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THE RAINBOW TROUT SPAWNING RUN AND CATCH, IN THE EAST BRANCH
OF THE AU GRES RIVER, IOSCO COUNTY, 1955

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This report lists for the sake of a convenient record, the number of trout transferred over the More Trout, Inc. (hereafter referred to as MTI) dam, during 1955 and the number caught during 1955 by anglers in the impoundment and immediately below the dam, and in Guiley Pond. Data on marking and recapture of trout are also included.

The locale of these observations is in the upper portion of the drainage of the East Branch of the Au Gres River in Iosco County. The MTI dam is located just above the "Meadow" bridge, in T. 22 N., R. 6 E., Section 28; Guiley Pond lies on Guiley Creek, one of the larger tributaries, upstream from the MTI dam, in Section 2 of the same township and range. The MTI dam was operated by a private corporation under a permit granted by the Michigan Department of Conservation, for a 5-year period which expired August 21, 1956.

During the springs of 1952, 1953 and 1954, spawners were passed through the dam by allowing them to enter a bulkhead bay, dropping a screen behind them, and removing a screen at the upstream end of the bulkhead. Exact counts were impossible, because turbulent water impaired

good visibility. In 1955 it was decided by MTI and the Fish Division of the Michigan Department of Conservation, that an accurate count of rainbow trout passing the dam was desirable.

Transfer operations under the supervision of H. L. Peterson, District Fisheries Supervisor, commenced on April 1, 1955. The trout, mostly rainbows, were lured into simple enclosures in the various bays of the dam by manipulation of the water level and water volume. A large dipnet was used to remove them from the enclosures.

Sex of all fish was determined, and when adequate assistance was available, they were measured, weighed, and scale samples were taken. To facilitate handling, fish were anesthetized with urethane. The fish were released in the MTI pond above the dam.

Mr. Peterson was assisted in supervising the transfer by the author, and by H. Gowing, Junior Fisheries Biologist, A. W. DeClaire, Rifle River Area Manager, and Conservation Officer Arthur Leitz. All of these men were assisted by Mr. Eddie Parker in recording the progress of the spawning migration.

The Spawning Run

The daily catch, by traps at the MTI dam, of upstream migrants is given in Table 1. The peak of the run occurred apparently on April 10, 11, and 12, when 55, 192, and 58 fish, respectively, were put over the dam. On these dates, water temperatures rose to the low 50's for the first time during 1955.

Except for April 6, 23, and 25, some fish were put over each day in April (Table 1). The run continued sporadically in May (migrants taken only on 9 days), and the last migrant was transferred on June 7.

Table 1. Rainbow trout transfer operations, E. Br. Au Gres River, 1955, at the MTI Dam

Date 1955	Air Temp. (° F.)	Water Temp. (° F.)	Imm.	Males	Females	Recoveries below dam		Others put up		Escaped up
						Tags	Fin-clips	Browns	Brooks	
April 1	66	45	...	39	10	1	...	...	...	...
2	56	45	...	21	15	...	1	...	...	1 ♂
3	61	44	...	11	7	...	...	...	1	1
4	...	...	...	5	3	...	2	...	...	...
5	...	...	...	9	8	...	...	...	...	...
7	38	40	...	11	8	...	...	...	...	...
8	40	47	...	6	9	...	...	...	...	...
9	...	...	...	6	3	...	...	...	1	...
10	72	52	...	30	25	...	...	...	...	...
11	...	...	...	77	112	2	1	...	...	...
12	60	50	2	14	42	...	...	...	...	...
13	57	51	1	5	9	...	...	...	...	...
14	...	...	1	15	32	...	...	...	...	1
15	60	50	...	5	10	...	...	1	...	...
16	60	52	6	3	12	...	...	...	...	...
17	66	53	4	5	7	...	...	...	...	...
18	66	53	2	5	17	...	...	...	...	...
19	50	47	...	3	3	...	...	...	...	...
20	...	...	...	...	5	...	...	...	...	...
21	...	...	3	2	8	...	...	...	...	...
22	52	52	1	2	11	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...
24	48	47	...	...	2	...	...	...	...	...
26	48	52	2	5	10	...	...	...	...	...
27	60	56	5	4	16	...	...	...	...	...
28	58	57	...	1	7	...	...	...	...	...
29	60	58	...	1	7	...	...	...	...	...
30	66	59	...	1	5	...	...	...	...	...
May 2	60	70	1	1	11	...	...	...	...	...
4	76	62	2	4	7	...	...	...	1	...
6	...	...	...	1	6	...	...	...	...	...
14	...	...	...	2	3	...	...	...	...	...
15	...	...	1	...	...	...	...	...	...	...
17	...	...	...	2	3	...	...	...	...	...
19	...	...	...	...	1	...	...	...	...	...
22	...	...	...	...	1	...	...	...	...	...
28	...	...	...	1	1	...	...	...	...	...
June 7	...	...	...	...	1	...	...	...	...	...
Totals			31	297	437	3	4	1	3	3

↓ Taken between 10 a.m. - 5 p.m. on the indicated dates, mostly p.m.

