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THE RAINBOW TROUT RUN AND ANGLING RESULTS AT GUILLEY POND,  
IOSCO COUNTY, 1946 TROUT SEASON

by

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The 1946 trout season at Guiley Pond marked the seventh consecutive year of cooperation between the owner, Mr. Edward Parker, the Sportsmen's Improvement Association, and the Michigan Department of Conservation. The mode of operation has been described in detail in previous reports (see Institute for Fisheries Report No. 950, 1016, 1050). Briefly it consists of transferring rainbow trout on their spawning migration over a small hydro-electric dam under permit from the Department, and allowing public fishing for the fish which are confined to the Guiley Creek drainage above the dam by 1-1/2-inch screens. The number and weight of rainbow trout transferred has been recorded since 1941, and the number and weight of trout taken by the anglers has been kept each year since 1940. Angling is by fly-fishing only with an 8-inch size limit; also only one fish daily of 5 pounds or more is permitted to be kept, and anglers cease fishing when their catches exceed 5 pounds or 10 fish.

This report will present the data on the 1946 spawning run, the angling results on the pond for the 1946 trout season, and will discuss briefly the success of the experimental modified Denil fish ladder which was installed at the dam in March, 1946.

The 1946 Spawning Run (Table 1)

A total of 149 adult rainbow trout weighing 546 pounds, 1 ounce were transferred into Guiley Pond in 1946. This total was composed of 87 male fish weighing 248 pounds, 2 ounces (average weight, 2 pounds, 13.6 ounces), and 62 female rainbow trout weighing 297 pounds, 15 ounces (average weight, 4 pounds, 12.9 ounces). The sex ratio of the fish transferred over the dam was 1.4 males to 1 female. The total number and total weight of fish transferred during 1946 was the smallest of any year of operation. In previous years from 196 to 329 migrating adult rainbow trout weighing from 806.1 to 1,233.3 pounds have been placed in Guiley Pond. Apparently the 1946 run was somewhat smaller than in former years; also Parker did not begin dipping operations below the dam as soon as possible, as he was instructed to allow the migrants to use the fish ladder if they would do so.

The peak of the spawning run occurred during the period March 16-31, when 65 males and 29 females were put over the dam. The run started March 9 with 5 small males. The last fish, a small male was transferred on June 30.

Eight spawners which weighed 40 pounds, 9 ounces were supplied to the State Fish Hatchery at Harrisville for display purposes (3 males and 5 females). The 1946 anglers at Guiley Pond therefore had 505 pounds, 8 ounces of rainbow trout to fish over (less the weight lost as a result of spawning, of course).

Three tagged rainbow trout were recovered during the 1946 transfer operations from the tagging work conducted at Guiley Pond in 1944. All three of these fish were tagged in April, 1944, and all the pertinent data on these recoveries are presented in Table 2. All were between

Table 1.--Number and weight of male and female rainbow trout transferred into Guiley Pond in the 1946 spawning run.

Period	Males transferred			Females transferred			Totals	
	Number	Total pounds	Average weight (pounds)	Number	Total pounds	Average weight (pounds)	Number	Total pounds
March 1 - 15	5	9.63	1.93	...	...	...	5	9.63
March 16 - 31	65	188.75	2.52	29	150.50	5.36	94	339.25
April 1 - 15	6	12.43	2.07	9	46.63	5.18	15	59.06
April 16 - 30	8	30.25	3.78	20	78.75	3.94	28	109.00
May 1 - 15	2	3.13	1.56	4	22.06	5.52	6	25.18
May 16 - 31	...	...	...	...	...	...	...	...
June 1 - 15	...	...	...	...	...	...	...	...
June 16 - 30	1	3.94	3.94	...	...	...	1	3.94
Totals, averages	87	248.13	2.85	62	297.94	4.81	149	546.06

Table 2.--Data on tagged rainbow trout recovered on the 1946 spawning run at Guiley Pond Dam

