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FIRST ANALYSIS OF THE MICHIGAN CREEL CENSUS

Covering the five year period 1928 to 1932, with some figures for  
1927

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HISTORY AND METHODS OF THE MICHIGAN CREEL CENSUS

Beginning with 1927, THE MICHIGAN DEPARTMENT OF CONSERVATION has been main-  
taining a record of the sport fishery within the state. Though an inventory of  
the game fish yield, like that of any product, would seem to be a self-evident need,

this has been a pioneer effort. Several other states have either contemplated or begun a CREEL CENSUS, patterning their methods more or less on the Michigan creel census. But we believe no other state has carried on this work as long or as thoroughly as Michigan.

To Commissioner of Conservation HAROLD TITUS belongs the credit for appreciating the need of this inventory, and for having it established. Various persons, including staff members of the Department of Conservation and the University of Michigan contributed suggestions, but we owe the creel census essentially to Mr. Titus.

Although it appeared from the first that a COMPLETE STATISTICAL RECORD of sport fishing in Michigan would be desirable, it was clear that the attainment of this ideal was utterly impracticable, at least for the state as a whole. It was therefore decided that what should be sought was a RANDOM SAMPLE of fishing returns, in the hope that the sampling might be sufficiently extensive and representative as to indicate the trend of fishery, by years and by regions.

It was probably wise not to have based the returns on reports asked for or demanded on the fishing licenses. This would have given spotted and unrepresentative returns through the early years of the census, when there was no general rod license. Even now it is improbable that a general report from the anglers, asked for on the license, would give as true a picture as is furnished by the present system. Similar trials, as with upland game, have yielded a very low percentage of returns. Unusually large catches would almost certainly be entered in disproportionate numbers. If a report was demanded, it would usually be made from memory (and the big catches would be most often recalled) or at times would even be faked.

The use of conservation officers for the COLLECTING OF THE DATA was the best plan at the outset of the work. These men in their normal rounds contact thousands of fishermen each year, and obtaining the creel census data is a small task compared with their total activities. When properly handled, the collecting of the

creel census gives the officer a good, friendly means of approach. The use of white cards for officers, pink for the general public and blue for the Izaak Walton League was early adopted. The returns from the League were so few and scattered as to have hardly justified the extra card printing. It is our impression that the returns from the officers have been most reliable and representative. On the basis of experience, we recommend that the officers be instructed to continue the taking of creel census data, and that those who have been negligent along this line be especially contacted, so that the data may be made as representative of the whole state as possible. Returns by the interested public (on pink cards) should be encouraged, though we would not recommend wholesale distribution of these cards, or any general campaign for public cooperation. The data obtained by officers instructed to gather the cards and trained in making them out fully and correctly, are likely to be much better. The best data we believe has been and is being secured by men especially selected for the taking of the creel census on a full-time basis. In general funds have seemed insufficient in the past to allow of this being done on a large scale. Gerald McCrimmon of the Institute staff was assigned this job for several weeks early in 1931, specifically to get data on the ice fishing in southeastern Michigan. Now we have a number of C.C.C. boys engaged in this task, as well as a C.W.A. man working out from the Institute.

The FISHERY TREND, it was obvious from the first, should be measured in terms of UNIT OF EFFORT. The most obvious unit of effort for such fishing would be ONE HOUR OF FISHING. The yield of fishing would be the number of fish of a given species caught per hour by each type of fishing. The creel census cards were therefore prepared with blank spaces for entering the number of fish of each species caught, and the number of hours spent fishing. Since ultimately enough data might be expected to show the trend of fishing in each fishing lake and stream, blanks were provided for entering the name of lake or stream, and the county and township. The date was also requested to make possible analysis of the fishing returns by

season, and the kind of bait used was also asked for, to make possible computations of the number of fish caught per hour on different types of lure. The "approximate number small fish hooked and put back" was asked for, in the belief that data on this point, important from several angles, would be obtained. Through the first 3 years (1927 to 1929) however, this information on undersized fish caught did not specify the species. Later cards were provided with a column to show number of undersized fish of each species.

The data from the cards for 1927, 1928 and 1929 were entered on large sheets at the Department of Conservation. The sheets for 1927 we understand were discarded, so that for that year we have recorded only the few calculations given in the Department's one-sheet report dated April 2, 1930. These figures, with the exception of one entry (19,255 undersized fish put back) are repeated in Table 1.

In the 1928 computation the average catch per hour of all fish is stated to be 1.048, but the figures used give an average of 1.154, for the entire state. The catch per hour for 1929 was wrongly figured as 1.007, whereas the figures used give a value of 0.989. Our tabulations of the 1928 and 1929 records, made from the entries on the large Departmental sheets since the original cards had been thrown away, do not agree perfectly with the computations released by the Department on April 2, 1930. Since this discrepancy introduces a small degree of uncertainty into the yearly comparisons, we give in Table 1a comparison of the two sets of computations. The agreement is very good for 1928, assuming that the number of fish as listed by the Department excluded those listed on cards on which the number of hours of fishing was not entered (this of course was the proper procedure for the catch per hour computations; however, all fish reported are properly included for computations of relative abundance and percentage of the total catch, for the time element is immaterial for those computations). The agreement for 1929 is not so good. The Departmental tabulation involved more fish, indicating either that some entries were figured in twice by the Department or else that some entries were mis<sup>s</sup>ed by the Institute, or lost before being retallied.

Fortunately the two sets of catch per hour computations, and the number of trout of each and of all species as given in the two tallies—the only points of significance involved in both computations—are not widely different.

It must be said that computing a mass of figures as large as that involved in the creel census involves many possible ERRORS, most of which in the final computations are compensating errors, not greatly affecting the result. Absolute accuracy seems almost impossible to obtain in the computations. While we feel certain that the errors in computation have been far less than the errors in collecting the data, we have made an effort to be as accurate as possible, and have spent hundreds of hours rechecking to correct errors. Nevertheless, occasional very minor inaccuracies and a few omissions have been discovered since the tabulations have been drawn up. It is planned to recheck the whole data later. The experience we have had will help greatly in facilitating the computations in the future, and in reducing the errors.

The METHOD of recording and tallying the great mass of creel census data adopted by the Institute is more elaborate than that which had been used by the Department. The unit chosen was the individual lake or stream under each county, for this is the basis of all the records of the Department and Institute for the interior waters of the state. Almost all the data from the 3" x 5" field cards were transferred onto separate cards for each lake and stream in each county, for which any reports were given. These larger cards are made 6" x 9", to correspond with the lake and stream survey cards and fish planting record cards. The data from each small card was entered on one line only on the larger cards, to facilitate summary computations. As indicated on the samples of these larger cards included on pp. 6 and 7 of this report, the only data on the smaller cards not transferred are (1) the fisherman's name, address, license number and (2) the remarks, which are not involved in the computations, and (3) the number of undersized fish returned for each species in non-trout waters. Experience has shown that this information





on undersized fish is often omitted from the original cards, especially for lake fishes. The officer or other person submitting the card is entered on the generally unused part of the larger sheet referring to the species rarely caught.

All the available records for the years 1928 to 1932 have been entered on these 6" x 9" cards. The data for 1928 and 1929 were taken from the large Department tally sheets since the original cards for these years were destroyed. Those for 1930 to 1932 have been taken directly from the original cards, which have been kept, arranged and filed for future reference and checking.

The records have been divided into those referring to trout fishing and those based on fishing in non-trout waters. The distribution of the data into these divisions is natural and desirable, but involves some errors and arbitrary decisions. However these errors do not greatly modify the final results, for few trout are included for "trout waters" and a relatively unimportant number of most warm-water species are included in the records classed as trout fishing. The slight errors introduced by wrongly classifying the records do not, of course, enter into the tabulations of total numbers of each species caught in all waters, nor into the computations of "percentage of total reported catch in all waters", or of "total fish catch per hour".

The data on each lake and stream tally card were all summed for each year of fishing, and computations made, for each species, of catch per hour and of relative abundance in the total reported catch for that lake or stream in that year. For the trout waters the ratio of undersized ("illegal") to legal-sized ("legal") fish was also computed for each species and year. As stated before, the tally cards are well suited for these computations.

These SUMMARY DATA for each year were then summed by counties, separately for trout waters <sup>and</sup> for non-trout waters. On these tabulations there were indicated the total number of fish of each species reported, and the number for which the hours of fishing were reported. These county summaries were then combined (on tabulating sheets) for all the counties in each of three regions of the state,



which have been used at times in fish legislation: (1) Lower Peninsula south of Townline 20, (2) Lower Peninsula north of Townline 20 and (3) Upper Peninsula. The counties were numbered and are listed numerically within each region, roughly from south to north. For the general summary of fishing in each county over the five years (1928 to 1932), given on pp. 25 to 33, the counties for convenience have been arranged alphabetically. Isle Royale was treated as though a separate county in the Upper Peninsula, because it is so remote from Keweenaw County proper. These county and regional tabulations were carefully proofed, checked and rechecked, so that such errors as occur in our tabulations are restricted to those on the individual county summaries. On these county and regional tabulations there have been based the various tables which accompany this report.

All averages given in the Tables and text are weighted means. Unusual and unreliable values based on few records therefore have little effect on these averages.

#### EXTENT OF THE DATA

Table 1 gives a summary of the actual data utilized in this analysis of the creel census data. The figures for 1927 are taken from the Department's brief summary of April 2, 1930, since no other data for this year are available. The figures for 1928 and 1929 are based on the retallying and recomputing of the data as this was entered on large tally sheets by the Department. The figures for 1930, 1931 and 1932 are based on original tallies and computations.

It will be seen from this table that the creel census data increased gratifyingly from 1927 to 1930, fell off somewhat in 1931 but dropped to a low level in 1932. In the peak year (1930) the number of individual card records almost reached 15000, the number of hours of fishing reported on exceeded 74000, of which more than 20000 hours were in trout waters, and the number of legal-sized fish taken was almost 70000. In 1932 the data dropped to about 50% of the somewhat reduced 1931 data; down to a level even below that for 1928: only about 6000 cards were turned in, reporting about 38000 hours of fishing (about 8500 in trout waters) and about

50000 legal sized fish. The relatively small amount of creel census data accumulated in 1932 may be attributed to a number of factors: (1) the depression, limiting the amount of fishing; (2) the cut in the warden force, requiring extra work and extra territory to be covered by the conservation officers, and (3) a decline in interest on the part of the officers, due in part to the delay in the preparation of this report by the Institute, in part we suppose to the general morale of the field force and in part to a less vigorous campaign from headquarters. These factors are mentioned without any idea of incrimination, but in the hope that the analysis may suggest means of increasing the creel census data in the future. We trust that as financial conditions improve and the field force is rebuilt to its former strength, the officers will be required to be more thorough in collecting the data. The Institute will make an effort to analyze the data for each year early in the subsequent year, and to extract from time to time additional information of value from the data for previous years. We urge the Department to give the creel census more publicity, and <sup>to</sup> ~~the~~ require that more attention be given to the creel census work by the field force.

We trust that 1932 marks the low ebb in the accumulation of creel census data. About 8300 cards are already at hand for 1933, and the total should approximate that for 1928.

The plan now underway, utilizing C.C.C. help in obtaining much more thorough creel census returns for a series of selected lakes should materially increase the available data for 1934. The Institute has just started a C.W.A. employee at the task of collecting creel census data for winter fishing in southeastern Michigan. A C.W.A. clerk has now filed and is tallying the 1933 cards and a statistician is engaged to analyze the 1933 data and to further analyze the 1928 to 1932 data.

The TOTAL DATA on the creel census for the five-year period under analysis (1928 to 1932, excluding the meager and incomplete data for 1927) is rather impressive. Well above 50000 cards have been made out, reporting 287505 legal-sized fish, of which 273725 were caught in the 274336 reported hours of fishing (76219

hours in trout waters). The total number of trout reported is 84387, of which 73631 were brooks, 1950 browns and 8806 rainbows. For non-trout waters 201858 were reported caught. The total number of the more important warm-water fishes reported caught is: bluegill, 59509; perch, 55161; northern pike, 20612; rock bass 12135; bullheads, 11381; common sunfish, 9586; large-mouth bass, 7511; black crappie, 7293; walleye, 5989; suckers, 4296; small-mouth bass, 4090; carp, 1593; smelt, 1467.

If the CREEL CENSUS is to be of very material value to the Department, we believe that considerable more data for each year is needed than was obtained annually, on the average, over the 1928-1932 period. We would suggest as a seemingly practicable goal at the present time a total of about twice that five year average, namely about 20000 cards, which would report about 100000 man-hours of fishing, of which about 30000 would be in trout waters; and would give particulars on more than 100000 legal-sized fish, of which roughly 35000 would be trout. This would give a fair cross section of the sport fish yield through the state, especially if the Department can roughly equalize the returns from each county for each season, so that the returns will be about proportionate to the actual amount of fishing in that county each season. Some officers in the past have been so energetic in gathering creel census cards, that their returns unduly overweigh the whole data, while a larger number of officers have been so negligent in making out the cards that the fishing in their districts is not adequately represented in the data.

While the yearly gathering and analyzing of 20000 cards to represent 100000 man-hours of fishing would seem to be and would be, a huge task, this would represent only a minute fraction of the fishing in the state. If we estimate the total number of persons who angle in Michigan as 500000 each year, it will be seen that an average of only one hour's fishing per year by each angler in five would enter into the tabulation. This would seem to be about the minimum that would give figures at all reliable for each county, and for any but the most abundantly taken species.

Such a quota would yield reliable data for very few individual lakes and streams, which information will be needed, if the managing of the game fish of the state is to be put on a real business-like basis. Eventually the creel census should be greatly expanded. Its value will be of the cumulative sort, increasing from year to year. It is essentially a running inventory, the value of which depends on its being continued year after year without interruption. In order to expect real usefulness from this inventory, it should be planned as a routine activity, not as a passing investigation.

Other data in Table 1 are primarily of interest in showing in a brief way the extent of the data obtained each year, and in indicating roughly the reliability of the data given in the other tables for the different species. The figures of course show the relative abundance of the various species in the reported catch, and the annual change in the reported catch. But these points are brought out more definitely in the subsequent tabulations showing "Percentage of Total Reported Catch", "Relative Abundance" and "Catch per Hour".

#### COMPUTATIONS ON PERCENTAGE OF TOTAL CATCH

Tables 2 to 4 give data on the "PERCENTAGE OF THE TOTAL CATCH". These figures were obtained by dividing the reported catch of each species, in the given county or region, by the total reported catch of all species of fish in that county or region. For these tables, therefore, no distinction was made between fishing in trout waters and in non-trout waters.

Table 2 shows the percentage of the total reported catch in all waters of the state for each species or group of species, and the percentage of this total catch which is caught in each region of the state. It should be borne in mind that the first region (Lower Peninsula south of Townline 20) is 2.58 times as large in (land) area as the second region (Lower Peninsula north of Townline 20), and 1.76 times as large as the Upper Peninsula. The Upper Peninsula is 1.47 times as large as the northern region in the Lower Peninsula. Hence a heavy proportion of the

catch for the area does not necessarily indicate a high ratio of fish per unit area of land (or water). It should also be remembered that the officers reporting creel census data may have been more effective in one region than in the other two. Nevertheless the figures represent at least roughly the relative dominance of each species or groups of species in each of the three regions.

For all species the ratio of the total reported catch (287505 fish) for the five year period 1928-1932 was about 48:34:18 for the three areas. Per unit area this suggests that the most extensive fishing is in the Lower Peninsula north of Townline 20.

For the three species of stream TROUT (brook, brown and rainbow) this percentage ratio is about 16:46:38, clearly emphasizing that the Lower Peninsula north of Townline 20 is the predominant trout section of the state. For each of the three species that region shows 44 to 48% of the total reported catch for the state. The tendency of brook trout to prevail in the Upper Peninsula and of browns to prevail south of Townline 20, is clearly brought out by these percentages of the total catch. For south of Townline 20, the approximate figures are: brooks 13, browns 52, rainbows 35%. For the Upper Peninsula these figures are: brooks 42, browns only 4.5 and rainbows only 16.5%.

The four MAJOR GAME FISH (the two black basses, walleye and northern pike) show a great preponderance in the Lower Peninsula north of Townline 20, the ratios for the three regions from south to north being 31:54:15. The PAN FISHES show a very different ratio, 71:22:7, indicating that the southern part of the state predominately yields the five smaller species (bluegill, sunfish, rock bass, black crappie, perch).

The five chief PROPAGATED warm-water fishes (the two basses, bluegill, perch, walleye) show a very interesting ratio for the three regions, 68:23:9. The NON-PROPAGATED fish (sunfish, rock bass, crappie, pike, bullheads) as reported show the ratio 51:41:7. This indicates that the Department is propagating lake fish which predominate in the southern part of the state. This may or may not mean that the

the Department's efforts along the line of warm-water fishes are effective in holding up the fishing in the southern part of the state, for the continued predominance of these fish in that section may be due to more favorable conditions rather than to artificial aid. In either event it is indicated that the Department, in its propagation of warm-water fishes, is strongly favoring the southern part of the state. In defense of that action, it may be affirmed that, in compensation, trout are chiefly propagated for northern Michigan where they chiefly abound; also that the very intensive fishing in the southern lakes calls for more intensive fishcultural efforts for these waters than for the less heavily depleted northern waters. However, the natural productivity of the southern lakes, we are convinced, averages much greater than that of the northern lakes. The available information suggests that the propagation of lake fishes may be disproportionately neglected in the northern part of the state.

For individual species of fish other than trout, the percentage ratios of reported catch for the three regions of the state (from south to north) are instructive. The ratio for SMALL-MOUTH BASS is 40:47:13, indicating preponderance in the Lower Peninsula north of Townline 20. For LARGE-MOUTH BASS the ratio is very different, 78:15:7, indicating preponderance in the south. BLUEGILL preponderance in the south is even greater, 89:11:0.5. The ratios for SUNFISH are similar: 79:20:1. For ROCK BASS the ratio of 48:46:6 indicates especial abundance in the small middle region. The CRAPPIE is essentially a southern fish (92.5:7:0.5). PERCH are almost evenly distributed over the state, considering area, the ratio being 52:32:16; the deficiency in the Upper Peninsula was largely destroyed by the rapid increase in the perch catch in that region in 1928. WALLEYES predominate in the reported catch for the Lower Peninsula north of Townline 20, and are scarce to the south, the ratio being 14:56:30. NORTHERN PIKE show a somewhat similar distribution in abundance, 16:69:15. BULLHEADS are chiefly southerly, 69:26:5. So also GARS and DOGFISH (ratios 90:10:0 and 79:21:0). SMELT were only reported

for Benzie County (north of Townline 20). CISCO and WHITEFISH were reported chiefly from the north (9:39:52); LAKE TROUT likewise (12:15:73). SUCKERS were relatively abundant in the north, while MULLETS and REDHORSES were taken in larger numbers in the south (ratios respectively 43:19:37 and 65:20:15). CARP are southern (90:2:8). The ratio for CATFISHES was 65.5:15.5:19. For the other ratios, based on very few reports, see the last 7 rows of Table 2.

PERCENTAGE OF TOTAL REPORTED CATCH BY COUNTIES (TABLES 3a-3d)

These figures which give for each species the PERCENTAGE OF THE TOTAL REPORTED CATCH of all fish for the county, are none to reliable for many counties, because the records are <sup>so</sup> few that variations due to chance are apt to be large. Glancing down the columns shows features of importance, however. The relative scarcity of TROUT north to and about Saginaw Bay is very clear. The variations in abundance of the trout reported from counties farther north in the Lower Peninsula is considerable and significant. The great preponderance of BROOK TROUT in the reported catch for the Upper Peninsula counties other than Menominee (only 4%) and Mackinaw (40%) is clear.

The relative scarcity of SMALL-MOUTH BASS, except in a few counties, is striking. The varying abundance of LARGE-MOUTH BASS in the south and its scarcity in the north is clear.

The BLUEGILL column is very instructive. This fish predominates in the southern two-fifths of the Lower Peninsula, in many counties constituting more than 50% of the total reported catch. The only southern counties in which this fish is not abundant are those lying largely in the lowlands along Lake Erie, Detroit and St. Clair rivers and Lake Huron, and in these counties it is scarce. Farther north than Genesee County the bluegill decrease irregularly in abundance, but in no county north of Saginaw Bay does it constitute as much as 30% of the total reported catch. In the Upper Peninsula it is scarce, especially so toward the west.

The COMMON SUNFISH, ROCK BASS and CRAPPIE show large differences in abundance

from county to county. The PERCH shows the greatest consistency through the state, though it also varies from county to county.

The WALLEYE shows only a very small fraction of the total catch in any of the counties, except for a few in the northern part of the Lower Peninsula and in Gogebic and Marquette counties in the Upper Peninsula; its greatest indicated abundance is about 21% of the total catch for Cheboygan County. NORTHERN PIKE are scarce in the catch for most southern counties for which any considerable number of fish were reported. It often constitutes a considerable proportion of the catch in the counties of the northern half of the Lower Peninsula and in the counties of the Upper Peninsula. For Roscommon County the pike makes up 56% of the reported catch, which is largely for Houghton Lake but involves 15604 fish. Except for a few counties of the Saginaw region from which the reports are too few for reliance, in no other county does the northern pike make up as much as 20% of the total reported catch.

The catch of BULLHEADS and of other minor species (Table 3c and 3d) are too slight and for fluctuating to show much.

#### PERCENTAGE OF TOTAL REPORTED CATCH BY REGIONS AND YEARS

Tables 4a to 4c combine the data for the counties into the three regions and then into the entire state, so as to eliminate the excessive fluctuations due to chance and local variations. These data are given separately for the years, to show the trend in the indicated abundance of each species in reference to the total reported catch for each species within the given region or the whole state.

The percentage ratios for TROUT as a whole (brooks, brown and rainbows) constitute the first set of figures in Table 4a. In the southern region (south of Townline 20) the trout held their abundance fairly well varying little from 10% of the total reported catch in each region. North of Townline 20 in the Lower Peninsula, the percentage stayed near 40% until 1932 when it dropped to 22.5%. In the Upper Peninsula the drop was more consistent, from a high of 83% in 1929



to a low of 42% in 1932. This means that the decreased yield of sport fishing in the Upper Peninsula has involved trout more than other fishes. For the entire state there is indicated a marked increase in abundance of trout as compared with all fishes caught, from 1927 to 1929, a moderate decrease in 1930 and 1931 and a marked decrease in 1932. These figures are of course relative, and may mean an increase in other species rather than a decrease in the trout yield. The catch per hour figures given later need also be considered in this connection.

The percentage ratios for BROOK TROUT follow those for trout as a whole, so the discussion just given applies to this one species. The BROWN TROUT constitute such a small percentage of the total catch of all fish in any region that these figures show little. Reference should be made to the discussion of relative abundance of the different species of trout in the total trout catch. RAINBOW TROUT showed a relative decrease from 1928 to 1931, a continued decrease in 1932 for the Lower Peninsula north of Townline 20, but an increase that year to about 3.5% of the total catch of all species in the other two regions and in the state as a whole.

SMALL-MOUTH BASS showed in general a slight decrease from 1928 to 1931 with an increase in 1932. LARGE-MOUTH BASS went down in relative abundance in both regions of the Lower Peninsula, but increased in the Upper Peninsula from 1930 to 1932, but this relative increase is due largely to the decrease in the trout yield.

The BLUEGILL percentage has remained fairly constant, though rising to a high point (45%) in 1930. This applies to the Lower Peninsula south of Townline 20, and to the entire state, for the catch is chiefly in that region.

The percentage catch of COMMON SUNFISH and ROCK BASS remained fairly constant through the five years, except for a large indicated increase in the proportion of BLACK CRAPPIES caught in 1932 in the Lower Peninsula south of Townline 20. This increase, however, was due to unrepresentative sampling, as more than half of the black crappies for this region in 1932 were reported from a single lake (Reeds Lake, Kent Co.), on which only two reports were made in the previous years.

PERCH were relatively more abundant south of Townline 20 in 1928 and 1929 than in 1930 to 1932, but increased after 1930 north of Townline 20 in the Lower Peninsula. In the Upper Peninsula a very marked increase in perch as compared with other fish caught took place from 1928 to 1932, the percentages of the total catch for these years being 5, 6, 17, 18.5 and 31.5. For the state as a whole the perch percentage dropped somewhat from 1928 to 1930, then increased to 23% of the total catch, a figure higher than for 1928. This increase in the perch catch may have been due to the heavy stocking of the interior waters by Great Lakes perch.

The WALLEYE percentages for any region never reached 10% of the total catch, and fluctuated widely. The percentage of NORTHERN PIKE in the three districts varied thus: in Lower Peninsula south of Townline 20 the figures fluctuated from 1.2% to 3.5%, being highest in 1929; in the Lower Peninsula north of Townline 20, from about 11 to 17% being high in 1930 and 1932; in the Upper Peninsula from about 3 to 7%, being high in 1930 and 1931.

The percentage of BULLHEADS taken in general showed an increase.

Other species seldom made up as much as 2% of the total catch, for any district, excepting smelt and suckers which occasionally made up from 2 to 7% of the catch (in 1931 only).

RELATIVE ABUNDANCE OF BROOK, BROWN AND RAINBOW TROUT (TABLES 5a AND  
5b, SUMMARIZED AS TABLE 6)

The reported catch for each of these three species of TROUT is expressed as a percentage of the catch of all three species in Table 5 (for counties) and Table 6 (for the three regions of the state).

The fluctuations in the figures for the separate counties are great, largely due to errors of chance for the counties having an insufficient report on trout fishing. These errors we believed are largely smoothed over when the county figures are summed first into the three regions (Lower Peninsula south of Townline 20, Lower Peninsula north of Townline 20, Upper Peninsula), and finally summed for

the whole state, as is done in Table 6.

BROOK TROUT south of Townline 20 increased slightly in relative numbers in 1929 and 1930, but then decreased to a low level in 1932, the percentage of the total trout catch in the region for the five years being about 71, 78, 78.5, 72 and 47. North of Townline 20 there was little fluctuation, though a slight drop in 1932 was indicated: the figures are 87, 88, 85, 89, 81. For the Upper Peninsula the percentages remained above 90, varying over the five years as follows: 91, 96, 97, 97, 91.5. For the state as a whole the percentage was low (though not very reliable); in 1927 (76), and varied over the years 1928 to 1932 thus: 85, 89.5, 89, 90, 77. The decrease in relative abundance of brook trout as compared with other trout was due to the relative increase in the catch of browns and rainbows.

BROWN TROUT showed a marked increase in numbers relative to all trout in 1931 and 1932, in the Lower Peninsula south of Townline 20; for the five years the percentages run 7, 1.5, 3, 12 and 14. In the Lower Peninsula, north of Townline 20 there was an uneven fluctuation, from 1.6% (1929) to 3.5% (1932); for 1930 the figure is 3.2%. In the Upper Peninsula the percentage dropped from only 1.0 in 1928 to 0.1 in 1931 and 1932. For the state as a whole there is indicated a drop in relative abundance of brown trout from 4.7% in 1927 to 1.2% in 1929; then a rise to 4.6% in 1932. The 1927 figures are based on too few records to be very trustworthy.

RAINBOW TROUT in their relative abundance in some respects paralleled the brown trout. South of Townline 20, there was a decrease from 22.5% in 1928 to 15.5% in 1931, followed <sup>W</sup> however by a sharp rise in 1932 to 39%. North of Townline 20 in the Lower Peninsula, the percentage fluctuated from 9.5% to 12% during the period of 1928-1931 but stood at nearly 16% in 1932. In the Upper Peninsula the percentage of rainbows dropped from nearly 8 in 1928 to below 3 in 1931, but rebounded to 8.5% in 1932. In the entire state the percentage of rainbow trout among

all trout dropped from 19.5 in 1927 to below 8 in 1931, but leaped to 18 in 1932.

It would seem, despite irregularities in the data, that brown and rainbow trout increased in relative numbers as compared with the brook trout over the five year period from 1928 to 1932. This does not necessarily mean a driving out of brook trout, for the brown and rainbow trout may have in part at least, adopted waters none too suitable to brook trout.

#### THE RELATIVE ABUNDANCE OF WARM-WATER FISHES

Tables 7 to 9 indicate the relative abundance of the various WARM-WATER FISHES. These figures represent the percentage of the total reported catch in non-trout waters, for each region and also for the entire state, which is constituted by the reported catch of each species or groupings of species. Tables 7a and 7b give the data by the three regions of the state and by the entire state, by years from 1928 to 1932. Tables 8a to 8d give the data by counties for the whole five-year period, while Tables 9a and 9b give the data for the bluegill by counties and years. The figures for each species by counties and year show too much fluctuation (caused by meager data) to warrant the tabulation now of other species by counties and years.

The data presented in Table 7a will be first discussed, as this is the most significant tabulation.

SMALL-MOUTH BASS on the grand average for the whole state constituted but 2% of the fish catch in non-trout waters. For the state as a whole there seemed to be a peak of relative abundance in 1929 and 1932. There seems to have been a marked downward trend in the percentage of small-mouths in the Upper Peninsula (from 7.2% in 1928 to 1.4% in 1931 and 2.1% in 1932, but the data are too meager to be very reliable. Possibly the bass tapeworm which seems to be so serious in the Upper Peninsula lakes is responsible for the decrease in the catch in that region.

The LARGE-MOUTH BASS has apparently decreased in relative abundance south of Townline 20, where it is relatively most abundant; the five year percentage figures

are 5.0, 6.4, 5.3, 3.6 and 3.3. In the Lower Peninsula north of Townline 20 an even more marked decrease is indicated: 3.3, 3.1, 1.6, 0.6 and 0.6. For the Upper Peninsula the figures (based on VERY few fish) fluctuate. For the state as a whole the relative abundance of large-mouth bass in the catch from the non-trout waters was 4.6, 5.1, 3.9, 2.6 and 2.6.

The BLUEGILLS have maintained their relative abundance very well. In the Lower Peninsula south of Townline 20 the percentages have been about 40, 38, 49, 42 and 39 over the five year period. The apparent drop in 1932 was caused by the huge record of crappies from Reeds Lake, Kent County which made up nearly one-twelfth of the total reported catch of fish in all non-trout waters south of Townline 20 that year. Bluegills have shown no significant decrease in relative abundance over the five year period in waters south of Townline 20. In 1931 the bluegill percentage in the Lower Peninsula north of Townline 20 showed a great slump, for reasons not analyzed, but returned in 1932 nearly to the five year average. For the entire state the percentage has remained relatively constant, being highest in 1930 (35%) and lowest in 1931 (25%). The detailed figures for the bluegill by counties are reported in Tables 9a and 9b.

Returning to Table 7a we note that the SUNFISH showed in general a tendency to decrease in relative abundance from 1928 to 1932. The ROCK BASS increased to a high peak from 1928 to 1929, then decreased to 1931 and rose again in 1932. This proves to have been a common tendency.

The figures for the BLACK CRAPPIE fluctuate tremendously. The rise in 1932 to 13%, for the Lower Peninsula south of Townline 20, as already explained, was due almost entirely to frequent reports for 1932 of huge catches in a single lake.

The PERCH figures are interesting. In the Lower Peninsula south of Townline 20, perch made up about 29% of the catch in non-trout waters in 1928 and 1929, but only 18 to 21% annually from 1930 to 1932. In the Lower Peninsula north of Townline 20 there has been in contrast an increase in the percentage: 24, 27, 22, 44 and 38. In the Upper Peninsula the perch have apparently fared even better, for the reports indicate the percentage of that species there to have increased from 19% in 1928

through 33%, 52.5% and 48% to 54.5% in 1932. Possibly this increase in perch to the north has been caused by the increased plants of Great Lakes fingerling perch which have been poured into these lakes. A comparison of the yield from the stocked versus the unstocked lakes as a whole would be very instructive in testing this point.

The WALLEYE constituted 1% or less of the annual catch south of Townline 20. A tendency to decrease from 1928 to 1930 or 1931 with a considerable recovery in 1932 marks both of the northern regions, and consequently the figures for the entire state show the same trend, for the walleye is essentially <sup>a</sup> northern fish in Michigan. In the Upper Peninsula the decreased walleye yield from 1928 to 1930 was very marked, from about 36% to 5%.

The NORTHERN PIKE has shown in general an increase to 1929 or 1930, then a decrease to 1932. In that year a partial recovery was indicated in the Lower Peninsula north of Townline 20, because of the increased pike catch in Houghton Lake that year.

BULLHEADS have with some irregularities increased in relative abundance over the five year period, in 1932 approaching 10% of the total catch in non-trout waters (except in the Upper Peninsula).

Adding together the catch of the four most important of the LARGER GAME FISHES in non-trout waters (small-mouth and large-mouth bass, walleyes and northern pike) gives figures which show the trend of this major type of fishing (from a sport standpoint). These are relatively far more important in northern Michigan than they are south of Townline 20. In that region these fishes together made up nearly 13% of the total catch in non-trout waters in 1929, but this value fell to less than 7% in 1932. In the Lower Peninsula north of Townline 20 the percentages were much higher every year, changing thus: 40, 41, 39, 23, 33. In the Upper Peninsula this percentage of larger game fish showed a marked decrease: 60.5, 44, 30.5, 27, 24. The decrease was of course relatively, largely attributed to the increased catch of perch. This decrease in the relative abundance of the

larger fishes in the Upper Peninsula influences a decrease in the values for the entire state, from a peak more than 24% in 1929 to a low of less than 15% in 1932.

The five major PAN FISHES in contrast constituted about 80% of the total catch in non-trout waters in southern Michigan, below Townline 20. These include the bluegill, which dominates the group, the common sunfish, rock bass, black crappie and perch, added together. Bullheads, smelts and ciscoes are excluded; other species coming under the term "pan-fish" are caught in immaterial numbers. The figures for the southern region fluctuate little, from 84% in 1928 to 77% in 1931, and back to 81% in 1932. For the Lower Peninsula north of Townline 20 the fluctuation was also slight, the low being 53% in 1930 and the high point 58% in 1932. In the Upper Peninsula there has been an irregular increase in the proportionate number of panfishes as reported, the figures for the five years, heavily influenced by the perch catch, being: 30, 44, 62, 50, 60. For the state as a whole the percentage has fluctuated little from 70%,—from a low of 67.5% in 1931 to a high of 73% in 1928.

The RATIO OF PAN-FISHES TO GAME-FISHES is of interest in that it shows the great preponderance of pan-fishes in the total catch for non-trout waters for the southern part of the state only. For this region the five pan-fishes outnumbered the four larger game fishes 8.9 to 1. This ratio was lowest in 1929 (6.4) and highest in 1932 (12.1), but the last figure is influenced by the abnormally high crappie report from Reeds Lake, already mentioned. The true ratio of pan-fishes to larger game fishes in southern Michigan is probably about 8 to 1. In the ~~true~~ two northern regions only about 1.7 pan-fish were reported for each of the larger game-fish, and the highest ratio for any year in either region was 2.5. This difference in relative abundance of pan-fishes and game-fishes in the southern and northern parts of the state would seem to be a basic factor to be considered in sport-fish management.

Other species are taken in too small numbers to warrant comment.

The relative abundance of the warm-water fishes is given for counties in Tables 8a to 8d, on the same basis of percentage of the total catch of all species in non-

trout waters. These tables contain much information of value and local interest, though marred by many fluctuations due to insufficient or unrepresentative sampling. Such fluctuations are largely smoothed over when the counties are combined by regions, as has been done in Tables 7a and 7b, discussed above.

As stated above, Tables 9a and 9b give the detailed figures for the relative abundance of bluegills, expressed as the percentage of the total catch of all species in non-trout waters, for each county and for each year from 1928 to 1932. This information may be of value in working out the stocking budget.

#### CATCH PER HOUR

The best statistical index of the trend of sport fishing in the state is the CATCH PER HOUR of fishing. This gives, in fishery science parlance, the "yield per unit of effort". For trout fishing this is most accurate, because only three species are involved and the same type of fishing takes all three species. For fishing in non-trout waters, the index is not so definite nor accurate, because very different types of fishing are combined. Since all of the perhour records of fishing in non-trout waters are combined, no distinction is made, say, between trolling for bass or still-fishing for bluegills. Theoretically the catch per hour of fishing with each type of bait should be separately computed, but this has not yet been done, for the following reasons: (1) as it is, the records per county and year are none to extensive to give reliable averages; if the data were divided, the figures would be subject to still greater fictitious fluctuations due to chance; (2) very many entries fail to specify type of bait used; (3) many other entries combine different types of bait, such as "spinners and worms", on one card; (4) the more involved tabulation would have consumed weeks of additional effort. Despite these difficulties and drawbacks, it is planned to make later the computations of catch per hour with different types of bait. Since our summary cards for each lake and stream carry the information the tabulations will be facilitated. While the data will be too scattered and limited to indicate



accurately the catch per hour for each species in each county each year, the errors ought to be sufficiently compensating to yield fairly reliable figures for various combinations of species, counties or years. When the data can be worked on the card-punching and sorting system, the additional computations would not involve great difficulties.

The fish catch perhour by counties and years is given in Tables 10a and 10b for all species; in Tables 11a and 11b for trout and in Tables 12a and 12b for various species in non-trout waters. Examinations of these figures will show fair consistency from year to year, for the figures based on any considerable number of reported hours of fishing. The trends of fishing for each county over the five year period 1928 to 1932, as indicated by these catch per hour computations, were as follows:

ALCONA COUNTY: Average trout fishing was reported (1.15 per hour) for 1928 to 1931 (no data for 1932), with no significant indication of fluctuation or trend. The very few lake fishing returns (for 1928 to 1930 only) suggest a somewhat higher catch per hour (1.5), but the average is not reliable.

ALGER COUNTY: Approximately one trout per hour was the average fisherman's luck in Alger County. The yearly figures are about 1.7 for 1928, and 1.1, 0.8, 1.4 and 1.1 for subsequent years. Warm-water fishing showed more variation over the same period: 0.4, 0.6, 0.6, 0.7 and 2.0 per hour. ~~The apparent variation over the same period.~~ The apparent increase in 1932 to nearly 2.0 fish per hour was probably fortuitous, being due chiefly to some large bullhead catches reported for that year.

