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REPORT OF THE GENERAL CREEL CENSUS FOR 1943

by

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Introduction

This report includes the data for the seventeenth year of the General Creel Census in Michigan. The Conservation Officers, as in other years, have collected the records as part of their regular duties and usually incidental to patrol activities. This cooperation by members of the Division of Field Administration is greatly appreciated.

The aim of the general creel census is to furnish a random sample of all types of lake and stream fishing in all parts of the state. As in the Report of the General Creel Census for 1942 the records of fishing done in waters of the Great Lakes has been considered separately.

During 1942 there were no records of fishing submitted from only 2 counties: Arenac and Van Buren, whereas during 1943, there were 8 counties from which no fishing records were received: Arenac, Bay, Iosco, Kalkaska, Mason, Mecosta, Osceola, and Sanilac. Although there are few lakes and streams in Arenac, Bay, and Sanilac counties there is an abundance of good fishing in Lake Huron, and a lack of such

records from these counties prejudices the statewide sample of fishing in the Great Lakes. In the other five counties there are many lakes and streams which afford a good deal of fishing for both trout and warm-water fishes. In addition to this inland fishing, Iosco and Oceana counties border on the Great Lakes.

This report will follow that for the general creel census of 1942 in order to facilitate any comparisons which might be made. No records of intensive lake or stream censuses have been included in this report.

The term "fisherman-day" as used in this report denotes the amount of time which the angler had spent fishing that day prior to the time he was interviewed by the conservation officer. Only legal-sized fish taken by the anglers have been considered.

During 1943 the conservation officers interviewed 34,476 anglers who fished a total of 103,429.4 hours in all types of water throughout the state and caught a total of 119,596 legal-sized fish, a catch of 1.16 fish per hour (Table I). These figures represent a decrease of

Table I  
Number of fishermen, hours fished, and legal-sized fish  
caught for each hatchery district

District	Number of fishermen	Total hours fished	Number of legal-sized fish caught	Catch per hour
1	2,362	7,519.1	8,235	1.10
2	3,033	10,591.5	9,388	0.89
3	1,946	5,290.8	5,743	1.09
4	2,992	7,273.8	10,578	1.45
5	5,856	15,322.6	10,225	0.67
6	624	1,777.4	1,133	0.64
7	936	2,783.7	3,917	1.41
8	3,561	11,604.1	13,469	1.16
9	3,859	11,923.4	17,232	1.45
10	2,486	7,243.4	9,643	1.33
11	6,821	22,099.6	30,033	1.36
Total or average	34,476	103,429.4	119,596	1.16

11,698 anglers, 47,887.6 hours, and 53,842 legal-sized fish from the figures of 1942. The catch per hour of 1.16 fish indicated a rise of 0.02 fish per hour over that of 1942. The records for fishing in all types of water have been divided into three categories: (1) non-trout waters - 28,277 anglers who fished 82,723.9 hours and caught 96,737 legal-sized fish at a rate of 1.17 fish per hour. The catch per hour for non-trout waters in 1942 was 1.11 fish. (2) trout waters (waters which are known to support considerable trout fishing) - 4,639 anglers who fished 14,344.4 hours and caught 12,963 legal-sized fish, a catch of 0.90 fish per hour. The catch for trout waters in 1942 was 0.89 fish per hour. (3) Great Lakes waters - 1,560 anglers who fished 6,355.7 hours and caught 10,196 legal-sized fish, at a rate of 1.60 fish per hour. The catch per hour for Great Lakes waters in 1942 was 1.67 fish.

Of the 34,476 fishermen interviewed by the officers in 1942, there were 3,965 non-residents (11.2 per cent) a decrease of 4.5 per cent from that of 1942.

There were 5,603 women anglers interviewed by the officers during 1943. These women made up 16.3 per cent of all anglers a decrease of 0.8 per cent from that of 1942. On non-trout waters 17.8 per cent of all anglers were women, in Great Lakes waters 13.1 per cent of the anglers were women and on trout-waters 7.6 per cent of all anglers were women.

#### Detailed Analysis

##### Number of Records

During 1943 the conservation officers obtained records from 34,476 fishermen, a decrease of 11,698 (25.3 per cent) from the 46,174 records collected in 1942. These records represented 103,429.4 hours of fishing,

a decrease of 47,887.6 hours (31.6 per cent) from that of 1942. The number of legal-sized fish reported in 1943 (119,596 fish) was a decrease of 53,842 (31.0 per cent) from that reported during 1942.

During 1943 no creel census records were submitted from Arenac, Bay, Iosco, Kalkaska, Mason, Mecosta, Osceola, and Sanilac counties. This is a four-fold increase in "blank" counties from the census of 1942 when only 2 counties were not represented. In addition to these there were 15 counties from which records of fewer than 100 fisherman-days were submitted as follows:

Muskegon	1	Gratiot	17	Saginaw	59
Ogemaw	2	Baraga	20	Keweenaw	70
Ontonagon	3	Alger	45	Crawford	79
Menominee	5	Isabella	49	Newaygo	95
Macomb	12	Tuscola	58	Oceana	98

As mentioned in the report of the general creel census for 1939 (Institute Report No. 625) a goal of 400 records for the officers of each county was recommended. During 1943 the officers of the following 35 counties secured records of more than 400 fisherman-days: Allegan, Antrim, Barry, Benzie, Branch, Cheboygan, Clinton, Delta, Dickinson, Genesee, Gogebic, Grand Traverse, Huron, Ionia, Iron, Jackson, Kalamazoo, Kent, Lapeer, Leelanau, Lenawee, Livingston, Mackinac, Manistee, Marquette, Monroe, Montcalm, Oakland, Oscoda, Ottawa, Roscommon, St. Joseph, Washtenaw, Wayne, and Wexford. This list includes 13 counties from which fewer than 400 such records were submitted in 1942 as follows: Allegan, Barry, Clinton, Delta, Dickinson, Grand Traverse, Ionia, Kalamazoo, Kent, Lenawee, Montcalm, St. Joseph, and Washtenaw. Also there were 12 counties on the "400 list" in 1942 which did not submit as many records in 1943: Alcona,

