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REPORT OF THE GENERAL CREEL CENSUS FOR 1941

by

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This is the fifteenth year that the general creel census has been conducted in Michigan. As in previous years, the conservation officers have collected the records as an adjunct to their other duties. This cooperation of the Division of Field Administration is greatly appreciated.

The aim of the general census is to afford a random sample of the fishing in all parts of the state and represent all types of inland lake and stream angling during the entire fishing season. However, in 1941 there were no usable reports from the following counties: Bay, Cass, Missaukee, Ogemaw, Otsego, Ottawa, Saginaw and Sanilac. There were no reports from five of these counties viz., Bay, Cass, Ottawa, Saginaw and Sanilac, in 1940. In Bay and Sanilac Counties there is little good fishing water but in the other counties, with the possible exception of Saginaw, there is an abundance of good fishing water which is fished considerably. The lack of records from some counties might tend to bias the randomness of the sample.

This report will follow previous reports of the general creel census rather closely to facilitate comparisons. The methods used in compilations and analyses of data are the same as those in previous reports. No records of intensive lake and stream censuses have been included in this report.

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

In 1941, the 34,299 fishermen interviewed by the officers fished a total of 117,981.75 hours on all types of water in the state and caught 117,955 legal-sized fish, a catch of 1.00 fish per hour (Table I). This catch per hour is 0.01 higher than that of 1940, 0.06 lower than that of 1939, 0.29 lower than that of 1938 and 0.46 lower than that of 1937. The catch per hour for non-trout waters was 1.06 fish in 1941, which is 0.02 fish per hour higher than in 1940, 0.10 fish lower than 1939, 0.37 fish lower than 1938 and 0.62 lower than 1937 (Table V). The catch per hour for trout waters was 0.77 for 1941, the same as in 1940, 0.05 fish lower than 1939, 0.14 fish lower than 1938 but 0.02 fish higher than 1937 (Table VI).

Of the 34,299 fishermen interviewed by the officers in 1941, 5,055 (14.75 per cent) were non-residents. This is a decrease of 0.25 per cent from 1940 and 1.45 per cent from 1939.

There were 5,564 women anglers interviewed by the officers in 1941. These women made up 16.2 per cent of all fishermen, an increase of 2.3 per cent over 1940, an increase of 4.6 per cent over 1939, a 10.3 per cent increase over 1938 and an increase of 8.8 per cent over 1937. The women caught fish at the rate of 0.82 fish per hour, whereas the men averaged 1.03 fish per hour. The women anglers preferred non-trout fishing to trout fishing at a ratio of 15 to 1 and the men anglers preferred non-trout fishing to trout fishing at a ratio of 3.5 to 1. This preference is assumed on the basis of the relative number of returns from each class of water.

Detailed Analysis

Number of Records

During 1941 the conservation officers obtained records from 34,299 fishermen as compared with 29,477 records taken in 1940. The number of records taken in 1941 is the largest number secured in any one year since the inauguration of the general creel census in 1927.

The 34,299 fishermen-days reported in 1941 represented 117,981.75 hours of fishing, an increase of 19,867.25 hours over that of 1940, an increase of 7,950.50 hours over 1939, a 36,416.50 hour increase over 1938 and an increase of 56,339.75 hours over 1937.

Previously it was stated that no records were received from 8 counties during 1941. In addition to these there were 12 counties from which fewer than 100 records were received. These counties with the number of records sent in from each, are:

Arenac	1	Menominee	58
Kalkaska	3	Emmet	69
Montcalm	10	Genesee	74
Shiawassee	19	Washtenaw	82
Kalamazoo	48	Tuscola	86
Van Buren	51	Antrim	98

As mentioned in the report of the general creel census for 1939 (Institute Report No. 625) a goal of 400 records for the conservation officers of each county was recommended. In 1941 the officers succeeded in getting over 400 records from the following 31 counties: Alcona, Allegan, Barry, Benzie, Branch, Cheboygan, Chippewa, Crawford, Dickinson, Eaton, Gladwin, Gogebic, Grand Traverse, Ingham, Iron, Jackson, Lake, Lapeer, Leelanau, Livingston, Mackinac, Manistee, Marquette, Oakland, Ontonagon, Oscoda, Presque Isle, Roscommon, St. Clair, Wayne and Wexford. This list includes thirteen counties which did

not turn in more than 400 reports in 1940, as follows: Allegan, Barry, Crawford, Dickinson, Eaton, Gogebic, Jackson, Livingston, Mackinac, Marquette, Oakland, Ontonagon and St. Clair. Also there are six counties which turned in over 400 records in 1940 which failed to do so in 1941: Baraga, Charlevoix, Houghton, Iosco, Midland, and Osceola. It is difficult to explain why the officers of any county can obtain more than 400 records one year and fail to do so in the other years. Of those counties from which more than 400 records were sent in, Roscommon, in Hatchery District 5, heads the list again in 1941 with 5,047 records. As in 1940 this number not only exceeds that of any other county, but also that of any other Hatchery District (Table I). It has previously been suggested that a few records be taken each week by the conservation officers and that these should be pro-rated as far as is practicable according to the fishing pressure for that time of year. The records should not all be gathered in one day from one lake because this practice will tend to bias the results. Rather, the records should be taken during the entire fishing year, and on as many different waters as possible.

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	3,685	14,382.00	9,304	0.65
2	3,082	10,551.75	11,542	1.09
3	1,281	3,591.75	3,117	0.87
4	4,327	12,150.75	13,821	1.14
5	7,443	25,614.50	16,972	0.66
6	1,309	4,173.00	3,000	0.72
7	2,190	7,438.25	8,309	1.12
8	1,035	3,259.75	4,968	1.52
9	2,322	7,974.00	10,181	1.28
10	2,817	9,844.25	14,282	1.45
11	4,808	19,019.75	22,459	1.18
Total or Average	34,299	117,999.75	117,955	1.00

According to the records of the general creel census in 1941, 14.8 per cent of the fishermen were non-residents. This is a decrease of 0.4 per cent from 1940, a decrease of 1.4 per cent from 1939, but an increase of 0.6 per cent over 1938. The total number of non-resident fishermen interviewed by the officers was 5,055 in 1941 as compared with 4,432 in 1940 and 5,097 in 1939. Of these non-residents, 4,397 (87.0 per cent) preferred non-trout fishing and the remaining 658 (13.0 per cent) sought trout. As in 1940, the greatest concentration of non-resident anglers fished in Hatchery District 9, which includes Allegan, Berrien, Branch, Cass, Hillsdale, Kalamazoo, St. Joseph and Van Buren Counties. The records from this district show that 32.9 per cent of the anglers were non-residents (Table II). This may not be a true picture because of the lack of returns from Cass County and the few returns from Kalamazoo and Van Buren Counties.

Table II
Number of fishermen, resident and non-resident, and percentage of non-resident fishermen for each Hatchery District.

