

State of California  
The Resources Agency  
DEPARTMENT OF WATER RESOURCES  
Northern District

RECREATION USE SURVEY OF  
BIG GRIZZLY CREEK, PLUMAS COUNTY  
1986

Technical Information Report No. 87-2

Prepared under the supervision of

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by

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This report was prepared to summarize information collected under Work Order 1501-0100 to document recreation and fishery enhancement provided by a revised operation of Lake Davis. This report has received only limited review; it is intended for internal use and should be considered preliminary and subject to revision.

June 1987

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## SUMMARY

A survey of streamside recreation along Big Grizzly Creek, Plumas County, was conducted in 1986. The purpose of the survey was to estimate the amount and types of recreation use and angler success occurring along the creek with augmented flow from Lake Davis through Grizzly Valley Dam. The stratified random sample survey combined roving use counts with interviews of recreators in order to gather information on recreation activities, visitor origin, and angler success.

There were an estimated 4,400 hours of recreation use on Big Grizzly Creek between April 26 and November 15, 1986. The most frequently observed activities were fishing, swimming and beach use, and relaxing. About 45 percent of all visitors and 41 percent of all anglers lived in the northeast counties of California, mostly Plumas County. A large proportion lived in the City of Portola. Anglers caught an estimated 2,300 rainbow trout and 50 brown trout in 2,900 hours of fishing.

## INTRODUCTION

Big Grizzly Creek below Grizzly Valley Dam offered an opportunity to implement the Department of Water Resources' (DWR) water management policy, adopted in 1975, which states, "Instream uses for recreation, fish, wildlife, and related purposes shall be balanced with other uses." When Grizzly Valley Dam began operation in 1966, streamflows in Big Grizzly Creek below the dam were increased and stabilized. Minimum flows were increased from about 0.5 cubic foot per second (cfs) to 8 cfs. Fishing and related streamside recreation were enhanced. An instream flow needs assessment later indicated that increasing flows to 20 cfs would further increase trout habitat over the post-project levels to near optimum levels without significant detriment to lake recreation (Haines, 1982).

On a trial basis, Grizzly Valley Dam began a revised operation in June 1982. Monitoring downstream recreation use, fish populations, and trout catch will document changes to these uses caused by the modified flow release schedule.

