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Institute for Fisheries
Research
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INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

January 29, 1951

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

ALBERT S. HAZZARD, PH.D.
DIRECTOR

Report No. 1274

THE RAINBOW TROUT TRANSFER OPERATIONS AND THE INTENSIVE CREEL CENSUS
STATISTICS FOR THE 1947, 1948, AND 1949 TROUT SEASONS AT
GUILLEY POND, IOSCO COUNTY

By

David S. Shetter and Neil A. Walker

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ABSTRACT

The 1947 transfer operations at Guiley Pond placed 141 migrating rainbow trout weighing 452.4 pounds in the impoundment, of which approximately 10 percent were permitted to use the experimental Denil fish ladder. In 1948 no records were kept as there was a frost break in the dam which was not repaired until after the peak of the spawning migration had passed. In 1949 Parker, in violation of the terms of his permit, dipped fish from various parts of the East Branch of the Au Gres River, and between January 4 and May 31, transferred 999 rainbow trout and one brown trout totaling 2,915.9 pounds weight into Guiley Pond.

Creel census results in the various years were as follows: 1947-- 384 individuals spent 1,502.25 hours in fishing and caught 69 rainbow trout, 109 brook trout and 1 brown trout for a catch per hour of 0.12 fish. The total weight of the 1947 catch was 198.8 pounds (0.132 pounds per hour); 1948--131 individuals spent 582.50 hours in catching 47 rainbow trout, 10 brook trout and 1 brown trout for a catch per hour of 0.10 fish. The total weight of the season's catch was 82.3 pounds (0.141 pounds per hour); 1949--1,237 individuals spent 7,007.25 hours in catching 580 rainbow trout,

83 brook trout and 10 brown trout for a catch per hour of 0.10 fish. The total weight of the 1949 catch was 1,382.2 pounds (0.197 pounds per hour).

The percentage of unsuccessful individual anglers in 1947, 1948 and 1949 was 85.4, 80.9, and 81.0. In 1947, 2.2 percent of the total individual anglers removed 50 percent of the season's catch. In 1948, 3.8 percent of the total individual fishermen recorded took 56.9 percent of the total catch. In 1949, 1.9 percent of the total individual anglers removed 50 percent of the total catch.

The average size of the trout taken by angling in the various years was: 1947 - rainbow trout 17.3 inches, 2.38 pounds, brook trout, 9.1 inches, 0.31 pounds; 1948 - rainbow trout 17.5 inches, 1.94 pounds, brook trout, 8.8 inches, 0.24 pounds; 1949 - rainbow trout 18.1 inches, 2.33 pounds, brook trout, 9.3 inches, 0.31 pounds.

A summary of the main statistical features of the past 10 seasons on Guiley Pond is included, and the implications of the data are briefly discussed.

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Guiley Pond is a 1 3/4 acre trout pond located on the lower end of Guiley Creek, a tributary of the East Branch of the Au Gres River in Iosco County. Between 1940 and 1949, the former owner, Eddie Parker, under permit[✓] from the Conservation Department transferred adult rainbow trout moving up Guiley Creek over the dam during their spawning run, and confined them there by means of steel bar gratings with 1 1/2-inch spacing. The fish so held were then angled over by the general public under the following special rules:

1. Artificial flies only to be used.
2. Daily limit of one fish of 4 pounds, or 10 fish and 5 pounds of fish.

The results of the operations from 1940 through 1946 will be found in earlier Institute reports (Numbers 639, 734, 950, 1016, 1050, and 1131). This report will summarize the results tabulated by Parker as to the numbers of fish transferred and the results of the angling over them during 1947, 1948 and 1949 seasons.

[✓] The terms of Parker's permit allowed him to capture the rainbow trout moving up to the dam by means of dip-net on his own land. In 1949 he violated the terms of the permit by dipping trout from all parts of the East Branch of the Au Gres River.

Numbers of rainbow trout transferred (Table 1).

1947 - The experimental Denil fish ladder was operated again during this year, and of 141 migrating fish listed, 14, or very close to 10 percent entered the pond via the Denil ladder and trap at the top end. The remainder were captured by dip-net and transferred. In 1946 only 8 of 149 migrants were observed to use the ladder.