ALLEGAN COUNTY: The catch of lake fish over the five year period varied little from 1.5 per hour (except for 1929 when inadequate returns gave an average of only 0.6 per hour). The limited trout catch was at the rate of one fish per two hours.

ALPENA COUNTY: Very limited records for warm-water fishes (none at all for 1931 and 1932) indicate, unreliably, a catch of about 1.3 fish per hour. The trout catch was under one-half fish per hour, on the basis of returns almost entirely restricted to 1930.

ANTRIM COUNTY: The trout catch per hour fluctuated over the 5 years from 1.1 to 1.7, being best in 1929 and 1932. The catch of other species dropped off from 1929 to 1931 at the following rate: 1.0, 0.7 and 0.4. The figures for 1928 and 1932 are higher but are based on too few records to be significant.

ARENAC COUNTY: Inadequate returns indicate a catch of 3.8 fish per hour in non-trout waters (this figure untrustworthy) and of 0.8 fish per hour in trout waters (this figure of fair reliability for the whole period).

BARAGA COUNTY: Trout fishing, rather well recorded, was best in 1929, fell to a low point in 1930, but recovered particularly in 1931 and 1932. The catch per hour shifted as follows: 1.4, 1.8, 0.5, 1.0 and 1.1. Lake fishing was relatively poor, as indicated by scattering returns, the catch being little in excess of one fish in three hours angling.

BARRY COUNTY: The lake fish catch per hour varied as follows from 1928 to 1932: 1.2, 1.5, 1.9, 1.5, 1.8, suggesting a slight upward trend. The restricted trout catch gave an average of one fish per hour.

BAY COUNTY: The very few returns, for 1930 only, give an unreliable average of one-third of a fish per hour's fishing.

BENZIE COUNTY: The lake fish catch per hour was above the average for the region, the annual figures for the 1928-1932 period being about: 0.8, 1.0, 0.95, 1.4 and 1.1. The high figure for 1931 (1.4 per hour) was caused by the inclusion of an especially large number of reports on angling for smelt. The trout fishing ran about average, and was apparently bettered slightly over the five years. The catch per hour figures being about: 1.0, 0.8, 0.9, 1.1 and 1.1.

BERRIEN COUNTY: The best fishing for the five year period was 1929, when 1.7 fish per hour (all species) were caught. There followed a steady decline to less than 0.9 fish per hour in 1932. The trout fishing formed a relatively inconsequential part of the whole.

BRANCH COUNTY: Adequate data for this county (all for fishes other than trout), show a slight decline in the yield per hour in 1929, but a marked increase since. The figures for the 5 years are approximately 2.0, 1.6, 1.9, 2.9 and 3.2. This gratifying increase in catch may reflect the fish rearing activities in this county.

CALHOUN COUNTY: No definite trend in the fish catch per hour is indicated. The catch per hour over the five years fluctuated from 1.3 to 1.9, reaching higher figure in 1929 and 1932. The trout returns were few, but averaged about the same (1.5 per hour) as the lake fish.

CASS COUNTY: The catch per hour for all species dropped from 1.6 in 1928 to 1.1 in 1929 and 1930. The trout catch followed the same decline as the warm-water fishes. The data for 1931 and 1932 are too limited to give reliable figures.

CHARLEVOIX COUNTY: Lake fish furnished relatively good fishing in this county, averaging about 2.0 per hour over the five years. A low catch of less than 1.5 per hour marked 1930; about 1.6 per hour were caught in 1928 and 1929; in 1931, 2.9 per hour were reported, and in 1932, 4.5 per hour but on the basis of too few cards. The trout yield was 1.1 per hour, with fluctuations that hardly seem significant in view of limited returns.

CHEBOYGAN COUNTY: Trout fishing averaged rather poor, being below the regional average each year except in 1931. The five year figures for per hour catch are about: 0.8, 0.7, 0.7, 1.3 and 0.6 in 1932. Lake fishing seemed to show a slight decline, the per hour figures being 0.9, 0.8, 0.7, 0.8 and 0.6

CHIPPEWA COUNTY: Trout were caught at a somewhat higher rate per hour than for upper Michigan as a whole, the five year (1928-1932) figures being about: 1.6, 1.3, 1.8, 1.0 and 1.5. The few returns on lake fish suggest an even heavier catch, 2.8 per hour.

CLARE COUNTY: Lake fishing was below average, the catch being about 0.5 per hour in 1929 and 0.8 per hour in 1930 (data good); perhaps better in 1928 and 1932 (1.7 and 2.5 per hour on the basis of very limited data). Trout fishing improved: 0.7 per hour in 1929, 1.0 per hour in 1930 and 2.8 per hour in 1932 (data for 1928 and 1931 limited).

CLINTON COUNTY: The best fishing indicated for any year of the five was in 1932, when 2.1 fish per hour were caught. For 1931 the per hour catch is indicated to have been about 1.1; in 1930, 1.3; in the previous years, much less, but on the basis of inadequate figures. No trout were included.

CRAWFORD COUNTY: The trout catch per hour fell off badly from 1928 to 1931, the figures being about: 1.0, 0.8, 0.8 and 0.4. The few returns for 1932 indicated better fishing, but were too few to be trustworthy. The warm-water fish catch averaged poor, but fluctuated widely, the per hour figures being about: 0.6, 0.4, 0.9, 0.25 and 0.6.

DELTA COUNTY: On the average 1.2 warm-water fish were caught per hour during the 1928-1932 interval. The figures are too few to give accurate averages for each year. The trout catch per hour was the same over the whole period, but has apparently declined since 1929. The yearly figures for trout caught per hour are about: 0.8, 1.7, 1.3, 1.3 and 0.9.

DICKINSON COUNTY: Trout, as reported, were caught at the following rates per hour over the period from 1928 to 1932: 0.6, 1.3, 0.5, 0.7 and 0.7. Other fishes were taken at about 0.9 per hour, according to limited figures, including none for 1932.

EATON COUNTY: Rather good figures indicate an up and down fluctuation in the per hour catch from 0.6 to 1.4, without evident trend; 1929 and 1931 were poor years; the others were average. No trout were included.

EMMET COUNTY: The trout catch was relatively fair, averaging over the 1928-1932 period about as follows: 1.1, 2.0, 1.9, 1.3 and 1.8,—thus showing no clear trend. The lake fish catch fluctuated thus: 0.9, 1.9, (no returns for 1930), 0.9 and 1.1.

GENESEE COUNTY: The poorest fishing over the five years, as indicated, was in 1929, when 1.4 fish per hour were caught, about the average for southern Michigan. In other years this index figure fluctuated irregularly from 1.8 (1930) to 2.8 (1931) without indicating a trend up or down. Ice fishing records in 1931 were too few to lower the general average materially. No trout were reported.

GLADWIN COUNTY: Fishing was none too successful. For non-trout waters adequate data are available for 1929, 1930 and 1932, when the catch was about 0.2, 0.2, 0.3 and 0.9 fish per hour. The trout catch averaged the same, slightly less than one fish per two hours angling.

GOGEBIC COUNTY: Trout were caught at the rate of about one per hour, with little variation from 1928 to 1932. Other fish, with emphasis on pike and walleyes, were taken on the average at 0.6 per hour, the yield rising to a maximum of 1.2 per hour in 1930, and decreasing since, to 0.5 per hour in 1931 on the basis of

good data and to 0.3 per hour in 1932 on the basis of very limited data.

GRAND TRAVERSE COUNTY: Fishing showed an irregular downward trend over the five years. The warm-water fish catch was about 0.9 per hour in 1928 and 1929 but dropped to about 0.5 in the three following years, ~~reaching a low of 0.3 in the three following years~~, reaching a low of 0.3 in 1931. The trout catch was also below average, highest at 0.8 per hour in 1928 and lowest in 1931 (one trout in three hours angling). The 1929, 1930 and 1932 yield was about one fish per hour and a half).

GRATIOT COUNTY: Very inadequate returns (none for trout) suggest without much reliability a very low average per hour catch in this county—only one fish for five hours angling.

HILLSDALE COUNTY: The figures for this county almost exactly parallel those for Branch County: 1.1, 0.8, 1.6, 2.4 and 5.3. The high figure for 1932, however, is entirely unreliable. Trout fishing hardly entered into the calculations. Here again a local fish rearing project may be reflected in the increased catch.

HOUGHTON COUNTY: Relatively satisfactory data indicate that the trout fishing grew worse from 1928 to 1930, then began to recover. The catches per hour were about: 1.4, 1.1, 0.6, 0.75 and 1.0. For lake fish the catch per hour fluctuated thus: 0.5, 1.3, 0.6, 0.6 and 0.85.

HURON COUNTY: Few returns, for 1929 and 1930 only, indicate (unreliably) that nearly two hours are required on the average to catch one fish.

INGHAM COUNTY: The returns for this county were very poor: none for 1928 and 1929, and inadequate for 1931 and 1932. The 1930 catch was half a fish per hour, but the grand average for 1930 to 1932 was nearly 0.9 per hour.

IONIA COUNTY: The returns, lacking for 1928, inadequate for 1929 and 1930 and none to numerous for 1931 and 1932, indicate about average fishing for the region: warm-water fish, 1.3 per hour; trout, 0.9 per hour. The data are not complete enough to indicate if there was a trend up or down. No trout were reported.

IOSCO COUNTY: Trout fishing fluctuated without showing a definite trend, the per hour catch over the five years being about: 1.0, 1.65, 0.9, 1.1 and 1.4. Lake fishing was about average for the region, 0.8 fish per hour being the catch. The returns for warm-water fish, however, were adequate only for 1930.

IRON COUNTY: Trout fishing was relatively good in this county, the per hour figures from 1929 to 1932 being about: 1.8, 1.3, 1.5 and 1.4. Warm-water fishing was nearly up to the Upper Peninsula average in 1931 (0.8 per hour) and in 1932 (1.0 per hour), the only years when any considerable returns were made.

ISABELLA COUNTY: Few and scattering returns for trout indicate a fair catch of 1.6 per hour. The only data for non-trout waters was for 1929 and 1930, when two-thirds of a fish and a fish and a half per hour, respectively, was the indicated yield.

ISLE ROYAL: Relatively virgin fishing did not prove good, in compiling the returns for fishing on Isle Royal. The trout catch per hour was only 0.6 per hour in 1931 and 0.7 per hour in 1932. Previous returns were inadequate.

JACKSON COUNTY: A slight increase in the catch per hour took place from 1928 to 1930 (1.1, 1.2, 1.9), with a drop to 1.0 in 1931. This was largely an apparent drop, having been affected by the special census that year of ice fishing, which yielded very few fish. The returns for 1932 were insignificant. The few trout reported for 1931 did not modify the average.

KALAMAZOO COUNTY: The per hour catch for all species fluctuated from 0.6 to 1.4, with a general trend toward better fishing (about 1.4 fish per hour in 1930 and 1932). The reported trout catch, averaging 0.9 per hour) was not sufficient to modify the trend.

KALKASKA COUNTY: The trout catch declined from 1.2 per hour in 1928 to 0.8 per hour in 1930, but increased to 1.1 per hour in 1931. 1932 records were insufficient. Warm-water fish were caught at the rate of 1.2 per hour in 1928, 0.7 per hour in 1929 and 0.8 per hour in 1930. The figures for 1931 and 1932 are much higher, but are based on too few records to be reliable.

KENT COUNTY: The catch per hour of warm-water fish has apparently been above the average in this county, varying over the five years about as follows: 1.7, 1.4, 2.2, 1.6 and 5.6. The high value for 1932 is unduly weighted by large catches of black crappie reported for Reeds Lake. The not inconsiderable trout catch varied thus: 0.5, 0.9, 0.6, 1.5 and 3.0 trout per hour,—indicating a decided upward trend.

KEWEENAW COUNTY (excluding Isle Royal): Fair records indicate rather poor trout fishing over the five year period: 0.6, 0.7, 0.6, 0.6 and 0.4 trout per hour being the annual averages. Warm-water fish were taken even less rapidly, less than one fish in two hours being the five-year average.

LAKE COUNTY: Lake fishing was distinctly better than average, the catch being about 2.1 fish per hour. A high average of 3.55 was enjoyed in 1932, while only 1.3 per hour was caught in 1928 (for intervening years the data are too limited to give trustworthy averages). Trout fishing was just about average, 1.2 per hour, with no great trend or fluctuation evident.

LAPEER COUNTY: The data for warm-water species, adequate only for 1929 to 1931, yielded average catches per hour for these years of about 1.5, 2.1 and 1.3. The trout catch on very limited data is indicated as fair (1.7 per hour).

LEELANAU COUNTY: Fishes other than trout were caught at the following rates over the 1928-1932 period: 0.8, 1.1, 1.3, 1.4 and 1.1,—better than the average for the region. The trout catch averaged just about one fish per hour, with no indication of a trend up or down.

LENAWEE COUNTY: Good figures (for species other than trout only) show some up-and-down fluctuation about a mean catch of one and a third fish per hour, without any evident trend. The value for 1931 was only 0.95, lower than for the other four years (1.4 to 1.7). This figure for 1931 was low because a special census was made that year of ice fishing, which yielded very few fish.

LIVINGSTON COUNTY: Very good fishing (2.4 fish per hour) was enjoyed in 1928, according to the figures, while since then the take has shifted between 1.1 and 1.6 per hour. The lowest figure (1.1 fish per hour) was for 1931, when a special census was made of ice fishing which yielded very few fish. The trout catch as reported was insignificant.

LUCE COUNTY: Trout fishing seems to have gone down from 1930 to 1932, 1.75, 1.1 and 0.1 trout per hour being the figures. These were based, however, on too limited data for much reliance. The very few cards on lake fishing turned in give an unreliable average of only 0.4 fish per hour.

**MACKINAC COUNTY:** Fishing was relatively good, as measured by the computed catch per hour. Trout catches averaged 1.8 per hour, and varied from 1.6 to 2.1, for the years (1929-1931) for which more than 100 hours of fishing were reported. The catch per hour of warm water fish fluctuated from 1.3 to 3.5 per hour, depending chiefly on the ups and downs of perch fishing.

**MACOMB COUNTY:** The only returns for 1930, based on rather few reported hours, indicate without any great accuracy a trout catch of one fish per hour and a half, and of one warm water fish in about four hours of fishing.

**MANISTEE COUNTY:** Good returns for both trout and lake fish indicate fishing somewhat better than the average for northern Michigan. The trout yield showed a slight increase over the five years, the catch per hour being about: 1.1, 1.3, 1.1, 1.5, 1.5. Success in angling for fish other than trout apparently declined somewhat, especially in 1932, the figures being about: 1.4, 1.15, 1.15, 1.3, 0.9.

**MARQUETTE COUNTY:** Fair to good figures indicate nearly average trout fishing, the catch per hour computations from 1928 to 1932 being rather uniform: 1.1, 0.8, 1.0, 0.8 and 0.8. Warm-water fishes were taken at the rate of just 1.0 per hour; slightly more (1.2 per hour) for 1932, for which the best data are available.

**MASON COUNTY:** Fishing was somewhat better than the average for south of Townline 20, the non-trout catch averaging about 2.0 per hour and the trout catch 1.5 per hour. The rather limited figures indicate no significant trend over the 1928-1932 period.

**MECOSTA COUNTY:** The computations indicate relatively good fishing in this county. The trout yield fluctuated from 2.1 to 3.4 per hour (grand average 2.6) without any clear trend. The non-trout fishing also ran good, 1.6 to 3.1 per hour (average 2.1).

**MENOMINEE COUNTY:** Warm-water fish were caught in increasing numbers per hour over the five years, the figures being about 0.65, 1.1, 1.2, 1.6, and 2.15. The increase was due almost entirely to increased catches of perch, which in this county constituted 57% of the total fish catch over the five years. The trout catch per hour was consistently poor, averaging only one fish for two hours angling, on the basis of figures too limited to indicate reliably whether there has been a trend for better or worse.

**MIDLAND COUNTY:** Inadequate returns indicate a poor yield, averaging only one fish per two hours for non-trout waters (though nearly 1.5 per hour in 1932). No trout were caught in 101 hours of fishing reported (for 1929 only).

**MISSAUKEE COUNTY:** Both types of fishing showed a marked decline from 1928 to 1931. The catch per hour figures for lake fish over this period was about: 2.0, 1.2, 0.7 and 0.4. The figures for trout were about: 1.2, 1.4, 0.95, 0.7. The figures for 1932 suggest a possible recovery (1.9 per hour for warm-water fish and 1.0 per hour for trout), but are based on too limited data to be reliable.

**MONROE COUNTY:** The average hourly catch reached a peak of about 3.0 in 1929, followed by a low of 1.0 in 1930 and a partial recovery to 1.6 in 1931 and 1932. No trout figures are included.

**MONTCALM COUNTY:** For non-trout waters very good fishing was indicated for 1928 (4.4 per hour) but the figure is uncertain; the catch was only 0.6 per hour in 1930, and about 1.3 per hour in 1931; for the five years it averaged nearly 1.5 per hour. The trout catch was about 1.0 per hour, with too limited data to indicate trend.

MONTMORENCY COUNTY: Trout fishing was better than average for the region (about 1.6 trout per hour) over the five years. Fluctuations in the figures were probably largely caused by deficient data, especially for 1931 and 1932. Warm-water fish, on the basis of entirely insufficient returns, were caught at the rate of 0.9 per hour.

MUSKEGON COUNTY: The catch as reported for the 5 years is slightly above the average (1.7 per hour, all species). For non-trout waters a decline is apparent, for the computed yield was about 4 fish per hour in 1928 and 1929 and only about one per hour since. The trout catch averaged about 1.0 per hour, with returns too limited to indicate any trend.

NEWAYGO COUNTY: Fishing for fish other than trout was about average. The yield fluctuated, with a probable downward trend. The catch per hour for the five years was about: 1.2, 2.7, 1.2, 0.75 and 1.1. The trout catch increased somewhat from 1928 to 1930, then decreased to 1932: 1.1, 1.2, 1.5, 1.1, 0.8.

OAKLAND COUNTY: The catch of warm-water fish in this county fluctuated widely between a low of 0.35 per hour in 1931 and a peak of 2.5 in 1932 (except for 3.6 in 1929 when the data were inadequate). The very poor figure for 1931 does not mean a real decrease in the fishing yield that year, because it was influenced by the special census of ice fishing, which yielded very few fish. No trout were included.

OCEANA COUNTY: Limited data suggest a moderate bettering of the fishing in non-trout waters over the five years, for which the computed catch per hour was about: 1.3, 1.2, 1.8, 1.8 and 2.1. The trout yield ran about average (1.3 per hour), with too few figures to indicate a trend.

OGEMAW COUNTY: Lake fishing was better in 1928 and 1929 (catch per hour respectively 1.3 and 1.0) than in 1930 and 1931 (0.8 fish per hour). Trout fishing declined steadily over these four years, as follows: 1.6, 1.5, 1.0 and 0.8 trout per hour. Returns for 1932 were inconsequential.

ONTONAGON COUNTY: Trout fishing was relatively good over the five years, except in 1932, the catch per hour over this term of years being 1.2 (unreliable), 1.5, 3.3 (unreliable), 2.0 and 0.6. The few returns for other species indicate a poor average catch of one-half fish per hour.

OSCEOLA COUNTY: The lake fishing averaged poor (0.7 fish per hour) but fluctuated widely, rising to above 2.3 per hour in 1929 and 1932 and dropping to 0.7, 0.5 and 0.4 per hour in 1928, 1930 and 1931. The trout catch averaged low, about 0.5 per hour, not rising above 1.0 per hour in any year.

OSCODA COUNTY: The fish catch averaged 0.8 per hour for trout and 0.7 per hour for lake fish. The returns were too few since 1929 to indicate whether any trend for better or worse was involved.

OTSEGO COUNTY: Trout fishing was a little better than the average for northern Michigan. It was best in 1929, poorest in 1932, but the fluctuations were not great. The per hour figures are: 1.35, 1.6, 1.4, 1.5 and 1.1. Lake fish were caught at the rate of about one per hour in 1928 and of 1.3 or 1.4 per hour in 1929 and 1930, when few returns were made. The more extensive data for 1931 indicated a very poor yield of only one fish per ten hours—but this low figure is due to the circumstance that the reports for 1931 were based very largely on ice fishing, which yielded very few fish.

OTTAWA COUNTY: The data are meager, entirely lacking for 1928 and 1931. About an average catch was indicated for 1929 and 1930, but a good catch (3.0 per hour) for 1932. No trout were included.

PRESQUE ISLE COUNTY: The limited data suggest good fishing in this county (2.5 warm-water fish per hour, and 1.6 trout per hour). The figures are near the lower limit of reliability, however, and are too few to indicate whether there has been a trend up or down.

ROSCOMMON COUNTY: The data for this county essentially apply to Houghton Lake, for which by all means the finest creel census returns were turned in—thanks to the diligence of Conservation Officer Thomas White. Between 7000 and 13000 individual records per year indicate a remarkably uniform average catch per hour from 1928 to 1931: 0.26 in 1928, 0.28 in 1929, 0.27 in 1930 and 0.25 in 1931. While this represents an average of only one fish in nearly four hours fishing, the fish caught were predominately northern pike. The catch per hour increased abruptly to 0.55 in 1932, but this was due to an increase in the perch yield, which this year about equaled the pike yield. The pike catch showed only a slight increase. In 1931 the pike catch was down, but the yield of perch was already sufficiently on the increase to prevent any marked drop in the total catch per hour. A separate report on fishing in Houghton Lake will be made. Trout fishing as reported for Houghton County was below par, yielding an average of only 0.7 fish per hour over the five years. For 1929 the yield was 1.1 per hour, but since then has been below 0.5 per hour.

SAGINAW COUNTY: No reports were received for this county.

SANILAC COUNTY: A very high average catch is indicated (14.4 fish per hour), but the reports were for 1928 only and were based almost entirely on perch fishing.

SCHOOLCRAFT COUNTY: The per hour catch from 1928 to 1932 was about 1.5 for trout and 1.2 for other kinds. The records are too limited to show whether the yearly fluctuations from this mean are significant.

SHIAWASSEE COUNTY: The figures, based entirely on non-trout waters, and approaching adequacy only for 1928, 1930 and 1931, suggest a marked upward trend: the indicated per hour catch for these years was 0.7, 1.9 and 2.3. The five-year average was 1.5.

ST. CLAIR COUNTY: For 1929 to 1932 the catch per hour figures vary widely: 2.7, 0.8, 1.4, 6.5. The jump in 1932 was due to more reports on perch fishing in St. Clair River and apparently to better perch fishing that year than formerly. No trout figures were included.

ST. JOSEPH COUNTY: The fishing was very good in 1928 (2.55 per hour, all species), but declined sharply to about 1.5 per hour in 1929, partially recovering to 1.9 per hour in 1930. Later figures are unreliable. Practically no trout fishing was included.

TUSCOLA COUNTY: A very fluctuating catch per hour (for warm-water fish only) is indicated: lowest in 1930 (0.4 fish per hour), highest in 1929 (1.9 per hour); about average for the general region in 1932 (1.3 per hour). No definite trend appears.

VAN BUREN COUNTY: The best fishing, in 1929, yielded 2.4 fish per hour. In 1930 and 1931 (no returns for 1932) about an average catch was recorded (1.4 and 1.5 per hour). The reported trout catch of about half a fish per hour was too limited to modify the total figures.



WASHTENAW COUNTY: The catch per hour as reported for this county is very variable, but seems to indicate a downward trend over the 1928 to 1932 period (1.7, 1.8, 1.3, 0.6, 1.3). The average catch per hour indicated for 1931 was lowered because a special census was taken then of ice fishing, which yielded very few fish. No trout were reported.

WAYNE COUNTY: The take per hour declined from 0.9 in 1928 to less than 0.6 in 1932, except for a rise to 1.1 in 1931. The data are extensive and uniform, as about 2000 to 2500 hours fishing was reported each year. No trout were mentioned.

WEXFORD COUNTY: Only fair data indicates lake fishing somewhat below the average for northern Michigan, and trout fishing just average. The five year figures in terms of catch per hour are about 0.5, 1.7 (unreliable), 0.4, 0.2 and 1.0 for lake fish, and 1.2, 1.7, 1.1, 0.2 and 1.3 for trout. No definite trend is apparent, but fishing was better in 1932 than over the five years as a whole.

BLUEGILL CATCH PER HOUR BY COUNTIES.—The catch per hour of BLUEGILLS by counties and by years is indicated in Tables 13a and 13b. The figures there given show very clearly how the bluegill catch dies out toward the north, and also along the Lake Erie—Lake Huron lowland. For the southern counties the total catch of warm-water fishes per hour is closely paralleled by the bluegill catch. In fact, the bluegill catch is there the dominant factor in the total catch. The increased catch in Branch and Hillsdale counties, which was perhaps the consequence of local fish-rearing projects, was largely due to the greater number of bluegills caught per hour. The lowering of the catch per hour computations for 1931 for certain counties, on account of the inclusion of many ice fishing records, notably involves the bluegill catch.

#### SUMMARY OF CATCH PER HOUR COMPUTATIONS

Tables 14a and 14b, which combine the CATCH PER HOUR computations into three regions of the state, give the best available picture of the trend of the sport fishery of the state over the five year period from 1928 to 1932. These tables also show the grand averages for the state as a whole for the same period, and the average catch per hour for all species in 1927 as well. The three regions by which the data are summarized are: (1) Lower Peninsula south of Townline 20; (2) Lower Peninsula north of Townline 20, and (3) Upper Peninsula.

ALL SPECIES.—The general trend of all sport fishing in all waters was the same in all three regions of the state. There was a decline in the catch per hour from 1927 to 1930 or 1931, with a recovery in 1932 to a level higher than that enjoyed in either 1927 or 1928. The average per hour catch south of Townline 20 for the five year period 1928 to 1932 varied as follows: 1.53, 1.21, 1.17, 1.16 and 1.69 fish per hour, with a grand average of 1.33 for the region. For the Lower Peninsula north of Townline 20 the per hour catch fluctuated thus over the same period: 0.78, 0.75, 0.65, 0.71 and 0.80, with a grand average of 0.72. These figures for the northern part of the Lower Peninsula are unduly low, because overweighted by the very heavy returns for Houghton where relatively few (but large) fish are caught per hour. For the Upper Peninsula the total fish catch of all species per hour increased from 1.01 in 1928 to 1.15 in 1929, then dropped to 0.92 in 1930, recovering to 0.97 in 1931 and 1.17 in 1932; grand average, 1.02. For the state as a whole the figures, beginning with 1927 and ending with 1932 show the trend of the fishing as measured in fish caught per hour of angling to be as follows: 1.15, 1.09, 0.96, 0.88, 0.91, 1.26. For the five years 1928 to 1932, the average return to the angler for an hour's fishing was 1.00 fish per hour.

ALL FISH IN NON-TROUT WATERS.—The same general trend is shown by the catch per hour computations for all fish caught in non-trout waters, except in the Upper Peninsula. There was a decline in the Lower Peninsula from 1928 to a low point in 1930 or 1931, with a recovery in 1932, which year furnished the best fishing of the five in all three districts. For the Lower Peninsula south of Townline 20 the change was from 1.58 fish per hour in 1928 down to 1.17 in 1931, then back to 1.70 in 1932. For the upper region in the Lower Peninsula the shift was from 0.62 fish per hour in 1928 down to 0.53 in 1930, then up to 0.73 in 1932. For the Upper Peninsula the catch per hour of warm-water fish as a whole fluctuated from 0.70 in 1928, to 0.96 in 1929, 1.07 in 1930, 1.00 in 1931 and up to 1.55 in 1932. The increased yield in the Upper Peninsula was due largely to the better catches of perch. For the entire state the catch per hour of fish in non-trout waters was 1.05 in

1928, dropped to 0.88 in 1929 and 0.85 in 1930, then recovered slightly to 0.88 in 1931 and rose to 1.32 in 1932, the highest figure for the five years. For the five years the average fish catch in non-trout waters was 1.35 per hour south of Townline 20; 0.60 per hour in the Lower Peninsula north of Townline 20 (this figure lowered by reason of disproportionately heavy returns from Houghton Lake); 1.12 per hour in the Upper Peninsula, and 0.97 per hour for the state as a whole.

TROUT CATCH PER HOUR.—The catch per hour of brook, brown and rainbow trout combined for the Lower Peninsula and for the state as a whole, followed the general trend already mentioned, decreasing to 1930 or 1931, then recovering. South of Townline 20, in the Lower Peninsula, the decrease was from 1.17 trout per hour in 1928 to 1.03 per hour in 1930 and 1931, with a gratifying recovery to 1.58 per hour in 1932. For the Lower Peninsula north of Townline 20 the average trout catch per hour was 1.16 in 1928 and 1.18 in 1929; dropped to 0.99 in 1930 and to 0.97 in 1931 but rose again to 1.22 trout per hour, the highest annual figure, in 1932. In the Upper Peninsula the trout picture was less gratifying, for here there was a drop from a high point of 1.21 trout per hour in 1928, and of 1.20 per hour in 1929, down to only 0.86 per hour in 1930, with a partial recovery to 0.95 per hour in 1931 but another slump to 0.87 per hour in 1932. Continued low water in the Upper Peninsula has seriously affected the trout habitats, preventing a recovery in the catch, and calling for careful consideration from the standpoints of fish propagation and of stream improvement. For the state as a whole the combined trout catch was 1.17 per hour in both 1928 and 1929, dropped to 0.93 per hour in 1930, recovering to 0.97 per hour in 1931 and to 1.10 trout per hour in 1932. Thus for the entire state the recovery in trout fishing was not complete. The grand average hourly catch of all trout for the 1928 to 1932 period was 1.15 for the Lower Peninsula south of Townline 20, 1.08 for the Lower Peninsula north of Townline 20, 0.97 for the Upper Peninsula, and 1.04 for the state as a whole. Thus on the trout streams as well as on the lakes, the average fisherman's luck from 1928 to 1932 was about one fish for each hour of angling. If there has been any error in the computation, it was likely on the upper side.

BROOK TROUT.—The success of brook trout fishing as measured in terms of fish per hour caught in general decreased through the five year period under analysis, 1928 to 1932. South of Townline 20 in the Lower Peninsula, the catch dropped from 0.85 per hour in 1928 to 0.83 in 1929 and 1931 and 0.81 in 1930. Instead of recovery in 1932, the catch then dropped about 10% to 0.73 per hour. The large increase in the total trout catch in southern Michigan in 1932 was due to increases in the catch of brown and especially of rainbow trout. In the northern part of the Lower Peninsula (north of Townline 20), the average brook trout catch per hour increased slightly from 1.01 trout per hour in 1928 to 1.05 per hour in 1929, then dropped abruptly to 0.85 per hour in 1930 and 0.86 per hour in 1931. In 1932 there was an almost complete recovery, to 1.00 brook trout per hour. In the Upper Peninsula, in which brook trout dominate, the catch per hour first increased from 1.10 to 1.15, then fell to 0.84 in 1930, rising to 0.93 in 1931 but slumping to only 0.80 trout per hour in 1932. For the whole state the trend was the same, the annual catch per hour figures for the five years from 1928 to 1932 being 1.01, 1.05, 0.84, 0.89 and 0.83. This five year period was therefore marked by a decided decline in brook trout fishing. This decline was certainly in part due to the drought, which was particularly effective in the Upper Peninsula. Other factors to be considered and weighed are overfishing, beaver activities, predators (herons, kingfishers, otters, etc.), and the increase in brown and rainbow trout. The increased catch of these other species, however, especially in southern Michigan, was responsible for the recovery in trout fishing in 1932.

BROWN TROUT.—As just mentioned, the per hour catch of brown trout increased greatly in southern Michigan in 1932. This was especially true south of Townline 20, for which the catch per hour figures for the five years 1928 to 1932 are 0.08, 0.02, 0.03, 0.06 and 0.22 in 1932. For the Lower Peninsula north of Townline 20 the increase was apparent though less marked (0.02, 0.02, 0.03, 0.02 and finally 0.05 in 1932). In the Upper Peninsula the brown trout catch was wholly inconsequential, though some were reported each year. For the state as a whole the annual catch of

brown trout per hour from 1928 to 1932, dropped and rose as follows: 0.03, 0.01, 0.02, 0.02 and 0.05. Even in the peak year this meant one brown trout caught on the average in twenty hours of trout fishing, in all trout waters including those in which brook trout alone occur. The per hour catch in streams containing brown trout was of course much higher.

RAINBOW TROUT.—Rainbow trout fishing suffered the usual slump after 1928, but increased again in 1932 more notably than did the fishing for other species. South of Townline 20 the drop was from 0.24 per hour in 1928 to 0.13 per hour in 1931, with a remarkable leap to 0.62 per hour in 1932. This figure, based on the total number of hours of trout fishing in all streams of the region, approaches the per hour catch of brook trout in the same region (0.73 per hour). North of Townline 20 in the Lower Peninsula the trend was identical though the variations were less marked and the figures for each year are lower, primarily because of the prevalence of brook trout in the north: the drop was from 0.13 per hour in 1928 to 0.09 per hour in 1931, with a rebound to 0.19 per hour in 1932. An almost identical trend was shown in the Upper Peninsula, though the rebound did not bring the 1932 figure (0.07 per hour) as high as the 1928 figure (0.09 per hour). For the state as a whole the five year figures are: 0.14, 0.11, 0.08, 0.07 and 0.19 rainbow trout per hour.

COMPARATIVE CATCH PER HOUR FOR THE THREE SPECIES OF TROUT.—The five-year average catch per hour of brook, brown and rainbow trout in the three sections of the state was as follows: for the Lower Peninsula south of Townline 20, 0.82 brook trout per hour, 0.08 brown trout per hour and 0.25 rainbow trout per hour; for the Lower Peninsula north of Townline 20, 0.94, 0.02 and 0.12; for the Upper Peninsula, 0.93, trace (less than 0.005) and 0.04, and for the state as a whole, 0.92, 0.02 and 0.11. This means for the state as a whole, considering all trout waters, that on the average it required slightly more than one hour to catch a brook trout, about fifty hours to catch one brown trout and ten hours to catch one rainbow trout. Of course it would not require so long to catch a brown trout or

a rainbow trout in waters where these species are common.

CATCH PER HOUR OF PROPAGATED VERSUS NON-PROPAGATED LAKE FISHES.—In general the per hour fish catch in the state, both in trout waters and in warmer waters, rather consistently passed through a cycle from 1928 to 1932, first showing a decline from 1928 to 1930 or 1931, then a recovery to or in 1932. It is a matter of interest and importance to determine whether this change in the success of fishing was essentially due to fishcultural activities or to natural causes. Bearing on this problem, a comparison has been made of the trend of fishing as indicated for the main warm-water fishes which are propagated, as compared with those which are not propagated. The propagated fishes considered are large-mouth and small-mouth bass (of which the catch is relatively small), bluegill (which dominates the catch in the south), perch (which in the north preplaces the bluegill as the dominant game fish in point of numbers), and the walleye (of considerable importance in the northern part of the state). The non-propagated species included in the tabulation are common sunfish (of some importance in the south), rock bass (of moderate importance, especially in the Lower Peninsula north of Townline 20), black crappie (important only south of Townline 20), northern pike (relatively unimportant south of Townline 20, but constituting nearly one-fourth of the catch in non-trout waters in the Lower Peninsula north of Townline 20, and about 15% of this catch in the Upper Peninsula). While all these five species are recorded in the fish planting records for the years from 1926 to 1932, the numbers propagated are inconsequential. The data are given for the species combined in Table 14a, and for the individual species in Table 14b, and discussed below.

The five PROPAGATED FISHES in the Lower Peninsula and in the state as a whole followed the general trends nicely. South of Townline 20, where the warm-water fishes predominate, the annual catch per hour figures dropped from 1.19 in 1928 to only 0.80 in 1931, rising again to 1.08 in 1932. North of Townline 20 in the Lower Peninsula the drop was from 0.35 per hour in 1928 to 0.26 in 1930, followed by an increase to 0.42 fish per hour in 1932. In the Upper Peninsula, there was

a steady increase in the per hour catch of the five propagated fishes from 0.53 in 1928 to 1.05 in 1932, except for a partial slump in 1931. The low water which was responsible for the decline in the trout catch in the Upper Peninsula naturally did not affect the lake fish in the same way. The increased catch of lake fish in the Upper Peninsula was almost entirely due to heavier catches of perch. The catch per hour of the propagated lake fishes for the state as a whole fell from 0.74 in 1928 to 0.55 in 1931, recovering to 0.83 in 1932.

The five NON-PROPAGATED FISHES showed in general the same trend, especially as regards the increased yield per hour in 1932. In the Lower Peninsula south of Townline 20 there was a decrease in the catch per hour from 0.35 in 1928 to 0.25 in 1930, followed by a rise to 0.58 in 1932. In the same peninsula north of Townline 20 the per hour catch was about uniform from 1928 to 1930 (0.26, 0.28, 0.28), dropped to 0.18 in 1931 and rebounded to 0.30 in 1932. In the Upper Peninsula the catch per hour of the non-propagated fishes was for some reason very low (0.12) in 1928, highest in 1929 when the catch was 0.32 per hour, declining to 0.25 in 1931 and increasing to 0.29 in 1932. For the state as a whole, the five non-propagated fishes were caught at the rate of 0.29 per hour in 1928 and 1929, 0.27 per hour in 1930, only 0.24 per hour in 1931, and at the highest rate, 0.44 per hour, in 1932.

From this analysis it seems safe to conclude that the vicissitudes of fishing,—first a decline and then a recovery in 1932,—were due more to natural causes than to fish-cultural activities. The non-propagated fishes in general followed the general trend almost as closely as did the propagated species. Whatever may be true of the trout, the increased catch of lake fish in 1932 can not be attributed with any certainty to fish culture.