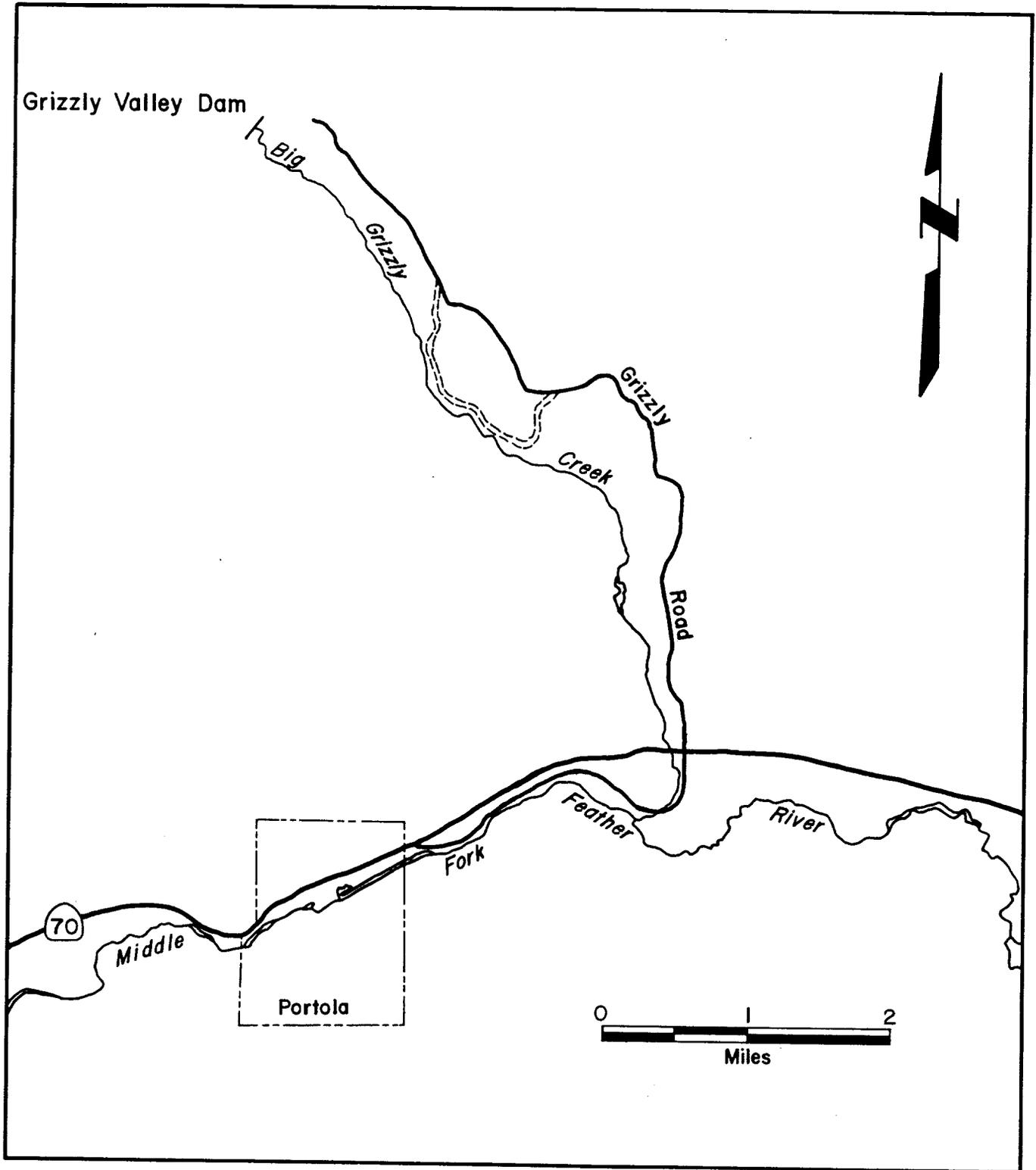
This report describes the recreation use survey, creel census, and results for the 1986 trout season, April 26 to November 15. A separate report, prepared by the Department of Fish and Game (DFG), Contract Services Section, will describe a fish population survey conducted in October 1986.

### Description of Study Area

Big Grizzly Creek is a major tributary of the Middle Fork Feather River (a designated National Wild and Scenic River) within the Plumas National Forest.

Flowing from Grizzly Valley Dam, at Lake Davis, at an elevation of 5,670 feet, the creek drops through steep-walled canyons; through the eastern edge of Smith Peak State Game Refuge; intersects with Highway 70 about 2 miles east of the City of Portola; and joins the Middle Fork Feather River on the western side of Sierra Valley at an elevation of 4,870 feet. Its total length is about 6 miles (Figure 1).

Grizzly Road, which also intersects with Highway 70, roughly parallels the creek, providing easy access to the mouth of the creek and to Lake Davis. About 3.8 miles upstream from the mouth is a dirt road, called Burnam Ranch



**Figure 1- Lake Davis and Big Grizzly Creek,  
Plumas County, 1986**

Road, which provides public access to some of the more rugged areas of the creek.

About three years ago, DWR purchased a strip of land along Big Grizzly Creek for public fishing access, making the public access area below the dam nearly three miles long. In all, about 4.25 miles of the 6.25-mile reach of Big Grizzly Creek below Grizzly Valley Dam is used by anglers and other recreationists, although about one mile of the area used is privately owned and usually posted against trespass. The remaining two miles of the creek is generally inaccessible and/or clearly posted against trespass.