In 1947 spawning run, as judged by the numbers and times of transfer, extended from March 9 to June 7, and reached its peak in the two-week period April 27-May 10. The total number of rainbow trout transferred was 141, weighing 452.40 pounds. This total was composed of 86 male fish weighing 222.32 pounds (average 2.59 pounds) and 55 female fish weighing 230.08 pounds (average 4.18 pounds). The sex ratio of the fish transferred was 1.56 males to 1 female. The total poundage transferred was the smallest of any year of operation. It would appear that the males and females moved upstream more nearly at the same time in 1947 since there were only slight differences in the numbers of either sex put over after April 12.

1948 - No records of transfer operations were kept by Parker in 1948 as a break occurred in the dam as the result of frost action, and the break was not repaired until after the main spawning run was past. During the spawning period the migrants were able to move into and out of the pond and were not confined.

1949 - The rainbow trout confined in Guiley Pond in 1949 after transfer by Parker may be considered as a sample of the spawning run which utilized the East Branch of the Au Gres River, as it is known that the majority of these fish were dipped at numerous locations along the East Branch of the Au Gres River throughout the winter and spring. (Transferring fish to Guiley Pond other than from Guiley Creek from the dam to the highway bridge bounding

Table 1.--Number, sex and weight of rainbow trout transferred into Guiley Pond during the spawning runs, 1947, 1948, and 1949.

Year and/or period	Male fish			Female fish			Total	
	Number	Total pounds	Average weight (pounds)	Number	Total pounds	Average weight (pounds)	Number	Total pounds
1947								
March 2-15	26	40.69	1.57	9	13.38	1.49	35	54.07
March 16-29	3	2.69	0.90	...	...	...	3	2.69
March 30-April 12	...	...	...	1	5.38	5.38	1	5.38
April 13-26	13	36.94	2.84	12	63.81	5.32	25	100.75
April 27-May 10	31	94.19	3.04	25	120.44	4.82	56	214.63
May 11-24	12 ¹	44.06	3.67	7	22.69	3.24	19	66.75
May 25-June 7	1	3.75	3.75	1	4.38	4.38	2	8.13
Totals, 1947	86	222.32	2.59	55	230.08	4.18	141	452.40
Totals, 1948	Dam out, impossible to confine fish							
Totals, 1949	616	1,608.25	2.61	382	1,301.25	3.41	1,000 ²	2,915.88

¹ One fish died in the holding tank.

² One rainbow trout, sex not given, 5.63 pounds, and one brown trout, 0.75 pounds included in totals.

Parker's property on the south was in violation of the permit issued him by the Conservation Department.) For this reason ~~the data have~~ not been broken down into bi-weekly periods. The total number of trout placed in Guiley Pond was 1,000 fish weighing 2,915.88 pounds. This total was composed of 616 male rainbow trout weighing 1,608.25 pounds (average 2.61 pounds) and 382 female rainbow trout which weighed 1,301.25 pounds, one rainbow trout of unrecorded sex, 5.63 pounds, and one brown trout which weighed 0.75 pounds.

The sex ratio of transferred rainbow trout was 1.61 males to 1 female. Netting operations were conducted from January 4 to May 31.

Creel Census Results

1947 - In this year 384 individuals spent 704 angling days on Guiley Pond, and 604 trips (85.8 percent) were unsuccessful. The average angling day was 2.13 hours long. A total of 1,502.25 hours of angling resulted in a catch of 69 rainbow trout, 109 brook trout and 1 brown trout, a total catch of 179 fish and a catch per hour for the 1947 season of 0.12 fish. The anglers removed more brook and brown trout per hour (0.07 fish) than rainbow trout (0.05 fish). The rainbow trout catch accounted for 164.27 pounds, brook trout taken weighed 33.28 pounds, and one brown trout of 1.25 pounds was caught, placing the total poundage removal at 198.80 pounds, or a pounds per hour removal of 0.132 pounds. Rainbow trout were caught at the rate of 0.109+ pounds per hour, brook (and brown) trout at the rate of 0.022+ pounds per hour. On a per acre basis anglers removed 102 fish and 113.6 pounds from Guiley Pond in 1947 under an angling pressure of 859 hours per acre for the season.

The best fishing was in the last period (August 16-September 1) or in the second period (May 10-23), depending on whether you preferred numerous small fish or fewer large fish.

Table 2.--Intensive creel census data, Guiley Pond 1947 trout season.

