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RESULTS OF INVESTIGATIONS AT GUILLEY POND, IOSCO COUNTY,
INCLUDING INTENSIVE CREEL CENSUS, AND A SUMMARY
OF TAGGING ACTIVITIES, DURING 1941

by

David S. Shetter

During 1941 the Institute for Fisheries Research continued active cooperation with Eddie Parker, owner of Guiley Pond. For the past history of this pond and its operation, the reader is referred to Institute Report Number 639 (The Intensive Creel Census of Guiley Creek Pond for the 1940 Trout Season, by David S. Shetter and A. S. Hazzard).

Early in January, 1941, a permit was obtained from the Conservation Department which authorized Parker to transfer the migrating trout above his dam on Guiley Creek. In return, Parker promised to record daily temperatures of air and water and to tag, measure, and weigh all fish placed in Guiley Pond. Parker also kept all creel census records for the 1941 angling on Guiley Pond, which was open to public fishing under rules similar to those in effect during 1940 (see attached copy).

Summary of the Tagging Activities

Observations recorded

The temperature, water level, and sunshine records, together with the daily number of fish handled, have been summarized by weekly periods,

starting with January 13, to provide some degree of convenience in tabulation. The data from these observations have been brought together in Table 1, where the average daily maximum and minimum air temperatures are given for each week, along with the average daily water temperature, the average number of hours of sunshine each day, and the average daily water level fluctuation. The daily averages in all instances are (except for average hours of sunlight) based on 14 observations. Temperatures were taken on maximum-minimum thermometers furnished by the Institute. Water level fluctuation and hours of daily sunshine recorded are based on Parker's personal judgments.

Method of capturing fish.

The fish tagged and fin-clipped were rainbow, brook, and a few brown trout which were blocked in their upstream movement by Parker's power dam (approximately 5-foot head). On noting any concentration of fish below the dam, Parker would shut off the water by placing slash-boards in the overflow chute, which would lower the water level to a minimum in the stream immediately below the dam. Parker then would net the fish from below the dam by means of a long-handled dip net and a prod, holding the captured fish temporarily in a stock tank connected to a supply of fresh stream water.

Method of marking.

All fish listed in Tables 1 and 2 were measured and weighed. Total lengths of the fish were recorded in millimeters, and weights were recorded in pounds and ounces. These fish then were tagged around the lower left jaw by the usual jaw-tag method, with tags appropriate to the size of the fish. The first ten fish were tagged by the author to demonstrate the proper technique, but all fish handled after that time were tagged by Parker. During the 1941 operations, a total of 345 rainbow trout, 584 brook trout and 3 brown trout were tagged.

In addition to the rainbow and brook trout of **six inches** or larger which were tagged and transferred above the dam, an approximately equal number of small rainbow and brook trout (less than six inches in length) were transferred above the dam. These fish were marked by removing the adipose fin. Approximately 350 young rainbow trout and 400 young brook trout were so handled. The number of these latter fish and their weight have not been included in any of the tabulations.

Sex ratio, size of fish handled.

From the data listed on the daily record sheets it has been possible to tabulate the average size and sex of the fish running each week. It was possible to sex accurately over two-thirds of the rainbow trout handled, but the sex was recognizable in less than one per cent of the brook trout marked. This information is presented in Table 2.

Up to May 5, which was fairly close to the end of the rainbow trout spawning period, a total of 134 male fish and 108 female fish, and 68 rainbow trout of undeterminable sex had been handled for tagging. Considering only those fish on which sex was definitely known, the ratio of males to females was 1.24 to 1. During the entire period, 141 males, 117 females, and 93 rainbow trout of unknown sex were handled.

The average size of the female rainbow trout was considerably larger than the male rainbow trout, based on the lengths of tagged fish recovered by anglers (24 females, 35 males). The average size of the females was 20.9 inches (531 millimeters) total length, and 3 pounds, 14 ounces (62.15 ounces) in weight. The male rainbow trout were of an average size of 18.6 inches (471 millimeters) total length and 2 pounds 12 ounces (44.72 ounces) in weight. Casual inspection of the remainder of the data indicates a similar disparity in size between the two sexes.

The greatest number of males and females running in any week was 45 male and 42 female rainbow trout which came to Guiley Creek Dam during the week of April 7-13. This period was apparently the peak of the spawning run. The average water temperature during this week was 39.5° (range 34° - 45°).

The number of male fish exceeded or equalled the number of female fish every week up to and including that week, but in two weekly periods after that time the female fish outnumbered or equalled the male fish. Mature adult rainbow trout were noted and tagged up until the week of June 9-15. No more large rainbow trout were tagged until the week of October 13-19, and this species did not appear to be moving upstream in the intervening period. The peak of the brook trout run occurred during the period May 19-June 1, during which time 223 of the 584 brook trout were tagged. The average water temperature for that time was approximately 56.5°F. No more than five brook trout were caught in any one week until the average daily water temperature exceeded 50°.

Total weight of fish handled.

The total weight of the rainbow trout tagged was 1,031.2 pounds, and the total weight of the brook trout tagged was 109.3 pounds. The weight of the fin-clipped fish also transferred above the dam would not exceed 50 pounds. The heaviest run of rainbow trout in any week was 363.1 pounds (April 7-13), while the heaviest run of brook trout in any week was 24.4 pounds (May 26-June 1). (See Table 2).

Results of the Creel Census, 1941 Trout Season

The results of the creel census on Guiley Pond showed an increased number of angling-days in 1941 over 1940 of almost one-third (937 to 666). A total of 273 individuals fished for a total of 2,440.25 hours, an increase

of 59 per cent over the 1940 angling. However, 704 (75 per cent) of the angling-days were unsuccessful (Table 3). The catch consisted of 299 legal brook trout and 104 legal rainbow trout, or a total of 403 legal trout-- a slightly higher total catch than was recorded in 1940. Some 910 sub-legal brook trout and 75 sub-legal rainbow trout were captured and returned to the water (See Table 3).

