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REPORT OF THE GENERAL CREEL CENSUS FOR 1942

by

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Introduction

This report includes the data for the sixteenth year of operation of the general creel census in Michigan. The conservation officers, as in other years, have collected the records as a part of their regular duties and usually incidental to patrol activities. This cooperation of the Division of Field Administration is greatly appreciated.

As in previous years, the aim of the general census is to afford a random sample of the fishing in all parts of the state represented by all types of inland lake and stream fishing. This year, for the first time, fishing in the waters of the Great Lakes and their connecting waters is treated separately. The fishing afforded by the Great Lakes is probably not properly appreciated by most sportsmen but inasmuch as 41 of the 83 counties in Michigan border on one or more of the Great Lakes, it seems advisable that such fishing should be considered separately. Certainly there is no inland lake or stream fishing in the state which is directly comparable to that of the Great Lakes. Probably one reason for not having treated the Great Lakes fishing separately in previous years is the fact that a resident angler does not need a license to fish in such waters. However, non-residents fishing in Great Lakes waters are required to have a fishing license. Conservation officers have been

submitting records of fishing in the Great Lakes in increasing numbers and if these are included in the general census along with inland lake fishing, the true picture might become biased.

In 1941 there were no usable records from 8 of the 83 counties in the state. During 1942, however, there were only two counties from which no records of fishing were received. These two counties are Arenac and Van Buren. There was only one record from Arenac County and 51 records from Van Buren County in 1941. Although inland fishing in Arenac County is confined to a few rivers and only one lake, there is an abundance of fishing in Saginaw Bay, and a lack of such records prejudices the state-wide sampling for Great Lakes waters. In Van Buren County, although there is an abundance of inland lake fishing as well as fishing in the Great Lakes, no records were received. Lack of records from any county tend to bias the randomness of the sample.

With the exception of the separate treatment of fishing in Great Lakes waters, this report will follow previous reports of the general creel census 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 the legal-sized fish taken by the anglers have been considered.

During 1942 the conservation officers interviewed 46,174 fishermen who fished a total of 151,317 hours in all types of water throughout the state and caught 173,438 legal-sized fish, a catch of 1.15 fish per hour (Table I). These figures represent an increase of 11,875 anglers, 33,336.25 hours, and 55,483 legal-sized fish over the figures for 1941.

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	5,871	21,965.5	11,082	0.64
2	3,613	12,254.0	17,423	1.42
3	2,094	6,282.0	5,345	0.85
4	5,709	18,144.0	34,003	1.87
5	10,241	28,324.5	17,999	0.64
6	1,757	5,098.0	3,283	0.64
7	2,379	7,492.0	11,886	1.59
8	1,342	4,168.2	4,159	1.00
9	1,735	5,357.8	7,627	1.42
10	2,060	6,919.8	9,708	1.40
11	9,373	35,311.2	47,923	1.36
Total or average	46,174	151,317.0	173,438	1.15

The catch per hour of 1.15 fish represents an increase of 0.15 fish per hour over that of 1941. The records for fishing in all types of waters are divided into three general categories: (1) non-trout waters - 35,097 anglers who fished 107,674.00 hours and caught 119,439 legal-sized fish, a catch of 1.11 fish per hour. The catch per hour in 1941 for non-trout waters was 1.06 fish. (2) Trout waters (waters which are known to support considerable trout fishing) - 6,798 fishermen who fished 24,261.50 hours and caught 21,601 legal-sized fish, a catch of 0.89 fish per hour. The catch per hour for trout waters in 1941 was 0.77 fish. (3) Great Lakes waters - this year is the first year that fishing in Great Lakes waters has been separated from non-trout waters in the report of the general creel census. Records of 4,279 anglers who fished 19,381.50 hours and caught 32,398 legal-sized fish at a rate of 1.67 fish per hour were submitted by the officers in 1942.

Of the 46,174 anglers interviewed by the officers in 1942, 7,248 (15.7 per cent) were non-residents. This is an increase of 0.95 per cent over 1941 and 0.7 per cent over 1940.

There were 7,874 women anglers interviewed by the officers in 1942. These women constituted 17.1 per cent of all fishermen, an increase of 0.9 per cent over 1941 and a 3.2 per cent increase over 1940. As in previous years, the women preferred non-trout fishing to trout fishing. For every woman who fished in trout waters there were 9.4 who fished in non-trout waters. In 1941 the ratio was 1 to 15, an indication that the fishing for trout is becoming more popular with women. This preference is assumed on the basis of the relative number of returns from each class of water. On Great Lakes waters only one woman was interviewed for every 13.1 women who fished non-trout waters.

Detailed Analysis

Number of Records

During 1942 the conservation officers obtained records from 46,174 fishermen, an increase of 11,875 (34.6 per cent) over the 34,299 records collected during 1941. The number of records taken during 1942 is the largest secured in any one year since the inauguration of the general creel census in 1927.

The 46,174 records reported in 1942 represented 151,317.0 hours of fishing, an increase of 33,336.25 hours (28.3 per cent) over that of 1941.

During 1942 only those officers of Arenac and Van Buren counties failed to submit creel census records. This is a decided improvement over 1941 when no records were received from 8 counties. Also during 1941 there were 12 counties from which less than 100 records were received. In 1942 fewer than 100 records were received from 11 counties as follows:

Berrien	5	Keweenaw	52
Bay	11	Gratiot	57
Montcalm	21	Isabella	77
Ogemaw	43	Sanilac	77
Saginaw	48	Kalamazoo	93
Shiawassee	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 1942 the officers of the following 34 counties secured more than 400 records: Alcona, Alpena, Antrim, Benzie, Branch, Charlevoix, Cheboygan, Chippewa, Clare, Genesee, Gladwin, Gogebic, Huron, Ingham, Iron, Jackson, Lapeer, Leelanau, Livingston, Mackinac, Macomb, Manistee, Marquette, Mason, Monroe, Montmorency, Oakland, Ontonagon, Oscoda, Ottawa, Roscommon, St. Clair, Wayne, and Wexford. This list includes 11 counties from which fewer than 400 records were received in 1941 as follows: Alpena, Antrim, Charlevoix, Clare, Genesee, Huron, Macomb, Mason, Monroe, Montmorency, and Ottawa. Also there were 8 counties which turned in more than 400 records in 1941 and failed to do so in 1942: Allegan, Barry, Crawford, Dickinson, Eaton, Grand Traverse, Lake, and Presque Isle. There does not seem to be any suitable explanation for the failure of officers of any county to secure 400 records in 1942 after having done so in 1941. Roscommon County with 6,678 records in 1942 again heads the list and is followed in order by Gogebic (3,082 records), Manistee (2,194 records), Oakland (1,677 records), Oscoda (1,436 records), Wayne (1,296 records), and Benzie (1,286 records) counties. It has been previously suggested that a few records be taken each week by the conservation officers and that these should be pro-rated as far as is possible according to the fishing pressure for that time of year.