Period 1947	Number of angling days (number days 0 fish)	Total hours of angling	Number of trout taken		Total fish (and pounds)	Angling quality		Total angling quality catch/hour (pounds/hour)
			Rainbow (pounds)	Brook (pounds)		Rainbow trout catch/hour (pounds/hour)	Brook trout catch/hour (pounds/hour)	
April 26-May 9	87 (82)	169.00	2 (7.19)	4 (1.66)	6 (8.85)	0.01 (0.043)	0.02 (0.009)	0.04 (0.052)
May 10-23	85 (77)	165.00	8 (29.78)	4 (1.42)	12 (31.20)	0.05 (0.180)	0.02 (0.009)	0.07 (0.189)
May 24-June 6	165 (141)	355.00	21 (54.13)	8 (2.95)	30 [↓] (58.33)	0.06 (0.152)	0.02 (0.008)	0.08 (0.164)
June 7-20	130 (110)	293.50	16 (47.30)	13 (3.63)	29 (50.93)	0.05 (0.161)	0.04 (0.012)	0.10 (0.173)
June 21-July 4	73 (64)	142.25	6 (14.87)	7 (3.84)	13 (18.71)	0.04 (0.105)	0.05 (0.027)	0.09 (0.132)
July 5-18	55 (48)	130.50	2 (7.31)	15 (4.30)	17 (11.61)	0.02 (0.056)	0.11 (0.033)	0.13 (0.089)
July 19-August 1	17 (16)	44.00	...	4 (1.64)	4 (1.64)	0.00 (0.000)	0.09 (0.037)	0.09 (0.037)
August 2-15	19 (14)	44.00	2 (0.81)	5 (1.20)	7 (2.01)	0.05 (0.018)	0.11 (0.027)	0.16 (0.046)
August 16-September 1	73 (52)	159.00	12 (2.88)	49 (2.64)	61 (15.52)	0.08 (0.018)	0.31 (0.079)	0.38 (0.098)
Totals, averages	704	1,502.25	69 (164.27)	109 (33.28)	179 [↓] (198.80)	0.05 (0.109)	0.07 (0.022)	0.12 (0.132)

↓ One brown trout, ³⁸⁵ millimeters, 1.25 pounds included in totals.

The 69 rainbow trout were of an average size of 17.3 inches and 2.38 pounds, while the 109 brook trout averaged 0.31 pounds in weight and 9.1 inches in length. These averages are somewhat smaller than noted in 1946.

As noted earlier, 85.8 percent of the total angling days were unsuccessful. The most trout caught on any single angling day was 10 (the pond limit), and this number was taken on two occasions by the same individual. This angler caught 11.2 percent of the total catch for 1947. The 5 anglers with the largest catches for the season comprised 1.3 percent of the total anglers using the pond. They caught 66 fish (36.9 percent of the total catch). Fifty percent of the total season's catch was removed by 2.2 percent of the total anglers (Table 3).

Guiley Pond anglers in 1947 came from 30 different counties located chiefly in the southeastern Lower Peninsula, and from the states of Illinois, Ohio, Indiana, and Pennsylvania (Table 4). Residence of two anglers was not given. The most angling days were recorded for Iosco County (208), followed by Genesee (107), Wayne (95), and Saginaw County anglers (81). Non-resident anglers were registered at the pond for 13 angling days.

1948 - Angling interest concerning Guiley Pond was very low because the washout of a portion of the retaining dam made it impossible to confine any appreciable numbers of migrating rainbow trout. Records of angling on the pond show no fishing after July 2. Between April 24 and that date, 202 angling days were spent on Guiley Pond by 131 individual anglers (Table 5).

The total angling time spent by these fishermen amounted to 582.5 hours. One hundred and sixty-three (163) angling days were unsuccessful (80.7 percent). The average angling day was 2.88 hours in length. During the abbreviated season 25 successful anglers caught 10 brook trout, one brown trout and 47 rainbow trout for a catch per hour of 0.10 fish. The total poundage removed

Table 3.-- The distribution of the total season catches among individual Guiley Pond anglers for the 1947, 1948 and 1949 trout seasons.

