MONTANA STATE DEPARTMENT OF FISH AND GAME
FEDERAL AID IN FISH RESTORATION SECTION
HELENA, MONTANA

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. F-7-R-5 Job No. V

Title of Job: The Relationships of Cutthroat Trout and Yellow Perch in Lower Thompson Lake

Abstract:

Only parts of the shoreline of Lower Thompson Lakes was treated on July 16, with a fish toxicant, as very few schools of yellow perch fry were observed. Fifteen days after treatment, cutthroat fry were planted in both lakes by means of a planting boat. Gill net sets were made in May and October, 1955, and February,1956. Eighteen overnight sets were made in each lake for each period. Netting information indicates that the partial treatment of the lower lake had decreased the number of adult perch. No information was obtained on the success of the trout plant. No perch fry were observed in the lower lake after treatment, although they were numerous in the untreated middle lake.

Objectives:

The relationships of yellow perch and cutthroat trout have been studied in 1952 and 1953 in Middle Thompson and Lower Thompson Lakes in order to determine any weak link in the life cycle of the perch. The cost of complete removal of yellow perch in these lakes would be prohibitive at the present time. During the study it was found that perch fry could be effectively killed with rotenone while in schools along shore. The entire shoreline of Lower Thompson Lake was treated with "Fish-Tox" in 1954 when the perch fry were congregated in large schools. Later, both Middle Thompson and Lower Thompson Lakes were planted with cutthroat trout fry at about three hundred per surface acre. According to observations and gill net sets made since the partial poisoning took place, there is definitely less yellow perch in Lower Thompson Lake than in Middle Thompson. One of the objectives of this job is to determine the effects of partial poisoning and subsequent planting in one lake as compared with planting and no poisoning in another lake. The over-all objective is to determine the most economical method to develop a fishery in a lake that has a stunted yellow perch population.

Techniques Used:

Observations were made in June for yellow perch fry concentrations. Observations were continued until July 9, when fry were seen in both lakes. On July 16, the shoreline of Lower Thompson Lake was treated with a spray of fish toxicant from a pump placed in a boat. Only 19 small schools of perch fry were observed in the lower lake during the operation. After treatment the lake was observed for perch fry for about one month and no perch fry schools were observed.

On August 1 and 2, cutthroat trout fry were planted in the two lakes, from a planting boat at the rate of 246 fish per surface acre in Middle Thompson Lake and 520 fish per surface acre in the lower lake. These fish were well scattered over the lake.

In May and October of 1955 and February 1956, both lakes were sampled with gill nets. Nets were of the sampling type, 125 feet long with 5 mesh sizes of 25 feet each (3/4, 1, 1 1/4, 1 1/2, and 2 inch bar measure). Eighteen overnight sets were made in each lake during each sampling period.

Creel census was taken periodically on both of the lakes.

Findings:

A study was made of the yellow perch in the Thompson Lakes and reported in previous completion reports and also a publication by John Echo. Since, as was mentioned previously, the cost of rehabilitation of the chain of three lakes would be prohibitive at the present time, it was recommended that killing of large concentrations of perch fry with the use of fish toxicants be tried. Due to an intesive work plan, observations could not be made of the lakes during the spawning of the yellow perch. The spring was late with low water temperatures until May. This retarded the runs of rainbow and cutthroat trout at spawning stations in other lakes where department personnel obtained trout eggs.

Extensive observations on Thompson Lakes were not made until July 1. No fry were observed in either Middle or Lower Thompson Lakes until July 9. At this time only one small school of approximately fifty perch fry were observed in Lower Thompson Lake. The project leader anticipated difficulty in the finding of perch fry schools in the lower lake due to the low catch of adults in various gill net sampling periods. Actually Middle Thompson Lake was observed very carefully for perch fry schools before extensive observations were made on the lower lake. On July 15, the project leader with the aid of a student assistant sprayed schools of perch fry in the lower lake. During this operation, only 19 small schools of fry were counted. Due to lack of any great concentration of perch fry it was decided to spray only those bays and shallow areas were perch fry were found. Several trips were made around the lake and only 400 pounds of "Fish-Tox" were used. The lake was observed frequently for a month after the operation and no perch fry were observed.

On August land 2, 180,000 cutthroat trout fry were planted in Middle Thompson Lake and 125,000 in Lower Thompson Lake.

From May 10 to 14, 18 overnight gill net sets were made in each lake (Table I). The nets were set in each lake in the same areas as the previous years. At this time only seven yellow perch were caught in the lower lake, while 586 were caught in the middle lake. One cutthroat trout was captured in the lower lake while 14 were caught in the middle lake. Generally there were less fish caught in the lower lake except for the longnose sucker. Most of these were caught near the outlet of the lake and may have been caused by a spawning movement to the outlet.

The schedule was set for sampling in August and November, but could not be adhered to because of help needed on the Marias project. The two lakes were sampled again from October 11 to 15.