Alpena, Charlevoix, Chippewa, Clare, Gladwin, Ingham, Macomb, Mason, Montmorency, Ontonagon and St. Clair. There does not seem to be any suitable explanation for the failure of officers of any county to secure 400 records in one year after having done so the previous year. Particularly hard to explain are such counties as Mason which dropped from more than 400 records to none, or such counties as Ontonagon or Macomb which dropped from more than 400 to 3 and 12 respectively. Roscommon County with 4,254 records of individual fishermen again heads the list and is followed in order by Iron (1,477 records), Jackson (1,165 records), Kent (1,119 records), and Wayne (1,073 records) counties.

As previously stated, 3,965 (11.2 per cent) of the 34,476 anglers interviewed by the officers were non-residents, a decrease of 4.5 per cent from that of 1942. This is the poorest representation of non-resident anglers shown in the general creel census to date and is probably attributable to wartime travel restrictions. Of these non-residents 3,535 (89.2 per cent) were interviewed on non-trout waters, 223 (5.6 per cent) on trout waters and 207 (5.2 per cent) on Great Lakes waters. As in 1940, 1941, and 1942, the greatest concentration of non-resident anglers interviewed during 1943 fished in Hatchery District 9 which is located in the southwestern corner of the state. The records (Table II) show that 28.6 per cent of all the anglers contacted by the officers in this district were non-residents.

Table II

Number of fishermen, resident and non-resident, and percentage of non-resident fishermen in each hatchery district

District	Number of fishermen	Resident	Non-resident	Per cent non-resident fishermen
1	2,362	2,110	252	10.67
2	3,033	2,786	247	8.14
3	1,946	1,651	295	15.16
4	2,992	2,630	362	12.10
5	5,856	5,255	601	10.26
6	624	581	43	6.89
7	936	726	210	22.44
8	3,561	3,504	57	1.60
9	3,859	2,756	1,103	28.58
10	2,486	2,177	309	12.43
11	6,821	6,335	486	7.13
Total or per cent	34,476	30,511	3,965	11.50

Trout, Non-trout, and Great Lakes Fishing by Hatchery Districts

Table III gives the data on the numbers and percentages of anglers using trout, non-trout, and Great Lakes waters during 1942 arranged by hatchery districts.

Table III

Numbers and percentages of fishermen interviewed on trout, non-trout, and Great Lakes waters, by hatchery districts

Hatchery district	TROUT WATERS		NON-TROUT WATERS		GREAT LAKES WATERS	
	Number of fishermen	Percentage of fishermen	Number of fishermen	Percentage of fishermen	Number of fishermen	Percentage of fishermen
1	1,213	51.35	1,144	48.44	5	0.21
2	1,300	42.86	1,652	54.47	81	2.67
3	565	29.03	1,381	70.97	...	...
4	406	13.57	2,559	85.53	27	0.90
5	483	8.25	5,373	91.75	...	...
6	179	28.69	443	70.99	2	0.32
7	121	12.93	815	87.07	...	...
8	169	4.75	3,392	95.25	...	...
9	95	2.46	3,754	97.28	10	0.26
10	22	0.88	2,464	99.12	...	...
11	86	1.26	5,300	77.70	1,435	21.04
Total or average	4,639	13.46	28,277	82.02	1,560	4.52

The largest percentage of records for trout fishing during 1943 were taken in Hatchery District 1 where 51.35 of the 2,362 anglers fished in trout waters. This was followed in order by Hatchery District 2 with 42.86 per cent based on 3,033 records and District 3 with 29.03 per cent based on 1,946 records. The seven hatchery districts north of the Bay City-Muskegon line furnished 92.0 per cent of all the trout fishing recorded whereas in 1942 and 1941 these same districts furnished 97.3 per cent and 96.7 per cent respectively. Also the trout fishing in these seven districts made up 24.0 per cent of all the fishing in that area as compared with 20.6 per cent for the same area in 1942.

As in 1942, Hatchery District 10 furnished the greatest percentage of non-trout fishing records with 99.12 per cent based on 2,486 records. District 10 was followed in order by District 9 with 97.28 per cent based on 3,859 records and District 8 with 95.25 per cent based on 3,561 records.

Records of fishing in the Great Lakes were submitted from 6 hatchery districts in 1943 as compared with 5 in 1942. District 11 furnished the largest percentage—21.04 per cent based on 6,821 records.

#### Quality of Fishing

The best general indication of the quality of fishing is the catch per hour of fishing effort. This varies considerably with the type of fishing done by the anglers as indicated in the report of the general census for 1942. The records for 1943 show that the best fishing was in District 4 (Table I). As in 1942 this high catch per hour was due to large catches of perch in Lake Michigan off Manistee County. Generally the southern counties of the state yield uniformly higher catches per hour than do the northern counties (Table IV). The catch per hour in the