Number of trout taken	1947				1948				1949				
	Numbers of individuals taking numbers of trout		Total trout catch for season	Percentage of total Indi- Trout	Numbers of individuals taking numbers of trout		Total trout catch for season	Percentage of total Indi- Trout	Numbers of individuals taking numbers of trout		Total trout catch for season	Percentage of total Indi- Trout	
	viduals	of trout	for season	viduals caught	viduals	of trout	for season	viduals caught	viduals	of trout	for season	viduals caught	
0	328		0	85.4	0.0	106	0	80.9	0.0	1,002	0	81.0	0.0
1	21	21				16	16			144	144		
2	16	32				3	6			33	66		
3	7	21	12.5	51.4	4	12	17.6	58.6+	19	57	16.9	48.3	
4	2	8							7	28			
5	2	10							6	30			
6	2	12			1	6			4	24			
7	...	...			...	...			5	35		
8	...	...	1.0	17.3	...	...	0.8	10.3+	1	8	1.1	14.3
9	1	9			...	...			1	9		
10	1	10			...	...			2	20		
11	2	22			...	...			1	11		
12	...	...	0.8	20.1	...	...			1	12	0.4	9.8
13	...	...			...	...			1	13		
14	1	14			...	...			...	...
15	...	...			...	...			2	30		
17	...	...			...	...			1	17		
18	...	...			1	18			...	...	
19	...	...	0.3	11.2	...	...	0.8	31.0+	1	19	0.6	27.6
20	1	20			...	...			1	20		
22	...	...			...	...			2	44		
24	...	...			...	...			1	24		
28	...	...			...	...			1	28		
34	...	...			...	...			1	34		
Totals	384	179	100.0	100.0	131	58	100.1	99.9	1,237	673	100.0	100.0	

Table 4.--Residence of anglers using Guiley Pond in 1947, 1948 and 1949, tabulated by angling days.

Residence (county)	Resident anglers			Residence (state)	Non-resident anglers		
	Number of resident angling days				Number of non-resident angling days		
	1947	1948	1949		1947	1948	1949
Alcona	1		19	District of Columbia			1
Alpena	1			Illinois	2	1	2
Arenac	7		17	Indiana	2	1	7
Bay	57	11	234	Iowa			1
Branch	2			Louisiana			1
Calhoun			1	Ohio	8	4	28
Clare	1		3	Pennsylvania	1		1
Clinton			6	Tennessee			1
Crawford	1			Wisconsin			2
Eaton	3		23	West Virginia			2
Emmet	2						
Genesee	107	14	255	Totals	13	6	46
Gladwin			3				
Gratiot			2				
Huron	1		7				
Ingham	7	3	86				
Iosco	208	86	602				
Isabella	19		4				
Jackson	1		11				
Kalamazoo			2				
Kent	1		4				
Lapeer	4	2	1				
Lenawee	1	2					
Livingston	3		7				
Macomb	1		7				
Mason			1				
Midland			61				
Missaukee			2				
Monroe			7				
Montmorency	3		8				
Muskegon			1				
Newaygo			1				
Oakland	22	5	73				
Ogemaw	25	5	169				
Oscoda	6	2	2				
Roscommon			2				
Saginaw	81	29	408				
St. Clair	5		13				
Shiawassee	3		15				
Tuscola	5	3	20				
Washtenaw	16	4	25				
Wayne	95	30	387				
Wexford			2				
Unknown	2		2				
Total resident	691	196	2,493				
Total non-resident	13	6	46				
Grand total	704	202	2,539				

by angling was 82.30 pounds, and consisted of 79.61 pounds of rainbow trout (for 41 fish kept), 2.38 pounds of brook trout, and 0.31 pounds of brown trout, or a removal of 0.141 pounds of all trout per hour of angling. For the various species the rate of removal over the entire period of fishing was: rainbow trout, 0.08 fish per hour, 0.137 pounds per hour; brook trout (includes the one brown trout also), 0.02 fish per hour, 0.004 pounds per hour. The per acre removal by the anglers amounted to 33 fish and 47.0 pounds during 1948 under an angling pressure of 333 hours per acre for the season. The best fishing was recorded between May 8 and June 4.

Forty-two of the rainbow trout were measured and these fish were of an average length of 17.5 inches, and were of an average weight of 1.94 pounds. The 10 brook trout averaged 8.8 inches in length and 0.24 pounds in weight. The largest rainbow trout caught measured 24.4 inches in length and weighed 4.44 pounds. The best brook trout listed was 12.2 inches long and weighed 0.66 pounds.

The most trout caught in one day by any individual was 7, or 12.0+ percent of the total season's catch. The 5 anglers (3.8 percent of all pond anglers) with the largest total catches for the season caught 33 fish (56.9 percent of the total catch) (Table 3).

