

2004 Angler Creel Survey: Rock Creek Cresta Project (FERC No. 1962) North Fork Feather River - March 2005 Final

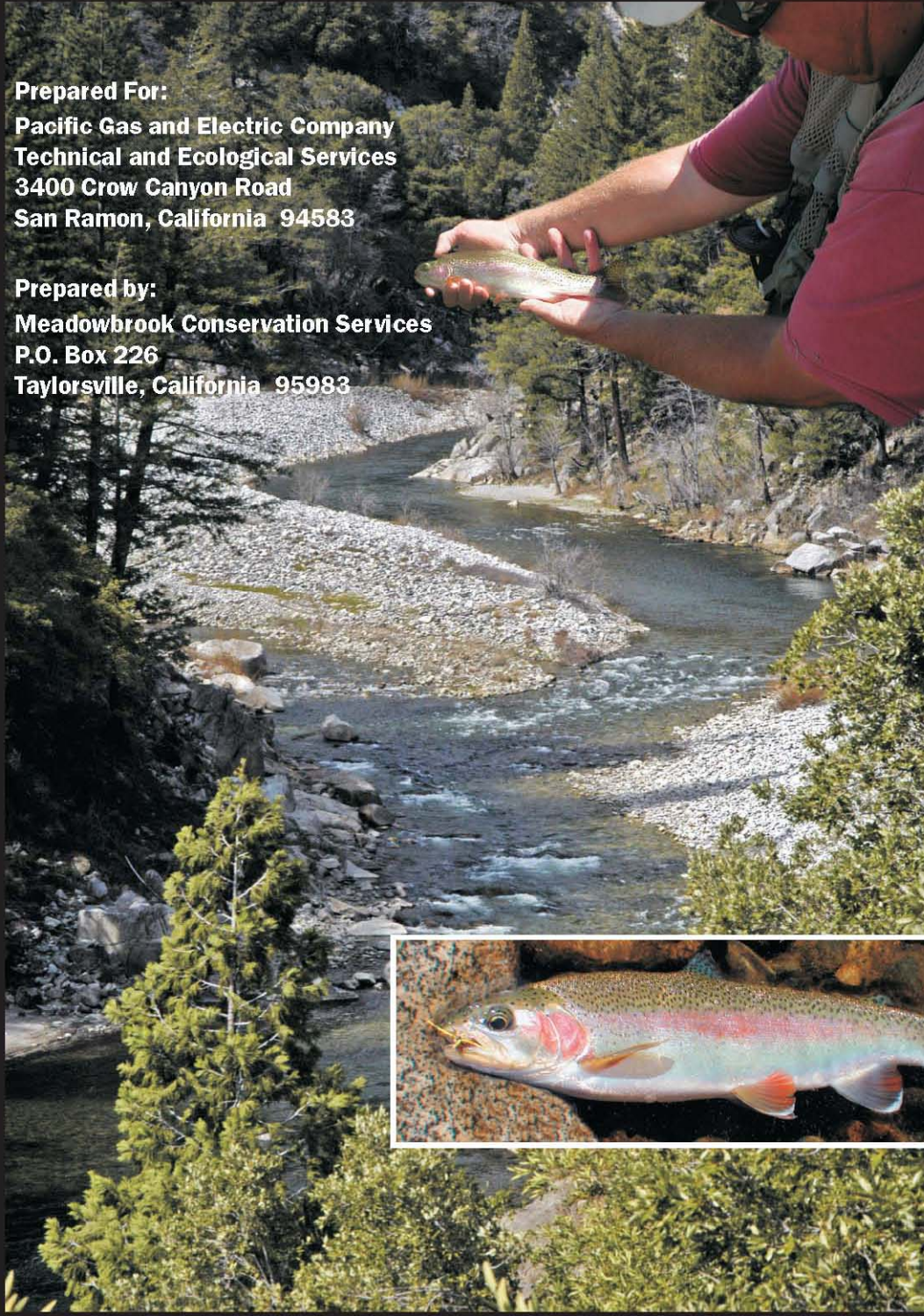
Butte and Plumas Counties, California

Prepared For:

**Pacific Gas and Electric Company
Technical and Ecological Services
3400 Crow Canyon Road
San Ramon, California 94583**

Prepared by:

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MEADOWBROOK CONSERVATION SERVICES
SPECIALIZING IN AQUATIC & RIPARIAN ECOSYSTEMS



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FINAL REPORT

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Date: March 2005

EXECUTIVE SUMMARY

This report describes the results of the 2004 Angler Creel Survey performed by Meadowbrook Conservation Services on the Rock Creek and Cresta reaches of the North Fork Feather River, Plumas and Butte Counties, California.

For comparative purposes, this report follows the format of the 2002 Angler Creel Survey Report by Garcia and Associates, and follows a similar methodology that was utilized by the California Department of Fish and Game during the 1981-1985 fisheries study (CDFG 1988).

The 2004 Angler Creel Survey was conducted in the third year of the current Operating License and Settlement Agreement (issued October 24, 2001) for the Rock Creek-Cresta Hydroelectric Project (FERC No. 1962). The 2004 Angler Survey builds on the data base started by the 2002 Angler Survey, and supports one element of the Project's 15-year monitoring program. The primary objective of the angler surveys is to track the quality of the fishery from an angling perspective during the initial 15 years of the License.

The Settlement Agreement (SA) identifies the following performance criteria or targets that are to be addressed with the angler surveys: 1) a fish catch of 80% wild trout/ 20% non-game fish, 2) an average size of wild trout caught > 9.7 inches fork length, 3) adult rainbow trout > 17 inches available for catch, and 4) an angler catch rate of one fish per angling hour, including catch and release.

Meadowbrook Conservation Services (MCS) conducted surveys for a total of 60 days throughout the 2004 trout season (April 24th through November 15th). Survey efforts typically included four weekend days and five weekdays during each full month. All major holidays were sampled and combined with their associated weekend days. Methods included a combination of a drive-by use count, and of angler interviews. (Boating flow weekends, which occurred in 2004 on one weekend per month from June and October, were excluded from these surveys. Angling during the boating flow weekends was assessed separately in association with other recreation monitoring during boating flow weekends).

An estimated total of 2,091 anglers fished the Rock Creek and Cresta reaches during the 2004 trout season based on a total of 528 anglers observed. Fishing pressure was highest on weekends, followed by holidays (and weekends associated with holidays), and finally weekdays. The estimated number of anglers per day was highest during April through June.

The 528 anglers reported catching 847 rainbow trout, 8 brown trout, 129 Sacramento pikeminnow, 68 smallmouth bass, 10 hardhead, and 7 Sacramento sucker. Anglers kept 20 of the rainbow trout (2.4% of all trout caught), two smallmouth bass, and six Sacramento pikeminnow despite catch and release regulations for trout in the riverine reaches. Because pikeminnow and hardhead are difficult to distinguish from one another, an unknown portion of the pikeminnow reported were possibly hardhead.

A total of 986.7 angler hours were reported for the survey area during the surveys. Catch per unit effort (CPUE) for all fish averaged 1.08 fish/hour. CPUE was higher for the Cresta Reach (Reach 1) at 1.32 fish/hour than for the Rock Creek Reach (Reach 3) at 1.08 fish/hour, although greater angler effort was devoted to Reach 3 (i.e., more angler hours total). Overall, 83.5% of the interviewed anglers were fishing in the river reaches, while 16.5% were fishing in the reservoirs.

Fly fishing was the most popular angling method in terms of angler numbers (44.9%), followed by lures (34.1%), bait (19.1%), and a fourth category, a combination of two or three angling methods (1.9%). Bait fishing was still a popular method and occurred in the riverine reaches, even though it was prohibited by the catch and release regulations. Overall, fly fishing anglers reported the highest CPUE for rainbow trout at 1.33.

In 2004, rainbow trout comprised 79.2% of the catch, with an average length of 11.9 inches. Anglers reported catching a total of 39 fish measuring 17 inches or longer. The total CPUE for rainbow trout averaged 0.86 rainbow trout/hour. CPUE was higher for the Cresta Reach at 1.07 rainbow trout/hour than for the Rock Creek Reach at 0.90 rainbow trout/hour.