District	Number of fishermen	Resident	Non-Resident	Per cent non-resident fishermen
1	3,685	2,978	707	19.2
2	3,082	2,619	463	15.0
3	1,281	997	284	22.2
4	4,327	3,352	975	22.5
5	7,502	6,512	936	12.5
6	1,250	1,102	202	16.2
7	2,190	1,909	281	12.8
8	1,035	1,016	19	1.8
9	2,322	1,558	764	32.9
10	2,817	2,622	195	6.9
11	4,808	4,579	229	4.8
Total or Average	34,299	29,244	5,055	14.7

Trout and Non-trout Fishing by Hatchery Districts

The largest percentage of records for trout fishing was from Hatchery District 1 with 54.5 per cent based on 3,685 records (Table III). In 1941,

Table III

District	TROUT		NON-TROUT	
	Number of fishermen	Per cent of fishermen	Number of fishermen	Per cent of fishermen
1	2,010	54.5	1,675	45.5
2	1,601	51.9	1,481	48.1
3	343	26.8	938	73.2
4	1,052	24.3	3,275	75.7
5	801	10.8	6,642	89.2
6	131	10.0	1,178	90.0
7	777	35.5	1,413	64.5
8	46	4.4	989	95.6
9	114	4.9	2,208	95.1
10	4	0.1	2,813	99.9
11	68	1.4	4,740	98.6
Total or Average	6,947	20.3	27,352	79.7

District 2 ranked second with 51.9 per cent based on 3,082 records and District 7 ranked third with 35.5 per cent based on 2,190 records. In 1941, the seven hatchery districts north of the Bay City-Muskegon line afforded 96.7 per cent of all the trout fishing in the state, as shown by the general creel census. When compared with the figures of the 1940 census in which these same seven districts provided 99.3 per cent of the state's trout fishing, it indicates an increased use of the southern Michigan trout streams during 1941. Also the trout fishing in the seven districts north of the Bay City-Muskegon line made up 28.8 per cent of all fishing in this area as compared with 21.3 per cent trout fishing in the same area in 1940. In the other four districts, trout fishing made up 2.1 per cent of the total fishing in the area in 1941 as compared with 0.6 per cent in 1940.

The largest percentage of non-trout fishing records were submitted from Hatchery District 10, with 99.9 per cent based on 2,817 records (Table III). District 10 was followed in order by District 11 with 98.6 per cent non-trout

fishing based on 4,808 records, District 8 with 95.6 per cent based on 1,035 records, District 9 with 95.1 per cent based on 2,322 records and District 6 with 94.2 per cent non-trout fishing based on 1,250 records. The above calculations assume that the sampling by creel census is representative of the types of fishing found in each district.

Quality of Fishing

The best general indication of the quality of fishing is the catch per hour. This varies markedly with the type of fishing done by the angler. It is common knowledge that an angler trolling for muskellunge will not average as many fish per hour as he would while still-fishing for perch or bluegills. It is plausible, then, that the best catch per hour should be in that part of the state where bluegills and other such fish are sought most frequently. The records from the 1941 general census show that the best fishing was in Hatchery District 8 where catch per hour was 1.52 fish. District 8 was followed in order by District 10, with a catch of 1.45 fish per hour, District 9 with a catch of 1.3 fish per hour and District 11 with a catch per hour of 1.2 fish. Table IV shows the catch per hour for all

Table IV
Catch per hour for all waters by Hatchery Districts

District	1937	1938	1939	1940	1941
1	0.8	0.6	0.6	0.5	0.7
2	1.1	1.1	1.1	1.4	1.1
3	0.8	1.0	1.2	0.8	0.9
4	1.4	1.5	1.1	1.1	1.1
5	1.4	1.1	0.9	0.8	0.7
6	0.9	1.1	1.0	0.7	0.7
7	1.4	1.5	1.3	1.2	1.1
8	1.9	1.4	1.4	1.3	1.5
9	2.7	2.0	1.3	1.3	1.3
10	1.9	1.8	1.5	1.5	1.5
11	2.1	1.6	0.9	1.3	1.2
State Average	1.5	1.3	1.1	1.0	1.0

waters by hatchery districts for the past 5 years. For the state as a whole, the catch per hour has decreased by one-third during the past 5 years. Since the inception of the general census in 1927 when the catch per hour was 1.15 fish, based on 4,437 reports, the catch per hour has dropped as low as 0.88 fish in 1930 and has risen as high as 1.64 fish per hour in 1934. In both 1940 and 1941 the catch per hour was 1.0 fish. This might indicate that in the two years just passed the cycle (if there is a cycle of fishing for the state as a whole) is now at its low point and fishing should become increasingly better for the next several years if the cycle follows the same pattern as in the last decade.

The value of the data collected in the general creel census becomes more valuable as the years pass. The number of records taken each year has increased from 4,437 taken in 1927 to nearly 35,000 in 1941. The accumulated data over such a period of years for individual lakes and streams, as well as for the entire state, gives an index as to the kinds and relative abundance of different fishes, and, to some extent, the quality of fishing, in each lake or stream as a unit. This is valuable information for use in the practice of intelligent lake management.

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

Non-trout fishing in 1941 made up 79.7 per cent of all the fishing in the state as shown by the general creel census. The catch per hour in non-trout waters showed an improvement in Hatchery Districts 1, 4, and 8 over that of 1940 (Table V); in Hatchery Districts 3, 6, 9 and 10 it remained as it was in 1940 and in the other districts there was a decrease in the catch per hour for non-trout fishing.

Table V
Catch per hour--non-trout waters, by Hatchery Districts

District	1937	1938	1939	1940	1941
1	0.6	0.4	0.4	0.3	0.6
2	1.2	1.2	1.1	1.5	1.1
3	1.3	1.4	1.4	0.9	0.9
4	1.6	1.7	1.2	1.1	1.3
5	1.6	1.1	1.0	0.8	0.7
6	1.0	1.0	1.0	0.7	0.7
7	1.7	2.0	1.4	1.6	1.3
8	1.9	1.5	1.4	1.4	1.6
9	2.7	2.1	1.4	1.3	1.3
10	1.9	1.8	1.5	1.5	1.5
11	2.1	1.6	1.9	1.3	1.2
State Average	1.7	1.4	1.1	1.0	1.1

Table VI shows the catch per hour for trout waters for each of the hatchery districts for the past 5 years. As previously stated, the area north of the Bay City-Muskegon line afforded 96.7 per cent of all the trout fishing in the state. The area south of this line does not have an abundance of trout water although in 1941 trout fishing was reported from every district in the state.

There has been very little variation in the quality of fishing in trout waters in Michigan for the past several years. Of the last five years the catch per hour has remained at 0.8 fish with the single exception of 1938 when it rose to 0.9 fish per hour.