One step farther in this analysis bears more directly on the question of whether the propagation of warm-water fishes has been very significant in maintaining the yield. By determining the RATIO of the catch per hour of the five propagated

species to the catch of the five which do not receive this artificial aid, it can be learned whether or not the propagated species are increasing in relative numbers as compared with those which must rely almost entirely on natural reproduction. The ratios are given and compared in the last item in Table 14a. Over the five years from 1928 to 1932 the ratios of propagated to non-propagated fishes were approximately as follows: for the Lower Peninsula south of Townline 20, 3.4, 3.3, 3.6, 2.7 and 1.9; for the Lower Peninsula north of Townline 20, 1.35, 1.1, 0.9, 1.7 and 1.4; for the Upper Peninsula (figures fewer and more erratic), 4.4, 1.75, 2.3, 2.4 and 3.6. For the state as a whole the ratios were 2.55, 2.1, 2.1, 2.3 and 1.9. There is no good evidence that the propagated warm-water fishes as a whole showed any increase in relative numbers caught per hour over the non-propagated species, for the five year period 1928-1932, except in the Upper Peninsula, where the increase chiefly involved the perch.

The CONCLUSION from this and other data seems legitimate, that natural propagation still is of dominant importance in maintaining the yield of game fishes in the non-trout waters of the state. If this condition has been due to the relatively small number of such fishes propagated, an increase in the catch per hour of the propagated species may become evident following the operation of the present great expansion of the rearing ponds. The increase in the bluegill catch in Branch and Hillsdale counties, where bluegill rearing ponds have been in operation, may indicate that a similar increase will take place over the southern half of the state as a whole, when the rearing of this species is proportionate<sup>ly</sup> multiplied for the entire region. On the other hand, natural propagation may still overweigh even the expanded artificial fishculture of the coming years. The continuation of the creel census if only to test this problem would seem advisable.

The indicated importance of natural reproduction in maintaining the supply of warm-water fishes might be taken to justify the current efforts of the Department to improve the shelter for young fishes and to increase the spawning facilities in the lakes for the game fishes and for the forage fishes and other food organisms.



#### SUGGESTIONS FOR FUTURE ANALYSIS

The advantage of continuing the gathering and analysis of the creel census has already been stressed, and the suggestion made that for the near future a quota of 20000 cards be fixed (see p. 11). The value of the creel census will depend on its permanency.

The INSTITUTE FOR FISHERIES RESEARCH is making arrangements for further creel census work. As mentioned, aid has been obtained from the C.W.A. for this purpose. One man is collecting additional creel census data for ice fishing, so as to permit a better comparison of summer and winter fishing. Another man, trained in statistics, is working over the 1928 to 1932 data, obtaining material for supplementary reports covering items not touched upon in the present report. When the 1933 records have all been entered on the individual lake and streams cards by a third C.W.A. employee, who has already filed the 1933 cards, the statistician will draw up the material for the 1933 creel census report. Additional creel census collectors will be obtained for work in Washtenaw County, if a new project for an economic survey of this county by the C.W.A. is approved.

Work is already underway on the report comparing ICE FISHING with summer fishing. Unfortunately ice-fishing records have been in general badly neglected by the Conservation Officers. Many of such reports as were sent in are of rather doubtful value, because a single card sometimes refers to fishing by one man and sometimes to fishing by a party of two or more in a shanty. The fact that the law permitted five lines to be used by one man often makes it impossible to determine whether the card refers to fishing by one man or by two. Fortunately this big doubt does not apply to the most extensive series of ice-fishing records, which were obtained by the Institute directly, early in 1931, in the lakes of southeastern Michigan. While a general conclusion on the relative yield of ice fishing and summer fishing will be withheld until the special report on this subject is pre-

pared, we note that the average catch per hour in non-trout waters was greatly depressed in 1931 in those counties in which an abundance of ice-fishing returns were made. These counties are Lenawee, Jackson, Washtenaw, Livingston and Oakland in southern Michigan, where the Institute gathered the data (the winter records for Genesee County were too few to lower the general average), and Otsego County in northern Michigan, where Conservation Officer Ernest Slade gathered many ice fishing records the same year.

In 1934, a thorough test of ice fishing should be made, now that several lakes are being covered by the C.C.C. and a C.W.A. employee is obtaining numerous records for southeastern Michigan. The C.C.C. creel census data should be particularly valuable in comparing winter and summer fishing returns, because very extensive data, approximating as closely as possible the absolute total fish catch of the several lakes being worked, is being obtained this winter and will be continued, presumably, next summer. It is advisable to request conservation officers to increase their returns on ice-fishing this year, in order that the data may be spread as much as possible. Unless the officers turn in a considerable amount of data, the data may not be properly representative of the whole state.

Other reports designed to follow would cover:

- (1) The creel census data by individual COUNTIES (about two pages per county);
- (2) the creel census data for certain individual LAKES AND STREAMS for which a large amount of data have been accumulated;
- (3) the relative number of ILLEGAL FISH (UNDERSIZED), especially for trout;
- (4) comparison of relative numbers of trout caught on BAIT AND ON FLIES, and of the catch per hour using each kind of bait (possibly some similar analysis for fish caught in non-trout waters should be attempted);
- (5) comparison of catch per hour in STOCKED VS. UNSTOCKED WATERS, or (and?) in heavily vs. lightly stocked waters, may prove practicable, but should at least await the completion of the 1933 report.

It is hoped that arrangements can be completed in 1934 for changing over the creel census tabulating to the CARD-SORTING MACHINE METHOD. Preliminary moves to this end months ago were not carried forward, because of the lack of a well drawn-up numbering system for lakes and streams. This presupposes a satisfactory classified

list of the lakes and streams of the state, which we have not felt justified in drawing up, owing to the expense involved. Now we have a C.W.A man, an engineer, busy drawing up the list of waters which will serve as the basis for the number system. Number codes will then be drawn up to cover other items on the creel census, and the system can be put into effect. This should produce a great economy of time, effort and expense.

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:	1927	1928	1929	1930	1931	1932	Totals excluding 1927
No. of cards used (approximately)	4437	3722	10326	14694	12840	6034	52616
Total No. of hours of fishing reported	26491	48261	51593	74123	62722	37837	274336
Total No. of legal-sized fish reported	30562	54661	51438	69605	61736	50065	287505
Total No. of hours fishing, trout waters	-	12860	15206	20968	18650	8535	76219
Total No. of legal-sized fish reported for trout waters	-	15922	18739	21140	19974	9872	85647
Brook, brown and rainbow trout, all waters	4450	15812	18688	20675	19566	9646	84387
Brook trout	3374	13424	16736	18464	17579	7428	73631
Brown trout	207	424	216	377	485	448	1950
Rainbow trout	869	1964	1736	1834	1502	1770	8806
Total No. of hours fishing, non-trout waters	-	35401	36387	53155	44072	29102	198117
Total No. of fish reported for non-trout waters	-	38739	32699	48465	41762	40193	201858
Small-mouth Bass	-	814	793	953	538	993	4090
Large-mouth Bass	-	1774	1662	1910	1112	1053	7511
Bluegill	-	12206	8942	17017	10567	10777	59509
Common Sunfish	-	2462	1652	2621	1417	1434	9586
Rock Bass	-	2544	2747	3030	1705	2109	12135
Black Crappie	-	726	323	1381	1461	3402	7293
Perch	-	10441	9264	10695	13085	11676	55161
Walleye	-	1565	1223	1245	776	1180	5989
Northern Pike	-	3560	4336	5750	4128	2838	20612
Bullheads	-	1706	1418	2338	2511	3408	11381
Cats	-	1	1	14	53	0	69
Dogfish	-	1	53	265	219	38	576
Smelt	-	120	0	0	1347	0	1467
Cisco and Whitefish	-	0	2	191	228	462	883
Lake Trout	-	13	0	7	56	20	96
Suckers	-	467	290	882	2288	369	4296
Mullets and Redhorses	-	25	4	111	113	19	272
Carp	-	373	38	369	355	48	1593
Chubs and shiners	-	0	0	62	109	55	226
Catfishes	-	44	2	36	14	46	142
Muskallunge	-	0	0	10	3	0	13
White Bass	-	0	0	2	8	69	79
Warmouth	-	7	0	7	11	7	32
Sheepshead	-	0	0	19	4	2	25
Lawyer	-	0	0	3	19	0	22
Grayling	-	0	0	7	11	4	22
Unnamed	-	0	0	6	32	0	38

TABLE 1a. COMPARISON OF CREEL CENSUS TABULATIONS ISSUED BY THE DEPARTMENT OF CONSERVATION ON APRIL 2, 1930, WITH THOSE USED IN THE PRESENT REPORT

	Computations for 1928 by		Computations for 1929 by	
	Department	Institute	Department	Institute
Number of cards used in tabulation	8722	Not tallied	10326	Not tallied
Total number of hours spent fishing	48352.5	48261	55498	51593
Total number legal sized fish taken	52677 ✓	54661	54900	51438
Legal sized fish taken per hour (All species)	1.089	1.09	1.007 or 0.989 ✓	0.96
Under sized fish put back	33908	Not tallied	34777	Not tallied
Number of reports on trout fishing	2707	Not tallied	3143	Not tallied
Number of hours spent fishing for trout	12274.5	12860	16356	15206
Number legal sized brook trout taken	12556 ✓	13424	17120	16736
Number legal sized brown trout taken	390 ✓	424	216	216
Number legal sized rainbow trout taken	1799 ✓	1964	1763	1736
Number legal sized trout taken	14745 ✓	15812	19099	18688
Legal sized trout taken per hour	1.20	1.17	1.16 or 1.17 ✓	1.17
Under sized trout taken (all species)	13153	Not tallied	18563	Not tallied
Number reports other fish than trout	6015	Not tallied	7183	Not tallied
Number of hours spent fishing for fish other than trout	36078	35401	38142	36387
Number legal sized fish taken other than trout	37932 ✓	38849	35801	32750
Legal sized fish taken per hour other than trout	1.05	1.05	0.938 or 0.939 ✓	0.88
Under sized fish put back other than trout	20755	Not tallied	16214	Not tallied

✓ The number of fish as given by the Department for 1928 seem to exclude those taken from cards on which the hours of fishing was not entered.

✓ Corrected computation from figures used by Department.

TABLE 2. PERCENTAGE OF TOTAL REPORTED CATCH IN ALL WATERS OF EACH SPECIES WHICH IS CAUGHT IN EACH REGION, FOR THE PERIOD 1928 TO 1932 INCLUSIVE

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	287505	48.3	33.9	17.8
All Species Caught in Trout Waters	85647	16.1	45.5	38.4
Brook, Brown & Rainbow Trout	84387	15.9	45.9	38.2
Brook Trout	73631	12.6	45.7	41.7
Brown Trout	1950	51.6	43.9	4.5
Rainbow Trout	8806	35.2	48.3	16.5
All Species Caught in Non-Trout Waters	201858	62.0	20.9	9.1
Four Major Game-fishes <sup>1</sup>	33202	30.6	54.1	15.3
Five Major Pan-fishes <sup>2</sup>	143684	70.7	22.3	7.0
Five Propagated Fishes <sup>3</sup>	132260	67.8	23.0	9.2
Five Non-propagated Fishes <sup>4</sup>	61007	51.4	41.2	7.4
Small-mouth Bass	4090	39.6	47.5	12.9
Large-mouth Bass	7511	78.0	14.3	7.2
Bluegill	59509	88.7	10.8	0.5
Common Sunfish	9586	78.7	20.2	1.1
Rock Bass	12135	48.4	45.5	6.1
Black Crappie	7293	92.5	7.1	0.4
Perch	55161	51.8	32.2	16.1
Walleye	5989	14.3	55.8	29.9
Northern Pike	20612	16.2	69.2	14.6
Bullheads	11381	69.0	25.6	5.4
Gars	69	89.9	10.1	None
Dogfish	576	79.2	20.8	None
Smelt <sup>5</sup>	1467	None	100	None
Cisco and Whitefish	883	8.6	39.1	52.3
Lake Trout	96	12.5	14.6	72.9
Suckers	4296	43.3	19.3	37.3
Mulletts and Redhorses	272	65.1	20.2	14.7
Carp	1593	89.5	2.2	8.3
Chubs and Shiners	226	38.2	40.4	21.3
Catfishes	142	65.5	15.5	19.0
Muskallunge	13	23.1	69.2	7.7
White Bass	79	100	None	None
Warmouth <sup>6</sup>	32	81.3	13.7	None
Sheepshead	25	100	None	None
Lawyers	22	None	100	None
Grayling	22	None	None	100
Unnamed	38	100	None	None

<sup>1</sup> Small-mouth bass, large-mouth bass, walleye and northern pike.

<sup>2</sup> Bluegill, common sunfish, rock bass, black crappie and perch.

<sup>3</sup> Small-mouth bass, large-mouth bass, bluegill, perch and walleye.

<sup>4</sup> Common sunfish, rock bass, black crappie, northern pike and bullheads.

<sup>5</sup> Not including about 25000 reported as caught in dip-nets in Menominee County.

<sup>6</sup> Largely reported as "mud bass". Some reports for south of Townline 20 and perhaps all for north of that line were very likely based on green sunfish.

TABLE 3a. PERCENTAGE OF TOTAL REPORTED CATCH BY IMPORTANT SPECIES, FOR 1928 TO 1932 INCLUSIVE, FOR ALL WATERS, IN COUNTIES OF LOWER PENINSULA SOUTH OF TOWNLIN 20.

When the percentage is less than 0.05%, the actual number of fishes reported is given in parenthesis. 0 = no reports for this species.

County	TROUT			BLACK BASS					Rock Bass	Black Crappie	Perch	Walleye	Northern Pike	Bull-heads	Total No. of fish reported
	Brook	Brown	Rain-bow	Small-mouth	Large-mouth	Blue-gill	Common Sunfish								
1. Berrien	7.0	0.2	0.1	0.3	2.2	55.5	1.1	0.3	14.4	8.4	0.3	0.3	2.1	2153	
2. Cass	3.9	0.2	0.5	0.3	4.8	45.1	5.7	6.0	4.3	24.3	(3)	0.5	3.5	8835	
3. St. Joseph	0.6	0	0	1.2	4.9	56.0	13.3	3.4	2.8	12.0	0.1	2.8	0.8	3342	
4. Branch	0	0	0	0.7	5.9	59.3	5.1	1.5	3.3	13.1	(3)	0.7	6.0	8280	
5. Hillsdale	1.7	0	0	0.1	7.2	56.7	1.9	3.5	1.5	19.3	0.6	1.2	1.3	2513	
6. Lenawee	0	0	0	0.6	6.1	57.3	15.2	4.0	0.4	11.6	0.1	0.6	2.3	5230	
7. Monroe	0	0	0	0.5	1.2	0.1	4.7	8.7	0.1	42.6	0	0.4	37.1	6326	
8. Van Buren	1.9	0.2	0.4	0.3	7.3	62.7	2.4	6.0	3.4	13.9	0	0.6	0.4	3832	
9. Kalamazoo	5.7	1.0	0.4	0.2	4.5	47.2	4.0	2.0	6.6	22.1	0	1.9	2.3	1399	
10. Calhoun	2.0	1.2	0	1.2	3.7	51.1	5.4	0.5	8.9	12.9	0.6	2.0	3.2	2654	
11. Jackson	1.4	0	0.1	0.6	3.6	48.5	12.5	4.7	4.4	18.9	(1)	1.6	3.1	3524	
12. Washtenaw	0	0	0	1.0	7.6	51.9	6.1	4.2	0.9	19.9	0.1	4.4	3.5	4496	
13. Wayne	0	0	(3)	0.5	0.2	1.6	1.9	10.3	4.0	51.5	3.5	1.3	16.4	9908	
14. Allegan	2.4	0.7	0.1	(1)	3.0	62.2	2.3	0.7	9.8	10.7	1.6	1.0	2.5	2632	
15. Barry	5.0	0.1	0	0.7	3.1	53.9	5.0	1.7	5.7	10.3	1.3	1.3	2.0	4844	
16. Eaton	0	0	0	0	3.5	54.4	7.6	2.4	7.1	3.4	(1)	0.7	10.1	4696	
17. Ingham	0	0	0	0	4.4	53.9	6.3	0	1.9	20.6	0.2	6.9	5.7	525	
18. Livingston	0.1	(1)	(2)	0.6	3.8	57.5	13.6	5.0	2.4	9.1	0.1	1.6	4.6	5621	
19. Oakland	0.1	0	0	2.0	5.8	53.6	8.9	7.4	0.7	16.5	0.1	3.1	1.6	4763	
20. Macomb	35.4	0	0	0	3.2	4.8	8.1	4.8	0	12.9	0	0	0	62	
21. Ottawa	0	0	0	0.2	2.1	50.2	4.1	4.8	8.1	19.9	0.6	0	8.9	518	
22. Kent	12.9	0.3	1.0	0.6	2.9	30.9	1.7	3.3	37.9	6.6	0.5	0.8	0.3	5715	
23. Ionia	6.0	0	1.1	1.2	20.2	31.1	6.9	5.7	2.0	13.8	1.0	9.4	1.1	810	
24. Clinton	0	0	0	2.1	3.2	46.3	8.1	2.3	7.6	8.9	0.9	3.3	14.8	2204	
25. Shiawassee	0	0	0	5.9	3.0	26.2	16.0	23.4	0	2.7	0	6.7	1.1	901	
26. Genesee	0.3	0	(1)	1.8	1.4	49.3	3.2	2.9	0	20.4	0.1	5.8	4.6	3243	
27. Lapeer	3.0	(1)	0.4	0.7	8.1	64.6	5.4	1.2	(1)	12.2	(1)	1.4	2.7	4446	
28. St. Clair	0	0	0	1.2	2.8	0	(1)	0.5	0	89.3	2.6	3.0	0	2049	
29. Gratiot	0	0	0	0	41.2	17.6	0	0	0	0	0	29.4	0	17	
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31. Tuscola	0	0	0	5.1	5.0	48.7	2.1	2.0	0.9	22.2	0.5	7.8	4.9	799	
32. Sanilac	0	0	0	(1)	0	0	0	0	0	99.8	0	0.2	0	1914	
33. Midland	0	0	0	1.0	0	0	0	1.0	53.1	30.6	0	11.2	3.1	98	
34. Bay	0	0	0	0	0	0	0	0	0	0	0	87.5	12.5	8	
35. Huron	0	0	0	0	0	0	0	0	0	52.2	0	43.5	0	23	
36. Muskegon	21.8	0.4	4.3	1.3	5.6	38.2	3.2	6.9	4.8	9.9	1.1	2.1	0.4	1402	
37. Montcalm	4.8	0.1	0.1	1.9	4.3	31.6	3.4	0.9	26.8	18.8	0	2.5	3.8	1619	
38. Newaygo	38.2	0.3	4.0	5.6	1.6	17.5	2.7	6.1	1.8	10.5	2.6	6.0	2.3	4111	
39. Mecosta	55.2	0.5	0.8	2.7	5.3	21.1	2.8	1.0	0	1.0	0.8	7.4	0.8	2606	
40. Isabella	17.8	0.4	3.2	0.8	17.8	14.4	14.0	4.4	0	12.2	0	11.8	3.1	970	
41. Gladwin	9.5	0.2	0.1	4.3	1.1	10.0	4.6	6.7	4.2	31.1	0.4	10.1	13.3	2809	
42. Arenac	63.6	1.2	7.5	0	0	0	0.6	2.7	0	20.8	0	0.6	1.2	664	
43. Oceana	28.0	0.4	4.4	0.1	6.3	7.0	1.3	5.6	2.2	32.3	0.1	10.3	1.4	1646	
44. Mason	15.1	1.7	9.8	2.5	5.4	27.2	4.4	2.1	5.7	21.6	1.0	2.6	0.7	5252	
45. Lake	16.1	14.3	34.1	0.8	2.4	22.6	1.4	0.7	1.0	5.6	0	0.4	0.4	4223	
46. Osceola	18.4	1.7	2.1	3.6	4.3	23.9	6.0	8.0	1.0	20.5	(1)	5.6	1.0	2024	
47. Clare	20.8	2.9	16.8	2.7	7.9	24.6	2.7	0.9	0	13.9	0.4	4.8	1.4	3167	
<u>Averages</u>	6.7	0.7	2.2	1.2	4.2	38.0	5.4	4.2	4.9	20.6	0.6	2.4	5.7	138883	

TABLE 3b. PERCENTAGE OF TOTAL CATCH BY IMPORTANT SPECIES FOR 1928 TO 1932 INCLUSIVE, FOR ALL WATERS, IN COUNTIES NORTH OF TOWN-LINE 20.

When the percentage is less than 0.05%, the actual number of fishes reported is given in parenthesis.

Region and County	TROUT			BLACK BASS					Common Sunfish	Rock Bass	Black Crappie	Perch	Walleye	Northern Pike	Bull-head	Total Number of Fish Reported
	Brook	Brown	Rainbow	Small-mouth	Large-mouth	Blue-gill										
Lower Peninsula																
N. of T. 20:																
48. Manistee	33.3	(3)	4.8	5.1	1.2	15.4	1.5	10.8	0	14.2	2.5	4.4	0.8	10450		
49. Wexford	54.1	1.5	10.8	3.5	0.2	7.8	4.4	1.6	0	11.2	2.1	2.3	0.2	3193		
50. Missaukee	25.1	(3)	3.9	2.0	0.7	16.2	3.1	1.7	0	7.5	0.6	14.9	23.2	6733		
51. Roscommon	1.1	0.1	(6)	0.5	0.1	0.7	1.7	5.4	0	21.8	3.6	56.3	2.6	15604		
52. Ogemaw	32.4	1.3	6.2	1.4	1.9	15.1	4.7	1.9	5.9	15.2	0.8	11.7	0.7	8479		
53. Iosco	47.4	0.1	2.7	0.5	2.1	12.0	5.8	3.7	0.1	6.9	0.9	14.4	2.5	3111		
54. Benzie	22.9	0.2	8.7	2.3	0.7	4.1	0.7	13.7	0	28.1	0.2	1.9	0.5	9597		
55. Grand Traverse	19.9	4.6	2.4	3.8	8.2	19.9	1.4	11.0	0	20.0	1.9	3.2	2.4	2962		
56. Kalkaska	65.1	0.2	2.7	1.9	3.4	5.9	2.8	1.0	0	13.5	(1)	2.9	0	3026		
57. Crawford	56.9	9.3	9.4	1.8	1.7	(1)	0.6	0.9	0	13.5	(1)	5.0	0.2	3688		
58. Oscoda	43.3	8.6	6.2	1.3	4.4	3.7	7.1	0.8	0	11.0	1.0	11.7	0.7	707		
59. Alcona	87.4	0	0	0.2	0.5	6.5	0.1	0	0	5.3	0	0	0	1009		
60. Leelanau	11.9	(2)	0.1	4.2	0.9	3.1	1.0	17.3	0	55.2	(2)	3.5	0.1	5276		
61. Antrim	75.9	0.5	6.0	1.1	0.1	0.9	0.8	3.0	0	7.6	0.2	2.6	0.6	4010		
62. Otsego	86.5	0.2	2.5	0.5	0.1	0.2	0	0.4	0	2.0	0	7.6	(1)	6659		
63. Montmorency	94.6	0	1.5	0.4	0.3	0	0	0.1	0	0.9	0	2.4	0	1158		
64. Alpena	14.4	0	0	10.0	0.6	0	0.4	10.2	0	14.6	13.2	17.2	0.2	471		
65. Charlevoix	19.3	0.5	2.6	1.2	1.8	3.9	5.0	4.4	0	57.4	(1)	3.7	0.1	2358		
66. Emmet	54.3	0.1	1.5	1.7	1.4	1.5	1.7	2.5	0.5	12.1	12.4	7.9	1.9	2951		
67. Cheboygan	28.2	1.1	13.0	0.8	0.5	0.6	1.2	1.8	0	12.9	20.7	12.2	3.4	4751		
68. Presque Isle	25.0	0	0.9	1.2	0.2	5.2	1.2	2.1	0	27.8	1.7	5.9	28.5	1216		
<u>Averages</u>	34.5	0.9	4.4	2.0	1.1	6.6	2.0	5.7	0.5	18.2	3.4	14.6	3.0	97409		
Upper Peninsula:																
69. Menominee	4.2	0	(3)	1.9	1.7	(2)	0.2	5.9	0	57.2	3.5	7.1	3.1	9430		
70. Dickinson	79.4	0	0	0.3	(2)	0	0	0	0	10.5	0	4.2	0	1249		
71. Delta	80.9	1.7	1.4	0.7	0.1	0.1	0	0.5	0	8.9	0	5.8	0	1676		
72. Schoolcraft	80.7	0	1.5	0.5	0.1	3.8	0	0.1	0	4.1	1.0	7.5	0.8	1699		
73. Mackinac	40.0	0	0.5	0.2	0	5.1	0.6	2.0	0	43.0	2.1	5.5	0.9	2547		
74. Gogebic	70.9	0.1	2.5	0.5	2.1	0.4	0	0	0.2	2.2	10.6	4.1	1.3	5201		
75. Iron	76.5	0	(1)	(1)	1.6	0	(1)	0	0.4	3.8	0.2	3.4	0.4	3771		
76. Marquette	64.3	0.2	5.6	1.1	0.6	0.4	0.4	0.9	0	6.5	11.5	7.4	0.2	4064		
77. Alger	70.7	0.5	0.6	0.7	0.8	1.4	0	(1)	0	1.3	0	17.0	5.3	2792		
78. Luce	97.5	0	0.3	0	0.1	0	0	0	0	0	1.7	0.3	0	686		
79. Chippewa	74.4	0.1	0.3	0.2	0.5	0	0.2	0.2	0	17.7	0.3	2.4	1.3	3349		
80. Ontonagon	86.2	0	3.2	0.1	0.3	1.4	0	0	0.3	2.3	5.9	0.3	0	1447		
81. Houghton	70.0	0.2	10.3	2.1	1.0	0.3	0.6	0.9	(3)	6.9	2.6	4.0	0.1	7310		
82. Baraga	88.9	0.1	3.9	0.5	0.7	0	0	0	0	2.6	0.4	3.1	0	3322		
83. Keweenaw	63.4	0.6	3.5	2.1	2.1	0.1	0	0.4	0	5.5	3.1	15.6	0.1	1977		
84. Isle Royal	96.7	0	0.1	0	0	0	0	0	0	0	0.6	0	0	703		
<u>Averages</u>	59.9	0.2	2.3	1.0	1.1	0.6	0.2	1.5	0.1	17.4	3.5	5.9	1.2	51213		



TABLE 3c. PERCENTAGE OF TOTAL CATCH BY MINOR SPECIES, FOR 1928 TO 1932 INCLUSIVE, FOR ALL WATERS, IN COUNTIES OF LOWER PENINSULA SOUTH OF TOWN-LINE 20.

This table itemizes the "other kinds" listed together in Table 3c. When the percentage is less than 0.05%, the actual number of fishes reported is given in parenthesis.

County	Gar	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mulletts and Redhorses	Carp	Chubs and Shiners	Cat-fishes	Muskal-lunge	White Bass	Warmouth	Sheeps-head	Other Kinds
1. Berrien	0	1.1	0	0	0	4.5	0	0	0.7	(1)	0	0	0	0	1.4
2. Cass	0	0	0	0.1	0	0.5	0	0.2	0	0	0	0	0	0	(3)
3. St. Joseph	0	0	0	0	0	1.9	0	0.1	0	0	0	0	0	0	(1)
4. Branch	(1)	1.8	0	0	0	0.4	0.9	1.3	0	0	0	0	0.1	0	0
5. Hillsdale	0	0.1	0	0	0	0.6	0	4.2	0	0	0	0	0.1	0	0
6. Lenawee	0	1.1	0	0.2	0	0.3	0	0.1	(1)	0	0	0	0.2	0	0
7. Monroe	0	0	0	0	0	0.9	0.2	2.7	0	0.8	0	0	0	0	0
8. Van Buren	0	0	0	0	0	0.3	0	0	0	0.1	0	0	0	0	0
9. Kalamazoo	0.2	0.2	0	0	0	0	0	0	1.7	0	0	0	0	0	0
10. Calhoun	0	0.9	0	0	0	7.3	0	0	0	0	0	0	0	0	0
11. Jackson	0	0.2	0	0	0	0.2	0	0	0	0	0	0	0.1	0	0.1
12. Washtenaw	0	(2)	0	0.1	0	0.3	(1)	0	0	0	0	0	0	0	(1)
13. Wayne	0	(1)	0	0	0	0.7	(4)	7.3	(2)	0	0	0.1	0	0.2	0
14. Allegan	0.5	1.4	0	0	0	0.2	0	0.8	0	0	0	(1)	0	(1)	0
15. Barry	0.9	0.6	0	(2)	0	6.2	(1)	1.8	0	0	(2)	0	(1)	0	0
16. Eaton	0	1.4	0	(1)	0	7.3	0	1.3	0.2	0	0	0	(1)	0	0
17. Ingham	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0
18. Livingston	0	0.4	0	0	0	0.1	(1)	0	0	0	0	1.2	0	0	(1)
19. Oakland	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0
20. Macomb	0	4.3	0	0	0	0	0	21.0	0	0	0	0	0	4.3	0
21. Ottawa	0	0	0	0	0	0	0	0	0	1.2	0	0	0	0	0
22. Kent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Ionia	0	0.2	0	0	0	0	0	0	0	0.1	0	0	0	0	0
24. Clinton	0	1.1	0	0	0	0.5	0.1	0.4	0	0.3	0	0	0	0	0
25. Shiawassee	0	0	0	0	0	13.9	1.2	0	0	0	0	0	0	0	0
26. Genesee	0	0	0	0	0	3.4	1.6	0.1	0	0	0	0	0	0	0
27. Lapeer	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0
28. St. Clair	0	0	0	0	0	0.3	0	0.2	0	0	(1)	0	0	0	0
29. Gratiot	0	0	0	0	0	11.3	0	0	0	0	0	0	0	0	0
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0
32. Sanilac	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33. Midland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34. Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35. Huron	0	0	0	0	0	0	0	4.3	0	0	0	0	0	0	0
36. Muskegon	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
37. Montcalm	0	0	0	0	0	0.1	0.1	0.1	0	0.6	0	0	0	0	0
38. Newaygo	0	0	0	0	0	0	0	0	0.6	0	0	0	0	0	0
39. Mecosta	0	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0
40. Isabella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41. Gladwin	0	0	0	1.7	0	1.5	0.6	0.3	0.1	0.5	0	0	0	0	0
42. Arenac	0	0	0	0	1.3	0	0	0	0	0	0	0	0	0	0
43. Oceana	0	0	0	0.1	0	0.3	0	0	0	0	0	0.2	0	0	0
44. Mason	0	0	0	0	0	0.1	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	3.5	0	0	0.3	0	0	0	0	0	0
47. Clare	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0
Averages	(62)	0.5	0	0.1	(12)	1.3	0.1	1.0	0.1	0.1	(3)	0.1	(26)	(25)	(38)

TABLE 3d. PERCENTAGE OF TOTAL CATCH BY MINOR SPECIES, FOR 1928 TO 1932 INCLUSIVE, FOR ALL WATERS IN COUNTIES NORTH OF TOWNLIN E 20

This Table itemizes the "Other Kinds" listed together in Table 8d. When the percentage is less than 0.05%, the actual number of fishes reported is given in parenthesis.

Region and County	Gars	Dogfish	Smelt	Cisco and whitefish	Lake Trout	Suckers	Mullets and Redhorses	Carp	Chubs and Shiners	Cat-fishes	Muskal-lunge	White Bass	War-mouth	Sheeps-head	Lawyers	Other Kinds
Lower Peninsula																
N. of T. 20:																
48. Manistee	0	(3)	0	0.9	0	4.9	0	(2)	0	0	(1)	0	0	0	0	0
49. Wexford	0	0	0	0	0	0.4	0	0	0	0	0	0	0	0	0	0
50. Missaukee	0	0	0	0	0	0.5	0	(2)	0.2	0.3	0	0	0	0	0	0
51. Roscommon	(7)	0.7	0	0	0	0.3	(6)	0	0	0	0	0	(5)	0	0	0
52. Ogemaw	0	0	0	0	0	0.2	(2)	(2)	0.6	(1)	0	0	0	0	0	0
53. Iosco	0	(1)	0	0	0	0.8	0.2	0	0	0	0	0	0	0	0	0
54. Benzie	0	0	15.3	0	(3)	0.1	0.4	0	0	0	(1)	0	(1)	0	0	0
55. Gr. Traverse	0	0	0	0	(1)	0.2	0	0.9	0	0	0	0	0	0	0	0
56. Kalkaska	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0
57. Crawford	0	0	0	0	0	0.1	0	0.1	0.5	0	0	0	0	0	0	0
58. Oscoda	0	0	0	0	0	(1)	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	0
60. Leelanau	0	(1)	0	2.5	0.1	(1)	0	0	0	0	0	0	0	0	0	0
61. Antrim	0	0	0	0.1	0	0.5	0	(1)	0	0	0	0	0	0	0	0
62. Otsego	0	0	0	0	0.1	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	0	0	0
64. Alpena	0	0	0	0	0	17.6	0	0	1.5	0	0	0	0	0	0	0
65. Charlevoix	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0
66. Emmet	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0
67. Cheboygan	0	0.2	0	2.4	0	0.4	0	0	0	0	0.1	0	0	0	0.5	0
68. Presque Isle	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0
<u>Averages</u>	(7)	0.1	1.5	0.4	(14)	0.9	0.1	(35)	0.1	(22)	(9)	0	(6)	0	(22)	0
Upper Peninsula:																
69. Menominee	0	0	0	1.4	0	12.1	0.1	1.3	0	0.3	0	0	0	0	0	0
70. Dickinson	0	0	0	0	0	4.5	0	0	0.4	0	0	0	0	0	0	0
71. Delta	0	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	0
73. Mackinac	0	0	0	0	0	(1)	0	0	0	0	0	0	0	0	0	0
74. Gogebic	0	0	0	0	0.1	4.0	0.6	0	0.4	0	(1)	0	0	0	0	0
75. Iron	0	0	0	8.5	0	0.1	0	0	0	0	0	0	0	0	0	0
76. Marquette	0	0	0	0	0	0.9	0	0	0.1	0	0	0	0	0	0	0
77. Alger	0	0	0	0	0	0.9	0	0	0.7	0	0	0	0	0	0	0
78. Luce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79. Chippewa	0	0	0	0	1.5	1.0	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	0
81. Houghton	0	0	0	0	0	0.6	0	0.1	(2)	0	0	0	0	0	0	0.3
82. Baraga	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
83. Keweenaw	0	0	0	0.7	0	2.9	0	0	0	0	0	0	0	0	0	0
84. Isle Royal	0	0	0	0	2.6	0	0	0	0	0	0	0	0	0	0	0
<u>Averages</u>	0	0	0	0.9	0.1	3.1	0.1	0.3	0.1	0.1	(1)	0	0	0	0	(22)

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

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

Species	Region	1927	1928	1929	1930	1931	1932	Average
Brook, Brown & Rainbow Trout	1. Lower Peninsula south of T. 20	-	10.4	11.5	8.0	10.0	9.0	9.7
	2. Lower Peninsula north of T. 20	-	43.8	44.3	38.4	41.3	22.5	39.8
	3. Upper Peninsula	-	73.0	82.7	67.7	59.7	42.0	62.9
	4. Entire state	14.6	28.9	36.3	29.7	31.7	19.3	29.4
Brook Trout	1. Lower Peninsula south of T. 20	-	7.4	9.0	6.3	7.3	4.2	6.7
	2. Lower Peninsula north of T. 20	-	38.0	39.1	32.6	36.7	18.2	34.5
	3. Upper Peninsula	-	66.7	79.2	65.6	58.0	38.4	59.9
	4. Entire state	11.0	24.6	34.5	26.5	28.5	14.8	25.6
Brown Trout	1. Lower Peninsula south of T. 20	-	0.7	0.2	0.2	1.2	1.3	0.7
	2. Lower Peninsula north of T. 20	-	0.9	0.7	1.2	0.7	0.8	0.9
	3. Upper Peninsula	-	0.8	0.3	0.1	Tr.	Tr.	0.2
	4. Entire state	0.7	0.8	0.4	0.5	0.8	0.9	0.7
Rainbow Trout	1. Lower Peninsula south of T. 20	-	2.3	2.3	1.5	1.6	3.5	2.2
	2. Lower Peninsula north of T. 20	-	4.9	4.5	4.6	3.9	3.5	4.4
	3. Upper Peninsula	-	5.5	3.2	2.0	1.7	3.6	2.8
	4. Entire state	2.8	3.6	3.4	2.6	2.4	3.5	3.1
Small- mouth Bass	1. Lower Peninsula south of T. 20	-	1.2	1.3	0.8	1.1	1.6	1.2
	2. Lower Peninsula north of T. 20	-	1.9	1.9	2.4	0.8	4.0	2.0
	3. Upper Peninsula	-	1.9	1.2	0.9	0.5	1.2	1.0
	4. Entire state	-	1.5	1.5	1.4	0.9	2.0	1.4
Large- mouth Bass	1. Lower Peninsula south of T. 20	-	4.5	5.7	4.9	3.2	3.0	4.2
	2. Lower Peninsula north of T. 20	-	1.9	1.7	1.0	0.4	0.5	1.1
	3. Upper Peninsula	-	1.7	0.6	0.6	1.3	1.4	1.1
	4. Entire state	-	3.2	3.2	2.7	1.8	2.1	2.6
Blue- gill	1. Lower Peninsula south of T. 20	-	35.7	33.9	45.2	38.2	35.2	38.0
	2. Lower Peninsula north of T. 20	-	8.5	6.8	8.9	1.7	7.5	6.6
	3. Upper Peninsula	-	1.9	0.3	1.2	0.2	Tr.	0.6
	4. Entire state	-	22.3	17.4	24.5	17.1	21.5	20.7
Common Sunfish	1. Lower Peninsula south of T. 20	-	6.9	5.8	5.4	4.8	4.5	5.4
	2. Lower Peninsula north of T. 20	-	2.1	1.8	3.5	0.7	1.4	2.0
	3. Upper Peninsula	-	0.3	0.5	0.2	Tr.	0.2	0.2
	4. Entire state	-	4.5	3.2	3.3	2.3	2.9	3.3
Rock Bass	1. Lower Peninsula south of T. 20	-	4.4	6.0	4.2	3.1	3.7	4.2
	2. Lower Peninsula north of T. 20	-	6.2	6.2	6.2	3.6	6.8	5.7
	3. Upper Peninsula	-	0.6	1.1	1.5	0.6	3.0	1.5
	4. Entire state	-	4.7	5.3	4.4	2.8	4.2	4.2
Black Crappie	1. Lower Peninsula south of T. 20	-	2.3	1.3	3.8	4.3	12.0	4.9
	2. Lower Peninsula north of T. 20	-	0.2	0.2	0.6	1.3	0	0.5
	3. Upper Peninsula	-	0.2	0	0.1	0.1	0	0.1
	4. Entire state	-	1.3	0.6	2.0	2.4	6.6	2.5

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

For further explanation see subheading of Table 4a.