Tag number	Date tagged	Size at tagging		Sex	Date recovered	Size at recovery		Gain in size		Days free
		Total length (inches)	Weight (ounces)			Total length (inches)	Weight	Total length (inches)	Weight	
38555	April 17, 1944	7.1	1.5	Male	April 7, 1946	23.7	4 lb., 15 oz.	16.6	4 lb., 13.5 oz.	720
16173	April 24, 1944	7.5	2.25	Female	March 29, 1946	24.8	6 lb., 2 oz.	17.3	6 lb.	703
16955	April 24, 1944	8.7	3.25	Female	April 30, 1946	24.6	5 lb., 5 oz.	15.9	5 lb., 1.75 oz.	736

7 and 8.5 inches at the time of tagging, all were free approximately 2 years, and all had gained between 15.8 and 17.4 inches in length during the past two years. These recoveries provide further evidence of the rapid growth which takes place when this species migrates to one of the Great Lakes.

The Use of the Modified Denil Fish Ladder By the Rainbow Trout

In mid-March, 1946, Grant Thompson, Fish Division Construction Foreman, assisted by Messrs. Barber, DeClaire and Myers of the Fish Division, installed a modified Denil fish ladder at Guiley Pond Dam. The purpose of the installation was experimental, and we hoped to find out if the migrating rainbow trout would pass up the ladder into a trap box located at the upper end. If the fish would do this, the structure would save Parker considerable work involved in netting the trout below the dam, and eliminate a certain amount of criticism from the public concerning Parker's netting activities.

The structure was built in two sections. It consists of a straight chute with a complicated system of side baffles and bottom baffles which create a high degree of turbulence in the water flowing in it. The end result is that the water current is slowed down so that a healthy fish can negotiate the ladder when it is installed on a slope of 4.1. As Guiley Pond Dam has approximately 5 feet of head, a 20-foot ladder was needed, and was constructed by bolting two 10-foot units together.

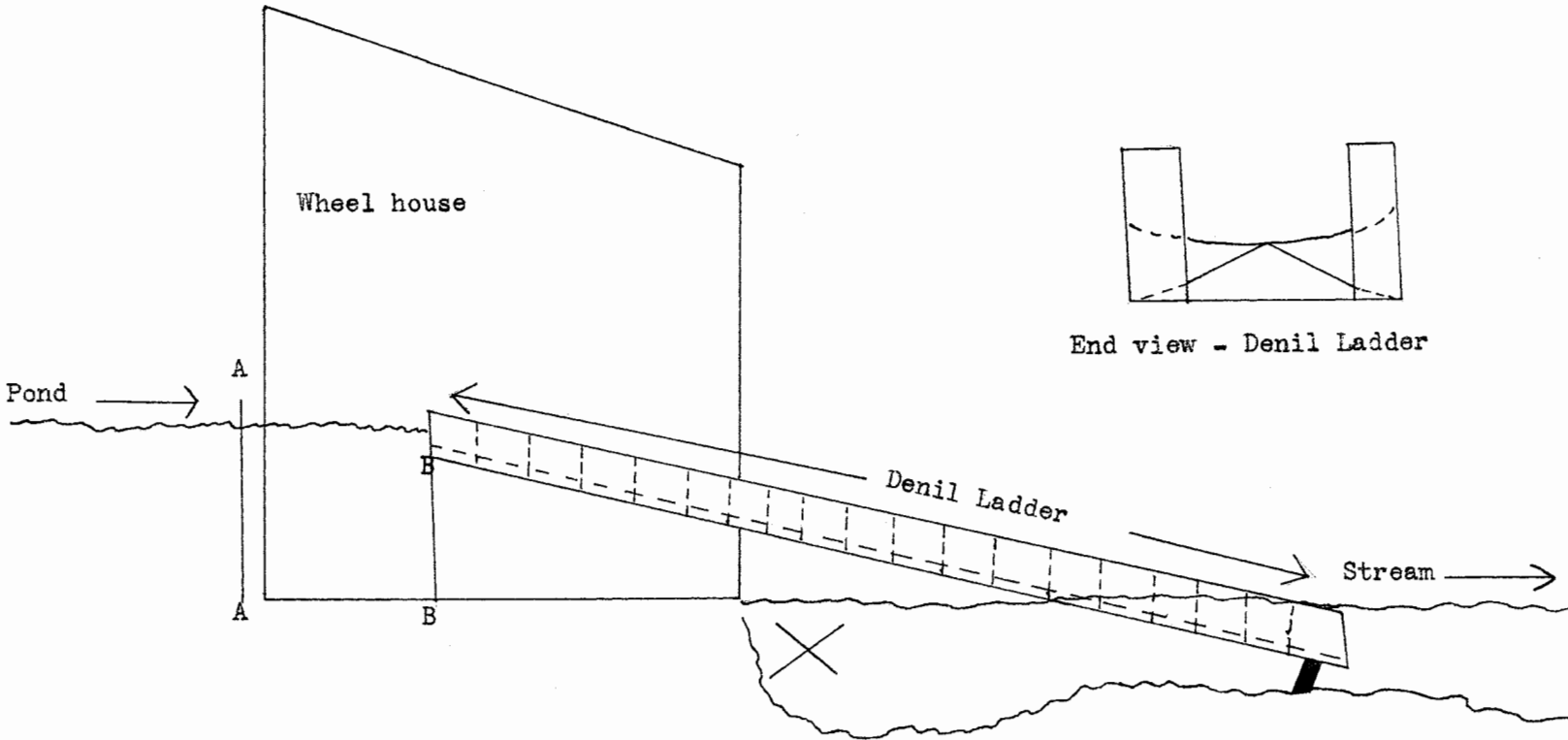
Because of previous construction in and around the spillway, and also because of the slope specifications, the downstream end of the ladder projected approximately 12 feet below the wheel-house. The ladder carried only a fraction of the total volume of overflow water at any time,