Public access is prohibited at Walton's Grizzly Lodge, a camp for children at the "Grizzly Ice Pond". The camp uses the pond for fishing and swimming and the surrounding area for other camp activities. This use was not measured and is not included in our estimates.

Among other things, Big Grizzly Creek provides visitors with opportunities for trout fishing (predominantly rainbow trout), walking and hiking, flora and fauna study, relief from the warm summers in the form of swimming and wading, and enjoyment of fall colors.

The general area has a rich history of gold mining, farming and ranching, lumber production, and railroading. In recent decades, recreation use has increased greatly, with water-related uses a major attraction. Employment today is divided among services, government, timber harvesting, ranching, and farming.

Grizzly Valley Dam was built as part of the State Water Project in 1966. Originally planned to supplement irrigation in Sierra Valley, it was completed mainly to benefit reservoir recreation and the fishery downstream in Big Grizzly Creek. Releases for recreation, fish, and wildlife are based on water surface elevation on May 1. In addition to the releases for downstream fisheries and water rights, the reservoir is operated to prevent spill. This requires large releases of up to 250 cfs in the early spring of some years (DWR, 1974).

In 1986, Lake Davis filled and spilled twice. It spilled from March 7 through March 28, reaching an estimated release and spill of 334 cfs on March 10 and 11. Releases were controlled thereafter to prevent further spill; however, minor spilling occurred from May 6 through May 18, reaching a maximum release and spill of 21.5 cfs. Thereafter, the release was controlled at 20 cfs for the remainder of the year, except for four days in October when the release was reduced to 5 cfs to permit fish population sampling.

## METHODS

### Recreation Use Counts

Use counts were made on randomly selected dates within nine survey strata using the optimum allocation method described by Abramson and Tolladay (1959). Thirty days of the 204-day period from April 26 through November 15, 1986, were surveyed; both days of the opening weekend of trout season, 5 of 9 holiday weekend days, 14 of 142 weekdays, and 9 of 51 weekend days. Five one-hour counts of recreation use were made in the study area each day at regular periods, scheduled according to the number of daylight hours (Appendices I and II).

The surveys were made from vehicle or on foot, as necessary, to check access and recreation sites. Recreators (and their vehicles) were counted and recorded by recreation activity. The five daily counts were totaled and multiplied by factors that accounted for recreation use in the daylight periods not counted. Similarly, the resulting daily figures were expanded to estimate total recreation hours for all days in each stratum. Adding the stratum totals provided an estimate of recreation hours for the study period.

### Creel Census

Anglers along Big Grizzly Creek were contacted on 23 days to determine fishing success. The county of residence and length of time spent fishing so far that day were recorded for each angler contacted. Fish censused were counted, measured (fork length to nearest 0.5 centimeter [cm]--0.2 inch [in]), and identified to species.

To determine total catch, the catch per hour was multiplied by estimated hours of fishing for each stratum. Total weight of trout caught was calculated from estimated total catch and length-weight data from Big Grizzly Creek trout (Bumpass and Smith, 1987).

## RESULTS

### Recreation Use

Total recreation use on Big Grizzly Creek was estimated at 4,400 recreation hours ( $\pm$  1,000 hours) for the period April 26 to November 15, 1986.

Counts of recreators along Big Grizzly Creek indicated that, overall, fishing was the major activity, followed by swimming and beach use, and relaxing (Table 1).

Table 1. Recreation Hours by Activity  
Big Grizzly Creek, 1986

<u>Activity</u>	<u>Recreation Hours</u>	<u>Percent</u>
Fishing	2,900	66
Swimming and beach use	800	18
Relaxing	200	5
Miscellaneous/Other*	<u>500</u>	<u>11</u>
Total	4,400	100

\* Includes sightseeing, picnicking, children playing, camping, shooting, walking, and off-road vehicle use.