The catch composition and the trout/hour values were very close to the 80% wild trout and one fish/angler hour criteria established in the Settlement Agreement, while the criteria for average length > 9.7 inches and the presence of large trout > 17 inches were exceeded.

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1.0 INTRODUCTION

The Rock-Creek-Cresta Hydroelectric Project License No. 1962 (issued October 24, 2001) requires the Pacific Gas and Electric Company to evaluate fish populations and trout angling in the Project area. The Company contracted with Meadowbrook Conservation Services (MCS) to conduct angler creel surveys in Years 3, 4, and 5 of the new License (i.e., 2004, 2005, and 2006). The angler surveys are one element of a multiple component fisheries monitoring program.

The long-term objective of the monitoring effort is to measure the response of fish populations in the Rock Creek and Cresta Study reaches of the North Fork Feather River (NFFR) to the flow regime changes specified within Condition 5 of the License. The overall objective of the Rock Creek – Cresta Settlement Agreement (PG&E 2000) is to provide “an excellent trout fishery and a functioning ecosystem to all naturally occurring species.” The performance criteria provided in the SA to achieve this objective include:

- a. Wild rainbow trout (*Oncorhynchus mykiss*) population with four age classes (fish population surveys).
- b. Fish catch of 80% wild trout/ 20% non-game fish (angler surveys).
- c. Average wild trout caught > 9.7 inches fork length (angler surveys).
- d. Adult rainbow trout available for catch > 17 inches (angler surveys).
- e. Harvestable component of 595 lbs/mile wild trout (fish population surveys).
- f. Wild trout biomass 62 lbs/acre (fish population surveys).
- g. Angler catch rate of one fish per angling hour, including catch and release (angler surveys).

The angler surveys conducted by MCS, and distributed herein, provide data to help address items b, c, d, and g. listed above. The other criteria (i.e., a, e, and f) are more directly addressed with the results from other monitoring elements.

2.0 METHODS

2.1 Angler Surveys

The 2004 angler surveys were conducted in the Rock Creek-Cresta Project river and reservoir reaches following methodologies used by CDFG during creel surveys conducted during the 1981-1986 Fisheries Management Study (CDFG 1988).

Angler surveys were conducted throughout the 2004 trout season from April 24 through November 15 (Appendix D). In each full month, four weekend days and five weekdays were selected for surveying. Two weekend days were surveyed in April and two weekend and two weekdays were surveyed in November. Memorial Day, July 4th, Labor Day, Columbus Day and their associated weekends were surveyed and treated as 'Holiday days. Veteran's Day, Thursday, November 11th, also a Holiday, did not have an associated weekend. Boating flow weekends, which occurred in 2004 on one weekend per month from June and October, were excluded from these surveys. Angling during the boating flow weekends was assessed separately in association with other recreation monitoring during boating flow weekends.

The study area was divided into four main sampling areas (Figure 1):

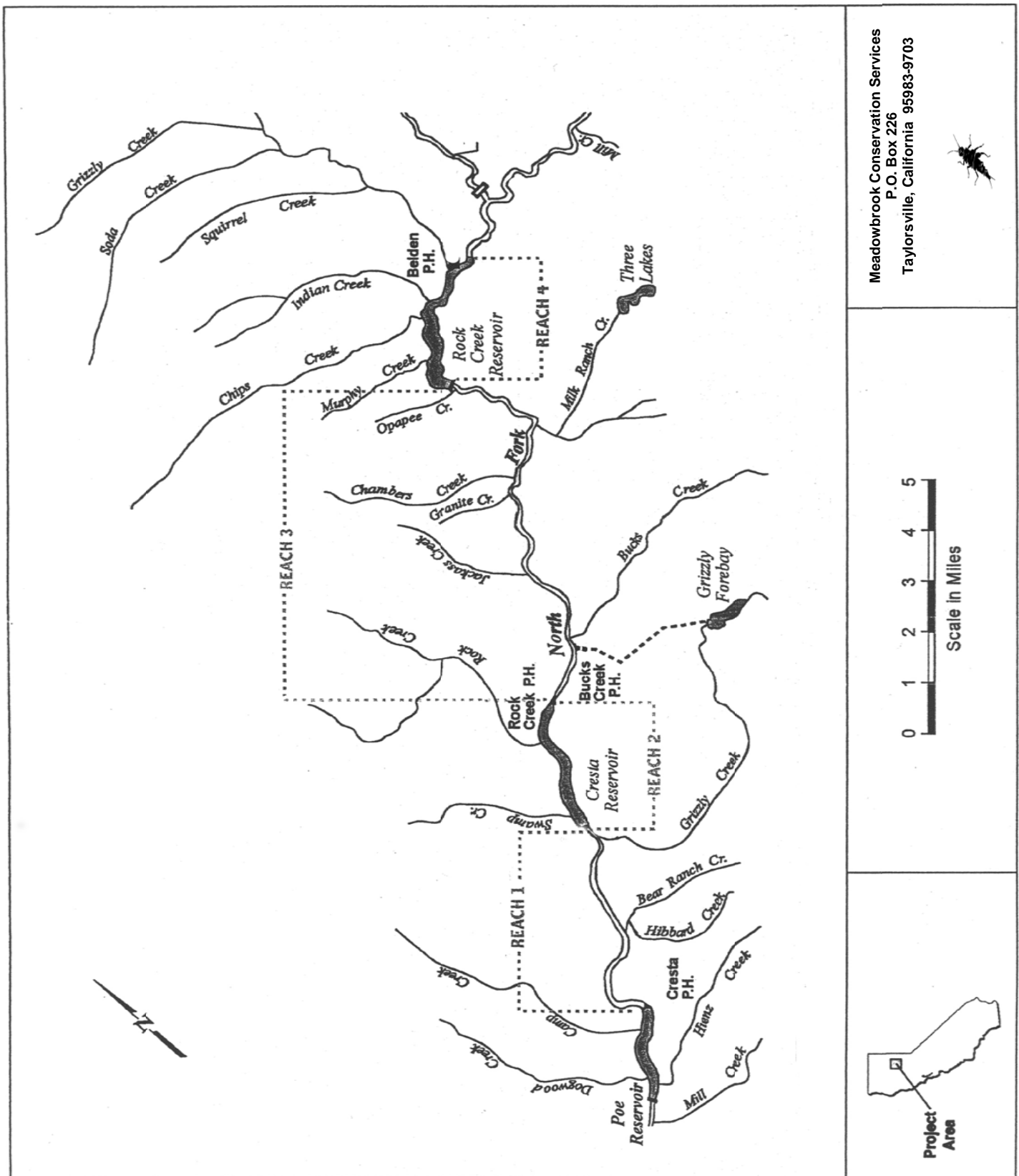
- Reach 1: Cresta Reach – Cresta Dam Powerhouse to Cresta Dam
- Reach 2: Cresta Reservoir – Cresta Dam to Rock Creek Powerhouse Outlet
- Reach 3: Rock Creek Reach – Rock Creek Powerhouse to Rock Creek Dam
- Reach 4: Rock Creek Reservoir – Rock Creek Dam to Belden Bridge

Angler surveys consisted of instantaneous use counts and angler interviews following a standard data sheet (Appendix A). Use counts consisted of driving along the river reaches and reservoirs, and counting the number of anglers, vehicles, and boats observed. Surveyors also drove the road into the "school house" area and the "whitewater parking area" just above Tobin to look for anglers who were parked away from Highway 70.

For the purposes of the angler surveys, the angling day was divided into five periods: 6:00-9:00, 9:00-12:00, 12:00-15:00, 15:00-18:00, 18:00-dark. At least one instantaneous use count was conducted during each period to estimate the number of anglers in each reach. The remaining time in each period was devoted to conducting as many angler interviews as time allowed.

Data collected included: number of anglers in the party, hours fished, county of residence, number of fish caught by species, estimated and/or measured lengths, and gear type used.

Figure 1. Survey Area for the Rock Creek-Cresta Creel Census



2.2 Data Analysis

The total number of angler hours, total catch, and catch per angler-hour were calculated for each reach (i.e., Cresta river reach, the Cresta Reservoir, and Rock Creek river reach, the Rock Creek Reservoir). Separate values were generated for weekend, weekday, holidays and monthly periods. Seasonal estimates of angler hours and catch were also calculated.