as its cross-sectional area does not exceed 2 square feet. The majority of the overflow fell over the splash-boards of the old-style fish ladder around both sides of the upper end of the Denil ladder, and issued into the stream at the base of the wheel house about 12 feet upstream from the lower end of the Denil ladder. To show the general arrangement, a diagram of the installation is given in Figure 1.

If migrating fish passed up the ladder, they could not go into the pond, as they were stopped by 1-1/2-inch-spaced gates, and were confined to the box made by the splash boards or spaced gates at A-A and B-B in the diagram. This trap was inspected by Parker daily.

Evidence was secured that a few rainbow trout did use the ladder. On March 28, 29 and 31, a small portion of the run was found in the well at the top of the Denil Ladder. On March 28 three males from 1 pound, 14 ounces to 4 pounds in weight out of a total of eight fish captured by all means were found to have used the ladder. The weights of the fish taken that day ranged from 1 pound 12 ounces to 6 pounds 6 ounces. On March 29, a 1 pound 9 ounce male used the ladder, out of a total of 46 fish handled that day. On March 31 three female rainbow trout ranging from 2 pounds 4 ounces to 5 pounds 11 ounces, and a 2 pound 7 ounce male fish ran the ladder. Thus a total of 8 of the 149 fish in the 1946 run are known to have used the ladder or 5.3 percent of the total number of rainbow trout handled at Guiley Pond.

The Denil Ladder might have attracted more fish had it been possible to keep a majority of the overflow water passing down the ladder. Under conditions at Guiley Pond, rarely was 1/10 of the overflow being passed by the Denil Ladder. The fish were attracted by the greater volume of water spilling into the stream 12 feet upstream from the downstream opening of the Denil Ladder and milled about in the pool at the base of



A—A = Splash boards of 1-1/2 inch spaced screen

B—B = Splash boards

X = Point of issue of majority of overflow

Scale 1" = 5' (app.)

Figure 1.--Diagram of arrangement of modified Denil fish ladder at Guiley Pond, Iosco County, during 1946.

the wheel house. The fish might have been forced to use the ladder by placing leads from each bank to the downstream mouth of the Denil ladder, as was successfully done at the Rock River installation in Marquette County. Parker claims, and perhaps with considerable justification, that such leads could not be held in place during flood times because of the great volume of water and water-born debris that is present.