Interviews conducted this year numbered 132, representing 296 people. The interviews revealed what people said they did during their visit. About 65 percent of the visitors to Big Grizzly Creek said they fished, followed by swimming/wading (27 percent), relaxing (25 percent), picnicking (15 percent), sightseeing (13 percent), beach use (11 percent), walking for pleasure (9 percent), and miscellaneous other activities (12 percent). These percentages add up to more than 100 percent because many people took part in more than one activity.

About 70 percent of the visitors were day users (i.e., returned home at night), 28 percent stayed overnight somewhere in the area (usually at Lake Davis or a commercial facility in Portola), and 2 percent camped along the creek (not strictly legal).

Visitor origin was predominantly from the northeast counties (45 percent), with 42 percent coming from Plumas County. Residents of the City of Portola represented 39 percent of all users. Visitors from the San Francisco Bay area totaled 21 percent of all users, and out-of-state visitors 18 percent (Figure 2).

#### Creel Census Data and Angler Success

During the 1986 trout season, 153 anglers were contacted. They had fished 297.5 hours, with a recorded catch of 192 rainbow trout (Salmo gairdneri), 2 brown trout (Salmo trutta), and 4 other fish. In addition, 19 trout and 2 other fish were reported to have been caught and 141 trout were reported to have been caught and released. The large number of trout caught and released probably was due to a large population of juvenile rainbow trout present in 1986.

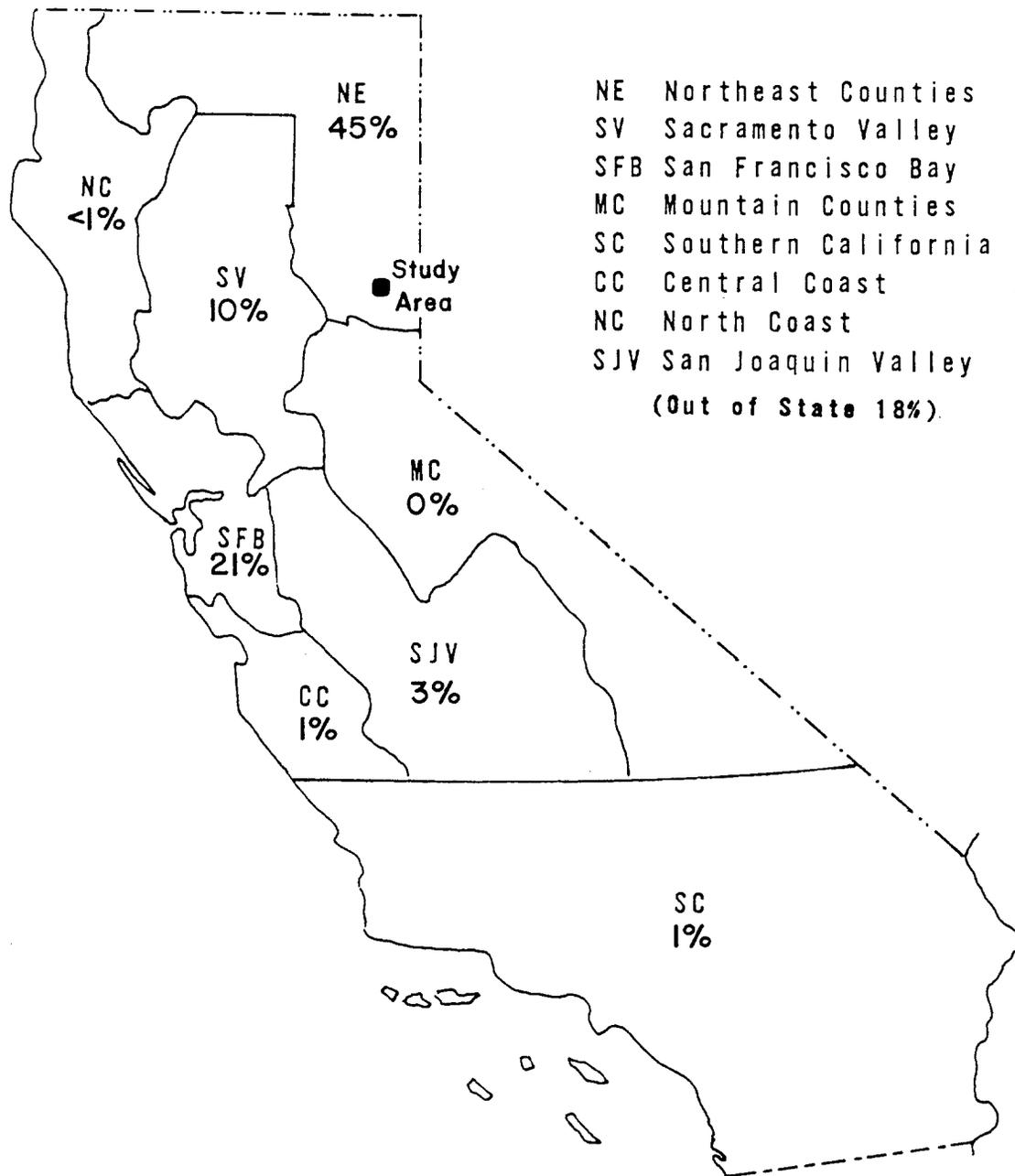
Total angling use was estimated at 2,900 hours ( $\pm$  750 hours) or 1,100 angler days, with an estimated catch of 2,300 rainbow trout, 50 brown trout, and 10 other fish. Based on trout reported caught and reported caught and released, an additional 300 trout may have been caught and 2,000 trout caught and released.

