

MONTANA 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-8

Name Northwest Montana Fishery Study

Job No. II

Title Productive Capacity of Smith Lake
Rearing Pond With More Than One
Age Class of Fish

Period Covered: May 1, 1958 - April 30, 1959

Abstract: A total of 3,753 twenty-two months old trout, weighing 488.0 pounds, was recovered along with 987 ten months old trout weighing 29.6 pounds. The weight gain was 69 percent less than the previous five year average. The survival of the ten months old fish was 6.6 percent and for the twenty-two months old fish was 47.3 percent. The younger fish averaged 4.5 inches in length and the older age group 7.9 inches. The lake was replanted with 15,000 cutthroat trout fry.

Objectives: The primary objective of this study will be to determine the effects of succeeding plants of cutthroat trout upon previous known plants within the lake. The maximum production of fish in pounds has been reached with the variation coming from the ratio of the average size to the total number recaptured. The pond was drained and fish captured, but instead of removing the fish from the pond, 40 percent of what has been the average maximum production in weight was to be placed back in the pond and another plant of fry made.

An additional objective of the study will be to determine the most suitable stocking policy per surface acre for plants following the initial plant to produce the best return.

Procedures: In April, the screen in the spillway of the lake was checked to make certain it was operating properly. The spring run-off was observed carefully and when high water started, most of this was diverted around the lake. The screen was checked periodically and on June 26 some planks were removed to gradually lower the level of the lake. The pond was completely drained by July 3. In the interim, fish were captured (of the older age group) and released downstream. The ten-month old fish were captured and held at Creston Fish Hatchery. On four separate days, 50 fish of each age class were weighed and measured. As in previous years, high temperatures killed a few stranded fish in the remaining shallow pool and they were then counted. The planks in the spillway were installed in the latter part of July and trout were planted in August when the pond was filled. There were not enough of the younger fish (10-month old) to properly proceed with the experiment, therefore none of these

were planted back into the lake. On August 27th, 15,000 cutthroat trout fry were scatter planted in the lake.

Findings: A total of 3,753 twenty-two months old trout, weighing 488.0 pounds, were recovered from the lake. This was from a plant of 345 pounds or 7,935 fish. The survival of these fish was 47.3 percent with an increase of weight of 43 pounds. In June of 1957 these fish averaged 5.3 inches in length and had an average weight of about 0.04 pounds. In June of 1958, their average length was 7.9 inches with a range of 5.7 to 10.3 inches, and an average weight of 0.13 pounds.

A total of 987 ten months old fish, weighing 29.6 pounds, were recovered from a plant of 15,000 cutthroat trout fry. This is a return of 6.6 percent. Their average length was 4.7 inches and average weight 0.03 pounds, with a range in size of 3.6 to 7.1 inches.

Combining all fish, there was a total of 4,740 fish recovered for a return of 21 percent. Total poundage of fish in this lake for the report period was 517.6 pounds.

Table 1. Number of Cutthroat Trout Planted and Recaptured in Smith Lake Rearing Pond for the Years 1951-through 1957.

Year	No. of fish Planted in Previous Yr.	Method of Release	No. of Fish Captured	Percent Return	Weight Gain	Range in Length	Average Length
1951	30,000	One spot	1,707	5.7	135.5	2.9-9.2	6.0
1952	29,000	One spot	1,670	5.8	218.4	4.6-9.2	7.5
1953	25,000	Scatter	5,882	23.5	572.6	2.4-9.4	6.9
1954	25,000	Scatter	9,076	36.3	584.6	2.9-8.6	6.0
1955	25,070	One spot	8,288	33.1	548.2	2.7-8.7	5.7
1956	25,200	Scatter	11,368	45.1	556.8	3.3-8.2	5.3
1957	25,200	One spot	9,847	39.1	417.9	3.8-6.7	5.3
1958	15,000(fry)	Scatter	987	6.6	24.7	3.6-7.1	4.7
	7,935(5.3")	One spot	3,753	47.3(21)	143.0(167.7)	5.7-10.3	7.9

The complete history of the data collected on Smith Lake Rearing Pond is presented in Table 1. The weight gain or the difference in weight of the fish from time of planting to time of release was fairly equal for the years 1953 to 1956. It is felt that weight gain would have been higher in 1957 and perhaps comparable to the preceding years were it not for the entrapment of an exceedingly large number of trout in the residual water in the pond after it was drained. The weight gain for the years 1951 and 1952 are not considered as no screen was installed and little attention was paid to diverting the spring run-off. The average weight gained for each year from 1953 through 1957 is 536.0 pounds. In 1958 the total weight gain for both age classes of trout was 167.7 pounds, or 31.3 percent of the previous five year average. No explanation can be given for such a large decrease of production in this pond.

The number of 10 months old fish was considered insufficient to test them with a planting of fry, as one of the objectives of this study was to create a 60 percent mortality on the older trout so that comparative tests could be made. Since the total production was only 31 percent of the previous five year average, it was decided to start over again.

Recommendations: It is recommended that the study be continued so that this problem of providing continued fishing success several years after a lake has been rehabilitated may be resolved. It is again recommended that 150 trout fry be planted per surface acre.

Prepared by Frank A. Stefanich

Approved by George D. Holton

Date January 19, 1959