The total catch per hour of legal trout for the season was 0.16 fish, made up of 0.12 legal brook trout and 0.04 legal rainbow trout caught per hour of angling. The average time spent fishing was 2.51 hours (slightly longer than in 1940, when it was 2.2 hours). (See Table 3).

The total weight of trout removed from Guiley Pond by angling was as follows:

Brook trout	68.7	pounds
Rainbow trout	<u>193.6</u>	pounds
Total	262.3	pounds (See Table 4).

This catch was 33 pounds less than that recorded for 1940, when 295.5 pounds of trout were taken. The drop in pounds of fish captured was brought about by the fact that 44 fewer of the larger rainbow trout were caught in 1941. Both the number of brook trout and the poundage of brook trout increased over the recorded catch of 1940. The catch per acre for 1941 was 209.8 pounds of trout, approximately 29 pounds per acre less than in 1940.

The average size of the rainbow trout removed varied in the several two-week periods from 19.0 inches and 42.5 ounces to 7.8 inches and 2.8 ounces. The average size of all rainbow trout recorded by the census was 13.7 inches, and 22.1 ounces. The average size of the brook trout varied from 8.9 inches and 3.9 ounces during May 10-23, to 7.9 inches and 2.8 ounces in the two-week period of July 19-August 1. The average size of all brook trout taken

by angling was 8.5 inches and 3.6 ounces. In general, the average size and the average weight of fish caught was the same in both years.

It should be pointed out that the poundage and total catch of trout removed would have been somewhat larger if the size limit on the pond fishing had been 7 inches instead of 8 inches. Parker occasionally did relax the 8-inch rule for novice anglers. This accounts for an average size of brook trout lower than 8 inches in the two-week period of July 19-August 1.

The largest brook trout taken during the season was $13 \frac{7}{8}$ inches long, and weighed 1 pound $\frac{3}{4}$ ounce, and the largest rainbow trout removed was $26 \frac{3}{8}$ inches long and weighed 6 pounds 7 ounces.

As judged by the total catch per hour, the best fishing was experienced in the two-week period of June 21-July 4, when the total catch per hour was 0.41 trout, followed by the two-week period immediately preceding, when the total catch per hour was 0.34. The best fishing for rainbow trout was experienced in the opening two weeks of the season when the catch per hour on this species was 0.11 fish. From that time on the catch per hour of rainbow trout remained between 0.00+ to 0.04 fish.

If the quality of the angling is rated according to the pounds of fish removed per hour of fishing, then the two-week period of May 10-23 was far and away the best of the season, as 0.81 pounds of fish were caught per angling hour. By these standards the opening two weeks were next best as the pounds of fish removed per hour of fishing effort were 0.27. During the remaining periods of the 1941 season, the pounds of fish removed per hour of angling varied between 0.02 and 0.12. For the entire season the poundage of fish removed per angling hour was 0.15 (0.02 pounds per hour less than in 1940).

There is a rather unique set of circumstances in these data bearing on the quality of the angling. Although the rainbow trout were outnumbered by the brook trout in the total catch of fish in the ratio of slightly less than 3 to 1, the poundage of rainbow trout removed exceeded the poundage of brook trout by a ratio of a little more than 3 to 1.

The number and percentage of fishermen catching various numbers of fish is presented in Table 5. Here again the "ground rules" laid down by Parker and the interested sportsmen influenced the results. Only 15 anglers took more than 3 fish (4 to 10 fish). A numerical limit of 10 fish was established, and a weight limit of 5 pounds, or one fish weighing more than four pounds. If the various anglers were included who caught fish of four pounds or over, the number and percentage of fishermen catching their "limit" would have been higher.

"Parker's Puddle" (as Guiley Pond has been affectionately dubbed by the owner) was patronized by residents of 20 counties of southeastern Michigan and by non-residents from Ohio (39), Illinois (5), Indiana (3), and Florida and Pennsylvania (2 each). Resident anglers from Wayne (244), Saginaw (174), and Genesee (151) Counties were the most consistent users of the area (Table 6). A total of 861 angling-days were spent by residents of Michigan on Guiley Pond, while tourist fishermen tried their luck on 51 different angling-days. Twenty-five angling-days were spent on the Pond by fishermen whose residence was not obtained.

Number of Tagged Trout in the Season's Catch

The tagged fish placed above the dam on Guiley Creek came into the catch during every two-week period of the trout season (Table 7). The greatest number of tagged rainbow trout was taken in the period of April 26-May 9, when 44 of 58 rainbow trout were tagged fish. Anglers

fishing during the period of May 24-June 6 caught the greatest number of marked brook trout, as 37 of 77 were tagged individuals.

The percentage of tagged fish in the catch for the various time periods was:

rainbow trout - 0 to 100 per cent

brook trout - 9 to 53 per cent

Over the entire season, 37.8 per cent of the total brook trout catch consisted of tagged fish (113/299), while 62.5 per cent of the total catch of rainbow trout were tagged (65/104). For both species combined, the marked fish constituted 59.1 per cent of the entire catch (178/299).

The total number of tagged rainbow trout recovered by pond anglers constituted 19.4 per cent (65/334) of all rainbow trout tagged and helped over the dam up to September 1, 1941. The recovery percentage effected by Guiley Pond fishermen on all brook trout tagged up to September 1, 1941, was 22.1 (113/510). Including recovery data reported by sportsmen from areas outside the pond, the total recovery percentages were: 21.5 per cent of all rainbow trout, and 26.8 per cent of all brook trout tagged up to September 1, 1941.