During this sampling period, 50 yellow perch were captured in the lower lake and 377 in the middle lake. There were 14 cutthroat trout caught in the lower lake while one was caught in the middle lake. The total of the other species of fish caught was considerably more in the middle lake than in the lower lake. The same number of gill

TABLE I

The Number and Weights of the Various Fish Captured in Lower Thompson Lake During the Three Sampling Periods

Species	May 1955 No.	May 1955 Wt.	Oct. 1955 No.	Oct. 1955 Wt.	Feb. 1956 No.	Feb. 1956 Wt.	Totals No.	Totals Wt.	% of Catch
Yellow Perch	7	.79	50	6.90	20	2.54	77	10.23	17.3
Cutthroat	1	.83	14	8.81	11	14.09	26	23.73	5.9
Mountain Whitefish	0	0	9	1.85	23	5.85	32	7.70	7.2
Longnose Sucker	189	279.94	21	9.08	17	5.75	227	294.77	51.1
Large-scale Sucker	3	5.21	2	3.33	0	0	5	8.54	1.1
Squawfish	17	22.72	2	.62	1	.46	20	23.80	4.6
Sunfish	7	.87	9	1.47	1	.23	17	2.47	3.9
Bass	0	0	1	.14	0	0	1	.14	.2
Kokanee	0	0	0	0	1	.82	1	.82	.2
Eastern Brook	9	2.47	12	6.94	16	7.83	37	17.24	8.3
Dolly Varden	1	.26	0	0	0	0	1	.26	.2
Totals	234	313.09	120	39.14	90	35.57	444	389.80	

TABLE II

The Number and Weights of the Various Fish Captured in Middle Thompson Lake During the Three Sampling Periods

Species	May 1955 No.	May 1955 Wt.	Oct. 1955 No.	Oct. 1955 Wt.	Feb. 1956 No.	Feb. 1956 Wt.	Totals No.	Totals Wt.	% of Catch
Yellow Perch	586	46.73	377	41.53	96	14.15	1059	102.41	70.0
Cutthroat	14	7.63	1	1.06	3	4.47	18	13.16	1.2
Whitefish	42	24.44	40	18.86	4	1.89	86	45.19	5.7
Longnose Sucker	25	28.16	7	12.39	2	3.30	34	43.85	2.3
Large-scale Sucker	41	63.50	16	23.79	2	3.71	59	91.00	3.9
Squawfish	24	18.37	24	14.98	6	4.15	54	37.50	3.6
Sunfish	41	4.98	63	9.37	13	2.40	117	16.75	7.9
Bass	1	.20	1	1.18	0	0	2	1.38	.1
Kokanee	8	4.08	55	45.50	0	0	63	49.58	4.2
Eastern Brook	2	.36	2	1.00	1	.21	5	1.57	.3
Dolly Varden	1	1.92	0	0	0	0	1	1.92	.1
Totals	785	200.37	586	169.66	127	34.28	1498	404.31	

net sets were made under 16 inches of ice from February 13 to 18, 1956. Due to ice and snow conditions, net sets were not scattered over the lakes as for the other two sampling periods. Sets were made under the ice with the aid of a prairie ice-jigger. At this time, 20 yellow perch were captured in the lower lake while 96 were captured in the middle lake. Eleven cutthroat were captured in the lower lake and three in the middle lake. Some the cutthroat were of large size and one weighed 4.70 pounds. At this time the total of other species of fish captured was less in the middle lake than in the lower lake, just a reverse of what was captured the previous two sampling periods.

A partial creel census was conducted on the lakes. No anglers were contacted on the lower lake. In Middle Thompson Lake, 11 anglers were contacted that caught 8 cutthroat, 29 kokanee and 5 yellow perch. The catch per hour of these fish was 1.1 fish.