Species	Region	1928	1929	1930	1931	1932	Average
Perch	1. Lower Peninsula south of T. 20	25.7	25.7	16.3	18.6	18.0	20.6
	2. Lower Peninsula north of T. 20	13.3	14.3	13.3	25.9	29.1	18.2
	3. Upper Peninsula	5.0	5.7	16.6	18.5	31.5	17.4
	4. Entire state	19.1	18.0	15.4	21.2	23.3	19.2
Walleye	1. Lower Peninsula south of Tw. 20	0.2	0.9	0.6	0.9	0.7	0.6
	2. Lower Peninsula north of T. 20	4.9	3.9	3.6	1.3	3.8	3.4
	3. Upper Peninsula	9.6	2.4	1.5	2.1	5.3	3.5
	4. Entire state	2.9	2.4	1.8	1.3	2.4	2.1
Northern Pike	1. Lower Peninsula south of T. 20	2.1	3.5	2.5	3.0	1.2	2.4
	2. Lower Peninsula north of T. 20	13.8	15.4	17.0	10.9	17.3	14.6
	3. Upper Peninsula	3.2	3.6	6.8	7.1	6.2	5.9
	4. Entire state	3.5	3.4	8.3	6.7	5.7	7.2
Bull-heads	1. Lower Peninsula south of T. 20	4.4	3.6	4.1	7.3	8.7	5.7
	2. Lower Peninsula north of T. 20	1.9	2.8	3.9	1.5	6.9	3.0
	3. Upper Peninsula	0.7	0.4	0.6	1.8	2.0	1.2
	4. Entire state	3.1	2.8	3.4	4.1	6.8	4.0
Gars	1. Lower Peninsula south of T. 20	Tr.	Tr.	Tr.	0.2	0	Tr.
	2. Lower Peninsula north of T. 20	0	0	0	Tr.	0	Tr.
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	Tr.	Tr.	Tr.	0.1	0	Tr.
Dogfish	1. Lower Peninsula south of T. 20	Tr.	0.1	0.7	0.6	0.1	0.3
	2. Lower Peninsula north of T. 20	0	0.2	0.1	0.2	0.1	0.1
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	Tr.	0.1	0.4	0.4	0.1	0.2
Smelt	1. Lower Peninsula south of T. 20	0	0	0	0	0	0
	2. Lower Peninsula north of T. 20	0.6	0	0	6.1	0	1.5
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	0.2	0	0	2.2	0	0.5
Cisco and White-fish	1. Lower Peninsula south of T. 20	0	Tr.	0.2	Tr.	Tr.	0.1
	2. Lower Peninsula north of T. 20	0	0	0.5	1.0	Tr.	0.4
	3. Upper Peninsula	0	0	Tr.	0	4.1	0.9
	4. Entire state	0	Tr.	0.3	0.4	0.9	0.3
Lake Trout	1. Lower Peninsula south of T. 20	Tr.	0	0	0	0	Tr.
	2. Lower Peninsula north of T. 20	0	0	Tr.	Tr.	Tr.	Tr.
	3. Upper Peninsula	Tr.	0	Tr.	0.4	0.2	0.1
	4. Entire state	Tr.	0	Tr.	0.1	Tr.	Tr.
Suckers	1. Lower Peninsula south of T. 20	0.8	0.7	1.8	2.7	0.6	1.3
	2. Lower Peninsula north of T. 20	0.8	Tr.	0.1	2.8	0.1	0.9
	3. Upper Peninsula	1.3	1.6	1.9	7.3	1.3	3.1
	4. Entire state	0.9	0.6	1.3	3.7	0.7	1.5

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

For further explanation see subheading of Table 4a.

Species	Region	1928	1929	1930	1931	1932	Average
Bullets & Redhorses	1. Lower Peninsula south of T. 20	0	Tr.	0.3	0.3	0.1	0.1
	2. Lower Peninsula north of T. 20	0.1	0	0.1	0.1	0	0.1
	3. Upper Peninsula	0	0	0.1	0.2	0	0.1
	4. Entire state	Tr.	Tr.	0.2	0.2	Tr.	0.1
Carp.	1. Lower Peninsula south of T. 20	1.3	0.2	1.0	1.3	1.2	1.0
	2. Lower Peninsula north of T. 20	Tr.	0	0.1	Tr.	0	Tr.
	3. Upper Peninsula	0	0	0.1	Tr.	1.1	0.3
	4. Entire state	0.7	0.1	0.5	0.5	0.9	0.6
Chubs and Shiners	1. Lower Peninsula south of T. 20	0	0	Tr.	0.1	0.2	0.1
	2. Lower Peninsula north of T. 20	0	0	Tr.	0.4	0	0.1
	3. Upper Peninsula	0	0	0.3	Tr.	Tr.	0.1
	4. Entire state	0	0	0.1	0.2	0.1	0.1
Cat-fishes	1. Lower Peninsula south of T. 20	0.1	Tr.	Tr.	0.1	0.2	0.1
	2. Lower Peninsula north of T. 20	Tr.	0	0.1	0	0	Tr.
	3. Upper Peninsula	0.5	0	0	0	0	0.1
	4. Entire state	0.1	Tr.	0.1	Tr.	0.1	Tr.
Muskal-lunge	1. Lower Peninsula south of T. 20	0	0	Tr.	0	0	Tr.
	2. Lower Peninsula north of T. 20	0	0	Tr.	Tr.	0	Tr.
	3. Upper Peninsula	0	0	0	Tr.	0	Tr.
	4. Entire state	0	0	Tr.	Tr.	0	Tr.
White Bass	1. Lower Peninsula south of T. 20	0	0	Tr.	Tr.	0.2	0.1
	2. Lower Peninsula north of T. 20	0	0	0	0	0	0
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	0	0	Tr.	Tr.	0.1	Tr.
War-mouth	1. Lower Peninsula south of T. 20	Tr.	0	Tr.	Tr.	Tr.	Tr.
	2. Lower Peninsula north of T. 20	0	0	0	Tr.	Tr.	Tr.
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	Tr.	0	Tr.	Tr.	Tr.	Tr.
Sheeps-head	1. Lower Peninsula south of T. 20	0	0	0.1	Tr.	Tr.	Tr.
	2. Lower Peninsula north of T. 20	0	0	0	0	0	0
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	0	0	Tr.	Tr.	Tr.	Tr.
Lawyer	1. Lower Peninsula south of T. 20	0	0	0	0	0	0
	2. Lower Peninsula north of T. 20	0	0	Tr.	0.1	0	Tr.
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	0	0	Tr.	Tr.	0	Tr.
Other Species	1. Lower Peninsula south of T. 20	0	0	Tr.	0.1	0	Tr.
	2. Lower Pensinsula north of T. 20	0	0	0	0	0	0
	3. Upper Peninsula	0	0	0.1	0.1	Tr.	Tr.
	4. Entire state	0	0	Tr.	0.1	Tr.	Tr.

TABLE 5a. RELATIVE ABUNDANCE OF BROOK, BROWN AND RAINBOW TROUT BY COUNTIES OF LOWER PENINSULA SOUTH OF TOWNLIN E 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 and year. 100 indicates that only this species of trout was reported from the county for the given year. 0 indicates that no trout of this species was reported, though some trout fishing was reported for the county and year. - (dash) indicates that no trout fishing at all was reported.

County	Brook Trout					Brown Trout					Rainbow Trout				
	'28	'29	'30	'31	'32	'28	'29	'30	'31	'32	'28	'29	'30	'31	'32
1. Berrien	100	100	82.6	98.2	-	0	0	13.0	1.3	-	0	0	4.3	2.6	-
2. St. Joseph	34.9	92.3	32.4	0	100	0	3.8	8.3	0	0	15.1	3.8	9.3	0	0
3. Cass	-	-	-	-	100	-	-	-	-	0	-	-	-	-	0
4. Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Hillsdale	-	-	100	-	-	-	-	0	-	-	-	-	0	-	-
6. Lenawee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7. Monroe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8. Van Buren	-	86.0	55.6	69.0	-	-	4.0	27.8	6.9	-	-	10.0	16.7	24.1	-
9. Kalamazoo	77.4	94.9	-	0	63.3	9.7	0	-	0	33.3	12.9	5.1	-	0	0
10. Calhoun	-	-	98.0	16.2	-	-	-	2.0	83.8	-	-	-	0	0	-
11. Jackson	-	-	0	100	-	-	-	0	0	-	-	-	100	0	-
12. Washtenaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13. Wayne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14. Allegan	100	-	63.4	100	0	0	-	34.7	0	50.0	0	-	2.0	0	50.0
15. Barry	100	100	100	92.5	100	0	0	0	7.5	0	0	0	0	0	0
16. Eaton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17. Ingham	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18. Livingston	62.5	-	-	-	-	12.5	-	-	-	-	25.0	-	-	-	-
19. Oakland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20. Macomb	-	-	100	-	-	-	-	0	-	-	-	-	0	-	-
21. Ottawa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22. Kent	93.9	44.1	92.2	93.4	96.2	6.1	1.5	0	3.1	2.1	0	54.4	7.8	3.5	1.8
23. Ionia	-	33.3	-	96.0	100	-	0	-	0	0	-	66.7	-	4.0	0
24. Clinton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25. Shiawassee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26. Genesee	-	-	100	-	50.0	-	-	0	-	0	-	-	0	-	50.0
27. Lapeer	-	82.6	100	-	94.4	-	0	0	-	5.6	-	17.4	0	-	0
28. St. Clair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29. Gratiot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32. Sanilac	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33. Midland	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-
34. Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35. Huron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36. Muskegon	65.4	96.2	100	100	-	2.8	1.3	0	0	-	31.9	2.6	0	0	-
37. Montcalm	-	93.3	50.0	100	-	-	6.7	0	0	-	-	0	50.0	0	-
38. Newaygo	99.5	34.6	95.2	93.7	89.9	0.2	0	0.5	2.5	1.7	0.3	65.4	4.4	4.0	8.4
39. Mecosta	99.6	96.8	100	95.7	96.2	0	0.7	0	1.9	2.3	0.4	2.5	0	2.4	1.5
40. Isabella	-	96.3	100	63.1	-	-	2.7	0	1.2	-	-	0.9	0	35.7	-
41. Gladwin	100	96.1	100	33.3	-	0	3.9	0	0	-	0	0	0	66.7	-
42. Arenac	100	-	81.4	88.6	76.6	0	-	1.7	1.4	3.6	0	-	16.9	10.0	19.8
43. Oceana	87.4	94.9	71.2	95.6	38.1	1.4	0	0	0.9	14.3	11.2	5.1	28.8	3.5	47.6
44. Mason	87.4	68.6	72.3	2.3	29.7	1.1	0.2	5.5	2.3	15.9	11.6	31.2	22.1	95.5	54.3
45. Lake	14.3	24.6	31.5	37.9	17.6	21.5	4.9	2.7	30.1	32.7	64.2	70.5	65.8	32.0	49.7
46. Osceola	70.3	82.4	91.7	76.9	75.0	10.9	7.1	1.7	15.4	0	18.8	10.6	6.7	7.7	25.0
47. Clare	96.8	92.7	65.0	37.2	18.4	0	0.3	3.1	0	13.8	3.2	6.0	31.9	62.8	67.7
<u>Averages</u>	70.7	78.2	78.5	72.2	46.8	6.8	1.5	2.9	12.1	14.2	22.5	20.3	18.5	15.7	39.0

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

For further explanation see Table 5a.

Region and County	Brook Trout					Brown Trout					Rainbow Trout				
	'28	'29	'30	'31	'32	'28	'29	'30	'31	'32	'28	'29	'30	'31	'32
Lower Peninsula, North of T. 20:															
48. Manistee	83.0	86.6	94.5	90.3	58.4	0	0	0.2	0	0.4	17.0	13.4	5.3	9.7	41.1
49. Wexford	84.6	80.7	73.3	92.5	42.1	0	0.2	3.5	0.2	32.9	15.4	19.0	23.2	7.4	25.0
50. Missaukee	55.4	86.1	96.9	93.8	82.4	0	0.3	0	0	1.5	44.6	13.6	3.1	6.2	16.2
51. Roscommon	-	93.7	95.1	100	50.0	-	2.7	0	0	50.0	-	3.6	4.9	0	0
52. Ogemaw	81.9	89.6	74.6	78.6	0	1.0	1.7	7.9	3.5	16.7	17.1	8.8	17.5	17.8	83.3
53. Iosco	98.8	91.3	95.4	95.6	91.1	0	0	0	0	0	1.2	8.7	4.6	4.4	8.9
54. Benzie	65.0	69.7	74.3	76.2	56.4	1.0	1.2	0.6	0.3	1.1	34.0	29.1	25.1	23.6	42.5
55. Grand Traverse	47.3	79.1	86.6	90.0	54.5	40.9	9.8	5.4	10.0	43.6	11.8	11.1	8.0	0	1.8
56. Kalkaska	99.6	95.9	86.5	98.4	96.3	0	0	2.0	0	0	0.4	4.1	11.5	1.6	3.7
57. Crawford	77.9	80.5	70.9	70.0	96.8	7.1	11.5	16.3	15.5	0	15.0	8.0	12.8	14.6	3.2
58. Oscoda	66.7	64.7	100	26.3	100	19.7	17.6	0	57.9	0	13.6	17.6	0	15.8	0
59. Alcona	100	100	100	100	-	0	0	0	0	-	0	0	0	0	-
60. Leelanau	96.0	100	100	99.2	66.7	1.6	0	0	0	0	2.4	0	0	0.8	33.3
61. Antrim	97.8	91.1	84.0	95.1	88.6	0.2	2.0	0	0.2	1.2	2.0	6.9	16.0	4.6	10.3
62. Otsego	97.3	92.6	97.6	99.5	97.0	0	0	1.0	0.1	0	2.7	7.4	1.4	0.3	3.0
63. Montmorency	98.0	97.9	100	100	100	0	0	0	0	0	2.0	2.1	0	0	0
64. Alpena	100	-	100	-	-	0	-	0	-	-	0	-	0	-	-
65. Charlevoix	93.7	93.0	89.6	78.6	65.3	0	0	0	1.0	16.7	6.3	7.0	10.4	20.4	20.0
66. Emmet	98.4	100	100	99.2	85.8	0.8	0	0	0	0	0.8	0	0	0.8	14.2
67. Cheboygan	71.7	77.6	58.6	52.4	83.8	0	0	7.1	2.0	0	28.3	22.4	34.4	45.6	16.2
68. Presque Isle	100	99.3	100	100	83.9	0	0	0	0	0	0	0.7	0	0	16.1
<u>Averages</u>	86.8	88.1	84.9	88.7	80.8	2.0	1.6	3.1	1.7	3.5	11.2	10.2	12.0	9.5	15.6
Upper Peninsula:															
69. Menominee	100	100	98.7	100	100	0	0	0	0	0	0	0	1.3	0	0
70. Dickinson	100	100	100	100	100	0	0	0	0	0	0	0	0	0	0
71. Delta	57.4	99.5	99.2	84.9	100	39.7	0.5	0	0	0	2.9	0	0.8	15.1	0
72. Schoolcraft	95.9	97.6	99.8	96.5	100	0	0	0	0	0	4.1	2.4	0.2	3.5	0
73. Mackinac	91.1	99.5	100	99.2	100	0	0	0	0	0	3.9	0.5	0	0.8	0
74. Gogebic	90.3	95.3	97.4	98.1	100	0.3	0.2	0	0.2	0	9.4	4.5	2.6	1.6	0
75. Iron	100	99.8	100	100	100	0	0	0	0	0	0	0.2	0	0	0
76. Marquette	91.6	99.7	94.0	100	82.3	0	0.1	1.7	0	0	8.4	0.2	4.3	0	17.7
77. Alger	94.9	99.1	99.4	100	97.7	4.1	0.9	0	0	0	1.0	0	0.6	0	2.3
78. Luce	97.1	100	99.7	100	100	0	0	0	0	0	2.9	0	0.3	0	0
79. Chippewa	100	100	98.9	100	99.2	0	0	0.4	0	0	0	0	0.7	0	0.8
80. Ontonagon	84.5	97.8	98.8	95.2	97.4	0	0	0	0	0	15.5	2.2	1.2	4.8	2.6
81. Houghton	90.4	84.1	85.4	92.1	75.5	0.1	0.8	0	0	0.2	9.5	15.1	14.5	7.9	24.4
82. Baraga	97.1	92.7	98.7	95.1	93.0	0	0	0	0	0.3	2.9	7.3	1.3	4.9	6.5
83. Keweenaw	91.3	94.2	99.0	95.5	83.4	0	3.9	0	0	0	8.7	1.9	1.0	2.5	16.6
84. Isle Royal	100	-	100	100	99.6	0	-	0	0	0	0	-	0	0	0.4
<u>Averages</u>	91.4	95.7	97.0	97.1	91.4	1.0	0.4	0.1	Tr.	0.1	7.6	3.9	2.9	2.8	8.5

(tr. = trace)

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 and year.

Species	Region	1927	1928	1929	1930	1931	1932	Average, 1928-1932
Brook Trout	1. Lower Peninsula S. of T. 20	-	70.7	78.2	78.5	72.4	46.8	69.4
	2. Lower Peninsula N. of T. 20	-	86.8	88.1	84.9	88.8	80.9	86.8
	3. Upper Peninsula	-	91.4	95.7	97.0	97.1	91.5	95.2
	4. Entire state	75.8	84.9	89.5	89.3	89.8	77.0	87.3
Brown Trout	1. Lower Peninsula S. of T. 20	-	6.8	1.5	3.0	12.1	14.1	7.5
	2. Lower Peninsula N. of T. 20	-	2.0	1.6	3.2	1.7	3.5	2.2
	3. Upper Peninsula	-	1.0	0.4	0.1	0.1	0.1	0.3
	4. Entire state	4.7	2.7	1.2	1.8	2.5	4.6	2.3
Rainbow Trout	1. Lower Peninsula S. of T. 20	-	22.5	20.3	18.5	15.5	39.1	23.1
	2. Lower Peninsula N. of T. 20	-	11.2	10.2	12.0	9.5	15.6	11.0
	3. Upper Peninsula	-	7.6	3.9	2.9	2.8	8.5	4.5
	4. Entire state	19.5	12.4	9.3	8.9	7.7	18.3	10.4



TABLE 7a. SUMMARY OF COMPUTATIONS ON RELATIVE ABUNDANCE OF THE MAIN FRESH-WATER FISHERS 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. Tr. = Trace, less than 0.05%.

Species	Region	1928	1929	1930	1931	1932	Average
Small-mouth Bass	1. Lower Peninsula south of Townline 20	1.3	1.5	0.9	1.2	1.4	1.2
	2. Lower Peninsula north of Townline 20	3.3	3.5	3.8	1.4	5.1	3.3
	3. Upper Peninsula	7.2	6.9	3.0	1.4	2.1	2.9
	4. Entire state	2.1	2.4	1.9	1.3	2.3	2.0
Large-mouth Bass	1. Lower Peninsula south of Townline 20	5.0	6.4	5.3	3.6	3.3	4.7
	2. Lower Peninsula north of Townline 20	3.3	3.1	1.6	0.6	0.6	1.9
	3. Upper Peninsula	6.5	3.2	1.8	3.3	2.5	2.9
	4. Entire state	4.6	5.1	3.9	2.6	2.6	3.7
Blue-gill	1. Lower Peninsula south of Townline 20	39.9	38.4	49.2	42.5	38.8	42.2
	2. Lower Peninsula north of Townline 20	15.2	12.2	14.6	2.9	9.7	11.0
	3. Upper Peninsula	7.2	1.9	3.9	0.5	0.1	1.7
	4. Entire state	31.5	27.3	35.1	25.3	26.8	29.5
Common Sunfish	1. Lower Peninsula south of Townline 20	7.7	6.3	5.9	5.3	5.0	6.0
	2. Lower Peninsula north of Townline 20	3.8	3.2	5.8	1.1	1.8	3.3
	3. Upper Peninsula	1.2	2.7	0.7	Tr.	0.3	0.6
	4. Entire State	6.4	5.1	5.4	3.4	3.6	4.7
Rock Bass	1. Lower Peninsula south of Townline 20	4.9	6.8	4.5	3.5	4.1	4.7
	2. Lower Peninsula north of Townline 20	11.0	11.2	10.2	6.0	8.8	9.4
	3. Upper Peninsula	1.7	6.6	5.0	1.7	5.3	4.1
	4. Entire state	6.6	8.4	6.2	4.1	5.2	6.0
Black Crappie	1. Lower Peninsula south of Townline 20	2.6	1.4	4.1	4.8	13.2	5.4
	2. Lower Peninsula north of Townline 20	0.4	0.4	1.0	2.3	0	0.9
	3. Upper Peninsula	0.6	0	0.1	0.3	0	0.2
	4. Entire state	1.9	1.0	2.8	3.5	8.5	3.6
Perch	1. Lower Peninsula south of Townline 20	28.8	29.0	17.8	20.8	19.8	22.8
	2. Lower Peninsula north of Townline 20	23.8	26.6	21.8	44.4	37.7	30.3
	3. Upper Peninsula	19.0	33.1	52.5	47.8	54.5	47.8
	4. Entire state	27.0	28.3	21.9	31.3	29.0	27.2
Walleye	1. Lower Peninsula south of Townline 20	0.2	1.0	0.6	1.0	0.7	0.7
	2. Lower Peninsula north of Townline 20	8.7	7.0	5.7	2.1	4.7	5.6
	3. Upper Peninsula	36.3	13.3	4.7	5.1	9.1	9.6
	4. Entire state	4.0	3.7	2.5	1.8	2.8	2.9
Northern Pike	1. Lower Peninsula south of Townline 20	2.2	3.8	2.6	3.1	1.3	2.5
	2. Lower Peninsula north of Townline 20	24.6	27.4	27.4	18.6	22.4	24.3
	3. Upper Peninsula	10.4	20.4	21.0	17.1	10.7	15.4
	4. Entire state	9.0	13.1	11.6	9.6	7.0	10.0
Bull-heads	1. Lower Peninsula south of Townline 20	5.0	4.1	4.5	8.1	9.6	6.3
	2. Lower Peninsula north of Townline 20	3.3	5.0	6.2	2.5	8.9	5.0
	3. Upper Peninsula	2.8	2.4	1.9	4.7	3.4	3.3
	4. Entire state	4.4	4.3	4.8	6.0	8.5	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	1928	1929	1930	1931	1932	Average
Larger game-fishes ↓	1. Lower Peninsula south of Townline 20	8.8	12.7	9.5	8.9	6.7	9.1
	2. Lower Peninsula north of Townline 20	40.0	41.1	38.6	22.8	32.9	35.1
	3. Upper Peninsula	60.5	44.3	30.5	26.9	24.3	30.8
	4. Entire state	19.7	24.4	19.9	15.3	14.7	18.6
Pan-fishes ↘	1. Lower Peninsula south of Townline 20	85.9	82.0	81.5	76.9	81.0	81.1
	2. Lower Peninsula north of Townline 20	54.2	53.6	53.3	56.7	58.0	54.9
	3. Upper Peninsula	29.8	44.3	62.2	50.4	60.1	54.3
	4. Entire state	73.3	70.1	71.5	67.5	73.1	71.1
Ratio: pan-fishes to game-fishes	1. Lower Peninsula south of Townline 20	9.6	6.4	8.6	8.7	12.1	8.9
	2. Lower Peninsula north of Townline 20	1.4	1.3	1.4	2.5	1.8	1.6
	3. Upper Peninsula	0.5	1.0	2.0	1.9	2.5	1.8
	4. Entire state	3.8	2.9	3.6	4.4	5.0	3.8
Smelt	1. Lower Peninsula south of Townline 20	0	0	0	0	0	0
	2. Lower Peninsula north of Townline 20	1.1	0	0	10.5	0	2.5
	3. Upper Peninsula	0	0	0	0	0	0
	4. Entire state	0.3	0	0	3.2	0	0.7
Cisco & White-fish	1. Lower Peninsula south of Townline 20	0	Tr.	0.2	Tr.	Tr.	Tr.
	2. Lower Peninsula north of Townline 20	0	0	0.8	1.7	Tr.	0.6
	3. Upper Peninsula	0	0	Tr.	0	7.1	2.5
	4. Entire state	0	Tr.	0.4	0.5	1.1	0.4
Suckers, Mulletts and Red-horses	1. Lower Peninsula south of Townline 20	0.9	0.8	2.1	3.2	0.6	1.6
	2. Lower Peninsula north of Townline 20	1.4	Tr.	0.3	4.6	0.1	1.4
	3. Upper Peninsula	5.1	9.0	5.2	17.7	2.9	8.1
	4. Entire state	1.2	0.9	1.8	5.5	0.9	2.1
Carp	1. Lower Peninsula south of Townline 20	1.4	0.2	1.1	1.5	1.3	1.1
	2. Lower Peninsula north of Townline 20	Tr.	0	0.2	Tr.	0	0.1
	3. Upper Peninsula	0	0	Tr.	Tr.	1.8	0.7
	4. Entire state	1.0	0.1	0.7	0.9	1.1	0.8
Other Species and Un-named	1. Lower Peninsula south of Townline 20	0.1	0.1	1.1	1.2	0.8	0.7
	2. Lower Peninsula north of Townline 20	Tr.	0.3	0.6	0.9	0.2	0.4
	3. Upper Peninsula	1.9	0	Tr.	0.3	0.3	0.3
	4. Entire state	0.1	0.2	0.8	1.0	0.6	0.6

↓ 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.

↘ 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 3a. RELATIVE ABUNDANCE OF THE MAIN WARM-WATER FISHES, FOR 1928 TO 1932 INCLUSIVE, IN COUNTIES OF THE LOWER PENINSULA SOUTH OF TOWNLIN 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	Blue-gills	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleye	Northern Pike	Bull-heads	Cars	Dogfish	Smelt	
1. Berrien	1991	0.3	2.4	60.0	1.2	0.4	15.6	9.0	0.3	0.3	2.3	0	1.2	0	
2. Cass	3424	0.3	5.0	47.3	6.0	6.3	4.5	25.4	Tr.	0.5	3.7	0	0	0	
3. St. Joseph	3321	1.2	5.0	56.4	13.4	3.4	2.8	12.1	0.1	2.9	0.8	0	0	0	
4. Branch	3280	0.7	5.9	59.3	5.1	1.5	3.3	13.2	Tr.	0.7	6.0	Tr.	1.8	0	
5. Hillsdale	2475	0.1	7.4	57.7	2.0	3.5	1.6	19.6	0.6	1.2	1.3	0	0.1	0	
6. Lenawee	5230	0.6	6.1	57.3	15.2	4.0	0.4	11.6	0.1	0.6	2.3	0	1.0	0	
7. Monroe	6326	0.5	1.2	0.1	4.7	3.7	0.1	42.6	0	0.4	37.0	0	0	0	
8. Van Buren	3735	0.3	7.5	64.3	2.5	6.2	3.5	14.2	0	0.6	0.4	0	0	0	
9. Kalamazoo	1299	0.1	4.8	50.9	4.3	2.2	7.2	23.8	0	2.0	2.5	0.2	0.1	0	
10. Calhoun	2568	1.3	3.8	52.8	5.6	0.5	3.3	13.4	0.7	2.0	3.3	0	1.0	0	
11. Jackson	3473	0.6	3.6	49.2	12.7	4.7	4.5	19.2	Tr.	1.7	3.1	0	0.2	0	
12. Washtenaw	4496	1.0	7.6	51.9	6.1	4.2	0.9	19.9	0.1	4.4	3.5	0	Tr.	0	
13. Wayne	9908	0.5	0.2	1.6	1.9	10.3	4.0	51.5	3.5	1.3	16.4	0	Tr.	0	
14. Allegan	2544	Tr.	3.1	64.4	2.4	0.7	10.1	11.1	1.6	1.0	2.6	0.5	1.5	0	
15. Barry	4572	0.7	3.3	57.1	5.3	1.8	6.1	11.0	1.4	1.4	2.1	1.0	0.7	0	
16. Eaton	4696	0	3.5	54.4	7.6	2.4	7.1	3.4	Tr.	0.7	10.1	0	1.4	0	
17. Ingham	525	0	4.4	53.9	6.3	0	1.9	20.6	0.2	6.9	5.7	0	0	0	
18. Livingston	5613	0.6	3.8	57.6	13.6	5.0	2.4	9.1	0.1	1.6	4.6	0	0.4	0	
19. Oakland	4763	2.0	5.8	53.6	8.9	7.4	0.7	16.5	0.1	3.1	1.6	0	0	0	
20. Macomb	40	0	5.0	7.5	12.5	7.5	0	20.0	0	0	0	0	7.5	0	
21. Ottawa	512	0.2	2.1	50.2	4.1	4.8	8.1	19.9	0.6	0	8.9	0	0	0	
22. Kent	4397	0.8	3.3	36.1	2.0	3.9	44.2	7.8	0.6	1.0	0.4	0	0	0	
23. Ionia	752	1.3	21.8	33.5	7.4	6.1	2.1	14.9	1.1	10.1	1.2	0	0.3	0	
24. Clinton	2204	2.1	3.2	46.2	8.1	2.3	7.6	8.8	0.9	3.3	14.8	0	1.1	0	
25. Shiawassee	901	5.9	3.0	26.2	16.0	23.4	0	2.7	0	6.7	1.1	0	0	0	
26. Genesee	3231	1.8	1.5	47.9	3.3	3.0	0	21.1	0.1	6.0	4.7	0	0	0	
27. Lapeer	4282	0.7	8.4	67.1	5.6	1.2	Tr.	12.7	Tr.	1.2	2.8	0	0	0	
28. St. Clair	2049	1.2	2.8	0	Tr.	0.5	0	89.3	2.6	3.0	0	0	0	0	
29. Gratiot	17	0	41.2	17.6	0	0	0	0	0	29.4	0	0	0	0	
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31. Tuscola	799	5.1	5.0	43.7	2.1	2.0	0.9	22.2	0.5	7.8	4.9	0	0	0	
32. Sanilac	1914	Tr.	0	0	0	0	0	99.8	0	0.2	0	0	0	0	
33. Midland	98	1.0	0	0	0	1.0	53.2	30.6	0	11.2	3.1	0	0	0	
34. Bay	8	0	0	0	0	0	0	0	0	87.5	12.5	0	0	0	
35. Huron	23	0	0	0	0	0	0	52.2	0	43.5	0	0	0	0	
36. Muskegon	1032	1.7	7.6	51.9	4.4	9.4	6.5	13.5	1.5	2.9	0.5	0	0.1	0	
37. Montcalm	1536	2.0	4.6	33.3	3.6	0.9	28.3	19.8	0	2.7	4.0	0	0	0	
38. Newaygo	2277	6.5	2.9	31.5	5.0	11.0	3.3	19.0	4.7	10.8	4.2	0	0	0	
39. Mecosta	1066	6.6	12.6	51.5	6.8	2.4	0	2.3	1.3	13.7	1.9	0	0	0	
40. Isabella	762	1.0	22.7	18.4	17.8	5.3	0	15.5	0	15.0	3.9	0	0	0	
41. Gladwin	2546	4.7	1.2	11.1	5.1	7.3	4.6	34.2	0.4	10.9	14.7	0	0	0	
42. Arenac	171	0	0	0	2.3	9.9	0	80.7	0	2.3	4.7	0	0	0	
43. Oceana	1101	0.2	9.4	10.4	1.9	8.4	3.3	47.8	0.2	15.4	2.1	0	0	0	
44. Mason	3838	3.5	7.3	37.3	6.0	2.9	7.8	29.6	1.3	3.2	1.0	0	0	0	
45. Lake	1499	2.3	6.7	63.6	4.1	1.9	2.8	15.7	0	1.2	1.3	0	0	0	
46. Osceola	1475	4.9	6.0	32.8	3.2	11.0	1.4	28.1	0.1	2.7	1.0	0	0	0	
47. Clare	1876	4.5	13.3	41.5	4.5	1.5	0	23.5	0.7	8.1	2.3	0	0	0	
<u>Total and Averages</u>	<u>125151</u>	<u>1.2</u>	<u>4.7</u>	<u>42.2</u>	<u>6.0</u>	<u>4.7</u>	<u>5.4</u>	<u>22.8</u>	<u>0.7</u>	<u>2.6</u>	<u>6.3</u>	<u>Tr.</u>	<u>0.4</u>	<u>0</u>	

TABLE 8b. RELATIVE ABUNDANCE OF THE MAIN WARM-WATER FISHES, FOR 1928 TO 1932 INCLUSIVE, IN COUNTIES NORTH OF TOWNLIN E 20.

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

Region and County	Total catch, non-trout waters	BLACK BASS											
		Small-mouth	Large-mouth	Blue-gills	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleye	Northern Pike	Pull-heads	Gars	Dogfish
<b>Lower Peninsula North of T. 20:</b>													
48. Manistee	6465	8.2	2.0	24.9	2.4	17.4	0	23.0	4.0	7.1	1.2	0	Tr. 0
49. Wexford	1075	10.4	0.5	23.2	13.0	4.7	0	33.4	6.2	7.0	0.6	0	0 0
50. Missaukee	4757	2.8	1.0	22.9	4.4	2.4	0	10.6	0.9	21.1	32.7	0	0 0
51. Roscommon	15414	0.5	0.1	0.7	1.7	5.5	0	22.1	8.7	56.9	2.6	Tr. 0	0.7 0
52. Ogemaw	5039	2.3	3.1	25.4	7.9	3.3	9.9	25.7	1.3	19.4	1.2	0	0 0
53. Iosco	1530	0.9	4.3	24.3	11.7	7.5	0.3	14.0	1.9	28.6	5.0	0	0.1 0
54. Benzie	6531	3.4	1.1	6.0	1.0	20.1	0	41.3	0.3	2.7	0.8	0	0 22.5
55. Grand Traverse	2136	5.3	11.3	27.6	1.9	15.3	0	27.8	2.6	4.1	2.6	0	0 0
56. Kalkaska	957	5.9	10.9	18.8	3.8	3.0	0	42.8	0.1	9.2	0	0	0 0
57. Crawford	877	7.5	7.2	0.1	2.5	2.9	0	56.9	0.1	19.2	0.8	0	0 0
58. Oscoda	296	3.0	10.5	8.8	16.9	2.0	0	26.4	2.4	28.0	1.7	0	0 0
59. Alcona	127	1.6	3.9	52.0	0.8	0	0	41.7	0	0	0	0	0 0
60. Leelanau	4635	4.8	1.1	3.5	1.1	19.7	0	62.9	Tr.	3.9	0.1	0	Tr. 0
61. Antrim.	707	6.2	0.6	5.1	4.5	16.8	0	43.1	1.3	15.0	3.5	0	0 0
62. Otsego	714	4.6	0.8	1.5	0	3.4	0	18.8	0	70.7	0.1	0	0 0
63. Montmorency	33	12.1	9.1	0	0	3.0	0	30.3	0	45.5	0	0	0 0
64. Alpena	383	12.3	0.8	0	0.5	12.5	0	18.0	16.2	15.9	0.3	0	0 0
65. Charlevoix	1824	1.6	2.0	5.1	6.4	5.6	0	74.2	0.1	4.8	0.1	0	0 0
66. Emmet	1295	3.9	3.2	3.5	3.8	5.7	1.2	27.6	28.3	17.5	4.2	0	0 0
67. Cheboygan	2685	1.3	0.9	1.1	2.2	3.2	0	22.6	34.7	21.4	6.0	0	0.3 0
68. Presque Isle	897	1.6	0.3	7.0	1.7	2.8	0	37.7	2.3	8.0	38.6	0	0 0
<b>Total and Averages</b>	<b>58377</b>	<b>3.3</b>	<b>1.9</b>	<b>11.0</b>	<b>3.3</b>	<b>9.4</b>	<b>0.9</b>	<b>30.3</b>	<b>5.6</b>	<b>24.3</b>	<b>5.0</b>	<b>Tr.</b>	<b>0.2 2.5</b>
<b>Upper Peninsula:</b>													
69. Menominee	9031	2.0	1.8	Tr.	0.2	6.2	0	59.8	3.6	7.4	3.2	0	0 0
70. Dickinson	212	4.7	0.9	0	0	0	0	61.8	0	8.5	0	0	0 0
71. Delta	268	4.1	0.4	0.7	0	3.0	0	55.6	0	36.2	0	0	0 0
72. Schoolcraft	271	3.3	0.4	23.6	0	0.7	0	20.3	5.2	41.7	4.8	0	0 0
73. Mackinac	1507	0.4	0	8.6	1.1	3.5	0	72.3	3.2	9.0	1.6	0	0 0
74. Gogebic	1203	2.2	9.1	1.7	0	0	0.7	2.7	45.0	17.1	5.5	0	0 0
75. Iron	882	0.1	6.6	0	0	0	1.6	36.5	0.7	14.3	1.8	0	0 0
76. Marquette	1207	3.6	1.9	1.5	1.3	3.1	0	21.9	38.6	25.0	0.6	0	0 0
77. Alger	701	2.9	3.0	5.6	0	Tr.	0	5.0	0	62.5	21.0	0	0 0
78. Luce	15	0	6.7	0	0	0	0	0	80.0	13.3	0	0	0 0
79. Chippewa	760	0.8	2.0	0	0.8	0.9	0	78.0	1.2	10.1	5.7	0	0 0
80. Ontonagon	139	0	2.9	14.4	0	0	2.9	24.5	52.5	2.9	0	0	0 0
81. Houghton	1273	11.9	5.9	1.9	3.3	5.4	0.2	36.4	14.6	17.8	0.3	0	0 0
82. Baraga	237	6.3	9.7	0	0	0	0	35.8	5.1	43.0	0	0	0 0
83. Keweenaw	620	6.6	6.8	0.2	0	1.3	0	17.6	9.8	49.7	0.3	0	0 0
84. Isle Royal	4	0	0	0	0	0	0	0	100	0	0	0	0 0
<b>Total and Averages</b>	<b>18330</b>	<b>2.9</b>	<b>2.9</b>	<b>1.7</b>	<b>0.6</b>	<b>4.1</b>	<b>0.2</b>	<b>47.8</b>	<b>9.6</b>	<b>15.4</b>	<b>3.3</b>	<b>0</b>	<b>0 0</b>

TABLE 8c. RELATIVE ABUNDANCE OF THE LESS IMPORTANT WARM-WATER FISHES FOR 1928 TO 1932 INCLUSIVE, IN COUNTIES OF THE LOWER PENINSULA SOUTH OF TOWNLIN E 20.