Data Obtained From Recovery of Trout

Tagged at Guiley Pond

The marked fish entering the anglers' catch were measured both at the time of marking and at subsequent recovery. In most instances both measurements were made by Parker on the same measuring board and scales. Slight discrepancies will be noted, such as a small loss in total length. This apparent loss is caused, quite likely, by measuring error which is unavoidable when handling large, active fish in cold weather, or by anglers allowing their fish to dry out before measurement (which causes a shrinkage in the tail membranes).

The majority of the tagged fish released in Guiley Pond were recovered in the Pond. However, a number of brook trout were recaptured in Guiley Creek above the Pond, and in Pickett and Vaughn Creeks, all of which empty into the Guiley above "Parker's Puddle".

After the high water of May 16 and the breaking of the barrier gate in the overflow chute, recoveries of tagged rainbow trout from the lower Au Gres were reported from M-55 bridge, National City Whitney Drain (3), and also one from the E. Branch of the Au Gres near the junction of Hale and Smith Creeks. All but one of the above mentioned fish were captured within a week of the time that the barrier was broken at Guiley Pond. The possible return of marked individuals which escaped from the pond may provide some interesting information.

The changes in size are of interest, particularly the changes in weight noted. In general, it may be said that all the larger rainbow trout (above one pound) lost weight between the time of tagging and the time of recovery, while almost without exception the brook trout either gained weight between the time of tagging and recovery, or made no gain or loss.

A summarization of the change in size of all recoveries obtained (both from the pond and elsewhere) where adequate data were available is presented in Table 8, listing the average gain or loss of length and weight of the marked fish recovered in each two-week period. The average gains or losses of length and weight per day of freedom are also presented.

It will be noted in Table 8 that the average size of rainbow trout recovered varied from 14.25 to 20.92 inches (total length) at the time of tagging. The average time between tagging and recovery varied between 39.5 and 114 days. The average growth in inches varied from 0.0 inches (4 fish free an average of 39.5 days--average size at tagging, 20.92 inches)

to 0.40 inches (17 fish free for an average period of 40.29 days--average size at tagging, 16.93 inches). The average loss in weight of recovered rainbow trout in the various two-week periods ranged from 16.87 ounces to 4.00 ounces.

The recovery data on rainbow trout were next sorted according to sex, since the sex was recorded on each tagged fish where it was recognizable at the time of marking. The data presented in Tables 9 and 10 demonstrate that the females lost considerably more weight than did the male fish. The average size of the 24 females recovered, at the time of tagging, was 20.90 inches (total length), and their average weight was 62.15 ounces. Between tagging and recovery these fish were free an average period of 26.8 days. They did not increase in average size, and lost an average of 11.96 ounces in weight (Table 9).

Data on 35 males recovered also indicate a loss in weight, but only about one half as large as for the females. The 35 male fish were of an average size of 18.54 inches and 44.72 ounces. They were free an average of 35.4 days, and increased in length an average of 3 millimeters. With one exception (a 212 millimeter-2 3/4 ounce male) they all lost weight, and the average loss (including the above-mentioned fish in the calculations) was 5.48 ounces.

Five tagged rainbow trout were recovered whose sex was not determinable at the time of tagging. All were comparatively small, ranging in total length from 7 3/8 to 9 3/4 inches, and ranging in weight from 2 to 5 ounces, at the time of marking. These fish were free an average period of 109.8 days (70-178 days), and on recovery showed an average gain in length of almost three-quarters of an inch and 1.1 ounces in weight (Table 11).

The loss of weight noted for the majority of tagged rainbow trout was of interest to all concerned, and the data on this point have been examined in as detailed a manner as feasible in an attempt to determine the cause for the weight loss. At Guiley Pond there are three possible causes for loss in weight: loss of weight by actual shedding of gonadial material (eggs and milt), loss of weight due to energy expended in the spawning act (using up stored body products), and loss of weight caused by lack of available food in Guiley Pond, or failure to feed in the pond. It is certain that weight losses occurred through operation of the first two possibilities mentioned, but it appears doubtful if the third factor could be blamed for many, if any, of the weight losses recorded.

The loss of weight by rainbow trout at spawning time has been reported on by Mottley (1937) who obtained recoveries on mature rainbow trout which were tagged on their upstream migration in Paul Creek, British Columbia. Weights, lengths, and sexes were noted both before and after spawning as the fish were passed through a counting weir. He states that the average percentage loss of weight by 103 male fish was 16.7 per cent in an average time of 28.4 days; by 280 female fish, 25.2 per cent in an average time of 26.8 days. Although Mottley does not state the size range of the 383 fish on which the above percentages were obtained, the reader infers that the majority of the fish were considerably smaller (1-4 pounds) than those handled at Guiley Creek. As shown in Tables 9 and 10, the average percentage loss in weight by 24 female rainbow trout was 19.2 per cent in an average time of 26.8 days; by 35 male rainbow trout, 10.3 per cent loss in weight in an average time of 35.4 days. The size range of the Guiley Creek fish varied as follows:

males, 2.75 ounces to 113.25 ounces
females, 14.50 ounces to 110.50 ounces

As the reader can see, the average percentage loss in weight is approximately 6 per cent lower for the Guiley Creek rainbow trout of both sexes than for the Canadian rainbow trout. This situation may have been brought about by the manner in which the data were collected. At Paul Lake, the weights on spent fish were obtained as soon as the fish moved downstream to the counting weir. At Guiley Creek, mature fish were tagged as early as January and as late as June on their way to the spawning beds, placed above the dam, and were not recovered until some time after April 26 by the anglers. No information is available as to the date limits of the spawning season (judging from the data presented in Tables 1 and 2, and from Parker's general notes, the majority of the rainbow trout spawned between April 15-May 15), so it cannot be stated how soon after spawning the Guiley Creek fish were recaptured and weighed. In the several interims between spawning and recapture, it is possible that the Guiley Creek fish gained back an appreciable percentage of weight lost in spawning.

