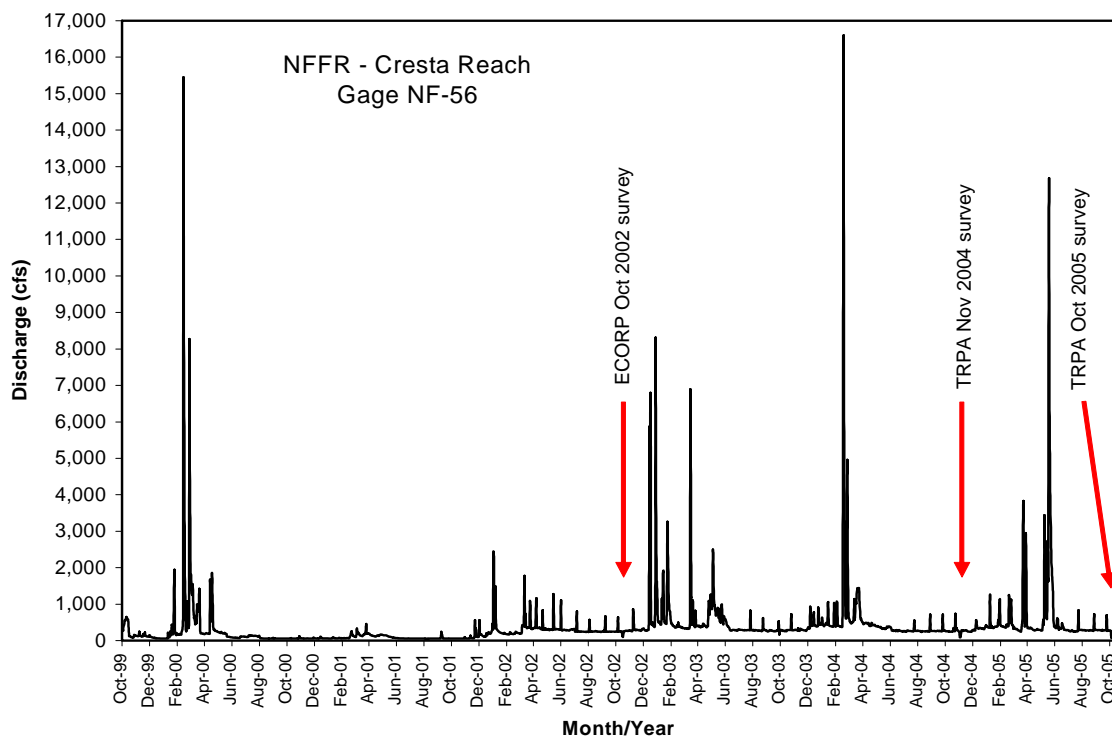


Figure 15. Mean daily stream flow records for the Cresta (top) and Rock Creek (bottom) study reaches during the 2000-2005 water years. Data from USGS and PG&E.

and Rock Creek reaches. Preliminary results from September 2005 snorkel counts conducted in about 80 separate Project area habitat (i.e., pools, runs, and riffles) indicated that about 5 percent of the rainbow trout counted (52 of 1,097 fish) were greater than 17 inches in length (Mark Allen, pers. comm.).

Our 2005 biomass estimates for rainbow trout, which ranged from 117 to 328 pounds per mile (Table 12), suggests that the SA goal of a wild trout population possessing a harvestable component of 595 pounds per mile has yet to be achieved.

Continued sampling in future years should provide additional data for evaluating the abundance and biomass of the resident fish populations in the Project area and for assessing the wild rainbow trout population status at the various base flow scenarios and against the criteria stipulated in the SA and currently adopted by the NFFR Ecological Resources Committee.

Recommendations

It is our understanding that the Indian Jim School site sampled in the three most recent electrofishing surveys conducted since 2002 is actually downstream of the Rock Creek reach site sampled by CDFG in their 1986 survey (Stuart Moock, pers. comm.). We added the Granite Creek site in our October 2005 survey to be more representative of the of the shallow-water site sampled by CDFG in their 1986 survey. We also added the Granite Creek site in hopes of substituting it for the Indian Jim School site for all the future shallow-water electrofishing surveys. We are recommending the elimination of the Indian Jim School site due to the safety and sampling efficiency concerns associated with backpack electrofishing this relatively deep-water reach of the NFFR. Much of the channel in this reach is greater than 3.5 feet, which is near the depth limit that wading with backpack electrofishing gear can be safely conducted. In order to keep the electronic equipment above water and still sample the deeper portions of the reach, crew members are required to balance on large boulders and reach their anode poles across deep water areas. This requirement limited the ability of the electrofishing crews to provide adequate

coverage of the entire reach during the survey, risked injury to electrofishing crews, and increased the risk of damage to the electrofishing equipment. While we realize elimination of the Indian Jim School site involves ignoring the data collected in 2002 and 2004, the benefits of concentrating on survey units that can be safely and effectively electrofished in future years outweighs this drawback.

We also continue to recommend that additional effort be allocated to secure the raw data from CDFG's 1982-1986 surveys in order to allow more appropriate and equivalent between year abundance, biomass, and length-frequency comparisons.

None of the rainbow trout scale samples collected in 2004 or 2005 (565 samples) have been examined, since scale analysis and age/growth determination were not included in the original scope of work. We are recommending that the ERC consider authorizing an age-length analysis using the scales collected in the two surveys, as well as the scales to be collected in the fall 2006 survey. CDFG (1988) suggested that mean length of rainbow trout at annulus II formation was significantly greater for years with higher minimum flows in the Rock Creek and Cresta reaches. Comparison of the age-length data from the 2004-2006 surveys with past and future data may be helpful in determining potential benefits of raising the base flows in the project area. The 2004 and 2005 scale samples are archived and can be easily accessed for this recommended analysis.

Literature Cited

- Bagenal, T.B., and F.W. Tesch. 1978. Age and growth. Chapter 5 *in* T.B. Bagenal, editor. Methods for assessment of fish production in fresh waters, 3rd edition. International Biological Programme Handbook 3. Blackwell Scientific Publications. Oxford. 365p.
- California Data Exchange Center. 2004. Daily and hourly rainfall records for Bucks Creek Powerhouse (BUP). Available online at <http://cdec.water.ca.gov/>
- California Department of Fish and Game. 1988. Rock Creek–Cresta Project (FERC 1962) fisheries management study, North Fork Feather River, California. 1 July 1988 final report prepared by Region 2 Environmental Services and submitted to Pacific Gas and Electric Company.

- DeVries, D.R., and R.V. Frie. 1996. Determination of age and growth. Chapter 16 *in* B.R. Murphy and D.W. Willis, editors. Fisheries Techniques, 2nd edition. American Fisheries Society, Bethesda, MD. 732p.
- ECORP Consulting, Inc. 2003. Draft results of backpack electrofishing surveys for the Rock Creek-Cresta Project (FERC No. 1962), Plumas County, California. 4 March 2003 draft report prepared for Pacific Gas and Electric Company.
- Everhart, H.W., A.W. Eipper, and W.D. Youngs. 1975. Principles of fishery science. Cornell University Press, Ithaca, NY. 288p.
- Flint, R.A. 1980. Chemical treatment of the North Fork Feather River, Butte and Plumas counties, California, 1977. California Department of Fish and Game, Inland Fisheries Administrative Report No. 80-4.
- Garcia and Associates. 2003. 2002 angler creel survey: Rock Creek-Cresta Project (FERC No. 1962) North Fork Feather River, Butte and Plumas counties, California. March 2003 draft report prepared for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.
- Kossow, M.C. 2004. Downstream migrant trapping study of selected tributaries to the North Fork Feather River, Rock Creek-Cresta Project, FERC Project No. 1962. February 2004 draft report prepared by Meadowbrook Conservation Services for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.
- Meadowbrook Conservation Services. 2005. 2004 angler creel survey: Rock Creek-Cresta Project (FERC No. 1962) North Fork Feather River, Butte and Plumas counties, California. March 2005 draft report prepared for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.
- Moyle, P.B. 2002. Inland Fishes of California, 2nd edition. University of California Press, Berkeley, California. 502p.
- Moyle, P.B., B. Vondracek, and G.D. Grossman. 1983. Responses of fish populations in the North Fork of the Feather River, California, to treatments with fish toxicants. North American Journal of Fisheries Management 3:48-60.
- Salamunovich, T. 2005. Rock Creek-Cresta (FERC No. 1962) backpack electrofishing surveys of shallow-water habitats – November 2004. January 7, 2005 final report prepared by Thomas R. Payne & Associates for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.

- Salamunovich, T. 2004a. Rock Creek-Cresta (FERC No. 1962) Recreation and pulse flow biological evaluation: stranding and displacement studies, year 1 – 2002. October 5, 2004 final report prepared by Thomas R. Payne & Associates for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.
- Salamunovich, T. 2004b. Rock Creek-Cresta (FERC No. 1962) Recreation and pulse flow biological evaluation: stranding and displacement studies, year 2 – 2003. December 2004 final report prepared by Thomas R. Payne & Associates for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.
- Salamunovich, T. and A. Berg, contributors. 2002a. Bucks Creek Project 2002 fish population report, FERC Project No. 619, Article 103. December 2002 report prepared by Thomas R. Payne & Associates for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.
- Salamunovich, T. and A. Berg, contributors. 2002b. Grizzly Creek 2002 fish population report, Grizzly Creek Rehabilitation Monitoring Program, FERC Project No. 619, Article 404(c). December 2002 report prepared by Thomas R. Payne & Associates for Technical and Ecological Services, Pacific Gas and Electric Company, San Ramon, CA.
- Van Deventer, J.S., and W.S. Platts. 1989. Microcomputer software system for generating population statistics from electrofishing data - user's guide for MicroFish 3.0. USDA, Forest Service General Technical Report INT-254. Intermountain Research Station, Ogden, Utah. 29p.
- White, G.C., K.P. Burnham, D.L. Otis, and D.R. Anderson. 1978. User's manual for program CAPTURE. Utah State University Press, Logan, Utah. 40p.
- White, G.C., D.R. Anderson, K.P. Burnham, and D.L. Otis. 1982. Capture-recapture and removal methods for sampling closed populations. LA-8787-NERP. Los Alamos National Laboratory, Los Alamos, New Mexico. 235p.

Appendix A

Rock Creek-Cresta Relicensing Settlement Agreement

Minimum Flow Schedules

Appendix A. Summary of Rock Creek-Cresta Project minimum flow schedules for three consecutive five-year periods under various water year types as specified in the Rock Creek Cresta Relicensing Settlement Agreement. Water year types to be determined by California Department of Water Resources forecasts of unimpaired flow of North Fork Feather River into Lake Oroville.

1st 5-year Period						
	Cresta			Rock Creek		
	<u>Normal/Wet</u>	<u>Dry</u>	<u>Crit. Dry</u>	<u>Normal/Wet</u>	<u>Dry</u>	<u>Crit. Dry</u>
Oct	220	175	140	180	150	150
Nov	220	175	100	180	150	110
Dec	240	190	100	200	160	110
Jan	240	190	100	225	180	110
Feb	240	190	100	225	180	110
Mar	250	200	100	250	200	110
Apr	250	200	100	250	200	110
May	250	200	140	250	200	150
June	240	190	140	220	175	150
Jul	220	175	140	180	150	150
Aug	220	175	140	180	150	150
Sep	220	175	140	180	150	150

2nd 5-year Period						
	Cresta			Rock		
	<u>Normal/Wet</u>	<u>Dry</u>	<u>Crit. Dry</u>	<u>Normal/Wet</u>	<u>Dry</u>	<u>Crit. Dry</u>
Oct	325	260	140	260	210	150
Nov	325	260	100	260	210	110
Dec	350	280	100	350	280	110
Jan	350	280	100	350	280	110
Feb	350	280	100	350	280	110
Mar	350	280	100	350	280	110
Apr	350	280	100	350	280	110
May	350	280	140	350	280	150
June	325	260	140	260	210	150
Jul	325	260	140	260	210	150
Aug	325	260	140	260	210	150
Sep	325	260	140	260	210	150

Appendix A. Summary of Rock Creek-Cresta Project minimum flow schedules for three consecutive five-year periods under various water year types as specified in the Rock Creek Cresta Relicensing Settlement Agreement. Water year types to be determined by California Department of Water Resources forecasts of unimpaired flow of North Fork Feather River into Lake Oroville. (continued)

3rd 5-year Period						
	Cresta			Rock		
	<u>Normal/Wet</u>	<u>Dry</u>	<u>Crit. Dry</u>	<u>Normal/Wet</u>	<u>Dry</u>	<u>Crit. Dry</u>
Oct	325	260	140	260	210	150
Nov	325	260	100	260	210	110
Dec	350	280	100	350	280	110
Jan	350	280	100	350	280	110
Feb	350	280	100	350	280	110
Mar	350	280	100	350	280	150
Apr	350	280	100	350	280	150
May	350	280	140	350	280	150
June	325	260	140	600	480	150
Jul	325	260	140	260	210	150
Aug	325	260	140	260	210	150
Sep	325	260	140	260	210	150

Appendix B

October 2005 Habitat Characteristic Data Sheets

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: Feather River County: Butte Date: 10/14/05
 Reach: Bear Creek (creek) Est Q: 74 cfs Page: 1 of 1
 Air Temp.: @ H2O Temp.: 55.8°F @ 11:05 AM Conductivity: 71.2 μ S/cm
 Air Temp.: @ H2O Temp.: 13.0°C @ 11:05 AM Specific Cond.: 92.0 μ S/cm
 Length: 374 feet gradient: 0.53% Salinity: 0.0 ppt
 D.O.: 6.77 mg/L
 D.O.: 65.0 % Saturation

Distance	Width	1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	72.7	1.05	2.15	2.0	
37	94.9	0.5	1.15	3.0	
74	108.1	0.6	1.4	4.05	
111	87.2	0.8	2.6	3.1	
148	66.4	1.0	2.4	3.0	
185	52.4	1.35	2.5	2.9	
222	44.0	2.1	2.65	2.6	
259	42.4	1.95	3.3	2.9	
296	59.0	0.75	2.1	2.05	
333	83.5	0.3	1.25	2.75	
370	79.0	0.8	1.4	2.2	
—					
—					
Mean Width	72.2 ft	Mean Depth 1.93 ft			
Total Area	26,999.45 ft ²	Total Volume 52,157.93 ft ³			

GPS Coord. Bottom: 39° 50.565 N
121° 23.971 W
 Top: 39° 50.582 N
121° 23.898 W

Photos: ① Top Down; ② Top Across
 ③ Mid Down; ④ Mid Up
 ⑤ Bottom X; ⑥ Bottom Up
 ⑦ Creek

Maximum Depth 5.1'

Reach Habitat Characterization:

Habitat types		
Pool	<u>80</u>	%
Run	<u>20</u>	%
Riffle		%
POW		%
		%

Substrate types		
finer (< 2mm or 1/16")	<u>5</u>	%
sand (2-7mm or 1/16-1/4")	<u>5</u>	%
gravel (7-75mm or 1/4-3")	<u>10</u>	%
cobble (75-300mm or 3-12")	<u>30</u>	%
boulder (>300mm or >12")	<u>50</u>	%
bedrock		%

trout spawning: 0 ft²

Fish Cover		
Surface turbulence	<u>15</u>	%
Instream object	<u>75</u>	%
Undercut bank	<u>10</u>	%
Overhanging vegetation (<48")	<u>5</u>	%

Gradient		
FS to top	<u>5.0</u>	
FS to bottom	<u>7.0</u>	
Elev change	<u>2.00</u>	
Distance	<u>374</u>	
Gradient	<u>0.53</u>	

Stream: NFFR County: PLUMAS Date: 10/15/2005
 Reach: GRIZZLY Est. Q: ~70 cfs Page: 1 of 1
 Air Temp.: @ H2O Temp.: 54.8°F @ 10:45 AM Conductivity: 75.3 $\mu\text{S/cm}$
 Air Temp.: @ H2O Temp.: 12.6°C @ 10:45 AM Specific Cond.: 98.5 $\mu\text{S/cm}$
 Length: 303' (300 in 2004) gradient: 1.25% Salinity: 0.0 ppt

GPS Coord. SAME AS Z004

See into body

Photos: ① Cover; ② Top View; ③ Top X

(4) Middle Down (5) Mid-up

(ii) Bottom up, (f) Bottom X

Maximum Depth 3.30 ft

Habitat types		
Pool	5	%
Run	50	%
Riffle	30	%
POW	15	%
		%

Substrate types		
finest (< 2mm or 1/16")	0	%
sand (2-7mm or 1/16-1/4")	5	%
gravel (7-75mm or 1/4-3")	10	%
cobble (75-300mm or 3-12")	25	%
boulder (>300mm or >12")	60	%
bedrock		%

trout spawning: 209 ft²

$$1+3+20+20460 \div 5 = 4093$$

Fish Cover		
Surface turbulence	30	%
Instream object	80	%
Underscut bank	5	%
Overhanging vegetation (<48")	5	%

Gradient	
FS to top	<u>4.55</u>
FS to bottom	<u>4.35</u>
Elev change	<u>3.20</u>
Distance	<u>303</u>
Gradient	<u>1.25</u>

Stream: NFR County: PLUMAS Date: 10/15/2005
 Reach: INDIAN JIM Est. Q: 170 cfs Page: 1 of 1
 Air Temp.: @ H2O Temp.: 56.3°F @ 11:35 AM Conductivity: 91.8 μ S/cm
 Air Temp.: @ H2O Temp.: 13.4°C @ 11:35 AM Specific Cond.: 118.4 μ S/cm
 Length: 308 (274 m 2004) gradient 0.81% Salinity: 0.1 ppt
 D.O.: 9.77 mg/L
 D.O.: 94.2 % Saturation

