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RESULTS FROM PLANTINGS OF LEGAL-SIZED RAINBOW TROUT IN BURT LAKE, CHEBOYGAN COUNTY

by

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One of the sport-fishery problems which has become of paramount importance during the last decade is the wise disposition of hatchery-reared trout. Pressure from the angling public has resulted in the release of a larger and larger number of trout of "keeper" size each year. Because fish of seven inches or larger eat considerable amounts of food when kept in the hatchery, rearing costs for such fish are high when compared with rearing costs for trout released at a size of three to five inches. Since these "ready-to-catch" trout are costing the angler more money, every effort is being made to assure the fishermen that they will have a chance to catch these fish -- in other words, the Department is attempting to release the trout at times and places and in the proper number so that the highest percentage possible of planted fish will survive to be caught by the fisherman. This report will describe an experiment with tagged rainbow trout of legal size (7 inches total length or larger) which were planted in Burt Lake,

Cheboygan County. The experiment demonstrates that plantings of legal-sized rainbow trout in lakes in the fall of the year is quite successful, in that a minimum of approximately 14 per cent survived from fall to the succeeding trout season and were caught by anglers, and that the fish grew well after release. Fall planting of adult rainbow trout in Michigan streams was found to be very inefficient, as never more than 1.2 per cent of the fall-planted fish were recaptured by the anglers (Shetter and Hazzard, 1940).

Five hundred jaw-tagged rainbow trout, all of legal size or larger, were planted on September 24, 1939, at Colonial Point on the west shore of Burt Lake. The average total length of these fish was 12.5 inches (318 millimeters). The age of these fish was twenty months, and the average weight was one-half pound. Publicity was given the experiment through articles in the newspapers of the vicinity, and also by means of posters announcing the presence of tagged rainbow trout in the Burt Lake drainage. The cooperation of anglers was requested in that they were asked to submit reports of recaptures voluntarily.

From this September, 1939, planting, a total of 69 tagged fish have been reported, or 13.8 per cent of the total number of tagged fish released.

These hatchery trout furnished sport to anglers over a wide area, as study of the distribution of the dots on the appended map (Figure 1) will reveal. Tagged fish from the September, 1939, planting were recovered in Burt Lake, chiefly at or near the mouth of the Sturgeon River (12 recaptures), in the Maple River (5 recaptures), in Carp Creek (9 recaptures), in the main Sturgeon River (38 recaptures), in the West Branch of the Sturgeon (3 recaptures), in Crooked Lake (1 recapture), and in the Cheboygan River (1 recapture).

Better than half of the recoveries reported were recaptured in the Sturgeon River, or in its main tributary, the West Branch of the Sturgeon River. The majority of the Sturgeon River recoveries were made in two more or less limited localities: at the mouth of the stream or very close to the mouth or in the vicinity of the town of Wolverine. This distribution reflects to a certain degree the distribution of the angling pressure on this stream.

The earliest recovery was made in November, 1939, and was captured in the Sturgeon River about half way between the towns of Wolverine and Indian River. The last recovery in 1940 was hooked on October 17, 1940, slightly upstream from the mouth of the Sturgeon River. The shortest recorded migration was approximately two miles (from Colonial Point to a point in Crooked River Bay). The longest migration, approximately 50 miles, was from Colonial Point to the headwaters of the West Branch of the Sturgeon River.

From the 69 recoveries turned in by anglers, a total of 63 tagged fish recaptured were measured, and a comparison of the known length of the fish at the time of tagging with the length at the time of recovery provides knowledge of the growth of the fish during the period between release and recapture.

In studying the growth made by the recovered fish, the recoveries were grouped into two-week periods, starting with the beginning of the 1940 trout season, and all recoveries placed in the respective two-week periods in which they were captured. Averages were obtained for the various periods, and are presented in Table 1, and the average growth for the several periods is also shown in Chart 1. From both the table and the chart it can be seen that the average growth (for any period where more than five tagged fish were recaptured) varied

from 1.7 inches to 5.8 inches. The least growth recorded was for the first fish reported (41 days after planting) which had shown no increase in length, while the largest size increase found was from a recovery in September, 1940 (356 days after release), which had grown 6.9 inches.