Table IV

Catch per hour for all waters by hatchery districts

District	1938	1939	1940	1941	1942	1943
1	0.6	0.6	0.5	0.7	0.6	1.1
2	1.1	1.1	1.4	1.1	1.4	0.9
3	1.0	1.2	0.8	0.9	0.9	1.1
4	1.5	1.1	1.1	1.1	1.9	1.5
5	1.1	0.9	0.8	0.7	0.6	0.7
6	1.1	1.0	0.7	0.7	0.6	0.6
7	1.5	1.3	1.2	1.1	1.6	1.4
8	1.4	1.4	1.3	1.5	1.0	1.2
9	2.0	1.3	1.3	1.3	1.4	1.4
10	1.8	1.5	1.5	1.5	1.4	1.3
11	1.6	0.9	1.3	1.2	1.4	1.4
State average	1.3	1.1	1.0	1.0	1.1	1.2

four districts south of the Bay City-Muskegon line ranged from 1.2 to 1.4 with an average catch per hour of 1.33 fish. Those counties north of the Bay City-Muskegon line showed catches that ranged from 0.6 to 1.5 fish per hour with an average of 0.97 fish per hour. Table IV shows the catch per hour for all waters combined for the past 6 years. According to the data compiled from the general creel census since its inception in 1927 the overall catch per hour should be better in 1944 than in 1943 providing the pattern already started continues. The general increase from 1.1 fish per hour in 1942 to 1.2 in 1943, although not a considerable increase is sufficient to further strengthen the evidence for a cycle in the quality of fishing.

Catch Per Hour -- Non-trout Waters, by Hatchery Districts

Fishing in non-trout waters made up 82.0 per cent of all fishing recorded in the general creel census for 1943. This is an increase of 6.0 per cent over that of 1942, and is probably accounted for by the current restrictions on travel, and consequently much more fishing done near the large centers of population in the southern part of the state



where there is relatively little water suitable for trout. The catch per hour in non-trout waters (Table V) showed an improvement in hatchery

Table V

Catch per hour—non-trout waters, by hatchery districts

District	1938	1939	1940	1941	1942	1943
1	0.4	0.4	0.3	0.6	0.5	1.2
2	1.2	1.1	1.5	1.1	1.1	0.8
3	1.4	1.4	0.9	0.9	0.8	1.2
4	1.7	1.2	1.1	1.3	1.9	1.4
5	1.1	1.0	0.8	0.7	0.7	0.7
6	1.0	1.0	0.7	0.7	0.9	0.6
7	2.0	1.4	1.6	1.3	1.9	1.5
8	1.5	1.4	1.4	1.6	1.0	1.2
9	2.1	1.4	1.3	1.3	1.4	1.5
10	1.8	1.5	1.5	1.5	1.4	1.3
11	1.6	1.9	1.3	1.2	1.2	1.3
State average	1.4	1.1	1.0	1.1	1.1	1.2

districts 1, 3, 8, 9, and 11 and showed a decrease in hatchery districts 2, 4, 6, 7, and 10. The catch per hour in district 5 remained the same as in 1942. The catch per hour from non-trout waters for the state as a whole showed an increase of 0.1 fish.

Catch Per Hour — Trout Waters, by Hatchery Districts

Table VI shows the catch per hour for trout waters for each of the hatchery districts for the past 6 years. Trout fishing made up only 13.5

Table VI

Catch per hour—trout waters, by hatchery districts

District	1938	1939	1940	1941	1942	1943
1	0.9	0.8	0.8	0.7	1.1	1.0
2	1.1	1.2	1.1	1.1	1.0	0.9
3	0.8	1.0	0.7	0.8	1.0	0.8
4	0.8	0.7	0.6	0.7	1.0	1.3
5	0.6	0.5	0.6	0.6	0.6	0.6
6	1.2	1.0	0.4	0.8	0.3	0.6
7	0.9	1.0	0.8	0.8	1.0	1.0
8	0.4	1.2	0.2	0.3	0.7	0.9
9	0.8	0.6	...	0.7	0.6	0.7
10	1.8	1.1	0.5	1.1	...	0.9
11	...	0.1	0.2	0.6	0.7	1.9
State average	0.9	0.8	0.8	0.8	0.9	0.9

per cent of all fishing done in the state during 1943 as shown by the records collected by the officers as compared with 14.7 per cent in 1942, a drop of 1.2 per cent. Trout fishing, according to these records, was better in districts 4, 6, 8, 9, 10, and 11 than it was in 1942, and there was a decrease in the catch per hour in districts 1, 2, and 3. The quality of trout fishing in districts 5 and 7 remained the same as during 1942. This increase in the quality of trout fishing in the lower tiers of counties indicates that there is an increased usage of the southern streams of the state. For the state as a whole the trout fishing remained about the same in 1943 as it was in 1942.

Catch Per Hour — Great Lakes Waters, by Hatchery Districts

Records for fishing in Great Lakes waters were received from 12 counties representing 6 hatchery districts in 1943. The following table shows a comparison of the catch per hour for Great Lakes waters by hatchery districts between 1942 and 1943. It is desirable to obtain more

<u>Hatchery District</u>	<u>Catch per Hour</u>	
	<u>1942</u>	<u>1943</u>
1	0.2	0.4
2	2.8	2.3
3	1.3	...
4	5.1	5.9
5	...	...
6	...	3.0
7	...	...
8	...	...
9	...	2.8
10	...	...
11	1.6	1.4
State average	1.7	1.6

records of fishing in Great Lakes waters from all counties which border on the Great Lakes.

