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TAGGING AND RECOVERY OPERATIONS, MORE TROUT, INC. POND,
EAST BRANCH AU GRES RIVER, IOSCO COUNTY, 1953 AND 1954

By

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Beginning on June 15, 1953, Mr. Eddie Parker, manager of the pond operated by More Trout, Inc. on the East Branch of the Au Gres River near Whittemore, began to jaw-tag angler-caught trout captured in and just below the pond. Tags were furnished by the Institute. This report will describe the results to date, as determined from the records of the fish tagged and recovered. Duplicate records have been furnished to the Institute for Fisheries Research by Parker, and are filed currently at the Hunt Creek Fisheries Experiment Station. Also available are records concerning recoveries at some distance from the tagging site which were reported by mail. An analysis of the recovery records is of some interest in light of Parker's recent claims as to the success of the feeding program which was operated in the vicinity of the pond during the past two seasons.

During 1953, according to records furnished by Parker, 372 rainbow trout, 2 brown trout and one brook trout were captured by anglers and tagged, weighed, measured, and released. During 1954 a total of 214 rainbow trout, 4 brown trout and 7 brook trout were marked, measured, and released. The size distribution of the trout tagged is given in Table 1.

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Note that in both years about 85 percent of the fish marked were between 7 and 10 inches long at the time of tagging.

Of the rainbow trout handled during 1953, 206 were released below the pond, while 166 rainbow trout were freed in the pond itself.

Total known recoveries on the 1953-tagged fish during 1953 were as follows: one of the two brown trout tagged was recovered; no brook trout recovered; 92 rainbow trout were recovered, or 24.5 percent of those marked. Of the rainbow recoveries, 23 (13.9 percent) were from the 166 fish released above the dam, and 69 (33.5 percent) were from the 206 fish released below the pond. These recoveries do not include duplicate recoveries on 15 fish or triplicate recoveries on four fish. Anglers were encouraged (by prizes offered by More Trout, Inc.) to tag and release legal-sized trout caught by them and to return trout tagged earlier, after lengths and weights were recorded by Parker.

During 1954 an additional 39 recoveries on 1953-tagged fish were reported by the anglers from the pond or its vicinity. Five of these were fish which had been released in the pond during 1953, and recovered below the pond during 1954; 11 were released below the pond in 1953, yet were recovered above the dam in 1954.

Six of the 1954 recoveries, tagged in 1953, were captured at varying distances downstream from the pond during 1954 and were reported by mail. Four of these fish had been released in the pond and were later recaptured at distances ranging from 2 to 53 miles downstream, as far away as Foote Dam on the Main Au Sable River. The other two fish were originally released below the dam.

From the 1954 rainbow trout tagging of 214 fish (212 released in the pond, 2 below the pond) a total of 61 recoveries (28.8 percent) have been

reported to date by pond anglers. This count does not include the duplicate records on five fish recovered twice. Five of the above recoveries were made below the dam, although all of the recovered fish were released above the dam.

Two 1954-tagged fish, recaptured and reported by mail, had been released in the pond in June and July, 1954 and recovered in August and September, 1954. The locality was not definitely given for one fish; the other was taken 6 miles upstream from the pond.

Other recoveries during 1954 were as follows: one 1954-tagged brook trout taken 3 miles above the pond; two brown trout, one a survivor from 1953 marking, and the other tagged during 1954; nine trout identifiable by tag numbers as rainbow trout used in the field tests of Psychological Research Services, Inc. and originally released in Guiley Pond on August 26, 1953. The data on these fish are given in Table 2.

The recovery to date of rainbow trout tagged by More Trout, Inc. can be summarized as follows: of 372 fish tagged in 1953, 92 were reported in that year, and an additional 45 recaptures were listed during 1954, for a total known recovery percentage of 36.8; the reported recoveries to date on 1954-tagged fish amount to 63 fish out of 214, or 29.4 percent.