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

County	Cisco and Whitefish	Lake Trout	Suckers	Mullets and Redhorses	Carp	Chubs and Shiners	Cat-fishes	Muskal-lunge	White Bass	War-mouth	Sheeps-head	Lawyer	Other Kinds
1. Berrien	0	0	4.7	0	0	0.8	Fr.	0	0	0	0	0	1.5
2. Cass	0.1	0	0.5	0	0.2	0	0	0	0	0	0	0	Tr.
3. St. Joseph	0	0	1.9	0	0.1	0	0	0	0	0	0	0	Tr.
4. Branch	0	0	0.4	0.9	1.3	0	0	0	0	0.1	0	0	0
5. Hillsdale	0	0	0.6	0	4.2	0	0	0	0	0.1	0	0	0
6. Lenawee	0.2	0	0.3	0	0.1	Fr.	0	0	0	0.2	0	0	0
7. Monroe	0	0	0.9	0.2	2.7	0	0.8	0	0	0	0	0	0
8. Van Buren	0	0	0.3	0	0	0	0.1	0	0	0	0	0	0
9. Kalamazoo	0	0	0	0	0	1.8	0	0	0	0	0	0	0
10. Calhoun	0	0	7.5	0	0	0	0	0	0	0	0	0	0
11. Jackson	0	0	0.2	0	0	0	0	0	0	0.1	0	0	0.1
12. Washtenaw	0.1	0	0.3	Tr.	0	0	0	0	0	0	0	0	Tr.
13. Wayne	0	0	0.7	Tr.	7.8	Tr.	0	0	0.1	0	0.2	0	Tr.
14. Allegan	0	0	0	0	0.8	0	0	0	Tr.	0	Tr.	0	0
15. Barry	Tr.	0	6.0	Tr.	1.9	0	0	Tr.	0	Tr.	0	0	0.1
16. Eaton	Tr.	0	7.3	0	1.8	0.2	0	0	0	Tr.	0	0	0
17. Ingham	0	0	0.1	Tr.	0	0	0.2	0	1.2	0	0	0	Tr.
18. Livingston	0	0	0	0	0	0	0	0	0	0	0	0	0.1
19. Oakland	0	0	0.3	0	0	0	0	0	0	0	0	0	0
20. Macomb	0	0	0	0	32.5	0	0	0	0	0	7.5	0	0
21. Ottawa	0	0	0	0	0	10	1.2	0	0	0	0	0	0
22. Kent	0	0	0	0	0	0	0	0	0	0	0	0	0
23. Ionia	0	0	0	0	0	0	0.1	0	0	0	0	0	0
24. Clinton	0	0	0.5	0.1	0.4	0	0.3	0	0	0	0	0	0
25. Shiawassee	0	0	13.9	1.2	0	0	0	0	0	0	0	0	0
26. Genesee	0	0	8.8	1.6	0.1	0	0	0	0	0	0	0	0
27. Lapeer	0	0	0.4	0	0	0	0	0	0	0	0	0	0
28. St. Clair	0	0	0.3	0	0.2	0	0	Tr.	0	0	0	0	0
29. Gratiot	0	0	11.8	0	0	0	0	0	0	0	0	0	0
30. Saginaw	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	0	0	0.9	0	0	0	0	0	0	0	0	0	0
32. Sanilac	0	0	0	0	0	0	0	0	0	0	0	0	0
33. Midland	0	0	0	0	0	0	0	0	0	0	0	0	0
34. Bay	0	0	0	0	4.3	0	0	0	0	0	0	0	0
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	0.1
37. Montcalm	0	0	0.1	0.1	0.1	0	0.7	0	0	0	0	0	0
38. Newaygo	0	0	0	0	0	1.1	0	0	0	0	0	0	0
39. Mecosta	0	0	0.6	0	0	0	0	0	0	0	0	0	0
40. Isabella	0	0	0	0	0	0	0	0	0	0	0	0	0
41. Gladwin	1.9	0	1.5	0.6	0.3	0	0.5	0	0	0	0	0	1.0
42. Arenac	0	0	0	0	0	0	0	0	0	0	0	0	0
43. Oceana	0.2	0	0.5	0	0	0	0	0	0.4	0	0	0	0
44. Mason	0	0	0.1	0	0	0	0	0	0	0	0	0	0
45. Lake	0	0	0.1	0	0	0	0	0	0	0	0	0	0
46. Osceola	0	0	3.7	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
Averages	0.1	0	1.4	0.1	1.1	0.1	0.1	Tr.	6.1	Tr.	Tr.	0	Tr.

TABLE 8d. RELATIVE ABUNDANCE OF THE LESS IMPORTANT WARM-WATER FISHES,  
FOR 1928 TO 1932 INCLUSIVE, 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 and Redhorses	Carp	Chubs and Shiners	Cat-fishes	Muskellunge	White Bass	War-mouth	Sheeps-head	Lawyer	Other kinds
Lower Peninsula, North of T. 20:													
48. Manistee	1.5	0	8.0	0	Tr.	0	0	Tr.	0	0	0	0	0.1
49. Wexford	0	0	1.1	0	0	0	0	0	0	0	0	0	0
50. Missaukee	0	0	0.6	0	Tr.	0	0.4	Tr.	0	0	0	0	0
51. Roscommon	0	0	0.3	Tr.	0	0	0	0	0	Tr.	0	0	Tr.
52. Ogemaw	0	0	0.2	Tr.	Tr.	0	Tr.	0	0	0	0	0	0.2
53. Iosco	0	0	0.6	0.5	0	0	0	0	0	0	0	0	0.3
54. Benzie	0	0	0.2	0.6	0	0	0	Tr.	0	Tr.	0	0	Tr.
55. Grand Traverse	0	Tr.	0.3	0	1.2	0	0	0	0	0	0	0	0.3
56. Kalkaska	0	0	0.2	0	0	0	0	0	0	0	0	0	0
57. Crawford	0	0	0.4	0	0.2	2.3	0	0	0	0	0	0	0
58. Oscoda	0	0	0.3	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	2.8	Tr.	Tr.	0	0	0	0	0	0	0	0	0	0
61. Antrim	0.6	0	2.8	0	0.1	0	0	0	0	0	0	0	0.3
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	21.7	0	0	1.3	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	1.1	0	0	0	0	0	0	0	0	0	0
67. Cheboygan	4.2	0	0.5	0	0	0	0	0.3	0	0	0	0.8	0.6
68. Presque Isle	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>Averages</u>	0.6	Tr.	1.3	0.1	0.1	Tr.	Tr.	Tr.	0.	Tr.	0.	Tr.	0.1
UPPER Peninsula													
69. Menominee	1.4	0	12.6	0.1	1.3	0	0.3	0	0	0	0	0	0
70. Dickinson	0	0	24.1	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	Tr.	0	0	0	0	0	0	0	0	0	0.4
74. Gogebic	0	0.2	15.5	0	0	0	0	0.1	0	0	0	0	0
75. Iron	36.3	0	0	0	0	0	0	0	0	0	0	0	1.9
76. Marquette	0	0	2.2	0	0	0.2	0	0	0	0	0	0	0
77. Alger	0	0	0	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	0.1	0.4	0	0	0	0	0	0	0	0	0	0
80. Ontonagon	0	0	2.2	0	0	0	0	0	0	0	0	0	0
81. Houghton	0	0	0	0	0	0	0	0	0	0	0	0	0
82. Baraga	0	0	0	0	0	0	0	0	0	0	0	0	0
83. Keweenaw	2.1	0	5.2	0	0	0	0	0	0	0	0	0	0.5
84. Isle Royal	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>Averages</u>	2.5	Tr.	8.0	0.1	0.7	Tr.	0.1	Tr.	0	0	0	0	0.1

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

Numbers in parenthesis are unreliable, being based on less than 100 reported hours of fishing. The hours of fishing are indicated on Table 12a. Tr. = trace, less than 0.5%. 0 indicates no reports of this species.

County	Total No. Reported	1928	1929	1930	1931	1932	Average
1. Berrien	1195	53	60	73	44	59	60.0
2. Cass	3987	46	41	56	No returns	No returns	47.3
3. St. Joseph	1873	49	61	61	(76)	(58)	56.4
4. Branch	4908	58	57	47	68	65	59.3
5. Hillsdale	1428	66	26	51	65	(97)	57.7
6. Lenawee	2998	64	42	57	44	74	57.3
7. Monroe	9	Tr.	Tr.	0	0	0	0.1
8. Van Buren	2403	50	52	62	79	No returns	64.3
9. Kalamazoo	661	53	(34)	61	5	51	50.9
10. Calhoun	1357	61	49	44	45	66	52.8
11. Jackson	1710	39	60	53	42	(31)	49.2
12. Washtenaw	2333	49	55	66	46	44	51.9
13. Wayne	1154	4	0	0	Tr.	4	1.6
14. Allegan	1639	46	(74)	71	72	36	64.4
15. Barry	2610	53	64	58	49	66	57.1
16. Eaton	2553	68	69	51	45	61	54.4
17. Ingham	283	No returns	No returns	75	(0)	(41)	53.9
18. Livingston	3234	56	54	63	61	51	57.6
19. Oakland	2552	43	(36)	54	44	80	53.6
20. Macomb	3	(17)	No returns	(0)	No returns	No returns	7.5
21. Ottawa	260	No returns	(19)	(37)	No returns	55	50.2
22. Kent	1765	69	44	68	65	7	36.1
23. Ionia	252	(10)	(71)	(30)	18	48	33.5
24. Clinton	1019	(60)	(0)	35	57	47	46.2
25. Shiawassee	236	0	(35)	30	36	(0)	26.2
26. Genesee	1599	66	35	25	60	47	47.9
27. Lapeer	2872	No returns	55	64	86	(90)	67.1
28. St. Clair	0	No returns	0	0	0	0	0
29. Gratiot	3	(0)	No returns	(25)	(0)	No returns	17.6
30. Saginaw	0	No returns	No returns	No returns	No returns	No returns	-
31. Tuscola	389	33	(30)	42	80	64	48.7
32. Sanilac	0	0	No returns	No returns	No returns	No returns	0
33. Midland	0	(0)	(0)	(0)	No returns	(0)	0
34. Bay	0	No returns	No returns	(0)	No returns	No returns	0
35. Huron	0	No returns	(0)	(0)	No returns	No returns	0
36. Muskegon	536	53	(32)	64	No returns	(0)	51.9
37. Montcalm	612	(17)	No returns	43	39	(0)	53.3
38. Newaygo	718	39	38	45	37	20	31.5
39. Mecosta	549	37	(18)	(71)	(66)	(82)	51.5
40. Isabella	140	No returns	28	9	No returns	No returns	18.4
41. Gladwin	282	No returns	6	5	(0)	15	11.1
42. Arenac	0	(0)	No returns	(0)	(0)	No returns	0
43. Oceana	115	(29)	0	23	3	1	10.4
44. Mason	1431	(44)	(71)	63	19	46	37.3
45. Lake	957	53	(55)	(16)	(50)	83	63.8
46. Osceola	484	42	42	25	36	(8)	32.8
47. Clare	778	(28)	26	45	No returns	(59)	41.5
<u>Averages</u>		39.9	38.4	49.2	42.6	38.9	42.2
<u>Totals</u>	52787	10400	7472	14750	10165	10000	

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

For further explanation see subheading of Table 9a.

Region and County	Total No. Reported	1928	1929	1930	1931	1932	Average
<b>Lower Peninsula</b>							
North of Townline 20:							
48. Manistee	1610	31	27	28	15	30	24.9
49. Wexford	249	14	(35)	13	33	31	23.2
50. Missaukee	1029	20	31	21	19	(1)	22.9
51. Roscommon	106	Tr.	Tr.	1	1	1	0.7
52. Ogemaw	1281	23	33	33	0	No returns	25.4
53. Iosco	372	28	(10)	22	14	(0)	24.3
54. Benzie	395	9	11	14	2	17	6.0
55. Grand Traverse	589	30	25	13	32	65	27.6
56. Kalkaska	180	47	3	8	(2)	(8)	18.8
57. Crawford	1	(0)	0	1	0	0	0.1
58. Oscoda	26	2	15	(5)	(0)	No returns	8.8
59. Alcona	66	(59)	(33)	(0)	No returns	No returns	58.0
60. Leelanau	161	12	4	2	2	0	3.5
61. Antrim	36	(18)	2	1	1	(15)	5.1
62. Otsego	11	2	(8)	(0)	0	No returns	1.5
63. Montmorency	0	(0)	(0)	(0)	No returns	(0)	0
64. Alpena	0	(0)	(0)	0	No returns	No returns	0
65. Charlevoix	93	8	3	15	0	0	5.1
66. Emmet	45	6	2	No returns	0	7	3.5
67. Cheboygan	30	0	1	0	0	10	1.1
68. Presque Isle	63	(0)	(0)	(58)	(0)	6	7.0
<b>Averages</b>		15.2	12.2	14.6	2.9	9.7	11.0
<b>Totals</b>	6403	1700	1443	2112	376	772	
<b>Upper Peninsula:</b>							
69. Menominee	2	0	0	0	0	Tr.	Tr.
70. Dickinson	0	(0)	(0)	(0)	0	No returns	0
71. Delta	2	(0)	(0)	2	(0)	(0)	0.7
72. Schoolcraft	64	(0)	No returns	27	(0)	(0)	23.6
73. Mackinac	129	25	(8)	5	(0)	(0)	8.6
74. Jogenic	20	0	(0)	0	5	(0)	1.7
75. Iron	0	(0)	(0)	(0)	0	0	0
76. Marquette	18	(0)	(0)	13	(0)	0	1.5
77. Alger	39	(0)	0	14	4	0	5.6
78. Luce	0	No returns	No returns	(0)	(0)	No returns	0
79. Chippewa	0	(0)	(0)	0	(0)	(0)	0
80. Ontonagon	20	(29)	0	(0)	(0)	(50)	14.4
81. Houghton	24	5	4	0	0	3	1.9
82. Baraga	0	(0)	(0)	0	0	0	0
83. Keweenaw	1	(0)	0	1	0	(0)	0.2
84. Isle Royal	0	No returns	No returns	No returns	No returns	(0)	0
<b>Averages</b>		7.2	1.9	3.9	0.5	Tr.	1.7
<b>Totals</b>	319	106	27	155	26	5	



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

The figures in parenthesis indicate the number of hours of such fishing reported each year for each county. When this number is low, the indicated average catch per hour is unreliable.

County	1928	1929	1930	1931	1932	Average per hour	Total hours
1. Berrien	1.00(620)	1.70(258)	1.30(362)	1.00(352)	0.87(275)	1.14	(1867)
2. Cass	1.59(2034)	1.10(2508)	1.11(2431)	No returns	6.00(8)	1.26	(6981)
3. St. Joseph	2.55(599)	1.52(504)	1.87(319)	2.70(91)	0.48(13)	2.06	(1526)
4. Branch	1.99(876)	1.62(870)	1.88(594)	2.92(427)	3.22(704)	2.24	(3471)
5. Hillsdale	1.09(604)	0.84(606)	1.63(309)	2.39(107)	5.29(14)	1.22	(1640)
6. Lenawee*	1.36(993)	1.54(513)	1.41(712)	0.95(990)	1.68(543)	1.33	(3751)
7. Monroe	2.22(703)	3.03(348)	1.00(890)	1.61(350)	1.56(1411)	1.69	(3702)
8. Van Buren	1.72(107)	2.38(479)	1.42(648)	1.49(521)	No returns	1.72	(1755)
9. Kalamazoo	0.83(612)	0.62(122)	1.38(305)	0.91(103)	1.39(189)	1.02	(1331)
10. Calhoun	1.52(435)	1.87(158)	1.30(588)	1.52(275)	1.89(232)	1.53	(1688)
11. Jackson*	1.14(239)	1.20(520)	1.92(659)	1.03(1040)	7.76(9)	1.34	(2467)
12. Washtenaw*	1.68(609)	1.84(555)	1.27(611)	0.60(1543)	1.31(434)	1.15	(3752)
13. Wayne	0.90(2447)	0.75(2521)	0.63(1953)	1.13(2511)	0.58(2025)	0.81	(11457)
14. Allegan	1.37(144)	0.60(58)	1.29(848)	1.48(591)	1.43(252)	1.35	(1893)
15. Barry	1.21(567)	1.57(402)	1.77(698)	1.47(850)	1.78(565)	1.56	(3082)
16. Eaton	1.39(430)	0.64(343)	1.28(521)	0.70(2504)	1.21(1007)	0.93	(4805)
17. Ingham	No returns	No returns	0.51(415)	0.60(10)	4.57(40)	0.86	(465)
18. Livingston*	2.42(374)	1.17(445)	1.53(1171)	1.10(1014)	1.59(710)	1.47	(3714)
19. Oakland*	1.81(968)	3.59(65)	1.78(633)	0.35(485)	2.46(421)	1.68	(2572)
20. Macomb	No returns	No returns	0.34(127)	No returns	No returns	0.34	(127)
21. Ottawa	No returns	1.52(21)	1.34(61)	No returns	3.03(130)	2.39	(212)
22. Kent	1.16(272)	1.31(342)	1.75(635)	1.56(685)	5.07(531)	2.29	(2465)
23. Ionia	No returns	1.25(36)	0.59(59)	1.23(147)	1.55(133)	1.24	(375)
24. Clinton	0.60(25)	0.35(8)	1.29(342)	1.06(285)	2.07(653)	1.61	(1313)
25. Shiawassee	0.66(213)	2.00(49)	1.86(123)	2.34(102)	1.89(18)	1.47	(505)
26. Genesee*	2.29(287)	1.39(226)	1.78(345)	2.83(361)	1.93(279)	2.10	(1498)
27. Lapeer	No returns	1.60(498)	2.14(1071)	1.34(543)	2.38(51)	1.82	(2163)
28. St. Clair	No returns	2.72(165)	0.83(192)	1.40(127)	6.54(182)	2.97	(666)
29. Gratiot	1.00(2)	No returns	0.27(45)	0.07(46)	No returns	0.19	(93)
30. Saginaw	No returns	No returns	No returns	No returns	No returns	-	-
31. Tuscola	0.96(147)	1.88(78)	0.38(411)	0.83(104)	1.34(181)	0.84	(921)
32. Sanilac	14.4 (125)	No returns	No returns	No returns	No returns	14.4	(125)
33. Midland	0.12(36)	0.06(164)	0.25(28)	No returns	1.47(45)	0.32	(273)
34. Bay	No returns	No returns	0.33(24)	No returns	No returns	0.33	(24)
35. Huron	No returns	0.62(34)	0.29(7)	No returns	No returns	0.56	(41)
36. Muskegon	3.64(147)	1.95(111)	1.04(343)	1.06(102)	1.04(27)	1.70	(730)
37. Montcalm	4.41(99)	0.80(37)	0.57(204)	1.29(694)	0.00(4)	1.42	(1038)
38. Newaygo	1.09(831)	2.08(367)	1.34(595)	0.89(617)	1.06(852)	1.20	(3262)
39. Mecosta	1.81(299)	2.60(168)	3.00(172)	2.43(242)	2.80(99)	2.41	(980)
40. Isabella	No returns	0.78(598)	1.36(140)	3.00(5)	No returns	0.90	(743)
41. Gladwin	1.88(8)	0.26(1227)	0.28(2832)	1.78(77)	0.86(1755)	0.47	(5899)
42. Arenac	1.46(137)	No returns	0.83(73)	0.76(255)	0.78(172)	0.92	(637)
43. Oceana	1.57(129)	1.29(195)	1.50(252)	1.48(283)	1.95(116)	1.51	(975)
44. Mason	1.11(215)	2.16(291)	1.65(500)	1.96(851)	1.97(794)	1.86	(2651)
45. Lake	1.17(1123)	2.89(144)	1.25(359)	1.08(361)	1.80(493)	1.39	(2480)
46. Osceola	0.66(602)	1.39(325)	0.60(673)	0.32(1042)	2.21(88)	0.65	(2730)
47. Clare	1.70(137)	0.57(1280)	0.83(1399)	1.02(42)	2.69(323)	0.95	(3181)
<u>Average</u>	1.53	1.21	1.17	1.16	1.69	1.33	
<u>Total hours</u>	(18195)	(17639)	(25679)	(20735)	(15778)		(98026)

\*The average catch per hour for these counties in 1931 was lowered because a special census was taken of ice fishing, which yielded very few fish.

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

The figures in parenthesis indicate the number of hours of such fishing reported each year for each county. When this number is low, the indicated average catch per hour is unreliable.

Region and County	1928	1929	1930	1931	1932	Average per hour	Total hours
<b>Lower Peninsula</b>							
N. of T. 20:							
48. Manistee	1.23(1994)	1.21(1958)	1.13(1928)	1.34(1330)	0.99(1437)	1.18	(8647)
49. Wexford	0.97(466)	1.69(298)	0.58(1366)	0.61(1049)	1.04(436)	0.77	(3915)
50. Missaukee	1.75(527)	1.24(1424)	0.77(2937)	0.46(2388)	1.37(89)	0.84	(7365)
51. Roscommon	0.26(10213)	0.29(11650)	0.27(12715)	0.25(7949)	0.55(7208)	0.31	(49735)
52. Ogemaw	1.42(1492)	1.23(1213)	0.80(3551)	0.83(1995)	0.43(14)	0.98	(8265)
53. Iosco	1.02(379)	1.75(309)	0.77(1736)	0.96(511)	1.51(102)	0.96	(3037)
54. Benzie	0.87(1007)	0.93(1719)	0.91(1696)	1.31(3656)	1.12(389)	1.09	(8467)
55. Grand Traverse	0.89(1075)	0.79(894)	0.52(1309)	0.30(656)	0.55(394)	0.64	(4328)
56. Kalkaska	1.21(654)	0.82(825)	0.79(905)	1.14(466)	2.25(39)	0.97	(2889)
57. Crawford	0.90(810)	0.62(1330)	0.80(1057)	0.35(2262)	0.78(283)	0.59	(5742)
58. Oscoda	0.81(307)	0.56(364)	1.32(138)	0.39(48)	6.00(1)	0.77	(858)
59. Alcona	1.18(363)	1.11(182)	1.30(241)	0.90(48)	No returns	1.18	(834)
60. Leelanau	0.78(888)	1.09(990)	1.28(916)	1.35(1499)	1.13(247)	1.16	(4540)
61. Antrim	1.40(632)	1.42(455)	1.14(653)	0.81(1365)	1.73(283)	1.14	(3388)
62. Otsego	1.28(1325)	1.63(803)	1.41(773)	0.69(2709)	1.11(415)	1.07	(6025)
63. Montmorency	1.63(118)	1.51(401)	1.98(110)	1.30(36)	1.19(32)	1.60	(697)
64. Alpena	2.24(98)	0.63(33)	0.60(265)	No returns	No returns	1.01	(396)
65. Charlevoix	1.44(478)	1.43(328)	1.23(278)	2.59(192)	2.92(94)	1.66	(1370)
66. Emmet	0.94(802)	1.97(426)	1.88(77)	1.02(621)	1.42(321)	1.26	(2247)
67. Cheboygan	0.85(1166)	0.74(1501)	0.71(1948)	0.97(731)	0.59(538)	0.77	(5884)
68. Presque Isle	1.33(57)	1.39(129)	1.08(43)	3.00(51)	2.91(230)	2.20	(510)
<u>Average</u>	0.78	0.75	0.65	0.71	0.80	0.72	
<u>Total hours</u>	(24851)	(27232)	(34942)	(29562)	(12552)		(129139)
<b>Upper Peninsula:</b>							
69. Menominee	0.57(496)	1.06(460)	0.96(1531)	1.57(1919)	2.10(1884)	1.46	(6290)
70. Dickinson	0.62(61)	1.46(237)	0.52(224)	0.71(625)	0.70(253)	0.80	(1400)
71. Delta	0.86(81)	1.68(240)	1.24(475)	1.49(93)	0.95(423)	1.22	(1312)
72. Schoolcraft	1.24(99)	4.54(46)	1.43(546)	1.25(322)	0.96(77)	1.45	(1090)
73. Mackinac	2.02(173)	1.73(198)	2.28(463)	1.70(227)	3.86(40)	2.08	(1101)
74. Gogebic	0.67(1347)	1.08(945)	0.89(1299)	0.79(2061)	0.59(152)	0.83	(5804)
75. Iron	1.22(23)	1.69(269)	1.19(513)	1.22(1011)	1.20(936)	1.25	(2752)
76. Marquette	0.98(473)	0.82(1078)	0.88(578)	0.78(190)	0.97(1929)	0.91	(4248)
77. Alger	1.49(201)	0.95(470)	0.70(1221)	1.00(373)	1.23(540)	0.94	(2805)
78. Luce	1.46(24)	1.51(37)	1.54(207)	1.11(179)	0.09(126)	1.08	(573)
79. Chippewa	1.50(96)	1.29(373)	2.18(776)	1.18(432)	1.44(158)	1.67	(1835)
80. Ontonagon	1.09(140)	1.12(376)	1.97(151)	1.95(163)	0.64(306)	1.22	(1136)
81. Houghton	1.28(1585)	1.12(1219)	0.59(2394)	0.73(1715)	0.93(1066)	0.85	(7979)
82. Baraga	1.39(153)	1.68(312)	0.51(2049)	0.76(1227)	0.94(395)	0.75	(4136)
83. Keweenaw	0.53(259)	0.61(462)	0.45(1039)	0.54(1332)	0.47(684)	0.51	(3776)
84. Isle Royal	1.50(4)	No returns	1.28(36)	0.60(556)	0.73(337)	0.68	(933)
<u>Average</u>	1.01	1.15	0.92	0.97	1.17	1.02	
<u>Total hours</u>	(5215)	(6722)	(13502)	(12425)	(9306)		(47170)

\* This very poor catch was due to the fact that most of the records for this year were for ice-fishing, which yielded few fish.

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

The figures in parenthesis indicate the number of hours  
of such fishing reported each year for each county.  
When this number is low, the indicated average catch  
per hour is unreliable.

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

County	1928	1929	1930	1931	1932	Average per hour	Total hours
1. Berrien	1.37(40)	2.00(1)	0.45(51)	1.01(76)	No returns	0.93	(168)
2. Cass	1.46(104)	1.27(41)	0.90(227)	No returns	0.25(8)	1.07	(380)
3. St. Joseph	No returns	No returns	No returns	No returns	6.00(3)	6.00	(3)
4. Branch	No returns	No returns	No returns	No returns	No returns	-	-
5. Hillsdale	No returns	No returns	3.31(13)	No returns	No returns	3.31	(13)
6. Lenawee	No returns	No returns	No returns	No returns	No returns	-	-
7. Monroe	No returns	No returns	No returns	No returns	No returns	-	-
8. Van Buren	No returns	0.62(67)	0.26(52)	No returns	No returns	0.46	(119)
9. Kalamazoo	0.94(33)	0.75(52)	No returns	0.00(1)	1.22(25)	0.89	(111)
10. Calhoun	No returns	No returns	1.08(26)	2.05(18)	No returns	1.48	(44)
11. Jackson	No returns	No returns	No returns	2.18(22)	No returns	2.18	(22)
12. Washtenaw	No returns	No returns	No returns	No returns	No returns	-	-
13. Wayne	No returns	No returns	No returns	No returns	No returns	-	-
14. Allegan	0.69(23)	No returns	0.34(132)	0.65(48)	1.00(2)	0.46	(205)
15. Barry	0.98(50)	1.74(66)	0.30(65)	1.66(24)	0.69(26)	1.04	(231)
16. Eaton	No returns	No returns	No returns	No returns	No returns	-	-
17. Ingham	No returns	No returns	No returns	No returns	No returns	-	-
18. Livingston	0.80(10)	No returns	No returns	No returns	No returns	0.80	(10)
19. Oakland	No returns	No returns	No returns	No returns	No returns	-	-
20. Macomb	No returns	No returns	0.66(33)	No returns	No returns	0.66	(33)
21. Ottawa	No returns	No returns	No returns	No returns	No returns	-	-
22. Kent	0.50(124)	0.90(75)	0.64(182)	1.48(151)	3.00(108)	1.24	(640)
23. Ionia	No returns	0.60(20)	No returns	0.79(26)	1.78(9)	0.88	(55)
24. Clinton	No returns	No returns	No returns	No returns	No returns	-	-
25. Shiawassee	No returns	No returns	No returns	No returns	No returns	-	-
26. Genesee	No returns	No returns	2.00(5)	No returns	2.00(0.5)	2.00	(5.5)
27. Lapeer	No returns	2.21(49)	3.00(5)	No returns	0.58(30)	1.67	(84)
28. St. Clair	No returns	No returns	No returns	No returns	No returns	-	-
29. Gratiot	No returns	No returns	No returns	No returns	No returns	-	-
30. Saginaw	No returns	No returns	No returns	No returns	No returns	-	-
31. Tuscola	No returns	No returns	No returns	No returns	No returns	-	-
32. Sanilac	No returns	No returns	No returns	No returns	No returns	-	-
33. Midland	No returns	0.00(101)	No returns	No returns	No returns	0.00	(101)
34. Bay	No returns	No returns	No returns	No returns	No returns	-	-
35. Huron	No returns	No returns	No returns	No returns	No returns	-	-
36. Muskegon	2.28(24)	0.67(74)	0.14(7)	1.06(102)	No returns	1.03	(207)
37. Montcalm	No returns	0.80(37)	0.23(14)	1.52(32)	No returns	0.99	(83)
38. Newaygo	1.06(616)	1.19(149)	1.48(278)	1.07(265)	0.84(185)	1.13	(1493)
39. Mecosta	2.06(121)	3.39(78)	2.98(116)	2.48(171)	2.50(53)	2.63	(539)
40. Isabella	No returns	1.75(62)	0.57(14)	3.00(5)	No returns	1.62	(81)
41. Gladwin	1.88(8)	0.47(327)	0.36(156)	0.00(2)	No returns	0.46	(493)
42. Arenac	1.38(133)	No returns	0.81(72)	0.38(185)	0.78(172)	0.79	(562)
43. Oceana	1.76(72)	1.45(70)	1.10(104)	1.03(110)	1.13(14)	1.27	(370)
44. Mason	1.47(128)	1.89(231)	1.05(210)	3.40(10)	1.57(289)	1.54	(868)
45. Lake	1.08(725)	1.68(78)	1.26(308)	1.11(349)	1.15(359)	1.16	(1819)
46. Osceola	0.63(102)	0.51(166)	0.98(167)	0.25(425)	0.67(6)	0.48	(866)
47. Clare	1.68(38)	0.71(500)	0.97(164)	1.02(42)	2.78(226)	1.29	(970)
<u>Average</u>	<b>1.17</b>	<b>1.04</b>	<b>1.03</b>	<b>1.03</b>	<b>1.58</b>	<b>1.14</b>	
<u>Total hours</u>	(2351)	(2244)	(2401)	(2064)	(1516)		(10575)

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

The figures in parenthesis indicate the number of hours  
of such fishing reported each year for each county.

When this number is low, the indicated average catch  
per hour is unreliable.

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

Region and County	1928	1929	1930	1931	1932	Average per hour	Total hours
<b>Lower Peninsula</b>							
N. of T. 20:							
48. Manistee	1.10(751)	1.34(668)	1.12(1057)	1.46(517)	1.51(153)	1.24	(3146)
49. Wexford	1.16(328)	1.69(250)	1.07(517)	0.81(702)	1.30(44)	1.07	(1841)
50. Missaukee	1.19(172)	1.39(433)	0.95(446)	0.72(631)	1.03(55)	1.00	(1737)
51. Roscommon	No returns	1.07(103)	0.46(89)	0.30(23)	0.48(55)	0.68	(270)
52. Ogemaw	1.59(687)	1.49(502)	0.97(759)	0.84(772)	0.43(14)	1.18	(2734)
53. Iosco	1.02(242)	1.65(214)	0.94(368)	1.07(365)	1.37(101)	1.14	(1290)
54. Benzie	1.04(273)	0.80(768)	0.87(841)	1.09(971)	1.08(162)	0.95	(3015)
55. Grand Traverse	0.82(227)	0.65(341)	0.66(395)	0.36(152)	0.64(86)	0.64	(1201)
56. Kalkaska	1.21(426)	0.83(692)	0.80(424)	1.07(456)	2.08(13)	0.97	(2011)
57. Crawford	0.96(725)	0.81(675)	0.78(864)	0.40(1544)	2.21(28)	0.67	(3836)
58. Oscoda	0.73(201)	0.51(163)	1.87(64)	0.46(41)	6.00(1)	0.81	(470)
59. Alcona	1.11(298)	1.06(168)	1.30(237)	0.90(48)	No returns	1.15	(751)
60. Leelanau	0.91(137)	1.15(76)	1.04(160)	0.93(260)	0.54(5)	0.98	(638)
61. Antrim	1.39(568)	1.62(309)	1.29(491)	1.13(750)	1.68(243)	1.35	(2361)
62. Otsego	1.35(1084)	1.62(746)	1.41(690)	1.48(1145)	1.11(415)	1.43	(4080)
63. Montmorency	1.66(114)	1.52(397)	1.96(107)	1.30(36)	3.17(6)	1.64	(660)
64. Alpena	4.67(3)	No returns	0.39(134)	No returns	No returns	0.48	(137)
65. Charlevoix	0.89(125)	1.16(135)	0.88(109)	1.44(43)	1.28(46)	1.06	(458)
66. Emmet	1.06(326)	2.02(274)	1.88(77)	1.29(198)	1.82(138)	1.53	(1013)
67. Cheboygan	0.77(572)	0.66(658)	0.72(848)	1.33(219)	0.58(192)	0.76	(2489)
68. Presque Isle	1.44(25)	1.91(69)	2.50(2)	2.00(26)	1.09(52)	1.64	(174)
<u>Average</u>	1.16	1.18	0.99	0.97	1.22	1.08	
<u>Total hours</u>	(7284)	(7641)	(8679)	(8899)	(1809)		(34312)
<b>Upper Peninsula:</b>							
69. Menominee	0.13(72)	0.79(77)	0.49(473)	0.74(107)	0.30(47)	0.51	(776)
70. Dickinson	0.64(58)	1.29(227)	0.49(208)	0.73(406)	0.70(253)	0.79	(1152)
71. Delta	0.82(72)	1.70(232)	1.31(371)	1.29(81)	0.87(345)	1.22	(1101)
72. Schoolcraft	1.27(96)	4.54(46)	1.41(406)	1.35(274)	1.04(69)	1.50	(891)
73. Mackinac	1.74(54)	2.08(104)	1.70(211)	1.58(148)	5.22(9)	1.81	(526)
74. Gogebic	0.88(435)	1.09(848)	0.85(1172)	0.98(1284)	0.92(75)	0.95	(3814)
75. Iron	0.37(8)	1.83(234)	1.33(446)	1.46(633)	1.38(460)	1.45	(1781)
76. Marquette	1.06(392)	0.82(1070)	1.04(367)	0.81(156)	0.84(1152)	0.88	(3137)
77. Alger	1.72(165)	1.13(303)	0.76(821)	1.39(169)	1.06(438)	1.03	(1896)
78. Luce	1.46(24)	1.51(37)	1.75(175)	1.13(175)	0.09(126)	1.13	(537)
79. Chippewa	1.56(89)	1.34(332)	1.78(632)	1.01(361)	1.46(156)	1.48	(1570)
80. Ontonagon	1.24(67)	1.46(275)	3.28(78)	1.96(161)	0.64(298)	1.42	(879)
81. Houghton	1.42(1339)	1.08(949)	0.58(2058)	0.75(1464)	1.00(568)	0.87	(6378)
82. Baraga	1.40(147)	1.79(282)	0.50(1934)	0.98(895)	1.11(284)	0.81	(3542)
83. Keweenaw	0.62(203)	0.68(305)	0.57(500)	0.57(817)	0.40(604)	0.55	(2429)
84. Isle Royal	1.50(4)	No returns	1.28(36)	0.60(556)	0.75(326)	0.68	(922)
<u>Average</u>	1.21	1.20	0.86	0.95	0.87	0.98	
<u>Total hours</u>	(3225)	(5321)	(9888)	(7687)	(5210)		(31331)

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

The figures in parenthesis indicate the number of hours of such fishing reported each year for each county. When this number is low, the indicated average catch per hour is unreliable.