Number and Size of Trout — Trout Waters

The numbers of each of the three kinds of trout with the average total length in inches for each, and the percentage of each kind in the total trout catch are given in Table VII. From these data it is apparent

Table VII

Number, average size, and percentage of total trout catch made up by each of the three species of trout—trout waters

District	BROOK TROUT			RAINBOW TROUT			BROWN TROUT		
	Number	Average size	Per cent catch	Number	Average size	Per cent catch	Number	Average size	Per cent catch
1	2,031	8.6	92.0	121	12.0	5.5	55	10.8	2.5
2	3,177	9.3	86.5	464	12.1	12.6	31	11.6	0.9
3	589	8.3	74.2	141	12.5	17.8	64	11.0	8.0
4	420	8.2	68.9	175	9.8	28.7	15	10.3	2.4
5	667	8.0	80.3	66	10.8	7.9	98	12.6	11.8
6	117	8.6	72.7	27	10.0	16.8	17	8.7	10.5
7	250	9.8	72.0	21	10.0	6.1	76	10.5	21.9
8	307	8.2	86.7	22	9.6	6.2	25	9.4	7.1
9	23	8.4	21.3	48	10.7	44.4	37	10.1	34.3
10	35	8.8	81.4	1	9.0	2.3	7	8.7	16.3
11	451	9.2	100.0	...	...	...	...	...	...
Total or percentage	8,067	8.8	84.2	1,086	11.5	11.3	425	11.0	4.5

that the great majority of the catch, as in past years, was brook trout (84.2 per cent) followed in order by rainbow trout (11.3 per cent) and brown trout (4.5 per cent). These figures show an increase in the percentage of brook trout from 76.6 per cent and decreases in rainbows and browns from 12.0 and 11.4 per cent respectively. The average lengths of each of the three species was greater in 1943 than during the previous year.

The largest percentage of brook trout were taken in the Upper Peninsula (64.5 per cent) but this was a considerable drop from the 73.0 per cent of the total state catch taken in the same area during 1942. The northern half of the lower peninsula contributed 25.3 per cent

of the total brook trout catch and 10.2 per cent were taken in the southern part of the lower peninsula.

Table VII indicates that the greatest number of rainbow trout were taken in the upper peninsula (53.9 per cent) and the largest percentage of brown trout (63.5 per cent) were taken in the northern half of the lower peninsula.

Other Fish Taken from Trout Waters

The three kinds of trout made up 73.9 per cent of all fish recorded from trout waters. Fourteen other kinds of fish were recorded from trout waters and are arranged in order of decreasing abundance in the catch as follows:

Yellow perch	1,926	Rock bass	102
Smallmouth black bass	238	Pumpkinseed	73
Bluegill	237	Largemouth black bass	42
Northern pike	236	Lake trout	27
Walleye	177	Cisco	23
Sucker	168	Chubs	10
Black crappie	111	Bullheads	7

Composition of Catch — Non-trout Waters

There were 27 different species of fish reported from non-trout waters during 1943. Again during 1943, the bluegill was caught in larger numbers than any of the other fish. Other species were reported in the following order of abundance: yellow perch, black crappie, pumpkinseed, northern pike, rock bass, walleye, largemouth black bass, smelt, and smallmouth black bass. These 10 species made up 94.5 per cent of all fish reported and 17 other species were included in the remaining 5.5 per cent. Included in these 17 species are the three

species of trout (brook, rainbow, and brown) which made up 1.1 per cent of the total catch in non-trout waters. Table VIII gives a comparison

Table VIII

Percentage composition of the total catch for non-trout waters (most abundant game and pan fish only)

Kind of fish	1938	1939	1940	1941	1942	1943
Bluegill	44.7	41.3	32.8	43.4	37.4	48.3
Yellow perch	17.4	22.2	28.3	24.6	23.8	17.8
Black crappie	3.0	3.4	5.0	5.1	5.8	8.3
Pumpkinseed	5.6	5.6	5.4	5.6	5.1	4.4
Northern pike	3.2	3.1	3.6	2.8	3.4	3.3
Rock bass	5.9	5.9	7.6	5.4	4.2	3.2
Walleye	2.6	2.6	2.3	2.6	2.8	3.2
Largemouth bass	2.6	2.2	2.1	2.5	2.2	2.5
Smelt	...	...	...	...	10.4	1.8
Smallmouth bass	2.3	2.4	2.8	2.7	2.2	1.7
Total	87.3	88.7	89.5	94.7	97.4	94.5

of the percentages for each of the 10 most abundant species in the total non-trout catch for the past 6 years. The bluegill showed an increase of more than 10.0 per cent in relative abundance in the catch over that of 1942, and this percentage of 48.3 during 1943 is the highest recorded to date in the general census. Yellow perch fell off from 23.8 in 1942 to 17.8 in 1943 a loss of 6 per cent. However these two species made up 66.1 per cent of the total catch from non-trout waters. Of the other 8 more abundant species the most significant change was in the relative abundance of the black crappie which showed an increase from 5.8 in 1942 to 8.3 in 1943. The only other two fishes which were reported in larger numbers in 1943 than during the previous year were largemouth black bass and walleyes.

Other Fish Taken from Non-trout Waters

A total of 2,044 fish referable to 17 species not listed in Table VIII made up 5.5 per cent of the total non-trout catch during 1943.

The relative abundance of these "other fish" in the anglers' creels is as follows:

Bullheads	1,491	Redhorse	63
Carp	1,057	Sheepshead	62
Brook trout	873	Lake trout	43
Suckers	749	Dogfish	42
Herring	540	Muskellunge	3
Rainbow trout	123	White bass	1
Catfish	111	Gar pike	1
Warmouth bass	89	Chubs	1
Brown trout	87		

Composition of Catch — Non-trout Waters, by Hatchery Districts

Table IX lists the 10 most frequently recorded fish from inland non-trout waters and their relative abundance in the total catch of

Table IX

Percentage catch of most important species for non-trout waters, by hatchery districts

