JOB COMPLETION REPORT

INVESTIGATIONS PROJECTS

State of Montana

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

Title of Job: The Effects of Logging on Pinkham Creek's Fish Population.

Objectives:

So far as is known, no information is at hand on the change if any, of a stream population after a drainage has had timber removed. This project is aimed to determine what changes may take place in a stream population after virgin timber has been removed.

Techniques Used:

The stream was divided off into one tenth mile units and by a random selection of numbers, 16 sections were chosen but only nine were sampled, the remainder were inaccessible. The four sections that were sampled in 1951 were sampled again along with five additional sections. Sampling was done with an electric shocking device and each station was blocked off with 1/2 inch, square mesh nets. All fish were weighed and measured and scale samples were taken of all the fish.

Findings:

Pinkham Creek is a small tributary of the Kootenai River. The surrounding region is heavily timbered and has been logged only slightly along the stream bottom up until 1952. The most common trees in the area are fir, pine, larch and spruce. A rough measurement of the stream flow was found to be about 7 cubic feet per second.

Major logging operations were started this last year. Approximately 4,410 acres were logged prior to 1951, and this was chiefly along the stream bottom. During 1952, a road was completed up the stream and several areas were logged. There are about 39,296 acres of timber land above section 1 and the following is a summary of the logging operations in 1952: approximately 360 acres were 30 percent cut, chiefly spruce, about 1,940 acres were 40 percent cut of mixed larch and fir, and about 130 acres were clear cut mainly of spruce.

Section 1 is nearest the mouth of the stream and the remainder of the sections are numbered upstream respectively. The distance between sections 1 and 9 is 8.9 road miles. The sections 1 through 4 of 1951 were renumbered 2 through 5 in 1952 as an additional section was taken downstream from the original section 1.

The number of fish captured and their weights are given in Table 1. Length frequency graphs (Fig. 1 & 2) did not indicate age classes as were found in 1951. Age and growth studies were made of all fish captured in 1951 (Table 2). The average calculated lengths of eastern brook trout at the end of

Table I - Numbers and weights of trout captured in the various sections in Pinkham Creek in 1952.

Section	Species	Number	Weight (pounds)
1	Eastern brook trout	15	0.96
	Rainbow trout	42	3.22
2	Eastern brook trout	55	2.59
	Rainbow trout	41	2.96
3	Eastern brook trout	40	1.81
	Rainbow trout	42	2.96
4	Eastern brook trout	78	3.06
	Rainbow trout	26	2.17
5	Eastern brook trout	30	1.51
	Rainbow trout	15	1.63
6	Eastern brook trout	46	2.80
	Rainbow trout	22	1.87
7	Eastern brook trout	70	3.28
	Rainbow trout	4	0.36
8	Eastern brook trout	103	4.93
	Rainbow trout	1	0.07
9	Eastern brook trout	170	9.25
Total	Eastern brook trout	607	30.19
	Rainbow trout	193	15.24

