

copy to: Titus

INSTITUTE FOR FISHERIES RESEARCH
UNIVERSITY MUSEUMS
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN

Report 282

April 15, 1935

ANALYSIS OF THE MICHIGAN CREEL CENSUS FOR THE YEAR 1933 ¹

The compilation of the 1933 Michigan creel census was directed by the staff of the Institute for Fisheries Research. The actual mechanics of compilation was done by the University of Michigan FERA under the writer's supervision.

As in previous years the data were collected largely by Michigan conservation officers. Unfortunately the return of cards for 1933 was less than for any of the previous years except 1927 and 1932. It is gratifying, however, that 1933 shows a substantial increase over 1932, and indications are that 1934 will show ^{an} even better increase over 1933. On the other hand it is encouraging to note that despite the relatively few cards turned in for 1933 the total number of hours reported fished and the total number of fish caught is not far from the average for the previous five years (see Table 1).

The 1933 creel census data contain almost nothing from the intensive survey made by various CCC camps in Michigan. I_n only a very few lakes was that survey begun before January 1934 and then only in the latter part of December.

In all cases each table in this report corresponds to the table of the same number in Report 238. In other words the data in Table 1 of this report is of the same nature and was handled in the same manner as the data for Table 1 of Report 238. We have in some instances where space permitted, included in the tables for this report the averages for the five years previous, taken directly from the corresponding tables in Report 238. This will facilitate comparison, but in most cases the true picture is obtained only by comparing the tables from Report 238 with

¹ For thorough understanding of this report see Report 238.

the corresponding ones in this report. There is one exception to this comparison, Table 1a of the present report deals with entirely different data than does Table 1a of Report 238.

Table 2 indicates that the ratio of the reported fish catch between the three regions (Lower Peninsula South of Townline 20, Lower Peninsula north of Townline 20, and Upper Peninsula) stands in 1933 as 66:20:14. The records for 1928 to 1932 indicated that the most intensive fishing ^{was} in the region in the Lower Peninsula north of Townline 20. The ratio for 1933 appears to show a slackening of that intensity. This ratio points toward a greater intensity in the region south of Townline 20.

The percentage ratio for the three species of trout is 24:33:43 which is probably correlated with the seeming slackening of intensity of fishing in the region in the Lower Peninsula north of Townline 20. The change in both of the above ratios may partially or entirely be due to unusually poor returns from the Lower Peninsula north of Townline 20. A check with Table 1a shows that from two-thirds of the counties of this region there were 40 or less cards returned. In fact more than a third of all the counties of the state which ^wshoed _^ 40 or less cards returned were from the Lower Peninsula north of Townline 20.

This deplorable lack of returns from the northern section of the Lower Peninsula is evident in the ratio of catch of GAME FISH (the two black bass, walleye and northern pike) which is 45% for the region south of Townline 20, 41% north of Townline 20 and 14% in the Upper Peninsula. For the five years previous this ratio was 31:54:15. Thus the 1933 report indicates a decided swing in the catch of game fish away from the region north of Townline 20 toward the southern section, while the same proportion occurs in the Upper Peninsula as in previous years. The same swing shows in the ratio of PAN FISH (bluegill, sunfish, rock bass, black crappie, perch), 83:12:5. This same inadequacy of data from north of Townline 20 is indicated in the ratio (83:11:6) of the PROPAGATED warm-water fishes (the two basses, bluegill, perch, walleye), and the ratio (61:30:8) of the NON-PROPAGATED fish (sunfish,

rock bass, crappie, pike, bullheads).

The high ratio of returns in the warm waters for the region south of Townline 20 may be due to the propagation effort of the lake species of that region.

The reported catch of both species of bass showed a decided preference for the region south of Townline 20, while the previous report indicated a preference on the part of the smallmouth for the region north of Townline 20. Of the species which were caught in significant abundance, perch and northern pike, showed a higher ratio in the region north of Townline 20, than for the previous five years.

The figures for tables 3a to 3d, are even more unreliable than those for Report 238 (see p. 15). Since in 1933 almost half of the counties (37) returned less than 40 reports for the entire year (less than one a week) and almost half of these returned less than 5 cards (less than one every two months), any ratio of species by counties is subject to great error.

Tables 4a to 4c by combining the data for the counties as given in tables 3a to 3d, eliminate such excessive fluctuations as were due to lack of data from some counties and the great amount of data from others. One of the interesting facts brought out in these tables is that of the total fish catch for 1933 the percentage of trout for the entire state was lower in each region than that of the average for the five years previous, but higher in the two northern regions than for the previous year, 1932. Bluegills in the region south of Townline 20 showed a significant increase over the average for the previous five years as well as over 1932. This increase in the lower region affected the average for the entire state. Perch and northern pike showed an increase in the region north of Townline 20.

Tables 5 and 6 show the relative abundance of the various trouts first by counties (Table 5) and their by regions (Table 6). These tables show very little of significant difference from the corresponding tables of Report 238. There may be some significance to the apparent increase in the percentage of brown trout in the region south of Townline 20. There also may be a significant decrease in the proportion of rainbows in the same region.

Tables 7a and 7b contain not only the percentage of the total catch for 1933 which each species represents, but, since space permitted, the average yearly figure for 1928 to 1932 has been included. In the figures for the entire state the only very striking item is the decided increase of bluegills in the 1933 catch. This is counterbalanced by an almost equal decrease in the perch catch for 1933. Otherwise the figures for the entire state are remarkably constant in the two columns. The regional percentages show slightly more fluctuation but are surprisingly similar nevertheless.

The figures for relative abundance of species in counties (Tables 8a to 8d), are based on too irregular reports to be of much significance.

Tables 9a and 9b again contain the yearly averages for the five years preceding 1933. In the region south of Townline 20 about 75% of the counties show an increase in the relative abundance of bluegills, while only about 50% show this increase in the region north of Townline 20 and about 25% in the Upper Peninsula.

Tables 10 to 14 give the per hour catch of all species of fish for all waters during 1933 and in all cases contain the yearly average for the five previous years. These tables are in many ways the most interesting as they represent the returns per unit of effort for the fisherman. In many counties the number of hours fished is too small to be of any significance but many counties show an interesting comparison with the previous five years. For instance Cass and Branch counties with over 1000 hours of fishing show a decided increase in catch per hour; Wayne with almost 3000 hours has almost a constant ratio with the previous five year average; Gladwin with almost 4000 hours of fishing has a slight increase in catch per hour and Arenac and Lake with 1600 and 6800 hours of fishing respectively show decided decreases in catch per hour. The figures upon which the 1928-1932 averages are based represent sufficient fishing hours to be seemingly significant. Similarly in the region north of Townline 20 the three counties (Roscommon, Iosco, Cheboygan) with approximately 1000 or over hours of fishing show in one case an increase,

once a decrease and once virtually the same catch per hour. In the Upper Peninsula the four counties (Menominee, Iron, Marquette, Houghton) with approximately 1000 hours or over of fishing, showed a decrease in catch per hour.

Tables 11a and 11b deal only with the trout caught in essentially trout waters. In this case there has been a decided decrease in catch per hour in all three regions although the drop in the region north of Townline 20 is hardly enough to be significant.

Tables 12a and 12b give the catch per hour for all species except trout and in essentially non-trout waters. Here there is a decided increase in the catch per hour in the region south of Townline 20, a fair increase in the region north of Townline 20, and a slight decrease in the Upper Peninsula. Table 13a gives a possible explanation of the increase in the southern region. The catch of bluegills in the southern part of the state was greatly increased; in a third of the counties of this region the bluegill catch was doubled or better. The bluegill catch north of Townline 20 and in the Upper Peninsula was conspicuously low.

Tables 14a and 14b, smooth off the inconsistencies of incomplete county returns and give a fairly good picture of the fishing trend by species and regions. It will be noted that the catch per hour of all species in all waters in the Lower Peninsula south of Townline 20 was somewhat better than the average for the five previous years, though not as high as two individual years of those five (see Table 14a, Report 238). The catch north of Townline 20 was not only better than the average for the five years previous but better than any individual year of those five, while that of the Upper Peninsula was less than any of the previous five years. The catch for the entire state was 12% better than the previous five year average and exceeded all the individual years except 1932. The catch for that year was 1.26 per hour of fishing. The values for all species in non-trout waters have about the same ratio to the catch from 1928 to 1932.

The catch of all trout in trout waters shows a very different picture. Here there is a drop in catch per hour in all regions and the drop for the whole state is about 25%. There was the largest decrease in the region south of Townline 20, but that region is not essentially trout waters. The region north of Townline 20 came the nearest to the average of the previous five years, but the Upper Peninsula also lost significantly. The next three items in Table 14a show that this loss in return was in the brook trout. While the brown and rainbow ^{trout} catch in Michigan ^{was} ~~is~~ relatively light there was virtually no loss in brown and only a slight loss in rainbows but the drop in brook trout catch for the entire state was about 33%. This drop was significant in all regions but most apparent in the region south of Townline 20 and in the Upper Peninsula. There was an increase in the returns for the five propagated species (large and smallmouth bass, bluegills, perch and walleyes), the only drop being in the Upper Peninsula, while the non-propagated species (common sunfish, rock bass, black crappie, northern pike and bullheads) stand about the same as the five previous years except for the Lower Peninsula north of Townline 20. Consequently the ratio of the five propagated species to the five non-propagated species increases in all but the one region, Lower Peninsula north of Townline 20. It is seen from Table 14b that the real gain in catch per hour of propagated fish is in the bluegills. The figures for both black basses and the walleye are almost identical with the average for the previous five years. The perch show a decrease in the region south of Townline 20 and in the Upper Peninsula, but increased in the region north of Townline 20. However the average for the entire state is not far from the average for the previous five years. The returns for the five non-propagated fish are virtually identical with preceding years except for the northern pike. For this species there was a sharp increase north of Townline 20 but a moderate drop in the other two regions making for a state average virtually the same as for 1928 to 1932.

General conclusions on the present status of the Michigan creel
census

The 1933 creel census, in spite of its regrettable lack of returns still indicates the general trend of fishing in Michigan. However, it is somewhat disheartening to have many returns from a county one year and virtually none the next. Even these inconsistencies will not be so vital over a long period, since the best returns from individual counties can be compared even though not for consecutive years. In order to obtain the fullest benefit it is imperative that this creel census be continued over a long period of time and that there be more adequate and uniform yearly returns from all counties.

As brought out in Report 238 much valuable information can still be obtained from the data already available. Lack of time and funds have prevented us from obtaining this valuable information.

The 1934 returns are now being tabulated again with the aid of FERA. A report for 1934 similar to this report for 1933 can only be compiled when all returns for 1934 are in our hands.

INSTITUTE FOR FISHERIES RESEARCH

Laura C. Hubbs

Prepared by Mrs. Carl L. Hubbs for
Carl L. Hubbs, Director.

TABLE 1. CREEL CENSUS DATA

Indicating extent of data utilized in the tabulations, for the entire state. The figures for individual species refer to the fish caught in all waters (trout and non-trout).

Item being summarized	1933	Ave. for 1928-1932
No. of cards used (approximately)	7320	10523
Total no. of hours of fish reported	46821 53000	54867
Total no. of legal-size fish reported	57975	57501
Total no. of hours fishing, trout waters	13327	15244
Total no. of legal-sized fish reported for trout waters	11012	17129
Brook, brown and rainbow trout, all waters	10883	16877
Brook trout	9090	14726
Brown trout	495	390
Rainbow trout	1298	1761
Total no. of hours fishing, non-trout waters	33495	39623
Total no. of fish reported for non-trout waters	46963	40372
Small-mouth bass	874	818
Large-mouth bass	1695	1502
Bluegill	20649	11902
Common sunfish	1881	1917
Rock bass	1951	2427
Black crappie	1725	1459
Perch	6909	11032
Walleye	1502	1197
Northern pike	3403	4122
Bullheads	3108	2276
Gars	1	14
Dogfish	27	115
Smelt	662	293
Cisco and whitefish	283	177
Lake trout	0	19
Suckers	754	859
Mulletts and redhorses	10	54
Carp	1160	319
Chubs and shiners	43	45
Catfishes	68	28
Muskallunge	0	3
White bass	1	16
Sheepshead	27	6
Lawyer	156	5
Grayling	5	4
Unnamed	69	8

Table 1a. Number of cards returned from each county, 1933.