Estimates for the monthly and seasonal angling pressure were made by extrapolating the averages for each day type by the appropriate number of days (e.g., May had 21 weekdays and 10 weekend days, of which 3 were holiday days). The extrapolation was done monthly and the monthly projections were added together to formulate an estimate for the season.

Angler use was calculated by totaling the number of anglers counted in each reach during each time period (5 per day except for two days late in the season), for each angler survey. The average angler use for each time period was then calculated for: weekdays, weekends, holidays and the total season (Table 1).

3.0 RESULTS

3.1 Summary of Angler Use Counts

MCS counted 605 anglers during the instantaneous use counts, and interviewed 528 of them over the 60 survey days within the 2004 fishing season. Fly fishing was the most popular angling method used in terms of angler numbers (44.9%), followed by lures (34.1%), bait (19.1%) and a fourth category, a combination of two or three angling methods (1.9%).

Many of the bait fishermen were not aware of the changes in the angling regulations prohibiting bait fishing in the riverine reaches (reaches 1 and 3). Average angling pressure was highest on weekends, followed by holidays, and, finally, weekdays (Table 1). Cumulative projections are presented in Table 2.

Table 1. Average daily angler use by reach and time period.

| | | Cresta River Reach | Cresta Reservoir | Rock Creek River Reach | Rock Creek Reservoir | | |
|--------------------|----------------------|-----------------------|---------------------|---------------------------|-------------------------|------------|----------------|
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative | % Distribution |
| Weekday | 6:00 - 9:00 | 0.15 | 0.00 | 0.15 | 0.04 | 0.33 | 4.6% |
| Weekday | 9:00 - 12:00 | 0.44 | 0.07 | 0.48 | 0.04 | 1.04 | 14.3% |
| Weekday | 12:00 - 15:00 | 0.61 | 0.00 | 0.96 | 0.04 | 1.61 | 22.2% |
| Weekday | 15:00 - 18:00 | 0.70 | 0.00 | 1.04 | 0.15 | 1.89 | 26.0% |
| Weekday | AFTER 18:00 | 1.19 | 0.00 | 0.81 | 0.38 | 2.38 | 32.9% |
| | Total | 3.10 | 0.07 | 3.44 | 0.64 | 7.25 | 100% |
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative | |
| Weekend | 6:00 - 9:00 | 0.11 | 0.00 | 0.20 | 0.05 | 0.36 | 2.7% |
| Weekend | 9:00 - 12:00 | 1.29 | 0.19 | 0.90 | 0.14 | 2.52 | 19.0% |
| Weekend | 12:00 - 15:00 | 0.79 | 0.05 | 2.45 | 0.35 | 3.64 | 27.3% |
| Weekend | 15:00 - 18:00 | 1.14 | 0.14 | 1.71 | 0.81 | 3.80 | 28.6% |
| Weekend | AFTER 18:00 | 1.06 | 0.06 | 1.50 | 0.38 | 3.00 | 22.5% |
| | Total | 4.38 | 0.45 | 6.77 | 1.73 | 13.32 | 100% |
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative | |
| Holiday | 6:00 - 9:00 | 0.08 | 0.00 | 0.54 | 0.00 | 0.62 | 5.4% |
| Holiday | 9:00 - 12:00 | 0.77 | 0.00 | 1.23 | 0.00 | 2.00 | 17.7% |
| Holiday | 12:00 - 15:00 | 1.07 | 0.07 | 2.14 | 0.00 | 3.29 | 29.1% |
| Holiday | 15:00 - 18:00 | 1.62 | 0.23 | 1.38 | 0.00 | 3.23 | 28.6% |
| Holiday | AFTER 18:00 | 0.67 | 0.42 | 0.83 | 0.25 | 2.17 | 19.2% |
| | Total | 4.20 | 0.72 | 6.13 | 0.25 | 11.30 | 100% |
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative | |
| 2004 Season | 6:00 - 9:00 | 0.12 | 0.00 | 0.25 | 0.03 | 0.40 | 4.0% |
| 2004 Season | 9:00 - 12:00 | 0.80 | 0.10 | 0.79 | 0.07 | 1.75 | 17.3% |
| 2004 Season | 12:00 - 15:00 | 0.77 | 0.03 | 1.71 | 0.13 | 2.64 | 26.0% |
| 2004 Season | 15:00 - 18:00 | 1.05 | 0.10 | 1.34 | 0.34 | 2.84 | 27.9% |
| 2004 Season | AFTER 18:00 | 1.04 | 0.11 | 1.02 | 0.35 | 2.52 | 24.8% |
| | Total | 3.78 | 0.34 | 5.11 | 0.92 | 10.15 | 100% |

¹ *This is an approximate value, since some anglers were counted in multiple time periods*

Table 2. Projections of cumulative angler use by reach and time period for the 2004 season

| | | Cresta River Reach | Cresta Reservoir | Rock Creek River Reach | Rock Creek Reservoir | | |
|-------------|---------------|-----------------------|---------------------|---------------------------|-------------------------|------------|----------------|
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Total | % Distribution |
| Weekday | 6:00 - 9:00 | 20.9 | 0.0 | 20.9 | 5.2 | 47.0 | 4.6% |
| Weekday | 9:00 - 12:00 | 62.7 | 10.4 | 67.9 | 5.2 | 146.2 | 14.3% |
| Weekday | 12:00 - 15:00 | 85.6 | 0.0 | 136.0 | 5.0 | 226.6 | 22.2% |
| Weekday | 15:00 - 18:00 | 99.2 | 0.0 | 146.2 | 20.9 | 266.3 | 26.0% |
| Weekday | AFTER 18:00 | 168.1 | 0.0 | 113.9 | 54.2 | 336.2 | 32.9% |
| | Total | 436.5 | 10.4 | 484.8 | 90.6 | 1022.4 | 100.0% |
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative | |
| Weekend | 6:00 - 9:00 | 6.3 | 0.0 | 12.0 | 3.0 | 21.3 | 2.7% |
| Weekend | 9:00 - 12:00 | 77.1 | 11.4 | 54.3 | 8.6 | 151.4 | 19.0% |
| Weekend | 12:00 - 15:00 | 47.4 | 3.0 | 147.0 | 21.0 | 218.4 | 27.3% |
| Weekend | 15:00 - 18:00 | 68.2 | 8.6 | 102.9 | 48.6 | 228.2 | 28.6% |
| Weekend | AFTER 18:00 | 63.5 | 3.8 | 90.0 | 22.5 | 179.8 | 22.5% |
| | Total | 262.5 | 26.8 | 406.1 | 103.6 | 799.1 | 100.0% |
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative | |
| Holiday | 6:00 - 9:00 | 0.4 | 0.0 | 2.7 | 0.0 | 3.1 | 5.4% |
| Holiday | 9:00 - 12:00 | 3.8 | 0.0 | 6.2 | 0.0 | 10.0 | 17.7% |
| Holiday | 12:00 - 15:00 | 5.4 | 0.4 | 10.7 | 0.0 | 16.4 | 29.1% |
| Holiday | 15:00 - 18:00 | 8.1 | 1.2 | 6.9 | 0.0 | 16.2 | 28.6% |
| Holiday | AFTER 18:00 | 3.3 | 2.1 | 4.2 | 1.3 | 10.8 | 19.2% |
| | Total | 21.0 | 3.6 | 30.7 | 1.3 | 56.5 | 100.0% |
| | TIME | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative | |
| 2004 Season | 6:00 - 9:00 | 24.4 | 0.0 | 51.5 | 6.9 | 82.8 | 4.0% |
| 2004 Season | 9:00 - 12:00 | 165.5 | 20.3 | 162.1 | 13.5 | 361.3 | 17.3% |
| 2004 Season | 12:00 - 15:00 | 158.7 | 6.6 | 352.2 | 26.6 | 544.1 | 26.0% |
| 2004 Season | 15:00 - 18:00 | 216.0 | 20.3 | 276.9 | 70.9 | 584.1 | 27.9% |
| 2004 Season | AFTER 18:00 | 213.5 | 22.9 | 209.8 | 72.5 | 518.7 | 24.8% |
| | Total | 778.1 | 70.1 | 1052.5 | 190.4 | 2091.0 | 100.0% |

¹ This is an approximate value, since some anglers were counted in multiple time periods

3.2 Angler Interviews

3.2.1 Angling Methods

MCS interviewed 528 anglers during the 2004 fishing season. Of those interviewed, 44.9% were fishing with flies, 34.1% with lures, 19.1% with bait, and 1.9% with a combination of two or three angling methods (i.e., flies and lures, flies and bait, or lures and bait).