However, if Mottley's percentages on average weight loss apply to Michigan fish, it then may be inferred that the enforced stay of the large rainbow trout in Guiley Pond in reality has not been to their detriment, but that the weight losses recorded are to be expected. Just how soon the Guiley Creek fish would regain their original weight (that weight recorded at tagging) cannot be answered as yet. No recoveries of large tagged rainbow trout were made after July 27, since the majority of the large fish left the pond when the cleats on the overflow chute broke under pressure of high water about May 17, 1941.

In contrast to the sexually mature fish discussed above, the five recoveries of small, and probably immature, rainbow trout all demonstrated an increase in weight (Table 11), no matter how long they had been in the pond.

This is a further argument in favor of the contention that confinement in the pond was not responsible for the loss in weight of the adult rainbow.

Certain features of Tables 9 and 10 should be pointed out also. With the exception of the "late" spawners of both sexes (fish tagged after May 12), those fish which were tagged in March and April and recovered in the period of April 26-May 16 (soon after or during the spawning period) showed a greater average percentage loss of weight per day of freedom than fish tagged at other periods, which indicates the severity of the drain on the body weight by the spawning act. One female rainbow trout tagged on May 12 weighed 110.50 ounces; caught four days later, she had lost 19.00 ounces, or 17.2 per cent of her original weight, or a loss of 4.30 per cent of weight per day of freedom.

Early migrators of both sexes (tagged in January, February and early March) all had an average daily percentage loss in weight which was less than that recorded for the fish tagged just before or during the main spawning time.

It is possible, as Mottley suggests himself, that he obtained higher losses in weight for the Paul Creek data because of a heavy run of small males which competed unduly for spawning positions. Such a circumstance conceivably might have caused undue energy expenditure by the whole spawning population, with a higher weight loss for all fish involved.

Data were available, also, on 111 brook trout which had been weighed and measured both at the time of tagging and recovery. These fish were tagged as early as March and as late as August, 1941. They were recovered between April 26 and August 31, 1941. Their average total length at tagging was 218.9 mm. (range 177-333 mm.); their average weight was 3.76 ounces (range 1.25-16.25 ounces); they were free an average period of 19.9 days

(range 0-102 days). The average gain in length over this period of time was 4.8 mm. (range 0-36 mm.) and the average gain in weight was 0.34 ounces (range 0-2.50 ounces).

The data were treated in a manner similar to that employed on the rainbow trout (Table 12) using the 99 records where all necessary information was complete.

All brook trout recaptured either showed no loss in weight, or showed a gain in weight, after release in Guiley Pond. From the data presented in Table 12, it will be seen that the brook trout tagged and transferred into Guiley Pond during May and June, and also recovered in June, showed the most rapid increase in weight (judged on the basis of the average percentage increase in weight per day).

The individual data on almost all recovered fish are presented in Tables 13, 14, 15 and 16 in the event the reader is interested in the losses or gains in length and weight made by various fish.

Summary and Suggestions for the Future

Operation of Guiley Pond

The owner of Guiley Pond, Eddie Parker, has completed successfully the second year of cooperation with the Institute for Fisheries Research. During the period of January 13-November 2, 1941, Parker tagged, measured, weighed and transferred above his dam a total of 345 rainbow trout, 584 brook trout and 3 brown trout. The total weight of fish handled was somewhat in excess of 1,140 pounds.

Daily records on the air and water temperatures were also kept by Parker, as well as observations on the hours of sunlight and the water fluctuation.

These tables are not included in the typed report but are kept with the Institute's file copy of the report in the Ann Arbor laboratory.

Creel census records of all fishing on Guiley Pond were again obtained. The angling pressure was about 60 per cent heavier in 1941, and the quality of the angling was poorer to some degree. This decrease in angling quality may be attributed partly to the loss of the large rainbow trout through breakage of one of the retaining gates caused by high water in mid-May.

From the data available through the recovery of both the tagged brook trout and rainbow trout, some interesting information has been obtained. A loss in weight of considerable proportions by the rainbow trout after spawning was noted. As far as could be determined by careful analysis, this weight loss could be attributed almost entirely to the spawning activities of the rainbow trout. Recoveries of tagged, immature rainbow trout showed a gain in weight and length.

Tagged brook trout recovered from the pond either maintained their original weight, or gained weight.

The following procedure is suggested for the continued cooperative work at Guiley Pond:

1. Install limited improvements as approved by the Institute for Fisheries Research and the Sportsmen's Improvement Association. The first of these installations should be a fish-trap immediately below the dam to eliminate the necessity of chasing the fish as they collect below the barrier. The bars of the trap can be spaced $1\frac{1}{2}$ inches apart and still retain rainbow trout larger than 13 inches, and will permit the passage of brook trout up to 12 inches (as determined by measurements on a series of preserved specimens). Likewise, the cleats on the overflow chute should be spaced at $1\frac{1}{2}$ inches, and the fish ladder kept in continual operation so that the brook trout of the stream system are free to move in any direction at any time.

2. Continue to tag only those trout taken by the trap. In addition, scale samples from all tagged fish should be obtained, as well as measurements

and weights.

3. Continue recording of daily temperatures, water levels, etc.
4. Continue the intensive creel census of Guiley Pond, and obtain as many stomachs as possible from the large rainbow trout. These are to be preserved intact in formaldehyde for examination at the Institute.
5. If at all feasible, a survey of the Au Gres River system should be conducted, and a random creel census also, to determine more definitely what part of the system is actually trout water, and what effect, if any, Guiley Pond has on this stream system.