County	No. of cards	County	No. of cards
Alcona	9	Lake	149
Alger	81	Lapeer	47
Allegan	90	Leelanau	0
Alpena	1	Lenawee	74
Antrim	28	Livingston	97
Arenac	171	Luce	18
Baraga	129	Mackinac	30
Barry	43	Macomb	6
Bay	0	Manistee	9
Benzie	36	Marquette	138
Berrien	44	Mason	21
Branch	159	Mecosta	62
Calhoun	29	Menominee	217
Cass	295	Midland	18
Charlevoix	13	Missaukee	0
Cheboygan	119	Monroe	187
Chippewa	63	Montcalm	4
Clare	28	Montmorency	3
Clinton	25	Muskegon	112
Crawford	68	Newaygo	138
Delta	72	Oakland	82
Dickinson	71	Oceana	113
Eaton	181	Ogemaw	4
Emmet	40	Ontonagon	20
Genesee	48	Osceola	20
Gladwin	354	Oscoda	12
Gogebic	100	Otsego	174
Grand Traverse	2	Ottawa	0
Gratiot	17	Presque Isle	0
Hillsdale	25	Roscommon	1502
Houghton	306	Saginaw	0
Huron	2	Sanilac	0
Ingham	42	Schoolcraft	75
Ionia	75	Shiawassee	43
Iosco	106	St. Clair	0
Iron	172	St. Joseph	32
Isabella	1	Tuscola	34
Jackson	94	Van Buren	41
Kalamazoo	56	Washtenaw	66
Kalkaska	33	Wayne	406
Kent	79	Wexford	0
Keewenaw	59		

TABLE 2. PERCENTAGE OF TOTAL REPORTED CATCH IN ALL WATERS OF EACH SPECIES WHICH IS CAUGHT IN EACH REGION FOR THE YEAR 1933

The trout include the few reported for essentially non-trout waters. The warm-water fish of given species include those caught in trout waters.

Species	Total catch Entire state (= 100%)	Percent of total catch caught in each region		
		Lower Peninsula		Upper Peninsula
		South of T. 20	North of T. 20	
All species	57975	65.8	19.8	14.5
All species caught in trout waters	11012	23.9	33.1	43.0
Brook, brown & rainbow trout	10814	24.1	33.4	42.5
Brook trout	9028	21.0	33.2	45.8
Brown trout	495	67.1	31.5	1.4
Rainbow trout	1291	29.5	35.7	34.8
All species caught in non-trout waters	46963	75.6	16.6	7.8
Four major game-fishes ¹	7474	45.5	40.6	13.9
Five major pan-fishes ²	33115	83.1	11.9	5.0
Five propagated fishes ³	31629	82.8	11.0	6.2
Five non-propagated fishes ⁴	12068	61.4	30.4	8.2
Small-mouth bass	874	70.7	6.2	23.1
Large-mouth bass	1695	84.5	4.1	11.4
Bluegill	20649	98.6	0.7	0.6
Common sunfish	1881	78.1	17.5	4.3
Rock bass	1951	56.0	35.8	8.2
Black crappie	1725	99.0	0.4	0.6
Perch	6909	41.8	39.8	18.3
Walleye	1502	58.5	28.8	12.7
Northern pike	3403	13.9	72.9	13.3
Bullheads	3103	85.9	4.9	9.3
Gars	1	100.0	-	-
Dogfish	27	59.3	40.7	-
Smelt	662	-	98.4	1.6
Cisco and whitefish	283	-	0.4	99.7
Lake trout	-	-	-	-
Suckers	754	64.8	0.4	34.7
Mullets and Redhorses	10	70.0	30.0	-
Carp	1160	100.0	-	-
Chubs and shiners	43	7.0	-	93.0
Catfishes	68	100.0	-	-
Muskallunge	-	-	-	-
White bass	1	100.0	-	-
Warmouth	27	25.9	-	74.1
Sheepshead	156	100.0	-	-
Lawyers	5	80.0	-	20.0
Grayling	-	-	-	-
Unnamed	69	10.2	-	89.8

¹ Small-mouth bass, large-mouth bass, walleye and northern pike.

² Bluegill, common sunfish, rock bass, black crappie and perch.

³ Small-mouth bass, large-mouth bass, bluegill, perch and walleye.

⁴ Common sunfish, rock bass, black crappie, northern pike and bullheads.

TABLE 3a. PERCENTAGE OF TOTAL REPORTED CATCH BY IMPORTANT SPECIES, FOR 1933,
FOR ALL WATERS, IN COUNTIES OF LOWER PENINSULA SOUTH OF TOWNLINE 20.

0 = no reports for this species.

County	Trout			Black Bass			Common Sunfish	Rock Bass	Black Crappie	Perch	Walleye	Northern Pike	Bull-heads	Total No. of fish reported
	Brook	Brown	Rainbow	Small-mouth	Large-mouth	Blue-gill								
1. Berrien	7.5	5.5	1.9	1.2	7.8	51.0	3.5	2.7	13.3	1.9	0	0	2.4	255
2. Cass	0	0	0	1.5	1.4	84.2	1.4	0.7	0.8	6.0	0	0.2	4.0	3108
3. St. Joseph	1.5	0.3	0.7	3.6	7.0	71.2	1.5	0.3	0	1.0	0	1.6	11.2	669
4. Branch	0	0	0	0.2	2.5	84.5	0.6	0.9	5.7	2.4	0	0.6	2.7	3972
5. Hillsdale	0	0	0	0	4.9	81.2	2.2	1.3	1.3	9.1	0	0	0	548
6. Lenawee	2.2	0	0	0.9	9.3	49.2	16.9	1.7	0	15.9	0	1.2	1.7	646
7. Monroe	0	0	0	6.1	0	1.0	1.8	8.2	0	21.6	0	0.4	38.8	1614
8. Van Buren	0	0	0	4.0	6.1	73.3	11.2	0	0	3.7	0	0	1.6	375
9. Kalamazoo	0	0	0	1.3	7.6	75.4	0.4	0.4	4.6	9.2	0	0.4	0.6	541
10. Calhoun	34.4	2.5	0	0	5.7	27.9	15.6	3.7	0	7.0	0	1.6	0.8	244
11. Jackson	0.4	0.7	0	3.1	8.4	51.7	10.6	6.8	2.6	9.2	0.2	2.0	3.7	455
12. Washtenaw	0	0	0	0	11.0	73.1	2.1	1.6	0	9.6	0	0.2	2.3	428
13. Wayne	0	0	0	0.9	2.5	3.1	1.9	5.3	3.9	17.8	tr.	1.2	20.9	2903
14. Allegan	4.2	0.3	0	0	0.6	73.1	3.3	0.4	4.2	9.5	0.9	0.4	2.5	1720
15. Barry	4.0	0.1	0	0.9	5.7	43.4	1.1	3.4	38.2	0.5	0.8	0.3	1.3	1454
16. Eaton	0	0	0	0	6.6	63.4	2.0	2.7	5.4	4.1	0	0.5	4.5	882
17. Ingham	0	0	0	0	5.3	79.7	4.3	0	6.3	0.4	0	2.0	1.8	507
18. Livingston	0.8	0	0	0.6	5.1	68.7	5.5	2.5	5.7	5.8	0	2.2	3.3	1568
19. Oakland	3.7	0	0	1.5	4.8	66.4	1.8	1.7	1.2	8.5	0	1.7	8.6	1323
20. Macomb	0	0	0	12.8	0	5.1	0	12.8	0	64.1	0	0	5.1	39
21. Ottawa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22. Kent	13.7	2.6	0	1.8	3.2	47.2	15.3	7.5	0	6.7	0	0.2	1.7	817
23. Ionia	0	0	0	1.1	4.4	72.2	2.8	0.7	3.6	9.8	0.1	1.5	3.7	722
24. Clinton	0	0	0	0	1.3	79.8	12.1	0	0.6	0	0	6.4	0	157
25. Shiawassee	0	0	0	13.4	6.5	15.2	16.6	12.4	0	0	0	5.5	0	217
26. Genesee	0	0	0	0.4	7.9	55.6	3.1	0.4	0.2	2.6	0	3.8	4.2	453
27. Lapeer	0.3	0	0	7.2	10.3	80.9	0	0.1	0	0	0	1.2	0	963
28. St. Clair	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29. Gratiot	0	0	0	1.3	9.2	59.2	17.1	0	2.6	5.3	0	0	5.3	76
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	0	0	0	1.8	4.2	33.9	0	3.4	0	11.2	0	3.3	42.2	551
32. Sanilac	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33. Midland	0	0	0	7.9	0	0	6.9	32.7	22.8	12.9	0	0	15.8	101
34. Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35. Huron	0	0	0	15.6	6.3	0	0	0	0	78.1	0	0	0	32
36. Muskegon	0	0	0	0.7	2.9	22.1	9.3	5.2	1.7	2.3	54.7	1.0	0	1029
37. Montcalm	0	0	0	0	2.4	47.0	41.0	0	0	8.4	0	1.2	0	83
38. Newaygo	17.5	1.4	2.4	1.4	1.5	36.1	2.5	3.5	5.6	4.5	20.6	2.3	0.6	1318
39. Mecosta	44.6	13.5	2.9	2.9	2.7	5.0	2.4	0	0	12.2	1.4	9.9	2.3	654
40. Isabella	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41. Gladwin	11.9	0.3	0.6	0.8	1.4	15.4	3.5	11.3	10.8	18.2	0.2	4.5	19.6	2265
42. Arenac	72.1	4.1	9.1	0.7	0	1.6	0	3.7	2.6	5.6	0	0	0.2	430
43. Oceana	4.3	0.3	0.6	3.1	7.2	75.7	4.6	0.4	0.3	3.2	0	0	0.3	2612
44. Mason	0	0	6.5	0	15.9	25.2	2.8	0	44.9	1.8	0	0	2.8	107
45. Lake	30.4	22.8	39.4	0.2	1.9	4.7	0	0.3	0	0.3	0	0	0	579
46. Osceola	48.1	0	10.6	0	0	40.4	1.0	0	0	0	0	0	0	104
47. Clare	1.1	0.4	0.4	1.9	1.2	79.5	12.4	0	0	2.7	0	0.2	0.1	1616
<u>Averages</u>	5.0	0.9	1.0	1.6	3.8	53.4	3.9	2.9	4.5	7.6	2.3	1.3	6.9	38138

TABLE 3b. PERCENTAGE OF TOTAL CATCH BY IMPORTANT SPECIES FOR 1933, FOR ALL WATERS, IN COUNTIES NORTH OF TOWNLINE 20.