The growth data available from the measurements on the tagged rainbow trout recovered were examined to determine whether or not there was any significant difference in the growth of fish which were less than 12½ inches at the time of planting, and those which were longer than 12½ inches at the time of release. In all two-week periods where more than five recoveries were reported, the recoveries were sorted according to whether or not they were greater or less than 12½ inches at the time of release, and the average growth per day calculated for the two categories. The results of the sorting and calculations were not consistent in any direction, but the average growth per day of tagged trout which were less than 12½ inches at release was either only slightly less or somewhat more than the average growth per day of those trout which were longer than 12½ inches when released. In other words, over the same approximate period of freedom, rainbow trout of 12½ inches or less grew at almost the same rate or slightly faster than did fish which were longer than 12½ inches when planted. Obviously if fish of 9½ to 12½ inches are going to grow as well as trout larger than 12½ inches when released, it would be wise practice (at least in planting Burt Lake) to plant the stock of legal-sized rainbow trout as soon as they reach a size of 10 to 12½ inches. Such a practice would save a certain amount of food which could be otherwise utilized. Also the fish taken by the anglers would be just as large as if they were planted at a slightly greater size.

On August 4, 1940, a planting of 249 tagged rainbow trout of legal size was made on the west shore of Burt Lake about one-half mile north of Colonial Point. These fish averaged 312 mm. total length (12.3 inches). The age of these fish was 30 months, and the average weight was one pound. Between August 4, 1940 and September 28, 1940, a total of 26 tag recoveries was returned, a recovery percentage to date of 10.4. As with the hatchery trout planted eleven months previously, the majority of the recoveries were made in the Sturgeon River. (See crosses on Figure 1). Nine recoveries were listed as having been taken in Burt Lake at the mouth of the river, and eleven others were hooked and landed in the river within five miles of the mouth. Three tagged fish from the August, 1940, planting were taken in the West Branch of the Sturgeon above Wolverine. These latter fish have moved the farthest of any of the recoveries from the August, 1940, planting. Recoveries of single fish were also received from the Crooked River at Alanson, from the Maple River two miles from its mouth, and from the northwest shore of Burt Lake. This distribution of the localities of recapture is quite similar to that described for the rainbow trout planted in 1939.

Because the 26 recoveries had been free only a relatively short period of time (seven weeks), little information is available on their growth. Only 13 of the 26 reports contained adequate information on which to calculate increases in length. Of these 13 fish, eight had shown no growth, while the other five had shown size increases of 0.2 inches to 3.1 inches. The average increase during the months of August and September was approximately one-half inch in three weeks.

Up to the present, these conclusions may be reached from the recoveries of tagged trout obtained from the two plantings discussed:

1. Fall planting of legal-sized rainbow trout in Burt Lake is a fairly efficient practice, since at least 14 per cent (and probably more) are later retaken by the anglers.

2. Since at least one-half of the recoveries from either the 1939 or 1940 planting were made in the Sturgeon River, it is obvious that the sand bar at the mouth of the Sturgeon River is not an impassable barrier to upstream movement, as has been locally contended.

3. A study of the growth of the tagged fish recaptured indicates an excellent size increase from the fall of one year to the following trout season. Several fish were reported which had reached a weight of $2\frac{1}{2}$ to $3\frac{1}{2}$ pounds.

The writer wishes to emphasize the fact that this experiment has not terminated. Much valuable information on the movements and growth of rainbow trout in the Burt Lake drainage system can be obtained from the recoveries of the survivors of the plantings just discussed which will come into the catch during 1941 and probably 1942 (since it has been proven by hatchery experiments that the rainbow trout will carry the tag for at least two years). To obtain all possible future recoveries we must receive the continued cooperation of the anglers who fish Burt Lake, the Sturgeon River and surrounding waters. The information obtained from these recovery reports supplied by the anglers is the only source of facts on which a practical, common-sense stocking policy for these waters can be based. For this reason, all fishermen are urged to report recoveries of all tagged trout captured by them.