The mean length of rainbow trout caught during 1986 was 23 cm (9.0 in) with a range of 11.5 to 45 cm (4.5 to 17.7 in) (Appendix III). An estimated 900 pounds of rainbow trout were caught.

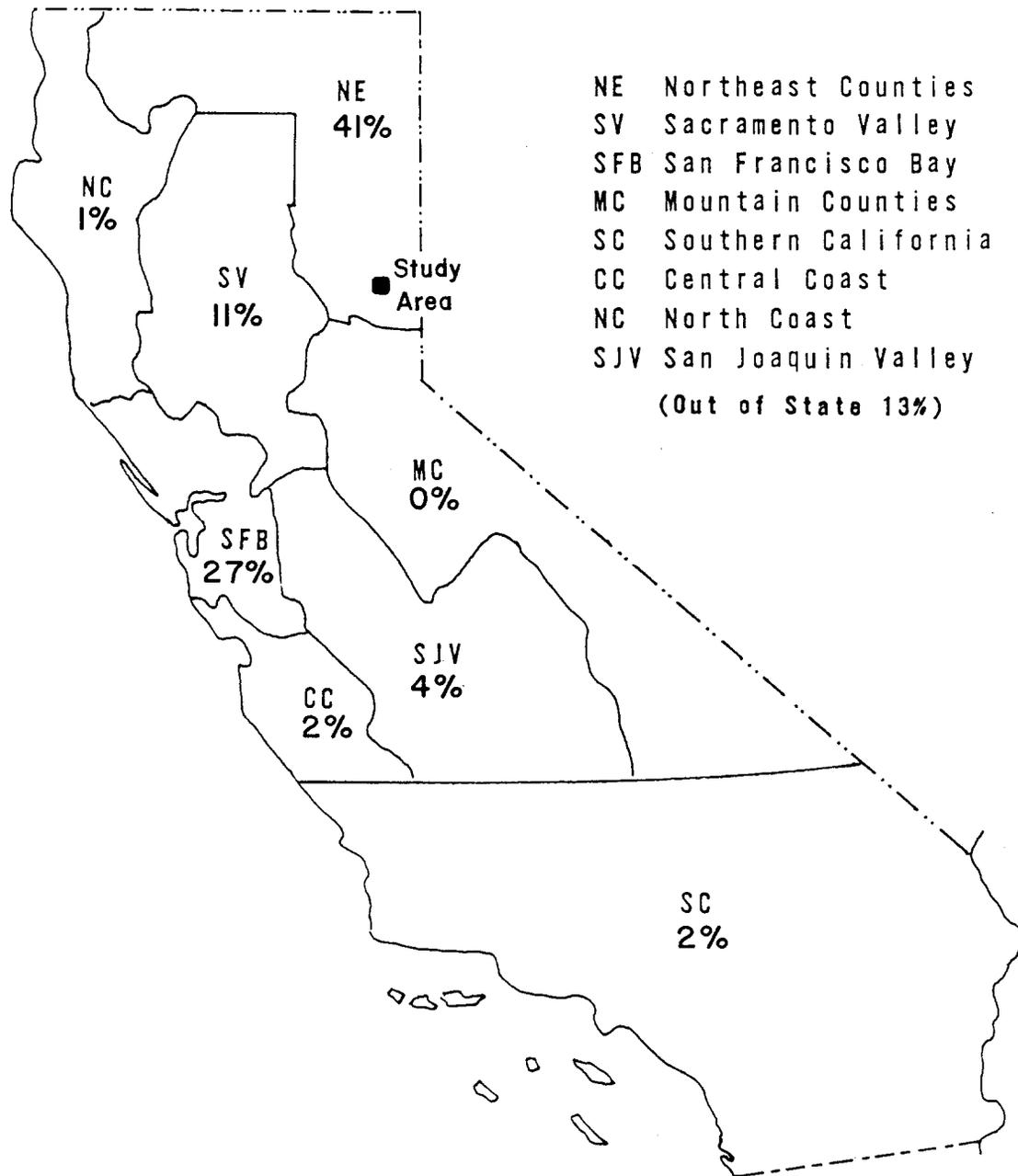
The two largest fish caught measured 45 cm (17.7 in) in length. Twelve other fish measured from 40 to 44.5 cm (15.7 to 17.5 in). These 14 larger fish were all caught on or before June 2, 1986. Half of these were caught on opening weekend. These fish probably entered the stream from the reservoir when it spilled during March 1986.

Big Grizzly Creek angler origin was predominantly from the northeast counties (41 percent) with 37 percent coming from Plumas County. Residents of the City of Portola made up about 35 percent of all anglers. Anglers from the San Francisco Bay area totalled 27 percent and out-of-state anglers 13 percent (Figure 3).

About 67 percent of the anglers fished with bait, about 19 percent with lures, about 7 percent with flies, and about 7 percent used more than one type of terminal gear during their effort.



**Figure 2- Big Grizzly Creek Visitor Origin by County Groups  
 1986**



**Figure 3- Big Grizzly Creek Angler Origin by County Groups  
 1986**

## DISCUSSION

Understanding the limitations of the recreation use survey and creel census helps put the data obtained in perspective. This section describes the limitations.

### Limitations of Use Counts and Creel Census

Most people using the creek were readily observed during the use counts. Vehicle access points were checked on each count, but people were not found for some vehicles. Vehicles of U. S. Forest Service (USFS) and DWR workers and other non-recreationists are sometimes parked along the road, making vehicle counts a poor index of recreation use. However, from counts of vehicles not associated with people, it appears the estimate of total recreation use could be as much as 22 percent low.

About 10 percent of the estimated fishing use was represented in the creel census.

## COMPARISON WITH USE AT INDIAN CREEK

Comparison of this single year of data with six years of well-documented recreation use at Indian Creek, Plumas County, shows some general similarities and differences.

General patterns of recreation use and fishing at Big Grizzly Creek were similar to Indian Creek: use was heaviest in the spring months (59 percent of the annual use and 67 percent of the fishing use at Big Grizzly Creek occurred before the end of June); angling use was greater on weekends and holidays than weekdays; fishing was good all day, but mornings (before noon) were best and evenings (after 4 p.m.) were better than afternoons; and the largest fish were caught on opening weekend or early in the season.