These recovery percentages for rainbow trout were noticeably lower than those recorded during the Guiley Pond studies in the period 1941-1949, when recovery percentages on marked fish ranged from a low of 41.3 to a high of 70.4 percent (Table 7, I. F. R. Report No. 1274). Possible reasons for this difference are: movement of marked fish out of the pond; mortality among fish captured for marking, resulting from capture methods (most specimens for tagging were taken on small hooks baited with mayfly nymphs); lower angling pressure than at Guiley Pond; and differential availability of mature and immature fish to the anglers.

In view of Parker's comments on the purported increased growth of his tagged fish, the recovery records were examined in detail and sorted into periods of marking and periods of recovery. For example, fish tagged in June and recaptured in July were grouped together, etc. The objective was to find some means to compare growth during times and places of feeding against some time or place where food was not given.

The records available for 1953 and 1954 do not permit of any such separation. In 1953, about 60 percent of the tagged fish were released below the pond, and 40 percent above; in 1954 almost all fish tagged were released in the pond. Feeding, according to Parker (letter of 1/1/55 to the author), was done below the dam only, during 1953. In 1954 "..... feeding was carried on, in a very limited way, in the pond, and quite heavily below the dam, from the middle of April till the middle of July. By then, feeding up to 100 pounds per day, was carried on in the pond and less, below.....".

Because of the feeding schedule and locations that were fed, it was not possible to compare growth of fish which had been tagged and recovered in one year with those tagged and recovered in another.

The detailed sortings of the 1953 and 1954 recoveries of fish tagged in those years are summarized in Tables 3 and 4 which list numbers of fish recovered in the vicinity of More Trout, Inc. in the various months, together with the average lengths at tagging, average gains, and average number of days free. In each grouping, the number of recoveries which were found in the "wrong" locations (e.g., released below the pond, but recovered in the pond) also is listed. The detailed tables from which these summaries were made are filed at the Institute for Fisheries Research offices in Ann Arbor. Duplicate and triplicate recoveries were utilized where the same fish was recovered in different months.

As will be noted from these tables, this type of marking and recovery operation yields relatively few recoveries on which to base growth calculations from any one period of freedom. When the detailed tables are inspected it can be shown also for recoveries on the 1953-tagged fish that some recoveries in almost all time groups were made in the pond, some below, and some were in the "wrong" area.

In general, the growth shown by the recovered fish listed was good. However, we do not know whether it would have been just as good had no feeding been done.

It would be of some interest to look over any data in the files of More Trout, Inc. if available, on lengths and weights of rainbow trout longer than 14 inches taken during 1953 and 1954. The four tag recoveries, 20252, 38652, 38654, and 38655, the only large recoveries (large at time of tagging), were all 15 to 16-1/2 inches at release. These fish showed no gains in length and changes of from +0.50 to -2.00 ounces in weight during 12 to 50 days in the pond. These results are similar to those recorded for the confinement of mature adult rainbow trout in Guiley Pond during the early 1940's.

The files of rainbow trout recoveries made in the period 1941-1946 during studies at Guiley Pond were reviewed. It was hoped that a series of recoveries of tagged immature fish, 7-12 inches long at time of tagging, might be found that could be compared with the 1953-1954 data at hand. Unfortunately the great majority of fish tagged in the earlier work were large, mature fish, while most of the recovered fish in the present work were between 7 and 10 inches at the time of tagging. Very few of the 1941-1946 recoveries were strictly comparable, as far as periods of freedom between tagging and recovery were concerned, with the period of freedom noted for the 1953-1954 series.

A series of seven recoveries from the earlier work can be compared with two different sets of recoveries made during 1954, one of 12 fish tagged in July, 1953, and another series of 19 fish tagged in September, 1953. The data on these fish, all of which were free over one winter (but because of the original tagging date were free for varying periods), are listed in Table 5.

