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INTENSIVE CREEL CENSUS OF KINNE CREEK, WINGLETON CLUB,

FOR THE 1944 TROUT SEASON

by

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For the seventh consecutive season detailed catch records of the anglers using Kinne Creek were kept through cooperation of club members and their guests. This report is based on those records, which the anglers listed in the ice-house record-book.

Because of war-time conditions, 1944 was the first season in many years in which the stream received no plantings of hatchery-reared trout. Hence all fish caught were unmarked and most of them were wild fish, since the "carry over" of hatchery trout from the season of planting to the season immediately following in Kinne Creek has been found previously to be low (2 per cent for brook trout and 0.0 to 2.5 per cent for brown and rainbow trout).

For the first time in the history of the club, members and their guests recorded the number of hours spent in fishing on Kinne Creek. A record of the angling time expended is necessary in the proper analysis of any creel census. In turn, the census data is a helpful tool in arriving at the proper management policy for Kinne Creek. From such data, the trend in the fishing pressure from year to year, and the effect it has on the total catch, and the quality of the fishing can be determined.

Knowing the angling pressure (hours per season) and the number of fish planted, we are better able to weigh the results of following some particular management policy. In the end we should be able to determine the stocking level which will give the number of fish and quality of fishing desired by club members.

The Total Catch (See Table 1)

Members and guests of the club spent 303 hours in 89 angling-days on the Creek during the 1944 trout season. The average angling day was of 3.40 hours duration. The average angling day spent above the railroad grade was 1.85 hours while that spent below was 3.67 hours. More angling days of greater duration were spent below the railroad grade than above it.

A total of 189 trout, 62 of which were brook trout, 120 brown trout, and 7 rainbow trout, were taken at the rate of 0.62 fish per hour. The quality of fishing (which is rated by the number of fish caught per hour) was better above than below the railroad grade. Above the grade fishermen removed 1.33 fish per hour, while below it their take was 0.56 fish per hour.

In other words, anglers fishing above the railroad grade took more fish per unit of effort than those fishing below the railroad grade.

The catch per angling hour in 1944 on Kinne Creek was slightly better than for the average public trout stream censused by the Institute in past years.

Brook Trout Catch

Fishermen removed a total of 62 brook trout, 32 originating from Section C and 30 from the stream below the railroad grade. This is a higher percentage of the total catch than that of 1939, the only other year since 1937 that no brook trout were stocked and the only year that could be rightfully compared with the 1944 season. That nearly half of the total

catch of brook trout (30 out of 62, or 48 per cent) came from the stream below the railroad grade is reassuring. It may be an indication that the lower waters have become more suitable for the habitation and reproduction of this species. For the years that it has been possible to separate the brook trout catch as to fish of hatchery origin and wild unmarked trout, the number of wild brook trout caught below the railroad grade has never constituted as high a percentage (approximately 47 per cent) of the brook trout catch as it did this season. Assuming there was a 2 per cent carry-over from 50 brook trout planted in 1943, theoretically 29 wild fish were caught in 1944 below the railroad grade.

The best brook trout fishing afforded the angler was during the latter part of the season, September 1 to Labor Day (Table 2). During this period eight fishermen fishing a total of 27.50 hours caught 9 brook trout, or 0.33 fish per hour. The fishing in May came closest to approaching this figure when 21 fishermen took 18 brook trout in 60 hours or 0.30 trout per hour.

The average length of brook trout taken was 8.47 inches (Table 2). The average length of brook trout by monthly periods ranged from 8.25 inches in August to 8.58 inches for the month of July. The average size of this species during 1944 was the third largest recorded for the period 1939-1944 (the average size of brook trout caught in 1938 was not computed).

Brook trout constituted 32.8 per cent of the total catch of trout taken (Table 3).

Brown Trout Catch

A total of 120 brown trout was taken in 1944. All of these fish were caught below the railroad grade. Assuming there was a maximum "carry-over" of 2.5 per cent of the brown trout planted in 1943, 115 of the 120 fish (or about 96 per cent) caught in 1944 were wild, unmarked trout.

The quality of brown trout fishing was better than for either brook trout or rainbow trout, and their average size was slightly larger than for either of the other two species. Fishermen caught 0.40 brown trout per hour, averaging 9.50 inches in length. They experienced their best brown trout fishing during the month of July. August also afforded some fair fishing.

The average length of brown trout by monthly periods ranged from 9.07 inches in August to 10.52 inches in May. The average size of brown trout taken in the 1944 season does not compare unfavorably with figures for previous seasons.

Brown trout made up a high percentage of the total catch in 1944 (63.5 per cent). During the period 1938-1944 there were three years-- 1938, 1940, and 1944--that no plantings of brown trout were made. However, in neither 1938 or 1940 did the percentage of the total catch made up of brown trout exceed 63 per cent (1938, 51.6 per cent; 1940, 34.8 per cent; 1944, 63.5 per cent).