(ft/m)	(ft/m)	(ft/m)	(ft/m)	(ft/m)	(ft/m)
Distance	Width	1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	71.9	2.9	2.1	2.5	
30	61.1	0.5	1.8	2.5	
60	67.7	1.5	3.4	2.1	
90	58.3	1.6	2.7	4.1	
120	57	1.4	2.5	3.8	
150	51.8	1.2	3.1	4.4	
180	49.7	4.9	3.6	1.6	
210	50.5	1.2	3.4	4.1	
240	49.7	1.6	3.6	4.2	
270	50.1	1.0	2.3	2.2	
300	53.6	1.7	1.6	1.2	

Mean Width

56.4 ft

Mean Depth

2.52 ft

Total Area

17,368.40 ft²

Total Volume

43,842.05 ft³

GPS Coord. SAME AS 2004

Photos: See note book

① Cover	② Top down	③ Top X
④ Inside down	⑤ Middle up	
⑥ Bottom up	⑦ Bottom X	

Maximum Depth 6.30 ft

Habitat types		
Pool	10	%
Run	70	%
Riffle	10	%
PCW	10	%
		%

Substrate types		
finer (< 2mm or 1/16")	40	%
sand (2-7mm or 1/16-1/4")	5	%
gravel (7.5mm or 1/4-3")	5	%
cobble (7.5-300mm or 3-12")	40	%
boulder (>300mm or >12")	50	%
bedrock	—	%

| trout spawning: | 0 | ft². |

Fish Cover		
Surface turbulence	20	%
Instream object	70	%
Undercut bank	5	%
Overhanging vegetation (<48")	10	%

Gradient	
FS to top	<u>5.7</u>
FS to bottom	<u>4.2</u>
Elev change	<u>2.5</u>
Distance	<u>308</u>
Gradient	<u>0.81</u>

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: NFR County: PLUMAS Date: 10/10/04
 Reach: GRANITE Est. Q: 70 cfs Page: 1 of 1
 Air Temp.: @ H2O Temp.: 55.6°F @ 10:25 AM Conductivity: 92.5
 Air Temp.: @ H2O Temp.: 13.0°C @ 10:25 AM Specific Cond.: 119.9
 Length: 352 feet (332 ~~352~~) gradient: 1.14% Salinity: 0.1
 D.O.: 9.54
 D.O.: 90.8 % S

ft/m	ft/m	ft/m			
Distance	Width	1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	54.2	1.05	2.2	2.7	
33	48.0	1.05	1.25	2.7	
66	62.3	0.7	1.7	1.5	
99	86.0	0.3	0.65	2.8	
132	92.6	0.5	0.5	1.6	
165	108	0.2	0.6	2.7	
198	45.7-194	0.8	1.4	2.3	
231	50.8-229	1.35	1.25	2.2	
264	54.7-289	1.3	1.2	1.7	
297	12.2	1.1	0.3	1.5	
332	126-110	0.25	1.3	0.6	
Mean Width		84.9 ft		Mean Depth	
				1.22 ft	
Total Area		29,894.40 ft ²		Total Volume	
				36,326.23 ft ³	

GPS Coord. BOTTOM SAME AS TOP
OF INDIAN JIM
Top 39° 56.980N
121° 18.033W

Photos: (1) COVER (2) TOP ACROSS
 (3) TOP OBLIQUE DOWN
 (4) TOP DOWN SPLIT; (5) TOP DOWN MAIN
 (6) MID UPSPLIT; (7) MID DOWN SPLIT
 (8) MID UP MAIN; (9) MID DOWN MAIN
 (10) BOTTOM ACROSS; (11) BOTTOM UP

Maximum Depth 4.20 ft

Reach Habitat Characterization:

Habitat types		
Pool	—	%
Run	<u>60</u>	%
Riffle	<u>25</u>	%
POW	<u>15</u>	%
	—	%

Substrate types		
finer (< 2mm or 1/16")	—	%
sand (2-7mm or 1/16-1/4")	<u>15</u>	%
gravel (7-75mm or 1/4-3")	<u>5</u>	%
cobble (75-300mm or 3-12")	<u>30</u>	%
boulder (>300mm or >12")	<u>50</u>	%
bedrock	—	%

trout spawning: 3 r/r

Fish Cover		
Surface turbulence	<u>35</u>	%
Instream object	<u>50</u>	%
Undercut bank	<u>5</u>	%
Overhanging vegetation (<48")	<u>10</u>	%

Gradient		
FS to top	<u>3.7</u>	
FS to bottom	<u>7.7</u>	
Elev change	<u>4.0</u>	
Distance	<u>352</u>	
Gradient	<u>1.14</u>	

WHEN UNIT PICKED
 SPLIT CHANNEL
 @ 144-288
 (from bottom)
 width @ top = 135'
 TOP OF UNIT
 536' Below
 Granite Creek

Bottom of unit at
 Riffle @ top of Indian Jim

RODGERS FLAT MAIN CHANNEL

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: NFFR County: PLUMAS Date: 10/18/2005
 Reach: RODGERS FLAT - MAIN Est. Q: 70 cfs Page: 1 of 1
 Air Temp.: @ H2O Temp.: 56.0°F @ 9:00 AM Conductivity: 104.0 $\mu\text{S/cm}$
 Air Temp.: @ H2O Temp.: 15.3°C/59.5°F @ 1:45 PM Specific Cond.: 127.5 $\mu\text{S/cm}$
 Length: 231 (~~231~~) gradient: 0.63% Salinity: 0.1 ppt
 D.O.: 9.82 mg/L
 D.O.: 98.4 % Saturation

MAIN CHANNEL

Distance	Width	1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	83.4	1.7	2.0	1.6	
23	80.8	0.4	1.3	2.3	
46	61.3	0.8	1.6	0.9	
69	62.8	2.0	2.7	1.2	
92	66.1	2.0	1.4	1.2	
115	64.9	1.4	3.0	1.2	
138	69.8	2.6	2.0	1.4	
161	67.2	0.6	2.3	2.5	
184	73.3	1.3	1.8	1.4	
207	70.4	2.0	1.3	1.3	
231	71.3	2.5	3.6	3.5	
Mean Width: <u>70.2 ft</u> Mean Depth: <u>1.79 ft</u>					
Total Area: <u>16,218.30 ft²</u> Total Volume: <u>29,045.50 ft³</u>					

GPS Coord. SAME AS 2004

Photos: (1) COVER (2) TOP DOWN
 (3) TOP X (4) MIDDLE DOWN
 (5) MIDDLE UP (6) BOTTOM UP
 (7) BOTTOM X

Maximum Depth 3.90 ft

Reach Habitat Characterization:

Habitat types	
Pool	— %
Run	<u>20</u> %
Rifle	— %
POW	<u>80</u> %

Substrate types	
fine (< 2mm or 1/16")	— %
sand (2-7mm or 1/16-1/4")	<u>5</u> %
gravel (7-75mm or 1/4-3")	<u>5</u> %
cobble (75-300mm or 3-12")	<u>10</u> %
boulder (>300mm or >12")	<u>80</u> %
bedrock	— %

trout spawning: 31 ft²

5 + 5 + 16 + 5

Fish Cover	
Surface turbulence	<u>30</u> %
Instream object	<u>80</u> %
Undercut bank	<u>0</u> %
Overhanging vegetation (<48")	<u>10</u> %

Gradient	
FS to top	<u>2.65</u>
FS to bottom	<u>4.10</u>
Elev change	<u>1.45</u>
Distance	<u>231</u>
Gradient	<u>0.63</u>

Side channel enters 100' above btm

RODGERS FLAT - SIDE CHANNEL

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: NFFR County: PLUMAS
 Reach: RODGERS FLAT - SIDE CH Est. Q: 5 cfs
 Air Temp.: @ H2O Temp.: — @
 Air Temp.: @ H2O Temp.: — @
 Length: 136 feet (128' in 2004) gradient: —

Date: 10/18/2005
 Page: 1 of 1
 Conductivity: — $\mu\text{S/cm}$
 Specific Cond.: — $\mu\text{S/cm}$
 Salinity: — ppt
 D.O.: — mg/L
 D.O.: — % Saturation

SIDE CHANNEL

(ft)m	(ft)m	(ft)m			
Distance	Width	1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	16.9	0.4	0.95	0.2	
13	11.9	0.85	0.5	0.45	
26	4.9	0.15	0.55	0.9	
39	11.3	0.2	0.40	0.25	
52	13.4	0.55	0.55	0.55	
65	16.3	0.9	0.85	0.5	
78	23.4	0.95	1.35	1.0	
91	34.1	1.05	0.2	1.05	
104	15.8	0.3	0.25	0.4	
117	12.0	0.2	1.1	0.75	
128	12.9	0.1	0.7	0.5	

GPS Coord. NONE

Photos: NONE

Mean Width 16.9 ft Mean Depth 0.62 ft
 Total Area 2,297.16 ft² Total Volume 1,413.10 ft³

Maximum Depth 1.80 ft

Reach Habitat Characterization:

Habitat types		
Pool	<u>75</u>	%
Run		%
Riffle	<u>5</u>	%
POW	<u>20</u>	%
		%

Substrate types		
finer (< 2mm or 1/16")	<u>5</u>	%
sand (2-7mm or 1/16-1/4")	<u>5</u>	%
gravel (7-75mm or 1/4-3")	<u>10</u>	%
cobble (75-300mm or 3-12")	<u>10</u>	%
boulder (>300mm or >12")	<u>70</u>	%
bedrock	<u>0</u>	%

trout spawning: 25 ft²
9 + 9 + 2 + 5

Fish Cover		
Surface turbulence	<u>5</u>	%
Instream object	<u>40</u>	%
Undercut bank	<u>0</u>	%
Overhanging vegetation (<48")	<u>60</u>	%

Gradient	
FS to top	
FS to bottom	
Elev change	
Distance	
Gradient	

Appendix C

October 2005 Electrofishing Fish Data Sheets

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

55.8°

Stream: NF Feather County: Platte Date: 10/04/05
 Reach: Bear Ranch Est. Q: ~ 74 cfs Page: 1 of 10
 Air Temp.: @ H2O Temp.: 55.8°F @ 11:05 am Conductivity: 71.2 microSiemens
 Blocknets: TOP + Bottom Specific Cond.: 92.0 microSiemens
 Reach Length: 374 feet Salinity: 0 ppt
 Electroshocker Type: ET D.O.: 6.77 mg/L
 Personnel: Shockers: Tim, Tom, Steve, Doug, Scott
R & L Photos:

Netters:
 RST-20-14-4
 N=42
 SE=4 OK

Robert, Sandra, Cindy, Andrea, Pam, Russell,
Sean, Don

Shocker	Tim	Tom	Steve	Doug	Scott
Model	T7/11/124	TRPA-11A	PAF 11-R	PG-5/124	TRPA-12A
Battery ID	PG+E	SAVIM 120	PG+E	PG+E	KLAT-2
Voltage:	400	400	400	400	400
Frequency:	30	30	30	30	30
1st Pass	Malfunction	2040	2235	1796	1869
2nd Pass	1468	1549	1790	1521	1344
3rd Pass	Malfunction	1423	1584	1262	1247
4th Pass					
5th Pass					

Lengths are fork lengths or total lengths in millimeters					Weights are in grams
Pass#	Species	Length	Weight	Scale Sample	Notes
1	Sculpin	✓ 72	4.7	most	1st Pass started @ 9:37 - ended @ 10:59 With a 25 min break to get time station working.
1	R. Sculpin	✓ 91	11.3	most	
1	R. Sculpin	✓ 90	6.2	most	
1	SMB	✓ 58	3.1	most	
1	P.M.	✓ 41	0.5	most	
1	R. Trout	✓ 367	48.7	(BOS-1)	
1	Sculpin	✓ 65	3.2	most	
1	"	✓ 70	3.5	most	
1	SMB	✓ 76	3.1	—	
1	SMB	✓ 63	3.9	—	
1	P.M.	✓ 49	1.1	—	
1	R.T.	✓ 292	20.5	BOS-2	
1	SMB	✓ 63	4.0	—	
1	T.	✓ 59	4.0	—	
1	T.	✓ 81	9.7	—	
1	T.	✓ 90	11.7	—	
1	RT	✓ 79	5.7	BOS-3	
1	SMB	✓ 74	6.9	—	
1	RT	✓ 186	80.5	BOS-4	
1	T.	✓ 323	393.8	BOS-5	
1	SMB	✓ 167	76.3	—	
1	RT	✓ 189	77.5	BOS-6	
1	T.	✓ 314	405.8	BOS-7	
1	T.	✓ 210	105.8	BOS-8	
1	SMB	✓ 85	10.7	—	

8

BOS-1, 2, etc

✓ 390 Total Fish - OK

65

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: N.F. Frazier

Date: 10/14/05

Page: 2 of 10

Reach: BEAR RANCH

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SMB	✓ 81	8.2	—	
	↓	✓ 58	3.3	—	
	RT	✓ 81	6.3	B05-9	
	SMA	✓ 63	3.4	—	
	Suck	✓ 71	4.4	—	
	↓	✓ 71	5.1	—	
	SMB	✓ 65	3.9	—	
	Suck	✓ 75	5.6	—	
	↓	✓ 60	2.9	—	
	↓	✓ 67	3.3	—	
	R. Sc.	✓ 111	21.9	—	
	↓	✓ 92	10.3	—	
	↓	✓ 91	10.2	—	
	RT	✓ 81	6.0	B05-10	
	↓	✓ 74	4.8	No Scale	
	SMB	✓ 81	8.8	—	
	↓	✓ 56	2.3	—	
	Suck	✓ 74	5.9	—	
	↓	✓ 67	3.5	—	
	↓	✓ 74	5.4	—	
	↓	✓ 73	4.8	—	
	↓	✓ 61	2.8	—	
	↓	✓ 58	3.0	—	
	↓	✓ 76	5.9	—	
	SMB	✓ 65	4.3	—	
	Suck	✓ 78	6.6	—	
	↓	✓ 69	4.4	—	
	SMB	✓ 68	4.6	—	
	R. Sc.	✓ 114	20.7	—	
	↓	✓ 79	5.5	—	
	R.T.	✓ 109	14.6	B05-11	
	↓	✓ 334	393.7	B05-12	
	↓	✓ 85	7.6	B05-13	
	↓	✓ 81	6.3	No Scale	
	↓	✓ 203	94.7	B05-14	
	↓	✓ 331	392.8	B05-15	
	SMB	✓ 60	3.1	—	
	↓	✓ 55	3.1	—	
	R. Sc.	✓ 85	9.4	—	
	Suck	✓ 75	6.6	—	
	↓	✓ 76	5.9	—	
	↓	✓ 71	4.8	—	
	↓	✓ 83	9.5	—	
	↓	✓ 68	4.7	—	
	SMB	✓ 63	3.8	—	

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NE FEATHER

Date: 10/04/05

Page: 3 of 10

Reach: BEAR RANCH

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	Suck	77 ✓	5.5	—	
		54 ✓	2.4	—	
		87 ✓	9.3	—	
	SMB	✓ 64	4.1	—	
	R. Sc	✓ 89	8.2	—	
	Suck	77 ✓	6.5	—	
	RT	✓ 92	9.4	B05-1/6	
	SMB	✓ 85	9.4	—	
	Suck	68 ✓	3.6	—	
	R. Sc	✓ 85	7.9	—	
	Suck	75 ✓	6.4	—	
	SMB	✓ 74	5.8	—	
	Suck	71 ✓	4.4	—	
		58 ✓	2.9	—	
		70 ✓	4.4	—	
	R. Sc	✓ 78	6.3	—	
	SMB	✓ 100	15.5	—	
		✓ 70	5.6	—	
		✓ 61	3.3	—	
		✓ 95	12.9	—	
		✓ 73	6.1	—	
		✓ 141	42.1	—	
		✓ 70	4.7	—	
		✓ 63	3.4	—	
		✓ 60	3.3	—	
	Suck	71 ✓	5.1	—	
		68 ✓	4.3	—	
		73 ✓	5.5	—	
		77 ✓	5.6	—	
		74 ✓	5.1	—	
		74 ✓	5.5	—	
		80 ✓	7.3	—	
	R. Sc	✓ 84	7.5	—	
	Suck	70 ✓	5.0	—	
	R. Sc	✓ 100	14.4	—	
	Suck	81 ✓	7.0	—	
		70 ✓	4.6	—	
		72 ✓	5.6	—	
		63 ✓	3.8	—	
		73 ✓	5.3	—	
		70 ✓	4.5	—	
		59 ✓	2.6	—	
	R. Sc	✓ 93	12.1	—	
		✓ 93	11.5	—	
	Suck	78 ✓	6.7	—	

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: N.F. FEATHER

Date: 10/04/05

Page: 4 of 10

Reach: BEAR RANCH

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SMB	✓ 65	3.5	---	
	Suck	✓ 70	4.2	---	
		✓ 103	3.3	---	
		✓ 62	4.5	---	
		✓ 72	4.5	---	
		✓ 76	4.4	---	
	R. Sn.	✓ 84	7.8	---	
		✓ 79	5.4	---	
		✓ 102	15.1	---	
		✓ 94	10.9	---	
		✓ 94	12.3	---	
		✓ 94	12.3	---	
		✓ 95	15.5	---	
		✓ 76	5.1	---	
		✓ 81	7.4	---	
	SMB	✓ 62	2.6	---	
		✓ 64	2.5	---	
	RT	✓ 88	8.5	--- 17	
	R. Sn.	✓ 78	6.5	---	
	Suck	✓ 71	5.4	---	
		✓ 61	2.9	---	
		✓ 68	4.2	---	
	SMB	✓ 70	5.3	---	
	Suck	✓ 71	5.4	---	
		✓ 83	7.6	---	
		✓ 71	4.3	---	
		✓ 70	4.3	---	
		✓ 73	4.9	---	
	SMB	✓ 70	5.5	---	
	Suck	✓ 68	3.7	---	
		✓ 74	5.2	---	
		✓ 79	7.5	---	
		✓ 70	4.1	---	
		✓ 48	1.2	Most	
		✓ 71	4.1	---	
		✓ 77	5.6	---	
	SMB	✓ 60	3.1	---	
	Suck	✓ 65	3.6	---	
		✓ 64	3.4	---	
		✓ 80	6.9	---	
		✓ 66	3.9	---	
		✓ 85	8.4	---	
		✓ 73	6.1	---	
		✓ 65	3.2	---	
1	RFS	✓ 74	5.6	---	