The 2004 angler interviews show 43% of the interviewed anglers were fishing in the Cresta Riverine Reach (Reach 1), 40.5% in the Rock Cr. Reach (Reach 3), 11% in the Rock Creek Reservoir (Reach 4), and 5.5% in Cresta Reservoir (Reach 2) (Table 3). The majority of those fishing with bait were in reaches 1 and 3 (n=69), even though bait was prohibited.

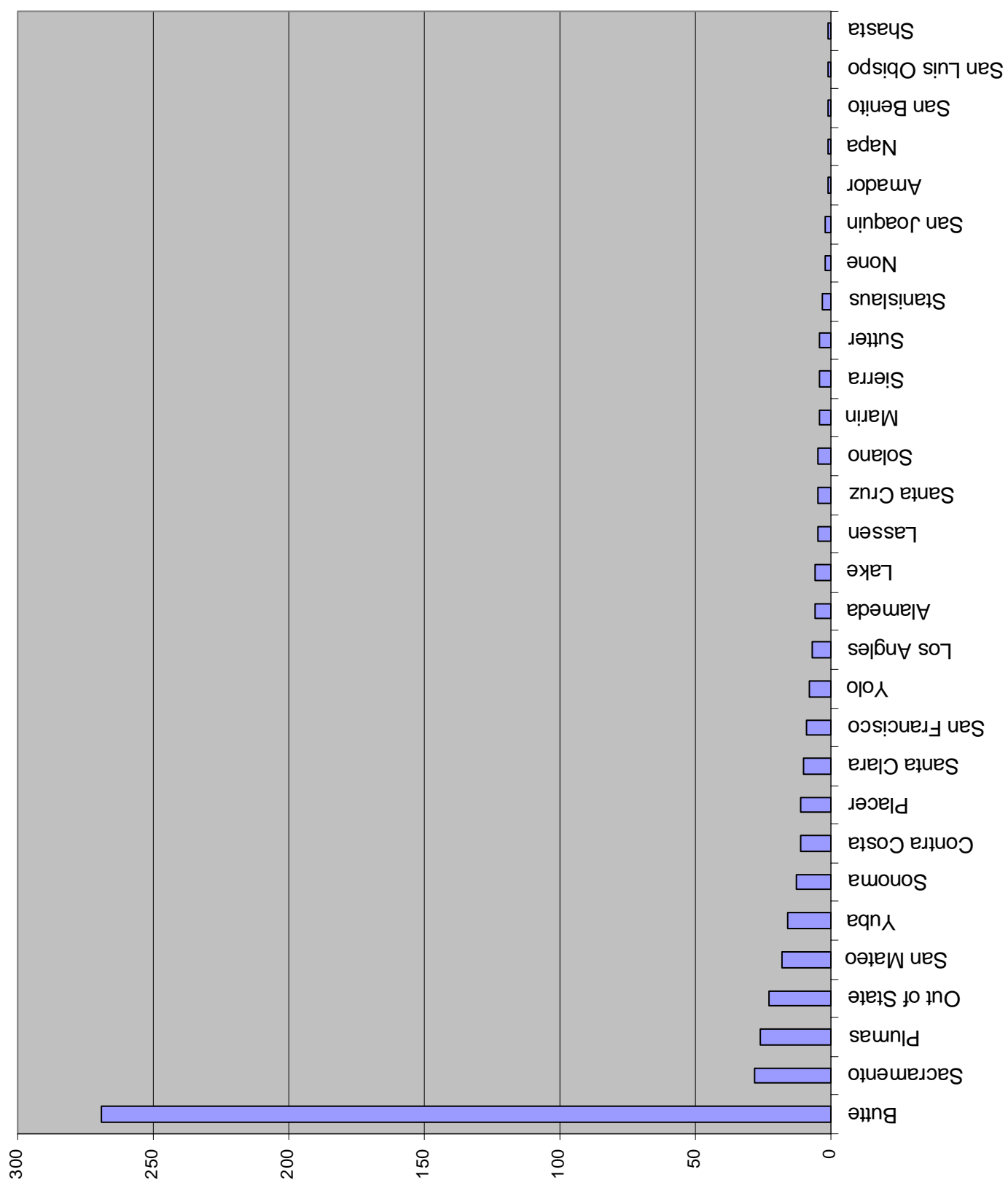
At the time of our interviews, the 528 anglers had fished for 986.7 hours. Slightly more than fifty one percent (51.3%) of the time was spent in the Rock Creek Reach, 35.8% of the angler's time was spent in the Cresta Reach, 10.1% of the time was spent in Rock Creek Reservoir, and 2.8% of the time was in the Cresta Reservoir.

Table 3. Number of anglers interviewed, gear type, and hours fished by stream reach

| | Number of Anglers | | | | | | Number of Angler Hours | | | | | |
|-------------|-------------------|-------|-------|-------|-------|------------|------------------------|-------|-------|-------|-------|------------|
| | Bait | Lure | Fly | Combo | Total | % by Reach | Bait | Lure | Fly | Combo | Total | % by Reach |
| Reach 1 | 40 | 67 | 116 | 4 | 227 | 43.0% | 38 | 99 | 213 | 4 | 353 | 35.8% |
| Reach 2 | 6 | 21 | 0 | 2 | 29 | 5.5% | 10 | 17 | 0 | 2 | 28 | 2.8% |
| Reach 3 | 29 | 65 | 119 | 1 | 214 | 40.5% | 57 | 103 | 344 | 3 | 506 | 51.3% |
| Reach 4 | 26 | 27 | 2 | 3 | 58 | 11.0% | 45 | 30 | 2 | 22 | 99 | 10.1% |
| Totals | 101 | 180 | 237 | 10 | 528 | 100.0% | 149 | 249 | 558 | 31 | 987 | 100.0% |
| % by Method | 19.1% | 34.1% | 44.9% | 1.9% | | | 15.1% | 25.2% | 56.6% | 3.1% | | |

The majority of the anglers, 269 of 528 interviewed, were from Butte County (Figure 2). The second and third most highly represented California counties were Sacramento County with 28 anglers and Plumas County with 26 anglers. Anglers from seven different states other than California were interviewed, with Nevada being the leading state with 13 anglers, followed by Oregon's five anglers. Other states represented included: North Carolina (1), South Carolina (2), Michigan (1), Arizona (1), and Alaska (1).

Figure 2. Angler Demographics



3.2.2 – Composition of Catch

A total of 847 rainbow trout, 8 brown trout, and 214 other fish including, Sacramento pikeminnow, smallmouth bass, hardhead, and Sacramento sucker were reported caught at the time of the interviews (Table 4). Rainbow trout were caught in all four reaches, including 457 in the Rock Creek Reach, 377 in the Cresta Reach, 10 in Cresta Reservoir, and 3 in Rock Creek Reservoir. Brown trout were caught in the riverine reaches only, 6 were caught in the Rock Creek reach and 2 were caught in the Cresta Reach. Slightly over eighty-seven percent (87.4%) of the rainbow trout were caught with flies, 8.9% percent were caught with lures, 3.4% were caught with bait and 0.4 % were caught by anglers using a combination of angling methods.

Nine rainbow trout were reported to be 18 inches or more in length. Rainbow trout ranged from 4 to 20 inches (Figure 3), with a mean of 11.9 inches. Eight brown trout ranging between 6 to 16 inches were reported caught during the 2004 fishing season.

One hundred and twenty nine (129) Sacramento pikeminnow, 68 smallmouth bass, and 10 hardhead were also caught (Figure 4). Sixty-five pikeminnow were caught in the Rock Creek Reach, 43 in the Cresta Reach, 14 in Rock Creek Reservoir, and seven in Cresta Reservoir. Thirty-six smallmouth were caught in the Cresta Reach, 21 were caught in the Rock Creek Reach, 8 were caught in Rock Creek Reservoir, and 3 were caught in Cresta Reservoir. Of the 10 hardhead reported caught, five were caught in Cresta Reservoir, three in the Cresta river reach, and two in Rock Creek Reservoir. Three Sacramento suckers were caught in the Cresta Reach, two in the Rock Creek Reach, and two in Rock Creek Reservoir.