Only in one year when plantings were made (1939) did the percentage of the total catch comprised by brown trout exceed the 1944 figure. Brown trout made up 73 per cent of ^{the} total catch that year. In that season a large number of brown trout (994) were planted. Only 35 per cent of the brown trout catch that year (98 of 279) originated from that planting, but the large number of fish stocked seemed to act as a "stimulus" to the native population of brown trout. The introduction of these fish possibly increased competition for the available food and stimulated the wild fish to search for food. This comparatively large planting apparently resulted in an increase in the total number of wild brown trout taken and a subsequent increase in the percentage of the total catch made up of that species in 1939.

The high percentage of brown trout in the total catch in 1944 may be an indication that more desirable environmental conditions have been afforded and because of these changes the number of wild fish of that species may be gradually increasing.

Rainbow Trout Catch

Fishermen caught seven legal rainbow trout in 1944 (3.7 per cent of the total catch). This was a considerable drop from the 1943 catch of 145 fish. This drop must be almost entirely due to the fact that no rainbow trout were stocked in 1944. Good numbers of rainbow have been taken only in those years that plantings of that species were made. Apparently little reproduction of rainbow trout occurs in Kinne Creek.

The average length of these fish for the season was 8.78 inches. The range in average lengths on a monthly basis was from 8.25 inches in July to 9.50 inches in September.

The quality of the fishing for rainbow trout was very poor because of the small number of this species available in Kinne Creek.

General Comments

The total number of trout caught in Kinne Creek during the 1944 season was the lowest seasonal catch recorded for the period 1938-1944 (Table 3). This decline in total catch was partly the result of no stocking of legal fish in 1944, and was partly due to a probable decrease in angling pressure (there has been a general decrease in the angling pressure on most Michigan trout streams since the war began). No hatchery fish could be obtained in 1944 because of war-time restrictions. This was probably more influential in lowering the total catch than the drop in pressure, since hatchery fish in previous years have comprised an average of 31.0 per cent of the total catch (Table 4). The percentage of the total catch made up of hatchery

fish is based on actual figures recorded for the years 1938, 1939, 1940 and 1941, and estimates for the 1942 and 1943 seasons, obtained by computing the number of hatchery fish (none were marked in 1942 and 1943) that theoretically were recovered during those years, assuming that the recovery percentage of hatchery fish for each species from 1938-1941 is a fairly accurate figure upon which to base our estimates. Basing our computations on the same recovery percentages and providing the same number of fish had been stocked in 1944 as was stocked in 1943, anglers theoretically could have caught 123 hatchery fish in 1944. This number added to the actual catch for 1944 would make a theoretical catch of 312 fish for that season or slightly better than one fish per hour. Obviously the quality of fishing might have been slightly better in 1944 if a number of legal-sized hatchery trout had been planted in Kinne Creek that season. In spite of no plantings of legal trout in 1944, the quality of the fishing in the Creek might be considered slightly better than average for public waters.

It is very likely, then, that the catch and the quality of the fishing would not drop materially below that for 1944 in the next few years under a program of no stocking and low angling pressure. By following a program of no planting and by keeping a record of the fishing on the Creek, we may be able to determine from the catch of wild fish taken the amount of restocking done by the native trout in Kinne Creek.

When the time arrives, or if in the meantime the Creek Committee decides to again plant trout in Kinne Creek, it may be of interest to know the numbers of trout planted in the past that have resulted in the best returns to the angler. An analysis of the results of previous plantings of hatchery fish is presented in Tables 4 and 5.

It has been emphasized in previous reports on KinneCreek that stocking with small numbers of hatchery fish has resulted in better returns to

the angler. During the years 1938-1941 (the only years marked hatchery fish were planted) the following number of trout were stocked: 1938 -- 1,500 brook trout; 1939 -- 994 brown trout and 2 rainbow trout; 1940 -- 167 brook trout and 250 rainbow trout; 1941 -- 302 brook trout, 201 brown trout, and 203 rainbow trout. The average recovery percentage of all hatchery fish for the first season in the stream was 12.0 per cent in 1938, 9.9 per cent in 1939, 25.4 per cent in 1940, and 26.2 per cent in 1941. On the basis of this data there was a higher average recovery percentage of hatchery trout in 1941 than for any of the three years previous. The best recovery percentage by species of any sizeable planting was for a planting of rainbow trout in 1941 (37.9 per cent recovery from 203 fish planted).

Independent of the angling pressure on Kinne Creek in 1940 and 1941, better average recovery percentages were obtained from plantings of fewer trout those seasons than the two seasons previous. It is possible that a better average recovery percentage of hatchery fish might have been obtained from the small planting of trout made in 1940 (417) if brown trout had also been included in the group of fish planted. All three species were planted in 1941. Reasoning thusly we might assume that planting relatively small numbers of all three species of trout (less than planted in 1941) might result in even better returns to the angler than was attained in the 1941 fishing season. Following this line of reasoning and basing the proposed number of each species of trout to plant on the recovery percentages of previous plantings, the best expected returns to the angler on Kinne Creek might be obtained from planting the following numbers of hatchery fish: 75 brook trout, 150 brown trout, and 200 rainbow trout, or a total of 425 legal fish.