County	1928	1929	1930	1931	1932	Average per hour	Total hours
1. Berrien	0.97(580)	1.70(257)	1.44(311)	1.00(276)	0.87(275)	1.16	(1699)
2. Cass	1.59(1930)	1.10(2467)	1.13(2204)	No returns	No returns	1.25	(6601)
3. St. Joseph	2.55(599)	1.52(504)	1.87(319)	2.70(91)	4.40(10)	2.09	(1523)
4. Branch	1.99(876)	1.62(870)	1.88(594)	2.92(427)	3.22(704)	2.24	(3471)
5. Hillsdale	1.09(604)	0.84(606)	1.56(296)	2.39(107)	5.29(14)	1.20	(1627)
6. Lenawee*	1.36(993)	1.54(513)	1.41(712)	0.95(990)	1.68(543)	1.33	(3751)
7. Monroe	2.22(703)	3.03(348)	1.00(890)	1.61(350)	1.56(1411)	1.69	(3702)
8. Van Buren	1.72(107)	2.67(412)	1.52(596)	1.49(521)	No returns	1.81	(1636)
9. Kalamazoo	0.83(579)	0.53(70)	1.38(305)	0.92(102)	1.42(164)	1.04	(1220)
10. Calhoun	1.52(435)	1.87(158)	1.31(562)	1.48(257)	1.89(232)	1.53	(1644)
11. Jackson*	1.14(239)	1.20(520)	1.92(659)	1.01(1018)	7.76(9)	1.33	(2445)
12. Washtenaw*	1.68(609)	1.84(555)	1.27(611)	0.60(1543)	1.31(434)	1.15	(3752)
13. Wayne	0.90(2447)	0.75(2521)	0.63(1953)	1.13(2511)	0.58(2025)	0.81	(11457)
14. Allegan	1.50(121)	0.60(58)	1.46(716)	1.55(543)	1.43(250)	1.46	(1688)
15. Barry	1.23(517)	1.54(336)	1.92(633)	1.46(826)	1.83(539)	1.60	(2851)
16. Eaton	1.39(430)	0.64(343)	1.28(521)	0.70(2504)	1.21(1007)	0.93	(4805)
17. Ingham	No returns	No returns	0.51(415)	0.60(10)	4.57(40)	0.86	(465)
18. Livingston*	2.46(364)	1.17(445)	1.53(1171)	1.10(1014)	1.59(710)	1.47	(3704)
19. Oakland*	1.81(968)	3.59(65)	1.78(633)	0.35(485)	2.46(421)	1.68	(2572)
20. Macomb	No returns	No returns	0.23(94)	No returns	No returns	0.23	(94)
21. Ottawa	No returns	1.52(21)	1.34(61)	No returns	3.03(130)	2.39	(212)
22. Kent	1.72(148)	1.42(267)	2.19(453)	1.58(534)	5.60(423)	2.65	(1825)
23. Ionia	No returns	2.07(16)	0.59(59)	1.32(121)	1.53(124)	1.30	(320)
24. Clinton	0.60(25)	0.35(8)	1.29(342)	1.06(285)	2.07(653)	1.61	(1313)
25. Shiawassee	0.66(213)	2.00(49)	1.86(123)	2.34(102)	1.89(18)	1.47	(505)
26. Genesee*	2.29(287)	1.39(226)	1.78(340)	2.83(361)	1.93(279)	2.10	(1493)
27. Lapeer	No returns	1.53(449)	2.14(1066)	1.34(543)	4.96(21)	1.83	(2079)
28. St. Clair	No returns	2.72(165)	0.83(192)	1.40(127)	6.54(182)	2.97	(666)
29. Gratiot	1.00(2)	No returns	0.27(45)	0.07(46)	No returns	0.19	(93)
30. Saginaw	No returns	No returns	No returns	No returns	No returns	No returns	
31. Tuscola	0.96(147)	1.88(78)	0.38(411)	0.83(104)	1.34(181)	0.84	(921)
32. Sanilac	14.4(125)	No returns	No returns	No returns	No returns	14.4	(125)
33. Midland	0.12(36)	0.15(63)	0.25(28)	No returns	1.47(45)	0.50	(172)
34. Bay	No returns	No returns	0.33(24)	No returns	No returns	0.33	(24)
35. Huron	No returns	0.62(34)	0.29(7)	No returns	No returns	0.56	(41)
36. Muskegon	3.91(123)	4.50(37)	1.06(336)	No returns	1.04(27)	1.97	(523)
37. Montcalm	4.41(99)	No returns	0.59(190)	1.28(662)	0.00(4)	1.46	(955)
38. Newaygo	1.17(215)	2.69(218)	1.21(317)	0.75(352)	1.12(667)	1.26	(1769)
39. Mecosta	1.64(178)	1.92(90)	3.05(56)	2.30(71)	3.15(46)	2.14	(441)
40. Isabella	No returns	0.67(536)	1.45(126)	No returns	No returns	0.82	(662)
41. Gladwin	No returns	0.19(900)	0.27(2676)	1.83(75)	0.86(1755)	0.47	(5406)
42. Arenac	4.00(4)	No returns	2.00(1)	1.75(70)	No returns	3.79	(75)
43. Oceana	1.32(57)	1.20(125)	1.78(148)	1.77(173)	2.06(102)	1.66	(605)
44. Mason	0.57(87)	3.19(60)	2.09(290)	1.94(841)	2.20(505)	2.01	(1783)
45. Lake	1.34(398)	4.32(66)	1.22(51)	0.17(12)	3.55(134)	2.06	(661)
46. Osceola	0.67(500)	2.31(159)	0.47(506)	0.37(617)	2.37(82)	0.73	(1864)
47. Clare	1.71(99)	0.48(780)	0.81(1235)	No returns	2.49(97)	0.81	(2211)
<u>Average</u>	1.58	1.25	1.18	1.17	1.70	1.35	
<u>Total hours</u>	(15,844)	(15,395)	(23,278)	(18,671)	(14,263)		(87,451)

\* The average catch per hour for these counties in 1931 was lowered because a special census was taken of ice fishing, which yielded very few fish.

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

The figures in parenthesis indicate the number of hours of such fishing reported each year for each county. When this number is low, the indicated average catch per hour is unreliable.

Region and County	1928	1929	1930	1931	1932	Average per hour	Total hours
<b>Lower Peninsula</b>							
N. of T. 20:							
48. Manistee	1.37(1243)	1.15(1290)	1.14(871)	1.28(813)	0.93(1284)	1.17	(5501)
49. Wexford	0.53(138)	1.67(48)	0.36(1149)	0.20(347)	1.01(392)	0.49	(2074)
50. Missaukee	2.02(355)	1.18(991)	0.74(2491)	0.37(1757)	1.91(34)	0.79	(5628)
51. Roscommon	0.26(10213)	0.28(11547)	0.27(12626)	0.25(7926)	0.55(7153)	0.31	(49465)
52. Ogemaw	1.28(805)	1.04(711)	0.76(2792)	0.82(1223)	No returns	0.88	(5531)
53. Iosco	1.05(137)	1.99(95)	0.72(1368)	0.69(146)	16.0(1)	0.82	(1747)
54. Benzie	0.81(734)	1.03(951)	0.95(855)	1.39(2685)	1.14(227)	1.17	(5452)
55. Grand Traverse	0.92(848)	0.88(553)	0.46(914)	0.28(504)	0.52(308)	0.64	(3127)
56. Kalkaska	1.22(228)	0.74(133)	0.79(481)	4.53(10)	2.33(26)	0.98	(878)
57. Crawford	0.57(85)	0.42(655)	0.88(193)	0.25(718)	0.62(255)	0.44	(1906)
58. Oscoda	0.92(106)	0.60(201)	0.84(74)	0.00(7)	No returns	0.72	(388)
59. Alcona	1.51(65)	1.71(14)	1.00(4)	No returns	No returns	1.52	(83)
60. Leelanau	0.76(751)	1.08(914)	1.33(756)	1.44(1239)	1.14(242)	1.18	(3902)
61. Antrim	1.50(64)	0.99(146)	0.67(162)	0.42(615)	2.05(40)	0.67	(1027)
62. Otsego	0.97(241)	1.33(57)	1.41(83)	0.11(1564)*	No returns	0.31	(1945)
63. Montmorency	0.75(4)	0.50(4)	2.66(3)	No returns	0.73(26)	0.86	(37)
64. Alpena	2.16(95)	0.63(33)	0.82(131)	No returns	No returns	1.29	(259)
65. Charlevoix	1.63(353)	1.62(193)	1.46(169)	2.92(149)	4.50(48)	1.96	(912)
66. Emmet	0.86(476)	1.88(152)	No returns	0.89(423)	1.12(183)	1.03	(1234)
67. Cheboygan	0.92(594)	0.80(843)	0.70(1100)	0.81(512)	0.60(346)	0.76	(3395)
68. Presque Isle	1.25(32)	0.73(60)	1.01(41)	4.04(25)	3.44(178)	2.49	(336)
<u>Average</u>	0.62	0.58	0.53	0.60	0.73	0.60	
<u>Total hours</u>	(17567)	(19591)	(26263)	(20663)	(10743)		(94827)
<b>Upper Peninsula:</b>							
69. Menominee	0.65(424)	1.12(383)	1.17(1058)	1.62(1812)	2.15(1837)	1.60	(5514)
70. Dickinson	0.33(3)	5.30(10)	0.87(16)	0.67(219)	No returns	0.87	(248)
71. Delta	1.21(9)	1.11(8)	0.98(104)	2.83(12)	1.30(78)	1.22	(211)
72. Schoolcraft	0.33(3)	No returns	1.50(140)	0.67(48)	0.25(8)	1.23	(199)
73. Mackinac	2.14(119)	1.34(94)	2.77(252)	1.92(79)	3.46(31)	2.33	(575)
74. Gogebic	0.57(912)	0.95(97)	1.24(127)	0.47(777)	0.27(77)	0.58	(1990)
75. Iron	1.40(15)	0.79(35)	0.22(67)	0.81(378)	1.02(476)	0.88	(971)
76. Marquette	0.58(81)	1.12(8)	0.61(211)	0.67(34)	1.17(777)	1.00	(1111)
77. Alger	0.44(36)	0.52(167)	0.58(400)	0.67(204)	1.97(102)	0.76	(909)
78. Luce	No returns	No returns	0.40(32)	0.25(4)	No returns	0.38	(36)
79. Chippewa	0.71(7)	0.84(41)	3.91(144)	2.07(71)	0.00(2)	2.83	(265)
80. Ontonagon	0.95(73)	0.18(101)	0.58(73)	1.50(2)	0.75(8)	0.54	(257)
81. Houghton	0.50(246)	1.28(270)	0.63(336)	0.61(251)	0.85(498)	0.78	(1601)
82. Baraga	1.17(6)	0.66(30)	0.65(115)	0.16(332)	0.51(111)	0.36	(594)
83. Keweenaw	0.20(56)	0.47(157)	0.34(539)	0.48(515)	1.01(80)	0.44	(1347)
84. Isle Royal	No returns	No returns	No returns	No returns	0.00(11)	0.00	(11)
<u>Average</u>	0.68	0.96	1.07	1.00	1.55	1.09	
<u>Total hours</u>	(1990)	(1401)	(3614)	(4738)	(4096)		(15839)

\* This very poor catch was due to the fact that most of the records for this year were for ice-fishing, which yielded few fish.

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

Numbers in parenthesis are unreliable, being based on less than 100 reported hours of fishing. The hours of fishing are indicated on Table . Tr. = trace, less than 0.005 fish per hour. The hours considered cover all types of angling in non-trout waters.

County	1928	1929	1930	1931	1932	Average per hour	Total hours
1. Berrien	0.56	1.03	1.05	0.42	0.54	0.69	(1699)
2. Cass	0.74	0.45	0.63	No returns	No returns	0.59	(6601)
3. St. Joseph	1.26	0.93	1.22	(2.07)	(1.50)	1.19	(1523)
4. Branch	1.16	0.94	1.12	1.93	2.10	1.39	(3471)
5. Hillsdale	0.71	0.22	0.90	2.14	(5.29)	0.70	(1627)
6. Lenawee*	0.88	0.63	0.81	0.42	1.22	0.76	(3751)
7. Monroe	0.01	0.01	None	None	None	0.09	(3702)
8. Van Buren	1.25	1.40	0.97	1.10	No returns	1.14	(1636)
9. Kalamazoo	0.45	(0.28)	0.84	0.05	0.72	0.54	(1220)
10. Calhoun	0.93	0.93	0.60	0.66	1.22	0.82	(1644)
11. Jackson*	0.41	0.71	1.00	0.43	(2.47)	0.65	(2445)
12. Washtenaw*	0.83	1.00	0.85	0.29	0.56	0.61	(3752)
13. Wayne	0.04	None	None	Tr.	0.03	0.01	(11457)
14. Allegan	0.71	(0.45)	1.05	1.16	0.50	0.96	(1688)
15. Barry	0.65	0.99	1.10	0.71	1.21	0.91	(2851)
16. Eaton	0.96	0.46	0.70	0.32	0.73	0.51	(4805)
17. Ingham	No returns	No returns	0.38	(None)	(2.49)	0.55	(465)
18. Livingston*	1.40	0.62	0.97	0.61	0.82	0.84	(3704)
19. Oakland*	0.78	(1.33)	0.93	0.15	1.97	0.91	(2572)
20. Macomb	No returns	No returns	(None)	No returns	No returns	None	(94)
21. Ottawa	No returns	(0.29)	(0.50)	No returns	1.67	1.20	(212)
22. Kent	1.19	0.64	1.47	1.04	0.39	0.95	(1825)
23. Ionia	No returns	(1.25)	(0.05)	0.31	0.81	0.50	(320)
24. Clinton	(0.36)	(None)	0.46	0.59	1.03	0.77	(1313)
25. Shiawassee	None	(0.59)	0.55	1.00	(None)	0.39	(505)
26. Genesee*	1.52	0.50	0.47	1.71	0.91	1.06	(1493)
27. Lapeer	No returns	0.84	1.40	1.15	(4.48)	1.24	(2079)
28. St. Clair	No returns	None	None	None	None	None	(666)
29. Gratiot	(None)	No returns	(0.07)	(None)	No returns	0.03	(93)
30. Saginaw	No returns	No returns	No returns	No returns	No returns	-	-
31. Tuscola	0.34	(0.56)	0.16	0.66	0.86	0.42	(921)
32. Sanilac	None	No returns	No returns	No returns	No returns	None	(125)
33. Midland	(None)	(None)	(None)	No returns	(None)	None	(172)
34. Bay	No returns	No returns	(None)	No returns	No returns	None	(24)
35. Huron	No returns	(None)	(None)	No returns	No returns	None	(41)
36. Muskegon	2.07	(1.43)	0.68	No returns	(None)	1.02	(523)
37. Montcalm	(0.77)	No returns	0.19	0.49	(None)	0.46	(955)
38. Newaygo	0.40	0.91	0.56	0.27	0.23	0.40	(1769)
39. Mecosta	0.59	(0.34)	(1.97)	(1.49)	(2.63)	1.07	(441)
40. Isabella	No returns	0.19	None	No returns	No returns	0.15	(662)
41. Gladwin	No returns	0.01	0.01	(None)	0.13	0.05	(5406)
42. Arenac	(None)	No returns	(None)	(None)	No returns	None	(75)
43. Oceana	(0.49)	None	0.39	0.05	0.02	0.16	(605)
44. Mason	(0.24)	(2.48)	1.32	0.37	1.04	0.78	(1783)
45. Lake	0.70	(2.42)	(0.20)	(0.08)	2.83	1.25	(661)
46. Osceola	0.29	0.98	0.12	0.09	(0.22)	0.23	(1864)
47. Clare	(0.50)	0.12	0.38	No returns	(1.55)	0.34	(2211)
Average	0.64	0.48	0.60	0.49	0.66	0.57	
Total hours	(15844)	(15395)	(23278)	(18671)	(14263)		(87451)

\* The average catch per hour for these counties in 1931 was lowered because a special census was taken of ice fishing, which yielded very few fish.

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

For further explanation see subheading of Table 13a.

Region and County	1928	1929	1930	1931	1932	Average Total per hour	Total hours
<b>Lower Peninsula</b>							
N. of T. 20:							
48. Manistee	0.43	0.31	0.32	0.02	0.28	0.29	(5501)
49. Wexford	0.09	(0.56)	0.05	0.07	0.31	0.12	(2074)
50. Missaukee	0.41	0.36	0.15	0.07	(0.03)	0.18	(5628)
51. Roscommon	Tr.	Tr.	Tr.	Tr.	0.01	Tr.	(49465)
52. Ogemaw	0.37	0.35	0.25	Tr.	No returns	0.23	(5531)
53. Iosco	0.35	(0.21)	0.19	0.11	(None)	0.20	(1747)
54. Benzie	0.07	0.11	0.13	0.03	0.19	0.07	(5452)
55. Grand Traverse	0.27	0.23	0.07	0.04	0.34	0.17	(3127)
56. Kalkaska	0.58	0.02	0.07	(0.11)	(0.15)	0.20	(878)
57. Crawford	(None)	None	0.01	None	None	Tr.	(1906)
58. Oscoda	0.02	0.09	(0.04)	(None)	No returns	0.06	(388)
59. Alcona	(0.89)	(0.57)	(None)	No returns	No returns	0.79	(83)
60. Leelanau	0.09	0.04	0.03	0.02	None	0.03	(3902)
61. Antrim	(0.28)	0.03	0.01	Tr.	(0.30)	0.03	(1027)
62. Otsego	0.02	(0.11)	(None)	None	No returns	0.06	(1945)
63. Montmorency	(None)	(None)	(None)	No returns	(None)	None	(37)
64. Alpena	(None)	(None)	None	No returns	No returns	None	(259)
65. Charlevoix	0.13	0.04	0.21	None	(None)	0.10	(912)
66. Emmet	0.05	0.05	No returns	None	0.08	0.04	(1234)
67. Cheboygan	None	0.01	None	None	0.07	0.01	(3395)
68. Presque Isle	(None)	(None)	(0.60)	(None)	0.21	0.18	(336)
<u>Average</u>	0.10	0.07	0.08	0.01	0.07	0.07	
<u>Total hours</u>	(17567)	(19591)	(26263)	(20663)	(10743)		(94827)
<b>Upper Peninsula:</b>							
69. Menominee	None	None	None	None	Tr.	Tr.	(5514)
70. Dickinson	(None)	(None)	(None)	None	No returns	None	(248)
71. Delta	(None)	(None)	0.02	(None)	(None)	0.01	(211)
72. Schoolcraft	(None)	No returns	0.36	(None)	(None)	0.03	(199)
73. Mackinac	0.67	(0.11)	0.15	(None)	(None)	0.22	(575)
74. Gogebic	None	(None)	None	0.05	(None)	0.01	(1990)
75. Iron	(None)	(None)	(None)	None	None	None	(971)
76. Marquette	(None)	(None)	0.09	None	None	0.02	(1111)
77. Alger	(None)	None	0.08	0.03	None	0.04	(909)
78. Luce	No returns	No returns	(None)	(None)	No returns	None	(36)
79. Chippewa	(None)	(None)	None	(None)	(None)	None	(265)
80. Ontonagon	(0.27)	None	(None)	(None)	(None)	0.08	(257)
81. Houghton	0.02	0.06	None	None	0.01	0.02	(1601)
82. Baraga	(None)	(None)	None	None	None	None	(594)
83. Keweenaw	(None)	None	Tr.	None	(None)	Tr.	(1347)
84. Isle Royal	No returns	No returns	No returns	No returns	(None)	None	(11)
<u>Average</u>	0.05	0.02	0.04	0.01	Tr.	0.02	
<u>Total hours</u>	(1990)	(1401)	(3614)	(4738)	(4096)		(15839)



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.

Computations based on all fishing in the specified waters. Tr. = trace, less than 0.005 fish per hour.

Species	Waters	Region	1927	1928	1929	1930	1931	1932	Average
All species	All waters	1. Lower Peninsula S. of T. 20	-	1.53	1.21	1.17	1.16	1.69	1.33
		2. Lower Peninsula N. of T. 20	-	0.78	0.75	0.65	0.71	0.80	0.72
		3. Upper Peninsula	-	1.01	1.15	0.92	0.97	1.17	1.02
		4. Entire state	1.15	1.09	0.96	0.88	0.91	1.26	1.00
All species	Non-trout waters	1. Lower Peninsula S. of T. 20	-	1.58	1.25	1.18	1.17	1.70	1.35
		2. Lower Peninsula N. of T. 20	-	0.62	0.60	0.53	0.60	0.73	0.60
		3. Upper Peninsula	-	0.70	0.96	1.07	1.00	1.55	1.12
		4. Entire state	-	1.05	0.88	0.85	0.88	1.32	0.97
Brook, Brown & Rainbow Trout	Trout waters	1. Lower Peninsula S. of T. 20	-	1.17	1.04	1.03	1.03	1.58	1.15
		2. Lower Peninsula N. of T. 20	-	1.16	1.18	0.99	0.97	1.22	1.08
		3. Upper Peninsula	-	1.21	1.20	0.86	0.95	0.87	0.97
		4. Entire state	-	1.17	1.17	0.93	0.97	1.10	1.04
Brook Trout	Trout waters	1. Lower Peninsula S. of T. 20	-	0.85	0.83	0.81	0.83	0.73	0.82
		2. Lower Peninsula N. of T. 20	-	1.01	1.05	0.85	0.86	1.00	0.94
		3. Upper Peninsula	-	1.10	1.15	0.84	0.93	0.80	0.93
		4. Entire state	-	1.01	1.05	0.84	0.89	0.83	0.92
Brown Trout	Trout waters	1. Lower Peninsula S. of T. 20	-	0.08	0.02	0.03	0.06	0.22	0.08
		2. Lower Peninsula N. of T. 20	-	0.02	0.02	0.03	0.02	0.05	0.02
		3. Upper Peninsula	-	0.01	Tr.	Tr.	Tr.	Tr.	Tr.
		4. Entire state	-	0.03	0.01	0.02	0.02	0.05	0.02
Rainbow Trout	Trout waters	1. Lower Peninsula S. of T. 20	-	0.24	0.20	0.19	0.13	0.62	0.25
		2. Lower Peninsula N. of T. 20	-	0.13	0.12	0.11	0.09	0.19	0.12
		3. Upper Peninsula	-	0.09	0.05	0.02	0.03	0.07	0.04
		4. Entire state	-	0.14	0.11	0.08	0.07	0.19	0.11
5 Propagated lake fishes ↓	Non-trout waters	1. Lower Peninsula S. of T. 20	-	1.19	0.97	0.89	0.80	1.08	0.97
		2. Lower Peninsula N. of T. 20	-	0.35	0.31	0.26	0.31	0.42	0.31
		3. Upper Peninsula	-	0.53	0.56	0.71	0.59	1.05	0.73
		4. Entire state	-	0.74	0.60	0.57	0.55	0.83	0.63
5 non-propagated lake fishes ✓	Non-trout waters	1. Lower Peninsula S. of T. 20	-	0.35	0.29	0.25	0.30	0.58	0.33
		2. Lower Peninsula N. of T. 20	-	0.26	0.28	0.28	0.18	0.30	0.27
		3. Upper Peninsula	-	0.12	0.32	0.31	0.25	0.29	0.27
		4. Entire state	-	0.29	0.29	0.27	0.24	0.44	0.30
Ratio, 5 propagated to 5 non-propagated fishes		1. Lower Peninsula S. of T. 20	-	3.40	3.34	3.56	2.67	1.86	2.94
		2. Lower Peninsula N. of T. 20	-	1.35	1.11	0.93	1.72	1.40	1.15
		3. Upper Peninsula	-	4.42	1.75	2.29	2.36	3.62	2.70
		4. Entire state	-	2.55	2.07	2.11	2.29	1.89	2.10

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

2/ Common sunfish, rock bass, black crappie, northern pike and bullheads. A small, inconsequential number of these species are recorded as having been planted from 1926 to 1932.

3/ Average based on the five year period, 1928 to 1932.

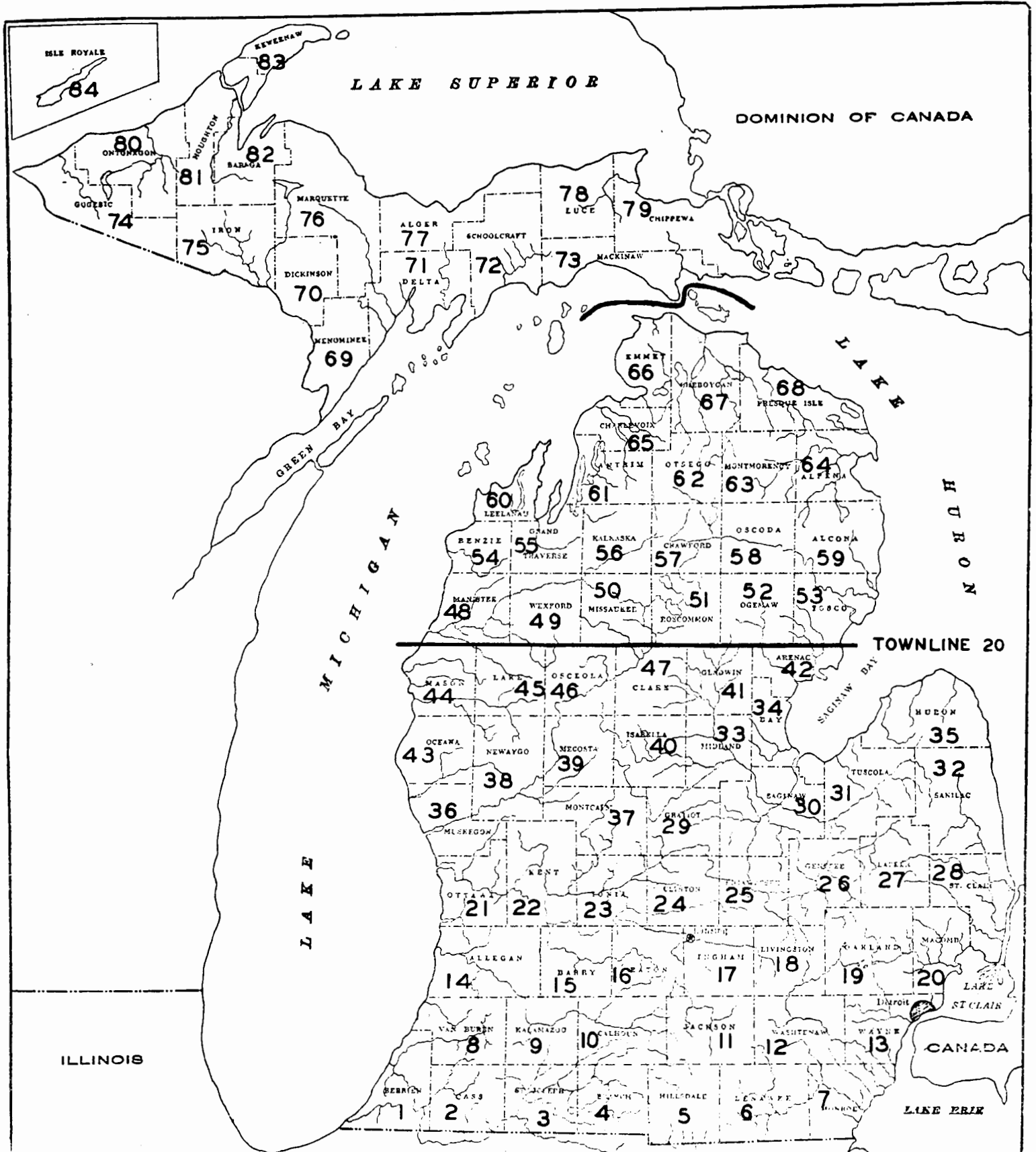
TABLE 14b. SUMMARY OF COMPUTATIONS OF TOTAL FISH CATCH PER HOUR,  
SECOND PART, FOR MORE IMPORTANT SPECIES IN NON-TROUT  
WATERS

All types of fishing in non-trout waters combined.

Tr. = trace, less than 0.005 fish per hour.

Species	Region		1928	1929	1930	1931	1932	Average
Small-mouth Bass	1. Lower Peninsula south of Townline	20	0.02	0.02	0.01	0.01	0.02	0.02
	2. Lower Peninsula north of Townline	20	0.02	0.02	0.02	0.01	0.04	0.02
	3. Upper Peninsula		0.05	0.07	0.03	0.01	0.03	0.03
	4. Entire state		0.02	0.02	0.02	0.01	0.03	0.02
Large-mouth Bass	1. Lower Peninsula south of Townline	20	0.07	0.08	0.06	0.04	0.05	0.06
	2. Lower Peninsula north of Townline	20	0.02	0.02	0.01	Tr.	Tr.	0.01
	3. Upper Peninsula		0.05	0.03	0.02	0.03	0.03	0.03
	4. Entire state		0.04	0.05	0.03	0.02	0.03	0.03
Blue-gill	1. Lower Peninsula south of Townline	20	0.64	0.48	0.60	0.50	0.66	0.57
	2. Lower Peninsula north of Townline	20	0.10	0.07	0.08	0.02	0.07	0.07
	3. Upper Peninsula		0.05	0.02	0.04	0.01	Tr.	0.02
	4. Entire state		0.34	0.24	0.30	0.22	0.35	0.29
Common Sunfish	1. Lower Peninsula south of Townline	20	0.12	0.08	0.07	0.06	0.09	0.08
	2. Lower Peninsula north of Townline	20	0.02	0.02	0.03	0.01	0.01	0.02
	3. Upper Peninsula		0.01	0.03	0.01	Tr.	Tr.	0.01
	4. Entire state		0.06	0.05	0.05	0.03	0.05	0.05
Rock Bass	1. Lower Peninsula south of Townline	20	0.08	0.09	0.05	0.04	0.07	0.06
	2. Lower Peninsula north of Townline	20	0.07	0.07	0.05	0.04	0.06	0.06
	3. Upper Peninsula		0.01	0.07	0.06	0.02	0.08	0.05
	4. Entire state		0.07	0.08	0.05	0.04	0.07	0.06
Black Crappie	1. Lower Peninsula south of Townline	20	0.04	0.02	0.05	0.05	0.22	0.07
	2. Lower Peninsula north of Townline	20	Tr.	Tr.	Tr.	0.01	None	Tr.
	3. Upper Peninsula		Tr.	None	Tr.	Tr.	None	Tr.
	4. Entire state		0.02	0.02	0.03	0.03	0.11	0.03
Perch	1. Lower Peninsula south of Townline	20	0.46	0.37	0.22	0.25	0.34	0.32
	2. Lower Peninsula north of Townline	20	0.15	0.16	0.11	0.27	0.28	0.18
	3. Upper Peninsula		0.11	0.31	0.57	0.49	0.85	0.54
	4. Entire state		0.29	0.25	0.19	0.29	0.39	0.27
Walleye	1. Lower Peninsula south of Townline	20	None	0.02	0.01	0.01	0.01	0.01
	2. Lower Peninsula north of Townline	20	0.06	0.04	0.02	0.01	0.03	0.03
	3. Upper Peninsula		0.27	0.13	0.05	0.05	0.14	0.11
	4. Entire state		0.09	0.04	0.02	0.01	0.04	0.04
Northern Pike	1. Lower Peninsula south of Townline	20	0.03	0.05	0.03	0.04	0.02	0.03
	2. Lower Peninsula north of Townline	20	0.15	0.16	0.15	0.11	0.16	0.14
	3. Upper Peninsula		0.08	0.20	0.22	0.18	0.16	0.17
	4. Entire state		0.09	0.12	0.10	0.09	0.09	0.09
Bull-heads	1. Lower Peninsula south of Townline	20	0.08	0.05	0.05	0.10	0.17	0.09
	2. Lower Peninsula north of Townline	20	0.02	0.03	0.03	0.01	0.07	0.03
	3. Upper Peninsula		0.02	0.02	0.02	0.05	0.05	0.03
	4. Entire state		0.05	0.04	0.04	0.05	0.12	0.06