As previously stated, 7,248 (15.7 per cent) of the 46,174 anglers interviewed by the officers were non-residents, an increase of 0.95 per cent over 1941 and 0.70 per cent over 1940. The total number of non-residents is the highest such figure that has been recorded to date in the general census. Of these non-residents, 6,086 (84.0 per cent) were contacted on non-trout waters, 747 (10.3 per cent) on trout waters, and 415 (5.7 per cent) on the Great Lakes. As in 1940 and 1941, the greatest

concentration of non-resident anglers fished in Hatchery District 9, which is located in the southwestern corner of the state. The records (Table II) show that 36.0 per cent of all anglers interviewed 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	5,871	4,405	1,466	25.0
2	3,613	3,085	528	14.6
3	2,094	1,533	561	26.8
4	5,709	4,775	934	16.4
5	10,241	8,478	1,763	17.2
6	1,757	1,533	224	12.7
7	2,379	2,005	374	15.7
8	1,342	1,288	54	4.0
9	1,735	1,111	624	36.0
10	2,060	1,866	194	9.4
11	9,373	8,847	526	5.6
Total or per cent	46,174	38,926	7,248	15.7

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

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

The largest percentage of records for trout fishing during 1942 was from Hatchery District 2 with 41.3 per cent based on 3,613 records, followed in order by District 1 with 31.8 per cent based on 5,871 records and District 6 with 28.9 per cent based on 1,757 records. In 1942 the seven hatchery districts north of the Bay City-Muskegon line furnished 97.3 per cent of all the records of trout fishing in the state. In 1941 these same seven districts furnished 96.7 per cent of the state's trout fishing. Also the trout fishing in these seven districts made up 20.9 per cent of all the fishing in that area.

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 anglers	Percentage of fishermen	Number of anglers	Percentage of fishermen	Number of anglers	Percentage of fishermen
1	1,866	31.8	3,461	59.0	544	9.2
2	1,492	41.3	1,328	36.8	793	21.9
3	560	26.7	1,525	72.8	9	0.5
4	775	13.6	4,698	82.3	236	4.1
5	878	8.6	9,363	91.4	...	...
6	507	28.9	1,250	71.1	...	...
7	535	22.5	1,844	77.5	...	...
8	61	4.5	1,281	95.5	...	...
9	33	1.9	1,702	98.1	...	...
10	...	...	2,060	100.0	...	...
11	91	0.9	6,585	70.3	2,697	28.8
Total or average	6,798	14.7	35,097	76.0	4,279	9.3

As in 1941, Hatchery District 10 furnished the greatest percentage of non-trout fishing records. In 1942 all the fishing recorded (2,060 records) from District 10 was done in non-trout waters as compared with 99.9 per cent of the fishing (based on 2,817 records) in 1941. District 10 was followed in order by District 9 with 98.1 per cent based on 1,735 records and District 8 with 95.5 per cent based on 1,342 records.

Records of fishing in Great Lakes waters were submitted from only five hatchery districts. District 11 furnished the largest percentage (28.8 per cent based on 9,373 records) of Great Lakes fishing records and was followed in order by District 2 (21.9 per cent based on 3,613 records) and District 1 (9.2 per cent based on 5,871 records).

Quality of Fishing

The best general indication of the quality of fishing is the catch per hour. This catch per unit of effort expended varies markedly with the type of fishing done by the angler. Data from intensive creel censuses taken on inland lakes and connecting waters between the Great

Lakes indicate that still-fishing is much more productive in numbers of fish caught than any other type of hook-and-line angling. For example in the census on waters between Lake Superior and Lake Huron (Institute Report No. 668) the catch per hour for three types of fishing was as follows: still-fishing, 2.6 fish per hour; still-fishing and casting, 1.3 fish per hour; and, casting and trolling, 0.7 fish per hour. It is plausible then, if the assumption that still-fishing is the most productive type, that the greatest catch per hour should occur where the most still-fishing is done, e.g. for bluegills, perch or some other pan fish. The records for 1942 show that the best fishing was in District 4 (Table I). This high catch per hour was due primarily to the large catches of perch in Great Lakes waters off Manistee and Leelanau counties. Usually the highest catch per hour is in one of the hatchery districts in the southern part of the state. In the four hatchery districts south of the Bay City-Muskegon line, the catch per hour ranged from 1.00 fish to 1.42 fish with an average of 1.34 fish, whereas in the other seven hatchery districts the catch ranged from 0.64 to 1.87 fish per hour with an average of 1.04 fish per hour. The following table shows the catch per hour for all waters combined for the past five years. From these data it appears that the catch per hour for the state as a whole has been remarkably constant for this period. If a difference of 0.1 fish per hour is considered significant however, there is a slight upward trend after hitting a low of 1.0 fish per hour in 1940 and 1941. If the catch per hour continues to follow the pattern made since the inception of the general creel census, the catch per hour should be better in 1943 than it was in 1942. Certainly there is evidence of cycles in the quality of fishing for the past fifteen years of the general census.

Table IV

Catch per hour for all waters by hatchery districts

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

The value of the data collected by the general creel census increases considerably as the years pass. During 1942 an all-time record in the number of reports (46,174 records) submitted was established. This number indicates more than a ten-fold increase from the 4,437 records taken in 1927. During 1943 and 1944 a considerable drop in the number of records is anticipated due to prevailing war conditions.