Recommendations

1. All members and guests of the Wingleton Club should continue to record their angling hours, the section of stream fished (above or below the railroad grade), and the number and length of each species of trout caught. This information is needed and the cooperation shown by members in recording this data in 1944 was encouraging.

2. No trout of any species should be planted during the next two years. In this interim we can learn more about the natural productive capacity of the stream and how it stands up under varied angling pressure.

Acknowledgments

We extend our thanks to the members of the Wingleton Club for their continued cooperation during the 1944 trout season, and especially for their care in recording their angling hours.

INSTITUTE FOR FISHERIES RESEARCH

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Table 1

Monthly Summary of the Angling Results
on Kinne Creek for the 1944 Season

Section	Month	Number of angling days	Number taking no fish	Total hours	Legal fish taken			Total legal fish	Catch per hour
					Brook trout	Brown trout	Rainbow trout		
Above railroad	May	5	0	7.50	11	0	0	11	1.47
Below railroad	May	16	7	52.50	7	10	0	17	0.32
Above railroad	June	5	0	12.50	11	0	0	11	0.88
Below railroad	June	28	1	109.50	11	45	3	59	0.54
Above railroad	July	1	0	0.75	2	0	0	2	2.67
Below railroad	July	16	0	57.00	8	43	2	53	0.93
Above railroad	August	1	0	0.75	1	0	0	1	1.33
Below railroad	August	9	1	25.00	2	13	1	16	0.64
Above railroad	September	1	0	2.50	7	0	0	7	2.80
Below railroad	September	7	0	25.00	2	9	1	12	0.48
Above railroad	Totals	13	0	24.0	32	0	0	32	1.33
Below railroad	Totals	76	9	279.0	30	120	7	157	0.56
GRAND TOTALS		89	18	303.0	62	120	7	189	0.62

Table 2

The Average Size and the Catch Per Hour by
Monthly Periods of All Trout Taken From
Kinne Creek During the 1944 Fishing Season

Month	Brook Trout		Brown Trout		Rainbow Trout	
	Catch per hour	Average size (inches)	Catch per hour	Average size (inches)	Catch per hour	Average size (inches)
May	0.30	8.57	0.17	10.52	0.00	0.00
June	0.18	8.51	0.37	9.53	0.02	8.83
July	0.17	8.58	0.74	9.32	0.03	8.25
August	0.12	8.25	0.50	9.07	0.04	9.00
September	0.33	8.40	0.33	9.77	0.04	9.50
Totals	0.20	8.47	0.40	9.50	0.02	8.78

Table 3

Number of Brook, Brown, and Rainbow Trout Removed
 From Kinne Creek by Anglers and the Percentage
 Composition by Species, 1938-1944

Year	Number of trout caught				Percentage of total catch by species		
	Brook	Brown	Rainbow	Total	Brook	Brown	Rainbow
1938	343	370	4	717	47.8*	51.6	0.6
1939	92	279	3	374	24.6	74.6*	0.8
1940	92	96	88	276	33.3*	34.8	31.9*
1941	162	145	78	385	42.1*	37.7*	20.2*
1942	134	222	136	492	27.2*	45.1*	27.7*
1943	75	152	145	372	20.2*	40.8*	39.0*
1944	62	120	7	189	32.8	63.5	3.7

* Indicates that trout of that species were planted that year.

Table 4

Summary of the Number of Hatchery Trout Taken
From Kinne Creek and the Percentage of the Total Catch
Made Up of Hatchery Trout for the Years 1938-1944

Year	Number hatchery fish caught			Total number stocked	Total catch	Total catch hatchery fish	Percentage total catch hatchery fish
	Brook	Brown	Rainbow				
1938	180 (1500)	0	0	1,500	717	180	25.1
1939	0	98 (994)	1 (2) ¹ ↓	994	381	99	26.0
1940	21 (167)	10 (0)	85 (250)	417	276	116	42.0
1941	52 (302)	56 (201)	77 (203)	706	398	185	46.4
1942 ² ✓	6 (50)	27 (200)	90 (250)	500	516	123	23.8
1943 ² ✓	6 (50)	27 (200)	90 (250)	500	373	123	32.9
Totals	265 (2,069)	218 (1,595)	343 (955)	4,617	2,661	826	31.0

¹ ✓ Two rainbows were in shipment of brown trout of that year.

² ✓ Numbers of hatchery fish caught are computed figures based on the recovery percentage by species of trout taken in other years (Percentage recovery by species: Brook 12.8, Brown 13.70, and Rainbow 35.8).

() Figures in parentheses are the number of hatchery fish stocked.

Table 5

Summary of the Number of Hatchery Trout
Planted in Kinne Creek and the Percentage
Recovery by Species for the Years 1938-1944

Year	Percentage recovery of hatchery trout during the season planted			Average recovery percentage	Total number of hatchery fish planted
	Brook	Brown	Rainbow		
1938	12.0	12.0	1,500
1939	...	9.9	50.0	9.9	996
1940	12.6	...	34.0	25.4	417
1941	17.2	27.9	37.9	26.2	706
1942) 1943)	Fish were not marked before release--no data available				500 500
1944	0