MICHIGAN CREEL CENSUS  
1928 - 1932



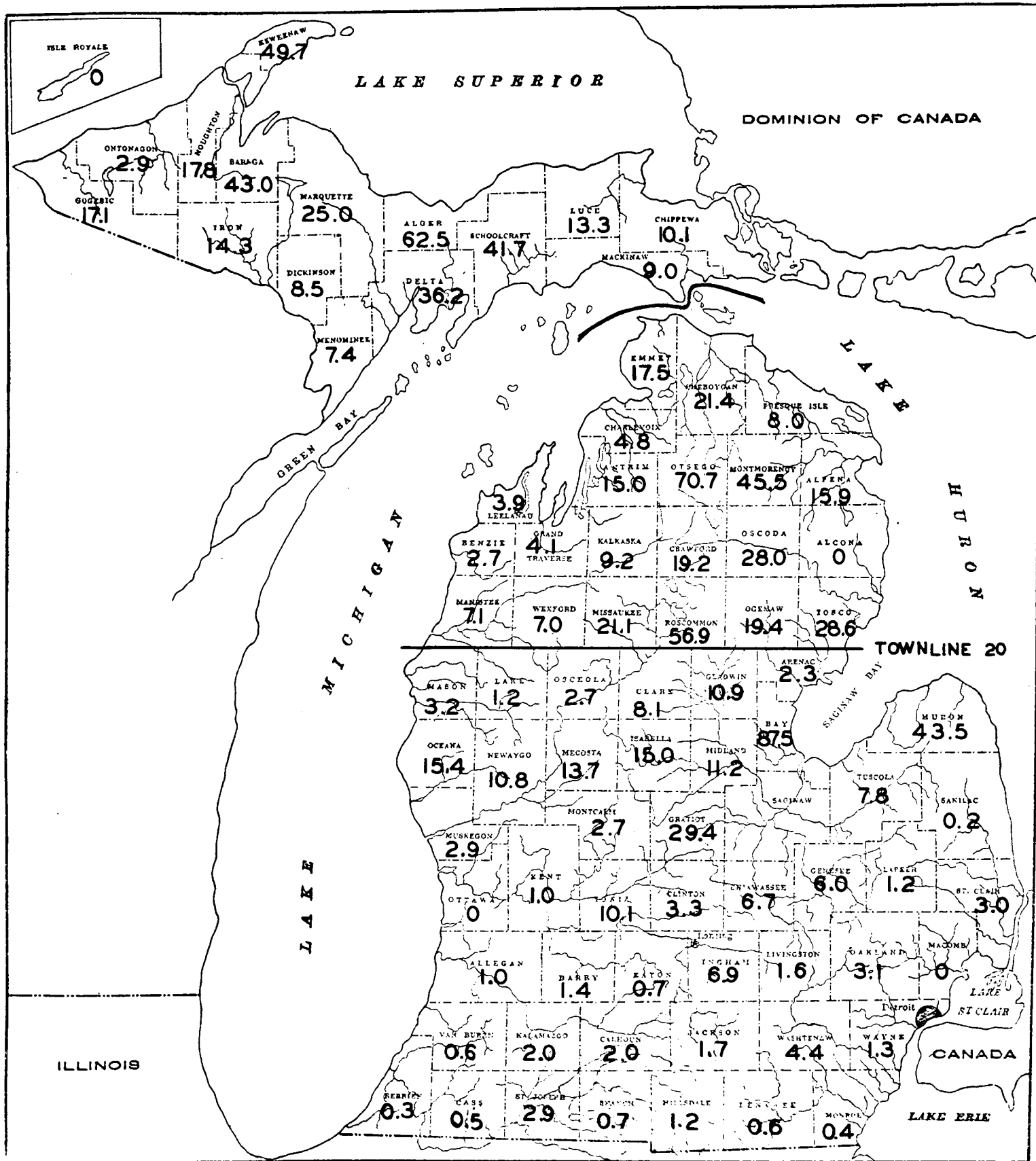
MICHIGAN COUNTIES AS NUMBERED AND ARRANGED IN CREEL CENSUS REPORT





MICHIGAN CREEL CENSUS

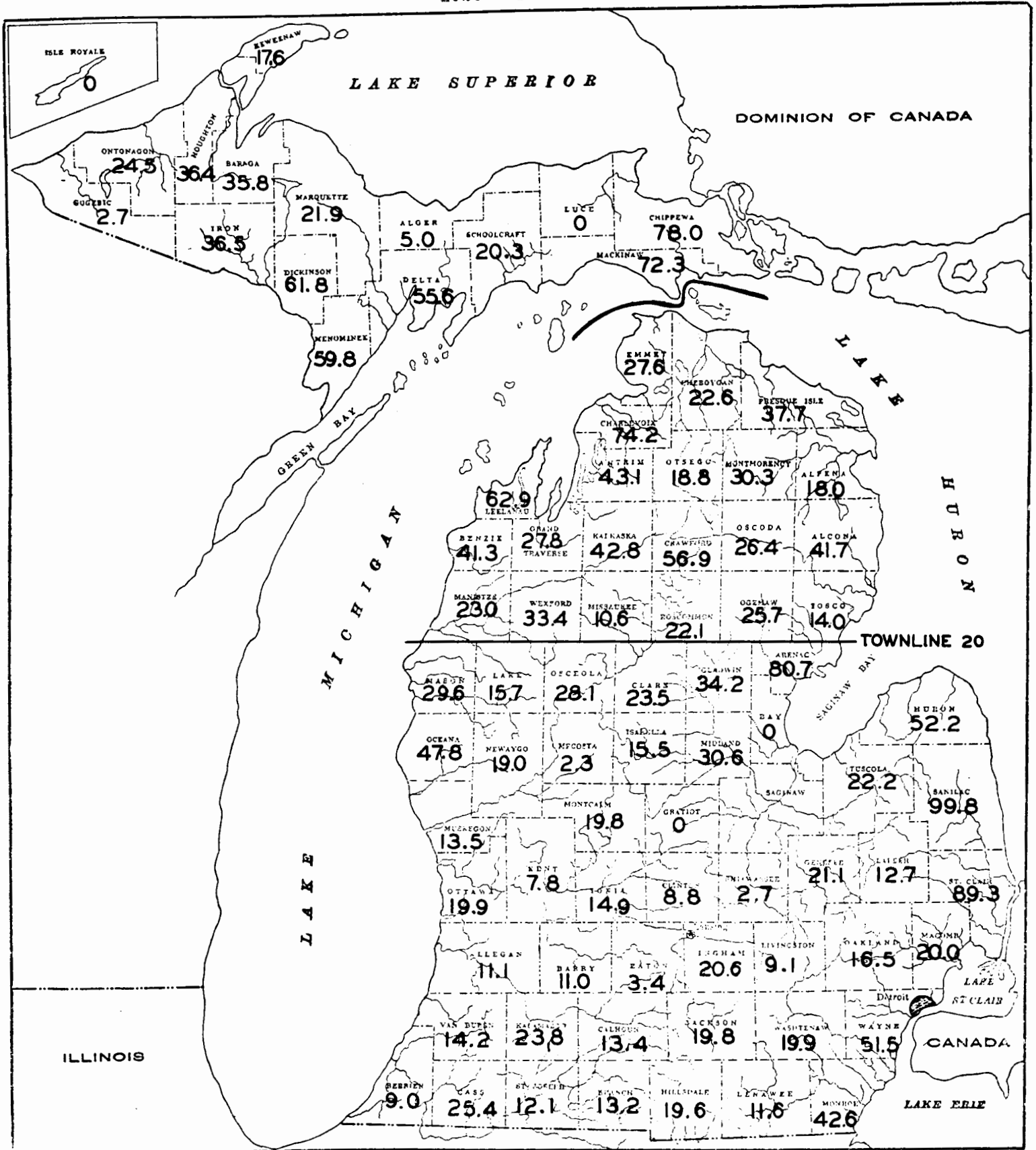
1928 - 1932



PERCENTAGE OF NORTHERN PIKE IN FISH CATCH IN NON-TROUT WATERS, BY COUNTIES

From Table 8 of Report

MICHIGAN CREEL CENSUS  
1928 - 1932



PERCENTAGE OF PERCH IN FISH CATCH IN NON-TROUT WATERS, BY COUNTIES

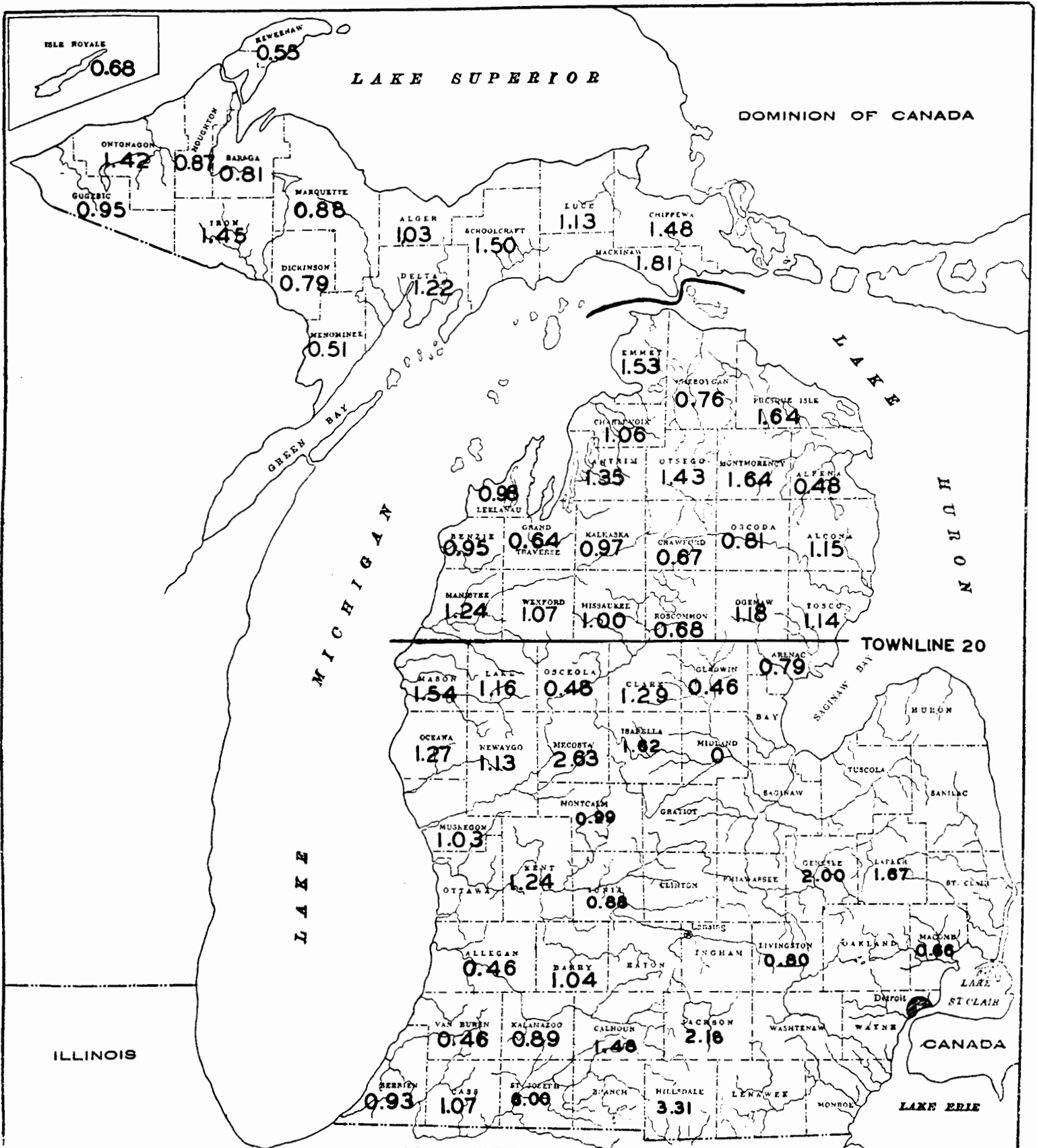
From Table 8 of Report







MICHIGAN CREEL CENSUS  
1928 - 1932



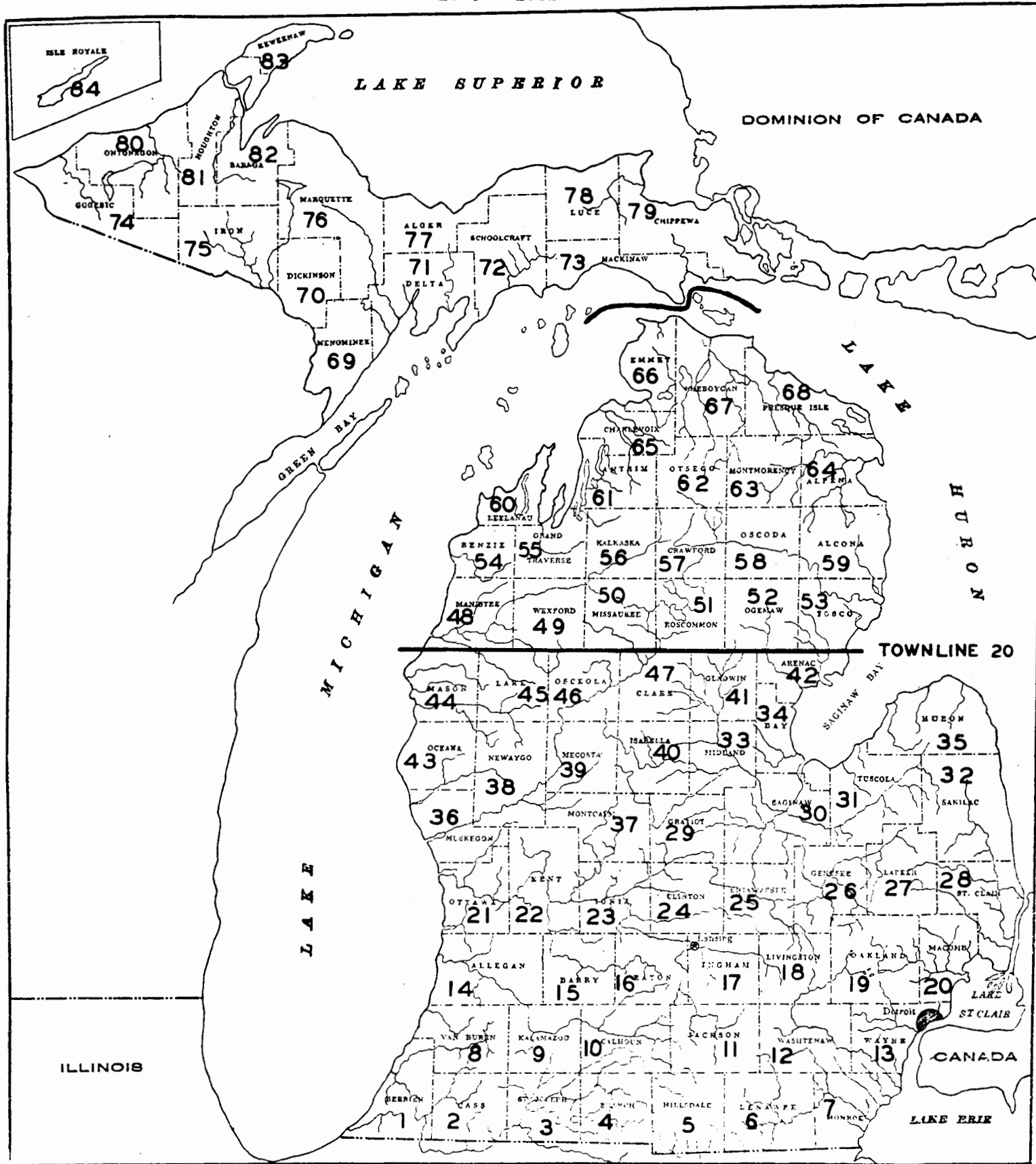
TROUT CATCH PER HOUR BY COUNTIES

From Table 11 of Report





MICHIGAN CREEL CENSUS  
1928 - 1932



MICHIGAN COUNTIES AS NUMBERED AND ARRANGED IN CREEL CENSUS REPORT

Record of Fishes Reported as Caught  
 in Non-Trout Waters, South of <sup>Compilations of</sup> Townline 20  
 (first sheet) data for Report 238.

	Brook Trout	Brown Trout	Rainbow Trout	Sun.-mouth Bass	Lg.-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Bleach Crappie	Total, this sheet
1. Berrien	28			-	7	330	2	6	71	416
	29			1	8	265	16	-	37	327
	30			-	17	328	4	-	27	376
	31			1	4	122 (5)	1	1	100	229 (5)
	32			4	12	150 (2)	1 (1)	-	76 (2)	243 (15)
T				6	48	1195 (7)	24 (1)	7	311 (12)	1591 (20)
2. Cass	28			19 (5)	188 (9)	1449 (28)	102	153 (16)	189	2100 (58)
	29			6	158 (4)	1118	216	275	87	1860 (4)
	30			2	76 (1)	1420 (26)	185	105 (4)	103 (8)	1891 (39)
	31			-	-	-	-	-	-	-
	32			-	-	-	-	-	-	-
T				27 (5)	422 (14)	3987 (54)	503	533 (20)	399 (8)	5851 (101)
3. St. Joseph	28			30	125 (10)	763 (9)	378	40	-	1336 (19)
	29			1	18	470 (6)	24	52	-	565 (6)
	30			1	16 (1)	412 (23)	43 (3)	22 (4)	66 (36)	560 (67)
	31			-	-	188	-	-	26	214
	32			8	6	40 (25)	-	-	-	54 (25)
T				40	165 (11)	1873 (63)	445 (3)	114 (4)	92 (36)	2729 (117)
4. Branch	28			27	87 (1)	1024	102	32	23	1295 (1)
	29			21	133	822 (1)	42 (1)	35	13	1066 (2)
	30			2	85 (9)	721 (56)	68 (4)	23 (8)	114 (4)	1013 (81)
	31			3	46	861 (25)	64	10	32	1016 (25)
	32			3	137	1480	150	21	91	1882
T				56	488 (10)	4908 (82)	426 (5)	121 (8)	273 (4)	6272 (109)
5. Hilldale	28			2	37	431	30	13	-	513
	29			-	57	132	6	36	-	231
	30			-	48 (12)	301 (34)	10	35 (2)	19 (1)	413 (49)
	31			-	31 (5)	272 (45)	3 (3)	3 (3)	20 (20)	329 (76)
	32			-	9 (9)	292 (218)	-	-	-	301 (227)
T				2	182 (26)	1428 (297)	49 (3)	87 (5)	39 (21)	1787 (352)
6. Kenawee	28			15 (1)	74 (2)	904 (34)	200 (1)	95 (1)	2	1290 (39)
	29			1	86	326	190	48	-	651
	30			7	47	578	158	12	-	802
	31			8	44 (3)	451 (32)	175 (1)	30	12 (11)	920 (47)
	32			-	68 (4)	739 (74)	70	26	7	910 (78)
T				31 (1)	219 (9)	2998 (40)	793 (2)	211 (1)	21 (11)	4373 (164)
7. Monroe	28			1	17	6	103	95	-	222
	29			3	8	3	19	147	-	180
	30			1	20	-	64	77	6	168
	31			10 (5)	10	-	20	37 (4)	-	17 (9)
	32			19	24 (3)	-	89 (1)	196 (1)	-	328 (5)
T				34 (5)	79 (3)	9	295 (1)	552 (5)	6	975 (14)
8. Van Buren	28			-	75 (6)	134	-	1	7	217 (6)
	29			8	132 (10)	577	27	190	9	943 (10)
	30			2	26 (17)	600 (24)	30	14	60 (8)	732 (49)
	31			-	48 (15)	1092 (518)	36 (2)	25 (5)	55 (11)	1256 (551)
	32			-	-	-	-	-	-	-
T				10	281 (63)	2403 (542)	93 (2)	230 (5)	131 (19)	3148 (671)
Total, this sheet				206 (11)	1984 (176)	18,801 (1185)	2628 (17)	1855 (48)	1252 (111)	26,726 (1548)

Record of Fishes — Non-trout waters  
 South of Townline 20 — (Second sheet)

		Perch	Walleye	Northern Pike	Bullheads	Gar	Loggfish	Sunelt	Cisw & Whitefish	Lake Trout	Suckers	Mudlets & Rockhoppers	Carp	Chubs & Shiners	Catfishes	Other spp.		Un-named	Total for Co. & yr.		
																Name	No.				
1. Berrien	28	51	-	2	18	-	-	-	-	-	20	-	-	-	-	-	-	-	568		
	29	77	2	1	9	-	20	-	-	-	2	-	-	-	-	-	-	-	439		
	30	35	4	1	17	-	3	-	-	-	2	-	-	-	-	-	-	-	449		
	31	5	-	2	10	-	1	-	-	-	-	-	11	4	-	-	-	30	280		
	32	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	255	
	T	180	6	6	45	-	24	-	-	-	93	-	-	15	1	-	-	-	30	1991	
2. Cass	28	854	1	26	135	-	-	-	-	-	40	-	16	-	-	-	-	-	3172		
	29	704	1	16	148	-	-	-	-	-	-	-	3	-	-	-	-	-	2732		
	30	587	1	-	29	-	-	9	-	-	-	-	-	-	-	-	-	3	2520		
	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	T	2145	3	42	312	-	-	9	-	-	40	-	19	-	-	-	-	-	3	8424	
St. Joseph	28	185	2	12	2	-	-	-	-	-	15	-	-	-	-	-	-	-	1552		
	29	99	-	56	6	-	-	-	-	-	49	-	1	-	-	-	-	-	776		
	30	73	1	27	15	-	-	-	-	-	24	-	1	-	-	-	-	Shady	678		
	31	29	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	246		
	32	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69		
	T	401	3	95	26	-	-	-	-	-	64	-	2	-	-	-	-	-	1	3321	
4. Branch	28	216	-	23	216	-	1	-	-	-	10	-	-	-	-	-	-	-	Warmouth	6	1767
	29	164	-	6	198	-	-	-	-	-	-	-	-	-	-	-	-	-	Warmouth	-	1434
	30	144	3	5	19	1	146	-	-	-	25	71	110	-	-	-	-	-	Warmouth	1	1538
	31	241	-	11	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1273
	32	316	-	14	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2268
	T	1081	3	59	492	1	148	-	-	-	35	71	110	-	-	-	-	-	7	8280	
5. Hillside	28	139	-	-	3	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	656
	29	213	14	21	23	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	504
	30	91	-	5	7	-	2	-	-	-	13	-	59	59	-	-	-	-	Warmouth	3	593
	31	41	-	4	-	-	-	-	-	-	-	-	46	46	-	-	-	-	-	-	420
	32	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	302
	T	485	14	30	33	-	2	-	-	-	16	-	105	105	-	-	-	-	3	2475	
6. Lenawee	28	82	-	4	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1409
	29	147	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	801
	30	153	3	9	27	-	1	-	11	-	-	-	-	-	-	-	-	-	-	-	1006
	31	176	-	13	27	-	54	-	-	-	15	-	6	1	-	-	-	-	Warmouth	8	1020
	32	47	-	4	31	-	-	-	-	-	-	-	-	-	-	-	-	-	"	2	994
	T	605	3	33	118	-	55	-	11	-	15	-	6	1	-	-	-	-	"	10	5230
7. Monroe	28	783	-	-	503	-	-	-	-	-	2	-	45	-	16	-	-	-	-	-	1571
	29	702	-	-	169	-	-	-	-	-	7	-	-	-	1	-	-	-	-	-	1059
	30	272	-	7	397	-	-	-	-	-	29	-	23	-	5	-	-	-	-	-	901
	31	119	-	2	350	-	-	-	-	-	-	7	17	-	2	-	-	-	-	-	574
	32	816	-	18	925	-	-	-	-	-	18	3	87	-	26	-	-	-	-	-	2221
	T	2692	-	27	2344	-	-	-	-	-	56	10	172	-	50	-	-	-	-	-	6326
8. Van Buren	28	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	267
	29	146	-	12	7	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1109
	30	220	-	8	9	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	972
	31	115	-	4	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	1387
	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T	531	-	24	16	-	-	-	-	-	13	-	-	-	3	-	-	-	-	-	3735
<b>Total, this sheet</b>		8120	32	316	3388	1	228	20	20	332	81	414	16	54	20	34	39782				

Non-trout waters  
South of Townline 20  
sheet 3

	Brook Trout	Brown Trout	Rainbow Trout	Sum.-mouth Bass	Spr.-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Total, this sheet
9. Kalamaygo	28	-	-	41	262	37	17	7	364	
29	-	-	5	20	6	⑥	4	-	35⑥	
30	2	-	9	255	2	-	4	74	346	
31	-	-	-	5	-	-	-	-	5	
32	-	-	8	119	11	-	3	12	153	
T	2	-	63	661	56	⑥	28	93	903⑥	
10. Calhoun	28	6	35	403	27	-	51	529		
29	5	9	146	47	-	-	23	230		
30	-	15	①	337	30	-	33	417①		
31	8	21	-	170	29	-	60	290		
32	14	17	-	301	10	-	45	388②		
T	33	97	①	1357	143	-	212	1854②		
11. Jackson	28	9	24	②	114	⑮	102	27	276⑮	
29	9	36	-	372	④	69	24	31	541④	
30	3	②	21	①	751	⑩	140	⑮	69⑮	
31	1	①	29	⑤	442	②	96	①	44①	
32	-	-	16	⑥	31	⑩	34	⑬	1⑬	
T	22	③	126	⑭	1718	⑮	441	⑮	165⑮	
12. Wadsworth	28	5	78	506	69	-	49	8	715	
29	11	107	557	66	-	-	16	-	757	
30	3	74	④	518	28	-	27	9	659④	
31	10	⑥	47	⑩	470	⑨	31	④	54④	
32	18	⑦	34	⑤	282	⑮	80	41	8⑧	
T	47	⑮	340	⑮	2333	⑮	274	⑮	187⑮	
13. Wayne	28	10	5	94	93	-	201	-	403	
29	2	2	-	-	13	-	166	-	183	
30	16	①	2	①	-	3	391	-	412⑩	
31	12	①	-	5	38	⑪	216	9	280⑪	
32	6	③	8	②	55	-	49	⑮	386⑮	
T	46	②	17	③	154	⑪	1023	⑮	395⑮	
14. Allyn	28	1	11	86	10	-	-	-	108	
29	-	7	26	-	-	-	-	-	33	
30	-	9	761	⑨	13	-	13	②	77②	
31	-	23	632	④	38	-	4	-	21④	
32	-	28	134	⑦	-	-	2	-	160⑦	
T	1	78	1639	⑮	61	-	19	②	258②	
15. Barry	28	8	30	339	90	-	5	-	472	
29	-	3	331	22	12	-	21	-	389	
30	2	27	698	42	4	-	122	-	895	
31	8	14	589	38	37	-	120	-	809	
32	16	77	653	51	29	-	10	-	836	
T	34	151	2610	243	82	-	278	-	3401	
16. Eaton	28	10	414	81	7	-	33	-	545	
29	33	①	158	①	15	-	8	-	223①	
30	33	-	366	④	2	-	76	②	478②	
31	59	①	837	④	154	⑩	28	⑤	135⑤	
32	29	③	778	③	106	-	67	②	83②	
T	164	⑤	2553	③	358	⑩	112	⑦	335⑦	
Total, this sheet	3	3③	185⑮	1036④②	13,017⑮	1766⑥②	1628⑧④	1765⑮	19,403⑥①	



Non-trout waters  
South of Townline 20

	Perch	Walleye	Northern Pike	Bullheads	Jars	Dogfish	Smelt	Cisco	Whitefish	Lake Trout	Suckers	Mullet & Redhens	Carp	Shiners	Catfish	Other spp.		Unnamed	Total for County and year
																Name	No.		
9. Kalamazoo	28 104 29 17 <sup>(15)</sup> 30 60 31 79 32 49 T 309 <sup>(15)</sup>		11 <sup>(4)</sup> 5 - 9 - 26 <sup>(4)</sup>	13 - 11 - 7 32	- - - - - 3 <sup>(1)</sup>	1 - 2 - - 2								24 24					493 <sup>(5)</sup> 58 <sup>(21)</sup> 421 94 233 1299 <sup>(2)</sup>
10. Calhoun	28 94 29 44 30 97 31 68 32 40 <sup>(0)</sup> T 343 <sup>(0)</sup>	- - - 3 14 17	6 3 16 16 11 52	34 21 22 1 6 84	- - 25 - - 25							191 <sup>(22)</sup> 2 193 <sup>(22)</sup>							663 298 768 <sup>(33)</sup> 380 459 <sup>(21)</sup> 2568 <sup>(54)</sup>
11. Jackson	28 5 29 65 30 276 <sup>(10)</sup> 31 304 32 17 <sup>(5)</sup> T 667 <sup>(15)</sup>	- - 1 - - 1	1 6 14 36 <sup>(4)</sup> 1 58 <sup>(4)</sup>	9 10 46 <sup>(5)</sup> 43 - 108 <sup>(5)</sup>	- - 4 3 <sup>(2)</sup> - 7 <sup>(2)</sup>														291 <sup>(11)</sup> 622 <sup>(4)</sup> 1415 <sup>(148)</sup> 1045 <sup>(22)</sup> 100 <sup>(34)</sup> 3473 <sup>(225)</sup>
12. Washburn	28 244 29 248 30 84 31 226 <sup>(16)</sup> 32 93 <sup>(9)</sup> T 895 <sup>(25)</sup>	1 3 1 <sup>(1)</sup> - - 5 <sup>(1)</sup>	35 4 23 <sup>(3)</sup> 182 <sup>(6)</sup> 5 199 <sup>(9)</sup>	38 9 20 16 <sup>(15)</sup> 75 <sup>(10)</sup> 158 <sup>(25)</sup>	- - - - 2 2														1033 1021 787 <sup>(8)</sup> 1017 <sup>(34)</sup> 638 <sup>(69)</sup> 4496 <sup>(164)</sup>
13. Wayne	28 1387 29 1462 30 625 <sup>(31)</sup> 31 1365 <sup>(33)</sup> 32 268 <sup>(11)</sup> T 5107 <sup>(194)</sup>	3 136 61 <sup>(19)</sup> 115 <sup>(3)</sup> 27 128 <sup>(22)</sup>	24 2 2 <sup>(1)</sup> 93 <sup>(14)</sup> 7 <sup>(1)</sup> 128 <sup>(16)</sup>	107 65 196 <sup>(27)</sup> 956 <sup>(15)</sup> 302 <sup>(24)</sup> 1626 <sup>(69)</sup>	- - - 10 - 10														2243 1879 1330 <sup>(96)</sup> 3036 <sup>(195)</sup> 1416 <sup>(254)</sup> 9908 <sup>(548)</sup>
14. Allegan	28 68 29 - 30 158 <sup>(7)</sup> 31 46 32 10 T 282 <sup>(7)</sup>	6 - - - 35 <sup>(7)</sup> 41 <sup>(7)</sup>	- 1 10 13 <sup>(3)</sup> 2 26 <sup>(3)</sup>	1 1 19 42 4 67	- - 11 <sup>(1)</sup> 12 <sup>(12)</sup> - 12 <sup>(12)</sup>														183 35 1072 <sup>(28)</sup> 878 <sup>(36)</sup> 376 <sup>(18)</sup> 2544 <sup>(82)</sup>
15. Barry	28 108 29 103 30 68 31 122 32 100 T 501	24 - - - 38 62	33 17 6 8 - 64	4 13 - 70 11 98	- - 12 34 - 46														642 524 1213 1208 <sup>(2)</sup> 985 4572 <sup>(2)</sup>
16. Eaton	28 40 29 - 30 15 31 56 <sup>(6)</sup> 32 49 <sup>(3)</sup> T 160 <sup>(7)</sup>	1 - - - - 1	2 1 15 <sup>(2)</sup> 15 <sup>(1)</sup> - 33 <sup>(3)</sup>	20 40 81 205 <sup>(21)</sup> 163 <sup>(2)</sup> 473 <sup>(34)</sup>	- - 4 <sup>(2)</sup> 64 <sup>(2)</sup> - 68 <sup>(5)</sup>														608 228 <sup>(3)</sup> 714 <sup>(41)</sup> 1867 <sup>(109)</sup> 1279 <sup>(64)</sup> 4696 <sup>(22)</sup>
Total, this sheet	8264 <sup>(219)</sup>	469 <sup>(32)</sup>	586 <sup>(39)</sup>	2646 <sup>(33)</sup>	61 <sup>(13)</sup>	174 <sup>(16)</sup>	6	894 <sup>(66)</sup>	6	769 <sup>(79)</sup>	36	39 <sup>(5)</sup>	3	33,556 <sup>(132)</sup>					

Non-trout waters  
South of Townline 20  
Sheet 5

	Brook Trout	Brown Trout	Rainbow Trout	Sm-mouth Bass	Lg.-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Total sheet
17. Longham	28				1	158	11		10	180
29					3					3
30					19 (7)	125 (24)	22 (16)			166 (47)
31					23 (7)	283 (24)	33 (16)		10	349 (47)
T										
18. Livingston	28			9	29	513 (12)	158 (6)	74 (8)		783 (26)
29				5	23	276	90	21		415
30				12	32	1144 (12)	212	44 (13)	117	1561 (25)
31					57 (3)	700 (35)	129 (2)	91 (10)	9	986 (100)
32				6	72 (5)	601 (20)	173 (11)	49 (6)	11 (10)	912 (53)
T				32	213 (7)	3234 (129)	762 (19)	279 (37)	137 (10)	4657 (209)
19. Oakland	28			49 (2)	178 (12)	868 (44)	191 (19)	216 (27)	20 (9)	1522 (183)
29				24 (1)	35 (3)	86	12	48 (4)		205 (8)
30				6	30 (8)	666 (77)	171 (8)	61 (9)	15	949 (102)
31					2 (2)	96 (40)	39 (2)	17		154 (44)
32	4			15	31	836 (8)	10	10		906 (8)
T	4			94 (3)	276 (23)	2552 (239)	423 (29)	352 (40)	35 (9)	3736 (345)
20. Macomb	28				2 (2)	3 (3)				5 (5)
29										
30										
31							5	3		8
32										
T					2 (3)	3 (3)	5	3		13 (5)
21. Otawa	28			1		6				7
29						30		17	34	81
30										
31										
32					71	224 (6)	21	8	8	272 (6)
T				1	11	260 (6)	21	25	42	360 (6)
22. Kent	28			3	14	177	3	15		212
29				8	30	172	19	19		248
30					46	688 (20)	41	157		932 (20)
31				26 (10)	72	564 (8)	32 (3)		88 (5)	782 (26)
32					2	164	1			2245
T				37 (10)	164	1765 (25)	96 (3)	191	2078	4419 (46)
23. Jones	28				21 (21)	13 (3)	44 (44)	22 (22)	10 (10)	110 (110)
29					9	64 (44)	2			75 (44)
30				3	40 (26)	33 (38)		15 (15)		91 (71)
31					78 (2)	37	8	5	5	133 (2)
32				7 (5)	16 (8)	105 (5)	2	4 (2)	1	135 (17)
T				10 (5)	164 (64)	252 (92)	56 (44)	46 (39)	16 (10)	544 (244)
24. Clinton	28					9	4			13
29										
30				15 (2)	8	159 (3)	29 (1)	5	88	304 (6)
31				13	1 (1)	182 (15)	7	41	12	256 (16)
32				19	62	669	139 (13)	5 (2)	67	961 (13)
T				47 (2)	71 (1)	1019 (18)	179 (14)	57 (2)	167	1534 (37)
Total this sheet	4			221 (20)	924 (98)	9368 (539)	1575 (125)	947 (118)	2573 (34)	15,612 (389)

	P perch	Walleye	Northern Pike	Bullheads	gars	logfish	Smelt	Siros and Whitefish	Lake trout	uckers Mulllets & Rock bass	Carp	Chubs and Shiners	Catfishes	Other spp. Name No.	Unnamed	Total for County and year
17. Ingham	28 29 30 13 31 - 32 95 <sup>(15)</sup> T 108 <sup>(15)</sup>	- - - - 1	8 <sup>(1)</sup> 3 25 <sup>(10)</sup> 36 <sup>(10)</sup>	10 - 20 <sup>(20)</sup> 30 <sup>(20)</sup>	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	212 <sup>(1)</sup> 6 307 <sup>(22)</sup> 525 <sup>(23)</sup>
18. Livingston	28 77 <sup>(3)</sup> 29 61 30 174 <sup>(8)</sup> 31 76 <sup>(27)</sup> 32 121 <sup>(1)</sup> T 509 <sup>(42)</sup>	- 2 2 3 - 7	20 32 17 14 5 88	43 11 50 <sup>(10)</sup> 69 <sup>(10)</sup> 84 <sup>(10)</sup> 257 <sup>(3)</sup>	- - 19 4 - 23	- - - - - -	- - - - - -	- - - - - -	- - 1 - - 4 <sup>(10)</sup>	- - - - - 1	- - - - - -	- - - - - -	- - - - - -	"Silver Bass" 1 "Silver Bass" 65 66	- - - - - 1	923 <sup>(29)</sup> 521 1825 <sup>(35)</sup> 1156 <sup>(28)</sup> 1188 <sup>(58)</sup> 5613 <sup>(250)</sup>
19. Oakland	28 33 <sup>(20)</sup> 29 21 30 244 <sup>(10)</sup> 31 56 <sup>(1)</sup> 32 132 T 784 <sup>(7)</sup>	2 - 2 - - 4	109 <sup>(4)</sup> 16 17 <sup>(1)</sup> 6 1 149 <sup>(10)</sup>	61 <sup>(13)</sup> - 12 - 3 76 <sup>(13)</sup>	- - - - - -	- - - - - -	- - - - - -	- - - - - -	1 - 13 - - 14	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	2026 <sup>(265)</sup> 242 <sup>(8)</sup> 1237 <sup>(113)</sup> 216 <sup>(45)</sup> 1042 <sup>(8)</sup> 4763 <sup>(439)</sup>	
20. Macon	28 - 29 - 30 8 31 - 32 - T 8	- - - - - -	- - - - - -	- - - - - -	- - 3 - - 3	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	13 <sup>(3)</sup> - - - - 13 <sup>(3)</sup>	- - - - - -	- - - - - -	- - - - - -	- - - - - -	18 <sup>(18)</sup> - 22 40 <sup>(18)</sup>
21. Ottawa	28 - 29 24 30 - 31 - 32 79 T 103	- - - - 3 3	- - - - - -	1 - - - 45 <sup>(4)</sup> 46 <sup>(4)</sup>	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	32 81 405 <sup>(10)</sup> 518 <sup>(10)</sup>
22. Kent	28 39 29 118 30 46 31 56 <sup>(3)</sup> 32 121 T 380 <sup>(3)</sup>	4 14 - 12 - 30	2 5 27 14 - 48	- 2 9 7 2 20	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	257 387 1014 <sup>(20)</sup> 871 <sup>(29)</sup> 2368 4897 <sup>(49)</sup>
23. Linn	28 13 <sup>(13)</sup> 29 2 30 - 31 33 <sup>(12)</sup> 32 64 <sup>(12)</sup> T 112 <sup>(27)</sup>	- - 8 - - 8	9 <sup>(4)</sup> 13 <sup>(13)</sup> 9 <sup>(3)</sup> 34 <sup>(24)</sup> 11 <sup>(10)</sup> 76 <sup>(27)</sup>	- - - - 9 9	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	132 <sup>(132)</sup> 90 <sup>(57)</sup> 109 <sup>(74)</sup> 202 <sup>(42)</sup> 219 <sup>(30)</sup> 752 <sup>(335)</sup>
24. Clinton	28 - 29 - 30 40 31 8 <sup>(2)</sup> 32 147 <sup>(18)</sup> T 195 <sup>(20)</sup>	- - 15 4 1 20	3 12 20 37 <sup>(12)</sup> 246 73 <sup>(4)</sup>	- - 64 25 246 32.6	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - 9 1 20 120	- - 2 1 - 3	- - 7 1 1 9	- - - - - -	- - - - - -	- - - - - -	- - - - - -	15 3 448 <sup>(6)</sup> 319 <sup>(18)</sup> 1419 <sup>(68)</sup> 2204 <sup>(92)</sup>
Total, this sheet	2199	73	470	764		53 <sup>(2)</sup>			30 <sup>(2)</sup>	4	22 <sup>(13)</sup>		15	69	1	19312 <sup>(316)</sup>

Non-trout waters  
South of Townline 20  
Sheet 7

Brook Trout Brown Trout Rainbow Trout In-mouth Out-mouth Bass Bluegill Common Carp Rock Bass Black Crappie Total, this sheet

Section	Year	Brook Trout	Brown Trout	Rainbow Trout	In-mouth Bass	Out-mouth Bass	Bluegill	Common Carp	Rock Bass	Black Crappie	Total, this sheet
25. Shawnee	28				4	9	-	23	26	-	62
	29				37	10	46	4	20	-	117
	30				-	4	68	79	52	-	203
	31				12	4	122	38	59	-	235
	32				-	-	-	-	54	-	54
	T				53	27	236	144	211	-	671
26. Kansas	28				28	1	444	33	29	-	535
	29				10	4	114	27	5	-	160
	30				10	11	164	15	16	-	216
	31				7	21	624	19	30	-	701
	32				2	9	253	9	15	-	288
	T				57	46	1599	103	95	-	1900
27. Lyceum	28				-	79	380	74	14	-	547
	29				26	270	1772	133	22	-	2223
	30				1	12	627	32	16	-	688
	31				2	-	93	-	-	-	96
	32				29	361	2872	239	52	1	3554
	T										
28. St. Clair	28				15	32	-	1	-	-	48
	29				8	2	-	-	10	-	20
	30				1	23	-	-	-	-	24
	31				-	-	-	-	-	-	-
	32				-	-	-	-	-	-	-
	T				24	57	-	1	10	-	92
29. Stratton	28				-	-	-	-	-	-	-
	29				-	-	-	-	-	-	-
	30				-	7	3	-	-	-	10
	31				-	-	-	-	-	-	-
	32				-	-	-	-	-	-	-
	T				-	7	3	-	-	-	10
30. Sageman	28										
	29										
	30										
	31										
	32										
	T										
31. Tuscola	28				10	11	55	-	-	-	76
	29				3	-	44	10	2	-	59
	30				15	21	65	-	1	7	109
	31				4	2	69	4	1	-	80
	32				9	6	156	3	12	-	186
	T				41	40	389	17	16	7	510
32. Sanitar	28				1	0					1
	29				-	-					-
	30				-	-					-
	31				-	-					-
	32				-	-					-
	T				1	0					1
Total, this sheet					205	538	5099	504	384	8	6738