Species	Hatchery Districts										
	1	2	3	4	5	6	7	8	9	10	11
Bluegill	4.7	5.7	12.4	11.1	36.3	10.7	75.7	59.3	71.00	73.6	55.5
Yellow perch	18.1	30.8	42.3	36.8	18.1	40.9	5.5	11.8	7.7	9.8	18.3
Black crappie	38.2	0.7	13.6	1.0	6.1	...	2.0	12.8	6.9	5.8	6.8
Pumpkinseed	0.1	1.9	3.5	3.7	15.4	3.2	5.7	2.4	3.5	5.8	2.7
Northern pike	8.6	17.2	4.1	2.8	7.1	13.9	1.2	3.3	0.6	0.5	1.1
Rock bass	0.9	8.1	6.3	7.7	9.4	2.8	2.4	1.4	0.8	1.0	1.7
Walleye	16.0	23.0	1.7	4.4	3.7	7.3	0.2	0.4	0.7	Trace	1.2
Largemouth bass	2.5	2.5	0.5	1.3	1.4	1.1	5.1	2.4	3.2	2.6	3.2
Smelt	...	0.1	0.9	19.2	...	...	...	Trace	...	...	...
Smallmouth bass	8.2	5.2	4.3	3.8	1.2	13.0	1.0	0.7	0.2	0.4	0.6
Total	97.3	95.2	89.6	91.8	98.7	92.9	98.8	94.5	94.6	99.5	91.1

each hatchery district. The other 17 recorded species made up 5.5 per cent of the total catch, more than twice the percentage (2.6 per cent) for other fish in 1942. This increase in the numbers of these less

frequently caught fish might be explained by the anglers keeping fish they deem less desirable than bluegills, perch, etc. in order to supplement rationed foods. The increase in the percentage of bluegills in the total catch is probably due to the relative increase in the number of anglers fishing in the southern part of the state where bluegills abound.

As in the reports of the general creel census for the past four years, the composition of the total catch in non-trout waters has been determined by regions. These regions are the natural divisions of the state: Region I — the Upper Peninsula; Region II — the Lower Peninsula north of the Bay City-Muskegon line and; Region III — the Lower Peninsula south of the Bay City-Muskegon line. There are two methods of comparing the catch among these three regions: (1) the percentage of the total state catch of each species taken in each region (Table X), and (2) the percentage of each species in the total catch for each individual region (Table XI). The fish mentioned in these two tables are arranged in order of decreasing abundance in the total state catch from non-trout waters.

Table X

Percentage of the total state catch of each of 10 species taken in each geographical region of Michigan—non-trout waters

Species	REGION I		REGION II		REGION III	
	Upper Peninsula		Northern half of Lower Peninsula		Southern half of Lower Peninsula	
	Number	Per cent	Number	Per cent	Number	Per cent
Bluegill	476	1.0	7,638	16.3	38,698	82.7
Yellow perch	2,230	12.9	7,304	42.4	7,701	44.7
Black crappie	1,856	23.0	1,356	16.8	4,853	60.2
Pumpkinseed	92	2.2	2,124	49.8	2,045	48.0
Northern pike	1,171	36.6	1,223	38.2	809	25.2
Rock bass	404	13.0	1,926	61.9	780	25.1
Walleye	1,779	57.8	858	27.9	441	14.3
Largemouth bass	228	9.3	457	18.5	1,780	72.2
Smelt	5	0.3	1,708	99.6	1	0.1
Smallmouth bass	620	36.6	768	45.4	305	18.0
Total or per cent	8,861	9.7	25,362	27.7	57,412	62.6

It is evident from these data that the bluegill is taken in greater numbers from non-trout waters than any other single species. During 1943, more than four-fifths of all bluegills reported in the general census were taken from Region III (Table X) whereas during 1942 only 65.2 per cent of all bluegills were taken from the same region. This increase in the percentage of bluegills taken in the southern part of the state is probably due to two things: (1) the relative increase in the number of returns from Hatchery Districts 8 and 9 and the relative decrease in records from District 5 in which Houghton Lake is located, and (2) the wartime restrictions on traveling. The yellow perch was taken more frequently in Region III than in Region II and is just the reverse of the previous year. The black crappie was taken most frequently in Region III followed in order by Regions I and II. Pumpkinseeds, as in former years, were taken in greater numbers in Region II than anywhere else. The northern pike, which has superseded the rock bass in reported numbers was taken in decreasing abundance from Region II, Region I, and Region III. The rock bass followed the pattern of the pumpkinseed. The walleye data show that this fish is taken most frequently in the northern peninsula and least frequently in Region III. The largemouth and smallmouth black basses have usually complemented each other in the three regions but in 1943 the smallmouth was taken more frequently in Region II whereas during 1942 this fish was reported in greater numbers from the upper peninsula. During 1943 the largemouth bass followed its usual pattern of abundance and was most frequently recorded from Region III followed in order by Regions II and I. The numbers of smelt recorded in the census decreased considerably from that of 1942 because of the tremendous mortality of this species



throughout the Great Lakes region during the autumn of 1942. However, as in 1942, the greatest numbers of smelt were reported from the northern part of the lower peninsula.

Table XI

Percentage composition of anglers' catch by species reported in each geographical region of Michigan--non-trout waters

Species	REGION I		REGION II		REGION III		ENTIRE STATE	
	Upper Peninsula		Northern half of Lower Peninsula		Southern half of Lower Peninsula		Number	Per cent
	Number	Per cent	Number	Per cent	Number	Per cent		
Bluegill	476	5.2	7,638	28.5	38,698	63.4	46,812	48.3
Yellow perch	2,230	24.2	7,304	27.3	7,701	12.6	17,235	17.8
Black crappie	1,856	20.2	1,356	5.1	4,853	8.0	8,065	8.3
Pumpkinseed	92	1.0	2,124	7.9	2,045	3.4	4,261	4.4
Northern pike	1,171	12.7	1,223	4.6	809	1.3	3,203	3.3
Rock bass	404	4.4	1,926	7.2	780	1.3	3,110	3.2
Walleye	1,779	19.3	858	3.2	441	0.7	3,078	3.2
Largemouth bass	228	2.5	457	1.7	1,780	2.9	2,465	2.5
Smelt	5	0.1	1,708	6.4	1	Trace	1,714	1.8
Smallmouth bass	620	6.7	768	2.9	305	0.5	1,693	1.7
Total or per cent	8,861	96.3	25,362	94.7	57,412	94.1	91,635	94.5