If the Denil ladder is to be made to function at Guiley Pond, it must carry all or a great majority of the water coming over the spill at all times so that the fish will be attracted to it. To obtain this condition, an emergency spillway could be constructed at the east end of the present dam, and blocked by the appropriate screens where it re-enters Guiley Creek. The level of the pond (and the amount of water flowing through the Denil ladder) then could be controlled by splash boards in the emergency spillway. Leads of 1-1/2-inch spacing should be placed from each bank to the downstream mouth of the Denil ladder. Under such a construction plan, migrating fish would be both forced and attracted to use the structure. The fish could be allowed free passage into the pond, or trapped at the top enclosure if it is desired to record the number of migrants.

Angling results, Guiley Pond, 1946 trout season

A total of 304 individuals spent 555 angling days on Guiley Pond in 1946, expending 1,343.75 hours in fishing. This is the lowest number of hours recorded for any of the 7 years of creel census, and amounted to 767 man hours per acre for the 1946 season in comparison with previous years when angling pressure has ranged from 1,162 to 3,071 man hours per acre per season.



Table 3--Intensive creel census summary, Guiley Pond, 1946 trout season

(Percentages given in parentheses)

Period	Number of anglers	Number taking no legal fish	Total hours of fishing	Legal trout caught		Pounds of legal trout caught		Rainbow trout		Brook trout		All trout	
				Rainbow	Brook	Rainbow	Brook	Number per hour	Pounds per hour	Number per hour	Pounds per hour	Number per hour	Pounds per hour
				April 27-May 10	169	144 (85.2)	417.25	24	7	55.00	1.92	0.06	0.132
May 11-24	100	74 (74.0)	261.00	21	14	55.20	4.22	0.08	0.211	0.05	0.016	0.13	0.227
May 25-June 7	88	74 (84.1)	205.00	9	7	23.44	2.72	0.04	0.114	0.03	0.013	0.07	0.127
June 8-21	58	52 (89.7)	131.00	3	5	7.19	2.11	0.02	0.055	0.04	0.016	0.06	0.071
June 22-July 5	35	31 (88.6)	81.00	3	4	10.06	1.41	0.04	0.124	0.05	0.017	0.09	0.141
July 6-19	29	23 (79.3)	73.50	6	4	17.67	1.25	0.08	0.240	0.05	0.017	0.13	0.257
July 20-August 2	21	18 (85.7)	57.00	2	1	6.06	0.34	0.03	0.106	0.02	0.006	0.05	0.112
August 3-16	21	18 (85.7)	36.50	...	4	...	1.49 <sup>v</sup>	...	...	0.11	0.041	0.11	0.041
August 17-30	28	24 (85.7)	67.50	3	5	13.81	1.06	0.05	0.205	0.07	0.016	0.12	0.221
August 31-September 2	6	3 (50.0)	14.00	3	...	9.00	...	0.21	0.643	...	...	0.21	0.643
Totals and averages	555	461 (83.1)	1,343.75	74	51	197.43	16.52	0.05	0.147	0.04	0.012	0.09	0.159

<sup>v</sup> Two fish not weighed were given the average weight as determined from the other 49 fish.

The total catch amounted to 125 legal trout weighing 213.95 pounds, or 0.09 fish per hour, or 0.159 pounds of fish per hour. The rainbow trout catch amounted to 74 fish weighing 197.43 pounds (0.05 fish per hour, 0.147 pounds of fish per hour), while anglers took 51 brook trout which weighed 16.52 pounds (0.04 fish per hour, 0.012 pounds of fish per hour). The percentage of unsuccessful fishermen days was quite high--83.1 percent of the angling days showed no fish. On a per acre basis, the yield to the anglers was 122.25 pounds per acre for this 1-3/4-acre pond.

