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INSTITUTE FOR FISHERIES RESEARCH

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SUMMARY OF THE INTENSIVE CREEL CENSUSES ON
PORTIONS OF SEVEN MICHIGAN TROUT STREAMS DURING
THE 1938 TROUT SEASON

An intensive creel census of the fishing on more or less representative portions of seven trout streams of the Lower Peninsula was maintained during the 1938 trout season (April 30-September 5) through the efforts of the Fish Division, the Michigan Civilian Conservation Corps, and the U. S. Forest Service. Six of these streams had been censused in a similar fashion in 1937 (Pine River, North Branch of the Au Sable River, Pigeon River, Little Manistee River, Canada Creek, and the South Branch of the Pine River); a seventh was added during the 1938 season (White River). The creel census of the state-owned water on the Pine River (Lake County) was conducted by employees of the Fish Division, while all others were taken by CCC enrollees of the state or of Forest Service camps.

In Tables 1 and 2 the pertinent data are presented for each of the seven streams. The fishing on each stream will be discussed briefly in the following paragraphs.

Pine River (Lake County)

Creel census on this river was conducted with a crew of four census clerks hired by the Fish Division. One man was permanently stationed throughout the trout season at each of the four main public camp grounds.

These clerks were under the direction of a qualified biologist employed by the Institute for Fisheries Research. The following men served as clerks: Harold Bowditch, Junior Blue, Clifford Smith, Richard Love, and Robert Fortney, Jr. O. H. Clark directed the census from April 30-June 8, and was succeeded by Richard Bohland for the duration of the trout season when Mr. Clark was transferred to the Huron River survey. The census covered 8 miles of the Pine River with approximately 99 per cent efficiency.

The state-owned water on the Pine River was more heavily fished than any stream area under census. A total of 4,109 anglers (fisherman-days) fished 16,849 hours during the season. The average time fished was 4.1 hours, and the average total catch per hour was 0.50, made up of 0.36 rainbow per hour and 0.14 brook trout per hour. Only six brown trout were recorded and positively identified. The total catch of fish for the season was 8,480, consisting of 6,126 rainbow, 2,348 brook, and 6 brown trout.

As in 1937, legal-sized hatchery trout (both brook and rainbow) were released in the Pine River during 1938. The influence of these plantings on the catch are discussed more in detail in Report No. 521.

Fishing pressure was heaviest during the opening week of the season, when over 2,500 hours of angling were recorded. Next heaviest week of fishing was that including Decoration Day, followed by the last week of the season.

North Branch of the Au Sable River

Creel census on the North Branch was conducted by enrollees of Camp Au Sable of the Michigan CCC. Five stations were maintained at the following points: Lovells Bridge, the Gravel Pit, the Twin Bridges, Ranch Hole, and Halstead's Ford. Two shifts of clerks were operated daily throughout the season. The accessibility of the stream from several roads and private cabins mitigates against 100 per cent efficiency in contacting all fishermen,

but an adequate sample of the fishing from a 5 mile section of the North Branch was obtained.

A total of 1,622 fishermen was recorded for the season, and they fished 5,308 hours. Fishing pressure was greatest during the opening week, again followed by the week which included Decoration Day. The average number of hours fished varied from 2.5 to 4.0, with a season average of 3.3 hours per trip.

The total catch of 2,524 trout was made up as follows: brook trout 2,063, rainbow trout 82, brown trout 393. The average total catch per hour was 0.48 fish of legal size, which was very slightly less than the 1937 catch per hour (0.50).

Pigeon River

The creel census of the angling in the Pigeon River was maintained by veteran enrollees of Camp Pigeon River of the Michigan State CCC. Checking stations were erected at the Vanderbilt bridge, at the Old Forest Headquarters, at the Tin Bridge, and at the Wolverine bridge (Red Bridge). Since these locations did not completely close off any section of the stream, the efficiency of the census in contacting all anglers cannot be estimated.

A total of 1,139 anglers were recorded for the 1938 season, and these fishermen spent 3,831 hours on the stream. The lengths of their trips varied from 2.9 to 4.1 hours, with a seasonal average of 3.4 hours.

The total catch of 1,735 trout was made up as follows: brook trout 1,132, brown trout 124, rainbow trout 479. The average total catch per hour was 0.45, a slight decrease from 1937, when it was 0.50.

