

7-5420-3 Ref ID: 71479
2

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. F-7-R-2 Work Plan No. IV Job No. IV-A

Title of Job: Establishing measures of Abundance of Cutthroat Trout in Ashley Lake.

Objectives:

At one time the cutthroat trout were abundant in Ashley Lake and little effort was required to catch a limit. Due to faulty management the numbers have dwindled to a dangerous low. This lake is used for spawn taking, and traps are operated on four tributaries. Records of the last few years show that few trout were planted back into the lake. The purpose of this project is to determine the relative abundance of trout in this lake so that the effects of corrective management may be noted.

Techniques Used:

During the spawn taking operations in April, May and June, a record of the number of trout entering the traps was recorded by the caretakers at the traps. Eggs were taken approximately once each week by personnel of the Somers Fisheries Station. A total of 78 trout were marked, either by jaw-tagging or by fin-clipping. Creel census was taken on opening day and attempted at various times throughout the summer. Scale samples were taken of the marked fish and were sent to the Department laboratory for aging.

Findings:

On April 11, 1952, racks were placed in the spawning traps in four of the tributary streams to prevent the movement of trout upstream. Actual trapping did not commence until April 25. The trout first appeared in Rand Creek on April 29, when two trout entered the trap. Trout captured in Cottonwood Creek and Green Mountain Creek were hauled to the trap at Fish Creek. The traps were operated until June 6, when most of the trout were either fin-clipped or tagged with a jaw tag, and then they were released and allowed to go back to the lake. According to records kept by caretakers stationed at the traps, the following is a summary of trout which entered the traps in the four streams:

Cottonwood Creek	18 males	9 females
Fish Creek	66 males	49 females
Green Mountain Creek	22 males	1 female
Rand Creek	49 males	66 females
Total	155 males and	125 females

A total of 1,225 suckers were captured in all traps during the trapping

of the trout. According to records at the Somers Fisheries Station a total of 323,306 eggs were taken from trout caught in the various traps, for 41 days of trap operation which amounted to 7,886 eggs per day. For the season the number of trout caught per day of trap operation was 6.8 fish or 3 females and 3.8 males per day.

A number of various sized trout were planted in the lake during the year 1952. The following is a list of cutthroat trout planted in the lake:

Fry	99,900
3 inch	22,000
4 inch	24,515
5 inch	<u>6,358</u>
Total	152,773

Age determination of scale samples taken in 1952 are not available at this time but age-growth studies of the trout taken in 1951 are presented (Table 1). The average calculated lengths at the end of each year of life for the first five years were, 4.1, 7.8, 12.3, 14.4 and 16.5 inches respectively. All of these trout were males.

Table 1

Average calculated total lengths and increments
(expressed in inches) of cutthroat trout collected
in 1951 in Ashley Lake.

Age Group	Number of Fish	Average Length at Capture	Year of Life				
			1	2	3	4	5
0							
I							
II							
III	10	15.8	4.4	8.8	15.2		
IV	4	15.6	4.2	7.6	11.8	15.6	
V	1	17.0	3.6	7.0	10.0	13.2	16.5
Average Calculated Length			4.1	7.8	12.3	14.4	16.5
Increment			4.1	3.7	4.5	2.1	2.1
Number of Fish			15	15	15	5	1

A total of 42 trout were jaw-tagged and 36 trout were fin-clipped in 1952. Two trout tagged in Green Mountain Creek in 1951 were recaptured in 1952, one in Rand Creek and the other in Fish Creek. Trout number 4-1022 was 15.4 inches in length and weighed 1.44 pounds when tagged on June 14, 1951. On June 5, 1952 this same fish was 18.5 inches long and weighed 2.94 pounds. Trout number 4-1017 was 15.5 inches long and weighed 1.25 pounds when tagged June 14, 1951. On June 5, 1952 this fish was 18.9 inches in length and weighed 2.50 pounds. These two fish were 4 years old in 1951 and grew 3.1 and 3.4 inches respectively between times of capture. Trout number 50191 was tagged June 5, 1952 and captured by an angler August 11, 1952. No data on length and weight at time of capture was obtained.

The condition factor (C) of the 78 trout marked was 40.4.

Creel census data are available chiefly for the opening day of fishing on Ashley Lake, as no anglers were contacted during the remainder of the fishing season although three Sundays and four week days were spent on the lake. A total of 38 anglers were contacted reporting a catch of 25 trout in 152 hours of fishing, making a catch of .16 trout per hour.

On October 18, three gill nets were set in the lake by the old hatchery. After 26 hours the following fish were caught: 3 cutthroat trout, 2 kokanee, and 15 suckers. Depths of sets varied from 8 to 30 feet.

The pH of the surface water in vicinity of the hatchery was 8.2 on July 30, and dissolved oxygen was 7.5 ppm at the surface. On this same date the thermocline in the lake was found between depths of 35 and 45 feet. The following temperatures were recorded for the respective depths:

Surface	69.5 F
5 feet	67.5
10 "	67.0
15 "	65.5
20 "	64.5
25 "	64.0
30 "	62.0
35 "	60.5
40 "	54.0
45 "	48.5
50 "	46.0
55 "	45.0
60 "	44.5 (bottom)

In a search for deep water a temperature of 40.5 was found at a depth of 208 feet. This was directly east of the hatchery, approximately mid-way from the shores of the lake.

Analysis and Recommendations:

The trend in number of trout entering the spawning traps is still downward with a resulting decrease in egg take. The plant of trout in the lake was approximately one half the number recommended and planted in the year of 1951. The reason for this is not clear and is presumed to be for the lack of fish at the Somers Fisheries Station.

It is recommended that this study be continued and attempts be made to follow the original recommendation of planting 100 trout per acre. This would require a planting of approximately 300,000 trout fry in the lake.

Summary:

A total of 280 trout entered the spawning traps during 41 days of trap operation, of which 125 were females and 155 were males. The number of eggs taken was 323,306. The number of trout planted back into the lake was 152,773, including 99,900 fry, 22,000 3-inch trout, 24,515 4-inch trout and 6,358 5-inch trout. Creel census indicated a catch of .16 trout per

fishing hour with insignificant fishing pressure after the opening day of the fishing season. Age-growth studies indicate that cutthroat trout in this lake are not sexually mature until 3 years old and these are chiefly males.

Data and Reports:

The spawning and planting records are on file in the Helena office of the Fish and Game Department and at the Somers Fisheries Station at Somers. Other records are on file with the fishery biologist at Kalispell, Montana.

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Date March 18, 1953