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

Fishing in non-trout waters during 1942 made up 76.0 per cent of all the fishing in the state according to the records submitted by the officers. This is a drop of 3.7 per cent from 1941 but is accounted for by the separate handling of Great Lakes waters in this report. The catch per hour in non-trout waters showed an improvement (Table V) in Hatchery Districts 4, 6, 7, and 9 and showed a decrease in Hatchery Districts 1, 3, 8 and 10. In the other three districts (2, 5, and 11) the catch per hour remained the same as in 1941. The catch per hour for non-trout waters in the state as a whole remained the same as in 1941.

Table V

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

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

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 five years. Trout fishing made up 14.7 per cent of all fishing done in the state during 1942 according to the

Table VI

Catch per hour--trout waters, by hatchery districts

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

records submitted by the officers. Trout fishing in 1942 was better than the previous year in Hatchery Districts 1, 3, 4, 7, 8, and 11 and there was a decrease in the catch per hour in Districts 2, 6, and 9. The catch per hour was the same for both years in District 5 and no records of trout

fishing were received from District 10 in 1942. For the state as a whole there was a slight increase in the quality of trout fishing in 1942 over that of 1941. During 1942 there were five districts in which the catch was 1.0 fish per hour or better, whereas in 1941 there were only two such districts.

Catch Per Hour--Great Lakes Waters, by Hatchery Districts

Inasmuch as fishing in waters of the Great Lakes and their connecting passages is handled separately in this report for the first time, there can be no comparison with the catch per hour of former years. Records of fishing in Great Lakes waters were received from 16 counties located in 5 districts. The catch per hour for all these counties as a whole was 1.7 fish. This is higher than that of either the trout or non-trout waters. There were reports of 544 anglers who fished Great Lakes waters in District 1. These anglers fished 2,710.25 hours and caught 485 fish, a catch of 0.2 fish per hour. This catch seems quite low when the average for the state was 1.7 fish per hour but nearly all of the fishing done in the Great Lakes waters of District 1 was trolling for lake trout. This is one of the least productive methods of catching fish when considered in numbers of fish taken per hour. In District 2, 793 anglers caught 7,428 fish at a rate of 2.8 fish per hour. Much of this fishing was for perch in the Les Cheneaux islands region. From District 3 there are records of but 9 anglers who caught 49 fish at a rate of 1.3 per hour. The anglers who fished Great Lakes waters in District 4 enjoyed catching more fish per hour than any other district. The great majority of the 236 fishermen were fishing for perch and caught 3,267 fish at a rate of 5.1 fish per hour. The only other district from which records on Great Lakes fishing were submitted was District 11 in the southeastern corner of the state. In this district 2,697 anglers took 21,169 fish at a rate

of 1.6 per hour. Most of the fishing was done on the connecting waters between Lake Huron and Lake Erie. The results of an intensified general census on this area are given in Institute Report No. 879.

Number and Size of Trout--Trout Waters

The numbers of the three kinds of trout with the average length in inches and the percentage of each kind in the total trout catch for each of the hatchery districts is given in Table VII.

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	6,059	8.5	93.0	300	10.4	4.6	153	11.0	2.4
2	4,284	8.8	96.6	119	14.6	2.7	32	10.8	0.7
3	696	8.2	40.2	283	9.8	16.3	753	10.5	43.5
4	963	8.0	49.3	890	9.4	45.5	101	9.2	5.2
5	1,217	8.1	79.8	77	11.6	5.0	231	10.8	15.2
6	107	9.0	72.3	27	13.4	18.2	14	8.1	9.5
7	527	8.3	29.3	488	9.6	27.1	785	10.5	43.6
8	74	8.7	63.2	19	8.7	16.3	24	10.3	20.5
9	56	11.7	100.0	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...
11	186	8.7	87.7	22	8.6	10.4	4	9.8	1.9
Total or percentage	14,169	8.7	76.6	2,225	10.0	12.0	2,097	10.5	11.4

From these data it is apparent that the great majority of the catch (76.6 per cent) was brook trout, followed by rainbow trout (12.0 per cent) and brown trout (11.4 per cent). These figures are quite comparable with those of 1941 in which the brook trout made up 77.9 per cent, the rainbow trout 12.6 per cent and the brown trout 9.5 per cent. The decrease in the percentage of brook trout is almost entirely compensated for by the increase in the percentage of brown trout. The total number of all trout recorded (18,491 fish) in the 1942 census exceeded that of 1941 by only 395 fish. The figures for the three species for 1941 and 1942 are as follows:

<u>Year</u>	<u>Number of brook trout</u>	<u>Number of rainbow trout</u>	<u>Number of brown trout</u>
1941	14,092	2,278	1,726
1942	14,169	2,225	2,097

The only one of the three species to manifest a significant change in relative abundance in the data was the brown trout.

As in former years, the greatest percentage of brook trout was taken in the Upper Peninsula (73.0 per cent of the state total). Although all the trout taken in District 9 were brook trout, these few (56) fish do not make up a significant portion of the total catch. The average length of all brook trout reported was 8.7 inches, the same as in 1941.

In no district did either the brown or rainbow trout make up half of the total trout catch although Table VII indicates that they are more abundant in the northern half of the Lower Peninsula than in any other part of the state. The rainbows averaged 10.0 inches in total length, an increase of 0.1 inch over the average of 1941 and an increase of 0.5 inches over the 1940 average. The average length of the brown trout was 10.5 inches, the same as in 1941.