The 1948 anglers at Guiley Pond came from 13 different southeastern Lower Peninsula counties, and from Illinois, Indiana, and Ohio (Table 4). As judged by the number of angling days, Iosco (86), Wayne (30), and Saginaw (29) fishermen were most interested in the pond's possibilities. Non-resident anglers spent 6 angling days on the pond.

1949 - As the result of Parker's activities in the transfer operations plus considerable publicity among the anglers of the large number of fish transferred, the angling pressure on Guiley Pond was the heaviest of any year recorded. A total of 1,237 individuals spent 2,539 angling days on the pond

Table 5.--Intensive creel census data, Guiley Pond 1948 trout season.

Period 1948	Number of angling days (number days 0 fish)	Total hours of angling	Number of trout taken		Total trout (and pounds)	Angling quality		Total angling quality catch/hour (pounds/hour)
			Rainbow (pounds)	Brook (pounds)		Rainbow trout catch/hour (pounds/hour)	Brook trout catch/hour (pounds/hour)	
April 24-May 7	48 (41)	120.50	5 (6.68)	2 (0.47)	7 (7.15)	0.04 (0.055)	0.02 (0.004)	0.06 (0.059)
May 8-21	44 (37)	109.50	15 ¹ (16.68)	...	15 ¹ (16.68)	0.14 (0.152)	0.00 (0.000)	0.14 (0.152)
May 22-June 4	60 (46)	190.00	16 (31.61)	2 ² (0.56)	18 (32.17)	0.08 (0.166)	0.01 (0.003)	0.09 (0.169)
June 5-18	41 (31)	139.50	10 (21.39)	7 (1.66)	17 (23.05)	0.07 (0.153)	0.05 (0.012)	0.12 (0.165)
June 19-July 2	9 (8)	23.00	1 (3.25)	...	1 (3.25)	0.04 (0.141)	0.00 (0.000)	0.04 (0.141)
Totals, averages	202 (163)	582.50	47 ¹ (79.61)	11 ² (2.69)	58 ^{1 2} (82.30)	0.08 (0.137)	0.02 (0.004)	0.10 (0.141)

¹ Six fish, presumably rainbow trout released. Weight given is for nine fish.

² One brown trout, 0.3 pounds included.

in 1949, of which 2,064, or 81.3 percent were unsuccessful (Table 6). The average angling day was 2.76 hours long. A total of 7,007.25 hours of angling yielded a catch of 580 rainbow trout, 83 brook trout and 10 brown trout, a total catch of 673 fish for a catch per hour of 0.10 fish (rainbow trout 0.08+ fish per hour, brook, and brown trout 0.07+ fish per hour). The total poundage of trout taken was 1,382.21, made up as follows: rainbow trout, 1,349.38 pounds, brook trout, 25.88 pounds; and brown trout, 6.95 pounds. Corresponding rate of removal indices are: rainbow trout, 0.193- pounds per hour; brook and brown trout combined, 0.005- pounds per hour. With the exception of the last 8 days, angling quality was consistently much better during the first half of the season. The per acre removal by anglers in 1949 was 385 trout and 789.8 pounds of trout under an angling pressure of 4,004 hours per acre for the 1949 season.

The average sizes of the trout taken in 1949 was: rainbow trout, 2.33 pounds, 18.1 inches; brook trout, 0.31 pounds, 9.3 inches; brown trout, 0.70 pounds, 11.6 inches. The largest rainbow trout caught was 31.5 inches long and it weighed 8.56 pounds. This fish received the first place award among fly-caught rainbow trout in the 1949 Detroit Free Press fishing contest. Guiley Pond also yielded the third-place rainbow trout in the same contest. The largest brook trout measured 11.7 inches and weighed 0.75 pounds, while the best brown trout noted was 12.8 inches in length and 1.13 pounds in weight.

The most fish taken by any angler in one day was 5, but the pond weight limit of 5 pounds was topped several times. Thirteen individuals took more than 10 fish apiece from Guiley Pond over the entire season, and their combined total removal amounted to 252 fish, or 37.4 percent of the total catch. Approximately 50 percent (336 fish) were removed by 24 anglers, or 1.9 percent of the total individuals fishing the pond in 1949. Unsuccessful individuals made up 81.0 of the total individual anglers.

Table 6.--Intensive creel census data, Guiley Pond 1949 trout season.