From Table 5 it can be demonstrated that the 1941 and 1944 fish, which very likely returned to Lake Huron in the interim between tagging and recovery, gained in length at an average rate of 0.0249 inch per day; the July, 1953 fish, recovered during April, May and July of 1954, gained in length at an average rate of 0.0108 inch per day; the September, 1953, fish, recovered in April, May, June, July and November of 1954, gained at an average rate of 0.0103 inch per day. The average size of the fish at tagging was not significantly different among any of the groups compared ($P = 3.98$ to 67.7 percent). The differences noted between the average gains per day were statistically significant between the 1941-1944 recoveries and those made in 1954 on the 1953-tagged fish ($P = 99.9+$ percent in both comparisons).

These comparisons are open to the criticism that the 1941-1944 recoveries were free for a longer period of time than were the 1954 recoveries; also they were free during more of what are usually considered the better "growing" months. Had the 1954 recoveries been tagged about 100 days earlier, perhaps they might have exhibited growth comparable to the earlier recoveries. It should be pointed out, however, that the growth of the earlier recoveries was made at no expense to anyone, while at least a portion of the growth made by the 1954 recoveries involved extensive feeding by Parker.

Advocates of a feeding program have played up the growth made by recovery No. 988. This particular fish was a P.R.S. rainbow trout ~~3044~~ (Group III training) released in Guiley Pond on August 26, 1953, at some size between 7 and 8-1/2 inches (these fish were all tagged, but were not measured individually). It was recovered in More Trout, Inc. Pond on October 9, 1954 at a size of 17-1/4 inches and a weight of 2 pounds, 9 ounces. The possibility that the feeding program added length and weight to this, and other, fish is not denied or excluded. However, how much the feeding aided, no one can estimate with any degree of certainty. During the latter part of 1953 this fish could have gone downstream through the More Trout, Inc. dam at any time until it reached a size of approximately 14 inches--the size of fish which is stopped by the 1-1/2-inch grates used in the dam. It would have been possible for this fish to drop down to Lake Huron and then return, undetected, to the pond during the spring run, when migrating fish are "locked" upstream. The fact that several other P.R.S. fish from Guiley Pond were recovered in More Trout, Inc. Pond during 1954, but failed to make gains in length and weight comparable to No. 988, strongly suggests that No. 988 might have spent some time in Lake Huron. Further, the tagging and recovery lists sent us by More Trout, Inc., furnish several instances of recapture, both above and below the dam, of fish placed at tagging on the opposite side of the barrier from the point of recovery (see Tables 3 and 4). Where a number of the trout tagged by Mr. Parker were able to negotiate the dam, in either direction, it is concluded that No. 988 could have done the same.

Under the existing circumstances of pond operation, it would seem difficult, if not impossible, for anyone to state with certainty how much growth took place in the pond, or elsewhere. The fact that some fish passed

*see below the
tagging was
not in operation*

back and forth through or over the dam suggests that others also may have done so without discovery until final capture.

Is it possible, under present operating conditions, to confirm or disprove the claims made for the success of the program of introducing food into the East Branch of the Au Gres River? There appears to be two possible avenues of approach which might yield the desired information.

One way is to compare the lengths and weights of 1955 tag recoveries of 1953- and 1954-tagged fish which will be taken in the vicinity of More Trout, Inc. Pond with fish of similar size recovered in and at Guiley Pond during 1941-1947, and/or at the state weir in more recent years.

Another possible comparison might be made of the rate of growth during 1953 and 1954, as determined from scale readings of East Branch Au Gres rainbow trout with East Branch Au Gres rainbow trout collected in earlier years. Comparison should be made on the basis of I's against I's, etc. It would also be possible to compare a scale collection from the East Branch of the Au Gres River with scale collections from other rainbow trout streams, such as the Black River or the Little Manistee River, to determine whether the 1953 and 1954 growth for the East Branch has been accelerated by the feeding program. Should the latter course of action be thought desirable, extensive scale collections and measurements will have to be made during 1955 on the rainbow trout of the East Branch of the Au Gres River.