Fishing pressure was heaviest from Decoration Day until mid-June, followed by the last week of the season. No legal trout were stocked during or before the 1938 season.

Little Manistee River

Creel records for the intensively censused section of the Little Manistee River were obtained by enrollees of Camp Wellston of the Manistee Purchase Unit of the U. S. Forest Service. Two checking stations were maintained, one was located just west of M-63 bridge, and another at the bridge north of Peacock. Here again the road pattern and cottage locations made it impossible to close off a section of stream so that all fishermen could be contacted.

Seven hundred and sixty-nine fishermen were interviewed during 1938 as compared with 659 during the preceding year. The average time fished was 4.2 hours. Angling pressure was greatest during the opening week of the season, followed by the third week of June, and by the week including Decoration Day.

The total catch of 1,761 trout was made up of 260 brook trout, 746 rainbow trout and 755 brown trout. The average total catch per hour was 0.55, which represents an increase over the preceding year (0.40). A slightly greater number of brown trout were recorded than rainbow trout this year despite the stocking of 500 legal-sized rainbow and 500 legal sized brook trout (all jaw-tagged) on June 28, 1938, part of which were placed in the census section. Only 11 tagged brook trout and 9 tagged rainbow trout from this planting contributed to the total catch.

Canada Creek

The creel census of Canada Creek was operated by veteran enrollees of Camp Presque Isle of the Michigan CCC. Five stations were maintained at strategic points such as bridge crossings and trail endings in that stretch of stream immediately below the north boundary of the Canada Creek Ranch. It is believed that the great majority of anglers were contacted.

Fishing pressure during the past season was slightly increased over 1937 (494 anglers in 1938 compared with 455 in 1937). Angling intensity was greatest during Decoration Day week, followed by the opening week. The average time spent per angler was 3.8 hours.

The total catch of trout consisted almost entirely of brook trout (767 brook, 2 brown trout). Eighteen per cent (140 brook trout) of the total brook trout catch was made up of tagged hatchery brook trout of legal size which were released during the month prior to the 1938 trout season. An additional 41 tagged brook trout were reported taken outside the census area, largely from the Canada Creek Ranch. Despite the addition of 500 legal trout to the stream, the average total catch per hour diminished from 0.50 in 1937 to 0.41 in 1938.

South Branch of the Pine River (Alcona County)

This census was conducted by enrollees of Camp Silver Creek of the Huron National Forest. One man was stationed at the Pine River Rearing Station. He was supposed to cover all fishing between the Rearing Station and the first road bridge below, but this was not physically possible. Figures presented for this stream therefore represent a random sample, and not complete coverage.

From records of 339 fishermen who fished 1,470 hours, 280 brook trout, 106 rainbow trout, and 5 brown trout were reported. The average total catch per hour of 0.26 fish for the 1938 season, was a slight increase over that of 1937, when the average total catch per hour was 0.20.

White River

Creel census on the White River was initiated at the start of the 1938 trout season and records were taken by enrollees of Camp White Cloud

of the Manistee Purchase Unit of the U. S. Forest Service. Three stations were maintained, and were located so that all fishermen entering a 3-mile stretch of the stream could be interviewed. This census was ~~probably~~ ^{probably} 95 per cent efficient.

During the 1938 season, 870 anglers fished 3,487 hours, averaging 4.0 hours per trip. These fishermen caught 1,903 brook trout and 2 brown trout. The average total catch per hour for the season was 0.55 fish.

Angling pressure was greatest during the opening week of the season, but the number of fishermen using the stream fell off rapidly after that period.

A study of Table 2 shows that with the exception of Canada Creek all streams recorded a larger catch of legal brown trout than of undersized brown trout. This is just the reverse of the usual situation in the total catch for the other two species, where usually from 50 to 75 per cent of the total catch for rainbow and brook trout will be less than 7 inches in length. The Pine River census of 1938 provided an exception to the latter statement, however, since twice as many legal rainbow trout as undersized rainbow trout were reported caught.

Records of fingerling stocking for the period 1933-1937 inclusive for the censused portions of the streams herein discussed have been tabulated (Table 3) to see what, if any, effect these might have had on the catches. Included in the table were fingerlings 3-8 months old as listed, but yearlings and adult fish were excluded. A brief comparison of these planting records with the catch records is made for each stream.