Literature Cited

Mottley, C. McC., 1938

Loss of Weight By Rainbow Trout At Spawning Time.

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INSTITUTE FOR FISHERIES RESEARCH

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Table 1

Summary by weeks of average daily air and water temperatures, average daily fluctuation of water level, average daily hours of sunlight, and number of brook and rainbow trout running each week at Guiley Pond.
(Fin-clipped trout are not included)

Weeks	Average Temperatures (F.)		Average Temperature (F.) Water	Numbers of Fish Tagged		Water Level (inches)	Hours of sun per day
	Maximum air	Minimum air		Rainbow	Brook		
Jan. 13-19	19.5	12.1	32.5	20	2	-0.1	2.1
Jan. 20-26	21.9	5.4	32.7	7	1	+0.3	3.1
Jan. 27-Feb. 2	27.2	15.2	33.7	18	4	0.0	2.1
Feb. 3-9	23.6	9.9	32.9	↓ 1	...	+0.2	4.0
Feb. 10-16	27.0	12.1	34.3	10	...	+0.6	4.1
Feb. 17-23	25.8	16.1	33.9	1	1	+0.1	3.6
Feb. 24-Mar. 2	21.4	5.1	32.8	1	1	+0.4	5.4
Mar. 3-Mar. 9	23.5	1.8	33.1	0	1	+0.7	8.1
Mar. 10-16	33.0	15.3	34.3	5	...	+3.2	6.6
Mar. 17-23	26.8	7.1	33.6	14	2	+0.4	6.3
Mar. 24-30	33.9	17.9	35.4	31	1	+1.5	7.0
Mar. 31-Apr. 6	37.1	25.2	38.6	29	...	+4.2	6.7
Apr. 7-13	50.6	29.1	39.6	84	1	+4.2	10.1
Apr. 14-20	63.2	48.5	49.6	47	2	+5.2	2.4
Apr. 21-27	51.0	31.8	48.3	14	5	+4.1	7.8
Apr. 28-May 4	45.0	39.5	52.4	6	22	+2.3	10.4
May 5-11	58.1	40.8	53.7	4	27	+3.0	4.4
May 12-18	63.9	42.7	52.3	4	17	+3.8	5.6
May 19-25	72.3	43.9	56.2	1	109	+1.9	10.0
May 26-June 1	71.4	49.5	57.4	2	114	+3.6	4.0
June 2-8	74.0	51.6	55.9	...	28	+0.7	9.7
June 9-15	65.2	43.8	53.0	2	38	+2.3	5.6
June 16-22	80.3	57.4	57.0	...	28	+0.4	10.0
June 23-29	86.2	62.7	60.2	3	58	0.0	10.2
June 30-July 6	85.3	57.5	59.0	4	19	-0.4	12.1
July 7-13	79.7	55.1	59.1	3	16	-0.1	8.1
July 14-20	78.1	54.4	58.1	2	5	-0.6	5.7
July 21-27	89.1	65.2	60.9	...	3	-0.7	7.7
July 28-Aug. 3	85.7	65.9	62.1	2	2	+4.3	7.0
Aug. 4-10	82.0	58.6	60.0	...	1	+3.4	10.4
Aug. 11-17	75.9	50.2	56.2	1	3	0.0	5.4
Aug. 18-24	71.5	51.4	55.1	...	...	+3.9	5.3
Aug. 25-31	74.6	52.9	57.4	...	...	+1.8	6.3
Sept. 1-7	73.3	54.1	57.1	...	...	+0.7	5.7
Sept. 8-14	68.5	45.6	53.6	1	3	+3.2	6.7
Sept. 15-21	72.1	47.3	55.3	...	...	+0.0	8.9
Sept. 22-28	71.2	43.9	54.0	...	...	+0.4	5.0
Sept. 29-Oct. 5	63.6	42.6	49.6	...	8	+3.9	4.7
Oct. 6-12	59.8	39.4	48.0	2	12	+2.8	3.1
Oct. 13-19	57.5	36.9	47.6	3	21	+7.1	4.0
Oct. 20-26	55.7	34.0	46.6	6	19	+4.9	3.3
Oct. 27-Nov. 2	48.1	37.4	47.0	...	...	+6.3	0.3
TOTALS (12 weeks)				345	584		

↓ Indicates number of large spawners that died.

⊕ 6 brook trout moved to Smith Creek.

⊕ All fish moved to Smith Creek.

⊕ All fish except one rainbow moved to Mitchell and Smith Creeks.

⊕ All fish moved to Sand Creek, Mitchell Creek, Hale Creek, Cooper Creek or Au Gres River.

⊕ A 7-pound, 11½ ounce female German Brown moved to Au Gres River after tagging.

Table 2

Number of trout tagged, their average size and range in total length (millimeters), their total weight and the numbers of each sex, by weekly intervals at Guiley Pond.
(Fin-clipped trout are not included)