Period 1949	Number of angling days (number days 0 fish)	Total hours of angling	Number of trout taken		Total trout (and pounds)	Angling quality		Total angling quality catch/hour (pounds/hour)
			Rainbow (pounds)	Brook (pounds)		Rainbow trout catch/hour (pounds/hour)	Brook trout catch/hour (pounds/hour)	
April 30-May 13	861 (684)	2,971.50	267 (589.56)	12 [✓] (5.33)	279 (594.89)	0.09 (0.198)	0.00+ (0.002)	0.09 (0.200)
May 14-27	466 (381)	1,130.75	96 (251.48)	5 (1.75)	101 (253.23)	0.08 (0.222)	0.00+ (0.002)	0.09 (0.224)
May 28-June 10	361 (304)	805.00	66 (146.72)	7 [✓] (2.79)	73 (149.51)	0.08 (0.182)	0.01 (0.003)	0.09 (0.186)
June 11-24	184 (146)	464.00	39 (98.14)	11 (3.28)	50 (101.42)	0.08 (0.212)	0.02 (0.007)	0.11 (0.219)
June 25-July 8	197 (147)	483.50	45 (109.71)	35 [✓] (11.11)	80 (120.82)	0.09 (0.227)	0.07 (0.023)	0.17 (0.250)
July 9-22	158 (137)	380.50	21 (48.95)	5 (1.61)	26 (50.56)	0.06 (0.129)	0.01 (0.004)	0.07 (0.133)
July 23-August 5	112 (94)	297.00	21 (42.48)	7 (2.40)	28 (44.88)	0.07 (0.143)	0.02 (0.008)	0.09 (0.151)
August 6-19	77 (72)	198.50	5 (11.75)	2 (0.60)	7 (12.35)	0.03 (0.059)	0.01 (0.003)	0.04 (0.062)
August 20-September 2	70 (60)	165.00	8 (17.96)	4 [✓] (1.82)	12 (19.78)	0.05 (0.109)	0.02 (0.011)	0.07 (0.120)
September 3 -11	53 (39)	111.50	12 (32.63)	5 [✓] (2.14)	17 (34.77)	0.11 (0.293)	0.04 (0.019)	0.15 (0.312)
Totals, averages	2,539 (2,064)	7,007.25	580 (1,349.38)	93 [✓] (32.83)	673 (1,382.21)	0.08 (0.193)	0.01 (0.005)	0.10 (0.197)

NOTE: Numbers in carets indicate numbers of brown trout, and their weights, included with brook trout. The 10 brown trout weighed 6.95 pounds.

The 1949 anglers at Guiley Pond came from 38 counties in Michigan's Lower Peninsula, as usual mainly from the southeastern counties. Non-resident fishermen travelled from 9 states and the District of Columbia. As judged by the numbers of angling days listed, Iosco (602), Saginaw (408), Wayne (387), Genesee (255) and Bay (234), county fishermen made the most use of the pond. The non-resident angling days were represented by Ohio (28), Indiana (7), Illinois, Wisconsin, West Virginia (2 each), and Iowa, Louisiana, Pennsylvania, Tennessee, and the District of Columbia (1 each). The residence of two angling days was not recorded (Table 4).

Discussion - The results of the last three years of operation point up the obvious fact that the more fish known to be present the heavier the angling pressure that will result. Although it might be expected that with larger numbers of fish present in the pond a smaller proportion of the individual anglers would be unsuccessful, reference to Table 3 will demonstrate that this is not necessarily so. During the past three years the total catches for those seasons were removed by 14.6 to 19.1 percent of the total individuals using the pond. Even in the best year noted among the last ten (1943), successful individual anglers amounted to only 30 percent of the total individual anglers in that year.

As has been demonstrated for the 1949 season on experimental sections of Hunt Creek and East Fish Lake, and for experimental portions of the Pigeon River, the majority of the total catch of any season is removed by a very small percentage of the individual anglers, usually less than 5 percent of the total.