It would be advantageous to all concerned, if future trout experimentation is planned by this group, to set up an experimental procedure by consultation between members of the Fish Division and officers of More Trout, Inc. The end result, in terms of data which could stand critical scrutiny, would be more satisfactory to everyone.

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Table 1.--Number and size distribution of trout tagged by More Trout, Inc., at pond on East Branch of the Au Gres River, Iosco County, 1953 and 1954

Year	Species	Size at tagging (inches)				Total
		7.0-9.9	10-12.9	13.0-15.9	16.0-23.0	
1953	Rainbow	357	12	1	2	372
	Brook	1	...	...	...	1
	Brown	1	1	...	...	2
1954	Rainbow	174	20	7	13	214
	Brook	6	1	...	...	7
	Brown	2	2	...	...	4

Table 2.--Data on rainbow trout recoveries reported by mail, P.R.S. trout, brook trout, and brown trout. Lengths are given in inches; weights are given in ounces. Asterisks indicate recoveries that were in wrong locations.

Tag number	Month tagged	Month recovered	Length at tagging	Gain in		Days out	Where tagged	Where recovered
				length	weight			
38669	6/53	11/54	7.000	9.750	17.25	498	Below Pond	Nat. City Br.
87565	9/53	1954?	8.375	1.625	...	250-300	In Pond	*Stone pile above weir
87556	9/53	10/54	8.125	7.875	19.50	400	In Pond	*2 mi. below Pond
88720	9/53	10/54	8.250	9.250	25.00	384	Below Pond	1/2 mi. below weir
87567	9/53	11/54	7.625	10.375	37.0	426	In Pond	*Nat. City Br.
87550	9/53	11/54	8.750	11.250	51.0	436	In Pond	*Foote Dam, Main Au Sable
20259	6/54	8/54	17.125	-0.125	...	75	In Pond	E. Br. ?
15094	7/54	9/54	8.000	0.750	...	44	In Pond	6 mi. above Pond
1101 (III)	8/53	4/54	7.0-8.5	10.250 ¹	...	241	Guiley Pond	2 mi. above M. T. Pond
2768 (c)	8/53	4/54	7.0-8.5	8.000	...	241	Guiley Pond	6 mi. above M. T. Pond
3136 (c)	8/53	4/54	7.0-8.5	10.125	...	241	Guiley Pond	More Trout Pond
2007 (?)	8/53	5/54	7.0-8.5	9.000	...	264	Guiley Pond	More Trout Pond
2702 (c)	8/53	5/54	7.0-8.5	10.000	...	262	Guiley Pond	More Trout Pond
1058 (III)	8/53	5/54	7.0-8.5	10.500	...	260	Guiley Pond	More Trout Pond
2483 (I)	8/53	7/54	7.0-8.5	13.000	...	311	Guiley Pond	More Trout Pond
988 (III)	8/53	10/54	7.0-8.5	17.250	...	409	Guiley Pond	More Trout Pond
99876 (?)	4/54	7/54	7.0-8.5	9.000	...	?	Guiley Pond (?)	2 mi. above M. T. Pond
<u>Brown trout</u>								
38751	7/53	9/53	7.625	1.625	4.75	42	Below Pond	Same
	7/53	6/54	7.625	5.000	13.25	344	Below Pond	Same
15080	7/54	10/54	10.750	-0.125	-2.50	90	In Pond	Same
<u>Brook trout</u>								
15022	6/54	7/54	8.500	...	...	17	In Pond	3 mi. above Pond

¹For P.R.S. trout length at recapture is given, since exact length at release is not known.