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFER

Date: 10/14/2005

Page: 5 of 10

Reach: BEAR

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓ 86	8.2		
	RFS	✓ 108	18.2		
		✓ 75	5.1		
		✓ 89	8.9		
		✓ 99	12.1		
		✓ 105	18.1		
		✓ 86	7.2		
		✓ 80	6.1		
		✓ 104	14.6		
		✓ 96	11.0		
		✓ 83	6.8		
	SKR	✓ 70	4.9		
	SMB	✓ 62	3.7		
	RFS	✓ 71	4.2		
	SKR	✓ 72	5.2		
	SKR	✓ 72	4.5		
	SKR	✓ 78	6.1		
	SKR	✓ 69	5.1		
	SKR	✓ 67	3.7		
	SKR	✓ 68	4.6		
	SMB	✓ 55 65	2.8		
	SKR	✓ 80	8.0		
	SMB	✓ 67	4.5		
	SKR	✓ 70	4.4		
	RFS	✓ 82	6.8		
	RFS	✓ 95	10.7		
	RFS	✓ 103	14.6		
	RFS	✓ 89	9.8		
	SKR	✓ 57	2.7		
	SKR	✓ 67	3.5		
	RFS	✓ 78	5.4		
	RFS	✓ 110	16.7		
	RFS	✓ 81	7.3		
	RFS	✓ 71	4.4		
	RFS	✓ 80	6.2		
	RFS	✓ 91	9.4		
70	RBT	✓ 89	5.6	805-17	
	RFS	✓ 90	9.5		
	RFS	✓ 104	14.3	14.3	
	RFS	✓ 104	15.5		
	RFS	✓ 79	6.4		
	RFS	✓ 68	4.1		
	RFS	✓ 79	5.7		
✓	RFS	✓ 100	12.7		
	RFS	✓ 82	5.8		

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFR

Date: 10/14/2005

Page: 6 of 10

Reach: REAR

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓ 74	4.7		
	SKR	✓ 58	2.5		
	SKR	✓ 75	6.3		
	RFS	✓ 103	14.7		
	RFS	✓ 93	10.2		
	RFS	✓ 96	11.1		
	RFS	✓ 92	9.4		
	RFS	✓ 92	9.4		
	RFS	✓ 82	6.9		* 1 yellow legged frog
	RFS	✓ 83	6.9		
	SKR	✓ 81	6.5		
	SKR	✓ 76	5.1		
1	RFS	✓ 74	5.0		end pass 1
Pass 2	SMB	✓ 71	5.2	—	
	↓	✓ 63	3.7	—	
	Suck	✓ 71	4.9	mont	
	SMB	✓ 97	11.5	—	
	RT	✓ 216	119.1	105-18	
	SMB	✓ 63	3.8	—	
	↓	✓ 62	3.7	—	
	↓	✓ 60	3.1	—	
	↓	✓ 75	5.3	—	
	↓	✓ 65	3.7	—	
	↓	✓ 61	3.7	—	
	Suck	✓ 65	3.5	—	
	Suck	✓ 77	5.9	—	
	SMB	✓ 60	3.2	—	
	↓	✓ 65	4.0	—	
	Suck	✓ 63	3.4	—	
	↓	✓ 76	6.1	—	
	↓	✓ 60	2.9	—	
	↓	✓ 64	3.6	—	
	↓	✓ 75	5.3	—	
	RT	✓ 81	6.1	805-19	
	Suck	✓ 59	3.2	—	
	↓	✓ 74	5.6	—	
	RFS	✓ 102	14.9	—	
	Suck	✓ 86	7.8	—	
	SMB	✓ 96	13.1	—	
	RFS	✓ 85	3.2	—	
	↓	✓ 71	4.0	—	
	Suck	✓ 66	3.6	—	
	RFS	✓ 80	5.9	—	

unconfirmed

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream:

NFR

Date: 10/04/05

Page: 7 of 10

Resch:

Bear Ranch

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	R Sc	✓ 87	9.2		
	Suck	✓ 70	4.5		
		✓ 70	5.7		
		✓ 67	3.7		
		✓ 65	3.3		
		✓ 65	3.8		
		✓ 66	4.0		
		✓ 55	2.1		
		✓ 50	6.5		
		✓ 73	4.5		Mort
	✓	✓ 75	5.4		Mort
	SMR	✓ 53	2.8		Mort
	✓	✓ 95	12.7		Mort
	Suck	✓ 73	5.2		
	SMB	✓ 60	3.3		
	RT	✓ 202	97.6	BOS-20	
		✓ 310	341.4	BOS-21	
		✓ 267	206.8	BOS-22	
	✓	✓ 336	400.5	BOS-23	
	SMB	✓ 67	4.1		
	RT	✓ 395	592.8	BOS-24	
	✓	✓ 387	562.1	BOS-25	
124 →	R Sc	✓ 124	24.4		
		✓ 101	14.3		
	✓	✓ 78	6.3		
	RT	✓ 218	131.2	BOS-26	
		✓ 264	227.9	BOS-27	
		✓ 279	236.7	BOS-28	
	✓	✓ 83	6.7	BOS-29	
	SMB	✓ 70	4.9		
	✓	✓ 72	5.1		
	Suck	✓ 73	5.2		
	✓	✓ 75	5.8		
	SMB	✓ 88	10.4		
	Suck	✓ 81	6.7		
	SMB	✓ 69	4.4		
		✓ 71	5.7		
		✓ 72	5.2		
		✓ 70	5.4		
	✓	✓ 68	4.4		
	Suck	✓ 80	6.6		
	SMB	✓ 68	4.8		
	R Sc	✓ 86	8.6		
	Suck	✓ 69	4.2		
	SMB	✓ 70	4.7		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFR Date: 10/04/05 Page: 8 of 10

Reach: Beaver Ranch (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
	Snuck	✓ 73	4.9		
	↓	✓ 90	4.7		
	↓	✓ 53	2.1		
	RSn	✓ 118	21.2		
	SMB	✓ 61	3.1		
	↓	✓ 65	4.2		
	RT	✓ 89	10.2	Bos-30	
	RSn	✓ 99	12.5		
	SMB	✓ 59	3.5		
	↓	✓ 61	3.3		
	RT	✓ 97	11.1	Bos-31	
	SMB	✓ 60	2.6		
	Snuck	✓ 65	3.5		
	↓	✓ 79	6.6		
	↓	✓ 72	4.8		
	↓	✓ 73	5.2		
	↓	✓ 74	5.3		
	↓	✓ 72	4.6		
	RSn	✓ 95	9.7		
	↓	✓ 87	8.7		
	↓	✓ 82	6.9		
	Snuck	✓ 53	1.7		
	RSn	✓ 86	7.1		
	↓	✓ 99	15.2		
	↓	✓ 99	12.5		
	Snuck	✓ 59	2.6		
	RSn	✓ 105	14.5		
	↓	✓ 97	11.5		
	↓	✓ 93	11.6		
	↓	✓ 94	8.9		
	↓	✓ 89	8.0		
	↓	✓ 93	9.8		
	↓	✓ 96	11.3		
	Snuck	✓ 78	6.7		
	↓	✓ 56	2.2		
	RSn	✓ 80	6.2		
	↓	✓ 100	11.6		
	Snuck	✓ 69	4.7		
	↓	✓ 45	1.1		
	RSn	✓ 87	8.2		
	↓	✓ 82	7.1		
	XXX	XXX	XXX	XXX	End Pass 2
#3	RAC	✓ 79	6.3		
↓	↓	✓ 107	18.6		
	SMB	✓ 58	3.4		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR Date: 10/04/05 Page: 9 of 10

Reach: Bear Ranch (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#3	SMB	✓ 77	6.4		
	Suck	✓ 68	4.5		
	SMB	✓ 66	4.1		
	↓	✓ 79	7.4		
	Suck	✓ 74	5.5		
	↓	✓ 82	6.3		
	SMB	✓ 64	3.8		
	RT	✓ 87	7.6	BOS - 32	
	↓	✓ 223	137.1	BOS - 33	
	↓	✓ 100	12.5	BOS - 34	
	SMB	✓ 68	4.4		
	Suck	✓ 76	5.5		
	↓	✓ 63	2.6		
	RT	✓ 303	336.1	BOS - 35	
	Suck	✓ 81	6.9		
	↓	✓ 80	6.8		
	RT	✓ 104	14.9		
	SMB	✓ 86	9.9		
	↓	✓ 60	2.9		
	Suck	✓ 68	3.8		
	R. Sc	✓ 81	5.8		
	SMB	✓ 62	3.2		Adopt
	Suck	✓ 85	2.1		
	R. Sc	✓ 75	5.4		
	↓	✓ 92	9.1		
	Suck	✓ 67	4.0		
	↓	✓ 75	5.5		
	↓	✓ 74	4.9		
	SMB	✓ 71	5.1		
	R. Sc	✓ 77	5.7		
	↓	✓ 88	7.9		
	↓	✓ 106	15.7		
	↓	✓ 97	11.8		
	SMB	✓ 65	3.5		
	↓	✓ 65	4.7		
	Suck	✓ 77	5.6		
	SMB	✓ 58	3.1		
	↓	✓ 87	8.7		
	R. Sc	✓ 85	6.0		
	SMB	✓ 58	3.2		
	R. Sc	✓ 83	7.1		
	Suck	✓ 75	5.2		
	↓	✓ 85	7.4		
	R. Sc	✓ 88	8.9		
✓	Hickory	✓ 105	13.5		

Stream: NFFR Date: 10/04/05 Page: 10 of 10
 Reach: Bear Ranch (continued)

Stream:

NIFFR

Date: _____

10, 04, 05

Page:

10 of 10

Reach:

Bear Ranch

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
3	Suck	✓ 75	5.6		
		✓ 81	7.4		
		✓ 76	5.3		
		✓ 74	5.0		
		✓ 167	3.9		
	SMB	✓ 59	3.3		
	Suck	✓ 65	3.4		
3		✓ 70	4.3		End Pass 3

3.

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFR County: PLUMAS Date: 10/5/2005
 Reach: GRIZZLY Est. Q: 72 Page: 1 of 18
 Air Temp.: @ H2O Temp.: 54.8°F @ 10:45am Conductivity: 75.3 microSiemens
 Blocknets: Top of Bottom Specific Cond.: 98.5 microSiemens
 Reach Length: _____ Salinity: 0 ppt
 Electroshocker Type: _____ D.O.: 9.93 mg/L
 Personnel: Shockers: Dennis Parkinson 93.4 % saturation
 Netters: Robert, Pam, Cindy, Don, Andrew, Russell, Sean Photos: _____

* TRPA Shadown

Shocker	Donor	Seam	Steel	Snout	Tom	Twin
Model	SP 152B	11A	PGE 125	PGE 124	* 125	PGE-7
Battery ID						
Voltage						
Frequency						
1st Pass	1130	1945	2025	1696	1696	Malp.
2nd Pass	1531	1770	2115	1739	1679	1605
3rd Pass	1498	1657	1914	1718	1572	1538
4th Pass						
5th Pass						

Lengths are fork lengths or total lengths in millimeters					Weights are in grams
Pass#	Species	Length	Weight	Scale Sample	Notes
1	RBT	1269	210.2	G05-01	
		1318	522.7	G05-02	
		1205	96.7	G05-03	
		1206	105.5	G05-04	
		198	12.4	G05-05	
		185	28.1	G05-06	
		189	81.9	G05-07	
		94	10.8	G05-08	
		84	6.4	G05-09	
		202	97.9	G05-10	
	SMB	97	13.6		
	RBT	212	118.1	G05-11	
		228	144.9	G05-12	
		113	19.0	G05-13	
		78	5.9	No Scale	
		92	9.3	G05-14	
		94	9.9	G05-15	
		93	9.8	G05-16	
		108	16.3	G05-17	
		81	6.5	G05-18	
		89	9.0	G05-19	
		83	6.5	G05-20	
		99	12.1	G05-21	
		132	30.0	G05-22	
		97	10.3	G05-23	

RFS, Sep. SKR (Sucker)

25

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/05/05

Page: 2 of 18

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	RBT	✓104	20.9	G05-24	
		✓99	12.2	G05-25	
		✓92	10.6	G05-26	
		✓94	10.5	G05-27	
	✓	✓77	5.7	G05-28	Mark ✓
	SKR	✓56	2.4		
	RFB	✓86	9.1		
	SKR	✓62	2.8		
		✓80	6.3		
		✓72	4.7		
		✓77	5.6		
		✓76	5.5		
		✓80	7.0		
		✓51	1.2		
	✓	✓48	1.3		
	Pik, M	✓55	1.6		
	SKR	✓40	1.0		
		✓56	2.4		
		✓73	5.2		
		✓44	1.0		
		✓47	1.4		
		✓57	2.3		
		✓52	1.6		
	✓	✓52	1.7		
	Pik, M	✓51	1.6		
	H.H.	✓40	0.8		
		✓43	0.7		
		✓44	0.7		
	✓	✓34	0.4		
	SKR	✓45	0.6		
	Pik, M	✓49	1.4		
	SMB	✓93	14.9		
	✓	✓91	13.4		
	RBT	✓82	7.3	G05-29	
		✓155	47.4	G05-30	
		✓88	7.0	G05-31	
		✓104	14.2	G05-32	
		✓84	5.3	G05-33	
		✓89	7.3	G05-34	
		✓85	9.2	G05-35	
		✓90	7.3	G05-36	
	✓	✓122	21.0	G05-37	
	SKR	✓54	1.6		Mark ✓
	RFB	✓83	8.6		
	SKR	✓37	0.5		Mark ✓

H.H. - Hard Head

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NERR

Date: 10/05/05

Page: 3 of 18

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓36	0.6		
	HH	✓36	0.3		Mort ✓
	SKR	✓58	2.4		
		✓45	0.2		
		✓66	3.9		
	✓	✓54	2.1		
	HH	✓38	0.3		
		✓45	0.7		
	✓	✓34	0.5		
	Pike M	✓50	1.0		
	HH	✓40	0.4		
	✓	✓39	0.5		
	Pike M	✓60	2.1		
	HH	✓41	0.5		
		✓37	0.3		
	✓	✓40	0.5		
	HH	✓45	1.2		
	SKR	✓68	4.0		
		✓56	2.2		
		✓56	2.1		
		✓57	2.3		
	✓	✓59	3.0		
	HH	✓40	0.6		
	✓	✓37	0.5		
	SKR	✓46	1.3		
	HH	✓47	0.8		
	✓	✓37	0.2		
	RBT	✓78	6.4	605-38	
	SKR	✓41	0.7		
	HH	✓35	0.6		
	SKR	✓53	1.6		Mort ✓
	SKR	✓46	1.2		
	HH	✓38	0.4		Mort ✓
	HH	✓36	0.4		
	SKR	✓61	1.9		
	HH	✓40	0.4		Mort ✓
	HH	✓50	0.9		Mort ✓
	SKR	✓75	5.7		
	HH	✓41	0.8		
	SKR	✓60	2.6		
	HH	✓40	0.4		
	HH	✓45	0.9		
	HH	✓46	0.9		
	HH	✓47	0.9		
	Pike M	✓50	1.1		

45 OK

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFR

Date: 10/05/05

Page: 4 of 18

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓ 83	5.8		
	↓	✓ 56	2.3		
	Pike M.	✓ 45	0.8		
	HH	✓ 44	0.8		
	SKR	✓ 61	2.5		
	SKR	✓ 62	3.5		
	HH	✓ 43	0.6		
	SKR	✓ 73	4.9		
	HH	✓ 40	0.4		
	HH	✓ 39	0.5		
	HH	✓ 40	0.7		
	SKR	✓ 47	1.1		
	↓	✓ 57	2.3		
	↓	✓ 62	3.2		
	↓	✓ 57	2.3		
	Pike M.	✓ 56	1.6		
	SKR	✓ 51	1.4		
	HH	✓ 42	0.8		
	SKR	✓ 61	2.6		
	↓	✓ 55	1.7		
	HH	✓ 42	0.5		
	HH	✓ 49	6.8		
	Pike M.	✓ 48	1.0		
	HH	✓ 46	0.9		
	HH	✓ 45	0.9		
	HH	✓ 44	0.5		
	SKR	✓ 49	1.4		
	HH	✓ 47	0.9		
	HH	✓ 38	0.6		
	HH	✓ 38	0.3		
	HH	✓ 37	0.5		
	Pike M.	✓ 55	1.8		
	HH	✓ 37	0.4		
	Pike M.	✓ 52	1.5		
	HH	✓ 41	0.8		
	SKR	✓ 60	2.7		
	HH	✓ 42	0.5		
	SKR	✓ 42	0.4		
	SKR	✓ 50	1.2		
	SKR	✓ 50	1.6		
	Pike M.	✓ 50	1.0		
	SKR	✓ 49	1.3		
	SKR	✓ 47	1.4		
	SKR	✓ 75	5.3		
	SKR	✓ 48	1.4		