Region and County	TROUT			BLACK BASS		Bluegill	Common Sunfish	Rock bass	Black Crappie	Perch	Walleye	Northern pike	Bull-head	Total no. of fish reported
	Brook	Brown	Rain-bow	Small-mouth	Large-mouth									
Lower Peninsula N. of T. 20:														
48. Manistee	13.3	0	4.4	1.1	0	0	0	0	0	77.2	1.1	1.7	0	180
49. Wexford	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50. Missaukee	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51. Roscommon	0.1	0	0	0.2	0.4	1.0	4.5	10.0	0	39.4	4.4	37.4	2.3	6393
52. Ogemaw	65.2	0	16.7	0	0	10.9	3.6	0	3.6	0	0	0	0	138
53. Iosco	53.0	0.3	6.3	0	3.2	6.2	3.8	5.3	0	3.5	10.6	7.7	0.2	1011
54. Benzie	3.3	0	0.8	0	0	0	0	0	0	5.0	0	0.1	0	717
55. Grand Traverse	0	0	0	10.8	0	18.9	0	2.7	0	64.8	0	2.7	0	37
56. Kalkaska	98.2	0.6	1.2	0	0	0	0	0	0	0	0	0	0	171
57. Crawford	41.8	40.7	10.0	3.6	2.1	0.7	0	0.4	0.7	0	0	0	0	280
58. Oscoda	79.3	9.4	1.9	0	9.4	0	0	0	0	0	0	0	0	53
59. Alcona	96.1	0	3.9	0	0	0	0	0	0	0	0	0	0	103
60. Leelanau	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61. Antrim	83.4	0	16.6	0	0	0	0	0	0	0	0	0	0	476
62. Otsego	85.9	2.7	7.8	1.7	0	0	0	0	0	0	0	0.1	0	954
63. Montmorency	68.1	0	31.9	0	0	0	0	0	0	0	0	0	0	47
64. Alpena	100.0	0	0	0	0	0	0	0	0	0	0	0	0	45
65. Charlevoix	94.8	0	5.2	0	0	0	0	0	0	0	0	0	0	115
66. Emmet	90.3	0	9.7	0	0	0	0	0	0	0	0	0	0	238
67. Cheboygan	55.3	1.4	27.1	1.4	0.6	0.2	0.2	0.2	0	0.4	8.3	0.6	0.8	494
68. Presque Isle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages	26.2	1.4	4.1	0.5	0.6	1.3	2.9	6.1	0.1	24.0	3.8	21.6	1.3	11452
Upper Peninsula:														
69. Menominee	5.0	0	0	4.8	1.2	0.4	2.1	10.6	0	14.7	6.4	15.8	9.2	1119
70. Dickinson	77.5	0.4	0	0	2.5	0	0	0	0	15.6	0	4.1	0	244
71. Delta	69.0	0	3.1	0	1.4	0	0	1.2	0	20.0	0	5.3	0	490
72. Schoolcraft	88.0	0.4	0	0	1.4	5.1	0	0	0	2.8	0	2.2	0	494
73. Mackinac	61.3	0	3.8	0	0	0	0	1.3	0	31.3	0.6	1.3	0.6	160
74. Gogebic	51.4	0	4.9	7.0	5.0	5.2	1.7	2.1	0.7	3.6	9.5	2.7	0	754
75. Iron	52.3	0	0.1	2.6	2.5	0	2.7	1.1	0	28.7	0.5	2.6	0	1414
76. Marquette	55.6	0.3	5.0	4.5	0.3	0	0.2	1.1	0	13.6	7.1	10.3	0	619
77. Alger	48.3	0.2	2.8	0.4	1.0	6.9	0.5	0	0	7.4	0	8.0	6.1	826
78. Luce	51.1	0	0	0	13.6	0	0	0	0	30.7	0	4.5	30.1	88
79. Chippewa	13.7	0	0.2	0.2	0	0	0	0	0	55.7	0	0	30.1	452
80. Ontonagon	51.4	0	34.7	1.4	6.9	0	0	0	0	5.6	0	0	0	72
81. Houghton	60.7	0	26.1	1.2	1.3	0	0.1	0	0.5	6.0	0	0.7	0	1042
82. Baraga	68.3	0	9.6	3.9	9.6	0	0	0	0	0	3.6	4.9	0	385
83. Keweenaw	76.1	0	0.4	0	3.5	0	0	0	0	0	0	4.0	0	226
84. Isle Royal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages	50.1	0.1	5.4	2.4	2.3	1.5	1.0	2.0	0.1	15.4	2.5	5.4	3.5	8385

TABLE 3c. PERCENTAGE OF TOTAL CATCH BY MINOR SPECIES, FOR 1933, FOR ALL WATERS, IN COUNTIES OF LOWER PENINSULA SOUTH OF TOWNLIN 20.

County	Gar	Dogfish	Smelt	Cisco	Whitefish	Lake trout	Suckers	Mulletts and Redhorses	Carp	Chubbs and Shiners	Catfishes	Warmouth Bass	Sheepshead	Lawyers	White bass
1. Berrien	0	0	0	0	0	0	0.4	0	0	0.4	0.4	0	0	0	0
2. Cass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. St. Joseph	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Branch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5. Hillsdale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Lenawee	0	0	0	0	0	0	0.8	0	0	0.2	0	0	0	0	0
7. Monroe	0	0	0	0	0	0	3.0	0.4	17.5	0	0.9	0	0.2	0	0
8. Van Buren	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Kalamazoo	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Calhoun	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0
11. Jackson	0	0.4	0	0	0	0	0	0	0	0	0	0.2	0	0	0
12. Washtenaw	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13. Wayne	0	0	0	0	0	0	9.4	tr.	25.8	tr.	1.8	0	5.2	0.1	0
14. Allegan	0	0	0	0	0	0	0	0	0.3	0	0	0	0.1	0	0.1
15. Barry	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0
16. Eaton	0	1.0	0	0	0	0	5.0	0	4.2	0	0	0.6	0	0	0
17. Ingham	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0
18. Livingston	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19. Oakland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20. Macomb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21. Ottawa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22. Kent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Ionia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24. Clinton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25. Shiawassee	0	0	0	0	0	0	0	0	30.4	0	0	0	0	0	0
26. Genesee	0	0	0	0	0	0	19.4	0	2.2	0	0	0	0	0	0
27. Lapeer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28. St. Clair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29. Gratiot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32. Sanilac	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33. Midland	0	0	0	0	0	0	0	0	1.0	0	0	0	0	0	0
34. Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35. Huron	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36. Muskegon	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
37. Montcalm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38. Newaygo	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
39. Mecosta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40. Isabella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41. Gladwin	0	0	0	0	0	0	1.2	0	0.4	0	0	0	0	0	0
42. Arenac	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0
43. Oceana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44. Mason	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45. Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46. Osceola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47. Clare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Averages	tr.	tr.	0	0	0	0	1.3	tr.	3.0	tr.	0.2	tr.	0.4	tr.	tr.

TABLE 3d. PERCENTAGE OF TOTAL CATCH BY MINOR SPECIES, FOR 1933, FOR ALL WATERS, IN COUNTIES NORTH OF TOWNLIN E 20.

Region and County	Gar	Dogfish	Smelt	Cisco	Whitefish	Lake trout	Suckers	Mulletts and Redhorses	Carp	Chubs and Shiners	Catfishes	Warmouth Bass	Sheepshead	Lawyers	Other kinds
Lower Peninsula N. of T. 20:															
48. Manistee	0	0	0.6	0.6	0	0	0	0	0	0	0	0	0	0	0
49. Wexford	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50. Missaukee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51. Roscommon	0	0.2	0	0	0	0	tr.	tr.	0	0	0	0	0	0	0
52. Ogemaw	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53. Iosco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54. Benzie	0	0	90.7	0	0	0	0	0	0	0	0	0	0	0	0
55. Grand Traverse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56. Kalkaska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57. Crawford	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58. Oscoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59. Alcona	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60. Leelanau	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61. Antrim	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62. Otsego	0	0	0	0	0	0	0	0	0	1.8	0	0	0	0	0
63. Montmorency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64. Alpena	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65. Charlevoix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
66. Emmet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67. Cheboygan	0	0	0	0	1.6	0.4	0	0	0	1.4	0	0	0	0	0
68. Presque Isle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average	0	0.1	5.7	tr.	0.1	tr.	tr.	tr.	0	0.2	0	0	0	0	0
Upper Peninsula:															
69. Menominee	0	0	1.0	18.7	0	0	9.7	0	0	0	0	0	0	0.1	0
70. Dickinson	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71. Delta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
72. Schoolcraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73. Mackinac	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74. Gogebic	0	0	0	0	0	0	0	0	0	6.1	0	0	0	0	0
75. Iron	0	0	0	5.2	0	0	0.4	0	0	1.2	0	0	0	0	0
76. Marquette	0	0	0	0	0	0.6	0.8	0	0	0.5	0	0	0	0	0
77. Alger	0	0	0	0	0	0	18.5	0	0	0	0	0	0	0	0
78. Luce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79. Chippewa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80. Ontonagon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81. Houghton	0	0	0	0	0	0	0.2	0	0	0	0	1.9	0	0	1.1
82. Baraga	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
83. Keweenaw	0	0	0	0	0	15.9	0	0	0	0	0	0	0	0	0
84. Isle Royal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages	0	0	0.1	3.4	0	0.5	3.3	0	0	0.8	0	0.2	0	tr.	0.1

TABLE 4a. SUMMARY OF COMPUTATIONS OF PERCENTAGE OF TOTAL REPORTED CATCH FOR ALL WATERS WITHIN EACH REGION, FOR TROUT, BASS AND SUNFISH.

Species	Region	1933	Percentage
Brook, Brown & Rainbow Trout	1. Lower Peninsula south of T. 20	2608	9.7 6.8
	2. Lower Peninsula north of T. 20	3619	31.6
	3. Upper Peninsula	4656	55.5
	4. Entire state	10883	18.8
Brook Trout	1. Lower Peninsula south of T. 20	1895	5.0
	2. Lower Peninsula north of T. 20	2996	26.2
	3. Upper Peninsula	4199	50.1
	4. Entire state	9090	15.8
Brown Trout	1. Lower Peninsula south of T. 20	332	0.9
	2. Lower Peninsula north of T. 20	156	1.4
	3. Upper Peninsula	7	0.1
	4. Entire state	495	0.9
Rainbow Trout	1. Lower Peninsula south of T. 20	381	1.0
	2. Lower Peninsula north of T. 20	467	4.1
	3. Upper Peninsula	450	5.4
	4. Entire state	1298	2.2
Small- mouth Bass	1. Lower Peninsula south of T. 20	622	1.6
	2. Lower Peninsula north of T. 20	54	0.5
	3. Upper Peninsula	205	2.4
	4. Entire state	881	1.5
Large- mouth Bass	1. Lower Peninsula south of T. 20	1432	3.8
	2. Lower Peninsula north of T. 20	70	0.6
	3. Upper Peninsula	193	2.3
	4. Entire state	1695	2.9
Blue- gills	1. Lower Peninsula south of T. 20	20371	53.4
	2. Lower Peninsula north of T. 20	153	1.3
	3. Upper Peninsula	125	1.1
	4. Entire state	20649	35.6
Common Sunfish	1. Lower Peninsula south of T. 20	1470	3.9
	2. Lower Peninsula north of T. 20	330	2.9
	3. Upper Peninsula	81	1.0
	4. Entire state	1881	3.2
Rock Bass	1. Lower Peninsula south of T. 20	1099	2.9
	2. Lower Peninsula north of T. 20	698	6.1
	3. Upper Peninsula	166	2.0
	4. Entire state	1963	3.4
Black Crappie	1. Lower Peninsula south of T. 20	1708	4.5
	2. Lower Peninsula north of T. 20	7	0.1
	3. Upper Peninsula	10	0.1
	4. Entire state	1725	3.0

TABLE 4b. SUMMARY OF COMPUTATIONS OF PERCENTAGE OF TOTAL REPORTED CATCH FOR ALL WATERS WITHIN THIS REGION, SECOND PART: FOR 10 OTHER SPECIES

Tr. = trace, less than 0.05%. 0 = no fish of this species reported.

Species	Region	1933	Percentage
Perch	1. Lower Peninsula south of T. 20	2891	7.6
	2. Lower Peninsula north of T. 20	2753	24.0
	3. Upper Peninsula	1289	15.4
	4. Entire state	6933	12.0
Walleye	1. Lower Peninsula south of T. 20	879	2.3
	2. Lower Peninsula north of T.20	433	3.8
	3. Upper Peninsula	210	2.5
	4. Entire state	1522	2.6
Northern Pike	1. Lower Peninsula south of T. 20	472	1.2
	2. Lower Peninsula north of T. 20	2479	21.6
	3. Upper Peninsula	452	5.4
	4. Entire state	3403	5.9
Bull-heads	1. Lower Peninsula south of T. 20	2665	7.0
	2. Lower Peninsula north of T. 20	153	1.3
	3. Upper Peninsula	290	3.5
	4. Entire state	3108	5.4
Gars	1. Lower Peninsula south of T. 20	1	tr.
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	0	0
	4. Entire state	1	tr.
Dogfish	1. Lower Peninsula south of T. 20	16	tr.
	2. Lower Peninsula north of T. 20	11	0.1
	3. Upper Peninsula	0	0
	4. Entire state	27	tr.
Smelt	1. Lower Peninsula south of T. 20	0	0
	2. Lower Peninsula north of T. 20	651	5.9
	3. Upper Peninsula	11	0.1
	4. Entire state	662	1.1
Cisco & Whitefish	1. Lower Peninsula south of T. 20	0	0
	2. Lower Peninsula north of T. 20	9	0.1
	3. Upper Peninsula	282	3.4
	4. Entire state	291	0.5
Lake trout	1. Lower Peninsula south of T. 20	9	tr.
	2. Lower Peninsula north of T. 20	2	0
	3. Upper Peninsula	40	0.5
	4. Entire state	51	0.1
Suckers	1. Lower Peninsula south of T. 20	489	1.3
	2. Lower Peninsula north of T. 20	3	tr.
	3. Upper Peninsula	274	3.3
	4. Entire state	766	1.3

TABLE 4c. SUMMARY OF COMPUTATIONS OF PERCENTAGE OF TOTAL REPORTED CATCH FOR ALL WATERS WITHIN EACH REGION, THIRD PART: FOR 9 ADDITIONAL SPECIES.