The tagging and planting of these fish was done by the writer with the

assistance of J. T. Wilkinson, District Supervisor of Fisheries Operations, and the Oden Hatchery crew. Assistance in the tagging of the August, 1940, planting was given by I. A. Rodeheffer and Clark Hubbs. The fish for both experiments were supplied by the Oden Hatchery.

The writer wishes to thank the many fishermen who voluntarily mailed in reports on their catches of tagged trout, and hopes they will continue to cooperate similarly in the future. Especial mention should be made of the efforts of Conservation Officer Tom Kaboski in obtaining information on recoveries of tagged fish, particularly from Carp Creek. The entire staff of the Oden Hatchery and the Wolverine Rearing Station is also to be commended for their continued interest in obtaining data on recoveries from these and other plantings.

Literature Cited

Shetter, David S., and Albert S. Hazzard.
1940. Results from plantings of marked trout of legal size in streams and lakes of Michigan. Trans. Am. Fish.Soc., Vol. 70, 1940. (In press)

INSTITUTE FOR FISHERIES RESEARCH

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Table 1

Summary of Growth and Movements of Tagged Rainbow Trout
Released in Burt Lake, Cheboygan County, on September 24, 1939

(Measurements given in inches)

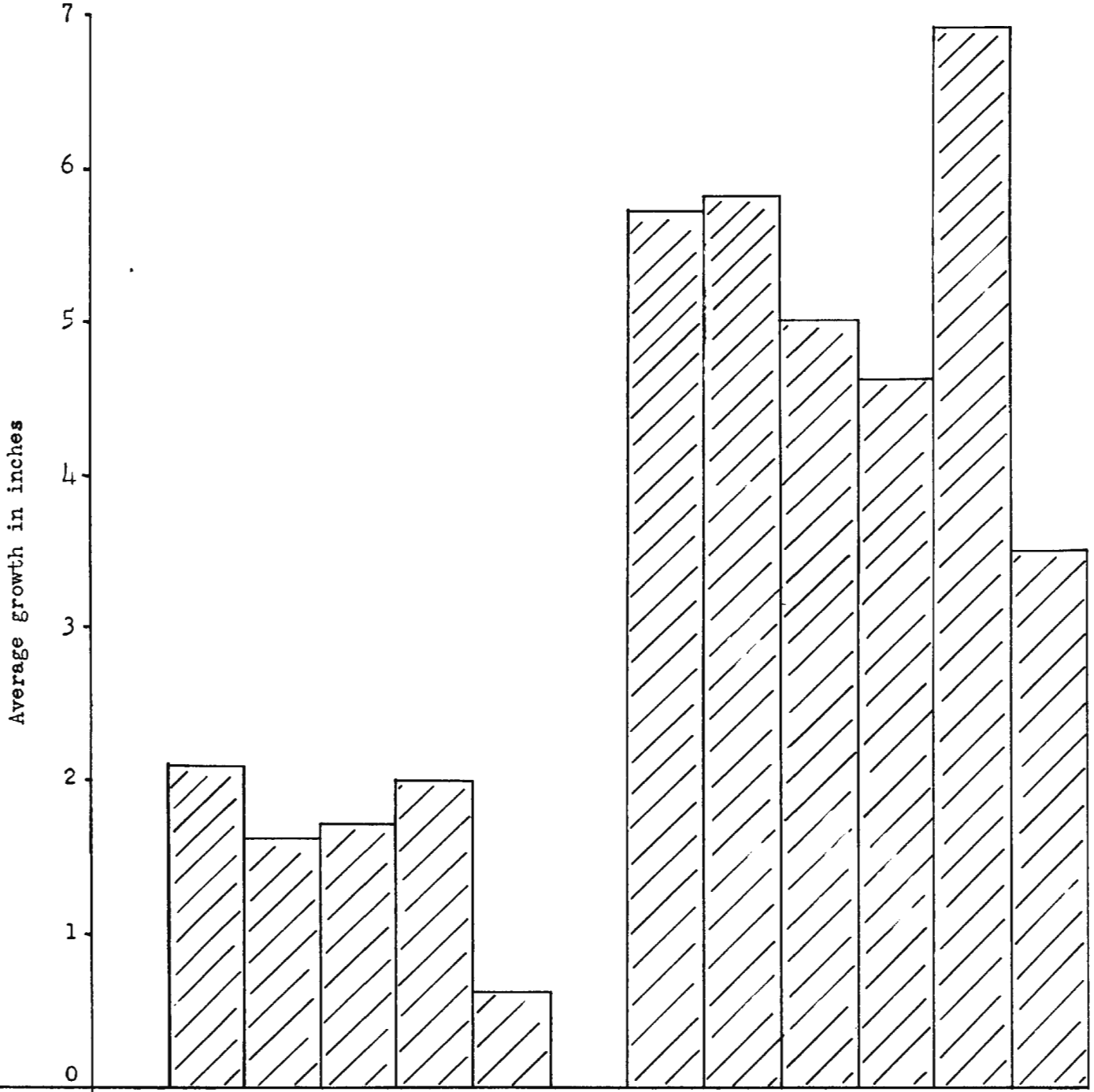