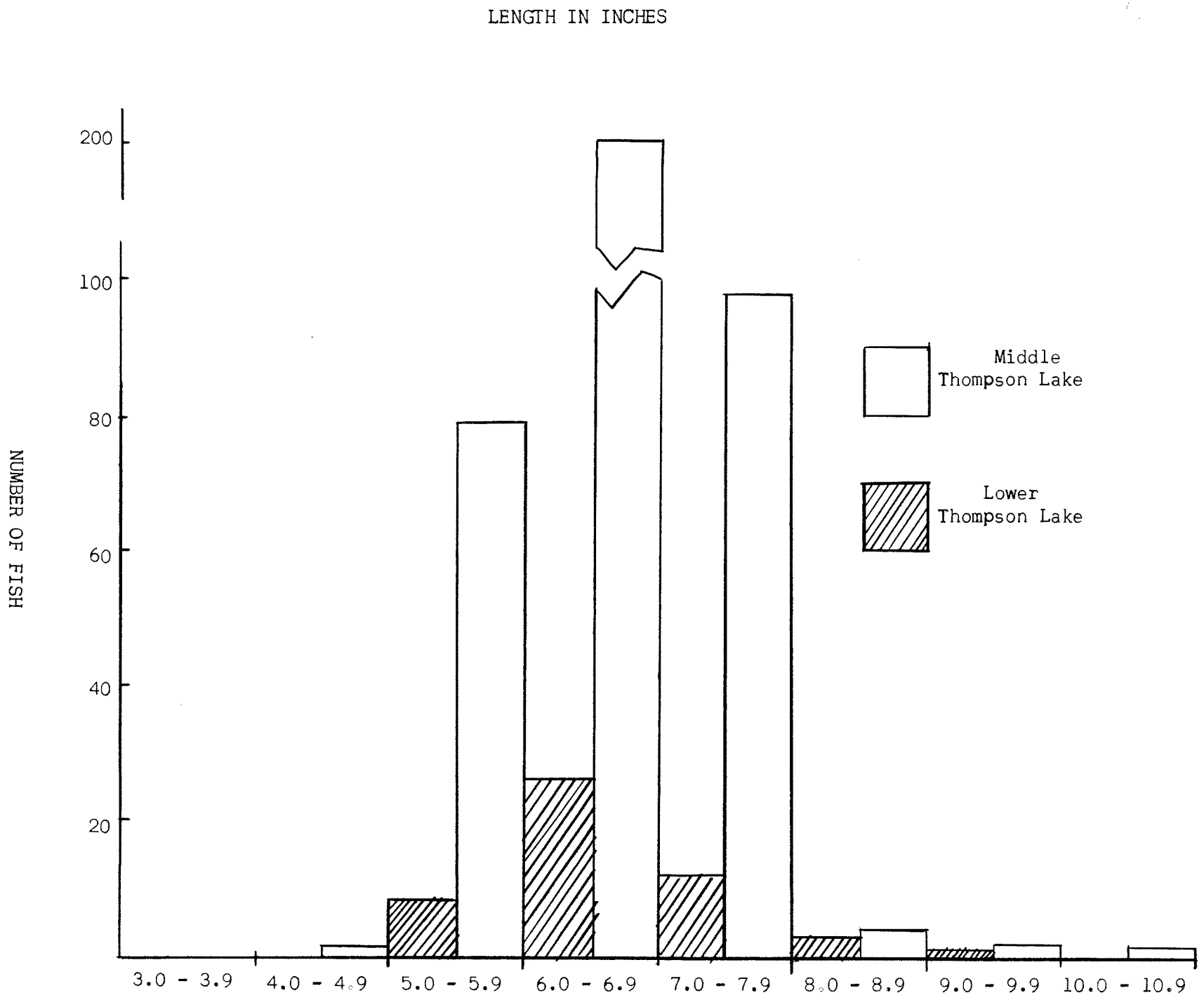

Figure 1. Length frequencies of 50 yellow perch from Lower Thompson Lake and 377 yellow perch from Middle Thompson Lake captured in 18 overnight gill net sets during October 1955.

Recommendations:

There are still less yellow perch in the lower lake than in the middle lake as determined by catch per unit of effort. It appears that the adult yellow perch suffered severe casualties due to the introduction of a fish toxicant. The mesh size of the gill nets do not catch very small fish; therefore, the effects of the cutthroat trout planting program cannot be determined as yet. The fish planted in 1954 should be showing up in the creels of anglers and also in gill nets this coming summer. From observations made it does not appear that many fry perch have survived the shoreline spraying of the fish toxicant. It was thought that due to the drastic decrease in the population of yellow perch in the lower lake the surviving perch might attain a larger size. Using the sample of perch obtained from the October 1955 gill netting (Figure 1), this does not demonstrate any size difference of the fish in the two lakes. It may take longer for the size difference to show up, if it does occur at all.

It is recommended that this study be continued and that observations be made on yellow perch fry in both Middle and Lower Thompson Lakes. After the perch fry concentrate in schools in Lower Thompson Lake, they should be treated with a fish toxicant. The program of planting cutthroat fry should be continued at a rate of 300 per surface acre in both lakes. Partial creel census and sampling by gill nets should be continued to determine the effectiveness of the planted fish and shoreline treatment of the lower lake. Partial creel census and sampling by gill nets should be continued on the middle lake as a control.

Summary:

The shoreline of Lower Thompson Lake was treated with a fish toxicant on July 16, after yellow perch fry were concentrated in schools along the shore. Only 19 schools of fry were observed during the treatment. Cutthroat trout fry were planted at the rate of 246 per surface acre in Middle Thompson Lake and 520 per surface acre in Lower Thompson Lake on August 1 and 2. Gill net sets were made in May and October, 1955, and February, 1956. Eighteen overnight sets were made in each lake. Netting information indicates that the partial treatment of the lower lake has decreased the number of yellow perch that could be taken by the gill nets. No information was obtained on the effectiveness of the trout plant.

Literature Cited:

Echo, John B.
1954. Some ecological relationships between yellow perch and cutthroat trout in Thompson Lakes, Montana.
Trans. Am. Fish. Soc. Vol. 84, pp. 239-248.

Data and Reports:

The original data and reports are with the project leader at Kalispell.

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