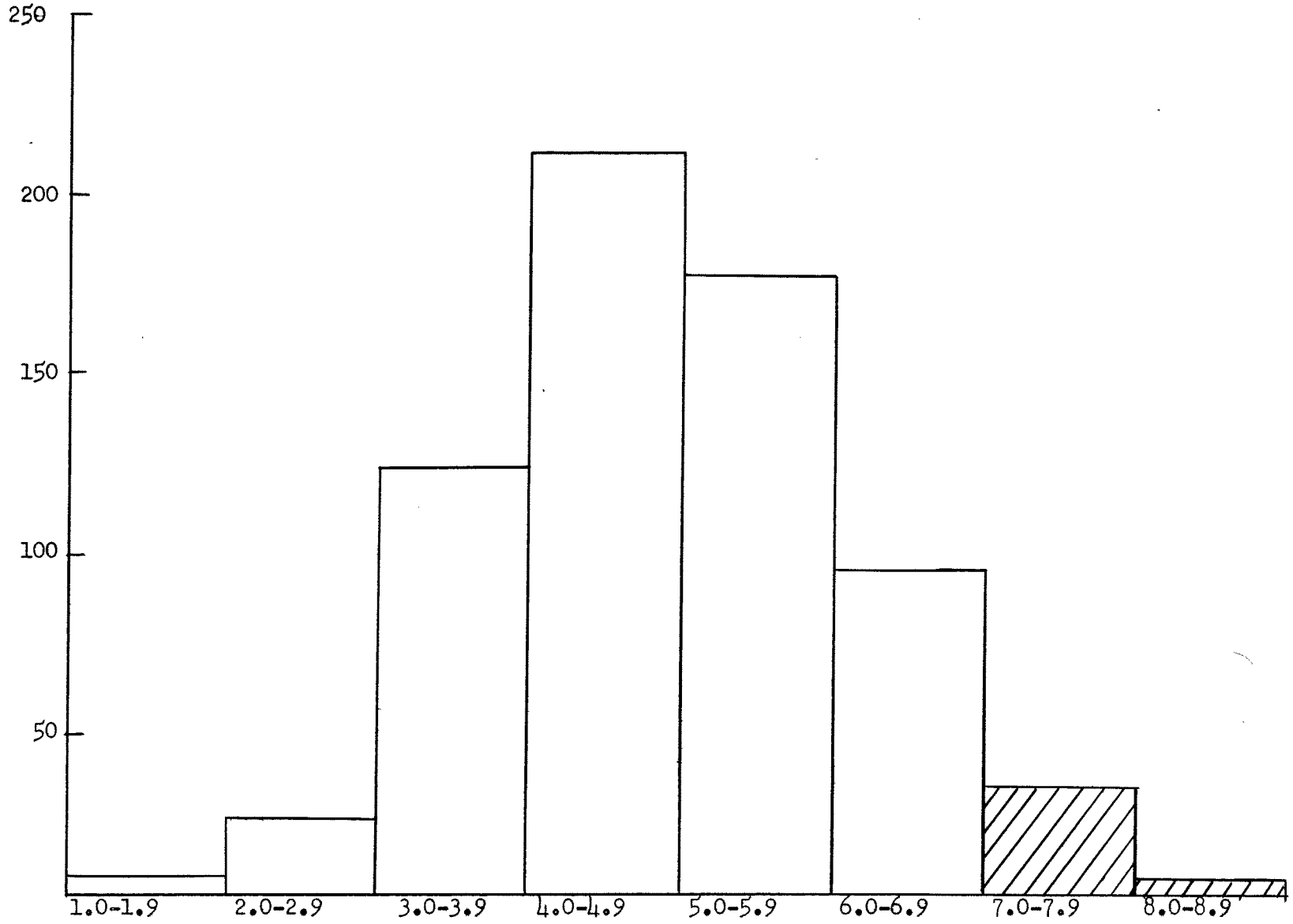

Figure 1. Length frequencies of eastern brook trout in Pinkham Creek in 1952.