Period of recovery	Number of tagged fish recovered	Av. no. of days free	Av. size of recovered fish at tagging	Av. increase in size of tagged fish recovered	No. of tagged fish recovered in: Burt Lake	Sturgeon River	Carp Creek	Maple River	Other	Av. no. of miles moved
Nov. 1939	1	41	13.0	0.0	.	1	.	.	.	20
1940										
Apr. 27-May 10	19	218	12.1 (18)	2.1 (18)	.	8	8	1	2	15
May 11-24	13	236	13.1 (19)	1.6 (19)	.	11	.	1	1	21
May 25-June 7	10	245	13.0 (8)	1.7 (8)	.	9	.	1	.	18
June 8-21	2	261	12.6 (1)	2.0 (1)	.	1	.	1	.	9
June 22-July 5	2	282	13.6	0.6	.	.	1	1	.	7
July 6-19	..	...	...	...	.	.	.	.	.	..
July 20-Aug. 2	3	302	12.5	5.7	.	2	.	.	1	16
Aug. 3-16	8	318	12.6 (7)	5.8 (7)	7	.	.	.	1	8 (7)
Aug. 17-30	5	333	12.6	5.0	1	4	.	.	.	11
Aug. 31-Sept. 12	3	344	13.1 (2)	4.6 (2)	3	.	.	.	.	4
Sept. 18	1	356	11.7	6.9	.	1	.	.	.	8
Oct. 17	1	388	13.4	3.5	.	1	.	.	.	8

(9) One fish is not listed in this tabulation as the date of capture was not given.

(1), (2) etc., indicate number of specimens on which measurements were available.

Chart 1

Growth of Rainbow Trout in Burt Lake Drainage
as Determined from Recoveries of Tagged Fish
during 1939 and 1940



Period of recovery	11/39	4/27-5/10	5/11-5/24	5/25-6/7	6/8-6/21	6/22-7/5	7/6-7/19	7/20-8/2	8/3-8/16	8/17-8/30	8/31-9/12	9/18	10/17
Av. size at tagging	13.0	12.1	13.1	13.0	12.6	13.6	--	12.5	12.6	12.6	13.1	11.7	13.4
No. of tagged fish recovered	1	19	13	10	2	2	0	3	8	5	3	1	1

Figure 1

Map of Burt Lake drainage showing localities of planting and localities of recovery of releases of tagged rainbow trout. (Traced from Michigan Highway Department maps. Photographed by Dr. James Moffett.)