Species	Region	1935	Percentage
Mulletts & Redhorses	1. Lower Peninsula south of T. 20	7	tr.
	2. Lower Peninsula north of T. 20	3	tr.
	3. Upper Peninsula	0	0
	4. Entire state	10	tr.
Carp	1. Lower Peninsula south of T. 20	1160	3.0
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	0	0
	4. Entire state	1160	2.0
Chubs & Shiners	1. Lower Peninsula south of T. 20	3	tr.
	2. Lower Peninsula north of T. 20	24	tr.
	3. Upper Peninsula	66	0.8
	4. Entire state	93	0.2
Catfish	1. Lower Peninsula south of T. 20	68	tr.
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	0	0
	4. Entire state	68	0.1
Muskal-lunge	1. Lower Peninsula south of T. 20	0	0
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	0	0
	4. Entire state	0	0
White Bass	1. Lower Peninsula south of T. 20	1	tr.
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	0	0
	4. Entire state	1	tr.
War-mouth	1. Lower Peninsula south of T. 20	7	tr.
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	20	0.2
	4. Entire state	27	tr.
Sheeps-head	1. Lower Peninsula south of T. 20	156	tr.
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	0	0
	4. Entire state	156	0.3
Lawyer	1. Lower Peninsula south of T. 20	4	tr.
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	1	tr.
	4. Entire state	5	tr.
Other Species	1. Lower Peninsula south of T. 20	0	0
	2. Lower Peninsula north of T. 20	0	0
	3. Upper Peninsula	14	0.2
	4. Entire state	14	tr.
All Species	1. Lower Peninsula south of T. 20	38138	65.76
	2. Lower Peninsula north of T. 20	11452	19.75
	3. Upper Peninsula	8385	14.46
	4. Entire state	57975	99.99+

TABLE 5a. RELATIVE ABUNDANT OF BROOK, BROWN AND RAINBOW TROUT BY COUNTIES OF LOWER PENINSULA SOUTH OF TOWNLIN 20

Exclusive of the few trout caught in essentially non-trout waters. The figures represent the percentage of the total catch of these three species for each county. 0 indicates that no trout of this species was reported, though some trout fishing was reported for the county. 100 indicates that only this species of trout was reported from the county. - (dash) indicates that no trout fishing at all was reported.

County	Brook trout	Brown trout	Rainbow trout
1. Berrien	50	36.8	13.2
2. Cass	-	-	-
3. St. Joseph	56.3	12.5	31.2
4. Branch	-	-	-
5. Hillsdale	-	-	-
6. Lenawee	100	0	0
7. Monroe	-	-	-
8. Van Buren	-	-	-
9. Kalamazoo	-	-	-
10. Calhoun	93.3	6.7	0
11. Jackson	40	60	0
12. Washtenaw	-	-	-
13. Wayne	-	-	-
14. Allegan	92.4	7.6	0
15. Barry	96.7	3.3	0
16. Eaton	-	-	-
17. Ingham	-	-	-
18. Livingston	100	0	0
19. Oakland	100	0	0
20. Macomb	-	-	-
21. Ottawa	-	-	-
22. Kent	84.2	15.8	0
23. Ionia	-	-	-
24. Clinton	-	-	-
25. Shiawassee	-	-	-
26. Genesee	-	-	-
27. Lapeer	100	0	0
28. St. Clair	-	-	-
29. Gratiot	-	-	-
30. Saginaw	-	-	-
31. Tuscola	-	-	-
32. Sanilac	-	-	-
33. Midland	-	-	-
34. Bay	-	-	-
35. Huron	-	-	-
36. Muskegon	-	-	-
37. Montcalm	-	-	-
38. Newaygp	82.2	6.8	11.0
39. Mecosta	73.2	22.0	4.8
40. Isabella	-	-	-
41. Gladwin	93.1	2.1	4.8
42. Arenac	84.5	4.9	10.6
43. Oceana	82.5	5.8	11.7
44. Mason	0	0	100
45. Lake	32.8	24.6	42.5
46. Osceola	82.0	0	18.0
47. Clare	58.1	22.6	19.3
Average	72.7	12.7	14.6

TABLE 5b. RELATIVE ABUNDANCE OF BROOK, BROWN AND RAINBOW TROUT BY COUNTIES OF LOWER PENINSULA NORTH OF TOWNLINE 20

For further explanation see Table 5a

County	Brook trout	Brown trout	Rainbow trout
Lower Peninsula north of Townline 20:			
48. Manistee	85.7	0	14.3
49. Wexford	-	-	-
50. Missaukee	-	-	-
51. Roscommon	100	0	0
52. Ogemaw	79.6	0	20.4
53. Iosco	89.0	0.5	10.5
54. Benzie	80.0	0	20
55. Grand Traverse	-	-	-
56. Kalkaska	98.2	0.6	1.2
57. Crawford	45.2	44.0	10.8
58. Oscoda	87.5	10.4	2.1
59. Alcona	96.1	0	3.9
60. Leelanau	-	-	-
61. Antrim	83.4	0	16.6
62. Otsego	89.1	2.8	8.0
63. Montmorency	68.1	0	31.9
64. Alpena	100	0	0
65. Charlevoix	94.8	0	5.2
66. Emmet	90.3	0	9.7
67. Cheboygan	66.1	1.7	32.2
68. Presque Isle	-	-	-
Average	82.9	4.3	12.8
Upper Peninsula:			
69. Menominee	100	0	0
70. Dickinson	99.5	0.5	0
71. Delta	95.8	0	4.2
72. Schoolcraft	99.5	0.5	0
73. Mackinac	94.2	0	5.8
74. Gogebic	91.2	0	8.8
75. Iron	99.7	0	0.3
76. Marquette	91.2	0.5	8.3
77. Alger	94.1	0.5	5.4
78. Luce	100	0	0
79. Chippewa	100	0	0
80. Ontonagon	59.7	0	40.3
81. Houghton	69.9	0	30.1
82. Baraga	87.7	0	12.3
83. Keweenaw	99.4	0	0.6
84. Isle Royal	-	-	-
Average	90.1	0.2	9.8

TABLE 6. SUMMARY OF COMPUTATIONS ON RELATIVE ABUNDANCE OF TROUT

Inclusive of the few trout caught in essentially non-trout waters. The figures represent the percentage of the total catch of these three species for each region.

Species	Region	1933	Percentage
Brook trout	1. Lower Peninsula S. of T. 20	1895	72.7
	2. Lower Peninsula N. of T. 20	2996	82.8
	3. Upper Peninsula	4199	90.2
	4. Entire state	9090	83.5
Brown trout	1. Lower Peninsula S. of T. 20	332	12.7
	2. Lower Peninsula N. of T. 20	156	4.3
	3. Upper Peninsula	7	0.2
	4. Entire state	495	4.5
Rainbow trout	1. Lower Peninsula S. of T. 20	381	14.6
	2. Lower Peninsula N. of T. 20	467	12.9
	3. Upper Peninsula	450	9.7
	4. Entire state	1298	11.9
Totals	1. Lower Peninsula S. of T. 20	2608	100.0
	2. Lower Peninsula N. of T. 20	3619	100.0
	3. Upper Peninsula	4656	100.1
	4. Entire state	10883	99.9

TABLE 7a. SUMMARY OF COMPUTATIONS ON RELATIVE ABUNDANCE OF THE MAIN WARM-WATER FISHES WITHIN EACH REGION, FIRST PART: MORE IMPORTANT SPECIES.

The figures represent the percentage of the total catch of fish in non-trout waters, for each region and year.

Species	Region	1933	Ave. 1928-1932
Small-mouth Bass	1. Lower Peninsula south of T. 20	1.7	1.2
	2. Lower Peninsula North of T. 20	0.7	3.3
	3. Upper Peninsula	5.5	2.9
	4. Entire state	1.9	2.0
Large-mouth Bass	1. Lower Peninsula south of T. 20	4.0	4.7
	2. Lower Peninsula north of T. 20	0.9	1.9
	3. Upper Peninsula	5.3	2.9
	4. Entire state	3.6	3.7
Blue-gill	1. Lower Peninsula south of T. 20	57.4	42.2
	2. Lower Peninsula north of T. 20	2.0	11.0
	3. Upper Peninsula	3.4	1.7
	4. Entire state	44.0	29.5
Common Sunfish	1. Lower Peninsula south of T. 20	4.1	6.0
	2. Lower Peninsula north of T. 20	4.2	3.3
	3. Upper Peninsula	2.2	0.6
	4. Entire state	4.0	4.7
Rock Bass	1. Lower Peninsula south of T. 20	3.1	4.7
	2. Lower Peninsula north of T. 20	8.9	9.4
	3. Upper Peninsula	4.4	4.1
	4. Entire state	4.2	6.0
Black Crappie	1. Lower Peninsula south of T. 20	4.8	5.4
	2. Lower Peninsula north of T. 20	0.1	0.9
	3. Upper Peninsula	0.3	0.2
	4. Entire state	3.7	3.6
Perch	1. Lower Peninsula south of T. 20	8.1	22.8
	2. Lower Peninsula north of T. 20	35.3	30.3
	3. Upper Peninsula	34.7	47.8
	4. Entire state	14.7	27.2
Walleye	1. Lower Peninsula south of T. 20	2.5	0.7
	2. Lower Peninsula north of T. 20	5.5	5.6
	3. Upper Peninsula	5.2	9.6
	4. Entire state	3.2	2.9
Northern pike	1. Lower Peninsula south of T. 20	1.3	2.5
	2. Lower Peninsula north of T. 20	31.8	24.3
	3. Upper Peninsula	12.4	15.4
	4. Entire state	7.2	10.0
Bullheads	1. Lower Peninsula south of T. 20	7.5	6.3
	2. Lower Peninsula north of T. 20	2.0	5.0
	3. Upper Peninsula	8.0	3.3
	4. Entire state	6.6	5.6

TABLE 7b. SUMMARY OF COMPUTATIONS ON RELATIVE ABUNDANCE OF THE WARM-WATER FISHES
 WITHIN EACH REGION, SECOND PART: FOR LARGER GAME-FISHES VS. PAN-FISHES, AND
 FOR MINOR SPECIES

For further explanation see Table 7a.