General Summary, 1940 - 1949

To summarize the more important features of the Guiley Pond statistics for the period 1940 - 1949, Table 7 has been prepared. In eight of the

Table 7.--Tabular summary of transfer activities and angling results,
Guiley Pond, 1940-1949 inclusive. (Area 1940-1943, 1.25
acres; 1944-1949, 1.75 acres)

Year	Rainbow trout transferred		Total hours of fishing (1)	Trout catch ²		Total trout (and total pounds)	Catch per hour (and pounds per hour)	Percent of transferred rainbow trout caught ⁴		Angling pressure per acre per season (hours)
	Number	Total pounds (average weight)		Rainbow	Brook			Number	Weight	
1940	Not recorded		1,452.50 (66-72)	150 (1.6)	235 (0.21)	385 (295.5)	0.27 (0.203)	...	...	1,162
1941	252	1,031.2 (4.1)	2,440.25 (937-75)	104 (1.9)	299 (0.22)	403 (262.3)	0.17 (0.107)	41.3	18.8	1,952
1942	310	1,233.3 (4.0)	3,839.00 (1,369-82)	195 (2.5)	166 (0.25)	361 (533.7)	0.09 (0.139)	62.9	39.8	3,071
1943	329	961.8 (2.9)	1,765.50 (785-70)	195 (2.4)	180 (0.25)	375 (507.7)	0.21 (0.288)	59.3	47.9	1,412
1944	196	806.1 (4.1)	2,176.25 (996-80)	138 (2.6)	215 (0.26)	353 (419.0)	0.16 (0.193)	70.4	45.0	1,244
1945	269	912.3 (3.4)	2,046.50 (736-70)	189 (2.2)	234 (0.26)	423 (475.5)	0.21 (0.232)	70.3	45.4	1,169
1946	149	546.1 (3.7)	1,343.75 (555-83)	74 (2.7)	51 (0.32)	125 (213.9)	0.09 (0.159)	49.7	36.2	768
1947	141	452.4 (3.2)	1,502.25 (704-86)	69 (2.4)	109 (0.31)	179 ¹⁰ (198.8)	0.12 (0.132)	48.9	36.3	859
1948	Not recorded		582.50 (202-81)	47 (1.9)	10 (0.24)	58 ¹⁰ (82.3)	0.10 (0.141)	...	...	333
1949	1,000	2,915.9 (2.9)	7,007.25 (2,539-81)	580 (2.3)	83 (0.31)	673 ¹⁰ (1,382.2)	0.10 (0.197)	58.0	46.3	4,004

1 Total angling days and percentage of unsuccessful angling days given in parentheses.

2 Average weights of trout taken by angling given in parentheses.

NOTE: Under total trout catch, numbers in carets indicate numbers of brown trout included and their weights also.

4 These percentages were calculated using all rainbow trout in anglers' catches, and include a small number of immature rainbow trout which were resident in Guiley Pond. Except for 1941 and 1942 when all transferred fish were marked, would not be possible to obtain exact percentages. The percentages given are maximum figures.

ten years the numbers of adult rainbow trout transferred into the pond was recorded, and this number varied between 141 and 1,000, and the total weight of the transferred fish ranged between 452.4 and 2,915.9 pounds. The average weight of the fish transferred varied between 2.9 and 4.1 pounds.

Angling pressure varied between 582.5 hours in 1948 (333 hours per acre) to 7,007.25 hours in 1949 (4,004 hours per acre). The yearly catches of rainbow trout ranged from 47 fish of an average weight of 1.9 pounds in 1948 to 580 fish averaging 2.3 pounds in weight in 1949. The 1946 catch of 74 rainbow trout had the best average weight, which was 2.7 pounds.

Brook trout catches have ranged from 10 in 1947 to 235 in 1940. The average weights of brook trout varied from 0.32 pounds (51 fish) in 1946 to 0.21 pounds (235 fish) in 1940.

The total weight of fish removed by angling has ranged between 82.3 pounds in 1948 to 1,328.2 pounds in 1949, but both of these should be considered abnormal years. When the numbers of rainbow trout transferred were more normal, the poundage of trout removed by angling varied between 198.8 and 533.7 pounds.

Angling quality in the several years ranged from 0.09 fish per hour (1942) to 0.27 fish per hour in 1940 if judged by numbers caught. On the basis of weight per unit of effort, angling quality ranged between 0.132 pounds per hour in 1947 to 0.288 pounds per hour in 1943.

In the eight years for which the numbers of adult rainbow trout transferred was recorded the percentage of the total number transferred and later removed by angling^{2/} varied between 41.2 percent (1941) and 70.4 percent (1944). The

^{2/} This percentage includes some immature rainbow trout which grew to the Guiley Pond size limit of 8 inches. However, the number of each fish taken each year is relatively few. Only in the years all transferred trout were marked would it be possible to determine the percentage exactly, inasmuch as immature migrants less than 8 inches in size also were transferred into the pond in certain years. The percentages given therefore are maximum.

percentage of the total weight transferred and later removed by angling ranged from 18.8 percent (1941) to 47.9 percent (1943).