Table XI further indicates that bluegills are taken more frequently than any other non-trout species in the southern third of the state and also, during 1943, it led in the northern half of the lower peninsula. In former years the yellow perch has led both Regions I and II but in 1943 the number of perch reported from Region II was smaller than that for bluegills. The black crappie ranked second in Region I and was followed in order in that region by walleyes and northern pike. Only in Region I, as in other years, did bluegills and perch combined fail to constitute more than half the total catch of the region. For the entire state these two species made up 66.1 per cent of the total catch. The only fish other than bluegills and perch which made up more than 10 per cent of any regional catch were the black crappie (20.2 per cent) the walleye (19.3 per cent) and the northern pike (12.7 per cent) in Region I.

Resident and Non-resident Anglers

The catch per hour for resident anglers (1.2 fish) indicates that they were more successful than the non-residents (catch per hour of 1.1 fish) as shown in Table XII. However, the catch per hour for non-residents

Table XII

Number of resident and non-resident anglers, and the number of unsuccessful fishermen and the catch per hour for each group

District	Resident Anglers			Non-resident Anglers		
	Fishermen			Fishermen		
	Number	Number taking no fish	Catch per hour	Number	Number taking no fish	Catch per hour
1	2,110	598	1.2	252	60	0.6
2	2,786	811	0.8	247	53	1.4
3	1,651	499	1.2	295	82	0.7
4	2,630	498	1.5	362	34	1.0
5	5,255	2,343	0.7	601	305	0.7
6	581	211	0.7	43	21	0.5
7	726	167	1.4	210	75	1.3
8	3,504	1,000	1.2	57	16	1.1
9	2,756	484	1.5	1,103	286	1.3
10	2,177	532	1.4	309	171	0.6
11	6,335	1,611	1.4	486	84	1.2
Total or average	30,511	8,754	1.2	3,965	1,187	1.1

in 1943 was 0.3 fish higher than that for 1942 whereas that for the residents was the same for both years. During 1943 a total of 8,754 resident anglers (28.7 per cent) were unsuccessful and 1,187 non-resident anglers (29.9 per cent) caught no fish. For the residents and non-residents respectively the figures for unsuccessful anglers in 1940 were 34.8 per cent and 40.6 per cent, in 1941 they were 32.1 per cent and 39.1 per cent, and in 1942 they were 29.3 per cent and 32.9 per cent. Thus for the past 4 years there has been a steady decline in the percentages of unsuccessful anglers both resident and non-resident. During 1943 there were relatively fewer non-resident anglers interviewed by the officers than any year previously. In 1942 the non-residents made up 14.8 per cent of all anglers whereas in 1943

only 11.2 per cent of the anglers were non-residents. Such data lend support to the validity of the general census because it is known that travel restrictions would curtail any great influx of anglers from out of state. Table XIII shows the numbers of resident and non-resident anglers, the numbers of hours spent fishing and the numbers of legal-sized fish caught by each group arranged by hatchery districts.

Table XIII

Number of resident and non-resident anglers and the number of hours spent fishing and the number of legal-sized fish caught by each group

District	Number of fishermen		Number of hours		Number of legal fish taken	
	Resident	Non-resident	Resident	Non-resident	Resident	Non-resident
1	2,110	252	6,439.2	1,079.9	7,567	668
2	2,786	247	9,718.7	872.8	8,168	1,220
3	1,651	295	4,578.5	712.3	5,265	478
4	2,630	362	6,332.0	941.8	9,666	912
5	5,255	601	14,038.0	1,284.6	9,388	837
6	581	43	1,657.9	119.5	1,072	61
7	726	210	2,118.5	665.2	3,026	891
8	3,504	57	11,417.4	186.7	13,259	210
9	2,756	1,103	8,524.2	3,399.2	12,683	4,549
10	2,177	309	6,594.5	648.9	9,268	375
11	6,335	486	20,480.7	1,618.9	28,025	2,008
Total	30,511	3,965	91,899.6	11,529.8	107,387	12,209

Residence of Non-resident Fishermen

As in all previous years for which there are records of the residence of fishermen available, Ohioans made up the largest group of out-of-state anglers. These were followed in order by residents of Indiana, Illinois, and Wisconsin. Residents of these 4 states made up 96.4 per cent of all non-residents and the remaining 3.6 per cent were from 19 states, 2 provinces of Canada, and the District of Columbia as shown in Table XIV. During 1942 residents of 28 states, 3 Canadian provinces, and the District of Columbia were interviewed by the officers in addition to the resident anglers.

Table XIV

Residence of fishermen

Resident		Non-resident	
County	Number	County	Number
Alcona	24	Mackinac	276
Alger	39	Macomb	61
Allegan	387	Manistee	488
Alpena	158	Marquette	613
Antrim	317	Mason	32
Arenac	12	Mecosta	6
Baraga	23	Menominee	5
Barry	387	Midland	451
Bay	208	Missaukee	153
Benzie	200	Monroe	212
Berrien	228	Montcalm	550
Branch	420	Montmorency	75
Calhoun	490	Muskegon	93
Cass	131	Newaygo	79
Charlevoix	291	Oakland	622
Cheboygan	88	Oceana	34
Chippewa	202	Ogemaw	13
Clare	255	Ontonagon	11
Clinton	303	Osceola	30
Crawford	18	Oscoda	92
Delta	581	Otsego	82
Dickinson	437	Ottawa	375
Eaton	229	Presque Isle	105
Emmet	350	Roscommon	427
Genesee	1,645	Saginaw	593
Gladwin	149	Saint Clair	152
Gogebic	497	Saint Joseph	93
Grand Traverse	478	Sanilac	6
Gratiot	156	Schoolcraft	102
Hillsdale	304	Shiawassee	273
Houghton	249	Tuscola	70
Huron	256	Van Buren	104
Ingham	1,896	Washtenaw	667
Ionia	529	Wayne	4,270
Iosco	32	Wexford	349
Iron	1,250		
Isabella	137	Unknown	573
Jackson	1,041		
Kalamazoo	713	TOTAL	30,511
Kalkaska	33		
Kent	1,663		
Keweenaw	47		
Lake	16		
Lapeer	486		
Leelanau	203		
Lenawee	447		
Livingston	172		
Luce	197		