The Settlement Agreement (SA) identifies a target criteria of 80 percent wild trout/20% non-game fish in the catch. In 2004, rainbow trout comprised 79.2% of the total catch. However, the SA does not take smallmouth bass, another game fish into account. Smallmouth comprised 6.4% of the total catch. If smallmouth bass are removed from the non-game fish totals and rainbow and brown trout are combined, non-game fish comprised 13.7% of the remaining total and trout comprised 85.4% of the catch. The Settlement Agreement also established an average size for rainbow trout of 9.7 inches and availability of trout > 17 inches as targets for the trout fishery. In 2004, rainbow trout had an average length of 11.9 inches. In addition, 39 of the rainbow trout reported caught were 17 inches or greater. A monthly breakdown of creel data is presented in Appendix C.

Table 4. Summary of the rainbow trout catch and total catch by stream reach.

| | Total Rainbow Trout Catch | | | | | | Total Catch for all fish | | | | | |
|-------------|---------------------------|------|-------|-------|-------|------------|--------------------------|-------|-------|-------|-------|------------|
| | Bait | Lure | Fly | Combo | Total | % by Reach | Bait | Lure | Fly | Combo | Total | % by Reach |
| Reach 1 | 17 | 32 | 328 | 0 | 377 | 44.5% | 32 | 77 | 355 | 3 | 467 | 43.7% |
| Reach 2 | 4 | 6 | 0 | 0 | 10 | 1.2% | 6 | 19 | 0 | 0 | 25 | 2.3% |
| Reach 3 | 8 | 36 | 412 | 1 | 457 | 54.0% | 21 | 59 | 467 | 1 | 548 | 51.3% |
| Reach 4 | 0 | 1 | 0 | 2 | 3 | 0.4% | 9 | 17 | 0 | 3 | 29 | 2.7% |
| Cumulative | 29 | 75 | 740 | 3 | 847 | | 68 | 172 | 822 | 7 | 1069 | |
| % by Method | 3.4% | 8.9% | 87.4% | 0.4% | | | 6.4% | 16.1% | 76.9% | 0.7% | | |