Other Fish Taken From Trout Waters

The following table lists the numbers and kinds of fish other than brook, rainbow, and brown trout taken from trout waters. These fish constituted 14.4 per cent of the total catch from trout waters. Certainly there is no definite line of demarkation between trout and non-trout waters. If a body of water has sufficient dissolved oxygen and temperatures suitable for the maintenance of trout throughout the year, that body of water might be considered as trout water. However, this does not preclude the fact that species other than trout--even warm water species as bluegills, bass, etc.--are also able to maintain themselves under these conditions. The lower reaches of many of the finer trout streams of the

Table VIII

Other species taken from trout waters

Northern pike	752	Pumpkinseed	70
Bluegill	701	Largemouth bass	25
Yellow perch	656	Shiners	15
Suckers	199	Crappies	13
Rock bass	190	Lake trout	7
Bullheads	188	Grayling (illegal)	5
Smallmouth bass	159	Chubs	5
Walleye	119	Redhorse	4
		Pilot	2

state are heavily fished for suckers, walleyes, and other non-trout species. It is probable that the foregoing list of fishes other than trout taken from trout waters does not give a true picture of the relative abundance of such fish in trout waters. In District 6, for instance, there were more northern pike taken from trout waters than the three species of trout combined. This however does not mean that the waters from which the pike were taken were not trout waters.

Composition of Catch--Non-trout Waters

There were 29 different species of fish reported from inland waters other than trout waters in the general census of 1942. As in past years, the bluegill was reported more frequently than any other fish and was followed in order of relative abundance in the catch by the yellow perch, smelt, black crappie, pumpkinseed sunfish, rock bass, northern pike, yellow pikeperch (walleye), largemouth black bass and smallmouth black bass. These 10 species made up 97.4 per cent of the total catch reported from non-trout waters. The 3 species of trout (brook, rainbow, and brown) made up less than one-half of one per cent of the total catch from non-trout waters. The following table gives a comparison of the percentage of the total catch made up by the ten most abundant species for the past five years (smelt not reported in abundance prior to 1942).

Table IX

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
Bluegill	44.7	41.3	32.4	43.4	37.4
Yellow perch	17.4	22.2	28.3	24.6	23.8
Smelt	...	...	...	...	10.4
Black crappie	3.0	3.4	5.0	5.1	5.8
Pumpkinseed	5.6	5.6	5.4	5.6	5.1
Rock bass	5.9	5.9	7.6	5.4	4.2
Northern pike	3.2	3.1	3.6	2.8	3.4
Walleye	2.6	2.6	2.3	2.6	2.8
Largemouth bass	2.6	2.2	2.1	2.5	2.2
Smallmouth bass	2.3	2.4	2.8	2.7	2.2
Total	87.3	88.7	89.5	94.7	97.4

The addition of the smelt to the list of the relatively most abundant fishes in the general creel census necessitates a decline in the percentage of other fishes. In other years it is known that smelt were taken by hook-and-line methods in large numbers but for some reason the records had not found their way into the general census. Most of these fish are taken through the ice in the northern lakes. Perhaps the report of the general census should be divided into winter and summer fishing as has been done in the intensive censuses on individual lakes in various parts of the state. This is not feasible at present due to a lack of office assistance and the fact that the winter fishing season occurs in two calendar years. However, it should be seriously considered when ample help is available following the present war. By and large the other species were not shifted greatly in their order of relative abundance because of the entrance of smelt into the more abundant category. For many years the bluegill and perch have occupied first and second place respectively in the creel of inland warm water fishing.

Other Fish Taken From Non-Trout Waters

Although the ten species listed above constituted 97.4 per cent of the total catch from non-trout waters, a total of 3,104 fish referable to 19 species made up the remaining 2.6 per cent. The following list indicates the relative abundance of the "other fish" in the anglers' catches:

Bullheads	721	White bass	45
Carp	651	Dogfish	23
Suckers	520	Lake trout	12
Herring	325	Muskellunge	11
Brook trout	267	Stoneroller	11
Rainbow trout	151	Warmouth bass	11
Catfish	140	Whitefish	8
Redhorse	102	Garpike	7
Brown trout	93	Sheepshead	5
		Sauger	1

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

As mentioned earlier in this report, the bluegill was recorded more often than any other fish in the general census of 1942. Table X lists the 10 most frequently caught non-trout fishes and the percentage of the total catch in their order of decreasing percentage, based on the state average, by hatchery districts. Fishes other than these 10 kinds were not taken in sufficient number to warrant individual attention. The 10 species listed in Table X made up 97.4 per cent of the total catch from non-trout waters whereas the other 19 made up 2.6 per cent.

Table X

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	12.7	7.0	16.9	5.6	43.0	9.7	52.1	52.7	77.8	67.4	53.4
Yellow perch	17.2	51.5	30.9	40.1	12.7	48.1	26.3	14.6	6.2	9.7	17.2
Smelt	...	...	10.2	39.8	...	23.8	...	...	...	...	0.5
Black crappie	2.6	0.5	4.4	0.8	3.5	2.2	7.2	14.2	7.1	6.9	12.1
Pumpkinseed	2.4	4.8	5.7	0.9	16.2	1.7	5.1	3.4	2.6	7.7	4.1
Rock bass	2.1	7.1	14.3	4.6	8.0	3.9	2.4	1.8	1.1	1.9	3.1
Northern pike	19.7	11.0	5.2	0.9	6.0	3.5	1.3	2.9	0.1	0.8	1.7
Walleye	24.5	2.8	3.7	1.3	6.0	1.3	0.4	0.2	0.1	0.2	0.2
Largemouth bass	6.8	3.0	0.9	0.3	2.1	0.8	2.2	2.3	2.6	3.0	3.0
Smallmouth bass	9.7	10.5	5.5	1.7	1.1	2.7	1.3	1.4	0.2	0.7	1.1
Total	97.7	98.2	97.7	96.0	98.6	97.7	98.3	93.5	97.8	98.3	96.4

As in the reports of the general creel census for the past three 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 -- that part of 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 XI), and (2) the percentage of each species in the total catch for each individual region (Table XII).