Table VI
Catch per hour--trout waters, by Hatchery Districts

District	1937	1938	1939	1940	1941
1	1.1	0.9	0.8	0.8	0.7
2	0.9	1.1	1.2	1.1	1.1
3	0.7	0.8	1.0	0.7	0.8
4	0.7	0.8	0.7	0.6	0.7
5	0.4	0.6	0.5	0.6	0.6
6	0.7	1.2	1.0	0.4	0.8
7	0.8	0.9	1.0	0.8	0.8
8	0.4	0.4	0.2	1.2	0.3
9	0.5	0.8	0.6	...	0.7
10	0.8	1.8	1.1	0.5	1.1
11	...	...	0.1	0.2	0.6
State Average	0.8	0.9	0.8	0.8	0.8

The highest catch per hour for trout waters was in District 2 with 1.1 fish, based on 1,601 reports. Although the catch of 1.1 fish per hour was also maintained in District 10, it is based on the records of only 4 fishermen. The county in which the highest catch per hour was recorded was Antrim County in District 3 with a catch of 1.92 fish per hour, based on 48 fishermen-days. The county with the highest catch per hour based on more than 100 fishermen-days was Chippewa County in District 2 with an average catch of 1.53 fish per hour based on 309 records. These figures are based on all fish taken from trout waters as recorded in the general census and not on trout alone.

Number and Size of Trout--Trout Waters

The numbers and kinds of trout, with the average length in inches and the percentage of the trout catch for each of the hatchery districts is given in Table VII. From these data it is apparent that brook trout make up the majority of the catch (77.9 per cent), followed by the rainbow trout (12.6 per cent) and the brown trout (9.5 per cent). These figures differ quite markedly from comparable figures from the 1940 census in which the brook trout made up 69.1 per cent, the rainbow trout 18.1 per cent

Table VII
Number of each kind of trout with average size and percentage of the trout catch by Hatchery Districts

	BROOK TROUT			RAINBOW TROUT			BROWN TROUT		
District	Number	Av. Size	Per cent catch	Number	Av. size	Per cent catch	Number	Av. size	Per cent catch
1	4,699	8.9	90.5	372	10.1	7.2	118	11.6	2.3
2	5,269	9.0	95.3	137	14.8	2.5	122	10.4	2.2
3	543	9.1	73.2	50	8.8	6.7	149	10.4	20.1
4	960	7.8	61.1	500	10.0	31.8	112	9.4	7.1
5	1,196	8.2	59.3	212	10.1	10.5	609	10.5	30.2
6	76	8.5	89.4	8	17.0	9.4	1	12.0	1.2
7	1,041	8.2	42.9	863	8.9	35.6	521	10.4	21.5
8	13	8.3	44.8	5	8.4	17.3	11	9.5	37.9
9	134	8.9	38.6	131	9.2	37.8	82	10.5	23.6
10	...	...	...	...	...	...	1	10.0	100.0
11	161	8.4	100.00	...	....	...	...	...	...
Total or Average	14,092	8.7	77.9	2,278	9.9	12.6	1,726	10.5	9.5

and the brown trout 12.8 per cent. The total trout catch in the 1941 general census exceeded that of 1940 by 3,806 fish.

The greatest percentage of brook trout were taken in Hatchery Districts 2, 1, and 3, whereas in 1940 the greatest percentages were reported from Districts 2, 1, and 6. The greatest percentages of rainbow trout were taken in Districts 9, 7, and 4 in 1941, whereas in 1940 the order was Districts 4, 9, and 7. In 1941 the greatest percentages of brown trout were reported from Districts 8, 5, and 9, although only one trout was taken in District 10 and it was a brown. In 1940 the largest percentages of brown trout were reported from Districts 7, 5, and 3.

The average length of the brook trout in 1941 was 8.7 inches, the same as for brook trout in 1940. The rainbows averaged 9.9 inches in 1941, an increase of 0.4 inch over 1940. The average length of the brown trout in 1941 was 10.5 inches as compared with the 10.4 inch average in 1940.

Other Fish Taken From Trout Waters

Table VIII lists the numbers and kinds of fish other than trout taken from trout waters during 1941. The cutthroat trout has been

Table VIII
Other species in trout waters.

Common sucker	351	Largemouth bass	55
Rock bass	278	Smallmouth bass	55
Yellow perch	273	Grayling (illegal)	50
Cutthroat trout	270	Lake trout	40
Northern pike	217	Mullet	18
Walleye	181	Whitefish	6
Bluegill	149	Carp	5
Bullheads	56	Black crappie	3
Pumpkinseed	55	Lawyer	1

included among the other species in trout waters because there have been only relatively small plantings made in a few isolated lakes of the state.

All the cutthroat trout and grayling recorded in the creel census for 1941 were taken from O'Brien Lake in Alcona County. Also the suckers are probably taken only by bait fishermen at certain times of the year and many of the anglers kill these fish and throw them away rather than keep them. Thus the figures in Table VIII are likely not to give a true picture of the relative abundance of these other fishes in trout waters.

Composition of Catch in Non-trout Waters

There were 29 different species of fish reported from non-trout waters in the general census of 1941. As in past years, the bluegill was reported more frequently in the catch than any other fish. The bluegills were followed in order of abundance by the yellow perch, pumpkinseed, rock bass, black crappie, northern pike, smallmouth black bass, walleye and largemouth black bass. These nine kinds of fish made up 94.7 per cent of the total catch in non-trout waters in 1941 (Table IX). In 1940 these same nine kinds only made up 89.5 per cent of the total catch. Table IX gives a comparison of the percentage of the total catch made up by each of the above-mentioned nine kinds of fish for the past seven-year period.

Table IX
Percentage composition of catch for nine species--non-trout waters.

Species	1935	1936	1937	1938	1939	1940	1941
Bluegill	42.7	44.8	44.5	44.7	41.3	32.4	43.4
Yellow perch	18.2	21.5	22.1	17.4	22.2	28.3	24.6
Pumpkinseed	4.5	4.7	6.0	5.6	5.6	5.4	5.6
Rock bass	7.1	4.0	5.8	5.9	5.9	7.6	5.4
Black crappie	6.8	5.3	5.8	3.0	3.4	5.0	5.1
Northern pike	2.8	2.8	2.7	3.2	3.1	3.6	2.8
Smallmouth bass	1.9	2.8	2.0	2.3	2.4	2.8	2.7
Walleye	2.2	2.0	2.0	2.6	2.6	2.3	2.6
Largemouth bass	3.5	3.7	2.6	2.6	2.2	2.1	2.5
TOTAL	89.7	91.6	93.5	87.3	88.7	89.5	94.7

In 1941 there was a marked rise (11.0 per cent) in the percentage of bluegills taken throughout the state over that of 1940. However, the percentage of bluegills taken in 1941 (43.3 per cent) compares quite favorably with that of the five year average 1935-1939 inclusive (43.6 per cent). In Districts 9 and 10, which make up the southwestern part of the state where the bluegill fishing is reputedly better than in other parts of the state, the percentage of bluegills in the total catch has remained at about 70 per cent for the past 7 years of the census. If there were only a few records from these two districts, the percentage of bluegills in the total catch of fish for the state would be much lower than if the number of records from these two districts were comparable to those from other districts. In 1940, when only 6.8 per cent of all general creel census records in the state were turned in from Districts 9 and 10, the percentage of bluegills in the total catch dropped more than 11 per cent from the average of the previous five years. In 1941, however, when 15 per cent of the records in the state were reported from Districts 9 and 10, the percentage of bluegills in the total catch returned to the level of the five years preceding 1940. During the period 1935-1939 the number of records from Districts 9 and 10 averaged 12 per cent of the total for the state. This is striking evidence that the number of records from each and every county in the state should be sufficient to give a true picture of all kinds of fishing in the county.

