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A SUMMARY OF THE 1940 TROUT SEASON ON KINNE CREEK, WINGLETON CLUB

by

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For the third consecutive season, members of the Wingleton Club cooperated with the Institute for Fisheries Research by reporting in considerable detail their trout catches made on Kinne Creek. This report will summarize results obtained from the experimental plantings of rainbow and brook trout made on April 16, 1940, and will compare the 1940 results with those of previous years.

Hatchery fish released in Kinne Creek during 1940 were as follows: 250 rainbow trout (average size 8.3 inches, range 7 1/4 to 10 1/2 inches), and 167 brook trout (average size 8.25 inches, range 7 3/4 to 11 1/8 inches). All hatchery trout were jaw-tagged, and all were released from the railroad

tracks downstream into the upper end of Section A. These fish were purchased from and delivered by the Crystal Springs Trout Hatchery, of Iron River, Michigan. This year there was no indication of any mortality other than a very small amount usually occurring from repeated handling of the fish in the tagging and measuring of the fish.

The angling results for the 1940 season, as listed by the club anglers, will be found in Table 1. A total of 276 legal trout were taken, of which 116 were of hatchery origin and 160 were wild fish. The catch records have been summarized by two-week periods, beginning with the first day of the trout season, and the records are broken down into the catches of the three species of trout made in the three sections.

Brook trout catch

A total of 92 brook trout were captured, of which 21 were tagged hatchery trout (22.8 per cent of the total catch). The 21 recoveries constituted a recovery percentage of 12.5, which was approximately the same recovery percentage obtained from the planting of 1,500 tagged brook trout in April, 1938. All but one (which was caught in Section A) of the tagged fish recovered were recaptured in Section B, the locality of release. As noted in previous years, Section C (above the railroad embankment) is the best area for brook trout. A total of 58 wild brook trout were captured in this area, while wild brook trout taken in Section B and Section A numbered 5 and 8 respectively.

Brown trout catch

Although no hatchery brown trout were introduced into Kinne Creek during 1940, the capture of 10 tagged brown trout gave evidence that there was some carry-over from the planting of 994 brown trout tagged and released in April, 1939. The total catch of brown trout for 1940 was 96, of which ten (10.4 per cent) were of hatchery origin, i.e., from the previous year's planting. Of the 86 wild fish creeled, 54 were caught in Section A, and 32 were taken from Section B. Nine of the tagged brown trout were caught in Section A and one was captured in Section B. The total percentage of tagged brown trout recovered to date is now 11.7 per cent (117 of 994). If it is assumed that recoveries on the tagged brown trout were made at the same rate during 1940 as during 1939 (98, or 9.8 per cent of total number planted were caught in 1939), the stock of tagged brown trout present in 1940 was approximately 100.

Rainbow trout catch

During the past three seasons the wild stock of rainbow trout in Kinne Creek has been quite low, and never more than four fish of this species have been recorded in the season's catch during the past three years. The introduction of 250 tagged rainbow trout brought this fish quite noticeably to the anglers' attention, as 85 of the marked fish were recorded in the 1940 Kinne Creek catch, a recovery percentage of 34.0. The fish were all taken in Sections A and B. In addition to the tagged rainbow trout recovered in Kinne Creek, six additional recoveries from the 1940 release of tagged rainbow trout were reported from the Pere Marquette River, which brings the

total recovery percentage on this planting to 35.4 per cent. Wild rainbow trout recorded in the 1940 catch records were three in number, all taken from Section A.

Growth of tagged trout in Kinne Creek

The growth of the tagged trout recovered in Kinne Creek has also been analyzed by two-week periods. By assembling the recoveries in this manner, fish which have been free over comparable lengths of time are grouped together.

The ten tagged brown trout which were planted in 1939 and recovered during 1940 were all caught between April 27 and July 19. The growth on these fish varied from one to five inches. The average size of these ten fish at the time of release on April 11, 1939, was 7 3/4 inches. The average rate of growth over the entire period of freedom during 1939 and 1940 was slightly less than an inch every 200 days.