Table XI

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	1,173	2.6	14,364	32.2	29,083	65.2
Yellow perch	3,555	12.5	18,339	64.4	6,562	23.1
Smelt	...	...	12,309	98.9	143	1.1
Black crappie	198	2.9	1,685	24.5	4,981	72.6
Pumpkinseed	382	6.3	3,584	58.5	2,157	35.2
Rock bass	472	9.4	3,424	67.9	1,145	22.7
Northern pike	1,825	44.5	1,617	39.4	660	16.1
Walleye	1,756	51.7	1,540	45.4	99	2.9
Largemouth bass	592	22.3	696	26.3	1,361	51.4
Smallmouth bass	1,135	43.1	1,058	40.2	440	16.7
Total or per cent	11,088	9.5	58,616	50.4	46,631	40.1

The fish mentioned in Tables XI and XII are arranged in order of decreasing abundance in the total state catch from non-trout waters. It is evident from the data in Table IX that the bluegill is taken in greater numbers from non-trout waters than any other single species. The bluegill is evidently most abundant in the southern third of the state and least abundant in the Upper Peninsula. Approximately two-thirds (65.2 per cent) of all of the bluegills reported taken from non-trout waters were caught in Region III. The yellow perch is taken in larger numbers in the northern half of the Lower Peninsula and in least numbers in the Upper Peninsula. The smelt, although taken at many places during the spawning run by dip nets, is taken by hook and line in largest numbers through the ice in the northern half of the Lower Peninsula. Most of the records on smelt fishing were from Benzie County. Crappies are taken in larger numbers in Region III than in any other part of the state. Pumpkinseeds, although closely related to the bluegill, are taken in greatest numbers in the northern part of the Lower Peninsula and in next largest numbers in the southern part of the Lower Peninsula. Rock bass

follow the same pattern of abundance in the catch as that of the pumpkinseed. Northern pike, walleyes, and smallmouth black bass follow similar patterns in that they are most frequent in the records from the Upper Peninsula, less frequent in those from the upper half of the Lower Peninsula and least frequently reported from the southern third of the state. The relative abundance of the largemouth black bass is directly opposite to that of the smallmouth black bass. The "largemouth" is most frequently recorded in the southern part of the state and less frequently reported as one moves northward.

Again in Table XII it is evident that bluegills are more readily taken in the southern third of the state where they constituted more than half (60.8 per cent) of all of the fish reported taken in that region.

Table XII

Percentage composition of angler's 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	1,173	10.4	14,364	23.8	29,083	60.8	44,620	37.4
Yellow perch	3,555	31.4	18,339	30.4	6,562	13.7	28,456	23.8
Smelt	...	...	12,309	20.4	143	0.3	12,452	10.4
Black crappie	198	1.7	1,685	2.8	4,981	10.4	6,864	5.8
Pumpkinseed	382	3.4	3,584	5.9	2,157	4.5	6,123	5.1
Rock bass	472	4.2	3,424	5.7	1,145	2.4	5,041	4.2
Northern pike	1,825	16.1	1,617	2.7	660	1.4	4,102	3.4
Walleye	1,756	15.5	1,540	2.6	99	0.2	3,395	2.8
Largemouth bass	592	5.2	696	1.1	1,361	2.8	2,649	2.2
Smallmouth bass	1,135	10.0	1,058	1.8	440	0.9	2,633	2.2
Total or per cent	11,088	97.9	56,616	97.2	46,631	97.4	116,335	97.4

Perch dominated both of the other two regions, making up 31.4 per cent regional catch in the Upper Peninsula and 30.4 per cent of the total of the total/catch in the northern half of the Lower Peninsula. Only in the Upper Peninsula did the perch and bluegill together fail to make up half of the total catch. For the entire state these two kinds of fish

made up 61.8 per cent of the total catch. The only other fish which made up more than 10 per cent of the total catch of any one region were: the smelt which made up 20.4 per cent in Region II and 10.4 per cent of the entire state catch; the black crappie which constituted 10.4 per cent of the catch in Region III; the northern pike, walleye, and smallmouth black bass made up 16.1 per cent, 15.5 per cent, and 10.0 per cent respectively of the total catch in the Upper Peninsula.

Resident and Non-resident Anglers

The catch per hour of resident anglers (1.21 fish) indicates that they are more successful than the non-residents (catch per hour of 0.76 fish).

Table XIII

Number of resident and non-resident anglers, and the number of unsuccessful fishermen and 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	4,405	1,447	0.68	1,466	330	0.54
2	3,085	658	1.50	528	119	1.04
3	1,533	514	0.94	561	238	0.63
4	4,775	1,023	2.04	934	332	0.87
5	8,478	3,652	0.63	1,763	873	0.64
6	1,533	693	0.67	224	115	0.49
7	2,005	525	1.57	374	70	1.67
8	1,288	426	1.00	54	17	0.83
9	1,111	248	1.71	624	171	0.98
10	1,866	268	1.45	194	55	0.83
11	8,847	1,946	1.38	526	65	0.90
Total or average	38,926	11,400	1.21	7,248	2,385	0.76

During 1942 a total of 11,400 resident anglers (29.3 per cent) were unsuccessful whereas 2,385 (32.9 per cent) of the non-resident anglers were "blanked." There has been a decline during the past three years in the number of unsuccessful anglers. For the residents and non-residents respectively the figures in 1940 were 34.8 per cent and 40.6 per cent and in 1941 they were 32.1 per cent and 39.1 per cent. Thus, whether the

catch per hour increases or not, there are fewer unsuccessful fishermen. In 1941, 14.75 per cent of the anglers interviewed by the officers lived outside Michigan, as compared with 15.7 per cent in 1942, an increase of 0.95 per cent. Table XIV indicates the numbers of resident and non-resident anglers, the numbers of hours spent fishing, and the number of legal-sized fish taken by each group.