Week	Number of fish tagged		Average total length		Total weight		Rainbow		Brook		Sex ?	
	Rainbow	Brook	Rainbow	Brook	Rainbow	Brook	♂	♀	♂	♀	R.	B.
Jan. 13-19	20	2	193 (170-212)	257 (211-274)	47.50	10.50	...	...	2	...	20	...
Jan. 20-26	7	1	241 (202-350)	183	37.00	2.00	2	1	...	...	4	1
Jan. 27-Feb. 2	18	4	216 (172-346)	132 (155-213)	66.00	7.75	1	1	...	...	16	4
Feb. 3-9	↓ 1	...	279	...	6.50	...	2	...	...	...	...	...
Feb. 10-16	10	...	269 (171-439)	...	106.50	...	3	1	...	...	6	...
Feb. 17-23	1	1	190	177	2.25	1.25	...	...	...	...	1	1
Feb. 24-Mar. 2	4	1	204 (191-218)	205	10.75	2.75	1	...	...	...	3	1
Mar. 3-9	8	1	187 (160-211)	188	14.25	1.75	...	...	...	...	8	1
Mar. 10-16	5	...	460 (224-553)	...	224.50	...	4	1	...	...	...	...
Mar. 17-23	14	2	422 (157-639)	195 (194-197)	599.75	4.00	8	2	...	...	4	2
Mar. 24-30	31	1	498 (196-631)	171	1,730.75	1.50	21	9	...	...	1	1
Mar. 31-Apr. 6	29	...	550 (339-666)	...	1,964.25	...	17	12	...	...	...	...
Apr. 7-13	↓ 84	1	548 (335-791)	176	5,809.75	1.50	45	42	...	...	...	1
Apr. 14-20	2 47	2	513	183 (166-200)	3,133.25	4.50	20	29	...	...	...	2
Apr. 21-27	14	5	451 (152-650)	189 (153-236)	1,105.50	12.00	7	4	...	...	3	5
Apr. 28-May 4	2 9	22	530	199	540.25	59.50	3	6	...	...	2	22
May 5-11	4	37	302 (172-595)	202 (166-275)	86.50	107.25	1	...	...	...	3	37
May 12-18	4	17	591 (482-683)	206 (172-257)	277.25	58.75	2	2	...	...	...	18
May 19-25	1	109	351 (162-286)	208 (162-286)	14.50	342.50	22	1	...	...	...	109
May 26-June 1	2	114	466 (452-480)	213 (165-333)	64.00	389.75	1	...	...	...	1	114
June 2-8	1	28	471	213 (165-262)	36.50	92.50	...	1	...	...	...	28
June 9-15	2	38	542 (476-608)	216 (167-254)	111.00	134.00	1	1	...	...	...	38
June 16-22	...	28	...	205 (172-231)	...	81.75	...	...	...	...	...	28
June 23-29	3	58	186 (183-192)	198 (173-251)	5.50	144.25	...	...	...	...	3	58
June 30-July 6	4	19	180 (174-192)	203 (174-283)	7.00	51.75	...	...	...	...	4	19
July 7-13	3	16	169 (164-178)	192 (162-223)	4.25	35.25	...	...	...	...	3	16
July 14-20	2	5	161 (160-161)	184 (165-248)	3.00	11.75	...	...	...	...	2	5
July 21-27	...	3	...	188 (164-221)	...	7.00	...	...	...	...	...	3
July 28-Aug. 3	2	2	196 (192-200)	192 (177-207)	5.25	4.75	...	...	...	...	2	2
Aug. 4-10	...	1	...	176	...	1.75	...	...	...	...	...	1
Aug. 11-17	1	3	165	212 (164-239)	1.50	11.75	...	...	1	...	1	2
Aug. 18-24	...	...	...	...	...	...	...	...	...	...	...	...
Aug. 25-31	...	...	...	...	...	...	...	...	...	...	...	...
Sept. 1-7	...	...	...	...	...	...	...	...	...	...	...	...
Sept. 8-14	1	3	192	175 (170-178)	2.25	5.00	...	...	...	...	1	3
Sept. 15-21	...	...	...	...	...	...	...	...	...	...	...	...
Sept. 22-28	...	...	...	...	...	...	...	...	...	...	...	...
Sept. 29-Oct. 5	...	8	...	200 (166-246)	...	23.00	...	...	...	...	...	8
Oct. 6-12	2	12	180 (178-182)	200 (169-280)	3.50	35.75	...	...	...	...	2	12
Oct. 13-19	3	21	324 (162-409)	191 (165-294)	49.00	55.00	1	1	...	...	1	21
Oct. 20-26	6	19	385 (168-578)	193 (152-222)	206.75	46.00	1	3	...	...	2	19
Oct. 27-Nov. 2	...	...	...	...	...	...	...	...	...	...	...	...
TOTALS (42 weeks)	↓ 345	584			16,499.25 (1,031.2 lb.)	1,748.75 (109.3 lb.)	141	117	3	...	93	581

↓ Includes number of spawners that died because of spear marks, previous injury in reaching Guiley Creek, or from handling and tagging. The weight of these fish is not included here.

Table 3

General results, 1941 intensive
creel census, Quiley Creek Pond,
by two-week periods.

Period	Number of Anglers			Fishermen taking no fish		Total hours fished	Legal trout caught ↓		Sub-legal trout returned *		Catch per hour of legal trout			Average number of hours per fisherman day	Pounds of fish per hour of angling
	Male	Female	Total	Number	Per cent		Brook	Rainbow	Brook	Rainbow	Brook	Rainbow	Total		
April 26-May 9	183	10	193	114	75	504.50	11	58	25	12	0.02	0.11	0.13	2.61	0.27
May 10-23 ↯	175	16	191	155	81	509.25	32	24	74	19	0.06	0.04	0.10	2.66	0.81
May 24-June 6	137	8	145	111	76	494.75	77	2	222	25	0.15	0.00*	0.15	3.41	0.04
June 7-June 20	65	2	67	40	59	177.75	59	3	103	7	0.33	0.01	0.34	2.65	0.12
June 21-July 4	78	5	83	56	67	115.75	15	2	174	7	0.39	0.02	0.41	1.39	0.08
July 5-18	63	8	71	54	76	172.75	26	5	131	8	0.15	0.02	0.17	2.43	0.08
July 19-August 1	46	1	47	37	78	131.50	11	2	64	2	0.08	0.01	0.09	2.79	0.03
August 2-15	62	11	74	53	71	181.50	24	6	55	3	0.13	0.03	0.16	2.45	0.03
August 16-Sept. 1	61	5	66	54	82	152.50	14	2	62	2	0.09	0.01	0.10	2.31	0.02
Totals or averages, 1941	871	66	937	704	75	2,140.25	299	104	910	75	0.12	0.04	0.16	2.51	0.15
Totals or averages, 1940	657	7	666	482	72	1,452.50	235	150	497	89	0.16	0.10	0.26	2.18	0.17

↯ One legal brown trout was caught.