Pine River.--Release of approximately the same number of rainbow and brook trout fingerlings over 5 years has not resulted in comparable numbers of legal trout of each species, although sub-legal trout caught were approximately equal in number. Either more hatchery reared rainbow fingerlings survive to legal size, or else there is more natural reproduction in the Pine River

of the rainbow trout than of the brook trout. Brown trout are not present to any degree, nor have they been stocked as fingerlings.

North Branch Au Sable River.--Brook trout (160,000) and brown trout fingerlings (20,500) have been released in this water. Brook trout dominate the catch both in legal fish and undersized fish, although an appreciable number of both brown and rainbow trout are taken each year as legal fish. From the large amount of known spawning territory for brown and brook trout in this stream, it is to be assumed that an appreciable percentage of the total catch is of natural origin. Since no rainbow trout have been planted here, natural reproduction is obviously responsible for the presence of these fish in the legal catch.

Pigeon River.--Brook trout fingerlings (207,000) and brown trout fingerlings (43,000) have been released in the Pigeon River. Brook trout dominate both the legal and sublegal catch, although brown trout are beginning to show up in greater numbers since the original release in 1935. Rainbow trout maintain their present status (slightly less than 1 legal rainbow to 2 legal brook) in the catch by natural reproduction, as fingerling rainbows have not been planted in this stream in the last 5 years.

Little Manistee River.--Brown trout fingerlings (103,000) and relatively few brook trout fingerlings have been planted in the Little Manistee River. Legal brown trout barely exceed the legal rainbow trout in the catch. The latter species is maintaining itself by natural spawning. Brown trout are becoming more abundant each year. Brook trout are of minor importance in the total catch. This stream has always produced many rainbow trout, but is now becoming a good stream for brown trout angling.

Canada Creek.--Brook trout only have been released in Canada Creek (22,000), and this species makes up practically the entire legal catch, although a few brown and rainbow trout were taken in 1938.

White River.--Ninety-six thousand brook trout fingerlings have been released in or adjacent to the censused area in the period 1933-1937. Brook trout made up almost the entire catch.

South Branch of the Pine River.-- Rainbow trout fingerlings (12,000) and brown trout fingerlings (61,000) have been released in the South Branch of the Pine River and Kurtz and Samyn Creeks. No brook trout fingerling plantings are recorded for this stream, but brook trout from natural reproduction have dominated the catch both of legal and of undersized brook trout. Rainbow trout are more numerous in the catch despite lighter stocking of this species than of brown trout in this area. Brown trout should not be planted in either Kurtz or Samyn Creeks as these streams are small, cold, reticulate, alder covered streams, more typical of brook trout feeder streams, and are not suitable habitat for the brown trout. The South Branch of the Pine proper, below the Pine River Rearing Station would probably be the desirable upper limit of brown trout planting on this stream.

A breakdown of the records reveals that angling for trout is still monopolized by men. Of the total number of anglers recorded for all streams in 1938, only 648, or 6.9 per cent, were women. In 1937, records from five of the six streams censused show that of 6,250 anglers recorded, 483 or 7.7 per cent were women.

The percentage of fishermen taking no trout was nearly the same in both 1937 and 1938. In 1937 a total of 3,314 anglers out of 6,909, or 47 per cent were unsuccessful. The following year 4,395, or 48 per cent of 9,342 anglers, did not take any trout.

The records of the angling for trout in 1937 and 1938, including the more pertinent data for each stream censused, are compared in tabular fashion in Table 4. The number of anglers and the number of hours fished increased

on some streams and decreased on others. Excluding the White River (not under census in 1937) there was probably a slight increase in the number of fishermen and number of hours fished. This may or may not represent actual conditions since it is known that all anglers were not recorded on the censused portion of the Pine River in 1937. The average total catch per hour for 1937 on the six streams censused was 0.54 trout. For the seven streams in 1938, the average total catch per hour was 0.49, a slight drop from the preceding year. The greatest drop in the catch per hour occurred in the Pine River census, the greatest increase on the Little Manistee River. Only slight changes took place in the remaining streams under census during both 1937 and 1938.