Table XIV

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

District	Number of fishermen		Number of hours		Number legal fish taken	
	Resident	Non-resident	Resident	Non-resident	Resident	Non-resident
1	4,405	1,466	15,657.0	6,308.0	10,663	3,419
2	3,085	528	10,234.5	2,019.5	15,337	2,086
3	1,533	561	4,464.8	1,817.2	4,215	1,130
4	4,775	934	15,633.7	2,510.3	31,831	2,172
5	8,478	1,763	23,641.0	4,683.5	14,975	3,024
6	1,533	224	4,407.5	690.5	2,946	337
7	2,005	374	6,160.2	1,331.8	9,663	2,223
8	1,288	54	4,013.2	155.0	4,031	128
9	1,111	624	3,250.8	2,107.0	5,568	2,059
10	1,866	194	6,423.8	496.0	9,296	412
11	8,847	526	33,989.3	1,321.9	46,764	1,159
Total	38,926	7,248	127,875.8	23,440.7	155,289	18,149

Residence of Non-resident Fishermen

Ohioans again made up the largest group of out-of-state anglers interviewed by the officers. The percentage of residents of the Buckeye State among the total anglers has been decreasing from 54.6 per cent in 1940, 51.3 per cent in 1941 and 48.0 per cent in 1942. However, this does not mean that there are fewer Ohioans fishing in Michigan each year because the actual number of such anglers has been steadily increasing according to the records of the general census. In 1942, although the figure dropped 3.3 per cent from that of 1941, there were actually 890 more Ohioans interviewed during 1942 than in 1941. What occurs is an increase in the number of non-resident anglers from states other than Ohio.

In 1942 for the first time there were more Illinois residents interviewed than were residents of Indiana. Table XV gives the residence of all anglers interviewed by the officers. During 1941, residents of 27 states and one province in Canada were checked by the officers, whereas in 1942 residents of 28 states, 3 Canadian provinces and the District of Columbia were interviewed in addition to resident anglers.

Table XV

Residence of fishermen

Resident		Non-resident			
County	Number	County	Number	State or Province	Number
Alcona	75	Mackinac	154	Alabama	5
Alger	249	Macomb	260	Arizona	9
Allegan	232	Manistee	1,556	Arkansas	3
Alpena	193	Marquette	1,059	California	2
Antrim	239	Mason	359	Florida	7
Arenac	54	Mecosta	269	Idaho	13
Baraga	206	Menominee	73	Illinois	1,495
Barry	139	Midland	668	Indiana	1,407
Bay	367	Missaukee	67	Iowa	39
Benzie	454	Monroe	188	Kansas	2
Berrien	82	Montcalm	107	Kentucky	103
Branch	219	Montmorency	159	Louisiana	4
Calhoun	496	Muskegon	433	Maryland	4
Cass	55	Newaygo	227	Minnesota	3
Charlevoix	210	Oakland	1,399	Mississippi	10
Cheboygan	97	Oceana	178	Missouri	46
Chippewa	341	Ogemaw	55	New Hampshire	2
Clare	304	Ontonagon	477	New York	24
Clinton	219	Osceola	140	North Dakota	28
Crawford	44	Oscoda	181	Ohio	3,481
Delta	464	Otsego	148	Oklahoma	2
Dickinson	318	Ottawa	270	Pennsylvania	72
Eaton	322	Presque Isle	91	Rhode Island	2
Emmet	302	Roscommon	434	Tennessee	11
Genesee	2,765	Saginaw	913	Texas	4
Gladwin	129	Saint Clair	114	Virginia	6
Gogebic	1,723	Saint Joseph	217	West Virginia	7
Grand Traverse	403	Sanilac	70	Wisconsin	414
Gratiot	263	Schoolcraft	262		
Hillsdale	160	Shiawassee	263	Washington, D. C.	8
Houghton	504	Tuscola	203	Alberta	1
Huron	26	Van Buren	47	British Columbia	1
Ingham	2,494	Washtenaw	572	Ontario	4
Ionia	140	Wayne	6,195		
Iosco	64	Wexford	668	Unknown	29
Iron	2,003				
Isabella	368	Unknown	...	TOTAL	7,248
Jackson	599				
Kalamazoo	295	TOTAL	38,926		
Kalkaska	42				
Kent	1,288				
Keweenaw	13				
Lake	165				
Lapeer	383				
Leelanau	190				
Lenawee	270				
Livingston	156				
Luce	326				

Residence of Resident Anglers

There were 6,195 residents of Wayne County who made up 15.9 per cent of all resident anglers interviewed by the officers. More than 1,000 anglers from each of eight other counties were recorded in the census: Genesee 2,765; Ingham 2,494; Iron 2,003, Gogebic 1,723; Manistee 1,556; Oakland 1,399; Kent 1,288; and Marquette 1,059. Residents of these nine counties made up 44.4 per cent of all resident anglers interviewed. All other counties in the state were represented.

Male and Female Anglers

In 1941 the general census indicated that women made up 16.2 per cent of all anglers and that they caught 11.7 per cent of all legal fish taken. In the 1942 general census women made up 17.1 per cent of all fishermen but, in contrast to 1941, they caught 16.0 per cent of all legal fish. In further contrast to 1941, when 44 per cent of the women anglers were unsuccessful, only 33.5 per cent were "blanked" in 1942. During 1942 30.0 per cent of all men anglers were unsuccessful as compared with 31.0 per cent for 1941. Table XVI shows the number of men and women anglers, the number of hours spent in fishing by each, and the numbers of legal-sized fish and the catch per hour for each group by hatchery districts. The catch per hour for the women showed an increase of 0.28 fish and for the men an increase of 0.13 fish per hour in 1942 over those of 1941. During 1942 the men caught fish at a rate of 0.06 fish per hour faster than the women.

Table XVI

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	5,110	731	19,230.8	2,734.7	12,894	1,188	0.67	0.43
2	3,228	385	10,949.0	1,305.0	15,384	2,039	1.41	1.56
3	1,775	319	5,323.5	958.5	4,627	718	0.87	0.75
4	4,696	1,013	14,923.5	3,220.5	28,955	5,048	1.94	1.56
5	7,984	2,257	22,081.7	6,242.8	13,916	4,083	0.63	0.65
6	1,425	332	4,135.5	962.5	2,810	473	0.68	0.49
7	1,959	420	6,170.0	1,322.0	9,370	2,516	1.52	1.90
8	1,085	257	3,370.0	798.2	3,250	909	0.96	1.14
9	1,370	365	4,229.5	1,128.3	6,059	1,568	1.43	1.39
10	1,688	372	5,671.5	1,248.3	7,492	2,216	1.32	1.76
11	7,950	1,423	29,951.0	5,360.2	40,937	6,986	1.38	1.30
Total or average	38,300	7,874	126,036.0	25,281.0	145,694	27,744	1.16	1.10