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/05/05

Page: 5 of 18

Reach: GA12214

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓ 50	1.6		
	SKR	✓ 54	1.6		
	SKR	✓ 59	1.9		
	SKR	✓ 47	1.3		
	HH	✓ 50	1.2		
	SKR	✓ 61	2.8		
	SKR	✓ 69	4.5		
	RFS	✓ 121	25.5		
	RFS	✓ 107	26.2		
	RFS	✓ 86	11.4		
	RFS	✓ 112	18.5		
	RFS	✓ 128	31.3		
	RFS	✓ 93	10.7		
		✓ 113	23.3		
		89	10.1		
		91	10.7		
		114	19.5		
		97	12.0		
		95	10.7		
		78	6.2		
		71	5.2		
		73	4.8		
		87	8.4		
		81	6.3		
		72	4.7		
		72	5.0		
		109	21.7		
		90	9.6		
		77	5.4		
		86	8.4		
		98	14.6		
		103	15.6		
		95	14.6		
		85	7.9		
		96	14.4		
		94	11.8		
		92	12.0		
		84	7.4		
		71	4.9		
		76	5.4		
		80	6.6		
		101	15.2		
		81	7.8		
		98	12.9		
	RFS	70	4.1		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFER

Date: 10/05/05

Page: 6 of 18

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
↓	RFS	93	13.1		
↓	↓	92	10.6		
↓		93	11.6		
↓		91	10.8		
↓		98	12.6		
		79	7.0		
		80	7.0		
		81	7.0		
		77	6.7		
		78	6.1		
		66	3.7		
		70	4.3		
		78	6.4		
		97	13.1		
		77	6.2		
		104	14.9		
		93	10.8		
		77	5.1		
		69	4.0		
		74	5.4		
		81	7.0		
		79	6.9		
		92	10.1		
		73	5.0		
		84	7.9		
		73	4.7		
		78	6.8		
		88	8.9		
		95	10.4		
		74	6.1		
		82	6.9		
		77	5.8		
		100	13.7		
		90	11.6		
		94	11.1		
		82	7.8		
		95	11.2		
		67	3.7		
		73	5.2		
		100	12.9		
		85	7.4		
		75	5.2		
		58	1.9		
		90	9.6		
		60	2.5		

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/05/05

Page: 7 of 8

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	RFS	✓ 83	8.2		
		✓ 73	4.7		
	✓	86	8.2		
		✓ 53	2.0		
		✓ 76	6.5		
	✓	64	3.2		
	SKR	✓ 52	1.7		Mort ✓
	SKR	✓ 50	1.5		Mort ✓
		✓ 52	1.8		Mort ✓
	✓	43	0.9		Mort ✓
		✓ 48	1.4		Mort ✓
		✓ 91	10.9		
		✓ 61	4.1		
		✓ 52	1.7		
		✓ 64	3.1		
		✓ 33	0.3		Mort ✓
		✓ 48	0.7		
	✓	46	1.2		
	SMB	✓ 99	14.5		
	SKR	✓ 46	1.5		
		✓ 43	1.0		
	✓	40	0.6		
		✓ 60	2.9		
		✓ 42	0.9		
		✓ 70	4.4		
		✓ 60	2.9		
		✓ 65	3.6		
		✓ 52	1.8		
		✓ 54	1.8		
		✓ 51	1.7		
		✓ 60	2.7		
		✓ 81	7.3		
		✓ 53	1.7		
		✓ 77	5.7		
		✓ 73	3.6		
		✓ 48	1.4		
		✓ 56	2.1		
		✓ 51	1.6		
		✓ 59	2.8		
		✓ 58	2.6		
		✓ 47	1.0		
		✓ 73	5.1		
		✓ 45	1.1		
		✓ 54	1.6		
		✓ 45	0.9		

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFER

Date: 10/05/05

Page: 8 of 18

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	44	0.7		
		59	3.1		
		59	2.7		
		52	1.9		
	✓	62	2.9		
		67	4.0		
		50	1.7		
		48	1.8		
		55	2.2		
		51	1.6		
		56	2.4		
		65	3.7		
		64	3.1		
		52	1.9		
		44	0.6		
		41	0.7		
		52	1.4		
		56	2.5		
		49	0.8		
		50	1.5		
		43	0.6		
		36	0.8		
		42	0.8		
		61	3.0		
		52	1.7		
		49	1.3		
		54	1.7		
		45	1.2		
		60	2.7		
		55	2.5		
		48	1.1		
		41	0.6		
		76	5.9		
		53	1.8		
		46	0.6		
		35	0.7		
		50	1.2		
		50	1.3		
		47	1.3		
		72	4.5		
		63	3.1		
		36	0.4		
		76	5.4		
		41	0.6		
	✓	73	5.2		

145

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFR

Date: 10/05/05

Page: 9 of 18

Reach: Gauging

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	82	6.6		
		58	2.3		
		55	2.0		
		62	2.9		
	↓	53	1.7		
		55	1.8		
		75	5.6		
		67	4.1		
		53	1.3		
		65	2.8		
		76	6.1		
		51	1.3		
		68	4.1		
		60	3.0		
		76	5.4		
		64	3.5		
		63	2.8		
		49	1.2		
		55	1.9		
		65	3.8		
		53	1.9		
		49	1.3		
		61	2.6		
		38	0.5		
		64	3.7		
		49	1.4		
	↓	64	3.8		
	SKR	55	1.6		
	HH	✓ 45	0.6		Mort ✓
	HH	✓ 45	0.8		Mort ✓
	Pike M.	✓ 51	1.1		
		✓ 51	1.5		
	↓	✓ 56	1.7		
	HH	✓ 50	1.3		
	Pike M.	✓ 53	1.7		
	HH	✓ 54	1.6		
	Pike M.	✓ 51	1.2		
	Pike M.	✓ 57	1.8		
	HH	✓ 32	0.3		
	Pike M.	✓ 48	0.9		
	↓	✓ 52	1.2		
	HH	✓ 53	1.5		
	Pike M.	✓ 54	1.4		
	↓	✓ 43	0.6		
	HH	✓ 54	1.6		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

 Stream: NFFR

 Date: 10/05/05

 Page: 10 of 18

 Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	HH	✓ 55	1.9		
	HH	✓ 54	1.7		
	Pike M.	✓ 43	0.8		
	HH	✓ 56	1.7		
	HH	✓ 56	2.1		
	HH	✓ 38	0.5		
	Pike M.	✓ 65	2.9		
	Pike M.	✓ 53	1.6		
	HH	✓ 46	1.0		
	Pike M.	✓ 54	1.5		
	HH	✓ 49	1.2		
	HH	✓ 37	0.9		
	HH	✓ 40	0.5		
	Pike M.	✓ 51	1.1		
	HH	✓ 37	0.5		
	HH	✓ 39	0.5		
	HH	✓ 44	0.8		
	HH	✓ 39	0.6		
	Pike M.	✓ 48	0.9		
	HH	✓ 42	0.5		
# 1	HH	✓ 37	0.5		END OF PASS #1
# 2	Pike M.	✓ 55	1.7		
	↓	✓ 43	0.7		
	RBT	✓ 225	146.2	G05-37	
	↓	✓ 194	9.0	G05-40	
	↓	✓ 182	6.3	G05-41	
	Pike M.	✓ 64	2.5		
	↓	✓ 53	1.4		
	HH	✓ 46	0.9		
	↓	✓ 45	0.6		
	↓	✓ 31	0.2		
	SMB	✓ 97	15.1		
	RBT	✓ 212	126.9	G05-42	
	↓	✓ 109	15.7	G05-43	
	↓	✓ 83	6.7	G05-44	
	↓	✓ 85	6.9	G05-45	
	↓	✓ 90	8.7	G05-46	
	↓	✓ 110	16.0	G05-47	OK
	HH	✓ 46	1.0		Mont ✓
	SKR	✓ 73	5.4		
	↓	✓ 64	3.3		
	↓	✓ 86	8.2		
	RBT	✓ 103	13.8	G05-48	

43

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/05/05

Page: 11 of 18

Reach: GRIZZLY (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	H.H.	✓ 44	0.8		
	SKR	✓ 61	2.7		
	RBT	✓ 107	15.5	G05-49	
	SKR	✓ 60	2.4		Mod.
	RBT	✓ 211	110.0	G05-50	
		✓ 87	8.8	G05-51	
	↓	✓ 105	14.8	G05-52	
	↓	✓ 98	10.9	G05-53	
	SMB	✓ 88	11.5		
	SKR	✓ 49	1.5		
	↓	✓ 116	20.0		
	H.H.	✓ 43	0.6		
	P. Minnow	✓ 55	1.7		
	↓	✓ 50	1.2		
	SKR	✓ 81	6.5		
	Pike M.	✓ 40	0.7		
	SKR	✓ 64	3.4		
	↓	✓ 47	1.1		
	Pike M.	✓ 50	1.3		
		✓ 50	1.5		
		✓ 59	2.0		
		✓ 39	0.6		
		✓ 53	1.4		
	SKR	✓ 77	5.6		
	P. Minnow	✓ 51	1.4		
	SMB	✓ 81	8.2		
	RBT	✓ 69	3.0	G05-54	
	Pike M.	✓ 40	0.5		
	RBT	✓ 89	8.1	G05-55	
	RFS	✓ 87	8.2		
	H.H.	✓ 39	0.6		
	Pike M.	✓ 38	0.5		
	RFS	✓ 86	8.3		
	SKR	✓ 43	1.0		
		✓ 57	2.3		
		✓ 49	1.2		
	RBT	✓ 115	19.0	G05-56	
	Pike M.	✓ 47	1.1		
	SKR	✓ 58	2.4		
	RBT	✓ 81	6.2	G05-57	
	Pike M.	✓ 35	0.4		
	RBT	✓ 81	6.6	G05-58	
	Pike M.	✓ 51	1.4		
	↓	✓ 52	1.4		

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/05/05

Page: 12 of 18

Reach: GRIZZLY (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
# 2	RBT	✓ 78	5.8	G05-59	
	SKR	✓ 69	3.9		73.9
	↓	✓ 57	2.5		
	Pike M	✓ 50	1.3		
	↓	✓ 45	0.9		
	RBT	✓ 97	11.8	G05-60	
	Pike M	✓ 39	0.7		
	↓	✓ 53	1.6		
	RBT	✓ 99	12.7	G05-61	
	SKR	✓ 69	3.7		
	Pike M	✓ 44	0.9		
	↓	✓ 44	0.9		
	SKR	✓ 51	1.6		
	↓	✓ 43	0.8		
	Pike M	✓ 41	0.7		
	↓	✓ 40	0.7		
	↓	✓ 39	0.5		
	↓	✓ 54	1.6		
	Prickly Sc.	✓ 94	12.0		
	↓	✓ 88	8.6		
	↓	✓ 101	16.4		
	H.H.	✓ 37	0.5		
	↓	✓ 41	0.7		
	Pike M	✓ 39	0.4		
	H.H.	✓ 45	0.7		
	↓	✓ 46	0.7		
	↓	✓ 51	1.2		
	Pike M	✓ 39	0.5		
	H.H.	✓ 44	0.8		
	H.H.	✓ 40	0.6		
	Prickly	✓ 98	13.2		
	H.H.	✓ 36	0.5		
	↓	✓ 38	0.4		
	SKR	✓ 75	5.3		
	SKR	✓ 59	2.4		
		✓ 105	3.6		
		✓ 69	4.1		
		✓ 58	2.4		
		✓ 51	1.5		
		✓ 61	2.9		Next ✓
		✓ 87	9.1		
		✓ 59	2.3		
		✓ 57	2.0		
		✓ 66	3.9		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFR Date: 10/05/05 Page: 13 of 18
 Reach: GRIZZLY (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓54	3.4		
		✓51	1.4		
		✓49	1.0		
		✓61	3.1		
		✓63	3.2		
		✓67	3.4		
		✓58	3.2		
		✓51	1.5		
		✓93	11.0		
		✓72	5.2		
		✓62	3.3		
		✓63	3.3		
		✓55	1.9		
		✓75	5.5		
		✓65	4.3		
		✓64	3.2		
		✓61	3.0		
		✓70	4.7		
		✓83	7.4		
		✓47	1.4		
		✓62	2.8		
		✓59	2.5		
		✓51	1.9		
		✓72	5.6		
		✓77	6.3		
		✓47	1.4		
		✓62	3.2		
		✓52	1.6		
	RR	✓53	4.1		
	SKR	✓66	3.8		
		✓47	1.2		
		✓67	3.7		
		✓54	1.9		
		✓51	1.7		
		✓47	1.1		
		✓54	2.0		
		✓56	2.5		
		✓52	1.8		
		✓48	1.4		
		✓52	1.4		Mort ✓
		✓41	0.8		Mort ✓
		✓38	0.6		
		✓44	0.9		
		✓58	2.4		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/05/05

Page: 14 of 15

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	SKR	✓75	4.6		
		✓44	1.0		
		✓40	0.8		
		✓44	0.8		
	RPS	✓103	15.6		
	SKR	✓64	2.9		
		✓49	1.2		
	RPS	✓108	20.1		
	SKR	✓40	1.0		
	RPS	✓84	7.3		
	SKR	✓55	1.9		
	RPS	✓88	8.7		
	SKR	✓71	4.2		
	RPS	✓103	14.4		
		✓99	13.1		
	SKR	✓46	1.2		
	RPS	✓95	12.8		
	SKR	✓55	2.0		
	RPS	✓98	12.8		
	SKR	✓70	3.9		
	RPS	✓105	16.4		
	SKR	✓68	4.1		
	RPS	✓104	16.5		
	SKR	✓78	6.6		
	RPS	✓104	15.4		
	SKR	✓46	1.2		
	RPS	✓104	17.1		
		✓98	13.3		
		✓99	9.1		
		95	10.6		
		87	8.6		
		94	10.9		
		88	9.3		
		75	5.8		
		96	13.4		
		118	23.0		
		80	6.0		
		103	16.4		
		83	7.2		
		80	7.4		
		90	9.1		
		93	9.3		
		81	7.0		
		89	8.9		
		84	7.6		

RP = Rippled Sculpin (note taken [Andrew] thought "Rippled" Sculpin)

145

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/5/05

Page: 15 of 18

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	RFS	86	7.7		
		71	4.8		
		86	9.2		
		96	11.7		
		84	8.4		
		83	7.3		
		103	17.5		
		74	5.2		
		90	10.1		
		101	14.5		
		93	11.7		
		94	10.4		
		96	11.2		
		78	5.8		
		80	6.6		
		85	8.1		
		78	5.1		
		75	5.8		
		84	7.7		
		101	14.9		
		82	7.9		
		53	1.9		
		82	7.3		
		85	7.9		
		81	7.6		
		82	7.1		
		50	1.4		
		50	1.4		
2		76	6.0		
END OF PASS #2					
#3	RFS	✓97	12.2		
	RBT	✓88	7.9	GOS-62	
		✓89	8.5	" -63	
		✓113	17.6	" -64	
		✓186	22.0	" -65	
	Prickly	✓88	10.2		
		✓100	14.0		
	HH	✓49	1.2		
	RBT	✓101	12.6	GOS-66	
	RBT	✓101	11.8	GOS-67	
		✓86	8.2	GOS-68	
	HH	✓40	0.5		
	RFS	✓97	11.9		
	Prickly	✓93	9.5		

43

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 1/10/05

Page: 16 of 18

Reach: GRIZZLY

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#3	RFS	✓79	7.0		
	Suck	✓50	1.6		
	RFS	✓88	10.3		
	Prickle	✓118	24.8		
	RBT	✓83	6.7	GOS-69	
	RFS	✓102	15.9		
	Prickle	✓100	13.5		
	RBT	✓99	12.0	GOS-70	
	↓	✓85	7.7	GOS-71	
	RFS	✓91	10.3		
	↓	✓80	7.0		
	↓	✓73	4.8		
	↓	✓89	9.1		
	↓	✓79	6.4		
	HA	✓51	1.3		
	RFS	✓78	5.9		
	HA	✓41	0.7		
	↓	✓36	0.5		
	SMB	✓98	14.6		
	RFS	✓90	8.7		
	I	✓103	16.0		
	Prickle	✓130	24.5		
	P. Min	✓45	0.7		
	RFS	✓79	6.4		
	SKR	✓51	1.6		
	RFS	✓109	17.4		
	SKR	✓46	1.0		
	I	✓41	0.7		
	RFS	✓103	18.2		
	SKR	✓41	0.7		
	RFS	✓103	10.3		
	SKR	✓46	1.1		
	RFS	✓113	20.3		
	Pike M	✓39	0.5		
	RFS	✓115	21.8		
	I	100	11.9		
	I	96	12.0		
	I	89	8.9		
	I	101	11.9		
	I	109	17.8		
	I	87	9.4		
	SKR	✓63	3.5		
	RFS	91	9.7		
	I	86	8.3		
	I	78	6.6		

145

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR Date: 10/05/05 Page: 17 of 18

Reach: GRIZZLY (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#3	PK M	✓57	1.7		
	SKR	✓46	1.0		Monte
	HH	✓47	1.1		
	SMA	✓88	9.1		
	PK M	✓63	2.6		
	RFS	✓97	12.2		
	I	✓90	6.2		
	HH	✓44	0.9		
	SKR	✓82	6.5		
	I	✓72	4.3		
	I	✓55	2.0		
	I	✓68	4.1	4-4.1	
	I	✓69	4.1		
	V	✓71	3.9		
	HH	✓48	1.1		
	V	✓53	1.5		
	SKR	✓58	1.8		
	P. Min	✓53	1.5		
	HH	✓38	0.5		
	SKR	✓62	2.3		
	HH	✓44	0.8		
	SKR	✓66	2.9		
	HH	✓54	1.4		
	PK M	✓51	1.2		
	SKR	✓62	3.1		
	SKR	✓59	2.0		
	PK M	✓50	1.3		
	SKR	✓54	1.8		
	HH	✓54	1.6		
	SKR	✓69	3.3		
	HH	✓45	0.9		
	PK	✓47	0.9		
	SKR	✓48	1.2		
	I	✓64	2.5		
	HH	✓46	0.9		
	SKR	✓67	3.3		
	I	✓55	1.9		
	V	✓63	2.7		
	HH	✓38	0.5		
	SKR	✓67	3.6		
	PK M	✓51	1.3		
	HH	✓40	0.6		
	SKR	✓46	1.0		
	P. Min	✓35	0.3	Monte	
	SKR	✓39	0.7		

(45)

Stream: NFR Date: 10/05/05 Page: 18 of 18
 Reach: GR1224 (continued)

Stream: NFFR

Date: 10 / 05 / 05

Page: 18 of 18

Reach: GR 12204

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
3	SKR	✓56	2.0		
		✓47	1.3		
		✓70	4.9		
	✓	✓76	4.9		
	H.H.	✓42	0.7		
	SKR	✓44	1.0		
	↓	✓67	3.3		
	Pike M	✓59	1.6		
	↓	✓48	0.8		
	SKR	✓58	2.3		
	Pike M	✓45	0.8		
	↓	✓37	0.5		
	SKR	✓46	1.0		
		✓55	1.5		
		✓81	6.8		
		✓55	1.6		
		✓42	0.8		
	✓	✓53	1.2		
	Pike M	✓55	1.5		
	SKR	✓53	2.1		
	↓	✓54	1.9		
	✓	✓57	1.7		
	Aku	✓44	0.8		
	SKR	✓73	3.9		
	Pike M	✓57	0.9		
	SKR	✓49	1.5		
		✓42	0.8		
	✓	✓44	1.1		
	↓	✓63	2.8		
	Pike M	✓46	0.8		
	SKR	✓44	0.6		
	Pike M.	✓51	1.2		
	SKR	✓45	0.8		
	Pike M	✓37	0.5		
	H.H.	✓36	0.6		
	SKR	✓46	1.0		
	Ako M	✓40	0.6		
	SKR	✓41	0.7		
#3	Pike M	✓36	0.4		
		✓35	0.4		
					End of Work exp 21.34 Pst.