Length Distribution of Rainbow Trout

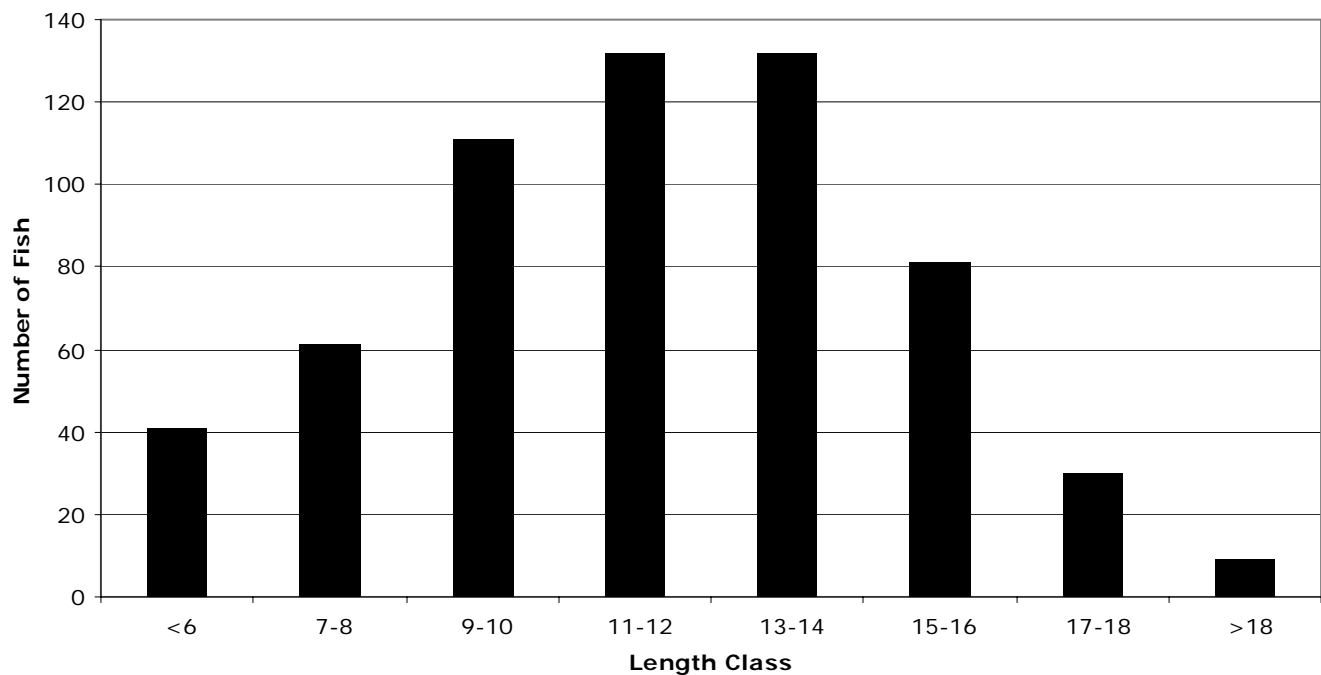


Figure 3. Length frequency distribution of rainbow trout caught in the Rock

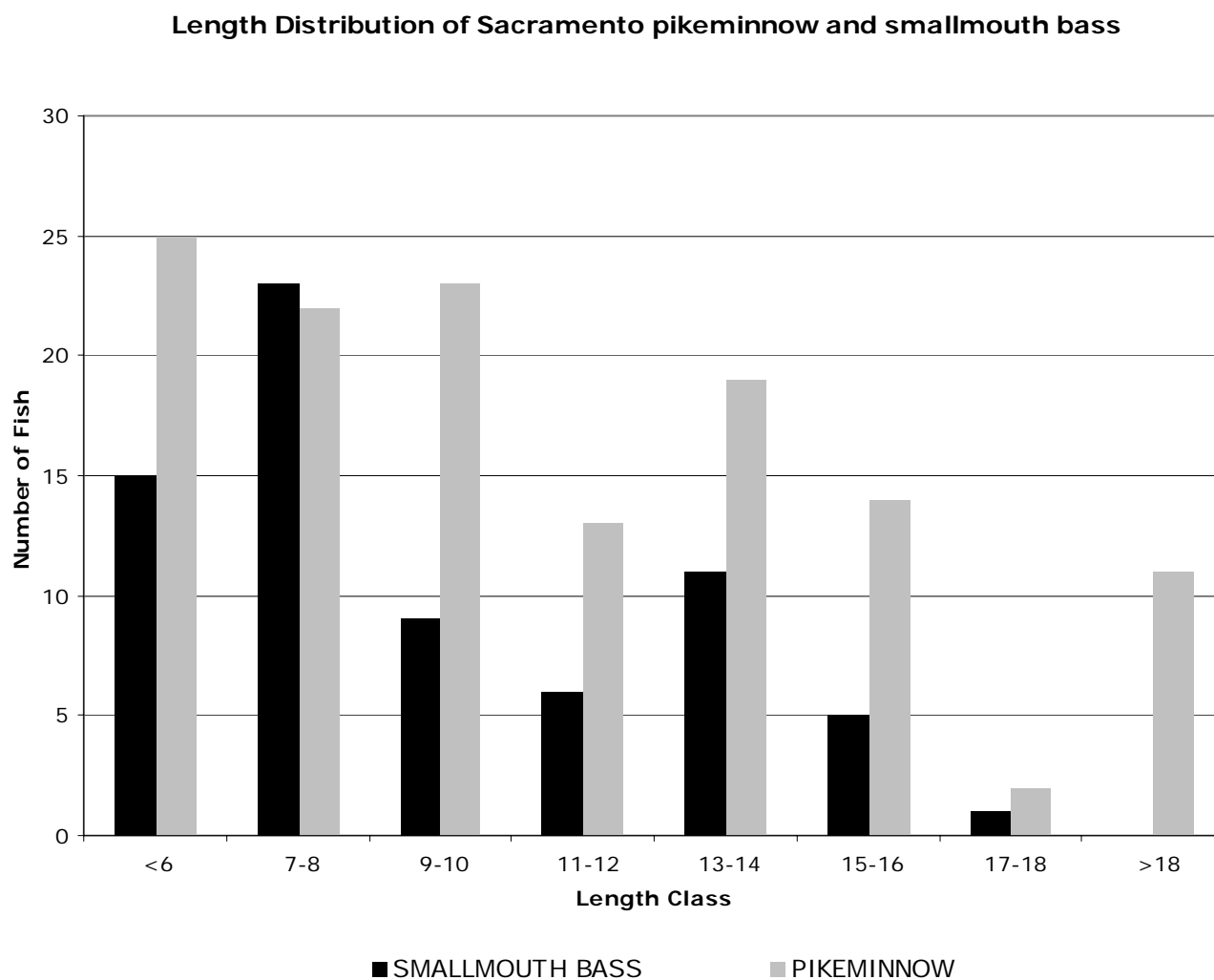


Figure 4. Length frequency distribution of smallmouth bass and Sacramento pikeminnow caught in the Rock Creek – Cresta portion of the North Fork Feather River during the 2004 fishing season.

3.2.3 Catch per Unit Effort

Catch per unit effort (CPUE) was calculated by angling method and reach (Table 5). CPUE was based on the information provided by the 528 anglers interviewed. The data are limited to what those anglers had caught at the time of the interview, and did not include any fish caught after the interview. Therefore, the values may not accurately reflect the total catch of each angler. In many cases, surveyors encountered anglers as they were just starting. At the time of the interviews, anglers had fished for an average of 1.87 hours.

The Cresta Reach (Reach 1) had a higher CPUE (1.32) than the Rock Creek Reach (1.08) (Reach 3), even though the Rock Creek Reach received the greater angling pressure, and yielded more fish overall. The catch rate was slightly lower in Cresta Reservoir (0.89) and much lower in Rock Creek Reservoir (0.29), than in the riverine reaches.

In terms of CPUE, bait was the least effective angling method, while fly fishing was the most successful for all species.

April, May, June, October, and November had the highest CPUE for rainbow trout (Figure 5), while July, August, and September were the least productive months for trout anglers. November had the highest CPUE, and August had the lowest.

The Settlement Agreement set a catch rate target of one fish per hour. In 2004 for all fish, the average catch rate for all fish was 1.08 fish per hour and 0.86 trout/hour for trout only.

On a monthly basis the catch rate of one fish/hour for all species combined was met in April, May, June, October, and November, but not in July, August, and September. For rainbow trout only, the monthly catch rate was greater than one trout/hour in April (1.16), May (1.19), and November (1.61). The CPUE for all species combined and for rainbow trout only was lowest in August, (0.56), and (0.19), respectively.

Table 5. CPUE for rainbow trout and all fish by reach and angling method

| | CPUE -- Rainbow Trout | | | | | CPUE -- Total Catch - All Fish | | | | |
|---------|-----------------------|------|------|-------|-------|--------------------------------|------|------|-------|-------|
| | Bait | Lure | Fly | Combo | Total | Bait | Lure | Fly | Combo | Total |
| Reach 1 | 0.45 | 0.32 | 1.54 | 0.00 | 1.07 | 0.85 | 0.78 | 1.67 | 0.75 | 1.32 |
| Reach 2 | 0.42 | 0.36 | -- | 0.00 | 0.36 | 0.63 | 1.13 | -- | 0.00 | 0.89 |
| Reach 3 | 0.14 | 0.35 | 1.20 | 0.33 | 0.90 | 0.37 | 0.58 | 1.36 | 0.33 | 1.08 |
| Reach 4 | 0.00 | 0.03 | 0.00 | 0.09 | 0.03 | 0.20 | 0.56 | 0.00 | 0.14 | 0.29 |
| CPUE | 0.19 | 0.30 | 1.33 | 0.10 | 0.86 | 0.46 | 0.69 | 1.47 | 0.23 | 1.08 |

Note: For the CPUE tables, A "0" means hours were spent fishing but no fish were caught.

A "--" means no fish were caught using a particular fishing method, (i.e., Bait, Lure, Fly, Combo).

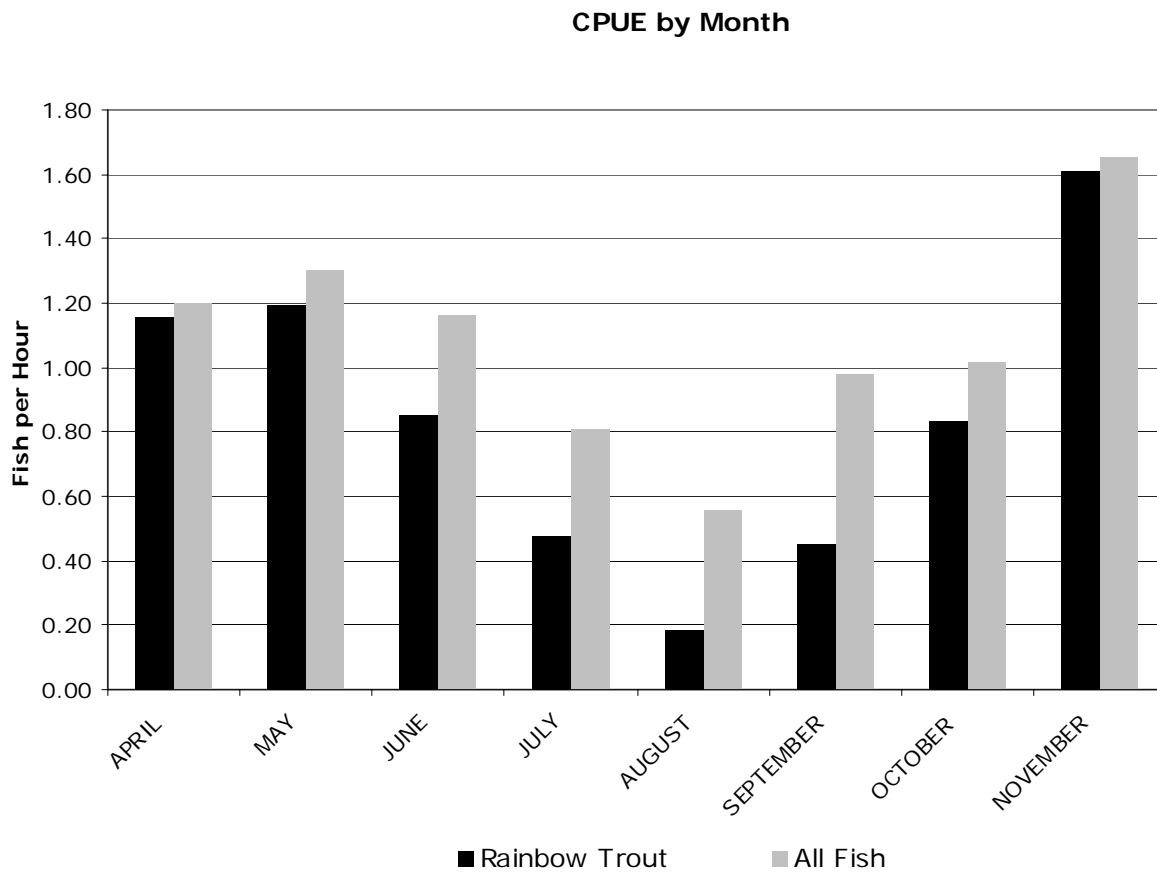


Figure 5. CPUE for rainbow trout and total catch by month

4.0 DISCUSSION

4.1 Angler Success

Overall, the angler use appears fairly light, with only 528 anglers observed over 60 days (an average of 8.8 anglers/day). Extrapolated for the season, the angling use data suggest that approximately 2,091 anglers fished the Rock Creek and Cresta reaches during the trout season. Most of these anglers slightly less than fifty five percent (54.5%) fished the Rock Creek and Cresta reaches during April, May, and June, 29% fished between July and Labor Day weekend, and an estimated 85 anglers (16%) fished after Labor Day (Table 6).