↯ Cleats on control gate of dam broke during the night of May 16, allowing the majority of big spawning rainbow trout to escape.

Table 4

Length and weight of anglers' catches for the
1941 trout season at Guiley Creek Pond
(Lengths are in inches, weights are in ounces)

Time period	Brook Trout				Rainbow Trout			
	Number	Average length	Average weight	Total weight	Number	Average length	Average weight	Total weight
Apr. 26-May 9	11	8.8	4.1	45.25	58	18.1	37.1	2,153.50
May 10-23	32	8.9	3.9	127.25	24	14.8	22.4	539.25
May 24-June 6	77	8.6	3.6	280.75	2	18.3	42.1	84.25
June 7-June 20	59	8.6	3.7	221.75	3	19.0	42.5	127.75
June 21-July 4	45	8.4	3.3	150.75	2	8.5	3.3	6.75
July 5-July 18	26	8.7	4.0	104.50	5	14.1	23.7	118.50
July 19-Aug. 1	11	7.9	2.8	31.00	2	13.2	21.0	42.00
Aug. 2-15	24	8.5	3.6	87.25	6	7.8	2.8	16.50
Aug. 16-Sept. 1	14	8.4	3.5	50.50	2	9.1	4.5	9.00
Totals or averages, 1941	299	8.5	3.6	1,099.00 (68.7 lb.)	104	13.7	22.1	3,097.50 (193.6 lb.)
Totals or averages, 1940	231	8.8	3.6	51.1 lb.	150	13.8	22.6	244.4 lb.

Table 5

Number and Percentage of Fishermen
Taking Various Numbers of Trout
Guiley Pond, 1941

Date	0	1	2	3	4	5	6	7	8	9	10
April 26-May 9	144	35	9	4	1	...	...	...	...	...	...
May 10-23	155	22	9	4	1	...	...	...	...	...	...
May 24-June 6	111	19	7	2	1	1	2	...	...	1	1
June 7-20	40	12	7	4	1	1	...	1	1	...	...
June 21-July 4	56	17	6	2	...	...	2	...	...	...	...
July 5-18	54	9	3	4	1	...	...	...	...	...	...
July 19-August 1	37	7	3	...	...	...	...	...	...	...	...
August 2-15	53	14	5	2	...	...	...	...	...	...	...
August 16-Sept. 1	54	8	4	...	...	...	...	...	...	...	...
Total	704	143	53	22	5	2	4	1	1	1	1
Per cent of total	75.1	15.3	5.7	2.4	0.5	0.2	0.4	0.1	0.1	0.1	0.1

Table 6

Residence of Fishermen
Guiley Pond, 1940

Residents		Non-Residents	
County	Number of anglers	State	Number of anglers
Arenac	3	Florida	2
Bay	60	Illinois	5
Calhoun	1	Indiana	3
Eaton	1	Ohio	39
Genessee	151	Pennsylvania	2
Ingham	6	<u>Total</u>	<u>51</u>
Iosco	88		
Isabella	7		
Lapeer	3		
Livingston	6		
Macomb	2		
Midland	9		
Oakland	62		
Ogemaw	20		
Saginaw	174		
St. Clair	1	Total resident anglers	861
Shiawassee	3	Total non-resident anglers	51
Tuscola	10	Unknown residence	25
Washtenaw	10		
Wayne	244	Total anglers	937
<u>Total</u>	<u>861</u>		
Unknown residence	25		

Note: From Parker's records a list of 273 different anglers made up the above totals.

Table 7

Number and percentage of marked fish in the
anglers' catch at Guiley Pond, 1941 season.

Two-week period-1941	Brook trout			Rainbow trout		
	Total catch	Tagged fish in catch	Per cent of tagged fish in catch	Total catch	Tagged fish in catch	Per cent of tagged fish in catch
Apr. 26-May 9	11	1	9	58	44	76
May 10-23	32	5	15	24	12	50
May 24-June 6	77	37	48	2	2	100
June 7-20	59	24	40	3	2	66
June 21-July 4 †	45	15	33	2	...	...
July 5-18	26	14	53	5	4	80
July 19-August 1	11	4	36	2	1	50
August 2-15	24	10	41	6	...	...
August 16-Sept. 1	14	3	21	2	...	...
Totals for pond	299	113	37.8	104	65	62.5

† One tagged brown trout was caught in this period, constituting 100 per cent recovery on brown trout tagged.

Table 8

Tabular summary of changes in length and weight of tagged trout recovered in Au Gres River drainage, including Guiley Pond, by two-week periods (Total lengths (T.L.) are given in inches, weights are given in ounces).