Table 3.--Summary of recoveries of 1953-tagged rainbow trout grouped by month of tagging and month of recovery.
Lengths are given in inches; weights are given in ounces

Month tagged	Month recovered	Number of recoveries	Avg. length at tagging	Avg. gains		Avg. days free	Avg. gains per day		Recoveries in wrong location
				Length	Weight		Length	Weight	
6/53	6/53	2	12.9	0.00	0.25	7.5	0.00	0.03	...
	7/53	2	11.6	0.88	2.00	31.5	0.03	0.06	...
	8/53	4	9.7	1.19	2.13	58.0	0.02	0.04	...
	9/53	3	7.4	3.04	6.25 (2)	83.3	0.04	0.08 (2)	...
7/53	7/53	3	7.7	0.29	0.33	11.3	0.03	0.03	...
	8/53	34	7.9	0.78 (33)	1.55 (33)	26.0	0.03	0.06	2 below
	9/53	29	8.0	1.56	3.62	48.0	0.03	0.08	...
	10/53	5	7.8	1.80	3.40	75.2	0.02	0.05	1 in Pond
	11/53	2	7.4	2.44	3.75	122.5	0.02	0.03	...
	4/54	5	7.6	1.95	...	277.4	0.01	...	2 in Pond
	5/54	7	7.8	3.55	8.17 (3)	293.4	0.01	0.03 (3)	7 in Pond
	7/54	1	7.3	7.38	21.75	361.0	0.02	0.06	...
8/53	8/53	1	8.4	1.00	1.75	23.0	0.04	0.08	...
	9/53	3	8.8	0.42	0.75	13.7	0.03	0.05	...
	10/53	2	8.2	0.81	1.50	84.5	0.01	0.02	...
	5/54	1	8.6	2.38	...	255.0	0.01	...	1 in Pond
9/53	9/53	13	8.0	0.34	0.54	17.5	0.02	0.03	...
	10/53	5	7.8	0.70	0.85	35.0	0.02	0.02	2 below
	11/53	1	7.9	0.125	...	61.0	0.00+	...	...
	4/54	7	8.1	1.46	...	226.4	0.01	...	...
	5/54	8	7.9	2.86	4.25 (3)	249.4	0.01	0.02 (3)	3 below, 1 in Pond
	6/54	2	8.2	1.94	2.88	273.5	0.01	0.01	...
	7/54	3	8.0	4.04	10.33	306.3	0.01	0.03	1 below, 1 in Pond
	11/54	1	7.5	7.63	20.75	430.0	0.02	0.05	...
	10/53	11/53	1	7.1	0.38	0.25	49.0	0.01	0.01
10/53	4/54	2	7.3	0.63	...	202.0	0.00+	...	
	5/54	1	7.4	1.63	...	211.0	0.01	...	
11/53	4/54	2	7.9	0.88	...	159.5	0.01	...	
	5/54	2	8.6	2.38	...	172.0	0.01	...	1 below Pond

Table 4.--Summary of recoveries of 1954-tagged rainbow trout grouped by month of tagging and month of recovery.
Lengths are given in inches; weights are given in ounces

1954		Number of recoveries	Avg. length at tagging	Avg. gains		Avg. days free	Avg. gains per day		Recoveries in wrong location
Month tagged	Month recovered			Length	Weight		Length	Weight	
May	June	1	15.5	0	0	31.0	0	0	...
June	July	6	7.40	0.67	1.42	27.0	0.02	0.05	...
June	August	2	7.25	1.19	1.88	51.5	0.02	0.04	1 below Pond
June	October	5	8.08	4.38	10.05	116.6	0.04	0.09	1 below Pond
July	July	4	8.03	0.44	0.92 (3)	11.3	0.04	0.07	...
July	August	4	9.72	1.25	3.75 (3)	25.3	0.05	0.13	...
July	September	1	8.25	2.75	7.25	65.0	0.04	0.11	...
July	October	12	8.00	3.50	7.23	87.6	0.04	0.08	1 below Pond
July	November	10	8.19	4.28	9.70	123.9	0.03	0.08	...
August	August	1	9.00	...	...	1	...	...	...
August	October	9	9.08	2.36	5.47	58.4	0.04	0.09	1 below Pond
August	November	3	8.63	3.17	5.75	96.7	0.03	0.06	...
September	October	2	9.89	1.19	2.63	29.5	0.04	0.09	1 below Pond
September	November	3	8.83	1.79	3.92	68.0	0.03	0.06	...
November	November	1	14.125	0.125	1.00	6.0	0.02	0.17	...

