

WILD TROUT PROJECT
California Department of Fish and Game
Rancho Cordova, California

STATUS OF THE TROPHY RAINBOW TROUT FISHERY AT MANZANITA LAKE
(LASSEN VOLCANIC NATIONAL PARK) BASED ON REPORTS
FROM ANGLER SURVEY BOXES IN 1994

by

John M. Deinstadt
California Department of Fish and Game

and

Al Denniston
Lassen Volcanic National Park

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FILE REPORT 95-1

January 1995

Deinstadt (Wild)

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BACKGROUND

Fingerling stocking has been considered a critical part of the management program needed to sustain a productive rainbow trout fishery in Manzanita Lake. When, under new National Park Service resource management guidelines, it was necessary to end the stocking program, there was concern that the rainbow trout fishery might decline sharply. Since 1990, trends in the Manzanita Lake fishery have been monitored by periodic fish population and angler box surveys. The objective of this report is to update the information obtained on trends in the fishery based on angler box survey data and discuss the management implications of these trends.

STUDY METHODS

Angling success at Manzanita Lake is sampled by two survey boxes. One box is located beside the unimproved boat ramp in the southeast corner of the lake and the other is adjacent to the upper parking lot located a short distance up the shoreline. Observations during a 1990 creel census study showed the latter parking lot was used by most of the lake's float tube anglers. Data collected included the date, type of fishing (boat, float tube, or shore), method of fishing (fly or lure), hours fished, and number and lengths of trout released. The boxes are maintained by Park Service personnel. Data are compiled annually by the Department of Fish and Game.

TRENDS IN THE FISHERY

Angler Success

Catch rates for rainbow trout between 1990 and 1994 have averaged 0.52 fish/hour. Angling success decreased from highs of 0.66 and 0.63 fish/hour during the first two years of the monitoring program to a low of 0.36 fish/hour in 1992. Catch rates for rainbow trout have increased during the past two years reaching 0.50 fish/hour in 1994 (Figure 1 and Appendix 1). Catch rates for brown trout have remained fairly steady over the five seasons ranging from 0.07 to 0.11 fish/hour.

Size Structure

In 1994, anglers reported that 19% of the rainbow trout they released were ≤ 13 inches, 54% were 14 to 17.9 inches in length, and 27% were ≥ 18 inches (Figure 2). The percentage of rainbow trout ≤ 13 inches in length was higher than reported during the previous four seasons (1990 through 1993 average was 12%). The proportion of the catch in the 14 to 17.9 inch range was similar

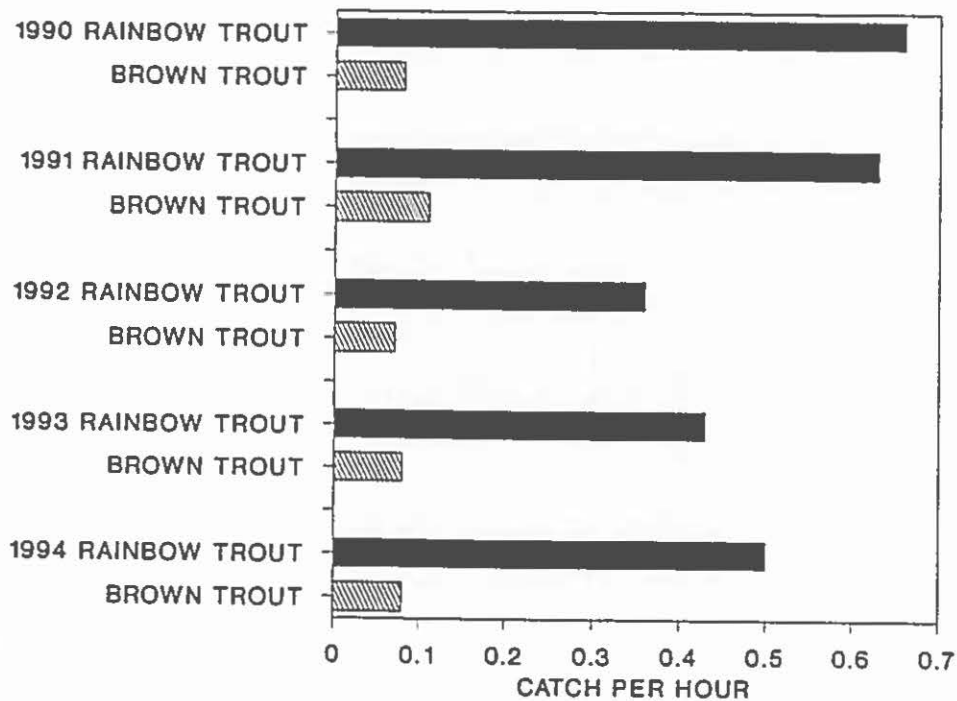


FIGURE 1. Catch/hour for rainbow and brown trout at Manzanita Lake from 1990 through 1994 based on angler survey box data.