Species	Region	1933	Ave. 1928-1932
Larger game- fishes ¹	1. Lower Peninsula south of T. 20	9.5	9.1
	2. Lower Peninsula north of T. 20	38.9	35.1
	3. Upper Peninsula	28.4	30.8
	4. Entire state	15.9	18.6
Pan- fishes ²	1. Lower Peninsula south of T. 20	77.5	81.1
	2. Lower Peninsula north of T. 20	59.5	54.9
	3. Upper Peninsula	45.0	54.3
	4. Entire state	70.6	71.1
Ratio: pan-fish to game- fishes	1. Lower Peninsula south of T. 20	8.2	8.9
	2. Lower Peninsula north of T. 20	1.3	1.6
	3. Upper Peninsula	1.6	1.8
	4. Entire state	4.4	3.8
Smelt	1. Lower Peninsula south of T. 20	0.0	0
	2. Lower Peninsula north of T. 20	8.3	2.5
	3. Upper Peninsula	0.3	0
	4. Entire state	1.4	0.7
Cisco & White- fish	1. Lower Peninsula south of T. 20	0.0	tr.
	2. Lower Peninsula north of T. 20	tr.	0.6
	3. Upper Peninsula	7.7	2.5
	4. Entire state	0.6	0.4
Mulletts, Suckers, and Red-	1. Lower Peninsula south of T. 20	1.4	1.6
	2. Lower Peninsula north of T. 20	tr.	1.4
	3. Upper Peninsula	7.2	8.1
	4. Entire state	1.6	2.1
Carp	1. Lower Peninsula south of T. 20	3.3	1.1
	2. Lower Peninsula north of T. 20	0.0	0.1
	3. Upper Peninsula	0.0	0.7
	4. Entire state	2.5	0.8
Other Species and Un- named	1. Lower Peninsula south of T. 20	0.6	0.7
	2. Lower Peninsula north of T. 20	0.2	0.4
	3. Upper Peninsula	3.3	0.3
	4. Entire state	0.6	0.6

¹ Four important species (small-mouth and large-mouth bass, walleyes and northern pike) added together. Other game-fishes, as the muskallunge, lake trout, etc., are caught in proportionately immaterial numbers.

² Five species, (bluegill, common sunfish, rock bass, black crappie, and perch) added together. Bullheads, smelt and ciscoes are excluded. Other species, coming under the term "pan-fish" are caught in immaterial numbers.

TABLE 8a. RELATIVE ABUNDANCE OF THE MAIN WARM-WATER FISHES, FOR 1933, IN COUNTIES OF THE LOWER PENINSULA SOUTH OF TOWNLINE 20.

The figures represent the percentage of the total reported catch of fish in non-trout waters, for each county, which total is given in the first column. Unless this total amounts to several hundred, the relative abundance figures are of low reliability. Tr. = trace, less than 0.05%. 0 indicates that no fish of the given species was reported for the county, although some fishing was reported for the county.

County	Total catch, non-trout waters	BLACK BASS												
		Small-mouth	Large-mouth	Bluegills	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleye	Northern pike	Bull-heads	Gars	Dogfish	Smelt
1. Berrien	217	1.4	9.2	59.9	4.1	3.2	15.7	2.3	0.0	0.0	2.7	0.0	0.0	0.0
2. Cass	3108	1.5	1.4	84.1	1.4	0.7	0.8	6.0	0.0	0.2	4.0	0	0	0
3. St. Joseph	653	3.7	7.2	72.9	1.5	0.3	0	1.0	0	1.7	11.5	0	0	0
4. Branch	3972	0.2	2.5	84.5	0.6	0.9	5.7	2.4	0	0.6	2.7	0	0	0
5. Hillsdale	548	0	4.9	81.2	2.2	1.3	1.3	9.1	0	0	0	0	0	0
6. Lenawee	632	0.9	9.5	50.3	17.2	1.7	0	16.3	0	1.3	1.7	0	0	0
7. Monroe	1614	6.1	0	1.0	1.8	8.2	0	21.6	0	0.4	38.8	0	0	0
8. Van Buren	375	4.0	6.1	73.3	11.2	0	0	3.7	0	0	1.6	0	0	0
9. Kalamazoo	541	1.3	7.6	75.4	0.4	0.4	4.6	9.2	0	0.4	0.6	0.2	0	0
10. Calhoun	154	0	9.1	44.2	24.7	5.8	0	11.0	0	2.6	1.3	0	1.3	0
11. Jackson	450	3.1	8.4	52.2	10.7	6.9	2.7	9.3	0.2	2.0	3.8	0	0.4	0
12. Washtenaw	428	0	11.0	73.1	2.1	1.6	0	9.6	0	0.2	2.3	0	0	0
13. Wayne	2903	1.0	2.5	3.1	1.9	5.3	3.9	17.8	tr.	1.1	20.9	0	0	0
14. Allegan	1641	0	0.6	76.7	3.5	0.4	4.4	9.9	1.0	0.4	2.6	0	0	0
15. Barry	1394	0.9	6.0	45.3	1.1	3.6	39.9	0.5	0.8	0.4	1.4	0	0	0
16. Eaton	882	0	6.6	63.4	2.0	2.7	5.4	4.1	0	0.5	4.5	0	1.0	0
17. Ingham	507	0	5.3	79.7	4.3	0	6.3	0.4	0	2.0	1.7	0	0	0
18. Livingston	1556	0.6	5.1	69.2	5.5	2.5	5.7	5.8	0	2.2	3.3	0	0	0
19. Oakland	1274	1.6	5.0	69.0	1.9	1.7	1.2	8.8	0	1.8	8.9	0	0	0
20. Macomb	39	12.8	0	5.1	0	12.8	0	64.1	0	0	5.1	0	0	0
21. Ottawa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22. Kent	684	2.2	3.8	56.4	18.3	8.9	0	8.0	0	0.3	2.0	0	0	0
23. Ionia	722	1.1	4.4	72.2	2.8	0.7	3.6	9.8	0.1	1.5	3.7	0	0	0
24. Clinton	157	0	1.3	79.6	12.1	0	0.6	0	0	6.4	0	0	0	0
25. Shiawassee	217	13.4	6.5	15.2	16.6	12.4	0	0	0	5.5	0	0	0	0
26. Genesee	453	0.4	7.9	55.6	3.1	0.4	0.2	2.6	0	3.8	4.2	0	0	0
27. Lapeer	960	7.2	10.3	81.1	0	0.1	0	0	0	1.2	0	0	0	0
28. St. Clair	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29. Gratiot	76	1.3	9.2	59.2	17.1	0	2.6	5.2	0	0	5.2	0	0	0
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	552	1.8	4.2	33.9	0	3.4	0	11.2	0	3.3	42.2	0	0	0
32. Sanilac	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33. Midland	101	7.9	0	0	6.9	32.7	22.8	12.9	0	0	15.8	0	0	0
34. Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35. Huron	32	15.6	6.2	0	0	0	0	78.1	0	0	0	0	0	0
36. Muskegon	1029	0.7	2.9	22.0	9.3	5.2	1.7	2.3	54.7	1.0	0	0	0.2	0
37. Montcalm	83	0	2.4	47.0	41.0	0	0	8.4	0	1.2	0	0	0	0
38. Newaygo	1037	1.7	1.9	45.9	3.2	4.4	7.1	5.7	26.2	2.9	0.8	0	0.1	0
39. Mecosta	255	7.5	7.1	12.9	6.3	0	0	31.4	3.5	25.5	5.9	0	0	0
40. Isabella	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41. Gladwin	1969	0.9	1.6	17.7	4.0	13.1	12.5	21.0	0.2	4.9	22.5	0	0	0
42. Arenac	55	3.6	0	12.7	0	18.2	20.0	41.8	0	0	1.8	0	0	0
43. Oceana	2475	3.2	7.6	79.9	4.9	0.4	0.3	3.4	0	0	0.3	0	0	0
44. Mason	100	0	17.0	27.0	3.0	0.0	48.0	2.0	0	0	3.0	0	0	0
45. Lake	43	2.3	25.6	62.8	0	4.7	0	4.7	0	0	0	0	0	0
46. Oseoda Osceola	43	0	0	97.7	2.3	0	0	0	0	0	0	0	0	0
47. Clare	1580	1.8	1.3	81.3	12.7	0	0	2.8	0	0	0.1	0	0	0
Average	35511	1.7	4.0	57.4	4.1	3.1	4.8	8.1	2.5	1.3	7.5	tr.	tr.	0

TABLE 8b. RELATIVE ABUNDANCE OF THE MAIN WARM-WATER FISHES, FOR 1933, IN COUNTIES NORTH OF TOWNLIN 20.

For further explanation refer to Table 8a.

Region and County	Total catch, non-trout waters	BLACK BASS		Bluegills	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleye	Northern pike	Bullheads	Gars	Dogfish	Smelt
		Small-mouth	Large-mouth											
Lower Peninsula north of T. 20:														
48. Manistee	152	1.3	0	0	0	0	0	91.4	1.3	2.0	0	0	0	0.7
49. Wexford	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50. Missaukee	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51. Roscommon	6387	0.2	0.4	1.0	4.5	10.0	0	39.4	4.4	37.5	2.3	0	0.2	0
52. Ogemaw	25	0	0	60.0	20.0	0	20.0	0	0	0	0	0	0	0
53. Iosco	410	0	7.8	15.4	9.3	13.2	0	8.5	26.1	19.0	0.5	0	0	0
54. Benzie	687	0	0	0	0	0	0	5.2	0	0.1	0	0	0	94.6
55. Grand Traverse	37	10.8	0	18.9	0	2.7	0	64.8	0	2.7	0	0	0	0
56. Kalkaska	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57. Crawford	21	47.6	28.6	9.5	0	4.7	9.5	0	0	0	0	0	0	0
58. Oscoda	5	0	100.0	0	0	0	0	0	0	0	0	0	0	0
59. Alcona	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60. Leelanau	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61. Antrim	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62. Otsego	17	94.1	0	0	0	0	0	0	0	5.9	0	0	0	0
63. Montmorency	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64. Alpena	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65. Charlevoix	0	0	0	0	0	0	0	0	0	0	0	0	0	0
66. Emmet	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67. Cheboygan	64	10.9	4.7	1.5	1.5	1.5	0	3.1	64.1	4.7	6.3	0	0	0
68. Presque Isle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average	7805	0.7	0.9	2.0	4.2	8.9	0.1	35.3	5.5	31.8	2.0	0	0.1	8.3
Upper Peninsula:														
69. Menominee	1062	5.1	1.2	0.4	2.3	11.2	0	15.5	6.8	16.8	9.7	0	0	1.0
70. Bickinson	54	0	11.1	0	0	0	0	70.4	0	18.5	0	0	0	0
71. Delta	137	0	5.1	0	0	4.4	0	71.5	0	19.0	0	0	0	0
72. Schoolcraft	57	0	12.3	43.9	0	0	0	24.6	0	19.3	0	0	0	0
73. Mackinac	56	0	0	0	0	3.6	0	89.3	1.8	3.6	1.8	0	0	0
74. Gogebic	304	17.4	12.5	12.8	4.3	3.3	1.6	8.9	18.7	6.2	0	0	0	0
75. Iron	679	5.5	5.3	0	5.6	2.4	0	56.6	0.3	5.5	0	0	0	0
76. Marquette	232	12.1	0.9	0	0.4	3.0	0	36.2	19.0	27.6	0	0	0	0
77. Alger	402	0.7	2.0	14.2	1.0	0	0	15.2	0	16.4	12.4	0	0	0
78. Luce	43	0	27.9	0	0	0	0	62.8	0	9.3	0	0	0	0
79. Chippewa	390	0.3	0	0	0	0	0	64.6	0	0	34.9	0	0	0
80. Ontonagon	10	10.0	50.0	0	0	0	0	40.0	0	0	0	0	0	0
81. Houghton	119	8.4	11.8	0	0.8	0	4.2	52.1	0	5.9	0	0	0	0
82. Baraga	85	17.6	43.5	0	0	0	0	0	16.5	22.3	0	0	0	0
83. Keweenaw	17	0	47.1	0	0	0	0	0	0	52.9	0	0	0	0
84. Isle Royal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average	3647	5.5	5.3	3.4	2.2	4.4	0.3	34.7	5.2	12.4	8.0	0	0	0.3

TABLE 8c. RELATIVE ABUNDANCE OF THE LESS IMPORTANT WARM-WATER FISHES FOR 1933, IN COUNTIES OF THE LOWER PENINSULA SOUTH OF TOWNLIN 20.

For further explanation of this Table refer to Table 8a.