The 775 trout transferred over the dam consisted of:

Brown trout	1
Brook trout	3
Rainbow trout	
Escaped up, sex unknown	3
Immature fish	31
Mature males	297
Mature females	437
Tagged rainbows from earlier years	3

All transferred fish were marked by clipping the adipose fin or by the attachment of a serially numbered jaw tag. Four fin-clipped rainbow trout, marked and put over during the early part of the transfer, were recaptured a second time below the dam.

During the transfer operations 146 rainbow trout, 3 brook trout, and 1 brown trout were tagged. The rest (619) of the transferred rainbow trout were fin-clipped.

In addition to the fish marked after capture in traps at the dam, a number of anglers, with Mr. Parker's aid, tagged and released hook-and-line-caught fish. Some were captured in the pond above the dam, some in the pool below the dam. All of these angler-caught fish were released in the pond above the dam. Thus the marking records (for tagging) can be broken down as to method and location of capture as follows:

<u>Where taken</u>	<u>Method</u>	<u>Rainbow</u>	<u>Brown</u>	<u>Brook</u>
Below dam	Trap	146	1	3
Below dam	Angling	28	1	1
Above dam	Angling	49	1	...
Total tagged		223	3	4

The length frequencies of rainbow trout in the spawning run are shown in Table 2. This table includes measurements on 298 transferred fish captured by the trap in the period April 12-June 7. The size range of these fish was 6.6 to 32.0 inches. The bi-modal size-frequency of these rainbows may be explainable after age determinations are made (not yet done) on available scale samples.

In 1955 the sex ratio of the rainbow trout spawners was unusual in that many more females than males were present. It was noted in earlier years at Guiley Pond that the male:female ratio varied from 1:1 to 1.6:1; however in 1955 the male:female ratio was 1:1.5. One possible explanation is that the males were more vulnerable to early season angling in that part of the stream between Lake Huron and the MTI dam.

Measurements were made on 65 males, 204 females, and 29 fish judged to be immature. The average lengths of the various groups were:

Males	20.24 ± 0.42 inches
Females	21.07 ± 0.19 inches
Immatures	16.55 ± 0.53 inches

Some of the fish (especially those over 15 inches long) which were judged as immature actually may have been fish which had spawned below the dam, and later moved upstream.

Angling records for 1955

MTI, through Mr. Eddie Parker, furnished a set of creel census records for 1955 which are separable into six different categories as to time and place (in the MTI pond and below the MTI pond for the early, regular, and fall rainbow trout season). Also Mr. Parker received reports of the capture of 5 unmarked, 6 tagged, and 5 fin-clipped fish from other parts of the drainage (Table 3).

Table 2. Size of 298 rainbow trout, 1955 spawning run,
East Branch Au Gres River at the MTI Dam

Size of fish (inches)	Male fish	Female fish	Immature fish	Total
Less than 14.0	...	...	4	4
14.0-14.9	...	...	1	1
15.0-15.9	6	3	4	13
16.0-16.9	7	9	4	20
17.0-17.9	10	14	6	30
18.0-18.9	3	27	9	39
19.0-19.9	10	29	...	39
20.0-20.9	4	11	1	16
21.0-21.9	4	23	...	27
22.0-22.9	3	30	...	33
23.0-23.9	6	30	...	36
24.0-24.9	4	18	...	22
25.0-25.9	7	6	...	13
26.0-26.9	...	2	...	2
27.0-27.9	...	1	...	1
28.0-28.9	...	1	...	1
29.0-29.9	...	...	...	...
30.0-30.9	...	...	...	...
31.0-31.9	...	...	...	...
32.0-32.9	1	...	...	1
Total measured	65	204	29	298
Av. length	20.24	21.07	16.55	
± std. error	±0.42	±0.19	±0.53	

Table 3. Catch and mortality records, 1955, MTI Pond, below MTI Pond, Guiley Pond and miscellaneous catch records. Average lengths given in inches. Figures in carets \surd indicate numbers of specimens on which lengths were not given