The data on the rate of growth of the tagged rainbow trout and the tagged brook trout are given in Table 2. There were not enough marked brook trout recaptured in the various two-week periods to give an accurate picture of their growth, but the data available indicate that growth of the introduced brook trout was similar to that found in the 1938 planting of hatchery brook trout, which was approximately 5/8 of an inch from April to September.

The rate of growth of the tagged rainbow trout appeared to be good. The planted fish increased in size at a somewhat irregular rate throughout the season. However, these apparent irregularities may have been caused by

too few samples in several of the two-week periods. The tagged rainbow trout showed even greater average increases in size (during the 1940 season) than did the tagged brown trout. Nine tagged rainbow trout showed an average increase in length of 1 5/8 inches by mid-July. This difference in growth rate between the two species may be due to the fact that only one-fourth as many rainbow trout were planted in 1940 as there were brown trout released in 1939.

Six tagged rainbow trout were recovered from the Pere Marquette River during 1940. The lengths reported indicated growths of from one-fourth inch to three inches before the close of the 1940 season.

The average size of the wild trout taken in Kinne Creek compared favorably with the average size of the hatchery trout recovered, and in the case of the brown trout, was greater. The average size of the wild trout taken was as follows: brook trout, 8.6 inches (ranging from 8 to 12 inches); brown trout, 10.4 inches (ranging from 8 to 15½ inches); and rainbow trout, 8.7 inches (three fish ranging from 7 to 9½ inches).

Comparison of the total catches on Kinne Creek, 1927-1940

The total catches for the several trout seasons will be found listed in Table 3, broken down by species and types. It will be noted that there has been a continual downward trend in the total catch from 1938 up to the present time. The decrease in the total catch from 1939 to 1940 was at least partially caused by the 8-inch size limit in effect during the 1940 trout season, which was not in effect during the previous two seasons. Another reason for the lower catch in 1940 is probably that there was less

fishing during the past season. The club ledger showed comparatively few registrations during the second and third weeks of August, a time when angling on Kinne Creek in past years has been quite productive.

The most noticeable decrease has occurred in the catch of wild brown trout, which dropped from 370 in 1938 to 86 in 1940, a drop of 76 per cent. The wild brook trout catch has decreased from 163 in 1937 to 71 in 1940, a decrease of 56 per cent. The catch of wild rainbow trout has been relatively constant at 3 or 4 fish each year for the past three years.

The April, 1940, planting of 250 rainbow trout has given the best returns to the angler of any yet attempted - 34 per cent recovery. This figure far exceeds the 1938 release of brook trout (1,500 tagged fish) from which 12 per cent were recovered, and the 1939 release of brown trout (994 tagged fish) from which 9.8 per cent were recaptured.

From Table 3 it will be noted that the catch during the past three years has been both good and bad in comparison with various seasons in the past thirteen years. None of the catches in any of the years listed approaches the total seasonal catches of 2,000 to 3,000 trout made in the early 1890's. Some of the apparent cyclic trends in the catch records also might be better explained if we knew more concerning the dates of establishment of the various dams, and their subsequent removal. Judging from the available data, the rainbow trout reached their peak in the years 1930-1932. The brown trout have exhibited two peaks of abundance, one in 1932 and 1933, and another in 1938, when the largest number of brown trout for any season was recorded. Neither of these species were planted at any time up to 1939. The best yields of brook trout were experienced in the years 1929 to 1933, with a small increase in 1938. Until 1939, brook trout were the only species stocked. As pointed

out in a previous report by Hazzard and Leonard (No. 399), the establishment of a series of dammed ponds favored the brown trout at the expense of the brook trout and probably tended to diminish the total bottom food supply, and may possibly account for the present status of the brook trout. The above-mentioned writers also brought out the fact that there was no apparent correlation between the extremely heavy stocking of fingerling brook trout from 1931-1936 and the subsequent catch. Since these fingerlings were not marked, there is no means of estimating their contribution to the total catch. Judging by results so far obtained on public waters, probably less than 2 per cent reached the anglers' creel.

The plantings of tagged legal trout since 1938 have contributed from 22 (1940) to 52 (1938) per cent of the total catch of brook trout in the years they were planted, tagged brown trout made up 35 per cent of the 1939 brown trout catch, and tagged rainbow trout contributed to the 1940 rainbow trout catch at the rate of 96 per cent.