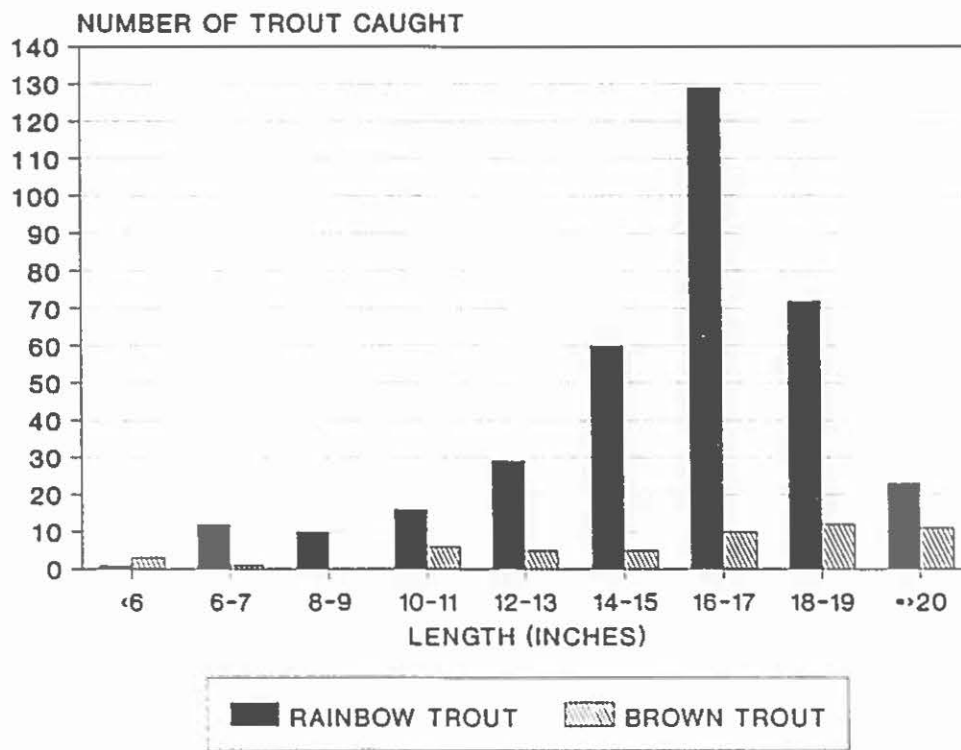


FIGURE 2. Lengths of rainbow and brown trout anglers reported releasing at Manzanita Lake in 1994 based on survey box data.

to the average of the previous four seasons while the proportion ≥ 18 inches decreased (Figure 3).

Data from a trout population survey conducted on November 3, 1994 provided an opportunity to compare the size of rainbow trout caught throughout the 1994 season with the size captured at the end of the season. The results showed that anglers reported releasing a higher percentage of rainbow trout ≥ 18 inches than appeared to be present in the population. Fifty-four percent of the reported catch from angler survey box data was in the 14 to 17.9 inch range. During the population survey, 93% of the rainbow trout netted were in this size range (Figure 4). Twenty-seven percent of the angler reported rainbow trout were ≥ 18 inches compared to just 2% of the rainbow trout captured. At the other end of the scale, anglers reported catching about four times as many ≤ 13 inch trout than were netted in November. It also appears, therefore, that the electrofishing survey did not effectively sample the smaller rainbow trout present in the lake.

Species Composition

In 1990, rainbow trout comprised 90% of the catch. During the past four seasons, the percentage of rainbow trout, though slightly lower (83% to 87%), gives no indication of a downward trend (Figure 5).

Trout population surveys were conducted in 1990, 1991, and 1994. While the percentage of rainbow trout was lower in the populations than in the catch, the relative abundance followed the pattern recorded in the box surveys. The percentage of rainbow trout was highest (68%) in 1990 and similar in 1991 (59%) and 1994 (60%).

MANAGEMENT IMPLICATIONS

Based on trends in catch/hour, size structure, and species composition reported through the angler survey box monitoring program, there is no indication that the rainbow trout population in Manzanita Lake is declining. Catch rates were at the highest level in 3 years, there were more rainbow trout ≤ 13 inches than reported over the past five years, and ratio of rainbow to brown trout in the catch is holding steady.