Comparison of Creel Census Data With That of Other Years

Table XVII gives a summary comparison of the data collected during each year of the general census for the past six years. There has been a decrease in the catch per hour for all waters from 1937 to 1940 and 1941. In 1942 there is a slight increase over 1941. The quality of fishing as indicated by the catch per hour did not vary considerably in the trout waters but did show significant variation in the non-trout waters. Fishing in the waters of the Great Lakes cannot be considered at this time because during 1942 these waters were treated as a separate unit for the first time. Resident anglers appear to be consistently more successful than the non-residents and the men likewise appear to be consistently more successful than the women. The percentage of non-resident fishermen shows a downward trend since 1937 but this may have been caused by a disproportionate increase in the number of resident anglers. While a slight increase in the percentage of non-resident anglers occurred in 1942 over 1941, it is expected that this may be reversed in the figures for 1943 when travel restrictions first became effective. The number of female anglers

has increased 2.3 times during the past six years (2.6 times in trout waters and 2.1 times in non-trout waters). The percentage of fishermen who were unsuccessful has not varied much during the past five years for which such data are available. Surprisingly enough, there appears to be little difference in the percentage of unsuccessful anglers in trout and non-trout waters as the average for the six years is the same in each case (33.0 per cent).

There has been no great variation in the average size of any of the 12 species of fish listed in Table XVII. The average length of bluegills as recorded by the officers has been consistently 7.5 inches until 1942, when there was an increase to 7.6 inches. The average length of the yellow perch has varied as much as half an inch but has remained between 8 and 8 1/2 inches. Pumpkinseeds varied in average length from 7.0 to 7.6 inches with an average length of 7.3 inches. The average length of rock bass has fluctuated only 0.4 inches in the six-year period and that of crappies only 0.5 inches. In the larger fishes as the black basses, northern pike and walleye, a greater variation in the average lengths than in the pan fishes might reasonably be expected. However, each of the average lengths of these species has remained fairly constant throughout the six-year period.

The average lengths of the trouts has also remained fairly constant. The brook trout varied 0.4 inches in average length with a six-year average of 8.6 inches. The size of rainbows ranged from 9.5 to 10.5 inches with an average of 10.0 inches for the six years. The average length of the brown trout only varied 0.2 inches during the six years with an average of 10.5 inches for the period.

Table XVII

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

	1937	1938	1939	1940	1941	1942	Average
Catch per hour							
All waters	1.5	1.3	1.1	1.0	1.0	1.1	1.2
Resident--all waters	1.5	1.3	1.1	1.0	1.0	1.2	1.2
Non-resident--all waters	1.1	1.1	0.9	0.9	0.9	0.8	0.9
Male anglers--all waters	1.5	1.3	1.1	1.0	1.0	1.2	1.2
Female anglers--all waters	1.3	1.3	0.9	0.8	0.8	1.1	1.0
Trout waters	0.8	0.9	0.8	0.8	0.8	0.9	0.8
Resident--trout waters	0.8	0.9	0.8	0.8	0.8	0.9	0.8
Non-resident--trout waters	0.6	0.7	0.7	0.5	0.6	0.7	0.6
Male anglers--trout waters	0.8	0.9	0.8	0.8	0.8	0.9	0.8
Female anglers--trout waters	0.5	0.5	0.4	0.3	0.5	0.6	0.5
Non-trout waters	1.7	1.4	1.1	1.0	1.1	1.1	1.2
Resident--non-trout waters	1.8	1.5	1.1	1.1	1.1	1.2	1.3
Non-resident--non-trout waters	1.2	1.1	1.0	0.9	0.9	0.9	1.0
Male anglers--non-trout waters	1.7	1.4	1.1	1.1	1.1	1.1	1.2
Female anglers--non-trout waters	1.4	1.4	0.9	0.8	0.9	1.0	1.1
Great Lakes waters	...	...	...	...	...	1.7	1.7
Resident--Great Lakes waters	...	...	...	...	...	2.0	2.0
Non-resident--Great Lakes waters	...	...	...	...	...	0.9	0.9
Male anglers--Great Lakes waters	...	...	...	...	...	1.8	1.8
Female anglers--Great Lakes waters	...	...	...	...	...	1.2	1.2
Percentage of all anglers represented by non-residents	17.2	14.2	16.2	15.1	14.8	15.7	15.5
Percentage of trout fishermen represented by non-residents	7.0	6.0	7.0	6.9	9.5	11.0	7.9
Percentage of non-trout fishermen represented by non-residents	20.0	17.0	18.0	16.7	16.1	17.3	17.5
Percentage of Great Lakes fishermen represented by non-residents	...	...	...	...	...	9.7	9.7
Percentage of all fishermen represented by female anglers	7.5	6.0	11.6	13.9	16.2	17.1	12.0
Percentage of trout fishermen represented by female anglers	4.0	3.0	4.0	5.8	6.9	10.2	5.6
Percentage of non-trout fishermen represented by female anglers	9.0	7.0	13.0	15.7	18.4	19.1	13.7
Percentage of Great Lakes fishermen represented by female anglers	...	...	...	...	...	11.6	11.6
Percentage of fishermen taking no fish--all waters	...	31.0	34.0	35.7	33.1	31.0	33.0
Percentage of fishermen taking no fish--trout waters	...	34.0	33.0	34.8	33.8	29.5	33.0
Percentage of fishermen taking no fish--non-trout waters	...	30.0	34.0	36.1	33.0	32.1	33.0
Percentage of fishermen taking no fish--Great Lakes waters	...	...	...	...	...	20.0	20.0
Average size of fish caught:							
Bluegills	7.5	7.5	7.5	7.5	7.5	7.6	7.5
Yellow perch	8.2	8.0	8.1	8.5	8.2	8.0	8.2
Pumpkinseeds	7.0	7.0	7.4	7.6	7.2	7.4	7.3
Rock bass	7.4	7.7	7.7	7.8	7.6	7.8	7.7
Crappie	8.2	8.6	8.7	8.2	8.2	8.6	8.4
Northern pike	20.6	20.3	20.6	21.1	20.8	20.4	20.6
Smallmouth black bass	12.7	12.8	13.0	13.3	13.1	12.8	13.0
Walleye	17.7	17.5	16.9	16.9	16.7	17.0	17.1
Largemouth black bass	13.0	13.1	12.8	13.2	13.0	12.8	13.0
Brook trout	8.3	8.7	8.6	8.7	8.7	8.7	8.6
Rainbow trout	10.5	10.3	10.0	9.5	9.9	10.0	10.0
Brown trout	10.5	10.4	10.6	10.4	10.5	10.5	10.5