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

As previously stated the bluegill was the most abundant fish as recorded in the general census of 1941 and was followed in order by the yellow perch, pumpkinseed, rock bass, black crappie, northern pike, smallmouth black bass, walleye and largemouth black bass. Other fishes recorded in the catch were not taken in sufficient quantities to warrant individual attention in this

report. Table X shows the percentage composition of the catch of the nine most abundant game fishes taken from non-trout waters by hatchery districts as shown by the general census for 1941.

Table X
Percentage composition of the catch for non-trout waters by Hatchery Districts

Species	Hatchery Districts										
	1	2	3	4	5	6	7	8	9	10	11
Bluegill	10.5	4.8	7.2	18.2	48.5	4.5	51.5	77.8	70.9	69.0	38.4
Yellow perch	22.7	63.2	55.8	40.6	4.8	60.3	22.4	5.5	8.5	9.3	34.5
Pumpkinseed	7.0	2.8	6.7	2.8	13.4	4.0	5.4	2.6	3.9	7.4	2.8
Rock bass	3.1	5.0	9.6	11.7	12.2	5.1	3.0	1.7	0.9	1.0	4.0
Black crappie	4.4	0.3	0.5	0.8	8.3	2.1	9.0	1.6	7.1	4.3	6.8
Northern pike	11.0	9.6	4.1	1.2	4.4	12.8	2.7	1.4	0.7	0.9	0.7
Smallmouth bass	15.0	3.9	2.5	3.6	1.4	3.2	1.7	2.4	0.4	0.2	3.4
Walleye	19.1	4.0	2.5	1.9	4.4	2.1	0.9	0.5	0.1	Trace	2.2
Largemouth bass	5.1	4.1	1.3	1.4	1.0	0.9	2.8	3.7	2.4	3.9	2.3

In 1941, as in 1939 and 1940, the composition of the catch has been determined by geographical regions. These regions are the natural divisions of the state; the Upper Peninsula is the first region, the northern half of the Lower Peninsula north of a line from Bay City to Muskegon is the second region, and the portion of the state south of the above-mentioned line is the third region. There are two methods of comparison of the catch between 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 of each region (Table XII).

Table XI
Percentage of the total state catch of each of nine species taken in each geographical region of Michigan--non-trout waters.

Species	Region I		Region II		Region III	
	Number	Per cent	Number	Per cent	Number	Per cent
Bluegill	657	1.5	12,630	29.7	29,179	68.8
Yellow perch	4,403	18.3	9,530	39.6	10,136	42.1
Pumpkinseed	416	7.6	2,876	52.5	2,188	39.9
Rock bass	399	7.5	3,717	69.8	1,208	22.7
Crappie	182	3.6	1,901	38.1	2,909	58.3
Northern pike	943	34.7	1,365	50.3	408	15.0
Smallmouth bass	779	30.0	863	33.3	952	36.7
Walleye	933	37.2	1,047	41.8	526	21.0
Largemouth bass	422	17.3	539	22.2	1,470	60.5
Total or Average	9,134	9.9	34,468	37.2	48,976	52.9

Table XII
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	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Bluegill	657	7.0	12,630	34.0	29,179	56.9	42,466	43.4
Yellow perch	4,403	47.2	9,530	25.6	10,136	19.8	24,069	24.6
Pumpkinseed	416	4.5	2,876	7.7	2,188	4.3	5,480	5.6
Rock bass	399	4.3	3,717	10.0	1,208	2.3	5,324	5.4
Crappie	182	1.9	1,901	5.1	2,909	5.7	4,992	5.1
Northern pike	943	10.1	1,365	3.7	408	0.8	2,716	2.8
Smallmouth bass	779	8.3	863	2.3	952	1.8	2,594	2.7
Walleye	933	10.0	1,047	2.8	526	1.0	2,506	2.6
Largemouth bass	422	4.5	539	1.5	1,470	2.9	2,431	2.5
Total or Average	9,134	97.8	34,468	92.7	48,976	95.5	92,578	94.7

Resident and Non-resident Anglers

The resident anglers were more successful than the non-residents as shown by the catch per hour in Table XIII. Also, of all resident anglers interviewed by the officers, 32.1 per cent had caught no fish, whereas 39.1 per cent of the non-resident anglers interviewed were "blanked". In 1940, 34.8 per cent of the resident fishermen were unsuccessful and 40.6 per cent of the non-residents had caught no fish. Thus in 1941, although the catch per hour was the same as in 1940 (1.0 fish), there was a greater

percentage of successful fishermen both among the residents and non-residents.

Table XIII
Numbers of resident and non-resident anglers, the unsuccessful anglers and the catch per hour for each group.

	Resident anglers			Non-resident anglers		
	Fishermen			Fishermen		
District	Number	Number taking no fish	Catch per hour	Number	Number taking no fish	Catch per hour
1	2,978	1,123	0.63	707	250	0.70
2	2,619	827	1.10	463	140	1.04
3	997	407	0.96	284	143	0.50
4	3,352	1,174	1.15	975	324	1.07
5	6,512	2,513	0.67	931	468	0.63
6	1,102	428	0.73	207	76	0.68
7	1,909	625	1.09	281	87	1.30
8	1,016	310	1.52	19	5	1.57
9	1,558	288	1.42	764	304	0.92
10	2,622	502	1.47	195	78	1.15
11	4,579	1,193	1.19	229	99	0.98
Total or Average	29,244	9,390	1.02	5,055	1,974	0.87

As previously stated, 14.75 per cent of the fishermen interviewed by the officers lived outside Michigan, a decrease of 0.25 of one per cent from that of 1940. The percentage of non-residents, as shown by the license sales, was 27.9 in 1940 and 28.8 in 1941. The figures for the 1941 license sales are not yet complete and the above percentage is based on data available as of May 30, 1942. One possible reason why the percentage of non-resident anglers interviewed by the officers was much lower than the percentage of non-residents purchasing fishing licenses is that about two-thirds of the non-residents took out ten-day licenses. These anglers, fishing for only ten days during the entire year, would probably not be interviewed by the officers as often as those who bought annual non-resident licenses or resident licenses.