  

Non-resident	
State or Province	Number
Arizona	1
California	14
Delaware	7
Florida	3
Idaho	8
Illinois	512
Indiana	932
Iowa	30
Kentucky	11
Massachusetts	4
Minnesota	2
Missouri	7
Montana	1
Nevada	4
New York	2
North Dakota	10
Ohio	2,253
Pennsylvania	11
Texas	4
Virginia	2
West Virginia	6
Wisconsin	125
Washington, D. C.	3
Quebec	2
Alberta	5
Unknown	6
TOTAL	3,965

Residence of Resident Fishermen

During 1943 there were 4,270 residents of Wayne County who made up 14.0 per cent of all resident anglers reported. More than 1,000 anglers were reported from each of 5 other counties as follows: Ingham - 1,896; Kent - 1,663; Genesee - 1,645; Iron - 1,250; and Jackson 1,041. Residents of these 6 counties made up 34.1 per cent of all anglers interviewed. All counties in the state were represented in the census records (Table XIV).

Male and Female Anglers

During 1943 there were 5,603 women (16.3 per cent) interviewed in the general census whereas in 1942 women made up 17.1 per cent of all anglers. In 1943 the women caught only 13.9 per cent of all the fish taken and in 1942 they caught 16.0 per cent. Table XV shows the comparison

Table XV  
Comparison of male and female anglers for all waters  
by hatchery districts

District	Number of anglers		Number of hours fished		Legal fish taken		Catch per hour	
	Male	Female	Male	Female	Male	Female	Male	Female
1	2,165	197	6,956.7	562.4	7,557	678	1.1	1.2
2	2,736	297	9,488.5	1,103.0	8,579	809	0.9	0.7
3	1,658	288	4,632.7	658.1	5,090	653	1.1	1.0
4	2,818	174	6,870.1	403.7	10,115	463	1.5	1.0
5	4,362	1,494	11,868.2	3,454.4	8,158	2,067	0.7	0.6
6	513	111	1,452.2	325.2	954	179	0.7	0.6
7	788	148	2,301.3	482.4	3,271	646	1.4	1.3
8	2,996	565	9,773.6	1,830.5	11,104	2,365	1.1	1.3
9	3,219	640	9,935.2	1,988.2	14,609	2,623	1.5	1.3
10	2,013	473	5,871.5	1,371.9	8,000	1,643	1.4	1.2
11	5,605	1,216	18,304.7	3,794.9	25,521	4,512	1.4	1.2
Total or average	28,873	5,603	87,454.7	15,974.7	102,958	16,638	1.2	1.0

between the number of men and women anglers, the total hours spent fishing, the total numbers of legal-sized fish taken and the catch per hour for each group by hatchery districts for all waters in the state. During 1943 there were 28.4 per cent of the male anglers unsuccessful and 30.9 per cent of the

female anglers caught no fish. The catch per hour of all men interviewed was 1.2 fish and the women caught fish at a rate of 1.0 fish per hour in 1943, approximately the same as during the previous year.

Comparison of the General Creel Census Data With That of Other Years

Table XVI gives a summary comparison of the data collected each year of the general creel census for the past 6 years. There has been a decrease in the catch per hour for all waters from 1938 through 1940. During 1940 and 1941 the catch per hour remained the same and since 1941 there has been a slight increase each year. There has been little variation in the catch per hour from trout waters but there has been considerable variation in that for non-trout waters. The variation in the catch per hour for Great Lakes waters was not significant for the two years in which these waters have been treated separately. Resident anglers appear to be consistently more successful than do the non-resident anglers and likewise men appear to be consistently more successful in fishing than do women. The percentage of non-resident anglers showed a sharp decrease in 1943 probably due to wartime travel restrictions. The relative numbers of female anglers in 1943 showed only a slight drop from that of 1942 and was the same as that of 1941. This is the first decrease in the percentage of female anglers since 1937 when only 6.0 per cent of all anglers were women. The chances of catching fish seem to be better in the Great Lakes than on inland waters as shown by the average numbers of unsuccessful anglers for the 6 years and also by the figures on the catch per hour.