Two-week period	Number recovered	Average T.L. at tagging	Average weight at tagging	Average change in T.L.	Average change in weight	Average number of days free	Average change in weight per day	Average change in length per day
<u>Rainbow Trout</u>								
April 26-May 9	⁴³ 44	19.12	50.08	+0.15	- 7.56	36.7	-0.21	+0.004
May 10-23	¹² 17	16.93	39.58	+0.40	- 0.88	40.3	-0.22	+0.010
May 24-June 6	² 4	20.92	49.50	0.00	- 7.38	39.5	-0.19	- 0.000
June 7-20	2	24.50	81.12	+0.10	-16.87	55.0	-0.31	+0.018
June 21-July 4	...	...	...	...	...	...	...	...
July 5-18	4	14.25	35.87	+0.37	- 6.87	92.3	-0.07	+0.041
July 19-Aug. 1	1	18.40	43.00	-0.00	- 4.00	114.0	-0.03	- 0.000
<u>Brook Trout</u>								
April 26-May 9	1	8.50	3.75	...	...	1.0	...	...
May 10-23	5	9.42	4.55	+0.18	+ 0.30	10.8	+0.03	+0.017
May 24-June 6	³⁵ 40	8.61	3.78	-0.16	+ 1.23	7.8	+0.16	+0.021
June 7-20	24	8.89	4.40	+0.13	+ 0.24	13.5	+0.02	+0.010
June 21-July 4	¹⁶ 17	8.58	3.41	+0.19	+ 0.43	18.6	+0.02	+0.010
July 5-18	13	8.54	3.62	+0.17	+ 0.29	23.8	+0.02	+0.008
July 19-Aug. 1	⁴ 5	7.84	2.25	+0.48	+ 0.50	41.0	+0.01	+0.012
Aug. 2-15	⁹ 11	7.98	3.08	+0.33	+ 0.50	64.5	+0.01	+0.005
Aug. 16-29	¹ 2	8.35	3.50	+0.60	+ 1.25	90.5	+0.01	+0.007
Aug. 30-Sept. 1	2	8.80	4.25	+0.10	+ 0.12	43.0	- 0.00+	+0.002

⁴³ Indicates number of recoveries with adequate data.

Table 9

Comparison of the average percentage changes in weight of female rainbow trout tagged and recovered in different months at Guiley Creek, 1941.

(All averages obtained from the combined data on individual fish recaptured in the respective periods)

Month of tagging, 1941	Time of recovery 1941	Average weight at tagging (ounces)	Average change in weight (ounces)	Average percentage change in weight	Average days free	Average percentage change of weight per day	Number of recoveries
March	April 26-May 7	74.75	-14.33	-18.6	36.0	-0.55	3
April	April 26-May 9	62.10	-11.62	-17.4	21.0	-0.83	13
April	May 10 - 13	47.63	- 8.12	-16.1	30.3	-0.53	4
April	June 14	108.50	-30.75	-28.4	74.0	-0.38	1
May	May 16	110.50	-19.00	-17.2	4.0	-4.30	1
May	June 6	14.50	- 1.75	-12.5	18.0	-0.69	1
June	July 17	36.50	- 9.00	-24.7	44.0	-0.56	1
Totals, averages		62.15	-11.96	-19.2	26.8	-0.86	24

Table 10

Comparison of the average percentage changes in weight of male rainbow trout tagged and recovered in different months at Guiley Creek, 1941.
(All averages obtained from the combined data on individual fish recaptured in the respective periods)

Month of tagging, 1941	Time of recovery 1941	Average weight at tagging (ounces)	Average change in weight (ounces)	Average percentage change in weight	Average days free	Average percentage change in weight per day	Number of recoveries
January	May 12	9.40	-0.87	+ 9.6	101.0	+0.08	2
February	May 4	15.00	-1.75	-11.7	91.0	-0.13	1
March	April 26 - 30	49.70	-9.63	-19.6	36.0	-0.56	6
April	May 1 - 6	44.67	-4.15	- 9.0	20.4	-0.42	18
April	May 7 - 16	36.87	-3.44	- 9.2	25.0	-0.42	4
April	May 17 - 25	84.50	-13.00	-15.3	38.0	-0.40	1
April	May 26-July 27	71.75	-13.13	-15.7	95.5	-0.18	2
May	June 18	54.00	- 3.00	- 5.6	36.0	-0.16	1
Totals, averages		44.74	- 5.48	-10.3	35.4	-0.39	35

Table 11

Comparison of the percentage changes in weight
of 5 rainbow trout (sex not recognizable)
tagged and recovered in different months
at Guiley Creek, 1941

Month of tagging 1941	Time of recovery 1941	Weight at tagging (ounces)	Change in weight (ounces)	Percentage change in weight	Days free	Percentage change in weight per day
January	April 27	3.00	+1.00	+ 33.3	114	+0.29
January	July 9	2.00	+3.50	+175.0	178	+0.98
February	May 3	3.00	+0.25	+ 8.3	90	+0.09
	May 10	5.00	+0.50	+ 10.0	97	+0.10
May	July 13	4.50	+0.25	+ 5.6	70	+0.08
Averages		3.50	+1.10	+ 46.4	109.8	+0.31

Table 12

Comparison of the average percentage changes in weight of brook trout
tagged and recovered in different months at Guiley Creek, 1941.
(All averages obtained from the combined data on individual
fish recaptured in the respective periods)

Month of tagging 1941	Month of recovery 1941	Average weight at tagging (ounces)	Average change in weight (ounces)	Average percentage change in weight	Average Number of days free	Average percentage change in weight per day	Number of recoveries
March	May	2.75	+2.50	+90.9	90.0	+1.01	1
April	May	3.75	+1.50	+40.0	31.0	+1.29	1
April	June	3.25	+0.50	+15.4	41.0	+0.38	1
May	May	3.82	+0.07	+ 1.8	3.4	+0.44	18
May	June	3.89	+0.34	+11.9	15.5	+1.05	33
May	July	2.94	+0.31	+15.3	56.5	+0.26	4
May	August	2.83	+0.79	+30.0	84.0	+0.36	6
June	June	4.32	+0.23	+ 7.2	6.8	+2.62	23
June	July	3.60	+0.41	+12.8	21.3	+0.67	14
June	August	3.81	+0.56	+17.0	56.0	+0.33	4
July	July	2.63	+0.25	+10.1	9.0	+1.13	2
August	August	3.75	0.00	0.0	11.5	0.00	2