Table 6. 2002 - 2004 Comparison.

| | 2002 | 2004 |
|---|------|------|
| Total Number of Anglers | 507 | 528 |
| Average Angler/Day | 8.6 | 8.8 |
| Projected Total Anglers | 1258 | 2091 |
| Days of April, May, and June Use | 326 | 288 |
| Days of use after Labor Day | 55 | 85 |

Both the 2002 and 2004 Angler Creel Survey's indicate that the study design underestimates the total number of hours fished and the total catch, since anglers were rarely interviewed as they were leaving the river. It may be valuable to add a question to future surveys that asks anglers if they are through fishing for the day. This question was included in the surveys conducted during the 1980-86 CDFG studies.

Although aesthetics may play a part in the apparent low angler use, it may also be due to high summertime temperatures. While conducting angler surveys in 2004 it became obvious as summertime temperatures increased, angling and angling success declined. Figure 5 suggests that all fish, especially rainbow trout, may become less active and therefore less susceptible to anglers as air and water temperature rise.

In addition, many reaches in the study area are not angler friendly due to difficult access along the rivers edge because of large boulders, steep banks, deep water, and dense vegetation. Difficult or dangerous parking along Highway 70 is also a problem.

Conducting angler surveys in the study reach is not an easy task as Highway 70 parallels the entire study reach. Highway 70 is one of the main routes between the Sacramento Valley and the Northern Sierra Nevada's. During use counts, it appeared that many of the anglers/ travelers were fishing their way up the river while traveling to another destination point other than the Rock Creek and Cresta reaches of the NFFR. The same was true for returning traffic, especially on weekends.

While conducting use counts, anglers, vehicles, and boats were noted during the drive-by counts. When conducting follow up interviews connected with the same use counts, many anglers or vehicles noted previously were never relocated. There are many areas along the study reach where it is difficult to see the angler during use counts because streamside vegetation has become very dense and many areas have large boulders which conceal anglers. It's easier to count vehicles because there are very few parking spots that cannot be observed from the highway.

Angler use is highest after 6:00 p.m. on weekdays, probably because the majority of the weekday anglers are from Butte County. It is a relatively short distance from Chico or Oroville for two to three hours of fishing in the late afternoon and evening. Some of these local anglers stated during interviews that they often do not fish on weekends, especially holiday weekends, to avoid competing with the large numbers of anglers and travelers during those high use periods. Weekend angler use indicates a different pattern with more of the use mid-day as the weekend angler's seem to spread out their recreation time over a longer time period, especially on Saturdays. Sunday is often a travel day for "weekenders" fishing the NFFR as they fish their way upriver or downriver toward their points of destination. On holiday weekends, most anglers were not observed fishing until mid-afternoon. As fall approached in 2004, air and water temperatures cooled and the fishing improved. Even though relatively few anglers utilized the river this past fall, those that did fish were successful. This pattern of higher success and an increase in use in the fall is consistent for many rivers and streams in California.

Rainbow trout, the primary species caught in the Rock Creek and Cresta riverine reaches, were caught at an overall rate of 0.98 fish per hour for those reaches. For fly fishermen, trout were caught at an even higher rate of 1.33 fish per hour. Trout fishing was best in April, May, June, October, and November.

5.0 CONCLUSIONS

Overall, the average and experienced anglers seem to be satisfied. Fly fishing was the most effective angling method employed by most anglers. Angling pressure was light at an average of 8.8 anglers per day, with the greatest use in the spring, lowest during mid-summer, and intermediate in the fall. The trout caught were of quality size and condition, and the overall catch rate was above the target of one fish per hour for all fish, and close to the target for trout only. In addition, the monthly catch rates were often close to or above the one fish/hour target for all fish combined and for trout only.

The following bullets summarize the most significant findings from the 2004 survey:

- Angling pressure was highest on weekend days, followed by holidays and finally weekdays.
- Angling pressure was greatest in the spring, lowest in mid-summer, and intermediate in the fall.
- Rainbow trout comprised 79.2 % of the total catch.
- The average rainbow trout was 11.9 inches in length.
- Thirty nine (39) trout > 17 inches were reported caught during the angler surveys.
- The CPUE was 0.86 trout/hour and 1.08 fish/hour for all fish combined.

Literature Cited

California Department of Fish and Game (CDFG). 1988. Rock Creek-Cresta Project (FERC 1962), Fisheries Management Study, North Fork Feather River, California. Prepared by CDFG's Region 2 Environmental Services.

Pacific Gas and Electric Company. 2000. Rock Creek – Cresta Relicensing Settlement Agreement. Rock Creek – Cresta Project, FERC Project No. 1962. Filed with FERC on September 29, 2000 and Approved as part on the New License on October 24, 2001.

Garcia and Associates. 2002 Angler Creel Survey Rock Creek – Cresta Project (FERC Project No. 1962) North Fork Feather River Report—Butte and Plumas Counties. Prepared for Pacific Gas and Electric Company, Technical and Ecological Services, 3400 Crow Canyon Road, San Ramon, California 94583.

APPENDIX A: Survey Form

APPENDIX B: Monthly Use Data

Projections of ANGLER USE by Month for 2004 Season

| Month | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
|--------|---------------|---------|---------|---------|---------|------------|
| April | 6:00 - 9:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 9:00 - 12:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 12:00 - 15:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 15:00 - 18:00 | 0.00 | 0.00 | 0.00 | 10.50 | 10.50 |
| April | After 18:00 | 0.00 | 0.00 | 0.00 | 7.00 | 7.00 |
| | Total | 0.00 | 0.00 | 0.00 | 17.50 | 17.50 |
| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
| May | 6:00 - 9:00 | 20.67 | 0.00 | 13.78 | 3.44 | 37.89 |
| May | 9:00 - 12:00 | 24.11 | 0.00 | 58.56 | 10.33 | 93.00 |
| May | 12:00 - 15:00 | 41.33 | 3.44 | 120.56 | 6.89 | 172.22 |
| May | 15:00 - 18:00 | 65.44 | 3.44 | 37.89 | 20.67 | 127.44 |
| May | After 18:00 | 27.13 | 19.38 | 42.63 | 0.00 | 89.13 |
| | Total | 178.68 | 26.26 | 273.40 | 41.33 | 519.68 |
| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
| June | 6:00 - 9:00 | 0.00 | 0.00 | 13.33 | 0.00 | 13.33 |
| June | 9:00 - 12:00 | 43.33 | 3.33 | 16.67 | 0.00 | 63.33 |
| June | 12:00 - 15:00 | 20.00 | 3.33 | 70.00 | 6.67 | 100.00 |
| June | 15:00 - 18:00 | 43.33 | 6.67 | 80.00 | 0.00 | 130.00 |
| June | After 18:00 | 73.33 | 3.33 | 73.33 | 16.67 | 166.67 |
| | Total | 180.00 | 16.67 | 253.33 | 23.33 | 473.33 |
| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
| July | 6:00 - 9:00 | 3.44 | 0.00 | 6.89 | 0.00 | 10.33 |
| July | 9:00 - 12:00 | 34.44 | 6.89 | 17.22 | 0.00 | 58.56 |
| July | 12:00 - 15:00 | 31.00 | 0.00 | 44.78 | 3.44 | 79.22 |
| July | 15:00 - 18:00 | 41.33 | 10.33 | 68.89 | 10.33 | 130.89 |
| July | After 18:00 | 44.78 | 0.00 | 41.33 | 6.89 | 93.00 |
| | Total | 155.00 | 17.22 | 179.11 | 20.67 | 372.00 |
| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
| August | 6:00 - 9:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| August | 9:00 - 12:00 | 37.89 | 6.89 | 17.22 | 3.44 | 65.44 |
| August | 12:00 - 15:00 | 20.67 | 0.00 | 51.67 | 10.33 | 82.67 |
| August | 15:00 - 18:00 | 13.78 | 0.00 | 37.89 | 31.00 | 82.67 |
| August | After 18:00 | 13.78 | 0.00 | 6.89 | 31.00 | 51.67 |
| | Total | 86.11 | 6.89 | 113.67 | 75.78 | 282.44 |