Time period 1955	Trips	Unmarked rainbow				Tagged rainbow		Fin-clipped rainbow		Brown trout		Brook trout		Total trout
		Immature Number	Av. L.	Mature Number	Av. L.	Number	Av. L.	Number	Av. L.	Number	Av. L.	Number	Av. L.	
E- 4/9-4/29	134	77	12.8	...	...	32	13.2	92	21.4	...	...	1	9.3	202
R- 4/30-9/11	423	267	11.1	...	...	125	16.5	221	20.8	4	15.3	...	...	617
F- 9/12-11/30	59	69	12.7	...	...	17	13.5	1	23.0	...	...	...	...	87
Totals MTI Pond 1955	616	413	11.7	...	...	174 \surd	15.5	314 \surd	20.8	4	15.3	1	9.3	906
E- 4/9-4/29	25	4	8.0	29	21.5	...	...	...	...	...	...	...	...	33
R- 4/30-9/11	47	103	8.6	7	24.1	...	...	...	...	1	8.9	2	10.2	113 \surd
F- 9/11-11/30	17	2	9.4	20	18.0	...	...	...	...	...	...	...	...	22
Totals below MTI Pond, 1955	89	109	8.6	56	20.6	...	...	...	...	1	8.9	2	10.2	168
Guiley Pond, 1955 4/30-9/11	1,548	26	9.3	10	17.8	7	17.7	61	19.6	4	11.3	1,157 \surd	8.4	1,265
Miscellaneous fishing records	11	...	...	5	...	6	...	5	...	...	...	...	...	16
Mortalities MTI Pond	...	...	...	1	...	2	...	4	...	...	...	...	...	7
Mortalities Guiley Pond	...	...	...	...	...	1	...	1	...	...	...	1	...	3
Totals	...	548	...	72	...	190	...	385	...	9	...	1,161	...	2,365

Additional records on angling in the drainage were obtained through the cooperation of Elmer Stensrud, owner of the land bordering Guiley pond, which is approximately 5 miles upstream from the MTI pond (Table 3).

Based on personal observation by the author, the angling records for the MTI pond are regarded as incomplete. On numerous occasions during April and May, several hundred anglers fished at all hours of the day and night. At such times it was impossible for one or two persons to secure complete and accurate creel census information. From June on, records for the MTI pond probably provide a good record of the catch but not of the angling pressure.

Insofar as known, the angling records from Guiley Pond represent a complete picture of the pressure and catch from that 1.75-acre pond during 1955. The last line of Table 3 shows the known catch, in 1955, of trout on the East Branch of the Au Gres River upstream from the "Meadow" bridge. The total catch and total amount of fishing are not known.

During the 1955 season, the known catch of trout, plus those observed dead, from the river above the "Meadow" bridge was as follows:

Brook trout	1,161 (1 mortality)
Brown trout	9
Rainbow trout	
Immature unmarked	548
Mature unmarked	72 (1 mortality)
Adipose-clipped	385 (5 mortalities)
Tagged	190 (3 mortalities)
<hr/>	
Totals	2,365 trout

Fraction of the 1955 spawning run

taken by angling and observed dead

The fraction of the 1955 spawning run captured by angling or subsequently observed dead from various causes was calculated from only those marked fish available from 1955 transfer operations. Of 768 marked rainbow trout theoretically available from the 1955 spawning run, 480 or 62.5 percent were known to be recaptured during 1955. Tagged and fin-clipped fish were recaptured at approximately the same rate (tagged fish, 95 recoveries¹ noted from 149 available, or 63.8 percent; fin-clipped fish, 385 recoveries from 619 fish, or 62.2 percent). These percentages of recovery are minimal, since creel census coverage was not complete.

The fact that 67 of the 78 mature rainbow trout taken by Guiley Pond anglers in 1955 were transferred and marked at the MTI dam shows that rainbows readily used the simple fish ladder in the low-head dam at Guiley Pond.

Other data collected

Scale samples were obtained from 285 fish during the transfer operations in 1955, and Mr. Parker furnished 261 scale samples from angler-caught fish from the MTI pond and vicinity for 1955. Elmer Stensrud secured 102 scale samples from Guiley Pond rainbow trout for the same year. The analysis of age and growth is yet to be completed.

¹The remaining tag recoveries consisted of recaptures of trout tagged after capture by hook and line, in 1953, 1954 and 1955, mainly from 1954 and 1955. Almost all of these fish were immature, and it was questionable if they were migrating. For the most part they were less than 10 inches long at tagging. Therefore it did not seem logical to include them in any evaluation of the fraction of the spawning run harvested.

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