Table XIV

District	Number of fishermen		Number of hours		Legal fish taken	
	Resident	Non-resident	Resident	Non-resident	Resident	Non-resident
1	2,978	707	11,436.00	2,946.00	7,249	2,055
2	2,619	463	9,037.75	1,514.00	9,961	1,581
3	997	284	2,897.00	694.75	2,773	344
4	3,352	975	9,686.25	2,464.50	11,182	2,639
5	6,512	936	23,010.00	2,604.50	15,321	1,651
6	1,102	202	3,576.50	596.50	2,596	404
7	1,909	281	6,470.25	968.00	7,048	1,261
8	1,016	19	3,222.75	37.00	4,910	58
9	1,558	764	5,654.00	2,320.00	8,054	2,127
10	2,622	195	9,342.75	501.50	13,704	578
11	4,579	229	18,462.50	557.25	21,915	544
Total or Average	29,244	5,055	102,795.75	15,204.00	104,713	13,242

As in the past several years, Ohioans greatly outnumbered the other out-of-state anglers (Table XV). In 1941, the officers interviewed 5,055 non-resident anglers of whom 2,591 (51.3 per cent) had their homes in Ohio. Although the total number of Ohioans fishing in Michigan in 1941, as shown by the general census, was greater than in 1940 (2,400 Ohio fishermen), the percentage of Ohio residents dropped from 54.6 to 51.3 per cent. This probably indicates that more non-resident fishermen from other states visited Michigan in 1941 than in 1940. Indiana, Illinois and Wisconsin followed Ohio in order in 1941 as in 1940. These four states bordering Michigan furnished 95.4 per cent of the non-resident fishermen interviewed during the 1941 general census. In all, 27 states and the Province of British Columbia were represented in the data collected.

Of the resident fishermen interviewed, those from Wayne County were most numerous, followed in order by residents from Ingham, Genesee, Kent and Iron Counties. These were the only counties represented by more than 1,000 fishermen in the general census. All counties of the state were represented.

Table XV
Residence of Fishermen

Resident				Non-resident	
County	Number	County	Number	State or Province	Number
Alcona	50	Mackinac	103	California	11
Alger	138	Macomb	108	Colorado	1
Allegan	266	Manistee	531	Connecticut	1
Alpena	208	Marquette	385	Florida	6
Antrim	69	Mason	244	Georgia	1
Arenac	1	Mecosta	115	Illinois	874
Baraga	100	Menominee	54	Indiana	1,070
Barry	220	Midland	445	Iowa	8
Bay	206	Missaukee	73	Kansas	7
Benzie	180	Monroe	130	Kentucky	24
Berrien	266	Montcalm	77	Maryland	2
Branch	370	Montmorency	55	Massachusetts	4
Calhoun	519	Muskegon	154	Minnesota	11
Cass	36	Newaygo	135	Mississippi	3
Charlevoix	155	Oakland	657	Missouri	32
Cheboygan	39	Oceana	20	Nebraska	2
Chippewa	453	Ogemaw	27	New Jersey	3
Clare	271	Ontonagon	296	New York	41
Clinton	174	Osceola	109	North Carolina	1
Crawford	173	Oscoda	84	Ohio	2,591
Delta	316	Otsego	11	Oklahoma	3
Dickinson	557	Ottawa	61	Pennsylvania	31
Eaton	412	Presque Isle	246	Tennessee	2
Emmet	73	Roscommon	452	Washington	2
Genesee	1,503	Saginaw	696	Virginia	3
Gladwin	111	St. Clair	35	West Virginia	26
Gogebic	775	St. Joseph	168	Wisconsin	286
Gd. Traverse	591	Sanilac	22		
Gratiot	428	Schoolcraft	126	British Columbia	5
Hillsdale	199	Shiawassee	135		
Houghton	416	Tuscola	106	Unknown	4
Huron	43	Van Buren	67		
Ingham	2,957	Washtenaw	311	TOTAL	5,055
Ionia	148	Wayne	4,226		
Iosco	40	Wexford	421		
Iron	1,009				
Isabella	432	Unknown	1,336		
Jackson	639				
Kalamazoo	323	TOTAL	29,244		
Kalkaska	11				
Kent	1,075				
Keweenaw	19				
Lake	87				
Lapeer	165				
Leelanau	160				
Lenawee	238				
Livingston	133				
Luce	269				

Male and Female Anglers

In the 1941 general census the women made up 16.2 per cent of all the fishermen interviewed, but caught only 11.7 per cent of the fish. Of the 5,519 women anglers interviewed by the officers, 44 per cent failed to catch any fish, whereas only 31 per cent of the 28,780 men were "blanked". Table XVI shows the number of men and women anglers, the number of hours each spent in fishing, the numbers of legal fish taken and the catch per hour for each group in each hatchery district. The catch per hour

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	3,432	253	13,431.75	950.75	8,873	431	0.66	0.45
2	2,818	264	9,773.25	778.50	10,718	824	1.10	1.05
3	1,067	214	3,006.25	585.50	2,778	339	0.92	0.58
4	3,665	662	10,474.75	1,676.00	12,329	1,492	1.18	0.89
5	5,988	1,455	21,409.75	4,204.75	14,911	2,061	0.70	0.49
6	1,066	243	3,521.75	651.25	2,633	367	0.75	0.56
7	1,867	323	6,462.00	976.25	7,198	1,111	1.11	1.14
8	846	189	2,690.25	569.50	4,129	839	1.53	1.47
9	1,889	433	6,731.50	1,242.50	8,942	1,239	1.33	1.00
10	2,197	620	7,764.00	2,080.25	11,752	2,530	1.51	1.22
11	3,945	863	16,011.25	3,008.50	19,910	2,549	1.24	0.85
Total or Average	28,780	5,519	101,276.00	16,723.75	104,173	13,782	1.03	0.82

for all women was 0.21 fish less than that for the men in 1941. In 1939 and 1940 the catch per hour for the women anglers was 0.2 fish less than that for the men, whereas in 1938 both men and women anglers had the same catch per hour.

Number of Anglers Taking No Fish

In 1941, fewer fishermen who were interviewed by the officers had caught no legal fish (33.1 per cent) than in either of the two preceding years (35.7 per cent in 1940 and 34 per cent in 1939).

Table XVII shows a comparison of the data collected each year in the general creel census for the past six years. The catch per hour indicates that the fishing throughout the state has probably reached the low point of the ten-year cycle and that perhaps in 1942 the average catch per hour will be greater than in 1941.