However, use at Big Grizzly Creek was different from Indian Creek in the following ways: about one-sixth as much total recreation use and one-third as much fishing use; a substantially higher proportion of swimming and beach use; there is no legitimate camping along the creek; a large number of users originated from a nearby urban area (City of Portola); the proportion of out-of-state users was about 10 percent higher; use on Memorial Day weekend was greater than opening weekend; and the trout catch consisted primarily of rainbow trout.

## ACKNOWLEDGMENTS

Graduate Student Assistants Greg Grimm and the author and Student Assistants Jennifer Voester and Carol Janeway conducted the use counts, creel censuses, and interviews. Special thanks go to Greg, who also assisted the author in preparing survey materials and continually re-evaluating and clarifying methods and implementation techniques in order to assure accuracy and consistency of details.

Thanks to Cliff Maxwell and Shawn Thomas, who drew the maps and graph, and Diane McGill, who typed the text and tables.

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APPENDIX I

RECREATION SURVEY SCHEDULE FOR  
 BIG GRIZZLY CREEK, PLUMAS COUNTY  
 APRIL 26, 1986, TO NOVEMBER 15, 1986

<u>Big Grizzly Creek Survey Dates</u>	Holiday = HD Weekend = WE <u>Weekday = WD</u>	<u>Survey Strata</u>
April 26	WE	I
April 27	WE	I
May 1	WD	IV
May 8	WD	IV
May 11	WE	III
May 14	WD	IV
May 17	WE	III
May 24	HD	II
May 25	HD	II
May 26	HD	II
June 2	WD	IV
June 5	WD	IV
June 7	WE	III
June 18	WD	IV
June 22	WE	III
June 26	WD	IV
July 1	WD	VI
July 6	HD	IX
July 12	WE	V
July 17	WD	VI
July 27	WE	V
July 29	WD	VI
August 7	WD	VI
August 16	WE	V
August 20	WD	VI
August 31	HD	IX
September 13	WE	VII
September 25	WD	VIII
October 21	WD	VIII
November 2	WE	VII

APPENDIX II

1986 USE COUNT SCHEDULE FOR BIG GRIZZLY CREEK

<u>Date</u>	<u>Daylight Hours</u>	<u>Use Count</u>		<u>Creel Census Time (approx.)</u>
		<u>Count</u>	<u>Time</u>	
April 26 PST	15-1/2	1st	0630-0730	0730-1200
		2nd	0900-1000	1300-1730
		3rd	1200-1300	
		4th	1430-1530	
		5th	1730-1830	
April 27 DST	15-1/2	1st	0730-0830	0830-1300
		2nd	1000-1100	1400-1800
		3rd	1300-1400	
		4th	1530-1630	
		5th	1830-1930	
May-August DST	16-1/2	1st	0700-0800	0800-1300
		2nd	1000-1100	1400-1900
		3rd	1300-1400	
		4th	1600-1700	
		5th	1900-2000	
September DST	14	1st	0730-0830	0830-1230
		2nd	1000-1100	1330-1730
		3rd	1230-1330	
		4th	1500-1600	
		5th	1730-1830	
October DST	13	1st	0800-0900	0900-1230
		2nd	1000-1100	1300-1700
		3rd	1230-1330	
		4th	1500-1600	
		5th	1700-1800	
November PST	12	1st	0730-0830	0830-1130
		2nd	0930-1030	1230-1530
		3rd	1130-1230	
		4th	1330-1430	
		5th	1530-1630	

Appendix III  
Length Frequency of Censused  
Rainbow Trout, Big Grizzly Creek  
1986

Plus one fish each  
42, 44, 44.5 and  
two at 43 and 45  
centimeters