A comparison of the 1937 intensive creel census on trout streams has been made with the 1937 general creel census taken on trout waters by conservation officers. According to general creel census records for hatchery districts 3, 4, 5, 6, and 7, (districts in which the intensively censused streams are located), a total of 2,899 anglers were interviewed by conservation officers. These anglers fished 10,228 hours and caught 6,889 trout, a catch per hour of 0.67 trout. This figure exceeds by 0.13 the average total catch per hour computed from the combined records of the six intensively censused streams in 1937. Such a discrepancy is most likely caused by chance and by errors inherent in the general methods of sampling the fishing (i.e. by the tendency of officers to secure most of their records from good fishing waters, during good fishing weather, by taking records of better than average catches and, in some instances, failing to record anglers taking no fish).

Residence of the anglers fishing the intensively censused streams during the past two years were charted (charts not included in report). Comparison of the charts for the two years indicated that:

1. The great majority of trout fishermen live in counties which have no trout water.

2. Trout fishermen seem to exhibit a preference for streams nearest their homes. With one exception, censused streams on the east side of the state received the heaviest angling pressure from Wayne County anglers. Only on the South Branch of the Pine River in 1938 was there a greater number of anglers from Genesee County. On the west side of the state Kent County anglers exerted the greatest fishing pressure on all the censused trout streams tributary to Lake Michigan. These figures follow in general the distribution of the centers of greatest population in Michigan according to the U. S. Census of 1930.

3. Very few trout fishermen living in counties with trout water go outside the county for trout fishing.

4. Residence patterns for Michigan trout fishermen remained much the same for the censused streams during both 1937 and 1938.

5. Ohio led in number of non-resident trout fishermen, especially on the streams of eastern Michigan. Western Michigan trout streams were visited by a greater number of Illinois and Indiana fishermen, but Ohio was also well represented on those waters.

6. Very few anglers came from the Upper Peninsula to the Lower Peninsula for trout fishing. The reverse is probably not true, although few creel censuses on the Upper Peninsula trout streams have been conducted.

7. Angling pressure was highest during the opening week on those streams nearest to the large centers of population. On the Pigeon River and Canada Creek heavy angling pressures did not develop until Decoration Day week-end.

The general trend of the trout fishing in the Lower Peninsula, as measured by the average total catch per hour for weekly periods, has been

studied (except for the South Branch of the Pine, where adequate weekly records were not available) and is briefly described here. Angling started out relatively poor, only the North Branch of the Au Sable and Canada Creek yielding better than 0.60 trout per hour. The second week was very poor in all streams, the catch per hour averaging from 0.25 to 0.47 fish per hour. Slight increases in the quality of fishing occurred during the third and fourth weeks, followed by a sharp drop in the fifth week in all streams. Through the sixth to eighth weeks there were alternate sharp rises and falls of the catch per hour in all but the Pine River. From the ninth to the twelfth week inclusive, fishing was at its best, there being seldom more than one stream where the catch per hour fell below 0.50, and in some instances the figure went as high as 1.45 fish per hour (eleventh week, on the Little Manistee). A decided drop (in two streams to below 0.15 trout) in the catch per hour occurred from the thirteenth to fifteenth week inclusive in those streams which brook trout were the dominant fish and in which the water tends to warm up during August (Canada Creek, Pigeon River, North Branch Au Sable, White River). During the last three weeks of the season the catch per hour in these and the other streams were more normal (from 0.35 to 0.73 trout per hour of fishing). In general the fishing in those streams where rainbow trout were the dominant species, fishing started out poorly and finished strong. This is obscured in the catch per hour on the Pine as plotted, but separate curves of the catch per hour of rainbow and brook from the Pine show this fact definitely. Brown trout fishing in general also becomes progressively better after the opening of the season, until about mid-August. No two streams have catch per hour curves of any great degree of similarity, although the average catch per hour for the season varied only from 0.41 to 0.55 fish per hour with the single exception of the South Branch of the Pine River.

Intensive creel census on six different trout streams of the state has now been completed for two consecutive trout seasons. In combination with tagging and marking studies, and from the census data alone, much information of pertinent value has been accumulated. There is still much to be learned from creel census studies, however, such as the total weight of the catch from known water areas, the size and age composition of the catch. To obtain these data, it will be necessary to secure individual weights and measurements on the fish in the angler's catch. A new and more detailed creel card for intensive trout stream census has been prepared, and it is the plan of the Institute staff to equip all creel census clerks with accurate balances and measuring boards for weighing and measuring individually all fish taken. The success of this plan depends to a large degree on how much cooperation is given by the anglers, and on the manner and method of approach used by the census clerks in their efforts to obtain the data. The value of such data, if we are successful in our efforts to collect it, will be more than worth the extra effort, and will contribute much toward a better understanding of the composition of the annual trout catch in the streams of the state.