The best fishing for rainbow trout, measured by the catch per hour and pounds per hour indices, was during the period July 6-19 (0.08 rainbow trout per hour, 0.240 pounds of rainbow trout per hour). The best brook trout fishing was recorded for the period August 3-16 (0.11 brook trout per hour, 0.041 pounds of brook trout per hour). The most rainbow trout (24) were captured during the first two weeks, and the most brook trout (14) were removed from the pond during the second two-week period. By June 7 slightly more than 65 percent of the total angling pressure had been expended; 54 percent of the brook trout had been caught, and 73 percent of the eventual total catch of rainbow trout was already removed.

The rainbow trout taken by the 1946 anglers were of slightly greater weight than those taken in previous years. The 74 fish were of an average weight of 2.67 pounds, and their average length was 19.0 inches (Table 4). The average size of the two sexes among the rainbow trout was:

34 males, 18.5 inches, 2.31 pounds;

34 females, 20.5 inches, 3.19 pounds.

Table 4.--Average size of trout taken by anglers from Guiley Pond,  
1946 trout season.

Period	Rainbow trout			Brook trout		
	Number	Average length (inches)	Average weight (pounds)	Number	Average length (inches)	Average weight (pounds)
April 27-May 10	24	18.0	2.29	7	9.0	0.27
May 11-24	21	18.7	2.63	14	9.2	0.30
May 25-June 7	9	19.0	2.61	7	10.1	0.39
June 8-21	3	18.1	2.39	5	10.3	0.42
June 22-July 5	3	21.6	3.36	4	9.7	0.35
July 6-19	6	19.7	2.94	4	9.4	0.31
July 20-August 2	2	21.1	3.03	1	10.0	0.34
August 3-16	...	...	...	4	9.2	0.38 <sup>1</sup>
August 17-30	3	22.4	4.60	5	8.5	0.21
August 31-September 2	3	21.4	3.00	...	...	...
Totals and averages	74	19.0	2.67	51	9.4	0.32 <sup>2</sup>

<sup>1</sup> Average weight of two fish only

<sup>2</sup> Average weight of 49 fish

The sex was not given for six fish.

Brook trout taken by the anglers also were noticeably larger in 1946. They averaged 9.4 inches in length and 0.32 pounds in weight.

The largest brook trout taken was 12.6 inches in length and weighed 0.75 pounds. The best rainbow captured weighed 6.81 pounds and measured 27.2 inches. A 27.3-inch rainbow was taken also which weighed only six pounds.

As stated earlier, 83.1 percent of the total angling days were unsuccessful. The most trout caught on any one angling day was 5 (by one angler, or 0.2 percent of the total). Anglers taking one, two and three fish amounted to 12.4 percent (69 anglers), 3.8 percent (21 anglers), and 0.5 percent (3 anglers) respectively. There were no anglers taking four fish. This distribution is in part the result of the pond rules regarding the daily number and weight limits.

Guiley Pond anglers came from 19 counties chiefly located in the southeastern Lower Peninsula, and from the states of Ohio and Indiana. The residence of two anglers was not learned. The most fishermen were recorded from Iosco County (158) where the pond is situated, followed by Wayne County fishermen (110), Saginaw County (74) and Genesee County anglers (72). Seven Ohio residents and two Indiana "Hoosiers" also fished the pond (Table 5).

Although the angling pressure and the catch in 1946 were the lowest on record, the angling quality was fairly good considering the relatively small number of adult rainbow trout placed in the pond. It is to be

Table 5.--Residence of anglers using Guiley Pond, 1946 trout season

County or state	Number of anglers
Alcona	1
Arenac	6
Bay	72
Branch	1
Genesee	72
Iosco	158
Isabella	5
Kent	4
Midland	5
Monroe	2
Montmorency	1
Oakland	15
Ogemaw	7
Roscommon	2
Saginaw	74
St. Clair	2
Tuscola	1
Washtenaw	6
Wayne	110
Total residents	544
Ohio	7
Indiana	2
Total non-residents	9
Unknown	2
Grand totals	555

hoped that arrangements for trapping and transfer of the migrant rainbow trout more satisfactory to all parties concerned can be developed for the benefit of the angling public.

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