Though there appears to be a difference in the actual size of rainbow trout in the lake and the size structure obtained from angler box survey data, this difference is assumed to have little impact of the value of the box survey as a monitoring tool. If there is some exaggeration in the reported lengths of the larger trout released, it is assumed that this exaggeration is consistent from season to season. Management decisions related to angler survey box data are based on trends, not on whether either the catch rate or the size of trout reported is absolutely accurate.

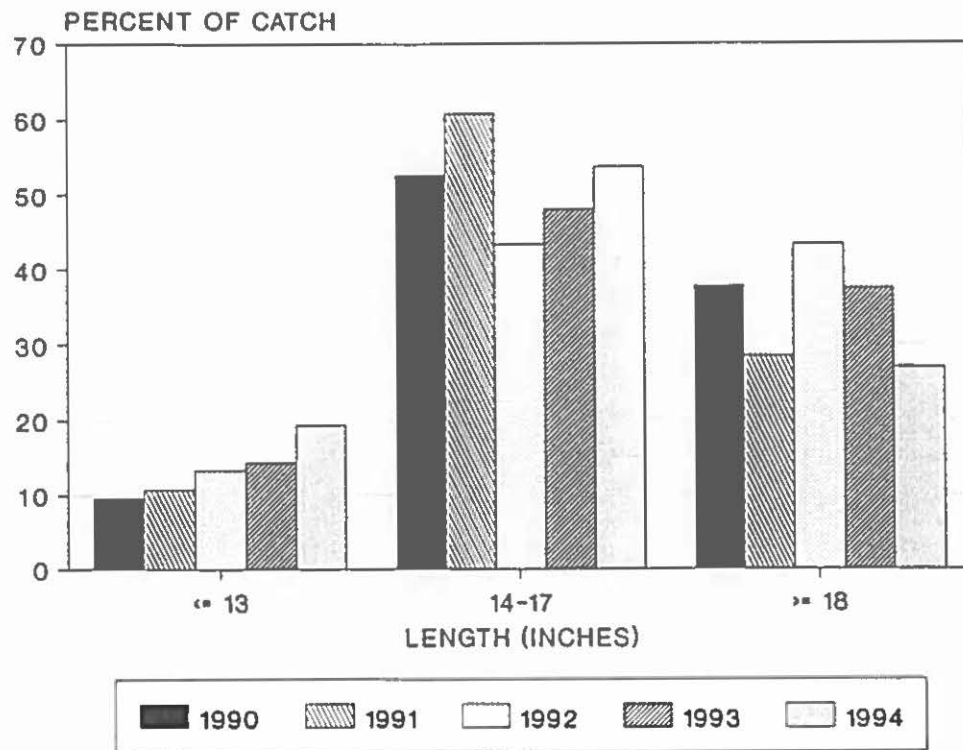


FIGURE 3. Lengths of rainbow trout anglers reported releasing at Manzanita Lake from 1990 through 1994 based on survey box data.