End of Work exp 21.34 Pst.

40

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR County: PLUMAS Date: 10/6/2005
 Reach: Indian Jim Est. Q: 70 Page: 1 of 11
 Air Temp.: @ H2O Temp.: 13.4/13.3°F @ 1155 Conductivity: 91.8 microSiemens
 Blocknets: TBR & Bottom Specific Cond.: 118.4 microSiemens
 Resch Length: 308' Salinity: 0.1 ppt
 Electroshocker Type: _____ D.O.: 9.77 mg/L
 Personnel: Shockers: _____ 94.2 % saturation
 Netters: Tyson, Tricia Parkinson, Russell, Don, Carby
Andrew Seiler, Robert, D. Parkinson
 Photos: _____

3-6-10-4-1
N=29±9
SE=4.6
P=0.316

Shocker Model	Scott	Swan	Steve	Tim	Tom
Model	12A	LR24	P66 12-B	Type 7	TRH 11-A
Battery ID					
Voltage	400	400	400	400	400
Frequency	30	30	30	30	30
1st Pass	1748	2050	1863	1322	1636
2nd Pass	1404	1412	1463	1072	1171
3rd Pass	1153	1233	1288	972	893
4th Pass	1168	1232	1106	902	769
5th Pass	1096	1183	1024	904	720

Lengths are fork lengths or total lengths in millimeters					Weights are in grams
Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	1442	1155		Some lengths in inches using TAPE MEASURE
		399	895		
		394	786		
		17"	1162		432 mm FL
		389	779		
		15.5"	997		394 mm FL
	H.H.	1360	537		
	RBT	1185	67.8	IJ05-01	
		1318	324.7	IJ05-02	
	H.H.	13.75"	523		349 mm FL
	RBT	1173	695	IJ05-03	
	Pike M	1211	87.9		
	SKR	117"	1107		432 mm FL
	H.H.	99	10.7		
	SKR	15"	705		381 mm FL
		14.75"	694		375 mm FL
		456	1192		
		1494	725		375 mm FL
		398	788		
		16"	931		406 mm FL
		15.25"	800		400 mm FL
		15.5"	771		394 mm FL
	Pike M	131	22.4		
	SKR	15"	726		381 mm FL
	H.H.	96	7.6		

USED TAPE MEASURE ON LAGER SUCKERS.

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream:

Date: 10/06/05

Page: 2 of 11

Reach:

Indian Jim

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
4	SKR	✓155	53.5		
	HH	✓112	13.9		
	SKR	✓15"	764		381 mm FL
		✓15.5"	792		394 mm FL
		✓408	850		
	HH	✓108	12.4		
		✓175	53.3		
	SKR	✓430	1022		
		✓14.25"	637		362 mm FL
	RBT	✓323	355.6	1505-04	
	SKR	✓13.25"	517		337 mm FL
		✓13.75"	612		349 mm FL
		✓132	19.2		
	RBT	✓400			
	HH	✓121	18.5		
		✓171	54.8		
	SKR	✓15.5"	740		394 mm FL
		✓177	74.4		
	RBT	✓304	279.8	1505-05	
	SKR	✓16.75"	1125		425 mm FL
		✓17"	1205		432 mm FL
	Prickly	✓77	5.3		
	SKR	✓16.5"	730		419 mm FL
	RBT	✓117	16.0		
	SKR	✓393	886		
		✓79	5.7		
		✓401	92.8		
		✓415	905		
	HH	✓34	0.4		
		✓375	596		
	SKR	✓382	837		
		✓71	5.0		
	HH	✓395	730		
	SMB	✓74	5.9		
	HH	✓415	984		
	SKR	✓168	68.5		
	HH	✓455	1242		
	RBT	✓170	44.0		
	SKR	✓400	844		
		✓349	43.8		
	RBT	✓171	45.0		
	SKR	✓237	164.5		
		✓430	985		
		✓199	113.6		
		✓405	748		

Thomas R. Payne & Associates Electrofishing Survey Form

Stream

Date: 10/06/05

Page: 3 of 11

Reach: Indian Jun (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	Pike M	✓ 134	22.2		
	HH	✓ 370	605		
	Pike M	✓ 178	53.7		
	SKR	✓ 420	890		
	HH	✓ 42	0.7		mont ✓
	↓	✓ 480	1344		14.5
	SKR	✓ 140	33.7		
	↓	✓ 204	103.1		
	↓	✓ 421	1102		
	SMB	✓ 85	9.2		
	SKR	✓ 401	932		
	Pike M	✓ 1194	15.8		
	SKR	✓ 404	1080		
		✓ 412	926		
		✓ 159	60.1		
		✓ 460	1184		
		✓ 115	18.6		
		✓ 240	190		
		✓ 135	340		
		✓ 171	60.9		
		✓ 303	408		
		✓ 206	119		
	Pike M	✓ 350	443		
	Ruffle Sc.	✓ 98	10.9		
	↓	✓ 84	6.3		
	SKR	✓ 126	23.1		
	↓	✓ 405	862		
	Ruffle Sc.	✓ 87	6.4		
	SKR	✓ 390	795		
	Ruffle Sc.	✓ 102	12.3		
	HH	✓ 360	554		
	↓	✓ 47	1.4		
	SKR	✓ 413	927		
	↓	✓ 191	99.8		
	↓	✓ 395	818		
	Pike M	✓ 125	17.4		
	SKR	✓ 415	948		
	Ruffle Sc.	✓ 87	8.1		
	HH	✓ 350	519		
	Ruffle Sc.	✓ 97	122 → 12.2		
	HH	✓ 435	1103		
	Ruffle Sc.	✓ 80	6.1		
	HH	✓ 385	687		
	Ruffle	✓ 115	17.2		

44

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/06/06

Page: 4 of 11

Reach: Indian Turn (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓ 420	957		
	Ruffle Sc	✓ 87	8.0		
	SKR	✓ 393	757		
	Prickly	✓ 97	12.4		
	SKR	✓ 400	839		
	Ruffle	✓ 88	8.8		
	SKR	✓ 405	928		
	✓	✓ 124	24.9		
	HH	✓ 404	799		
	Pike M	✓ 149	28.5		
	SKR	✓ 390	899		
	I	✓ 54	1.9		
	Ruffle Sc	✓ 79	5.7		
	✓	✓ 72	4.0		
	SKR	✓ 63	3.2		
	Ruffle Sc	✓ 87	7.0		
	SKR	✓ 400	762		
	I	✓ 426	1025		
	I	✓ 380	784		
	I	✓ 424	905		
	I	✓ 394	795		
	Ruffle Sc	✓ 89	8.5		
	I	✓ 94	9.6		
	SKR	✓ 405	910		
	Pike M	✓ 117	13.6		
	Ruffle Sc	✓ 82	7.3		
	I	✓ 78	5.6		
	I	✓ 80	6.3		
	SKR	✓ 52	1.6		
	Ruffle	✓ 49	0.8		
	I	✓ 92	9.3		
	I	✓ 77	5.9		
	I	✓ 80	6.2		
	SKR	✓ 361	730		
	Ruffle	✓ 93	9.8		
	SKR	✓ 430	1038		
	HH	✓ 195	76.0		
	I	✓ 388	665		
	Prickly	✓ 84	7.2		
	SKR	✓ 385	775		
	Ruffle Sc	✓ 89	10.5		
	SKR	✓ 361	690		
	Ruffle Sc	✓ 86	6.9		
	HH	✓ 123	18.8		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream:

NFFR

Date: 10/06/05

Page: 5 of 11

Reach:

Indian Jim

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	HH	✓115	13.6		
	RH	✓49	1.4		
	SKR	✓373	742		
		✓51	2.1		
		✓120	983		
		✓73	4.6		
		✓370	693		
	Prickly	✓72	4.5		
	SKR	✓405	752		
		✓153	43.9		
		✓375	701		
		✓412	873		
	RBT	✓381	594	IS05-06	
	SKR	✓383	761		
		✓386	760		
		✓416	984		
		✓410	857		
		✓390	819		
		✓383	667		
		✓440	1244		
		✓411	967		
		✓375	897		
		✓17.5"	1141		415 mm FL
		✓450	1194		
		✓385	747		
		✓380	797		
		✓390	824		
	RBT	✓322	359.4	IS05-07	
	SKR	✓426	985		
		✓375	759		
	RBT	✓323	368.1	IS05-08	
	SKR	✓442	1165		
		✓421	903		
		✓376	735		
		✓394	752		
	PEM	✓126	719.1		→ 19.1
	HH	✓387	718		
	SKR	✓390	721		
		✓354	653		
		✓357	627		
		✓387	844		
		✓375	668		
		✓363	604		
		✓442	1108		
		✓386	743		

45

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR Date: 10/16/05 Page: 6 of 11

Reach: Indian Jim (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	402	815		
		400	1219		
		408	910		
		400	864		
		385	812		
		408	924		
		400	780		
		18.5"	1226		470 mm FL
		369	718		
		451	1239		
		373	739		
		412	915		
		337	461		
	HH	39	0.5		
	SKR	330	500		
		430	792		
		367	638		
		411	893		
		305	399		
		409	864		
		416	952		
		385	795		
	HKM	191	62.0		
		173	47.3		
End of Pass 1					
#2	SKR	1398	831		
		1375	750		
		1376	718		
	SMB	176	6.6		
	HH	122	18.8		
		1143	32.1		
	RBT	210	102.4	IS05-09	
	HH	141	29.8		
		139	88.8		
		138	27.2		
	RBT	317	413.4	IS05-10	
	HH	378	692		
	SKR	472	1058		
		435	1039		
		441	1147		
		394	791		
	Ruff Sc	87	7.3		
	HH	393	758		
	SKR	442	1242		
		432	1026		

142 - 55.26 - 14 - 5 $\Sigma = 242$
 SKR $N = 245 \pm 5$ $SS = 2.29$ $P = 0.568$

29

29

(44)

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/06/05

Page: 7 of 11

Reach: Indian Glen

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	SKR	✓ 376	754		
		✓ 365	640		
		✓ 353	618		
		✓ 300	386		
		✓ 332	463		
		✓ 372	747		
		✓ 338	501		
	HH	✓ 132	20.9		
	L	✓ 103	11.7		
	RHSE	✓ 102	12.5		
	RBT	✓ 396	1605.5	IJOS-II	
	RH	✓ 83	6.6		
		✓ 95	10.5		
		✓ 76	5.5		
	SKR	✓ 382	826		
		✓ 382	806		
	L	✓ 413	917		
	HH	✓ 454	1802		
	SKR	✓ 430	931		
	HH	✓ 371	541		
	SKR	✓ 436	1036		
	HH	✓ 351	543		
	SKR	✓ 19.25	1115		489 mm R
	HH	✓ 441	1071		
	SKR	✓ 369	718		
	L	✓ 410	829		
	HH	✓ 351	529		
	RHSE	✓ 80	16.0		
	SKR	✓ 429	1104		
		✓ 427	927		
		✓ 385	772		
		✓ 412	943		
		✓ 430	1170		
	RHSE	✓ 90	9.2		
	HH	✓ 366	531		
	SKR	✓ 313	403		
	Pike M	✓ 116	15.1		
	SKR	✓ 425	995		
		✓ 421	943		
	Pike M	✓ 113.25	(6.2) + 13.2		
	SNB	✓ 91	12.1		
	SKR	✓ 405	865		
	RFS	✓ 83	6.9		
	SKR	✓ 133	27.4		
	RFS	✓ 47	1.0		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR Date: 10/06/05 Page: 8 of 11

Reach: Indian Gap (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	RBT	208	113	ISOS-12	
	Pk. M	35	0.4		
	Ruf. Sc	83	6.6		
	SKR	73	4.7		
	RBT	310	343.2	ISOS-13	
	Pk. M	64	2.3		
	HH	39	0.5		
	RBT	274	220.2	ISOS-14	
	HH	42	0.5		
	HH	42	0.5		
	SKR	399	892		892
		404	986		
		276	292		
		337	567		
		300	374		
		383	741		
		414	984		
		19.5"	1466		495mm FL
		403	940		
		402	921		
		377	731		
		401	812		
		184	89.1		
		197	101.7		
	Pike M	244	139.1		
	SKR	155	48.2		
		255	82.9		
	HH	55	1.9		
RFS	Ruf. Sc	78	5.4		
	Pike M	136	25.6		
	RFS	20	6.2		
	HH	135	25.5		
		128	21.1		
	Pike M	212	87.5		
	RFS	90	9.8		
	Pike M	163	42.2		
	SKR	161	48.3		
	RFS	47	1.2		
	SKR	126	25.4		
		116	18.8		
		61	2.9		
	Prickly	90	9.6		
		47	1.1		
✓	RFS	52	1.6		
		59	2.1		

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFER

Date: 10/06/05

Page: 9 of 11

Reach: Indian Jim (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	HH	✓ 41	0.6		End Pass 2
#3	SKR	✓ 300	371		
	I	✓ 419	942		
	I	✓ 437	979		
	I	✓ 408	871		
	HH	✓ 369	588		
	I	✓ 380	709		
	RFS	✓ 98	12.0		
	I	✓ 80	5.9		
	I	✓ 77	5.2		
	HH	✓ 36	0.4		
	RFS	✓ 49	0.6		
	HH	✓ 49	1.2		
	I	✓ 420	1004		
	SKR	✓ 397	860		
	I	✓ 432	964		
	RBT	✓ 299	323	ISOS-15	
	SKR	✓ 388	765		
	HH	✓ 160	42.5		
	RBT	✓ 350	446.7	ISOS-16	
	I	✓ 335	414.5	ISOS-17	
	SKR	✓ 443	1198		
	HH	✓ 380	617		
	SKR	✓ 377	821		
	I	✓ 369	736		
	HH	✓ 400	762		762
	RFS	✓ 97	10.8		
	SKR	✓ 420	1118		
	I	✓ 410	924		
	RFS	✓ 58	2.1		
	I	✓ 103	12.0		
	HH	✓ 176	58.8		
	SKR	✓ 355	601		
	I	✓ 375	685		
	I	✓ 365	709		
	RBT	✓ 363	299.6	ISOS-18	
	SKR	✓ 406	89.3		
	SKR	✓ 421	1093		
	RFS	✓ 99	7.7		
	HH	✓ 158	41.4		
	RFS	✓ 84	6.3		
	RBT	✓ 260	191.7	ISOS-19	

41

41

42

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/25/05

Page: 10 of 11

Reach: Indian Gap (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#3	SKR	✓148	41.2		
		✓365	800		
		✓349	606		
		✓455	1017		→ 1017
		✓400	801		
	RBT	✓270	213.3	IJ05-20	
	HH	✓170	49.8		
		✓115	16.5		
		✓175	57.5		
		✓160	40.6		
		✓135	17.8		
	SKR	✓415	1036		
		✓415	904		
		✓395	865		
	Pike M	✓105	10.6		
	SKR	✓389	900		
	HH	✓198	83.3		
		✓45	0.8		
	Pike M	✓125	16.9		
	Prickly	✓78	50		END Pass 3
#4	SKR	✓375	768		
	HH	✓385	706		
	HH	✓361	595		
	HH	✓123	19.7		
	RBT	✓340	488	IJ05-21	
	HH	✓45	0.8		
	SKR	✓115	18.7		
	HH	✓93	7.7		
	RBT	✓211	101	IJ05-22	
	Pike M	✓115	13.6		
	RFS	✓85	6.5		
	SKR	✓385	889		
		✓389	813		
		✓397	787		
		✓425	950		
		✓155	54.9		
	RBT	✓236	155	IJ05-23	REMARK: PROBLEM
	RBT	✓335	411	IJ05-24	
#4	SKR	✓371	674		
		✓400	882		
		✓405	895		

(20)

(41)

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: N.F.F.R.