An attempt was made to apply statistical analysis to the data on the number of rainbow trout transferred yearly into Guiley Pond with the objective being a determination of the effect of the transfer on spawning runs in later years. The wide variation in the data listed for the various years suggest that the only safe conclusion is that there is no reliable evidence to support the theory that the runs have improved or the theory that they have decreased as the result of transfer activities.

Variables beyond our control which make an analysis of this question extremely difficult are:

- a. Varying amounts of effort devoted to the transfer by Parker in the various years;
- b. Varying water level at the Rubble Dam and the old railroad water supply dam during the early spring in some years (when low water levels obtained, the runs were partially blocked);
- c. The activities of poachers was reported to be less in some years, more in others;
- d. Parker's known violation of his transfer permit in 1949 suggests the possibility of earlier transfers from unauthorized stream areas by Parker;
- e. The unknown effects of the Denil fish ladder on the 1947 and 1948 spawning runs.

The main conclusions which might be listed as a result of ten seasons of observation on this type of trout fishery management are:

1. Because of several variable conditions under which the transfer of rainbow trout into Guiley Pond was made it is not possible to state whether the transfer and confinement for later angling has had any effect on spawning runs in later years.

2. The confinement of these fish has made possible a harvest by angling of additional fish that otherwise would not have been available to the stream angler in years when the spring spawning season was brought on earlier by mild weather in late winters and early spring. Under such conditions in unobstructed streams the adult fish run upstream, spawn, and return to the lake before the opening of the trout season on the last Saturday in April.

3. Almost all of the angling on such blocked runs will be done upstream from obstruction or in the pond behind the dam which confines the migrating trout, whether it is a dam (as on Guiley Pond) or a bar weir (as on Bear Creek, Manistee County).

4. Creel census studies on Guiley Pond indicate that despite large numbers of brook trout and rainbow trout available, less than 5 percent of the total individuals using the pond in any year remove from 45 to 60 percent of the total catch. The average angler does not have any better chance, if as good, of taking fish in such a situation than on the average trout stream. Successful anglers in any year never constituted more than 30 percent of the total individuals registered.

5. Studies involving the tagging of mature rainbow as they were transferred into Guiley Pond before spawning and subsequent recapture by angling after spawning showed that male fish lose from 10.6 to 16.9 percent of their body weight and females lose 19.2 to 19.9 percent of their body weight in spawning, based on observations during 1941 and 1942. The weight lost at spawning time is not regained no matter how long the adult rainbow trout are confined in the pond.

6. Recoveries at Guiley Pond of fish tagged there in previous years gives evidence of the tremendous growth made by rainbow trout while in the Great Lakes. For example an immature rainbow trout of 7.3 inches weighing 2 ounces tagged early in 1941 was recovered 417 days later in 1942 at a size

of 20.2 inches and 3 pounds 3 ounces. Tag recoveries from fish marked at Guiley Pond were reported on both the American and Canadian shores of Lake Huron, from the St. Clair River, and from the Canadian shores of Lake Erie as far east as Long Point not far from Buffalo, New York.

7. Examination by Mrs. J. W. Leonard of the Institute for Fisheries Research of large series of rainbow and brook trout stomachs taken by anglers from Guiley Pond in 1942 indicated that fish comprised 30.5 percent of the diet of the rainbow trout. No small trout were noted in the stomachs. The major portion of the diet consisted of aquatic insects (40.0 percent), animal debris (15.7 percent) and crustacea (6.2 percent). Aquatic vegetation, spiders and hairworms made up the remainder. As in the rainbow trout, no young trout were found in the brook trout stomachs. The only species of fish noted as food items were muddlers and common suckers. The brook trout diet consisted mainly of aquatic insects, animal debris, crustacea, and terrestrial insects. On the diet available the confined rainbow trout never regained the weight lost at spawning time regardless of how long they remained in the pond. They would be considered inferior fish in appearance, fighting quality and eating quality as compared with fresh-run trout from Lake Huron.

8. The fishing afforded at Guiley Pond under the more or less artificial angling conditions appeals to that segment of the angling public which enjoys trying for a large fish without too much physical effort or personal discomfort.

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