Although the planting of comparatively large numbers of legal trout in Kinne Creek during the past three years has probably resulted in the capture of a higher percentage of hatchery-reared fish, the percentage of recovery from the total number planted has been comparatively low (12 per cent in 1938, 9.8 per cent in 1939), except in the instance of the release of the 250 tagged rainbow trout in 1940, on which there was a 34 per cent recovery. In experiments on public streams (and particularly on the Pine River) by the authors, it was found that the most efficient plantings were those made during the open trout season which were of from 100 to 160 legal trout per mile of stream averaging 50 feet in width. From such plantings, up to 60 per cent of

the fish planted have been recovered before the close of the season. (Shetter and Hazzard, 1940).

Measurements on the large-scale map of Kinne Creek demonstrate the length of stream from the railroad embankment to the lower screen to be 1.87 miles. The stream has an average width of 23.6 feet. The area of stream below the railroad embankment is therefore 5.4 acres. If planted at the maximum intensity suggested above, no more than 150 legal fish should be released at any planting, since Kinne Creek is only about one-half as wide, on the average, as the Pine River (80 fish per mile for 1.87 miles = 149.6 fish). In our management suggestions the number of trout to be planted has been doubled, as it is felt that the addition of only 150 legal fish would not provide enough fishing for the club members. It should be emphasized that as many as possible of the legal fish introduced each year should be captured before the close of each season; in other words, the creek should be fished hard enough to effect the removal of at least 75 per cent of the planted fish. Otherwise the introduced trout surviving will compete for both food and space with the native trout and a waste of planted and wild trout will result. This statement is based upon the assumption (which has been pretty well established) that a given area of water will support only a certain poundage of fish.

Management suggestions for 1941

1. Since a higher percentage of recovery of hatchery fish was obtained during 1940 from a planting less than half as large as those previously made, in spite of less fishing, it is recommended that releases of legal trout in

the future in Kinne Creek be kept low, never planting more than 300 legal trout at any one time in the section below the railroad. For 1941 the following plan is suggested:

(a) Plant 100 each of adult brook, brown and rainbow trout, 8 inches or over, below the railroad embankment, and release 50 adult brook trout of the same size in Section C, on May 26.

(b) Repeat this planting on June 30.

All of these fish should be tagged and measured before release into Kinne Creek. Plantings at the two suggested dates would make the fish available during periods of greatest angling pressure, that is, during the Decoration Day and July 4th holidays.

(2) When the club was visited in October, 1940, Kinne Creek was cruised by the authors, particularly Sections A and B, and thirteen improvement devices were suggested for Section A. Ten of these devices were wing deflectors which would assist the current to dig deeper holes and also uncover more bottom-food-producing gravel and rubble. The remainder of the suggestions dealt with floating cover to be increased in certain holes. The locations of the suggested devices were staked out and numbered, and an outline of the proposed devices to be installed was given Mr. Pullman at that time. Mr. Pullman promised to erect as many as was physically possible before the opening of the 1941 trout season. Additional improvements are needed in all sections to deepen pools and increase shelter. Only by improving living conditions for trout can the productive capacity of the stream be increased. Legal-sized plantings may temporarily improve fishing, but cannot permanently benefit the stream -- in fact this practice may actually harm it from the effect produced on the food and on the wild trout population.

The Institute had hoped to conduct further food studies on Kinne Creek during 1940, but the initiation of the Hunt Creek Experiment Station interfered with plans of Dr. J. W. Leonard to conduct any bottom-food sampling. However, an investigation of the food supply is scheduled for early spring and again in late fall.

(3) It has been suggested by various members of the Wingleton Club that a program of planting fingerling trout be reconsidered. To the writers it appears doubtful if the returns (in the form of legal fish) would be commensurate with the expense involved. The researches of Needham and Cliff (1938), Surber (1940), and Shetter (1939) have shown that rarely more than two per cent of the trout fingerlings planted survive to reach legal size. The previous experience of the Wingleton Club when planting fingerlings was apparently similar to that of these researchers. The portion of the stream above the railroad embankment (Section C) is now quite adequately supplied with fingerlings of natural origin, as can be demonstrated by seinings or close observation. From the railroad embankment downstream, however, not too much is known concerning the natural reproduction. A systematic seining of this stretch of Kinne Creek is planned for the coming summer.