County	Cisco and Whitefish	Lake Trout	Suckers	Mulletts and Redhorses	Carp	Chubs and shiners	Catfishes	Muskallunge	White Bass	Warmouth Bass	Sheepshead	Lawyers	Other kinds
1. Berrien	0	0	0.5	0	0	0.5	0.5	0	0	0	0	0	0
2. Cass	0	0	0	0	0	0	0	0	0	0	0	0	0
3. St. Joseph	0	0	0	0	0	0	0	0	0	0	0	0	0.2
4. Branch	0	0	0	0	0	0	0	0	0	0	0	0	0
5. Hillsdale	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Lenawee	0	0	0.8	0	0	0.2	0	0	0	0	0	0	0
7. Monroe	0	0	3.0	0.4	17.5	0	0.9	0	0	0	0.2	0	0
8. Van Buren	0	0	0	0	0	0	0	0	0	0	0	0	0
9. Kalamazoo	0	0	0	0	0	0	0	0	0	0	0	0	0
10. Calhoun	0	0	0	0	0	0	0	0	0	0	0	0	0
11. Jackson	0	0	0	0	0	0	0	0	0	0.2	0	0	0
12. Washtenaw	0	0	0	0	0	0	0	0	0	0	0	0	0
13. Wayne	0	0	9.4	tr.	25.8	tr.	1.8	0	0	0	5.2	0.1	0
14. Allegan	0	0	0	0	0.3	0	0	0	tr.	0	tr.	0	0
15. Barry	0	0	0.1	0	0	0	0	0	0	0	0	0	0
16. Eaton	0	0	5.0	0	4.2	0	0	0	0	0.6	0	0	0
17. Ingham	0	0	0	0	0	0	0	0	0	0.2	0	0	0
18. Livingston	0	0	0	0	0	0	0	0	0	0	0	0	0
19. Oakland	0	0	0	0	0	0	0	0	0	0	0	0	0
20. Macomb	0	0	0	0	0	0	0	0	0	0	0	0	0
21. Ottawa	-	-	-	-	-	-	-	-	-	-	-	-	-
22. Kent	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Ionia	0	0	0	0	0	0	0	0	0	0	0	0	0
24. Clinton	0	0	0	0	0	0	0	0	0	0	0	0	0
25. Shiawassee	0	0	0	0	30.4	0	0	0	0	0	0	0	0
26. Genesee	0	0	19.4	0	2.2	0	0	0	0	0	0	0	0
27. Lapeer	0	0	0	0	0	0	0	0	0	0	0	0	0
28. St. Clair	-	-	-	-	-	-	-	-	-	-	-	-	-
29. Gratiot	0	0	0	0	0	0	0	0	0	0	0	0	0
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	0	0	0	0	0	0	0	0	0	0	0	0	0
32. Sanilac	-	-	-	-	-	-	-	-	-	-	-	-	-
33. Midland	0	0	0	0	1.0	0	0	0	0	0	0	0	0
34. Bay	-	-	-	-	-	-	-	-	-	-	-	-	-
35. Huron	0	0	0	0	0	0	0	0	0	0	0	0	0
36. Muskegon	0	0	0	0	0	0	0	0	0	0	0	0	0
37. Montcalm	0	0	0	0	0	0	0	0	0	0	0	0	0
38. Newaygo	0	0	0	0	0	0	0	0	0	0	0	0	0
39. Mecosta	0	0	0	0	0	0	0	0	0	0	0	0	0
40. Isabella	-	-	-	-	-	-	-	-	-	-	-	-	-
41. Gladwin	0	0	1.4	0	0.4	0	0	0	0	0	0	0	0
42. Arenac	0	0	1.8	0	0	0	0	0	0	0	0	0	0
43. Oceana	0	0	0	0	0	0	0	0	0	0	0	0	0
44. Mason	0	0	0	0	0	0	0	0	0	0	0	0	0
45. Lake	0	0	0	0	0	0	0	0	0	0	0	0	0
46. Osceola	0	0	0	0	0	0	0	0	0	0	0	0	0
47. Clare	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	0	0	1.4	tr.	3.3	tr.	0.2	0	tr.	tr.	0.4	tr.	tr.

TABLE 8d. RELATIVE ABUNDANCE OF THE LESS IMPORTANT WARM-WATER FISHES, FOR 1933, IN COUNTIES NORTH OF TOWNLIN E 20.

For further explanation of this table refer to Table 8a. For total catch in non-trout waters, refer to Table 8a.

Region and County	Cisco and Whitefish	Lake Trout	Suckers	Mullets & Redhorses	Carp	Chubs & Shiners	Catfishes	Muskellunge	White Bass	Warmouth	Sheepshead	Lawyer	Other kinds
Lower Peninsula North of T. 20:													
48. Manistee	0.7	0	0	0	0	0	0	0	0	0	0	0	206
49. Wexford	-	-	-	-	-	-	-	-	-	-	-	-	-
50. Missaukee	-	-	-	-	-	-	-	-	-	-	-	-	-
51. Roscommon	0	0	tr.	tr.	0	0	0	0	0	0	0	0	0
52. Ogemaw	0	0	0	0	0	0	0	0	0	0	0	0	0
53. Iosco	0	0	0	0	0	0	0	0	0	0	0	0	0.2
54. Benzie	0	0	0	0	0	0	0	0	0	0	0	0	0
55. Grand Traverse	0	0	0	0	0	0	0	0	0	0	0	0	0
56. Kalkaska	0	0	0	0	0	0	0	0	0	0	0	0	0
57. Crawford	0	0	0	0	0	0	0	0	0	0	0	0	0
58. Oscoda	0	0	0	0	0	0	0	0	0	0	0	0	0
59. Alcona	0	0	0	0	0	0	0	0	0	0	0	0	0
60. Leelanau	-	-	-	-	-	-	-	-	-	-	-	-	-
61. Antrim	0	0	0	0	0	0	0	0	0	0	0	0	0
62. Otsego	0	0	0	0	0	0	0	0	0	0	0	0	0
63. Montmorency	0	0	0	0	0	0	0	0	0	0	0	0	0
64. Alpena	0	0	0	0	0	0	0	0	0	0	0	0	0
65. Charlevoix	0	0	0	0	0	0	0	0	0	0	0	0	0
66. Emmet	0	0	0	0	0	0	0	0	0	0	0	0	0
67. Cheboygan	0	0	0	0	0	0	0	0	0	0	0	0	1.5
68. Presque Isle	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	tr.	0	tr.	tr.	0	0	0	0	0	0	0	0	0.1
Upper Peninsula:													
69. Menominee	19.7	0	10.3	0	0	0	0	0	0	0	0	0.1	0
70. Dickinson	0	0	0	0	0	0	0	0	0	0	0	0	0
71. Delta	0	0	0	0	0	0	0	0	0	0	0	0	0
72. Schoolcraft	0	0	0	0	0	0	0	0	0	0	0	0	0
73. Mackinac	0	0	0	0	0	0	0	0	0	0	0	0	0
74. Gogebic	0	0	0	0	0	13.2	0	0	0	0	0	0	1.0
75. Iron	10.8	0	0	0	0	0	0	0	0	0	0	0	8.2
76. Marquette	0	0	0	0	0	0	0	0	0	0	0	0	0.9
77. Alger	0	0	38.1	0	0	0	0	0	0	0	0	0	0
78. Luce	0	0	0	0	0	0	0	0	0	0	0	0	0
79. Chippewa	0	0	0	0	0	0	0	0	0	0	0	0	0.3
80. Ontonagon	0	0	0	0	0	0	0	0	0	0	0	0	0
81. Houghton	0	0	0	0	0	0	0	0	0	16.8	0	0	0
82. Baraga	0	0	0	0	0	0	0	0	0	0	0	0	0
83. Keweenaw	0	0	0	0	0	0	0	0	0	0	0	0	0
84. Isle Royal	-	-	-	-	-	-	-	-	-	-	-	-	-
Average	7.7	0	7.2	0	0	1.1	0	0	0	0.5	0	tr.	1.7

TABLE 9a. RELATIVE ABUNDANCE OF BLUEGILLS IN THE TOTAL CATCH IN ALL NON-TROUT WATERS, BY COUNTIES IN THE LOWER PENINSULA SOUTH OF TOWNLIN E 20.

0 indicates no reports of this species.

County	No. reported 1933	Percentage 1933	Average 1928-1932
1. Berrien	130	59.9	60.0
2. Cass	2615	84.1	47.3
3. St. Joseph	476	72.9	56.4
4. Branch	3355	84.5	59.3
5. Hillsdale	445	81.2	57.7
6. Lenawee	318	50.3	57.3
7. Monroe	16	1.0	0.1
8. Van Buren	275	73.3	64.3
9. Kalamazoo	408	75.4	50.9
10. Calhoun	68	44.2	52.8
11. Jackson	235	52.2	49.2
12. Washtenaw	313	73.1	51.9
13. Wayne	91	3.1	1.6
14. Allegan	1258	76.7	64.4
15. Barry	631	45.3	57.1
16. Eaton	559	63.4	54.4
17. Ingham	404	79.7	53.9
18. Livingston	1077	69.2	57.6
19. Oakland	879	69.0	53.6
20. Macomb	2	5.1	7.5
21. Ottawa	-	-	50.2
22. Kent	386	56.4	36.1
23. Ionia	521	72.2	33.5
24. Clinton	125	79.6	46.2
25. Shiawassee	33	15.2	26.2
26. Genesee	252	55.6	47.9
27. Lapeer	779	81.1	67.1
28. St. Clair	-	-	0
29. Gratiot	45	59.2	17.6
30. Saginaw	-	-	-
31. Tuscola	187	33.9	48.7
32. Senilac	-	-	0
33. Midland	0	0	0
34. Bay	-	-	0
35. Huron	0	0	0
36. Muskegon	227	22.0	51.9
37. Montcalm	39	47.0	53.3
38. Newaygo	476	45.9	31.5
39. Mecosta	33	12.9	51.5
40. Isabella	-	-	18.4
41. Gladwin	348	17.7	11.1
42. Arenac	7	12.7	0
43. Oceana	1978	79.9	10.4
44. Mason	27	27.0	37.3
45. Lake	27	62.8	63.8
46. Osceola	42	97.7	32.8
47. Clare	1284	81.3	41.5
Averages		57.4	42.2
Total	20371		

TABLE 9b. RELATIVE ABUNDANCE OF BLUEGILLS IN THE TOTAL CATCH IN ALL NON-TROUT WATERS BY COUNTIES NORTH OF TOWNLIN E 20.

For further explanation see Table 9a.

Region & county	No. reported 1933	Percentage 1933	Average 1928-1932
Lower Peninsula N. of T. 20:			
48. Manistee	0	0	24.9
49. Wexford	1	-	23.2
50. Missaukee	-	-	22.9
51. Roscommon	65	1.0	0.7
52. Ogemaw	15	60.0	25.4
53. Iosco	63	15.4	24.3
54. Benzie	0	0	6.0
55. Grand Traverse	7	18.9	27.6
56. Kalkaska	0	0	18.8
57. Crawford	2	9.5	0.1
58. Oscoda	0	0	8.8
59. Alcona	0	0	58.0
60. Leelanau	-	-	3.5
61. Antrim	0	0	5.1
62. Otsego	0	0	1.5
63. Montmorency	0	0	0
64. Alpena	0	0	0
65. Charlevoix	0	0	5.1
66. Emmet	0	0	3.5
67. Cheboygan	1	1.5	1.1
68. Presque Isle	-	-	7.0
Average	153	2.0	11.0
Upper Peninsula:			
69. Menominee	4	0.4	tr.
70. Dickinson	0	0	0
71. Delta	0	0	0.7
72. Schoolcraft	25	43.9	23.6
73. Mackinac	0	0	8.6
74. Gogebic	39	12.8	1.7
75. Iron	0	0	0
76. Marquette	0	0	1.5
77. Alger	57	14.2	5.6
78. Luce	57	14.2	0
79. Chippewa	0	0	0
80. Ontonagon	0	0	14.4
81. Houghton	0	0	1.9
82. Baraga	0	0	0
83. Keweenaw	0	0	0.2
84. Isle Royale	-	-	0
Average	125	3.4	1.7

TABLE 10a. TOTAL FISH CATCH PER HOUR OF ALL SPECIES, BY COUNTIES IN THE LOWER PENINSULA SOUTH OF TOWNLINE 20, ALL WATERS.