Date: 10/06/05

Page: 11 of 11

Reach: Indian Glen (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
PASS 4	#4 HH	✓ 134	24.2		
	SKR	✓ 363	660		
		✓ 390	849		
	RFS	✓ 55	1.8		
		✓ 98	11.7		
	SKR	✓ 161	58.3		
	RFS	✓ 79	5.8		
PASS 5	SKR	✓ 60	2.7		End of Pass 4
	HH	✓ 134	24.2		
	SKR	✓ 363	660		
	SKR	✓ 390	849		
	RFS	✓ 55	1.8		
	SKR	✓ 161	58.3		
	RFS	✓ 79	5.8		
	SKR	✓ 60	2.7		
	#5 RBT	✓ 249	159	IT05-25	IT05-25
	Prickley	✓ 79	6.2		
	Yolo M	✓ 35	0.3		Mnt
	HN	✓ 128	23.1		Frayed tail
		✓ 122	19.8		
	RFS	✓ 89	9.3		
	HH	✓ 52	1.2		
	SKR	✓ 391	833		
	HH	✓ 133	26.4		
	SKR	✓ 405	808		
		✓ 443	1095		
		✓ 435	1128		
		✓ 395	780		End of Pass 5

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NEFR County: PLUMAS Date: 10/07/05
 Reach: GRANITE Est. Q: 70 Page: 1 of 13
 Air Temp.: @ H2O Temp.: 13.0°C/55.6°F @ 1025 Conductivity: 92.5 microSiemens
 Blocknets: Top & Bottom Specific Cond.: 119.9 microSiemens
 Reach Length: 352' Salinity: 0.1 ppt
 Electroshocker Type: D.O.: 7.54 mg/L
 Personnel: Shockers: TIM, STEVE, SCOTT, SEAN, TOM, DOUG 90.8 % saturation
 Netters: Pam Tison, Don Brown, Russel Contreras, Andrew Hagen, Mark, Mike, Midup, Spurt, Midup, Spurt, Midup, Spurt
53-11 Only Glen, Robert Frank, Sealed, Fisher. (10) Bottom X, (11) Bottom UP

Shocker	Steve	Tim	Scott	Sean	Tom	Doug
Model	AGE 12B	Type 7	LR 24	12-A	11-A	15B
Battery ID	400	400	400	400	400	400
Voltage	F-5	30	30	30	30	30
Frequency						
1st Pass	2254	Mald.	2033	2741	1715	1375
2nd Pass	1994	Mald.	1582	1444	1744	1099
3rd Pass	1826	1780	1489	1347	1575	1047
4th Pass						
5th Pass						

Lengths are fork lengths or total lengths in millimeters					Weights are in grams
Pass#	Species	Length	Weight	Scale Sample	Notes
1	RFS	✓ 92	9.2		
	+	✓ 99	11.3		
	Prickly	✓ 93	9.4		
	RBT	✓ 229	145	GN05-01	
	+	✓ 116	17.6	GN05-02	
	+	✓ 108	13.7	GN05-03	
	Prickly	✓ 93	10.5		
	RFS	✓ 108	17.3		
	+	✓ 91	12.1		
	+	✓ 88	8.0		
	+	✓ 87	8.4		
	+	✓ 96	11.0		
	+	✓ 109	14.5		
	+	✓ 85	7.1		
	+	✓ 104	15.9		
	+	✓ 83	8.0		
	+	✓ 103	15.2		
	+	✓ 81	6.8		
	+	✓ 82	6.7		
	+	✓ 78	6.0		
	+	✓ 99	13.5		
	+	✓ 96	13.0		
	+	✓ 83	7.0		
	+	✓ 87	8.6		
	+	✓ 94	9.8		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/07/05

Page: 2 of 13

Reach: GRANITE

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	RFS	✓106	14.8		
	RBT	✓121	21.7	GN05-04	
	RFS	✓104	12.7		
	RBT	✓106	14.0	GN05-05	
	AES	✓70	4.4		
	I	✓88	8.3		
	I	✓77	5.6		
	PKM	✓47	0.6		Mort ✓
	SKR	✓49	1.5		Mort ✓
	RBT	✓181	72.3	GN05-06	
	I	✓99	12.2	GN05-07	
	I	✓309	32.0	GN05-08	
	RFS	✓84	7.4		
	I	✓57	2.6		
	I	✓89	8.5		
	I	✓87	7.7		
	I	✓82	8.7		
	PKM	✓46	0.6		
	I	✓41	0.7		
	I	✓64	2.4		
	I	✓50	1.5		
	RBT	✓90	8.6	GN05-09	
	I	✓129	24.6	GN05-10	
	PKM	✓40	0.6		
	I	✓37	0.4		
	I	✓42	0.7		
	I	✓41	0.6		
	I	✓44	1.0		
	HH	✓106	13.2		
	I	✓37	0.5		
	PKM	✓50	0.4		
	SKR	✓168	63.5		
	RFS	✓86	7.4		
	HH	✓37	0.5		
	RBT	✓281	25.1	GN05-11	Shocking PRUSE
	I	✓211	10.1	GN05-12	Scale Patch removal from Previous days & 8
	PKM	✓46	0.9		
	RFS	✓64	3.5		
	PKM	✓170	44.7		
	RBT	✓63	2.7	GN05-13	
	RFS	✓82	6.1		
	RBT	✓280	24.8	GN05-14	
	PKM	✓47	0.8		
	RFS	✓59	2.6		
	SKR	✓69	4.6		

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/07/05

Page: 3 of 13

Reach: GRANITE (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	RES	✓ 105	16.3		
	↓	✓ 82	5.8		
	SKR	✓ 65	3.2		
	Pike M.	✓ 49	1.2		
	↓	✓ 45	0.9		
	HH	✓ 128	21.4		
	↓	✓ 115	16.2		
	SKR	✓ 55	2.4		Mort
	RBT	✓ 214	111	GN05-15	
	SKR	✓ 55	2.3		
	Pike M.	✓ 54	1.3		
	↓	✓ 56	1.8		
	↓	✓ 29	0.2		Mort ✓
	↓	✓ 40	0.7		
	↓	✓ 37	0.5		
	↓	✓ 50	1.7		
	↓	✓ 44	0.8		
	↓	✓ 42	0.6		
	RBT	✓ 103	13.0	GN05-16	
	Pike M.	✓ 40	0.5		Mort ✓
	HH	✓ 37	0.5		
	RBT	✓ 341	41.9	GN05-17	
	Pike M.	✓ 38	0.5		
	↓	✓ 49	1.2		
	RBT HH	✓ 149	23.7		
	RBT	✓ 292	24.4	GN05-18	
	Pike M.	✓ 40	0.6		
	↓	✓ 37	0.6		
	↓	✓ 38	0.4		
	SKR	✓ 56	2.7		
	Pike M.	✓ 40	0.6		
	Pike M.	✓ 96	7.6		
	RBT	✓ 180	67.8	GN05-19	
	Pike M.	✓ 160	32.1		
	RBT	✓ 102	14.2	GN05-20	
	RBT	✓ 90	8.5	GN05-21	
	RBT	✓ 113	16.0	GN05-22	
	Pike M.	✓ 55	1.8		
	HH	✓ 50	1.3		
	Pike M.	✓ 47	0.8		
	RBT	✓ 194	9.5	GN05-23	
	RBT	✓ 280	24.3	GN05-24	
	Pike M.	✓ 181	5.8		
	SKR	✓ 201	10.7		

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/7/05

Page: 4 of 13

Reach: Granite (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	SKR	✓ 63	3.7		
	RBT	✓ 175	62.0	GNOS-25	
	SKR	✓ 375	735		
	SKR	✓ 425	1125		-frayed caudal fin.
	HH	✓ 157	41.0		
	RBT	✓ 242	154	GNOS-26	
	RBT	✓ 310	346	GNOS-27	
	Pike M.	✓ 123	18.0		
	HH	✓ 139	26.5		
	RBT	✓ 216	127	GNOS-28	
	HH	✓ 110	13.0		
	RBT	✓ 217	126	GNOS-29	Adipose clip ✓
	Pike M.	✓ 173	46		
	HH	✓ 152	36.0		
	RBT	✓ 350	490	GNOS-30	
	Pike M.	✓ 171	43		
	HH	✓ 130	24.0		
	Pike M.	✓ 55	1.6		
	PS (Prickly)	✓ 111	17.7		
	RBT	✓ 213	119	GNOS-31	
	HH	✓ 130	23.0		
	RFS	✓ 113	17.0		
	RBT	✓ 349	486	GNOS-32	
	Prickly	✓ 105	15		
	HH	✓ 137	27		
	SKR	✓ 217	14.0		
	RFS	✓ 107	14.3		
	RBT	✓ 315	365	GNOS-33	
	SKR	✓ 89	9.7		
	Prickly	✓ 93	9.9		
	HH	✓ 109	13.3		
	RFS	✓ 104	12.7		
	Pike M.	✓ 51	1.5		
	HH	✓ 109	12.5		
	RFS	✓ 102	13.8		
	Pike M.	✓ 115	12.7		
	RFS	✓ 98	13.0		
	RBT	✓ 231	141.7	GNOS-34	
	RFS	✓ 136	32.6		
		✓ 95	9.8		
		✓ 94	11.4		
		✓ 75	5.7		
		✓ 95	12.2		
		✓ 84	7.2		

15.80

94

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFL

Date: 10/7/2005

Page: 5 of 13

Reach: Granite (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	RFS	✓ 99	12.9		
	↓	✓ 75	5.4		
	↓	✓ 61	2.6		
	SKR	✓ 59	2.6		
	RFS	✓ 73	4.3		
	↓	✓ 94	10.9		
	RBT	✓ 157	47.3	GNDS-35	
	RBT	✓ 214	106.8	GNDS-36	
	RFS	✓ 105	13.4		
	RBT	✓ 174	63.0	GNDS-37	
	HH	✓ 110	9.4		
	↓	✓ 134	27.3		
	RBT	✓ 343	46.7	GNDS-38	Scale patch removal from 10/6/05
	HH	✓ 95	8.8		
	Pike M.	✓ 147	30.2		
	RFS	✓ 97	12.2		
	Pike M.	✓ 139	21.2		
	RBT	✓ 196	91.0	GNDS-39	
	Pike M.	✓ 133	18.9		
	RBT	✓ 202	98.9	GNDS-40	
	SKR	✓ 202	111.5		
	RFS	✓ 97	10.4		
	↓	✓ 102	14.8		
	Prickly	✓ 114	22.4		
	RFS	✓ 94	11.5		
	↓	✓ 84	8.1		
	RBT	✓ 112	18.3	GNDS-41	
	RBT	✓ 211	107.9	GNDS-42	
	RBT	✓ 176	66.0	GNDS-43	Adipose clip ✓
	RBT	✓ 87	7.1	GNDS-44	
	SKR	✓ 135	32.0		
	RFS	✓ 81	6.4		
	↓	✓ 86	8.0		
	↓	✓ 102	12.6		
	Pike M.	✓ 121	16.8		
	RBT	✓ 123	21.5	GNDS-45	Burns + frayed Caudal fin
	RFS	✓ 82	6.2		
	Prickly	✓ 88	8.9		
	HH	✓ 81	5.7		
	Pike M.	✓ 190	62.3		
	↓	✓ 175	50.1		
	RBT	✓ 115	16.8	GNDS-46	
	SKR	✓ 76	5.9		
	RBT	✓ 107	12.6	GNDS-47	

2005/10

44

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFR

Date: 10/7/05

Page: 6 of 13

Reach: Granite (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
	HH	✓ 139	27.8		
	RBT	✓ 112	16.3	GNOS-48	
	Pike M.	✓ 132	20.4		
	SKR	✓ 155	42.8		
	RFS	✓ 80	16.8		
	Pickly	✓ 96	11.5		
	RFS	✓ 77	5.4		
	RFS	✓ 80	6.4		
	↓	✓ 78	6.1		
	↓	✓ 52	1.6		
	SKR	✓ 67	3.4		
	Pike M.	✓ 54	1.4		
	SKR	✓ 59	2.5		
	RBT	✓ 67	4.1	GNOS-49	
	Pike M.	✓ 124	17.6		
	RBT	✓ 81	5.4	GNOS-50	
	Pike M.	✓ 156	31.9		
	RBT	✓ 88	8.3	GNOS-51	
	RFS	✓ 89	9.2		
	SKR	✓ 55	1.7		
	Pike M.	✓ 98	9.5		
	Pike M.	✓ 134	21.9		
	RBT	✓ 108	15.6	GNOS-52	
	Pike M.	✓ 117	16.5		
	↓	✓ 97	12.7		
	↓	✓ 39	0.5		
	HH	✓ 125	20.9		
	RBT	✓ 99	11.7	GNOS-53	
	HH	✓ 132	21.9		
	RFS	✓ 100	10.5		
	↓	✓ 99	11.7		
	HH	✓ 89	8.4		
	HH	✓ 145	31.9		
	HH	✓ 130	21.7		
	↓	✓ 83	5.9		
	Pickly	✓ 95	9.0		
	↓	✓ 96	10.8		
	RFS	✓ 88	9.1		
	↓	✓ 94	11.2		
	↓	✓ 79	6.3		
	↓	✓ 115	17.2		
	↓	✓ 80	6.2		
	SKR	✓ 66	3.2		
	RFS	✓ 93	10.9		

44

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/7/05

Page: 7 of 13

Reach: Granite (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
	RFS	/ 100	12.9		
	↓	/ 86	7.2		
		/ 97	8.6		
		/ 104	13.3		
		/ 71	4.4		
		/ 94	9.9		
		/ 111	16.9		
		/ 89	8.0		
		/ 79	7.1		
		/ 96	11.3		
		/ 86	8.8		
		/ 84	9.3		
		/ 75	5.1		
	↓	/ 84	6.8		
	SKR	/ 75	5.4		
	SKR	/ 53	1.8		
	↓	/ 49	1.5		
		/ 63	3.1		
	RFS	/ 82	6.7		
		/ 89	8.6		
		/ 92	10.0		
		/ 75	5.3		
		/ 59	3.0		
	SKR	/ 60	2.7		
	RFS	/ 79	5.6		
	↓	/ 78	5.5		
	↓	/ 91	9.5		
	RFS	/ 77	4.7		
	↓	/ 71	4.5		
	↓	/ 74	5.2		
		/ 73	4.7		
	↓	/ 59	2.1		
	SKR	/ 74	5.8		
	SKR	/ 53	1.9		
	Pickly	/ 59	2.2		
	↓	/ 57	2.1		
1					END PASS #1

1975-2 282
(36)

Start
Pass #2

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/7/05

Page: 8 of 13

Reach: Granite (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	RBT	✓ 106	15.1	GN05-54	
	RFS	✓ 96	10.3		
		✓ 101	14.2		
		✓ 88	7.6		
	SKR	✓ 124	26.2		
	RFS	✓ 102	14.8		
	↓	✓ 100	13.5		
		✓ 78	6.3		
		✓ 99	9.5		
	↓	✓ 77	5.2		
	↓	✓ 77	5.8		
	↓	✓ 71	4.1		
	SKR	✓ 74	5.2		
	RBT	✓ 59	2.6	GN05-55	
	RFS	✓ 96	12.1		
	I	✓ 98	12.9		
	RFS	✓ 99	11.1		
	RBT	✓ 87	8.5	GN05-56	
	HH	✓ 110	13.6		
	Pridely	✓ 91	10.2		
	RBT	✓ 109	55.6	GN05-57	
	HH	✓ 93	9.2		
	RFS	✓ 93	12.9		
	HH	✓ 140	27.0		
	HH	✓ 123	18.8		
	SKR	✓ 140	30.4		
	Pike M.	✓ 45	1.2		
	RFS	✓ 82	5.8		
	RBT RBT	✓ 64	3.2	GN05-58	
	RFS	✓ 100	14.0		
	RFS	✓ 80	7.6		
	RBT	✓ 153	40.9	GN05-59	
	RFS	✓ 103	13.2		
	SKR	✓ 205	127.0		
	RFS	✓ 85	8.1		
	Pridely	✓ 105	15.1		
	RFS	✓ 100	14.1		
	SKR	✓ 726	150.2		
	RFS	✓ 118	25.4		
	I	✓ 91	9.5		
		✓ 111	19.9		
		✓ 114	18.7		
	↓	✓ 105	13.1		
	RBT	✓ 97	10.4	GN05-60	

44

10/7/05

Thomas R. Payne & Associates Electrofishing Survey Form

 Stream: NFR

 Date: 10/07/05

 Page: 9 of 13

 Reach: Grande (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	RFS	✓ 82	6.8		
	↓	✓ 98	11.8		
	RBT	✓ 179	68.1	GNOS - 111 60	
	Pike M.	✓ 112	13.8		
	SKR	✓ 71	4.7		
	RFS	✓ 91	10.6		
	↓	✓ 93	10.0		
	↓	✓ 87	8.6		
	RBT	✓ 109	15.2	GNOS - 111 62	
	RFS	✓ 90	9.2		
	RFS	✓ 89	9.7		
	RBT	✓ 183	89.5	GNOS - 111 63	
	RBT	✓ 87	7.9	GNOS - 111 64	Mort ✓
	RFS	✓ 101	13.7		
	HH	✓ 40	0.6		
	RBT	✓ 59	2.4	GNOS - 111 65	
	RFS	✓ 80	6.3		
	↓	✓ 96	12.8		
	HH	✓ 94	8.3		
	Pike M	✓ 117	15.6		
	HH	✓ 53	0.9		
	RFS	✓ 93	11.4		
	↓	✓ 91	10.4		
	↓	✓ 95	11.1		
	↓	✓ 91	12.2		
	Pike M	✓ 52	1.5		
	HH	✓ 130	22.0		
	SKR	✓ 154	44.3		
	HH	✓ 136	25.9		
	SKR	✓ 84	7.9		
	↓	✓ 192	89.5		
	RFS	✓ 94	10.9		
	↓	✓ 90	10.4		
	↓	✓ 100	12.5		
	RBT	✓ 132	28.7	GNOS - 111 66	
	RFS	✓ 88	8.9		
	↓	✓ 96	13.1		
	↓	✓ 83	7.1		
	↓	✓ 92	9.5		
	RBT	✓ 294	282	GNOS - 111 67	
	RFS	✓ 90	9.7		
	Prickly Sc.	✓ 91	9.6		
	RBT	✓ 286	280.0	GNOS - 111 68	
	RFS	✓ 77	5.9		