Projections of ANGLER USE by Month for 2004 Season (Continued)

| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
|-------------|---------------|---------|---------|---------|---------|------------|
| September | 6:00 - 9:00 | 0.00 | 0.00 | 0.00 | 3.33 | 3.33 |
| September | 9:00 - 12:00 | 3.33 | 3.33 | 30.00 | 0.00 | 36.67 |
| September | 12:00 - 15:00 | 10.00 | 0.00 | 16.67 | 0.00 | 26.67 |
| September | 15:00 - 18:00 | 20.00 | 0.00 | 20.00 | 0.00 | 40.00 |
| September | After 18:00 | 21.00 | 0.00 | 20.00 | 3.33 | 44.33 |
| | Total | 54.33 | 3.33 | 86.67 | 6.67 | 151.00 |
| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
| October | 6:00 - 9:00 | 0.00 | 0.00 | 10.33 | 0.00 | 10.33 |
| October | 9:00 - 12:00 | 20.67 | 0.00 | 3.44 | 0.00 | 24.11 |
| October | 12:00 - 15:00 | 24.11 | 0.00 | 27.56 | 0.00 | 51.67 |
| October | 15:00 - 18:00 | 27.90 | 0.00 | 21.70 | 0.00 | 49.60 |
| October | After 18:00 | 15.50 | 0.00 | 7.75 | 0.00 | 23.25 |
| | Total | 88.18 | 0.00 | 70.78 | 0.00 | 158.96 |
| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
| November | 6:00 - 9:00 | 0.00 | 0.00 | 7.50 | 0.00 | 7.50 |
| November | 9:00 - 12:00 | 3.00 | 0.00 | 18.00 | 0.00 | 21.00 |
| November | 12:00 - 15:00 | 10.00 | 0.00 | 19.29 | 0.00 | 29.29 |
| November | 15:00 - 18:00 | 6.00 | 0.00 | 11.25 | 0.00 | 17.25 |
| November | After 18:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Total | 19.00 | 0.00 | 56.04 | 0.00 | 75.04 |
| | Time | Reach 1 | Reach 2 | Reach 3 | Reach 4 | Cumulative |
| 2004 Season | 6:00 - 9:00 | 24.44 | 0.00 | 51.50 | 6.87 | 82.81 |
| 2004 Season | 9:00 - 12:00 | 165.48 | 20.26 | 162.10 | 13.51 | 361.34 |
| 2004 Season | 12:00 - 15:00 | 158.72 | 6.65 | 352.19 | 26.58 | 544.14 |
| 2004 Season | 15:00 - 18:00 | 215.97 | 20.26 | 276.92 | 70.92 | 584.07 |
| 2004 Season | After 18:00 | 213.49 | 22.89 | 209.81 | 72.48 | 518.68 |
| | Total | 778.10 | 70.06 | 1052.52 | 190.36 | 2091.03 |

APPENDIX C: Monthly Breakdown of Creel Data

APPENDIX D: 2004 Angler Survey Schedule

| Day | April | Day | May | Day | June | Day | July | Day | August | Day | September | Day | October | Day | November |
|-----|-------|-----|-----|-----|------|-----|------|-----|--------|-----|-----------|-----|---------|-----|----------|
| | | | | TUE | 1 | | | | | WED | 1 | | | | |
| | | | | WED | 2 | | | | | THR | 2 | | | | |
| | | | | THR | | THR | 1 | | | FRI | 3 | FRI | 1 | | |
| | | SAT | 1 | SAT | 5 | SAT | 3 | | | SAT | 4 | SAT | 2 | | |
| | | SUN | 2 | SUN | 6 | SUN | 4 | SUN | 1 | SUN | 5 | SUN | 3 | | |
| | | MON | 3 | MON | 7 | MON | 5 | MON | 2 | MON | 6 | MON | 4 | MON | 1 |
| | | TUE | 4 | TUE | 8 | TUE | 6 | TUE | 3 | TUE | 7 | TUE | 5 | TUE | 2 |
| | | WED | 5 | WED | 9 | WED | 7 | WED | 4 | WED | 8 | WED | 6 | WED | 3 |
| | | THR | 6 | THR | 10 | THR | 8 | THR | 5 | THR | 9 | THR | 7 | THR | 4 |
| | | FRI | 7 | FRI | 11 | FRI | 9 | FRI | 6 | FRI | 10 | FRI | 8 | FRI | 5 |
| | | SAT | 8 | SAT | 12 | SAT | 10 | SAT | 7 | SAT | 11 | SAT | 9 | SAT | 6 |
| | | SUN | 9 | SUN | 13 | SUN | 11 | SUN | 8 | SUN | 12 | SUN | 10 | SUN | 7 |
| | | MON | 10 | MON | 14 | MON | 12 | MON | 9 | MON | 13 | MON | 11 | MON | 8 |
| | | TUE | 11 | TUE | 15 | TUE | 13 | TUE | 10 | TUE | 14 | TUE | 12 | TUE | 9 |
| | | WED | 12 | WED | 16 | WED | 14 | WED | 11 | WED | 15 | WED | 13 | WED | 10 |
| | | THR | 13 | THR | 17 | THR | 15 | THR | 12 | THR | 16 | THR | 14 | THR | 11 |
| | | FRI | 14 | FRI | 18 | FRI | 16 | FRI | 13 | FRI | 17 | FRI | 15 | FRI | 12 |
| | | SAT | 15 | SAT | 19 | SAT | 17 | SAT | 14 | SAT | 18 | SAT | 16 | SAT | 13 |
| | | SUN | 16 | SUN | 20 | SUN | 18 | SUN | 15 | SUN | 19 | SUN | 17 | SUN | 14 |
| | | MON | 17 | MON | 21 | MON | 19 | MON | 16 | MON | 20 | MON | 18 | MON | 15 |
| | | TUE | 18 | TUE | 22 | TUE | 20 | TUE | 17 | TUE | 21 | TUE | 19 | | |
| | | WED | 19 | WED | 23 | WED | 21 | WED | 18 | WED | 22 | WED | 20 | | |
| | | THR | 20 | THR | 24 | THR | 22 | THR | 19 | THR | 23 | THR | 21 | | |
| | | FRI | 21 | FRI | 25 | FRI | 23 | FRI | 20 | FRI | 24 | FRI | 22 | | |
| SAT | 24 | SAT | 22 | SAT | 26 | SAT | 24 | SAT | 21 | SAT | 25 | SAT | 23 | | |
| SUN | 25 | SUN | 23 | SUN | 27 | SUN | 25 | SUN | 22 | SUN | 26 | SUN | 24 | | |
| MON | 26 | MON | 24 | MON | 28 | MON | 26 | MON | 23 | MON | 27 | MON | 25 | | |
| TUE | 27 | TUE | 25 | TUE | 29 | TUE | 27 | TUE | 24 | TUE | 28 | TUE | 26 | | |
| WED | 28 | WED | 26 | WED | 30 | WED | 28 | WED | 25 | WED | 29 | WED | 27 | | |
| THR | 29 | THR | 27 | | | THR | 29 | THR | 26 | THR | 30 | THR | 28 | | |
| FRI | 30 | FRI | 28 | | | FRI | 30 | FRI | 27 | | | FRI | 29 | | |
| | | SAT | 29 | | | SAT | 31 | SAT | 28 | | | SAT | 30 | | |
| | | SUN | 30 | | | | | SUN | 29 | | | SUN | 31 | | |
| | | MON | 31 | | | | | MON | 30 | | | | | | |
| | | | | | | | | TUE | 31 | | | | | | |
| | 2 | | 9 | | 9 | | 9 | | 9 | | 9 | | 9 | | 4 |
| | 7 | | 31 | | 30 | | 31 | | 31 | | 30 | | 31 | | 15 |

| | | | | |
|----------------------------------|-----|------------|----|-------------------------------------|
| Holidays | 5 | Sundays | 13 | |
| High Use Weekend Days | 8 | Mondays | 7 | Four out of the seven were Holidays |
| Regular Weekend Days | 20 | Tuesdays | 6 | |
| Week Days | 27 | Wednesdays | 8 | |
| Total Angler Survey Days | 60 | Thursdays | 4 | One was a Holiday |
| 2004 Fishing Season - Non-Survey | 206 | Fridays | 7 | |
| | | Saturdays | 15 | |