Species	Total hours	Total fish	Aver. per hr. 1933	Aver. 1928-1932
1. Berrien	309	255	.83	1.14
2. Cass	1133	2881	2.54	1.26
3. St. Joseph	481	669	1.39	2.06
4. Branch	1035	3946	3.81	2.24
5. Hillsdale	157	469	2.98	1.22
6. Lenawee	474	626	1.32	1.33
7. Monroe	1005	1431	1.42	1.69
8. Van Buren	162	375	2.31	1.72
9. Kalamazoo	376	537	1.43	1.02
10. Calhoun	131	244	1.86	1.53
11. Jackson	504	430	.85	1.34
12. Washtenaw	219	361	1.65	1.15
13. Wayne	2922	2445	.84	.81
14. Allegan	626	1666	2.66	1.35
15. Barry	208	436	2.10	1.56
16. Eaton	934	840	.90	.93
17. Ingham	254	507	1.99	.86
18. Livingston	735	1451	1.98	1.47
19. Oakland	361	1241	3.43	1.68
20. Macomb	23	39	1.70	0.34
21. Ottawa	-	-	-	2.39
22. Kent	437	696	1.59	2.29
23. Ionia	407	668	1.64	1.24
24. Clinton	115	157	1.36	1.61
25. Shiawassee	200	146	.73	1.47
26. Genesee	226	450	2.00	2.10
27. Lapeer	384	942	2.45	1.82
28. St. Clair	-	-	-	2.97
29. Gratiot	52	52	1.00	0.19
30. Saginaw	-	-	-	-
31. Tuscola	257	532	2.07	0.84
32. Sanilac	-	-	-	14.4
33. Midland	139	101	0.73	0.32
34. Bay	-	-	-	0.33
35. Huron	8	30	3.75	0.56
36. Muskegon	809	965	1.19	1.70
37. Montcalm	15	49	3.25	1.42
38. Newaygo	810	1236	1.53	1.20
39. Mecosta	417	597	1.43	2.41
40. Isabella	5	0	0	.90
41. Gladwin	3702	2210	.60	.47
42. Arenac	1596	430	.27	.92
43. Oceana	880	1453	1.65	1.51
44. Mason	100	104	1.04	1.86
45. Lake	6865	542	.79	1.39
46. Oscoda	86	92	1.07	0.65
47. Clare	683	1431	2.10	0.95
Average	30242	33732	1.12	1.33

TABLE 10b. TOTAL FISH CATCH PER HOUR OF ALL SPECIES, BY COUNTIES NORTH OF TOWNLINe 20.

Region and County	Total hours 1933	Total fish 1933	Fish per hr. 1933	Aver. per hr. 1928-1932
Lower Peninsula N. of T. 20:				
48. Manistee	166	180	1.08	1.18
49. Wexford	-	-	-	0.77
50. Missaukee	-	-	-	0.84
51. Roscommon	8869	6289	.71	0.31
52. Ogemaw	137	138	1.00	0.98
53. Iosco	991	944	.95	0.96
54. Benzie	203	717	3.54	1.09
55. Grand Traverse	164	20	0.12	0.64
56. Kalkaska	115	152	1.33	0.97
57. Crawford	160	212	1.32	0.59
58. Oscoda	29	38	1.31	0.77
59. Alcona	37	103	2.75	1.18
60. Leelanau	-	-	-	1.16
61. Antrim	261	436	1.67	1.14
62. Otsego	788	871	1.11	1.07
63. Montmorency	35	47	1.32	1.60
64. Alpena	12	45	3.75	1.01
65. Charlevoix	56	93	1.66	1.66
66. Emmet	158	238	1.50	1.26
67. Cheboygan	1000	405	0.41	0.77
68. Presque Isle	-	-	-	2.20
Total	13181	10928	0.83	0.72
Upper Peninsula:				
69. Menominee	1158	1119	0.97	1.46
70. Dickinson	408	226	0.55	0.80
71. Delta	345	466	1.35	1.22
72. Schoolcraft	405	494	1.22	1.45
73. Mackinac	107	149	1.39	2.08
74. Gogebic	624	701	1.12	0.83
75. Iron	1498	1403	0.94	1.25
76. Marquette	942	582	0.62	0.91
77. Alger	512	659	1.29	0.94
78. Luce	130	80	0.62	1.08
79. Chippewa	145	301	2.07	1.67
80. Ontonagon	165	58	0.35	1.22
81. Houghton	2254	1021	0.45	0.85
82. Baraga	421	353	0.84	0.75
83. Keweenaw	463	218	0.47	0.51
84. Isle Royale	-	-	-	0.68
Total	9577	7830	0.82	1.02

TABLE 11a. TROUT CATCH PER HOUR BY COUNTIES IN THE LOWER PENINSULA SOUTH OF TOWNLIN 20, FOR TROUT WATERS

Lake trout, and stream trout when in essentially non-trout waters, not included.

County	1933		1928-1932	
	Av. per hr.	Total hours	Av. per hr.	Total hours
1. Berrien	0.37	103	0.93	168
2. Cass	-	-	1.07	380
3. St. Joseph	1.33	12	6.00	3
4. Branch	-	-	-	-
5. Hillsdale	-	-	3.31	13
6. Lenawee	0.43	28	-	-
7. Monroe	-	-	-	-
8. Van Buren	-	-	0.46	119
9. Kalamazoo	-	-	0.89	111
10. Calhoun	1.62	55.5	1.48	44
11. Jackson	0.36	14	2.18	22
12. Washtenaw	-	-	-	-
13. Wayne	-	-	-	-
14. Allegan	0.63	125	0.46	205
15. Barry	1.03	58	1.04	231
16. Eaton	-	-	-	-
17. Ingham	-	-	-	-
18. Livingston	3.00	4	0.80	10
19. Oakland	9.80	5	-	-
20. Macomb	-	-	0.66	33
21. Ottawa	-	-	-	-
22. Kent	0.86	148	1.24	640
23. Ionia	-	-	0.88	55
24. Clinton	-	-	-	-
25. Shiawassee	-	-	-	-
26. Genesee	-	-	2.00	5.5
27. Lapeer	0.50	6	1.67	84
28. St. Clair	-	-	-	-
29. Gratiot	-	-	-	-
30. Saginaw	-	-	-	-
31. Tuscola	-	-	-	-
32. Sanilac	-	-	-	-
33. Midland	-	-	0	101
34. Bay	-	-	-	-
35. Huron	-	-	-	-
36. Muskegon	-	-	1.03	207
37. Montcalm	-	-	0.99	83
38. Newaygo	1.28	193.5	1.13	1493
39. Mecosta	2.91	124.2	2.63	539
40. Isabella	0	5	1.62	81
41. Gladwin	0.61	477.5	0.46	493
42. Arenac	147.4	0.25	0.79	562
43. Oceana	1.11	113.5	1.27	370
44. Mason	0.50	14	1.54	368
45. Lake	0.79	673.5	1.16	1819
46. Osceola	1.09	56	0.48	866
47. Clare	0.45	56	1.29	970
Average and total	0.67	3735.7	1.14	10575

TABLE 11b. TROUT CATCH PER HOUR BY COUNTIES NORTH OF TOWNLINE 20,
FOR TROUT WATERS.

Region and County	1933		1928-1932	
	Av. per hr.	Total hours	Av. per hr.	Total hours
Lower Peninsula N. of T. 20:				
48. Manistee	0.47	59	1.29	3146
49. Wexford	-	-	1.07	1841
50. Missaukee	-	-	1.00	1737
51. Roscommon	0.46	13	0.68	270
52. Ogemaw	0.83	135.5	1.18	2734
53. Iosco	1.52	357.3	1.14	1290
54. Benzie	0.38	79	0.95	3015
55. Grand Traverse	-	-	0.64	1201
56. Kalkaska	1.33	114.5	0.97	2011
57. Crawford	1.33	143.5	0.67	3836
58. Oscoda	1.27	26	0.81	470
59. Alcona	2.75	37.5	1.15	751
60. Leelanau	-	-	0.98	638
61. Antrim	1.67	261.25	1.35	2361
62. Otsego	1.08	781.5	1.43	4080
63. Montmorency	1.32	35.5	1.64	660
64. Alpena	3.75	12	0.48	137
65. Charlevoix	1.66	56	1.06	458
66. Emmet	1.50	158.3	1.53	1013
67. Cheboygan	0.37	887.3	0.76	2489
68. Presque Isle	-	-	1.64	174
Averages and totals	1.02	3157.2	1.08	34312
Upper Peninsula:				
69. Menominee	1.02	54.75	0.51	776
70. Dickinson	0.77	221.5	0.79	1152
71. Delta	1.33	258	1.22	1101
72. Schoolcraft	1.18	369	1.50	891
73. Mackinac	1.19	78	1.81	526
74. Gogebic	0.97	434.5	0.95	3814
75. Iron	0.92	738	1.45	1781
76. Marquette	0.42	839	0.88	3137
77. Alger	1.28	320.5	1.03	1896
78. Luce	0.47	96	1.13	537
79. Chippewa	0.50	98.5	1.48	1570
80. Ontonagon	0.37	145	1.42	879
81. Houghton	0.42	2120	0.87	6378
82. Baraga	0.86	329	0.81	3542
83. Keweenaw	0.52	332	0.55	2429
84. Isle Royal	-	-	0.68	922
Averages and totals	0.69	6433.75	0.98	31331

TABLE 12 a. TOTAL FISH CATCH PER HOUR BY COUNTIES IN THE LOWER PENINSULA SOUTH OF TOWNLIN 20, FOR NON-TROUT WATERS.

County	1933		1928-1932	
	Av. per hr.	Total hours	Av. per hr.	Total hours
1. Berrien	1.05	206	1.16	1699
2. Cass	2.54	1133	1.25	6601
3. St. Joseph	1.39	469.5	2.09	1523
4. Branch	3.81	1034.5	2.24	3471
5. Hillsdale	3.0	157.5	1.20	1627
6. Lenawee	1.38	445.75	1.33	3751
7. Monroe	1.42	1005.25	1.69	3702
8. Van Buren	2.31	162	1.81	1636
9. Kalamazoo	1.43	375.75	1.04	1220
10. Calhoun	2.04	75.5	1.53	1644
11. Jackson	0.87	490.25	1.33	2445
12. Washtenaw	1.65	218.75	1.15	3752
13. Wayne	0.84	2922	0.81	11457
14. Allegan	3.17	500.5	1.46	1688
15. Barry	2.51	150	1.60	2851
16. Eaton	0.90	934	0.93	4805
17. Ingham	1.99	254.5	0.86	465
18. Livingston	1.97	730.5	1.47	3704
19. Oakland	3.34	356.5	1.68	2572
20. Macomb	1.70	23	0.23	94
21. Ottawa	-	-	2.39	212
22. Kent	1.97	288.5	2.65	1825
23. Ionia	1.64	406.75	1.30	320
24. Clinton	1.36	115.5	1.61	1313
25. Shiawassee	0.73	200	1.47	505
26. Genesee	2.00	225.5	2.10	1493
27. Lapeer	2.48	378	1.83	2079
28. St. Clair	-	-	2.97	666
29. Gratiot	1.00	52	0.19	93
30. Saginaw	-	-	-	-
31. Tuscola	2.07	257	0.84	921
32. Sanilac	-	-	14.4	125
33. Midland	0.73	139	0.50	172
34. Bay	-	-	0.33	24
35. Huron	3.75	8	0.56	41
36. Muskegon	1.19	809.5	1.97	523
37. Montcalm	3.27	15	1.46	955
38. Newaygo	1.60	626.25	1.26	1769
39. Mecosta	0.80	292.25	2.14	441
40. Isabella	-	-	0.82	662
41. Gladwin	0.59	3224.5	0.47	5406
42. Arenac	0.45	122	3.79	75
43. Oceana	1.73	766	1.66	605
44. Mason	1.13	86	2.01	1783
45. Lake	0.69	13	2.06	661
46. Osceola	1.03	30	0.73	1864
47. Clare	2.23	627	0.81	2211
Averages and totals	1.54	20327.5	1.35	87451

Table 12b. TOTAL FISH CATCH PER HOUR BY COUNTIES NORTH OF TOWNLINE 20, FOR NON-TROUT WATERS.