1350

44

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFFR

Date: 10/07/2005

Page: 10 of 13

Reach: GRANITE (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	HH	✓ 100	10.4		
	RFS	✓ 80	5.5		
	↓	✓ 100	12.2		
		✓ 105	12.9		
	RBT	✓ 179	80.3	GN05 -	(69)
	RFS	✓ 84	7.2		
	RBT	✓ 189	79.3	GN05 -	(70)
	RFS	✓ 98	12.9		
	RBT	✓ 112	16.3	GN05 -	(71)
	RFS	✓ 82	7.1		
	RBT	✓ 78	5.8	GN05 -	(72)
	RFS	✓ 88	9.0		
	↓	✓ 91	7.9		
	RBT	✓ 111	15.9	GN05 -	(73)
	RFS	✓ 77	5.5		
	↓	✓ 85	7.1		
	RBT	✓ 240	159.7	GN05	(74)
	RFS	✓ 105	15.5		
	↓	✓ 92	10.6		
	↓	✓ 65	4.4		
	RFS	✓ 85	6.8		
	SKR	✓ 206	123.4		
	↓	✓ 58	2.0		
	RFS	✓ 50	1.5		
	HH	✓ 47	1.2		
	Prickly	61	2.7		
	HH	✓ 53	1.1		
	Prickly	✓ 103	13.5		
	RBT	✓ 78	5.7	GN05 -	(75)
	Pilg M	✓ 115	15.3		
	↓	✓ 113	13.4		
	SKR	✓ 68	4.1		
	↓	✓ 70	4.3		
	↓	✓ 76	6.4		
	↓	✓ 55	2.1		
	↓	✓ 73	5.3		
	↓	✓ 57	2.4		
	HH	✓ 50	1.2		
	RFS	✓ 105	14.6		
	↓	✓ 78	6.8		
	↓	✓ 93	9.6		
	↓	✓ 84	6.8		
	↓	✓ 76	4.9		
	↓	✓ 107	15.8		

Σ = 44
(44)

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFR

Date: 10/07/05

Page: 11 of 13

Reach: GRANITE (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	RFS	✓ 78	6.2		
		✓ 89	10.0		
		✓ 88	8.0		
	RFS	✓ 82	6.2		
	Prickly	✓ 98	10.7		
	↓	✓ 107	13.8		End Pass #2
#3	RFS	✓ 111	16.7		
		✓ 91	9.4		
		✓ 88	8.2		
		✓ 102	12.6		
	Prickly	✓ 41	0.8		
	RFS	✓ 97	11.2		
		✓ 88	8.3		
		✓ 84	6.5		
		✓ 92	9.6		
	Pike M	✓ 53	1.2		
	Prickly	✓ 92	8.9		
	HH	✓ 44	-	> 0.8	
	RFS	✓ 87	10.0		
	HH	✓ 34	0.3		
	RBT	✓ 161	50.4	GN05-76	
	HH	✓ 44	0.6		
	RFS	✓ 96	14.0		
	RBT	✓ 222	124.2	GN05-77	
	Pike M	✓ 44	0.9		
	HH	✓ 79	4.9		
	HH	✓ 45	0.4		
	HH	✓ 128	22.0		
	HH	✓ 52	1.2		
	HH	✓ 47	1.2		
	HH	✓ 75	3.8		
	RBT	✓ 114	16.9	GN05-78	
	HH	✓ 36	0.7		
	HH	✓ 36	0.4		
	HH	✓ 38	0.3		
	HH	✓ 44	0.8		
	RFS	✓ 96	11.7		
	I	✓ 98	10.6		
	RBT	✓ 112	16.4	GN05-79	
	HH	✓ 42	0.5		
		✓ 52	1.6		
		✓ 41	0.8		

11/4/05

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: WFR

Date: 10/07/05

Page: 12 of 13

Reach: GRANITE (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#3	RBT	✓ 234	145.1	GN05-80	
	HH	✓ 38	0.6		
	↓	✓ 30	0.2		
	↓	✓ 38	0.7		
	RFS	✓ 100	12.3		
	↓	✓ 108	16.1		
	↓	✓ 93	10.7		
	↓	✓ 91	9.2		
	↓	✓ 102	11.6		
	↓	✓ 93	9.0		
	↓	✓ 104	14.3		
	↓	✓ 94	11.8		
	↓	✓ 89	9.3		
	RBT	✓ 77	5.7	GN05-81	
	RFS	✓ 88	16.4		
	RBT	✓ 63	2.9	GN05-82	No Scales taken
	RFS	✓ 78	5.9		
	RBT	✓ 111	16.3	GN05-82	
	RFS	✓ 73	4.7		
	HH	✓ 51	1.9		
	RBT	✓ 106	14.2	GN05-83	
	HH	✓ 46	0.8		
	↓	✓ 37	0.4		
	↓	✓ 48	0.8		
	RFS	✓ 96	10.3		
	↓	✓ 97	12.8		
	↓	✓ 80	7.0		
	↓	✓ 89	8.5		
	↓	✓ 102	11.8		
	Pk. M	✓ 121	16.2		
	RFS	✓ 97	13.0		
	↓	✓ 94	10.3		
	Pk. M	✓ 127	19.2		
	RBT	✓ 171	51.1	GN05-84	
	HH	✓ 46	0.8		
	RBT	✓ 231	140.3	GN05-85	
	RFS	✓ 77	6.4		
	↓	✓ 89	9.5		
	↓	✓ 98	11.8		
	HH	✓ 39	0.7		
	SKR	✓ 65	3.0		
	↓	✓ 72	4.6		
	RFS	✓ 80	6.3		
	SKR	✓ 58	1.9		

12-00
114

Stream: NFER Date: 10/07/05 Page: 13 of 13
 Reach: GRATE (continued)

2-528

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR County: PLUMAS Date: 10/8/2005
 Reach: ROGERS FLAT Est. Q: 70 Page: 1 of 4
 Air Temp.: 55° @ 9:00 H2O Temp.: 56° @ 9:00 Conductivity: 104.0 microSiemens
 Blocknets: TOP & BOTTOM Specific Cond.: 127.5 microSiemens
 Reach Length: 231 feet H2O T @ 1345 hr = 15.3°C or 59.7°F Salinity: 0.1 ppt
 Electroshocker Type: _____ D.O.: 9.82 mg/L
 Personnel: Shockers: _____ 98.4 % saturation
 Photos: _____
 Netters: Don, Pam, Seasha, Cindy, Andrew, Russell

KEEP
MAIN CH
& SIDE CH
COUNTS
SEPARATE!

(SIDE CHANNEL)

Shocker	Scan	Tom	Tom	Steve	Tom	Steve
Model	LR-24	MPH2-A	PGE T-7	TRPA-11-A	AGE DA	11A 12B
Battery ID	#					
Voltage	400	400	400	400	400	400
Frequency	30	30	30	30	F.5	30 F.5
1st Pass	778	915	1307	1022	1222	459 531
2nd Pass	815	831	1140	945	1086	363 453
3rd Pass	816	753	M.O.B.	890	1099	355 444
4th Pass	715	764	893	917	997	ND 4th ND 4th
5th Pass						

Lengths are fork lengths or total lengths in millimeters

Weights are in grams

Pass#	Species	Length	Weight	Scale Sample	Notes
1	RBT	✓ 245	189.2	RF05-01	
		✓ 307	322.9	RF05-02	4 passes in Main Channel
		✓ 237	175.5	RF05-03	
	Hickory	✓ 109	17.7		3 passes in Side Channel
	RBT	✓ 225	124.2	RF05-04	
		✓ 107	14.7	RF05-05	
	SKR	✓ 196	163.4		
	HH	✓ 85	5.7		
	RFS	✓ 96	13.4		
	W	✓ 90	10.0		
	SMB	✓ 83	9.9		
	RFS	✓ 80	7.0		
	RBT	✓ 226	131.8	RF05-06	
		✓ 227	133.9	RF05-07	
		✓ 235	153.6	RF05-08	
		✓ 164	49.9	RF05-09	
		✓ 280	261.6	RF05-10	
		✓ 192	82.0	RF05-11	
		✓ 292	265.5	RF05-12	
		✓ 221	127.5	RF05-13	
		✓ 119	20.1	RF05-14	
	SMB	✓ 79	8.8		
	SKR	✓ 73	5.2		
	RFS	✓ 82	7.2		
		✓ 95	11.7		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: NFFR

Date: 10/08/05

Page: 2 of 4

Reach: Rogers Flat

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	RFS	✓125	24.4		
	Prickly	✓96	12.8		
	RFS	✓95	10.8		
		✓85	8.5		
		✓76	7.0		
		✓105	18.1		
		✓111	20.3		
		✓95	11.9		
	HCB	✓80	6.5		
	RBT	✓336	458.7	RFOS - 15	
		✓102	14.2	RFOS - 16	
		✓211	107.2	RFOS - 17	Main Channel Total RBT Pass 1 = 18
		✓160	52.5	RFOS - 18	
	HH	✓85	6.2		
	HH	✓99	9.3		Total RBT Side Ch = 6
	SMB	✓90	10.6		
	RFS	✓93	9.6		
		✓95	12.3		
		✓103	16.9		
		✓100	15.1		
		✓105	17.1		
		✓85	8.0		
		✓78	5.9		
		✓115	18.1		
		✓90	10.2		
		✓91	8.8		END OF MAIN CHANNEL - PASS 1
<hr/>					
SIDE	RBT	✓55	1.7	RFOS - 19	MORT SIDE CHANNEL - PASS 1
Channel		✓151	48.5	RFOS - 20	
PASS 1		✓169	70.5	RFOS - 21	
		✓96	12.2	RFOS - 22	
		✓85	7.3	RFOS - 23	
	Prickly	✓90	10.8		
	RFS	✓88	11.4		
	RBT	✓114	17.8	RFOS - 24	
	HH	✓74	4.8		
	RFS	✓100	14.9		
	P.M.	✓147	50.7		END OF SIDE CHANNEL - PASS 1
<hr/>					
#2	RBT	✓203	96.7	RFOS - 25	
		✓192	85.0	RFOS - 26	Main Channel Pass 2
		✓239	112.2	RFOS - 27	
		✓100	13.0	RFOS - 28	
		✓110	15.9	RFOS - 29	

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: NFER

Date: 10/08/05

Page: 3 of 4

Reach: Rogers Flat (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	HH	✓114	15.5		
	Pike M	✓325	348.2		
	RFS	✓108	19.1		
		✓87	9.9		
		✓77	6.6		
		✓93	11.1		
		✓98	11.8		
		✓83	7.5		
		✓90	9.5		
	Prickly	✓105	13.3		
	RFS	✓78	6.9		
	✓RBT	✓75	5.4		Main End Pass 2
	RBT	✓105	15.8	RFS-30	
#2	HH	✓41	0.8	MORT ✓	SIDE CHANNEL #2
	Pike M	✓51	1.2	MORT ✓	
	HH	✓73	4.0		
	SMB	✓85	9.0		S-RBT - side channel
	HA	✓141	30.8		
	RFS	✓65	3.8		
#3	RBT	✓152	43.3	RFS-31	
		✓115	18.6	RFS-32	
		✓209	107.7	RFS-33	
		✓102	12.8	RFS-34	
		✓245	172.1	RFS-35	
		✓252	192.5	RFS-36	
	SKR	✓240	196.3		
	Pike M	✓121	16.8		
	SKR	✓126	27.5		
		✓80	7.5		
	SMB	✓81	7.3		
	RFS	✓99	12.8		
		✓101	14.9		
		✓110	17.7		
		✓97	13.8		
		✓82	6.8		
		✓101	14.6		
		✓88	9.3		
		✓81	7.2		
		✓91	9.2		
		✓60	3.1		
		✓59	2.3		End Main Channel Pass 3

Thomas R. Payne & Associates Electrofishing Survey Form

Stream:

NFFR

Date: _____

10108105

Page:

4 of 4

Reach:

Roger's Flat

(continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#3 <i>phd.</i>	RFS	✓ 109	16.5		Side Channel Pass 3
	Pike M	✓ 111	12.3		END SIDE
#4	RBT	✓ 218	128.1	RF05-37	Pass #4
<i>/mgi.</i>	SKB	✓ 122	21.4		
	RBT	✓ 246	1162.5	RF05-38	
		✓ 218	125.5	RF05-39	
		✓ 215	117.1	RF05-40	
	RFS	✓ 110	20.1		
		100	14.9		
		95	11.4		
		82	8.4		
		84	8.3		
		76	5.8		
		97	10.9		END PASS 4

(14)

Appendix D

MicroFish 3.0 and Program CAPTURE Output for the
October 2005 Electrofishing Data

Stream: NFFR below Bear Ranch Creek, 4 October 2005

Species: Rainbow trout

Removal Pattern: 20 14 4

Total Catch = 38

Population Estimate = 42

Chi Square = 1.588

Pop Est Standard Err = 4.048

Lower Conf Interval = 38.000

Upper Conf Interval = 50.177

Capture Probability = 0.528

Capt Prob Standard Err = 0.108

Lower Conf Interval = 0.310

Upper Conf Interval = 0.745

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 33.82251 .

Stream: NFFR below Bear Creek, 4 October 2005

Species: Hardhead

Removal Pattern: None Captured

Total Catch = 0

Population Estimate = 0

Stream: NFFR below Bear Creek, 4 October 2005

Species: Sacramento pikeminnow

Removal Pattern: 2 0 0

Total Catch = 2

Population Estimate = 2 (**Using Program CAPTURE**)

Chi Square = 0.000

Pop Est Standard Err = 0.000

Lower Conf Interval = 2.000

Upper Conf Interval = 3.000

Capture Probability = 0.9998

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 1.00.

Stream: NFFR below Bear Ranch Creek, 4 October 2005

Species: Sacramento sucker

Removal Pattern: 90 43 22

Total Catch = 155

Population Estimate = 174

Chi Square = 0.062

Pop Est Standard Err = 8.700

Lower Conf Interval = 156.860

Upper Conf Interval = 191.140

Capture Probability = 0.518

Capt Prob Standard Err = 0.054

Lower Conf Interval = 0.412

Upper Conf Interval = 0.624

Stream: NFFR below Bear Ranch Creek, 4 October 2005

Species: Smallmouth bass

Removal Pattern: 42 31 16

Total Catch = 89

Population Estimate = 116

Chi Square = 0.650

Pop Est Standard Err = 15.968

Lower Conf Interval = 89.000

Upper Conf Interval = 147.616

Capture Probability = 0.382

Capt Prob Standard Err = 0.085

Lower Conf Interval = 0.214

Upper Conf Interval = 0.550

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 84.38399 .

Stream: NFFR below Bear Ranch Creek, 4 October 2005

Species: Riffle sculpin

Removal Pattern: 63 28 13

Total Catch = 104

Population Estimate = 113

Chi Square = 0.063

Pop Est Standard Err = 5.437

Lower Conf Interval = 104.000

Upper Conf Interval = 123.765

Capture Probability = 0.562

Capt Prob Standard Err = 0.062

Lower Conf Interval = 0.440

Upper Conf Interval = 0.684

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 102.235 .

Stream: NFFR below Bear Ranch Creek, 4 October 2005

Species: Prickly sculpin

Removal Pattern: 1 0 1

Total Catch = 2

Population Estimate = 2

Chi Square = 2.786

Pop Est Standard Err = 1.038

Lower Conf Interval = 2.000

Upper Conf Interval = 15.186

Capture Probability = 0.500

Capt Prob Standard Err = 0.519

Lower Conf Interval = %-6.093

Upper Conf Interval = 7.093

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -11.18564 .

Stream: NFFR below Grizzly Creek, 5 October 2005

Species: Rainbow trout

Removal Pattern: 39 23 10

Total Catch = 72

Population Estimate = 82

Chi Square = 0.390

Pop Est Standard Err = 6.779

Lower Conf Interval = 72.000

Upper Conf Interval = 95.491

Capture Probability = 0.497

Capt Prob Standard Err = 0.082

Lower Conf Interval = 0.334

Upper Conf Interval = 0.659

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 68.50948 .

Stream: NFFR below Grizzly Creek, 5 October 2005

Species: Hardhead

Removal Pattern: 69 16 19

Total Catch = 104

Population Estimate = 113

Chi Square = 9.314

Pop Est Standard Err = 5.437

Lower Conf Interval = 104.000

Upper Conf Interval = 123.765

Capture Probability = 0.562

Capt Prob Standard Err = 0.062

Lower Conf Interval = 0.440

Upper Conf Interval = 0.684

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 102.235 .

Stream: NFFR below Grizzly Creek, 5 October 2005

Species: Sacramento pikeminnow

Removal Pattern: 28 31 23

Total Catch = 82

Population Estimate = 272

Chi Square = 0.815

Pop Est Standard Err = 258.778

Lower Conf Interval = 82.000

Upper Conf Interval = 781.792

Capture Probability = 0.112

Capt Prob Standard Err = 0.121

Lower Conf Interval = -.125

Upper Conf Interval = 0.350

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -237.7917 .

Stream: NFFR below Grizzly Creek, 5 October 2005

Species: Sacramento sucker

Removal Pattern: 175 89 54

Total Catch = 318

Population Estimate = 378

Chi Square = 0.462

Pop Est Standard Err = 18.274

Lower Conf Interval = 341.999

Upper Conf Interval = 414.001

Capture Probability = 0.458

Capt Prob Standard Err = 0.041

Lower Conf Interval = 0.377

Upper Conf Interval = 0.538

Stream: NFFR below Grizzly Creek, 5 October 2005

Species: Smallmouth bass

Removal Pattern: 4 3 2

Total Catch = 9

Population Estimate = 10

Chi Square = 0.603

Pop Est Standard Err = 2.704

Lower Conf Interval = 9.000

Upper Conf Interval = 16.117

Capture Probability = 0.474

Capt Prob Standard Err = 0.243

Lower Conf Interval = -.077

Upper Conf Interval = 1.024

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 3.882674 .