Table XVII
Comparison of fishing for six years as shown by the general creel census

		1936	1937	1938	1939	1940	1941
1.	Catch per hour						
	All waters	1.4	1.5	1.3	1.1	1.0	1.0
	Resident--all waters	1.4	1.5	1.3	1.1	1.0	1.0
	Non-resident--all waters	1.2	1.1	1.1	0.9	0.9	0.9
	Male anglers--all waters	1.4	1.5	1.3	1.1	1.0	1.0
	Female anglers--all waters	1.4	1.3	1.3	0.9	0.8	0.8
	Trout waters	0.8	0.8	0.9	0.8	0.8	0.8
	Resident--trout waters	0.8	0.8	0.9	0.8	0.8	0.8
	Non-resident--trout waters	0.5	0.6	0.7	0.7	0.5	0.6
	Male anglers--trout waters	0.8	0.8	0.9	0.8	0.8	0.8
	Female anglers--trout waters	0.5	0.5	0.5	0.4	0.3	0.5
	Non-trout waters	1.7	1.7	1.4	1.1	1.0	1.1
	Resident--non-trout waters	1.7	1.8	1.5	1.1	1.1	1.1
	Non-resident--non-trout waters	1.4	1.2	1.1	1.0	0.9	0.9
	Male anglers--non-trout waters	1.7	1.7	1.4	1.1	1.1	1.1
	Female anglers--non-trout waters	1.6	1.4	1.4	0.9	0.8	0.9
2.	Percentage of all fishermen represented by non-residents	17.4	17.2	14.2	16.2	15.1	14.8
3.	Percentage of trout fishermen represented by non-residents	8.5	7.0	6.0	7.0	6.9	9.5
4.	Percentage of non-trout fishermen represented by non-residents	20.0	20.0	17.0	18.0	16.7	16.1
5.	Percentage of all fishermen represented by female anglers	7.0	7.5	6.0	11.6	13.9	16.2
6.	Percentage of trout fishermen represented by female anglers	4.0	4.0	3.0	4.0	5.8	6.9
7.	Percentage of non-trout fishermen represented by female anglers	8.0	9.0	7.0	13.0	15.7	18.4
8.	Percentage of fishermen taking no fish--all waters	...	...	31.0	34.0	35.7	33.1
9.	Percentage of fishermen taking no fish--trout waters	...	...	34.0	33.0	34.8	33.8
10.	Percentage of fishermen taking no fish--non-trout waters	...	...	30.0	34.0	36.1	33.0
11.	Average size of fish caught:						
	Bluegills	7.4	7.5	7.5	7.5	7.5	7.5
	Yellow perch	8.0	8.2	8.0	8.1	8.5	8.2
	Pumpkinseed	7.0	7.0	7.0	7.4	7.6	7.2
	Rock bass	7.4	7.4	7.7	7.7	7.8	7.6
	Crappie	8.2	8.2	8.6	8.7	8.2	8.2
	Northern pike	19.7	20.6	20.3	20.6	21.1	20.8
	Smallmouth black bass	13.0	12.7	12.8	13.0	13.3	13.1
	Walleye	17.4	17.7	17.5	16.9	16.9	16.7
	Largemouth black bass	13.2	13.0	13.1	12.8	13.2	13.0
	Brook trout	8.6	8.3	8.7	8.6	8.7	8.7
	Rainbow trout	9.7	10.5	10.3	10.0	9.5	9.9
	Brown trout	10.4	10.5	10.4	10.6	10.4	10.5

Table XVIII gives a comparison of the quality of the fishing as shown by the general creel census since the year after its inception in 1927. In this table the ten-year cycle in the quality of fishing previously mentioned is apparent.

Table XVIII

Year	Catch per hour		
	All Waters	Trout Waters	Non-trout 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
Average	1.18	0.89	1.28

The appendix of the Report of the General Creel Census for 1941 has been considerably abbreviated from that of 1940 in an effort to curtail the use of so much paper for copies of lengthy tables which, more often than not, are passed over by readers. All these tables, in their original form, are on file with our copy of this report in the office of the Institute for Fisheries Research in Ann Arbor.

INSTITUTE FOR FISHERIES RESEARCH

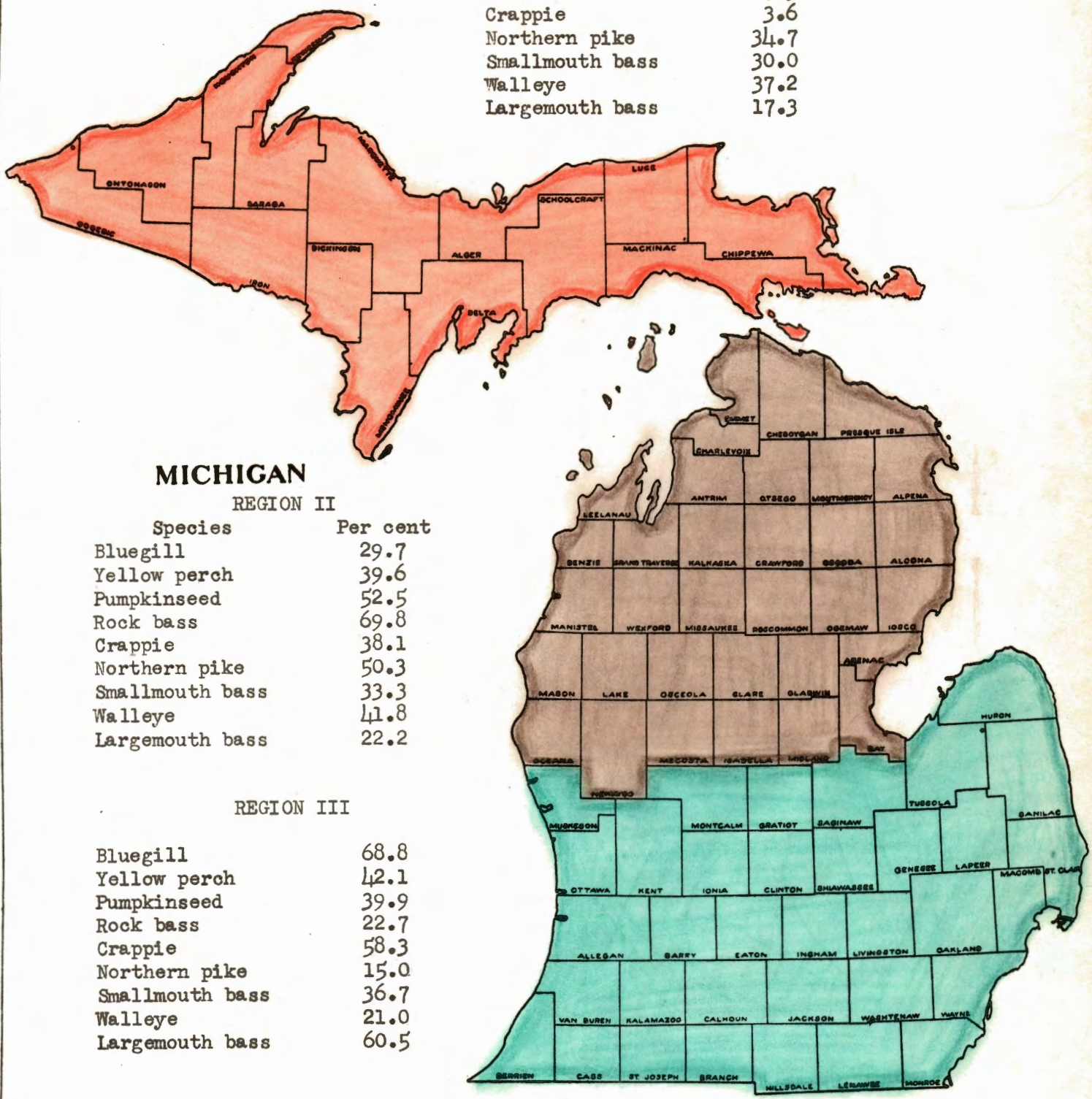
By Louis A. Krumholz

Report approved by: A. S. Hazzard

Report typed by: R. Bauch

REGION I

Species	Per cent
Bluegill	1.5
Yellow perch	18.3
Pumpkinseed	7.6
Rock bass	7.5
Crappie	3.6
Northern pike	34.7
Smallmouth bass	30.0
Walleye	37.2
Largemouth bass	17.3