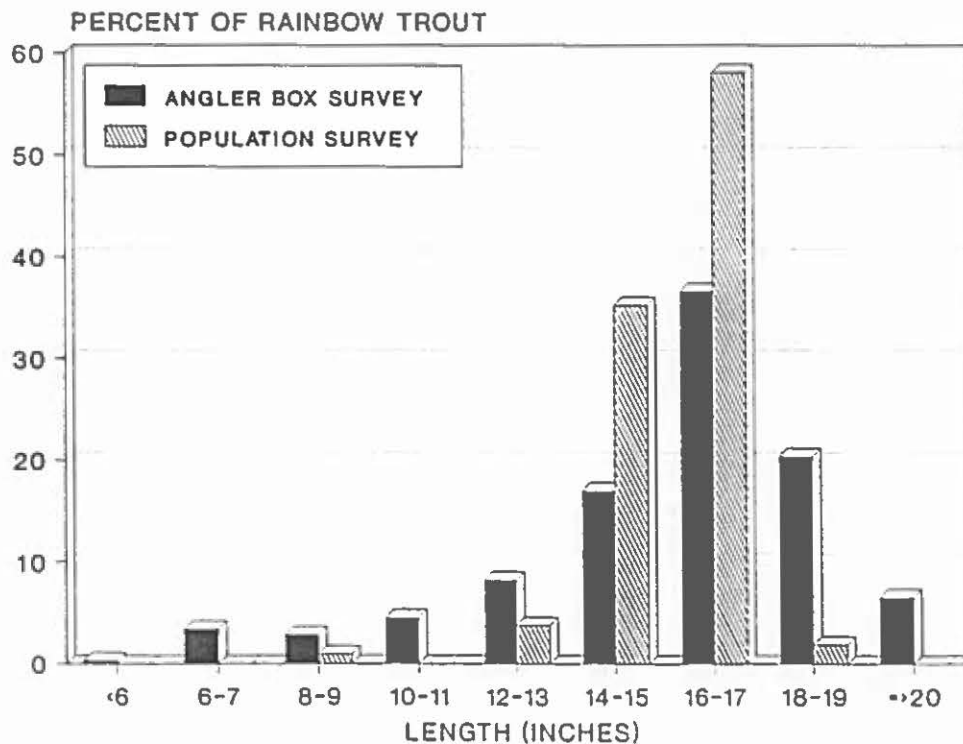


FIGURE 4. Comparison of the lengths of rainbow trout anglers reported releasing with the lengths of rainbow trout captured during an electrofishing survey at Manzanita Lake in 1994.

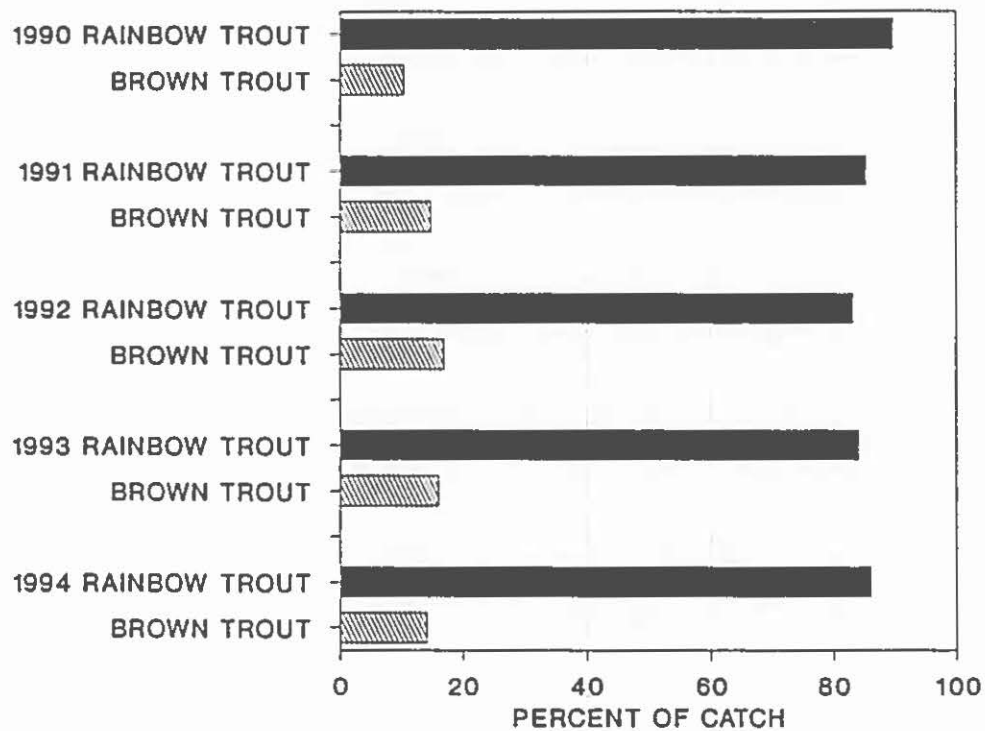


FIGURE 5. Percentage of rainbow and brown trout anglers reported releasing at Manzanita Lake from 1990 through 1994 based on survey box data.

RECOMMENDATION

The Park Service and the Department of Fish and Game should continue their cooperative angler box survey monitoring program through at least 1999.

APPENDIX 1. Angler Success at Manzanita Lake from 1990 through 1994 Based on Reports from Angler Boxes.

	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
Surveys reported	124	57	162	229	165
Hour fished	471.25	260.50	688.50	944.50	697.75
Trout released					
Rainbow	312	163	246	408	352
Brown	36	28	50	78	53
Combined	348	191	296	486	405
Percent of catch					
Rainbow	90	85	83	84	87
Brown	10	15	17	16	13
Catch/hour					
Rainbow	0.66	0.63	0.36	0.43	0.50
Brown	0.08	0.11	0.07	0.08	0.08
Combined	0.74	0.73	0.43	0.51	0.58
Trout/angler day	2.8	3.4	1.8	2.1	2.5