Stream: NFFR below Grizzly Creek, 5 October 2005

Species: Riffle sculpin

Removal Pattern: 91 63 30

Total Catch = 184

Population Estimate = 230

Chi Square = 1.338

Pop Est Standard Err = 18.532

Lower Conf Interval = 193.492

Upper Conf Interval = 266.508

Capture Probability = 0.413

Capt Prob Standard Err = 0.057

Lower Conf Interval = 0.302

Upper Conf Interval = 0.525

Stream: NFFR below Grizzly Creek, 5 October 2005

Species: Prickly sculpin

Removal Pattern: 0 4 6

Total Catch = 10

Population Estimate = 50

Chi Square = 6.734

Pop Est Standard Err = 250.891

Lower Conf Interval = 10.000

Upper Conf Interval = 554.292

Capture Probability = 0.068

Capt Prob Standard Err = 0.369

Lower Conf Interval = -.673

Upper Conf Interval = 0.810

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -454.2916 .

WARNING:

Run terminated at population estimate equal to 5 times the total catch. Cause: irregular or non-descending removal pattern. Results should not be considered reliable.

Stream: NFFR at Indian Jim School, 6 October 2005

Species: Rainbow trout

Removal Pattern: 8 6 6 4 1

Total Catch = 25

Population Estimate = 29

Chi Square = 1.743

Pop Est Standard Err = 4.557

Lower Conf Interval = 25.000

Upper Conf Interval = 38.333

Capture Probability = 0.316

Capt Prob Standard Err = 0.106

Lower Conf Interval = 0.098

Upper Conf Interval = 0.534

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 19.66667.

Stream: NFFR at Indian Jim School, 6 October 2005

Species: Hardhead

Removal Pattern: 29 22 17 6 4

Total Catch = 78

Population Estimate = 85

Chi Square = 2.762

Pop Est Standard Err = 4.780

Lower Conf Interval = 78.000

Upper Conf Interval = 94.508

Capture Probability = 0.384

Capt Prob Standard Err = 0.057

Lower Conf Interval = 0.271

Upper Conf Interval = 0.498

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 75.49221 .

Stream: NFFR at Indian Jim School, 6 October 2005

Species: Sacramento pikeminnow

Removal Pattern: 15 8 2 1 1

Total Catch = 27

Population Estimate = 27

Chi Square = 1.197

Pop Est Standard Err = 0.665

Lower Conf Interval = 27.000

Upper Conf Interval = 28.367

Capture Probability = 0.587

Capt Prob Standard Err = 0.085

Lower Conf Interval = 0.413

Upper Conf Interval = 0.761

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 25.63298 .

Stream: NFFR at Indian Jim School, 6 October 2005

Species: Sacramento sucker

Removal Pattern: 142 55 26 14 5

Total Catch = 242

Population Estimate = 245

Chi Square = 1.191

Pop Est Standard Err = 2.294

Lower Conf Interval = 242.000

Upper Conf Interval = 249.519

Capture Probability = 0.568

Capt Prob Standard Err = 0.029

Lower Conf Interval = 0.512

Upper Conf Interval = 0.624

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 240.4809 .

Stream: NFFR at Indian Jim School, 6 October 2005

Species: Smallmouth bass

Removal Pattern: 2 2 0 0 0

Total Catch = 4

Population Estimate = 4

Chi Square = 1.984

Pop Est Standard Err = 0.138

Lower Conf Interval = 4.000

Upper Conf Interval = 4.441

Capture Probability = 0.667

Capt Prob Standard Err = 0.208

Lower Conf Interval = 0.006

Upper Conf Interval = 1.328

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 3.559296 .

Stream: NFFR at Indian Jim School, 6 October 2005

Species: Riffle sculpin

Removal Pattern: 26 16 9 4 1

Total Catch = 56

Population Estimate = 57

Chi Square = 1.404

Pop Est Standard Err = 1.721

Lower Conf Interval = 56.000

Upper Conf Interval = 60.447

Capture Probability = 0.505

Capt Prob Standard Err = 0.062

Lower Conf Interval = 0.380

Upper Conf Interval = 0.629

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 53.55276 .

Stream: NFFR at Indian Jim School, 6 October 2005

Species: Prickly sculpin

Removal Pattern: 4 2 1 0 1

Total Catch = 8

Population Estimate = 8

Chi Square = 2.758

Pop Est Standard Err = 0.665

Lower Conf Interval = 8.000

Upper Conf Interval = 9.572

Capture Probability = 0.500

Capt Prob Standard Err = 0.166

Lower Conf Interval = 0.107

Upper Conf Interval = 0.893

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 6.427555 .

Stream: NFFR below Granite Creek, 7 October 2005

Species: Rainbow trout

Removal Pattern: 53 22 11

Total Catch = 86

Population Estimate = 93

Chi Square = 0.173

Pop Est Standard Err = 4.724

Lower Conf Interval = 86.000

Upper Conf Interval = 102.382

Capture Probability = 0.570

Capt Prob Standard Err = 0.067

Lower Conf Interval = 0.436

Upper Conf Interval = 0.703

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 83.61795 .

Stream: NFFR below Granite Creek, 7 October 2005

Species: Hardhead

Removal Pattern: 28 13 30

Total Catch = 71

Population Estimate = 355

Chi Square = 8.042

Pop Est Standard Err = 626.865

Lower Conf Interval = 71.000

Upper Conf Interval = 1,589.925

Capture Probability = 0.071

Capt Prob Standard Err = 0.136

Lower Conf Interval = -.196

Upper Conf Interval = 0.338

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -879.9249 .

WARNING:

Run terminated at population estimate equal to 5 times the total catch. Cause: irregular or non-descending removal pattern. Results should not be considered reliable.

Stream: NFFR below Granite Creek, 7 October 2005

Species: Sacramento pikeminnow

Removal Pattern: 57 6 8

Total Catch = 71

Population Estimate = 72

Chi Square = 10.062

Pop Est Standard Err = 1.407

Lower Conf Interval = 71.000

Upper Conf Interval = 74.805

Capture Probability = 0.740

Capt Prob Standard Err = 0.055

Lower Conf Interval = 0.629

Upper Conf Interval = 0.850

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 69.1948 .

Stream: NFFR below Granite Creek, 7 October 2005

Species: Sacramento sucker

Removal Pattern: 29 17 5

Total Catch = 51

Population Estimate = 55

Chi Square = 1.183

Pop Est Standard Err = 3.694

Lower Conf Interval = 51.000

Upper Conf Interval = 62.407

Capture Probability = 0.567

Capt Prob Standard Err = 0.088

Lower Conf Interval = 0.391

Upper Conf Interval = 0.743

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 47.59253 .

Stream: NFFR below Granite Creek, 7 October 2005

Species: Smallmouth bass

Removal Pattern: None Captured

Total Catch = 0

Population Estimate = 0

Stream: NFFR below Granite Creek, 7 October 2005

Species: Riffle sculpin

Removal Pattern: 103 73 52

Total Catch = 228

Population Estimate = 349

Chi Square = 0.016

Pop Est Standard Err = 48.639

Lower Conf Interval = 253.181

Upper Conf Interval = 444.819

Capture Probability = 0.297

Capt Prob Standard Err = 0.059

Lower Conf Interval = 0.181

Upper Conf Interval = 0.413

Stream: NFFR below Granite Creek, 7 October 2005

Species: Prickly sculpin

Removal Pattern: 12 7 2

Total Catch = 21

Population Estimate = 22

Chi Square = 0.683

Pop Est Standard Err = 1.919

Lower Conf Interval = 21.000

Upper Conf Interval = 25.993

Capture Probability = 0.600

Capt Prob Standard Err = 0.131

Lower Conf Interval = 0.328

Upper Conf Interval = 0.872

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 18.0075 .

Stream: NFFR at Rodgers Flat (Main Channel & Side Channel combined), 8 October 2005

Species: Rainbow trout

Model assumes 4th pass in side channel with no captures

Removal Pattern: 24 6 6 4

Total Catch = 40

Population Estimate = 42

Chi Square = 3.278

Pop Est Standard Err = 2.351

Lower Conf Interval = 40.000

Upper Conf Interval = 46.749

Capture Probability = 0.513

Capt Prob Standard Err = 0.084

Lower Conf Interval = 0.342

Upper Conf Interval = 0.683

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 37.25114 .

Stream: NFFR at Rodgers Flat (Main Channel & Side Channel combined) 8 October 2005

Species: Hardhead

Model assumes 4th pass in side channel with no captures

Removal Pattern: 4 4 0 0

Total Catch = 8

Population Estimate = 8

Chi Square = 3.902

Pop Est Standard Err = 0.370

Lower Conf Interval = 8.000

Upper Conf Interval = 8.875

Capture Probability = 0.667

Capt Prob Standard Err = 0.160

Lower Conf Interval = 0.288

Upper Conf Interval = 1.046

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 7.124674 .

Stream: NFFR at Rodgers Flat (Main Channel & Side Channel combined) 8 October 2005

Species: Sacramento pikeminnow

Model assumes 4th pass in side channel with no captures

Removal Pattern: 1 2 2 0

Total Catch = 5

Population Estimate = 5

Chi Square = 4.183

Pop Est Standard Err = 1.171

Lower Conf Interval = 5.000

Upper Conf Interval = 8.250

Capture Probability = 0.455

Capt Prob Standard Err = 0.264

Lower Conf Interval = -.279

Upper Conf Interval = 1.188

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 1.749998 .

Stream: NFFR at Rodgers Flat (Main Channel & Side Channel combined) 8 October 2005

Species: Sacramento sucker

Model assumes 4th pass in side channel with no captures

Removal Pattern: 2 0 3 1

Total Catch = 6

Population Estimate = 8

Chi Square = 4.636

Pop Est Standard Err = 5.649

Lower Conf Interval = 6.000

Upper Conf Interval = 21.360

Capture Probability = 0.261

Capt Prob Standard Err = 0.290

Lower Conf Interval = -.425

Upper Conf Interval = 0.946

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -5.360419 .

Stream: NFFR at Rodgers Flat (Main Channel & Side Channel combined) 8 October 2005

Species: Smallmouth bass

Model assumes 4th pass in side channel with no captures

Removal Pattern: 3 1 1 0

Total Catch = 5

Population Estimate = 5

Chi Square = 0.912

Pop Est Standard Err = 0.392

Lower Conf Interval = 5.000

Upper Conf Interval = 6.088

Capture Probability = 0.625

Capt Prob Standard Err = 0.213

Lower Conf Interval = 0.033

Upper Conf Interval = 1.217

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 3.912251 .

Stream: NFFR at Rodgers Flat (Main Channel & Side Channel combined), 8 October 2005

Species: Riffle sculpin

Model assumes 4th pass in side channel with no captures

Removal Pattern: 24 10 12 7

Total Catch = 53

Population Estimate = 65

Chi Square = 2.258

Pop Est Standard Err = 8.966

Lower Conf Interval = 53.000

Upper Conf Interval = 82.914

Capture Probability = 0.340

Capt Prob Standard Err = 0.087

Lower Conf Interval = 0.165

Upper Conf Interval = 0.514

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 47.08606 .

Stream: NFFR at Rodgers Flat (Main Channel & Side Channel combined), 8 October 2005

Species: Prickly sculpin

Model assumes 4th pass in side channel with no captures

Removal Pattern: 4 1 0 0

Total Catch = 5

Population Estimate = 5

Chi Square = 0.276

Pop Est Standard Err = 0.064

Lower Conf Interval = 5.000

Upper Conf Interval = 5.177

Capture Probability = 0.833

Capt Prob Standard Err = 0.156

Lower Conf Interval = 0.399

Upper Conf Interval = 1.267

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 4.822885 .

Rodgers Flat Site – Main Channel vs Side Channel

Stream: Rodgers Flat Main Channel, 8 October 2005

Species: Rainbow trout

Removal Pattern: 18 6 6 4

Total Catch = 34

Population Estimate = 37

Chi Square = 1.913

Pop Est Standard Err = 3.333

Lower Conf Interval = 34.000

Upper Conf Interval = 43.759

Capture Probability = 0.447

Capt Prob Standard Err = 0.098

Lower Conf Interval = 0.248

Upper Conf Interval = 0.646

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 30.24102 .

Stream: Rodgers Flat Side Channel, 8 October 2005

Species: Rainbow trout

Removal Pattern: 6 0 0

Total Catch = 6

Population Estimate = 6 (**Using Program CAPTURE**)

Chi Square = 0.000

Pop Est Standard Err = 0.000

Lower Conf Interval = 6.000

Upper Conf Interval = 7.000

Capture Probability = 0.999939

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 5.00.

Stream: Rodgers Flat Main Channel, 8 October 2005

Species: Hardhead

Removal Pattern: 3 1 0 0

Total Catch = 4

Population Estimate = 4

Chi Square = 0.369

Pop Est Standard Err = 0.084

Lower Conf Interval = 4.000

Upper Conf Interval = 4.266

Capture Probability = 0.800

Capt Prob Standard Err = 0.187

Lower Conf Interval = 0.205

Upper Conf Interval = 1.395

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 3.734075 .

Stream: Rodgers Flat Side Channel, 8 October 2005

Species: Hardhead

Removal Pattern: 1 3 0

Total Catch = 4

Population Estimate = 4

Chi Square = 5.337

Pop Est Standard Err = 0.969

Lower Conf Interval = 4.000

Upper Conf Interval = 7.083

Capture Probability = 0.571

Capt Prob Standard Err = 0.323

Lower Conf Interval = -.456

Upper Conf Interval = 1.599

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was .9168732 .

Stream: Rodgers Flat Main Channel, 8 October 2005

Species: Sacramento pikeminnow

Removal Pattern: 0 1 1 0

Total Catch = 2

Population Estimate = 2

Chi Square = 3.335

Pop Est Standard Err = 1.050

Lower Conf Interval = 2.000

Upper Conf Interval = 15.341

Capture Probability = 0.400

Capt Prob Standard Err = 0.452

Lower Conf Interval = %-5.341

Upper Conf Interval = 6.141

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -11.34119 .

Stream: Rodgers Flat Side Channel, 8 October 2005

Species: Sacramento pikeminnow

Removal Pattern: 1 1 1

Total Catch = 3

Population Estimate = 3

Chi Square = 1.345

Pop Est Standard Err = 1.271

Lower Conf Interval = 3.000

Upper Conf Interval = 8.469

Capture Probability = 0.500

Capt Prob Standard Err = 0.424

Lower Conf Interval = -1.323

Upper Conf Interval = 2.323

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -2.469018 .

Stream: Rodgers Flat Main Channel, 8 October 2005

Species: Sacramento sucker

Removal Pattern: 2 0 3 1

Total Catch = 6

Population Estimate = 8

Chi Square = 4.636

Pop Est Standard Err = 5.649

Lower Conf Interval = 6.000

Upper Conf Interval = 21.360

Capture Probability = 0.261

Capt Prob Standard Err = 0.290

Lower Conf Interval = -.425

Upper Conf Interval = 0.946

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was -5.360419 .

Stream: Rodgers Flat Side Channel, 8 October 2005

Species: Sacramento sucker

Removal Pattern: None Captured

Total Catch = 0

Population Estimate = 0

Stream: Rodgers Flat Main Channel, 8 October 2005

Species: Smallmouth bass

Removal Pattern: 3 0 1 0

Total Catch = 4

Population Estimate = 4

Chi Square = 2.701

Pop Est Standard Err = 0.262

Lower Conf Interval = 4.000

Upper Conf Interval = 4.833

Capture Probability = 0.667

Capt Prob Standard Err = 0.227

Lower Conf Interval = -.055

Upper Conf Interval = 1.388

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 3.167233 .

Stream: Rodgers Flat Side Channel, 8 October 2005

Species: Smallmouth bass

Removal Pattern: 0 1 0

Total Catch = 1

Population Estimate = 1 (**Assumed – No model works with this removal pattern**)

Lower Conf Interval = 1.000 (**Assumed – No model works with this removal pattern**)

Upper Conf Interval = 2.000 (**Assumed – No model works with this removal pattern**)

Capture Probability = unknown (**Assumed – No model works with this removal pattern**)

Stream: Rodgers Flat Main Channel, 8 October 2005

Species: Riffle sculpin

Removal Pattern: 22 9 11 7

Total Catch = 49

Population Estimate = 61

Chi Square = 2.241

Pop Est Standard Err = 9.373

Lower Conf Interval = 49.000

Upper Conf Interval = 79.746

Capture Probability = 0.329

Capt Prob Standard Err = 0.092

Lower Conf Interval = 0.145

Upper Conf Interval = 0.513

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 42.25415 .

Stream: Rodgers Flat Side Channel, 8 October 2005

Species: Riffle sculpin

Removal Pattern: 2 1 1

Total Catch = 4

Population Estimate = 4

Chi Square = 0.865

Pop Est Standard Err = 0.969

Lower Conf Interval = 4.000

Upper Conf Interval = 7.083

Capture Probability = 0.571

Capt Prob Standard Err = 0.323

Lower Conf Interval = -.456

Upper Conf Interval = 1.599

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was .9168732 .

Stream: Rodgers Flat Main Channel, 8 October 2005

Species: Prickly sculpin

Removal Pattern: 3 1 0 0

Total Catch = 4

Population Estimate = 4

Chi Square = 0.369

Pop Est Standard Err = 0.084

Lower Conf Interval = 4.000

Upper Conf Interval = 4.266

Capture Probability = 0.800

Capt Prob Standard Err = 0.187

Lower Conf Interval = 0.205

Upper Conf Interval = 1.395

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 3.734075 .

Stream: Rodgers Flat Side Channel, 8 October 2005

Species: Prickly sculpin

Removal Pattern: 1 0 0

Total Catch = 1

Population Estimate = 1 (**Using Program CAPTURE**)

Chi Square = 0.000

Pop Est Standard Err = 0.00014

Lower Conf Interval = 1.000

Upper Conf Interval = 2.000

Capture Probability = 0.9996

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 0.00.