MICHIGAN

REGION II

Species	Per cent
Bluegill	29.7
Yellow perch	39.6
Pumpkinseed	52.5
Rock bass	69.8
Crappie	38.1
Northern pike	50.3
Smallmouth bass	33.3
Walleye	41.8
Largemouth bass	22.2

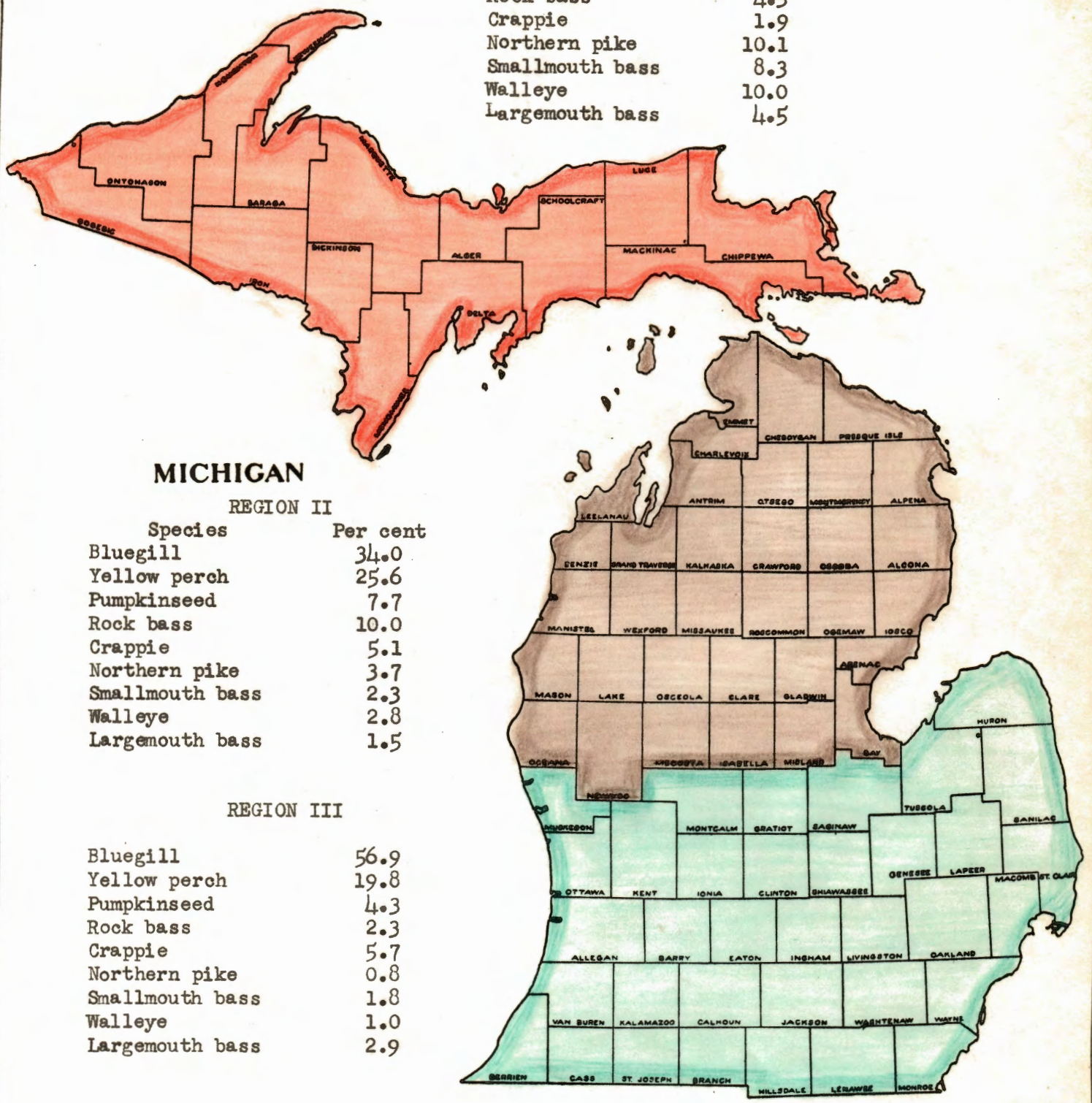
REGION III

Bluegill	68.8
Yellow perch	42.1
Pumpkinseed	39.9
Rock bass	22.7
Crappie	58.3
Northern pike	15.0
Smallmouth bass	36.7
Walleye	21.0
Largemouth bass	60.5

Map I. Percentage of total state catch of each of nine species taken in each geographical region of Michigan--Non-trout waters.

REGION I

Species	Per cent
Bluegill	7.0
Yellow perch	47.2
Pumpkinseed	4.5
Rock bass	4.3
Crappie	1.9
Northern pike	10.1
Smallmouth bass	8.3
Walleye	10.0
Largemouth bass	4.5