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TABLE 1

Intensive Creel Census on Michigan Trout Streams,
Open Season, 1938

Stream	Mileage censused	Total fishermen	Percentage taking no fish	Total hours fished	Total brook trout taken	Total brown trout taken	Total rainbow trout taken	Total trout taken	Total catch per hour	Catch per fisherman	Under-sized trout released	Catch per mile
Pine River	8	4,109	45	16,849	2,348	6	6,126	8,480	0.50	2.1	5,981	1,060
N. Br. Au Sable River	5	1,622	52	5,308	2,061	393	82	2,539	0.48	1.6	2,524	508
Pigeon River	..	1,139	51	3,831	1,132	124	479	1,735	0.45	1.5	4,079	..
Little Manistee River	4	769	41	3,194	260	755	746	1,761	0.55	2.3	1,763	440
Canada Creek	4	494	49	1,891	767	2	..	769	0.41	1.6	1,460	142
White River	3	870	42	3,487	1,903	2	..	1,905	0.55	2.2	4,229	635
S. Br. Pine River	2	339	58	1,470	280	5	106	391	0.26	1.2	1,120	195

TABLE 2

Number of Undersized Trout, Number of Legal Trout, Total Trout Caught
and Percentage of Undersized Trout Caught in 1938 Intensive Trout Stream Creel Census.

(Figures in parenthesis show percentage of total catch)

Stream	Number of undersized trout caught			Number of legal trout caught			¹ Total trout caught	Percentage of undersized trout in catch	Average catch per hour (legal fish)
	Brook	Brown	Rainbow	Brook	Brown	Rainbow			
Pine River	3,018 (21)	...	2,963 (20)	2,348 (16)	6 (tr.)	6,126 (42)	14,461	41	0.50
N. Br. Au Sable	2,344 (46)	91 (2)	89 (2)	2,061 (41)	393 (8)	82 (2)	5,060	50	0.48
Pigeon River	3,372 (58)	49 (1)	658 (11)	1,132 (19)	124 (2)	479 (8)	5,814	70	0.45
Little Manistee River	436 (12)	413 (12)	914 (26)	260 (7)	755 (21)	746 (21)	3,524	50	0.55
Canada Creek	1,449 (65)	10 (tr.)	1 (tr.)	767 (34)	2 (tr.)	...	2,229	66	0.41
White River	4,228 (69)	...	1 (tr.)	1,903 (31)	2 (tr.)	...	6,134	69	0.55
S. Br. Pine River	998 (66)	2 (tr.)	120 (8)	280 (18)	5 (tr.)	106 (7)	1,511	74	0.26

¹ Total undersized and legal trout reported.

TABLE 3

Number of 3-8 Month Old Trout Fingerlings Stocked in or
Adjacent to Censused Areas From 1933-1937 Inclusive

Stream	Brook	Brown	Rainbow
Pine River	92,800	...	96,000
North Branch Au Sable	160,000	20,500	...
Pigeon River	207,000	43,000	...
Little Manistee River	20,000	103,000	...
Canada Creek	22,000
White River	96,000
South Branch of the Pine	...	61,000	12,000

TABLE 4

Comparison Between the 1937 and 1938 Intensive Creel
Census on Trout Streams; Total Fishermen, Total Hours Fished,
Total Trout Taken, and Catch Per Hour

Streams under census	Total fishermen		Total hours fished		Total trout taken		Catch per hour	
	1937	1938	1937	1938	1937	1938	1937	1938
Pine River	2,010	4,109	8,459	16,849	6,504	8,480	0.77	0.50
North Branch Au Sable	1,904	1,622	6,664	5,308	3,143	2,539	0.50	0.48
Pigeon River	1,153	1,139	4,031	3,831	1,912	1,735	0.50	0.45
Little Manistee River	659	769	2,584	3,194	1,036	1,761	0.40	0.55
Canada Creek	455	494	1,411	1,891	673	769	0.50	0.41
White River	...	870	...	3,487	...	1,905	...	0.55
South Branch Pine	728	339	2,184	1,470	517	391	0.20	0.26
Total or Average	6,909	9,342	25,333	36,030	13,785	17,580	0.54	0.49