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5

Table 5.--Comparison of the growth made by three different groups of tagged rainbow trout from the East Branch of the Au Gres drainage. Lengths are given in inches (gains in weight were not utilized, as not all recoveries were weighed)

Date tagged	Date recovered	Tag Number	Length at tagging	Gain in length	Days out	Gain per days out	
March '44	April '45	25908	7.2	11.7	380	0.031	Avg. gain/day = 0.0249 inch (1)
February '41	June '42	13865	7.5	10.5	489	0.021	S.D. = 0.0046
March '41	March '42	13869	8.0	8.8	364	0.024	S.E. = 0.0017
February '41	March '42	13831	12.2	8.2	417	0.020	
March '41	May '42	13875	6.3	10.7	434	0.025	Avg. L. at tagging = 8.000 inches
January '41	March '42	13819	7.3	12.8	417	0.031	S.D. = 1.9218
February '41	March '42	13842	7.5	9.1	411	0.022	S.E. = 0.7264
July '53	April '54	38701	8.000	2.000	281	0.007	Avg. gain/day = 0.0108 inch (2)
July '53	April '54	38685	7.000	1.500	284	0.005	S.D. = 0.0058
July '53	April '54	38683	7.875	3.000	269	0.011	S.E. = 0.0017
July '53	April '54	38723	7.875	0.750	278	0.007	
July '53	April '54	38796	7.000	2.500	275	0.009	
July '53	May '53	38714	8.500	3.500	294	0.011	
July '53	May '53	38637	7.250	4.750	284	0.017	
July '53	May '53	38744	8.500	1.000	289	0.003	
July '53	May '53	38716	8.125	6.000	294	0.020	
July '53	May '53	38679	7.750	3.625	296	0.012	Avg. L. at tagging = 7.715 inches
July '53	May '53	38732	7.500	2.250	305	0.007	S.D. = 0.5253
July '53	July '54	38764	7.250	7.375	361	0.021	S.E. = 0.1516
September '53	April '54	87549	7.750	2.125	232	0.009	Avg. gain/day = 0.0103 inch (3)
September '53	April '54	88732	7.875	1.000	207	0.005	S.D. = 0.0080
September '53	April '54	88709	7.625	2.000	219	0.009	S.E. = 0.0018
September '53	April '54	87586	8.875	1.125	230	0.005	
September '53	April '54	87585	8.375	1.125	229	0.005	
September '53	April '54	87601	9.000	1.625	228	0.007	
September '53	April '54	87530	7.250	1.250	240	0.005	
September '53	May '54	87522	8.500	3.000	253	0.012	
September '53	May '54	88731	7.000	3.500	237	0.015	
September '53	May '54	87541	7.750	4.250	264	0.016	
September '53	May '54	87560	9.375	1.125	250	0.005	
September '53	May '54	87608	7.000	5.000	246	0.020	
September '53	May '54	87580	7.125	2.875	248	0.012	
September '53	May '54	88730	7.125	2.000	237	0.008	
September '53	June '54	87571	9.250	1.500	273	0.005	
September '53	July '54	87553	9.375	3.125	301	0.010	
September '53	July '54	87557	7.375	4.375	312	0.014	Avg. L. at tagging = 7.961 inches
September '53	July '54	87622	7.125	4.625	306	0.015	S.D. = 0.8580
September '53	November '54	87588	7.500	7.625	430	0.018	S.E. = 0.1968

(1) compared with (2), $t = 5.86$, $P = 99.9+$ percent, (1) with (3), $t = 5.84$, $P = 99.9+$ percent
(2) with (3), $t = 0.20$, $P = 15.86$ percent