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JOB COMPLETION REPORT

INVESTIGATIONS PROJECTS

State of Montana

Project No. F-7-R Work Plan No. VII Job No. VII-C

Title of Job: Comparison of the Growth Rate of Cutthroat Trout to that of Yellow Perch.

Objectives:

If the cutthroat trout and yellow perch eat each others young and also their own, it is important to know how fast each one grows in order to determine the length of time of availability of each species as food for the larger fish. The aim of this job is to find out if the taking of young fish accelerate the growth of the larger fish while the young are available, and attempt to determine the factors that may contribute to the stunting of perch.

Techniques Used:

Scale samples were taken from yellow perch and cutthroat trout in the lake throughout the summer. Scale samples were also taken of cutthroat trout captured in the tributary streams. Age-growth determinations were made at the department's laboratory at Montana State College in Bozeman.

Findings:

Scale samples of cutthroat trout were difficult to obtain because of the seeming scarcity of this species. Few were captured in the gill nets; most were caught by angling. The catch per hour of cutthroat trout by angling was 0.5 fish in all three lakes. Although the sample is small the cutthroat trout have a good growth rate in the lake. (Table 1). The average calculated lengths of cutthroat trout at the end of each year of life was 5.1, 7.8 and 10.3 inches respectively.

Table 1. Average calculated total lengths and increments of cutthroat trout, expressed in inches, collected in 1952 from all Thompson Lakes.

Age group	Number of fish	Average length at capture	Year of Life 1	2	3
I	3	9.6	6.6		
II	4	10.7	4.6	8.4	
III	2	12.3	4.1	7.1	10.3
Grand Average Calculated Length			5.1	7.8	10.3
Increment			5.1	2.7	2.5
Number of fish 9			9	6	2

The yellow perch did not grow as rapidly as the cutthroat trout. The average calculated lengths of yellow perch at the end of each year of life for the first five years were 2.0, 3.2, 4.5, 5.5 and 6.6 respectively (Table 2). A total of 29 perch scales was read and calculated lengths figured. More scales were read for age only, some perch being found as old as nine years. The most frequent age class captured throughout the summer was five years.

Table 2. Average calculated total lengths and increments of yellow perch, expressed in inches, collected in 1952 from Lower Thompson Lake.

Age group	Number of fish	Average length at capture	Year of Life 1	2	3	4	5
I							
II	2	3.8	2.2	3.5			
III	5	5.1	2.0	3.2	4.4		
IV	7	5.9	1.7	3.0	4.5	5.4	
V	15	7.3	2.0	3.3	4.5	5.6	6.6
Grand Average Calculated Length			2.0	3.2	4.5	5.5	6.6
Increment			2.0	1.2	1.3	1.0	1.1
Number of fish	29		29	29	27	22	15

Analysis and Recommendations:

The cutthroat trout demonstrate a good growth rate in the lakes. They start to utilize small fish as food in their third year of life. The growth of yellow perch compares favorably with other stunted perch populations as found for the first five years by other workers (Alm 1946). However, the growth rate of perch as compared with reports of workers in this country (Carlander 1950), is not as good. According to Alm (1946), a perch does not feed to any extent on insect larvae and plankton until there is an overpopulation of this species. He states further that when an overpopulation does occurr the use of plankton and insect larvae does not stimulate the fish to grow to a large enough size so that small fish can be utilized. This is apparently what is taking place in the Thompson Lakes. However, it may be stated that a combination of factors may be working on the yellow perch, such as temperature, the spatial factor and nutritional deficiency. It appears from the data collected that the yellow perch do not grow to a large enough size to utilize young fish, even though a large number of perch fry are present during the summer months. The stunting of perch in these lakes appears to be due primarily to the good spawning facilities which produce a high population. There is practically no fishing pressure on these lakes (about 80 hours per summer month). Whether enough fishing pressure could ever be exerted on this lake to utilize the yellow perch if they could be made to grow to a catchable size is doubtful. For this group of lakes it appears for the present that plantings of large cutthroat trout (yearlings) will be the best management practice.

It is recommended that this study be continued so that more age-growth data be gathered on the cutthroat trout.

Summary:

Although the sample is small, the cutthroat trout demonstrated good growth in the lakes. The growth of yellow perch compares favorably with that of other stunted perch population studies, but is much less than that of perch reported from the Great Lake states. The cutthroat trout were well over legal size in the 2 plus age class, however the yellow perch were still small (6.6) in the 5 plus age class.

Data and Reports:

All data and reports are with the project assistant at Montana State College, Bozeman, Montana.

Literature Cited:

Alm, Gunnar.
1946. Reasons for the occurrence of stunted fish populations. (With special regard to the perch). Reports from the Swedish Institute of Fresh-water Fishery Research, Drottningholm. No. 25, pp. 1-146.

Carlander, Kenneth D.
1950. Handbook of freshwater fishery biology. Wm. C. Brown Co. Dubuque, Iowa, pp. 1-281.

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