MICHIGAN

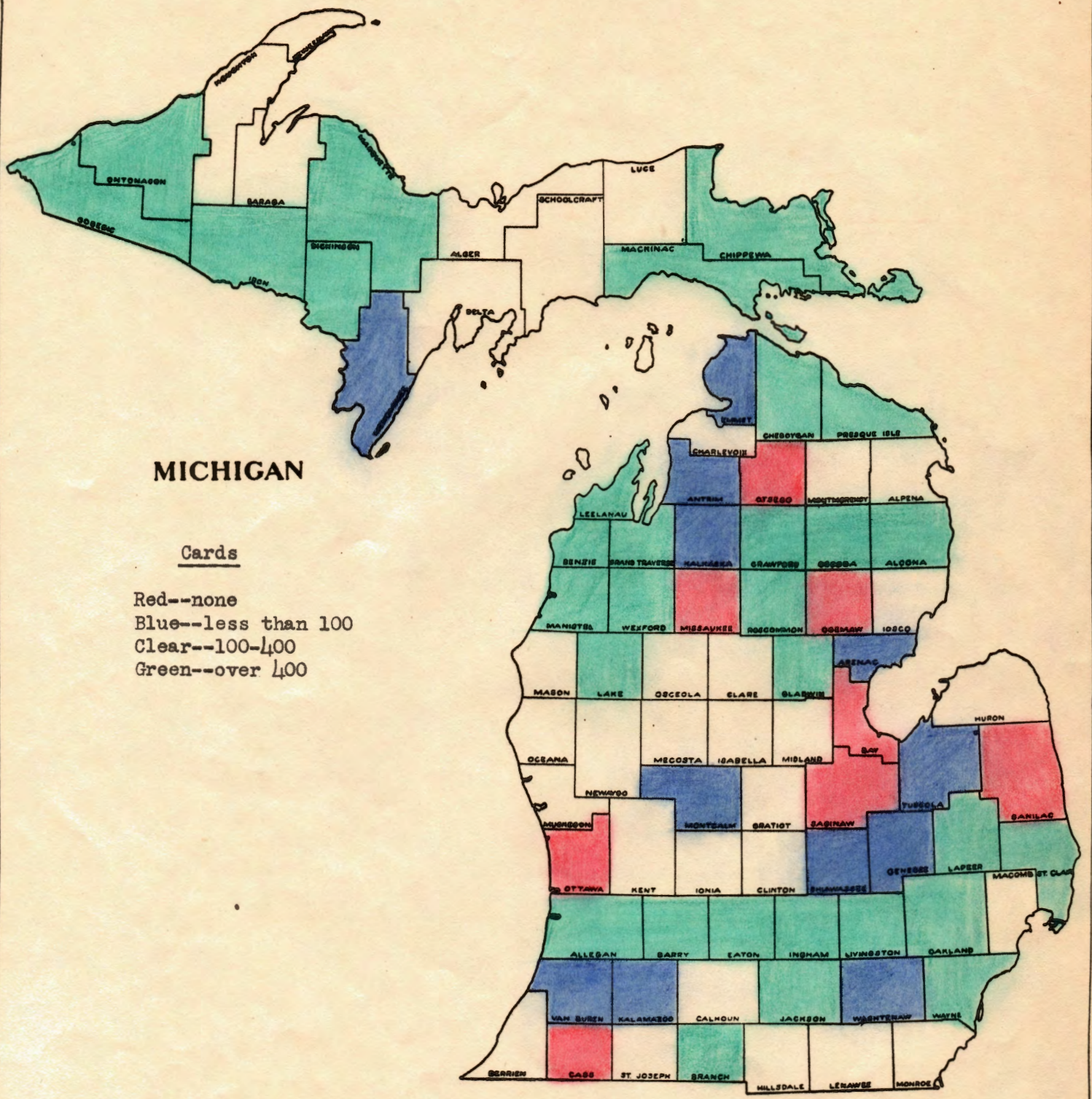
REGION II

Species	Per cent
Bluegill	34.0
Yellow perch	25.6
Pumpkinseed	7.7
Rock bass	10.0
Crappie	5.1
Northern pike	3.7
Smallmouth bass	2.3
Walleye	2.8
Largemouth bass	1.5

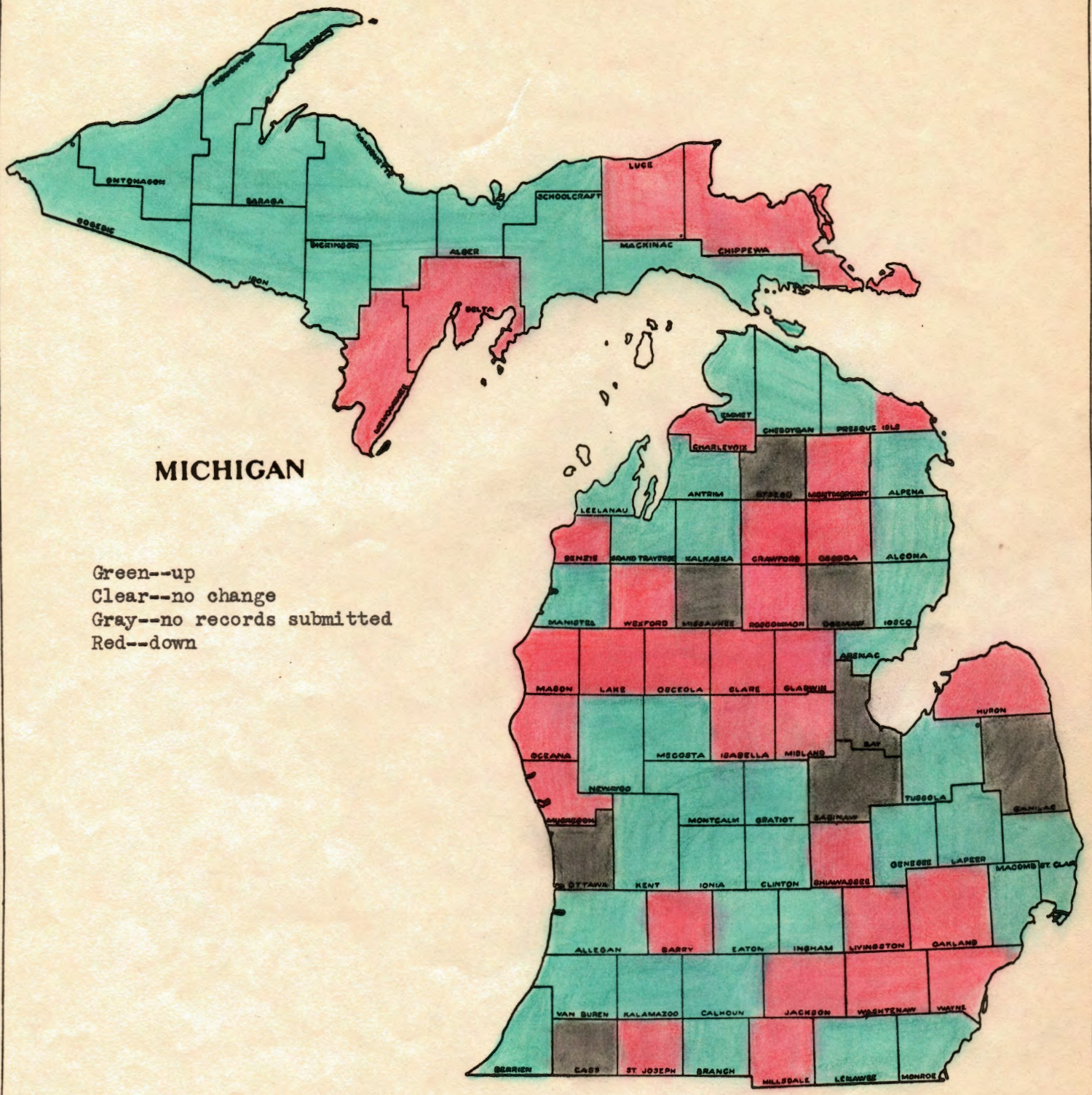
REGION III

Bluegill	56.9
Yellow perch	19.8
Pumpkinseed	4.3
Rock bass	2.3
Crappie	5.7
Northern pike	0.8
Smallmouth bass	1.8
Walleye	1.0
Largemouth bass	2.9

Map II. Percentage composition of anglers' catch for nine species reported in each geographical region of Michigan--Non-trout waters.



Map III. The number of general creel census records returns by Counties during 1941.



Map IV. The changes in catch per hour for all waters from 1940 to 1941, by counties.