Regions and county	1933		1928-1932	
	Total hrs.	Av. per hr.	Total hours	Av. per hr.
Lower Peninsula N. of T. 20				
48. Manistee	107	1.42	5501	1.17
49. Wexford	-	-	2074	0.49
50. Missaukee	-	-	5628	0.79
51. Roscommon	8856	0.71	49465	0.31
52. Ogemaw	2	12.5	5531	0.88
53. Iosco	633.5	0.63	1747	0.82
54. Benzie	123.5	5.56	5452	1.17
55. Grand Traverse	164.5	0.12	3127	0.64
56. Kalkaska	-	-	878	0.98
57. Crawford	16.75	1.25	1906	0.44
58. Oscoda	3	1.67	388	0.72
59. Alcona	-	-	83	1.52
60. Leelanau	-	-	3902	1.18
61. Antrim	-	-	1027	0.67
62. Otsego	6	1.83	1945	0.31
63. Montmorency	-	-	37	0.86
64. Alpena	-	-	256	1.29
65. Charlevoix	-	-	1234	1.03
66. Emmet	-	-	912	1.96
67. Cheboygan	112.5	0.55	3395	0.76
68. Presque Isle	-	-	336	2.49
Averages and total	10024.75	0.76	94827	0.60
Upper Peninsula:				
69. Menominee	1102.8	0.96	5514	1.60
70. Dickinson	186	0.29	248	0.87
71. Delta	87	1.43	211	1.22
72. Schoolcraft	36	1.58	199	1.23
73. Mackinac	29	1.93	575	2.33
74. Gogebic	189.5	1.32	1990	0.58
75. Iron	760	0.89	971	0.88
76. Marquette	103.5	2.12	1111	1.00
77. Alger	191	1.30	909	0.76
78. Luce	34	1.03	36	0.38
79. Chippewa	47	5.36	265	2.83
80. Ontonagon	20	0.25	257	0.54
81. Houghton	133.5	0.88	1601	0.78
82. Baraga	92	0.76	594	0.36
83. Keweenaw	131	0.13	1347	0.44
84. Isle Royal	-	-	11	Q
Averages and totals	3142.3	1.03	15839	1.09

TABLE 13a. BLUEGILL CATCH PER HOUR, BY COUNTIES IN THE LOWER PENINSULA SOUTH OF TOWNLIN E 20.

County	1933		1928-1932	
	Total hrs.	Av. per hr.	Total hrs.	Av. per hr.
1. Berrien	206	0.63	1699	0.69
2. Cass	1133	2.18	6601	0.59
3. St. Joseph	469.5	1.01	1523	1.19
4. Branch	1034.5	3.23	3471	1.39
5. Hillsdale	157.5	2.46	1627	0.70
6. Lenawee	445.75	0.71	3751	0.76
7. Monroe	1005.25	0.02	3702	0.09
8. Van Buren	162	1.70	1636	1.14
9. Kalamazoo	375.75	1.08	1220	0.54
10. Calhoun	75.5	.90	1644	0.82
11. Jackson	490.25	0.44	2445	0.65
12. Washtenaw	218.75	1.21	3752	0.61
13. Wayne	2922	0.03	11457	0.01
14. Allegan	500.5	2.41	1688	0.96
15. Barry	150	2.00	2851	0.91
16. Eaton	934	0.57	4805	0.51
17. Ingham	254.5	1.59	465	0.55
18. Livingston	730.5	1.37	3704	0.84
19. Oakland	356.5	2.35	2572	0.91
20. Macomb	23	0.09	94	None
21. Ottawa	-	-	212	1.20
22. Kent	288.5	0.97	1825	0.95
23. Ionia	406.75	1.21	320	0.50
24. Clinton	115.5	1.08	1313	0.77
25. Shiawassee	200	0.17	505	0.39
26. Genesee	225.5	1.12	1493	1.06
27. Lapeer	378	2.00	2079	1.24
28. St. Clair	-	-	666	None
29. Gratiot	52	0.63	93	0.03
30. Saginaw	-	-	-	-
31. Tuscola	257	0.73	921	0.42
32. Sanilac	-	-	125	None
33. Midland	139	None	172	None
34. Bay	-	-	24	None
35. Huron	8	None	41	None
36. Muskegon	809.5	0.26	523	1.02
37. Montcalm	15	1.47	955	0.46
38. Newaygo	626.25	0.75	1769	0.40
39. Mecosta	293.25	0.11	441	1.07
40. Isabella	-	-	662	0.15
41. Gladwin	3224.5	0.10	5406	0.05
42. Arenac	122	0.06	75	None
43. Oceana	766	1.35	605	0.16
44. Mason	86	0.31	1783	0.78
45. Lake	13	0.23	661	1.25
46. Osceola	30	1.00	1864	0.23
47. Clare	627	1.77	2211	0.34
Averages and totals	20327.5	0.89	87451	0.57

TABLE 13b. BLUEGILL CATCH PER HOUR, BY COUNTIES NORTH OF TOWNLIN 20.

Region and County	1933		1928-1932	
	Total hours	Av. per hr.	Total hours	Av. per hr.
Lower Peninsula N. of T. 20:				
48. Manistee	107	0	5501	0.29
49. Wexford	-	-	2074	0.12
50. Missaukee	-	-	5628	0.18
51. Roscommon	8856	0.01	49465	tr.
52. Ogemaw	2	7.50	5531	0.23
53. Iosco	633.5	0.10	1747	0.20
54. Benzie	123.5	0	5452	0.07
55. Grand Traverse	164.5	0.04	3127	0.17
56. Kalkaska	0	0	878	0.20
57. Crawford	16.75	0.12	1906	tr.
58. Oscoda	3	0	388	0.06
59. Alcona	0	0	83	0.79
60. Leelanau	-	-	3902	0.03
61. Antrim	0	0	1027	0.03
62. Otsego	6	0	1945	0.06
63. Montmorency	0	0	37	0
64. Alpena	0	0	259	0
65. Charlevoix	0	0	912	0.10
66. Emmet	0	0	1234	0.04
67. Cheboygan	112.5	0.01	3395	0.01
68. Presque Isle	-	-	336	0.18
Averages and totals	10024.75	0.02	94827	0.07
Upper Peninsula:				
69. Menominee	1102.8	tr.	5514	tr.
70. Dickinson	186	0	248	None
71. Delta	87	0	211	0.01
72. Schoolcraft	36	0.69	199	0.03
73. Mackinac	29	0	575	0.22
74. Mogenic	189.5	0.18	1990	0.01
75. Iron	760	0	971	0
76. Marquette	103.5	0	1111	0.02
77. Alger	191	0.30	909	0.04
78. Luce	34	0	36	0
79. Chippewa	47	0	265	0
80. Ontonagon	20	0	257	0.08
81. Houghton	133.5	0	1601	0.02
82. Baraga	92	0	594	0
83. Keweenaw	131	0	1347	tr.
84. Isle Royal	-	-	11	0
Averages and totals	3142.3	0.04	15839	0.02

TABLE 14a. SUMMARY OF COMPUTATIONS OF TOTAL FISH CATCH PER HOUR, FIRST PART, FOR ALL SPECIES, FOR TROUT AND FOR PROPAGATED VS. NON-PROPAGATED FISH.

Species	Waters	Region	Average 1933	Average 1928-1932
All species	All waters	1. Lower Peninsula S. of T. 20	1.40	1.33
		2. Lower Peninsula N. of T. 20	0.83	0.72
		3. Upper Peninsula	0.82	1.02
		4. Entire state	1.12	1.00
All species	Non- trout waters	1. Lower Peninsula S. of T. 20	1.54	1.35
		2. Lower Peninsula N. of T. 20	0.76	0.60
		3. Upper Peninsula	1.03	1.12
		4. Entire state	1.26	0.97
Brook, Brown & Rainbow Trout	Trout waters	1. Lower Peninsula S. of T. 20	0.67	1.15
		2. Lower Peninsula N. of T. 20	1.03	1.08
		3. Upper Peninsula	0.69	0.97
		4. Entire state	0.76	1.04
Brook Trout	Trout waters	1. Lower Peninsula S. of T. 20	0.49	0.82
		2. Lower Peninsula N. of T. 20	0.85	0.94
		3. Upper Peninsula	0.62	0.93
		4. Entire state	0.64	0.92
Brown Trout	Trout waters	1. Lower Peninsula S. of T. 20	0.08	0.08
		2. Lower Peninsula N. of T. 20	0.04	0.02
		3. Upper Peninsula	tr.	tr.
		4. Entire state	0.03	0.02
Rainbow Trout	Trout waters	1. Lower Peninsula S. of T. 20	0.10	0.25
		2. Lower Peninsula N. of T. 20	0.14	0.12
		3. Upper Peninsula	0.07	0.04
		4. Entire state	0.09	0.11
5 Propa- gated lake fishes ¹	Non- trout waters	1. Lower Peninsula S. of T. 20	1.15	0.97
		2. Lower Peninsula N. of T. 20	0.34	0.31
		3. Upper Peninsula	0.58	0.73
		4. Entire state	0.85	0.63
5 Non-pro- gated lake fishes ²	Non- trout waters	1. Lower Peninsula S. of T. 20	0.31	0.33
		2. Lower Peninsula N. of T. 20	0.36	0.27
		3. Upper Peninsula	0.28	0.27
		4. Entire state	0.32	0.30
Ratio, 5 propagated to 5 non-propagated fishes		1. Lower Peninsula S. of T. 20	3.71	2.94
		2. Lower Peninsula N. of T. 20	0.94	1.15
		3. Upper Peninsula	2.07	2.70
		4. Entire state	2.66	2.10

¹ Large-mouth and small-mouth bass, bluegills, perch and walleyes.

² Common sunfish, rock bass, black crappie, northern pike and bullheads.

TABLE 14b. SUMMARY OF COMPUTATIONS OF TOTAL FISH CATCH PER HOUR, SECOND PART,
FOR MORE IMPORTANT SPECIES IN NON-TROUT WATERS.

Species	Region	Average 1933	Average 1928-1932
Small- mouth bass	1. Lower Peninsula S. of T. 20	0.02	0.02
	2. Lower Peninsula N. of T. 20	tr.	0.02
	3. Upper Peninsula	0.06	0.03
	4. Entire state	0.02	0.02
Large- mouth bass	1. Lower Peninsula S. of T. 20	0.06	0.06
	2. Lower Peninsula N. of T. 20	tr.	0.01
	3. Upper Peninsula	0.05	0.03
	4. Entire state	0.04	0.03
Blue- gill	1. Lower Peninsula S. of T. 20	0.89	0.57
	2. Lower Peninsula N. of T. 20	0.02	0.07
	3. Upper Peninsula	0.04	0.02
	4. Entire state	0.55	0.29
Common sunfish	1. Lower Peninsula S. of T. 20	0.07	0.08
	2. Lower Peninsula N. of T. 20	0.03	0.02
	3. Upper Peninsula	0.03	0.01
	4. Entire state	0.05	0.05
Rock bass	1. Lower Peninsula S. of T. 20	0.05	0.06
	2. Lower Peninsula N. of T. 20	0.07	0.06
	3. Upper Peninsula	0.05	0.05
	4. Entire state	0.06	0.06
Black Crappie	1. Lower Peninsula S. of T. 20	0.06	0.07
	2. Lower Peninsula N. of T. 20	tr.	tr.
	3. Upper Peninsula	tr.	tr.
	4. Entire state	0.03	0.03
Perch	1. Lower Peninsula S. of T. 20	0.13	0.32
	2. Lower Peninsula N. of T. 20	0.27	0.18
	3. Upper Peninsula	0.38	0.54
	4. Entire state	0.20	0.27
Walleye	1. Lower Peninsula S. of T. 20	0.04	0.01
	2. Lower Peninsula N. of T. 20	0.04	0.03
	3. Upper Peninsula	0.05	0.11
	4. Entire state	0.04	0.04
Northern Pike	1. Lower Peninsula S. of T. 20	0.02	0.03
	2. Lower Peninsula N. of T. 20	0.24	0.14
	3. Upper Peninsula	0.13	0.17
	4. Entire state	0.10	0.09
Mullheads	1. Lower Peninsula S. of T. 20	0.12	0.09
	2. Lower Peninsula N. of T. 20	0.02	0.03
	3. Upper Peninsula	0.07	0.03
	4. Entire state	0.08	0.06