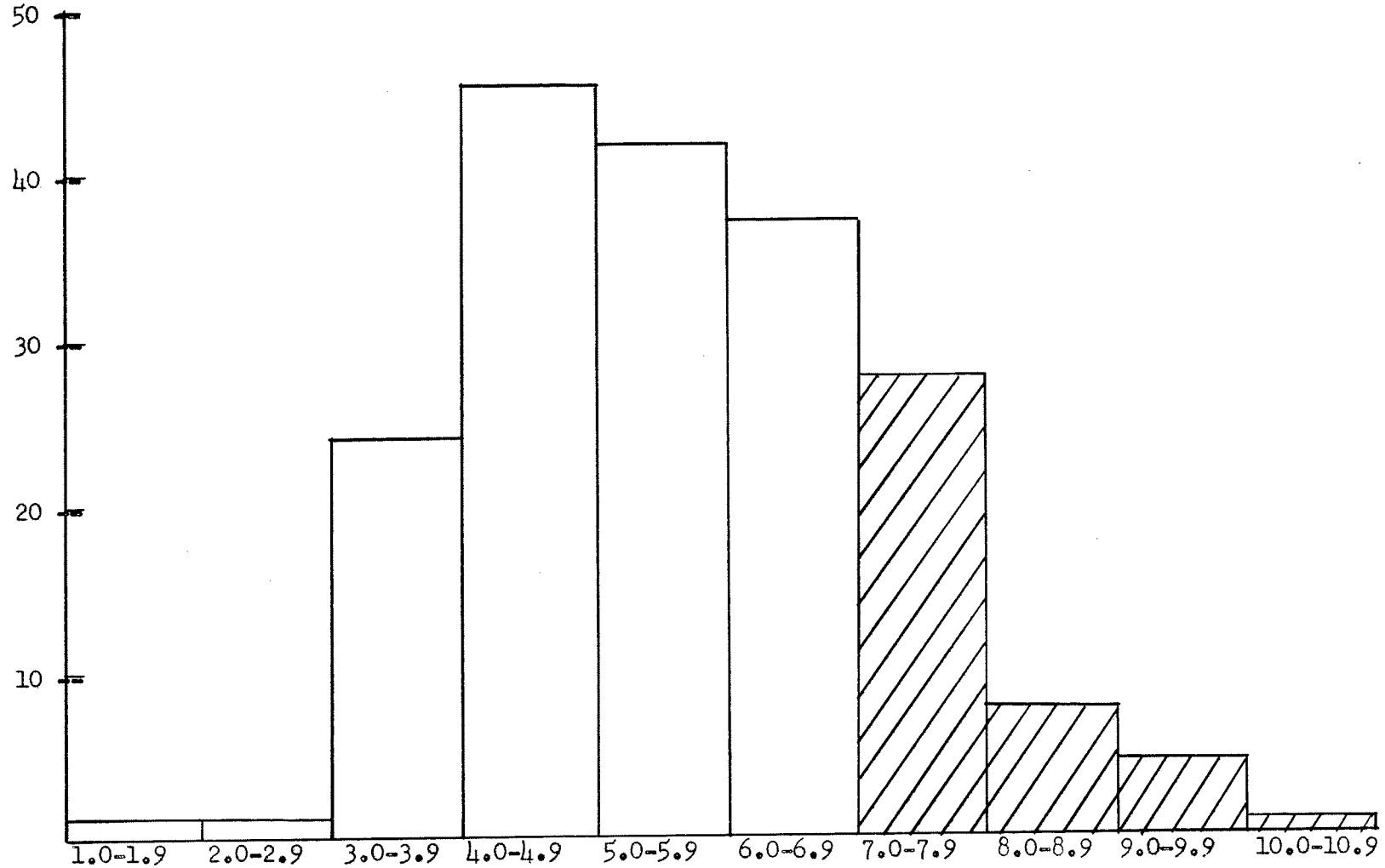

Figure 2. Length frequencies of rainbow trout in Pinkham Creek in 1952.

Table 2 - Average calculated total lengths and increments of eastern brook trout captured in Pinkham Creek in 1951.

Age Group	Number of fish	Average length at capture	Year of life 1	2
0	47	3.8		
I	74	5.8	4.3	
II	8	7.4	4.1	6.3
Average calculated length			4.2	6.3
Increment			4.2	2.1
Number of fish	129		82	8

Table 3 - Average calculated total lengths and increments of rainbow trout captured in Pinkham Creek in 1951.

Age Group	Number of fish	Average length at capture	Year of life 1	2
0	8	3.4		
I	26	5.6	4.2	
II	6	9.0	4.4	6.7
Average calculated length			4.3	6.7
Increment			4.3	2.4
Number of fish	40		32	6

the first year of life was 4.2 inches and at the end of the second 6.3 inches, and for the rainbow trout, 4.3 and 6.7 inches respectively. (Table 3).

Analysis and Recommendations:

This stream was again found to be an eastern brook trout water. A total of 607 eastern brook trout were captured and only 31 were of legal size (7.0 inches and over) or about 5 percent (Fig. 1), and of the 193 rainbow trout captured, 41 were of legal size or 21 percent. The eastern brook trout comprised 76 percent of the fish population of the stream. The condition factor C of the eastern brook trout averaged 37.8 percent and that of the rainbow trout, 38.0. Aging of the fish captured in 1952 could not be determined by the length frequency method. Age studies of the trout show that the fish captured in 1951 grew well for the first two years of life but none were found in the 3 year old age class. Winter conditions are probably the contributing factors as this area has heavy snows and sustained cold weather.

It is recommended that this study be continued, that changes in population composition may be observed should they occur as logging proceeds.

Summary:

Nine randomly selected sections, each 300 feet long, were sampled and 607 eastern brook trout and 193 rainbow trout were captured. Thirty-one of the eastern brook trout were 7.0 inches or longer and 41 of the rainbow trout attained this length. The condition factor of the eastern brook trout averaged 37.8 and that of the rainbow trout 38.0. None of the trout captured in 1951 indicated a formation of the third annulus. Logging operations were begun and approximately 2,430 acres were logged, varying from a 30 percent cut to clear cutting.

Data and Reports:

Original data is with the fisheries biologist at Kalispell, Montana

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Date January 27, 1952