Table XVIII presents a comparison of the quality of fishing as shown by the general creel census since 1928. This table indicates that there is an apparent "cycle" in the quality of fishing in all waters combined. However, it should be noted that the catch per hour in trout waters of the different years remains more or less constant and that the "cycle" is actually manifest only in the catch per hour in non-trout waters. The figures prior to 1932, when there was no license required for non-trout fishing, are probably not a reliable index of the catch per hour in non-trout waters. Since 1932 these figures are more reliable and the cycle is still apparent. The high point in 1935 of 1.85 fish per hour followed by a low point of 1.04 fish per hour five years later and the upward trend since 1940 indicates that the next high point should occur about 1945.

Table XVIII

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	1.16	0.89	1.11	1.67
Simple average	1.18	0.89	1.27	1.67

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

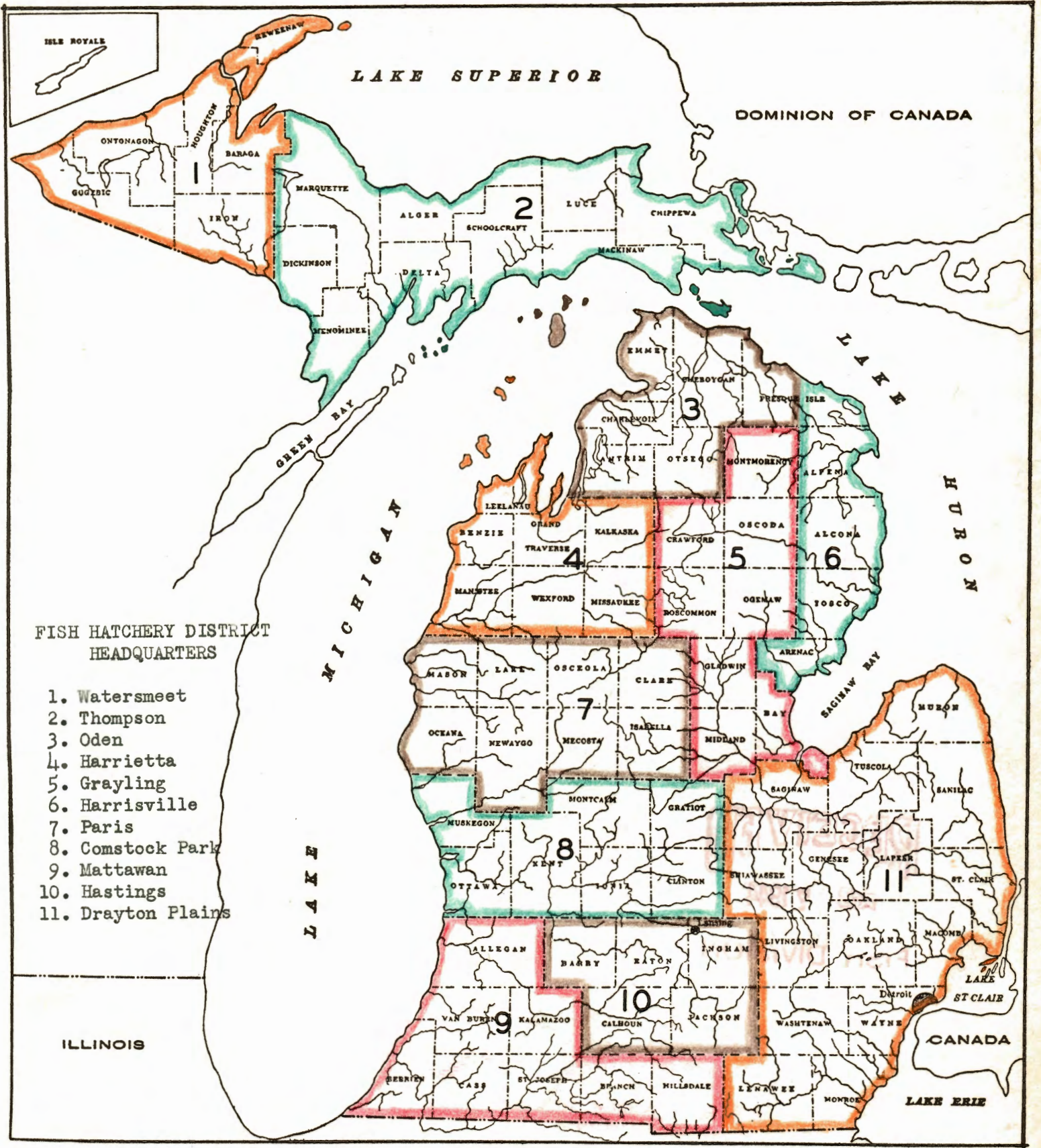
As in 1941, the appendix to the annual report of the general creel census has been omitted. The detailed tables used in the compilation of data presented in this report are on file at the office of the Institute for Fisheries Research at Ann Arbor.

INSTITUTE FOR FISHERIES RESEARCH

L. A. Krumholz

Report approved by A. S. Hazzard

Report typed by V. M. Andres



FISH HATCHERY DISTRICT HEADQUARTERS

- 1. Watersmeet
- 2. Thompson
- 3. Oden
- 4. Harrietta
- 5. Grayling
- 6. Harrisville
- 7. Paris
- 8. Comstock Park
- 9. Mattawan
- 10. Hastings
- 11. Drayton Plains

ILLINOIS

CANADA

LAKE ERIE