The sizes of the 12 individual species of fish listed have remained fairly constant throughout the six-year period. Bluegills had an average length of 7.5 inches for 4 years and have averaged 7.6 inches the last two years. Perch have ranged between 8.0 and 8.5 inches for the six years with an average length of 8.2 inches. Pumpkinseeds ranged from 7.0-7.6 inches

Table XVI

Comparison of data from the general creel census for the past six years

	1938	1939	1940	1941	1942	1943	Simple average
Catch per hour:							
All waters	1.3	1.1	1.0	1.0	1.1	1.2	1.1
Resident - all waters	1.3	1.1	1.0	1.0	1.2	1.2	1.1
Non-resident - all waters	1.1	0.9	0.9	0.9	0.8	1.1	1.0
Male anglers - all waters	1.3	1.1	1.0	1.0	1.2	1.2	1.1
Female anglers - all waters	1.3	0.9	0.8	0.8	1.1	1.0	1.0
Trout waters	0.9	0.8	0.8	0.8	0.9	0.9	0.9
Resident - trout waters	0.9	0.8	0.8	0.8	0.9	1.0	0.9
Non-resident - trout waters	0.7	0.7	0.5	0.6	0.7	0.7	0.7
Male anglers - trout waters	0.9	0.8	0.8	0.8	0.9	0.9	0.9
Female anglers - trout waters	0.5	0.4	0.3	0.5	0.6	0.7	0.5
Non-trout waters	1.4	1.1	1.0	1.0	1.1	1.2	1.1
Resident - non-trout waters	1.5	1.1	1.1	1.1	1.2	1.2	1.2
Non-resident - non-trout waters	1.1	1.0	0.9	0.9	0.9	1.0	1.0
Male anglers - non-trout waters	1.4	1.1	1.1	1.1	1.1	1.2	1.2
Female anglers - non-trout waters	1.4	0.9	0.8	0.9	1.0	1.0	1.0
Great Lakes waters	...	...	...	...	1.7	1.6	1.7
Resident - Great Lakes waters	...	...	...	...	2.0	1.5	1.8
Non-resident - Great Lakes waters	...	...	...	...	0.9	1.8	1.4
Male anglers - Great Lakes waters	...	...	...	...	1.8	1.6	1.7
Female anglers - Great Lakes waters	...	...	...	...	1.2	1.3	1.3
Percentage of all anglers represented by:							
Non-residents	14.2	16.2	15.1	14.8	15.7	11.2	14.5
Female anglers	6.0	11.6	13.9	16.2	17.1	16.3	13.5
Percentage of trout fishermen represented by:							
Non-residents	6.0	7.0	6.9	9.5	11.0	4.0	7.4
Female anglers	3.0	4.0	5.8	6.9	10.2	7.6	6.3
Percentage of non-trout fishermen represented by:							
Non-residents	17.0	18.0	16.7	16.1	17.3	12.5	16.3
Female anglers	7.0	13.0	15.7	18.4	19.1	17.8	15.2
Percentage of Great Lakes fishermen represented by:							
Non-residents	...	...	...	...	9.7	13.3	11.5
Female anglers	...	...	...	...	11.6	13.1	12.4
Percentage of fishermen taking no fish:							
All waters	31.0	34.0	35.7	33.1	31.0	28.8	32.3
Trout waters	34.0	33.0	34.8	33.8	29.5	29.4	32.4
Non-trout waters	30.0	34.0	36.1	33.0	32.1	25.5	31.8
Great Lakes waters	...	...	...	...	20.0	11.9	16.0
Average size of fish caught:							
Bluegills	7.5	7.5	7.5	7.5	7.6	7.6	7.5
Yellow perch	8.0	8.1	8.5	8.2	8.0	8.2	8.2
Pumpkinseeds	7.0	7.4	7.6	7.2	7.4	7.3	7.3
Rock bass	7.7	7.7	7.8	7.6	7.8	7.9	7.8
Black crappie	8.6	8.7	8.2	8.2	8.6	8.4	8.4
Northern pike	20.3	20.6	21.1	20.8	20.4	20.3	20.6
Walleye	17.5	16.9	16.9	16.7	17.0	16.9	17.0
Largemouth black bass	13.1	12.8	13.2	13.0	12.8	12.6	12.9
Smallmouth black bass	12.8	13.0	13.3	13.1	12.8	12.5	12.9
Brook trout	8.7	8.6	8.7	8.7	8.7	8.9	8.7
Rainbow trout	10.3	10.0	9.5	9.9	10.0	11.5	10.2
Brown trout	10.4	10.6	10.4	10.5	10.5	11.1	10.6

with an average length of 7.3 inches. Black crappies ranged between 8.2 and 8.7 inches with an average of 8.4 inches. Rock bass showed only a slight average size range with a six-year average of 7.8 inches. It would be reasonable to expect larger fish as northern pike, walleyes and the black basses to have greater size ranges than those of the smaller fishes but the data indicates that the overall range in size for any one of these species was less than an inch. The sizes of trout have been previously discussed.

Table XVII indicates that there is apparently a "cycle" in the quality of fishing in all waters combined since the first full year of the census in 1928. As mentioned in the report on the general census for 1942 the "cycle" is manifest only in the catch per hour for non-trout waters, the catch per hour from trout waters remaining fairly constant. From these

Table XVII

Catch per hour for all waters, trout waters, non-trout waters, and Great Lakes waters and averages for each

Year	Catch per hour			
	All waters	Trout waters	Non-trout waters	Great Lakes waters
1928	1.09	1.17	1.05	...
1929	0.96	1.17	0.88	...
1930	0.88	0.93	0.85	...
1931	0.91	0.97	0.88	...
1932	1.26	1.10	1.32	...
1933	0.97	0.68	1.28	...
1934	1.73	0.79	1.80	...
1935	1.58	0.80	1.85	...
1936	1.40	0.79	1.66	...
1937	1.46	0.76	1.68	...
1938	1.29	0.91	1.41	...
1939	1.06	0.83	1.12	...
1940	0.99	0.78	1.04	...
1941	1.00	0.77	1.06	...
1942	1.14	0.89	1.11	1.67
1943	1.16	0.90	1.17	1.60
Simple average	1.18	0.89	1.26	1.64



data it is apparent that anglers who fish non-trout waters catch approximately half again as many fish as those who fish trout waters.

As in the reports of the general creel census for 1941 and 1942 the appendix to this report has been omitted. The detailed tables used in the compilation of data presented herein are on file at the office of the Institute for Fisheries Research, University Museums Annex, Ann Arbor.

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