In conclusion, we wish to thank the Wingleton Club members for the faithful recording of their catches during the past three seasons, and to ask that they continue their cooperation in the future.

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Table I

Tabular Summary of the 1940 Trout Catch on Kinne Creek
(Compiled from catch records of the Wingleton Club)

Time period	Brook trout catch						Rainbow trout catch						Brown trout catch						Total catch		
	Tagged fish from section			Wild fish from section			Tagged fish from section			Wild fish from section			Tagged fish from section			Wild fish from section					
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Apr.27-May 10	.	2	.	.	.	7	5	.	.	.	.	.	2	.	.	3	2	.	10	4	7
May 11-24	.	6	.	.	.	2	23	3	.	2	.	.	3	.	.	9	2	.	37	11	2
May 25-June 7	1	6	.	.	.	17	11	6	.	.	.	.	2	.	.	6	7	.	20	19	17
June 8-21	.	2	.	1	1	1	2	2	.	.	.	.	.	.	.	1	1	.	4	6	1
June 22-July 5	.	.	.	.	1	.	9	6	.	.	.	.	.	1	.	10	10	.	19	18	..
July 6-19	.	3	.	4	1	1	9	1	.	1	.	.	2	.	.	4	7	.	20	12	1
July 20-Aug.2	.	1	.	.	.	7	1	.	.	.	.	.	.	.	.	12	1	.	13	2	7
Aug. 3-16	.	.	.	.	1	22	2	1	.	.	.	.	.	.	.	7	.	.	9	2	22
Aug. 17-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	..	..	..
Aug. 31-Sept. 2	.	.	.	3	1	1	3	1	.	.	.	.	.	.	.	2	2	.	8	4	1
Total by stream section	1	20	.	8	5	58	65	20	.	3	.	.	9	1	.	54	32	.	140	78	58
Total for Kinne Creek			92						88						96						276

Table 2

Growth of Hatchery Rainbow Trout and Hatchery Brook Trout
in Kinne Creek, 1940 Trout Season

(Measurements are given in millimeters)

Time period	Tagged rainbow trout				Tagged brook trout			
	Number of marked fish recaptured	Av. no. of days free	Av. size on Apr. 16	Average increase in size	Number of marked fish recaptured	Av. no. of days free	Av. size on Apr. 16	Average increase in size
Apr.27-May 10	5	18	226	3	2	11	209	12.5
May 11-24	*26	31	220	12	*6	37	207	6.6
May 25-June 7	*17	46	221	18	7	46	219	5.0
June 8-21	*4	62	196	14	2	63	224	3.0
June 22-July 5	15	76	221	29	..	..	...	...
July 6-19	*10	91	219	41	3	90	206	10.3
July 20-Aug.2	1	104	192	87	1	95	206	23.0
Aug. 3-16	3	113	199	43	..	..	...	...
Aug. 17-30	..	..	..	..	..	..	...	...
Aug.31-Sept.2	4	138	195	67	..	..	...	...

*One fish in each of the periods so indicated had insufficient growth data.

Table 3

Catch Records on Kinne Creek, 1927 to 1940
(From Wingleton Club Register)

Year	Brook trout		Brown trout		Rainbow trout		Total trout	
	Wild*	Hatchery	Wild*	Hatchery	Wild*	Hatchery	Wild*	Hatchery
1927	104	...	20	...	37	...	161	...
1928	190	...	33	...	36	...	259	...
1929	376	...	34	...	32	...	442	...
1930	497	...	69	...	55	...	621	...
1931	391	...	71	...	44	...	**575	...
1932	328	...	241	...	45	...	614	...
1933	298	...	284	...	22	...	604	...
1934	103	...	138	...	18	...	259	...
1935	72	...	188	...	14	...	274	...
1936	36	...	45	...	3	...	84	...
1937	- - - - - - - - - Data not available in our files - - - -							
1938	163	180	370	...	4	...	537	180
1939	92	...	181	98	2	1	275	99
1940	71	21	86	10	3	85	160	116

*Figures probably include a few trout which survived from hatchery plantings.
**69 fish added which were combined catches of brown and rainbow trout.

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