Non-trout waters South of Townline 20 Sheet 8

	P perch	Walleyes	Northern Pike	Bullheads	Clare	Loggfish	Sweet	Cisco and Whitefish Lake	Trout	Suckers	Mullet and Redhorse	Carp	Chubs and Shiners	Catfish	Other spp. Name No.	Unnamed	Total for County and Year
25. Shickman	28 - 29 - 30 18 31 6 32 - T 24	- - - - - -	40 5 <sup>(4)</sup> 5 4 6 60 <sup>(4)</sup>	- 9 - 1 - 10	-	-	-	-	-	39 - 5 87 <sup>(6)</sup> - 125 <sup>(8)</sup>	- - - 11 <sup>(1)</sup> - 110 <sup>(1)</sup>	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	141 131 <sup>(2)</sup> 231 338 <sup>(9)</sup> 60 <sup>(2)</sup> 901 <sup>(15)</sup>
26. Guzman	28 110 29 81 30 285 <sup>(3)</sup> 31 198 <sup>(3)</sup> 32 38 <sup>(7)</sup> T 662	- 3 1 - - 4	21 16 103 <sup>(10)</sup> 26 22 188 <sup>(10)</sup>	7 4 11 28 98 148	-	-	-	-	-	- 64 32 85 <sup>(1)</sup> 93 274 <sup>(1)</sup>	- - - 51 - 51	- - 1 3 - 4	- - - - - -	- - - - - -	- - - - - -	- - - - - -	673 <sup>(1)</sup> 328 649 <sup>(4)</sup> 1042 <sup>(22)</sup> 539 3231 <sup>(7)</sup>
27. Lopez	28 29 96 30 427 <sup>(6)</sup> 31 13 32 6 T 542 <sup>(9)</sup>	- - 1 <sup>(1)</sup> - - 1 <sup>(1)</sup>	11 33 <sup>(17)</sup> 6 1 51 <sup>(17)</sup>	23 73 <sup>(10)</sup> 23 - 19 <sup>(12)</sup>	-	-	-	-	-	15 - - - - 15	-	-	-	-	-	-	692 2157 <sup>(48)</sup> 730 103 4282 <sup>(48)</sup>
28. St. Clair	28 29 371 30 112 31 99 32 1248 <sup>(5)</sup> T 1830 <sup>(5)</sup>	18 9 <sup>(3)</sup> 26 - 53 <sup>(3)</sup>	14 16 <sup>(1)</sup> 32 <sup>(3)</sup> - 62 <sup>(4)</sup>	-	-	-	-	-	-	2 4 - - 6	-	2 3 - - 5	-	-	Muskell. 1 - - - 1	-	455 165 <sup>(6)</sup> 181 <sup>(3)</sup> 1248 <sup>(5)</sup> 2049 <sup>(6)</sup>
29. Gratiot	28 29 30 31 32 T	- - 2 3 5	- - 2 3 5	-	-	-	-	-	-	2 - - - 2	-	-	-	-	-	-	2 12 3 17
30. Saginaw	28 29 30 31 32 T	- - - - - -	- - - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31. Tuscola	28 67 <sup>(1)</sup> 29 82 <sup>(2)</sup> 30 10 31 - 32 18 T 177 <sup>(4)</sup>	1 2 1 - - 4	15 5 33 6 3 62	- - 3 - 36 39	-	-	-	-	-	70 <sup>(7)</sup> - - - - 70 <sup>(7)</sup>	-	-	-	-	-	-	166 <sup>(2)</sup> 148 <sup>(2)</sup> 156 86 243 <sup>(1)</sup> 799 <sup>(2)</sup>
32. Sanilac	28 1910 <sup>(15)</sup> 29 - 30 - 31 - 32 - T 1910 <sup>(15)</sup>	- - - - - -	3 <sup>(2)</sup> - - - - 3 <sup>(2)</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	1914 <sup>(11)</sup> - - - 1914 <sup>(11)</sup>
Total, this sheet	325	62 <sup>(4)</sup>	431 <sup>(3)</sup>	316 <sup>(12)</sup>	-	-	-	-	-	429 <sup>(5)</sup>	62 <sup>(1)</sup>	9	-	-	1	-	13,093 <sup>(92)</sup>

Non-trout waters  
 South of T. 20  
 Sheet 9

	Brook Trout	Brown Trout	Rainbow Trout	Luc-head Bass	Ly-head Bass	Bluegill	Common Rock Bass	Black Crappie	Total, this sheet	
33. Midland	28			1			1		2	
	29			-			-	-	-	
	30			-			-	7	7	
	31			-			-			
	32			-			-	45 (2)	45 (2)	
	T			1			1	52 (2)	54 (2)	
34. Bay	28									
	29									
	30									
	31									
	32									
	T									
35. Huron	28									
	29									
	30									
	31									
	32									
	T									
36. Muskegon	28	-		9	29	255	2	96	2	393
	29	-		-	37	53	-	-	25	115
	30	-		-	11	228	43	1	40	324
	31	-								
	32	-		9	1	-	-	-	-	10
	T	1		18	78	536	45	97	67	842
37. Montcalm	28			10	10	76	-	5	248	349
	29									
	30			-	33 (22)	86 (50)	24 (2)	2	-	145 (84)
	31			20	27 (1)	350 (27)	31 (7)	7	186	621 (35)
	32									
	T			30	70 (23)	512 (77)	55 (19)	14	434	1115 (119)
38. Muskegon	28			19	5	85	8	30	-	147
	29			14	16	199	72	84	-	385
	30			22	29	179	4	36	-	270
	31			4	12 (1)	101 (6)	16	3	-	136 (7)
	32			90 (1)	4	154 (2)	13 (3)	98 (7)	75	434 (15)
	T			149 (1)	66 (1)	718 (8)	113 (3)	251 (9)	75	1372 (22)
39. Mecosta	28			15	41	106	35	8	-	205
	29			34	39	31	2	14	-	120
	30			2	22	186 (75)	6	4	-	220 (75)
	31			13 (9)	29 (24)	105	30	-	-	177 (33)
	32			6 (2)	3	121	-	-	-	130 (2)
	T			70 (1)	134 (24)	549 (75)	73	26	-	852 (119)
40. Leelanau	28									
	29			4	38	102	54	38		236
	30			4 (3)	135 (31)	38 (38)	82 (70)	5 (5)		264 (147)
	31									
	32									
	T			8 (3)	173 (31)	140 (38)	136 (70)	43 (5)		500 (147)
Total, this sheet	1			276 (15)	521 (79)	2455 (198)	422 (92)	432 (14)	628 (2)	4735 (400)



Non-trout waters  
South of T. 20  
Sheet 11

Brook Trout    Brown Trout    Rainbow Trout    Sp. mouth Bass    G. mouth Bass    Bluegill    Common Carp    Rock Bass    Black Crappie    Total, this sheet

Station	Brook Trout	Brown Trout	Rainbow Trout	Sp. mouth Bass	G. mouth Bass	Bluegill	Common Carp	Rock Bass	Black Crappie	Total
41. Gladwin	28	-	-	2	-	11	4 (2)	-	1	18 (2)
29	-	-	-	35	11	37	27	33	2	145
30	-	-	-	22	-	-	-	-	-	22
31	25	-	-	61	19 (1)	234	98	154	114	680 (1)
32	-	-	-	120	30 (1)	282	129 (2)	187	117	890 (3)
T	25	-	-	120	30 (1)	282	129 (2)	187	117	890 (3)
42. Arona	28	-	-	-	-	-	-	6	-	6
29	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	4	11	-	15
32	-	-	-	-	-	-	-	-	-	-
T	-	-	-	-	-	-	4	17	-	21
43. Oceana	28	-	-	13 (2)	28	-	-	-	-	41 (2)
29	1	-	-	22	-	15	22	-	-	60
30	-	-	-	50 (20)	76 (18)	6 (3)	29 (2)	12	-	173 (43)
31	1	-	-	9	9	-	7	16	-	42
32	-	-	-	9 (5)	2	-	34	8	-	53 (5)
T	2	-	-	103 (27)	115 (18)	21 (3)	92 (2)	36	-	369 (50)
44. Mason	28	12	5	21	-	-	-	-	-	38
29	5	4	4	149	3	2	-	-	-	163
30	4	90	90	384	12	25	-	-	-	515
31	90 (5)	122 (34)	340 (29)	156 (94)	35 (5)	195 (1)	-	-	-	938 (168)
32	22 (5)	61 (3)	537 (14)	58	49	106	-	-	-	833 (22)
T	133 (10)	282 (37)	1431 (43)	229 (94)	111 (5)	301 (1)	-	-	-	2487 (190)
45. Lake	28	14	76	294 (16)	60	7	-	-	-	451 (16)
29	15 (2)	2	2	162 (2)	1	3 (1)	12	-	-	195 (5)
30	2	15	10	10	-	2	30	-	-	59
31	-	1	1	1	-	-	-	-	-	2
32	3	7	490 (112)	-	-	17	-	-	-	517 (112)
T	34 (2)	101	957 (30)	61	29 (1)	42	-	-	-	1224 (133)
46. Pease	28	14	10	145	29	9	-	-	-	207
29	18	18	18	157	27	9	11	-	-	240
30	12	46	60	60	13	13	-	-	-	144
31	7	11	102 (46)	-	23 (3)	-	-	-	-	143 (49)
32	21 (3)	3	20 (2)	52	108 (28)	10 (10)	-	-	-	214 (43)
T	72 (3)	88	484 (48)	121	162 (31)	21 (10)	-	-	-	948 (92)
47. Clare	28	6	11 (1)	49	-	-	-	-	-	66 (1)
29	19	45 (3)	45 (3)	97	36	15	-	-	-	212 (3)
30	53	162 (19)	162 (19)	470 (4)	19	3	-	-	-	707 (23)
31	-	-	-	-	-	-	-	-	-	-
32	7 (3)	32 (13)	162 (12)	29 (4)	11	-	-	-	-	241 (32)
T	85 (3)	250 (48)	778 (16)	84 (4)	29	-	-	-	-	1226 (67)
Total	25	3	3	3	3	3	3	3	3	25
Total this sheet	25	3	3	3	3	3	3	3	3	25
Total	446 (18)	854 (109)	4047 (255)	649 (103)	627 (39)	517 (11)	7165 (535)	-	-	-



	Purch	Walleye	Whitefish	Bullheads	Flare	Logfish	Smelt	Peccany	Whitefish	Spice	Trout	uckers	Mullet	Redheads	Crab	Shad and	Minnow	Pelphide	Other	Name No.	Unmarked	Total for County and year	
41. Blakwin	28 - 29 17 30 289 31 77 32 487 T 870	- 11 - 4 7 11	11 111 9 46 277	18 111 - 244 373	-	-	-	48 - - - 48	-	-	-	13 11 - 15 39	- 1 - 15 16	-	3 - - 5 8	-	-	-	-	-	-	-	180 716 137 1513 2546
42. Bruce	28 10 29 30 32 31 96 32 T 138	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16 32 123 171
43. Delana	28 22 29 2 30 118 31 231 32 153 T 526	-	23 86 38 19 4 170	9 2 1 10 1 23	-	-	-	2 - - - - 2	-	-	-	-	-	5 - - 5 - 5	-	-	-	-	White Bass	4 4	-	-	95 150 334 307 245 1101
44. Minon	28 - 29 41 30 72 31 754 32 270 T 1137	2 1 3 43 2 51	8 5 15 69 26 123	- 1 1 3 32 37	-	-	-	-	-	-	-	-	-	3 - - 3 - 3	-	-	-	-	-	-	-	48 211 606 1810 1163 3838	
45. Lake	28 71 29 95 30 2 31 - 32 68 T 236	-	12 1 - - 5 18	19 - - - - 19	-	-	-	-	-	-	-	10 - 1 - - 20	-	-	-	-	-	-	-	-	-	554 291 62 2 590 1499	
46. Menda	28 127 29 113 30 70 31 82 32 23 T 415	-	5 8 16 11 1 41	7 8 8 - - 15	-	-	-	-	-	-	-	4 - - 51 - 55	-	-	-	-	-	-	-	-	-	343 369 238 287 238 1475	
47. Ware	28 93 29 69 30 250 31 32 29 T 441	-	19 96 36 1 152	- 4 39 - 43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	178 382 1042 274 1876
Total	28 750 29 565 30 5325 31 4967 32 5105 T 2855	54 203 184 231 182	583 749 781 750 329	1292 791 1345 1942 2477	1 1 14 46 - 62	1 20 240 169 26 45	-	2 70 3 1 76	23 157 561 701 146 179	4 7 7 7 19 29	371 38 32 33 33 42	-	-	11 13 53 77	16 2 15 14 46 93	-	-	31 22 73 183	7 - 6 32 - 38	-	-	26084 1948 62995 23907 2547 2516	
Total, this sheet	(87)	(8)	(47)	(28)				50	(1)	104	16	8		14	(3)			4				12506	

# Non-trout Waters

N. of T. 20

Sheet 1

	Sm-mouth Bass	lg-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleyes	Northern Pike	Total, lbs
48. Manister	28 89	47	545	51	353	-	425	94	115	1719
	29 85	70	405	81	342	-	383	36	70	1472
	30 77	4	282	9	221	-	175	55	159	982
	31 10	-	15	-	14	-	264 (21)	9	100	412 (21)
	32 269	8	363	16	196	-	242	66	17	1177
T	530	129	1610	157	1126	-	1489 (21)	260	461	5962 (21)
49. Wexford	28 9	-	12	-	-	-	18 (6)	13 (3)	29 (7)	81 (16)
	29 13 (5)	-	33 (6)	4	-	-	28	2	14 (2)	94 (13)
	30 75 (5)	1	55	115	2	-	127 (1)	20 (1)	20 (1)	415 (8)
	31 4	-	26 (2)	18 (6)	-	-	13	2	7	70 (8)
	32 11	4	123	3	48	-	173 (1)	30	5 (1)	397 (2)
T	112 (10)	5	249 (8)	140 (6)	50	-	359 (8)	67 (4)	75 (4)	1057 (47)
50. Missaukee	28 29	8	146	4	23	-	49	-	125 (5)	384 (5)
	29 5	24 (1)	387 (35)	46 (6)	33	-	132 (19)	30 (4)	250 (12)	907 (77)
	30 62 (8)	13 (2)	418 (39)	108	39	-	196 (13)	11	426 (18)	1273 (80)
	31 34 (1)	2	137 (10)	50 (13)	20 (3)	-	78 (3)	-	190 (11)	511 (41)
	32 3 (2)	-	1	3	1	-	51	-	13 (5)	72 (7)
T	133 (11)	47 (3)	1089 (84)	211 (19)	116 (3)	-	506 (35)	41 (4)	1004 (51)	3147 (210)
51. Rosecrans	28 11	-	10	78	185	-	298	404	1682	2668
	29 23	8	8	72	114	-	518	358	2258	3359
	30 34	7	27	60	233	-	382	320	2208	3271
	31 6	2	21	23	81	-	632	91	1072	1928
	32 5 (2)	-	40	32	237 (9)	-	1573 (1)	171 (2)	1557 (7)	3615 (21)
T	79 (3)	17	106	265	850 (9)	-	3403 (1)	1344 (2)	8777 (7)	14841 (21)
52. Ogema	28 16	65	296	115	34	26	307	24	134 (2)	1017 (2)
	29 34	59 (1)	252	46	12	45	125	7	185	765 (1)
	30 65 (3)	32 (2)	733 (32)	239 (9)	118 (2)	137 (9)	453 (11)	36	343 (9)	2156 (77)
	31 -	1	-	-	-	291	408 (10)	-	316 (4)	1016 (14)
T	115 (3)	157 (3)	1281 (32)	400 (9)	164 (2)	499 (9)	1293 (24)	67	978 (15)	4954 (94)
53. Iosco	28 1	1	48	-	4	-	31	-	88	173
	29 1	15	20	6	7	-	83	6	43	181
	30 12	48 (3)	288 (28)	173	104	4 (3)	76 (1)	22	250 (19)	977 (54)
	31 -	2	16	-	-	-	24 (10)	1	49 (7)	92 (17)
	32 -	-	-	-	-	-	-	-	8	8
T	14	66 (3)	372 (28)	179	115	4 (3)	214 (11)	29	438 (26)	1431 (71)
54. Benzie	28 25 (5)	12	57 (6)	2	213 (27)	-	183 (27)	2	29 (2)	523 (67)
	29 55 (2)	19	107 (2)	5	406 (23)	-	407 (4)	-	18 (1)	1017 (32)
	30 49 (1)	21	116 (6)	13 (3)	240 (16)	-	328 (12)	-	48	815 (38)
	31 79 (1)	18 (1)	69	43	406 (8)	-	1670 (5)	8 (2)	69 (6)	2362 (23)
	32 13	-	46 (3)	2	46	-	110 (4)	11	11	239 (7)
T	221 (9)	70 (1)	395 (17)	65 (3)	1311 (74)	-	2698 (52)	21 (2)	175 (9)	4956 (167)
55. Gr. Traverse	28 22	145	233	17	185	-	148 (4)	10	23 (2)	783 (6)
	29 14 (8)	60 (3)	132 (1)	10 (2)	40 (2)	-	218 (7)	14	23 (3)	511 (26)
	30 31 (8)	19	61	14 (1)	79 (3)	-	147 (5)	30	29	410 (17)
	31 10 (1)	6	59 (3)	-	22 (6)	-	72 (1)	2 (2)	13	184 (48)
	32 36	12	104	-	-	-	8	-	-	160
T	113 (17)	242 (3)	589 (39)	41 (3)	326 (11)	-	593 (17)	56 (2)	88 (5)	2048 (97)
Total, this sheet	1317 (52)	733 (13)	5691 (208)	1458 (40)	4058 (99)	503 (12)	10,555 (46)	1885 (14)	11,996 (24)	38196 (728)

Non-trout Waters

N. of T. 20

Sheet 2

Name	No.	Gars	Dogfish	Smelt Cisco and Whitefish	Lake Trout	Suckers Mulletts & Redhorses	Sarp	Stubs and Shiners	Catfish	Brook Trout	Brown Trout	Rainbow Trout	Other spp. Name	No.	Unnamed	Total of Country and Year	
48. Manistee	98 29 80 31 32 T	2 10 4 40 23 79				2 1 1 5130 — 5160	1 1 2 1 2			1 1 4 — 4				— — — 1 — 1		1723 1482 993 1067(23) 1200 6465(23)	
49. Wexford	28 29 30 31 32 T	6 — — — — 6				2 — 1 9 — 12	— — — — — 2										89(16) 94(13) 416(8) 79(8) 397(2) 1075(47)
50. Missaukee	28 29 30 31 32 T	327 334 689(35) 207(44) — 1557(79)				14 1 1 12 — 28	— — 2 — — 2		21(2) — — — — 21(2)	— — — — — 2(2)							725(5) 1242(77) 1986(136) 732(87) 72(7) 4757(312)
51. Roscommon	28 29 30 31 32 T	3 18 67 9 303(10) 400(10)	— 33 21 42 11 107			17 1 1 28 — 47	6 — — — — 6			— — — 1 — 1							2694 3411 3360 2015 3934(22) 15444(22)
52. Gemaw	28 29 30 31 32 T	16 — 46 — — 62				8 — — 3 — 11	1 — — 2 — 2		1 — — — — 1	— — 8 — — 8							1043(2) 765(1) 2210(77) 1021(14) 5039(94)
53. Tusco	28 29 30 31 32 T	— 10 42 25 — 77	— — — — — 1			2 7 — — 9 7(4)	— — 7(4) — — 7(4)			— — <del>—</del> — — 4	— — 4 — — 4	— — 1 — — 1					173 198 1038(58) 118(17) 8 1530(75)
54. Benzie	28 29 30 31 32 T	— — 15 11 25 51		120 — — 1347 — 1467		— — 9 40 1 140	19 — 11(3) 10 — 40(3)			— — 1 — — 1				— — 1 1 — 2			662(67) 1017(32) 852(41) 3735(24) 265(7) 6531(171)
55. Gr. Traverse	28 29 30 31 32 T	— 23 30(22) 2 — 55(22)				3 2 1 — — 6	— — 26(8) — — 26(8)										786(6) 536(26) 467(47) 187(48) 160 2136(127)
Total, this sheet	2287	7	111(1)	1467.98	1	643	55(2)	31(8)	22(21)	16(2)	4	1		8	5	42947(871)	

Wormouths 5

Muskal. Warmouth

# Non-trout Waters

N. of T. 20

Street 3

	Sm-mouth Bass	Lg-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleyes	Northern Pike	Total, this sheet
56. Kalkaska	28	10	133	-	4	-	115	-	19	282
	29	50	3	-	7	-	-	-	17	100
	30	22 (2)	28 (1)	36	13	18	267 (52)	-	45	429 (53)
	31	7 (0)	8 (6)	1	4	-	28-	-	3 (1)	51 (8)
	32	3	8	7 (3)	67 (28)	-	-	1	4	90 (31)
	T	56 (3)	104 (7)	180 (3)	84 (28)	29	410 (52)	1	88 (1)	952 (94)
57. Crawford	28	12 (9)	-	7	3	-	15	-	9 (2)	59 (11)
	29	41	-	-	2	-	178 (8)	-	48	289 (8)
	30	9	18	1	15	5	103	-	19	170
	31	3	13 (9)	-	-	15	83 (1)	1	40 (1)	155 (6)
	32	-	-	-	-	-	120 (12)	-	52 (2)	172 (14)
	T	66	63 (13)	1	22	25	499 (21)	1	168 (5)	845 (39)
58. Oscoda	28	1	3	8	5	-	40	-	43 (4)	102 (4)
	29	25 (4)	20	20	1	-	23	7	30	126 (4)
	30	5	3	22	-	-	15	-	10	62
	31	-	-	-	-	-	-	-	-	-
	T	9	31 (4)	26	50	6	78	7	83 (4)	290 (8)
59. Alcona	28	2	58	1	-	-	36	-	-	99
	29	-	8	-	-	-	13	-	-	24
	30	-	-	-	-	-	4	-	-	4
	31	-	-	-	-	-	-	-	-	-
	T	2	5	66	1	-	53	-	-	127
60. Leelanau	28	8	69	5	148	-	249 (8)	2	30	576 (8)
	29	10	37	25	306	-	529	-	10	977
	30	48 (1)	11	25	14	238	510 (9)	-	56 (2)	902 (12)
	31	19	19	30 (5)	8	174	1440	-	77	1767 (5)
	32	30	1	-	-	45	186	-	10	272
	T	222 (1)	49	161 (5)	52	911	2914 (17)	2	183 (2)	4494 (25)
61. Antrim	28	2	18	6	12	-	38	-	7	96 (1)
	29	18	3	14	34	-	14	5	55	145
	30	8	-	1	8	29	40	-	14	100
	31	4	-	2	-	14	180 (13)	4	29	233 (13)
	32	1	-	12	4	30	33	-	1	81
	T	44 (1)	4	36	32	119	305 (13)	9	106	655 (14)
62. Otsego	28	2	5	-	-	-	1	-	218	239
	29	1	6	-	-	-	37	-	20	75
	30	9 (3)	3 (1)	-	-	24	96 (31)	-	24 (3)	156 (38)
	31	-	-	-	-	-	-	-	243 (72)	243 (72)
	T	33 (3)	6 (1)	11	-	24	134 (31)	-	505 (75)	713 (110)
63. Montmorency	28	2	1	-	-	-	-	-	1	3
	29	-	1	-	-	-	-	-	2 (1)	3 (1)
	30	-	-	-	-	-	8	-	-	8
	31	4	-	-	-	-	2	-	12	19
	T	4	3	-	-	1	10	-	15	33 (1)
Total, this sheet	436 (8)	265 (25)	481 (8)	241 (28)	1115	4403 (134)	20	1148 (89)	8109 (291)	

Non-front Waters

N.B.T. 20 Sheet 4

	Bullheads	Gars	Dogfish	Smelt Cisco and Whitefish	Lake Trout	Suckers	Mulletts & Redhorses	Sarp	Stubs and Shiners	Catfish	Brook Trout	Brown Trout	Rainbow Trout	Other spp. Name No.	Unnamed	Total of County and Year
56. Kalkaska	28 29 30 31 32 T					1 1 1 1 2					3					282 100 433 (55) 51 (8) 91 (31) 957 (99)
57. Snawford	28 29 30 31 32 T					1 1 3 3		1 2 2	1 1 20 20							59 (11) 289 (8) 170 187 (6) 172 (14) 877 (39)
58. Oscoda	28 29 30 31 32 T					1 1 1 1										102 (4) 132 (4) 62 296 (8)
59. Alcona	28 29 30 31 32 T															99 24 4 127
60. Leelanau	28 29 30 31 32 T					1 1 1 1										576 (8) 977 1021 (18) 1785 (7) 276 4635 (33)
61. Antrim	28 29 30 31 32 T					1 1 1 1 20		1 1 1 1			2 2					97 (1) 145 109 274 (13) 82 707 (14)
62. Otsego	28 29 30 31 32 T															239 76 156 (38) 243 (72) 714 (110)
63. Montmorency	28 29 30 31 32 T															3 3 (1) 8 19 33 (1)
Total, this sheet	45 (2)	1		134 (6)	2	27		3	20		5					8346 (299)

# Non-trout Waters

N. of T. 20

Sheet 5

	5mm-mouth Bass	4g. mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Punch	Walleyes	Northern Pike	Total, this sheet
64. Alpena	28 2 29 14 30 31 (9) 31 32 T 47 (9)	3 — — 3	— — — —	— — 2	15 — 33	— — —	51 5 13 (5)	18 2 42 (19)	40 (5) — 21 (12)	129 (5) 21 142 (45)
65. Charlevoix	28 11 29 4 30 2 31 32 T 47 (9)	17 — 19 (3) — 3	44 8 41 (5) — —	74 4 35 (6) 1 3	17 6 45 (4) 5 30	— — — — —	411 287 61 426 169 1354	— — 1 — — 1	8 5 68 (8) 3 4 88 (8)	582 314 272 (20) 436 218 (A) 1822 (30)
66. Emmet	28 27 (7) 29 11 30 31 32 T 51 (7)	29 — — 2 10 (0) 41 (0)	— — — — 15 45	— — — — 11 49	13 15 — 10 36 74	15 — — — — 15	41 58 (4) — 192 67 358 (4)	187 73 — 78 29 367	41 88 (4) — 81 16 (2) 226 (6)	413 (1) 253 (8) — 363 197 (3) 1226 (18)
67. Cheboygan	28 20 (0) 29 2 30 8 31 1 32 5 T 36 (0)	4 5 6 6 4 25	— — — — 23 30	8 50 — — — 58	18 (0) — 45 (3) 13 9 85 (4)	— — — — — —	157 84 162 102 102 (14) 607 (14)	225 (3) 273 295 75 (7) 63 (9) 931 (19)	110 (9) 114 (4) 225 (3) 97 (7) 28 (2) 574 (32)	542 (14) 535 (4) 741 (6) 294 (16) 234 (30) 2346 (70)
68. Presque Isle	28 29 30 2 (0) 31 7 (0) 32 5 T 14 (2)	— — — 1 2 (2) 3 (2)	— — 25 — 38 63	15 — — — — 15	— — — 3 (0) 22 25 (1)	— — — — — —	48 (28) 28 — 92 (5) 170 (11) 338 (44)	— 14 — 4 3 21	4 (4) 2 16 1 49 (6) 72 (10)	67 (32) 44 43 (1) 108 (7) 289 (19) 551 (59)
Totals	28 371 (14) 29 414 (15) 30 551 (41) 31 184 (5) 32 410 (8) T 1930 (83)	370 (9) 372 (9) 235 (12) 81 (11) 49 (3) 1107 (44)	1700 (6) 1443 (44) 2112 (110) 276 (58) 172 (6) 6403 (221)	428 (8) 384 (8) 840 (19) 147 (19) 141 (28) 1940 (74)	1232 (28) 1325 (25) 1473 (28) 777 (18) 701 (9) 5508 (108)	41 45 141 (12) 291 — 518 (12)	2661 (73) 3150 (42) 3163 (140) 5704 (69) 3006 (43) 17684 (367)	979 (6) 827 (4) 832 (20) 295 (11) 374 (11) 3287 (52)	2755 (42) 3252 (27) 3981 (75) 2390 (111) 1787 (30) 14165 (285)	10537 (178) 11212 (174) 13328 (457) 10225 (299) 7240 (138) 52542 (1246)
28										
29										
30										
31										
32										
T										
98										
99										
30										
31										
32										
T										
Total, this sheet	177 (23)	109 (6)	231 (5)	241 (6)	335 (9)	15	2726 (67)	1382 (38)	1021 (73)	6237 (227)

	Alpena	Bullheads	Bars	Dogfish	Smeelt	Sisco and Whitefish	Lake Trout	Suckers	Mulletts	Redhorses	Carp	Chubs and Shiners	Cattfish	Brook Trout	Brown Trout	Rainbow Trout	Other spp.	Unnamed	Total of County and Year
64. Alpena	28 98 29 29 30 30 31 31 32 32 T 83	1 1 1 1 1 1 1 1 1 1 T 5						18 3				7 7 7 7 7 T 7							210 (5) 21 152 (45) 383 (50)
65. Charlevoix	28 28 29 29 30 30 31 31 32 32 T 182	1 1 1 1 1 1 1 1 1 1 T 5																	582 314 272 (26) 436 220 (4) 1824 (30) 416 (7) 294 (8) 377 208 (3) 1296 (18)
66. Emmet	28 3 29 41 30 31 32 11 T 55	3 41   11 T 55						1 1  14 1 14											416 (7) 294 (8) 377 208 (3) 1296 (18)
67. Cheboygan	28 9 29 152 30 31 32 T 161	9 152    T 161	4 4 (1) 1 8 (1)	1 1  1 (1)	1 1  1 (5)	1 1  1 (5)	8 1  2 3 13						1 1  12 12	1 1  3 1 3		MUSICAL 6 (1) LAWYER 3 LAWYER 19 (4) MUSICAL 1	29 (5)	559 (14) 687 (4) 758 443 (26) 238 (30) 2685 (21)	
68. Presque Isle	28 5 29 30 31 32 341 T 346	5    341 T 346																	72 (32) 44 43 (1) 108 (7) 630 (19) 897 (59)
TOTALS	28 372 29 694 30 900 (7) 31 322 (46) 32 709 (1) T 2897 (24)	7 120 (2)	7 50 (2)	7 50 (2)	134 7 26 608 (2)	25 18 (7) 12 5	2 30 (8) 2 1	1 7 20 5	1 7 20 5	1 21 (21) 15 (5)	4 4 4 4	4 4 4 4	10 (1) 22 (4) 5 37 (5)	1191 (178) 11846 (174) 14570 12238 (30) 7922 (19) 58377 (142)			7085 (238)		

Total for this page 565

8 (1)

113 (5)

110

7

12

3

29 (5)

7085 (238)

Non-trout Waters  
 N. of T. to Upper Peninsula  
 Sheet 1

	Smallmouth Bass	Large-mouth Bass	Bluegills	Common Sunfish	Rock Bass	Black Snapper	Perc	Walleyes	Northern Pike	Total, this sheet
69. Menominee	28 37	10	-	2	25		46	72 ①	53 ②	245 ③
	29 16	10	-	2	39	259 ④	6	48		380 ④
	30 45	43	-	-	110	752	56	137		1143
	31 36	68	-	1	82	1582	106	259 ⑥		2134 ⑥
	32 48	29	2	16	302	2758	86	173		3414
T	182	160	2	21	558	5397 ④	326 ①	670 ⑧		7316 ⑩
70. Dickinson	28 -	-	-	-	-	-	-	-	-	-
	29 -	-	-	-	-	-	-	-	-	-
	30 -	1	-	-	-	-	-	13		14
	31 10	1	-	-	-	131	-	5		147
	32 -	-	-	-	-	-	-	-	-	-
T	10	2	-	-	-	131	-	18		161
71. Delta	28 7	-	-	-	-	-	-	4		11 ⑧
	29 -	-	-	-	-	6 ⑥	-	11 ②		17 ⑧
	30 4	-	2	-	8	26	-	62		102
	31 -	-	-	-	-	34	-	-		34
	32 -	1	-	-	-	83	-	20 ③		104 ③
T	11	1	2	-	8	149 ⑥	-	97 ⑤		268 ⑩
72. Schoolcraft	28 -	-	-	-	-	-	-	2		2
	29 -	-	-	-	-	-	-	-	-	-
	30 8	1	64 ⑭	-	2	55	14	78 ⑩		222 ⑫
	31 1	-	-	-	-	-	-	31		32
	32 -	-	-	-	-	-	-	2		2
T	9	1	64 ⑭	-	2	55	14	113 ⑩		258 ⑫
73. Mackinaw	28 4	-	80	9	-	187 ⑫	3	29		312 ⑬
	29 -	-	12 ⑮	1	-	82 ⑯	15 ⑰	23 ⑱		133 ⑬
	30 -	-	37	5	51	578 ⑲	25 ⑳	38 ㉑		434 ⑮
	31 -	-	-	-	-	149 ㉒	-	43 ㉓		192 ⑯
	32 2	-	-	1	1	93	5	2		104
T	6	-	129 ⑲	16	52	1089 ㉒	48 ⑰	135 ㉑		1475 ⑰
74. Gogebic	28 -	51	-	-	-	9	1	384	29	474
	29 -	-	-	-	-	-	1	60	6	67
	30 2	-	-	-	-	-	-	15	35 ⑩	52 ⑩
	31 16	49	20	-	-	29	82 ⑩	124 ②		320 ⑫
	32 9	10 ⑩	-	-	-	2 ②	-	12		33 ⑫
T	27	110 ⑩	20	-	-	33 ②	541 ⑩	206 ⑬		946 ⑮
75. Iron	28 -	-	-	-	-	-	-	-	-	-
	29 -	21	-	-	-	-	-	5	6 ④	32 ④
	30 1	2	-	-	-	-	-	15 ③		18 ③
	31 -	8	-	-	-	16	207 ⑥	85 ③		316 ⑨
	32 -	27	-	-	-	-	94 ⑥	20		142 ⑥
T	1	58	-	-	-	16	322 ⑫	126 ⑩		529 ⑫
76. Marquette	28 5	2	-	-	-	-	15 ①	1	2	25 ①
	29 7 ④	1	-	-	-	-	1	1 ①	4	14 ⑤
	30 3 ①	2 ①	18	16	-	-	53	11 ①	25 ⑤	128
	31 -	8	-	-	-	-	20 ⑩	5	-	33 ⑩
	32 29	10 ⑦	-	-	38 ⑦	-	175 ⑲	448 ⑩	271 ⑬	971 ⑮
T	44 ⑤	23 ⑧	18	16	38 ⑨	-	264 ⑲	466 ⑫	302 ⑱	1171 ⑲
Total, this sheet	290 ⑤	355 ⑱	235 ⑮	53	658 ⑨	25	7440 ⑲	1401 ⑳	1667 ⑳	12824 ⑳



Non-trout Waters

Upper Peninsula Street & ~~Highway~~

Name	No.	Gars	Dogfish	Smelt	Cisno and Whitefish	Lake Trout	Suckers	Mulletts & Rockhorses	Carp	Stubs and Shimers	Sea Fish	Brook Trout	Brown Trout	Rainbow Trout	Other spp.	Unnamed	Total of County and Year	
69. Memnoner	28	19					1										292 (4)	
	29	21					39										440 (4)	
	30	20					66										1241	
	31	124					847 (172)	10										3106 (178)
	32	104			128		188		118									3952
	T	288			129		1141 (172)	10	120				27					9031 (178)
70. Dickinson	28					1											1	
	29					50											50	
	30																14	
	31																147	
	T					51											212	
Delta	28																11	
	29																17 (2)	
	30																102	
	31																34	
	T																268 (11)	
72. Schoolcraft	28																2	
	29																	
	30	13															235 (25)	
	31																32	
	T	13															271 (25)	
73. Mackinac	28																317 (62)	
	29																145 (20)	
	30																335 (36)	
	31	2										7					202 (50)	
	T	24										7					108 (168)	
74. Sogebic	28	10				1	46										531	
	29						25										92	
	30						116										168 (11)	
	31	56				2											379 (12)	
	32					1											33 (12)	
	T	66				3	187										1203 (35)	
75. Iron	28																21	
	29																32 (4)	
	30																18 (3)	
	31																316 (9)	
	32	16															495 (6)	
	T	16															882 (22)	
76. Marguette	28	7					21 (6)										53 (6)	
	29																14 (6)	
	30						6										136 (8)	
	31																33 (10)	
	T	7					27 (6)										1217 (94)	
Total, this sheet 414				449		3	1407 (178)	10	120	2	27	24					1428 (59)	

Non-trot Waters

A. & F. 22 Street 9.  
Upper Peninsula

	Sm-mouth Bass	kg-mouth Bass	Bluegills	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleyes	Northern Pike	Total, this sheet
77. Alger	28 -	-	-	-	-	-	-	-	16	16
	29 9	-	-	-	-	11	⑦	90	110	⑦
	30 8	8	33	-	-	23	-	160	232	-
	31 -	-	6	-	-	1	-	79	87	-
	32 3	13	②	-	-	-	-	93	⑭	⑬
T	20	21	②	39	-	-	35	⑦	438	⑭
78. Luce	28 -	-	-	-	-	-	-	12	2	①
	29 -	-	-	-	-	-	-	-	-	14
	30 -	1	-	-	-	-	-	-	-	1
	31 -	1	-	-	-	-	-	-	-	-
	32 -	-	-	-	-	-	-	12	2	①
T	-	1	-	-	-	-	-	12	2	①
79. Chippewa	28 -	-	-	-	-	-	-	5	-	5
	29 -	11	-	-	-	22	1	-	-	34
	30 6	4	-	6	7	456	①	5	46	⑦
	31 -	-	-	-	-	115	-	2	25	142
	32 6	-	-	6	7	-	-	1	①	2
T	6	15	-	6	7	593	①	9	⑩	713
80. Ontonagon	28 -	1	20	-	-	-	-	49	-	70
	29 -	-	-	-	-	3	-	15	-	18
	30 -	-	-	4	-	4	31	7	-	42
	31 -	-	-	-	-	-	-	-	3	3
	32 -	3	-	-	-	-	-	2	1	6
T	-	4	20	4	4	34	73	4	4	139
81. Houghton	28 44	31	6	7	-	1	22	10	121	-
	29 41	2	15	34	53	66	64	68	343	-
	30 24	11	-	-	13	54	39	59	203	-
	31 -	3	-	-	1	71	32	35	142	-
	32 43	③	28	⑦	3	272	29	54	432	⑩
T	152	③	75	⑦	24	42	69	3	464	⑩
82. Baraga	28 -	-	-	-	-	7	-	-	-	7
	29 9	-	-	-	-	7	1	3	20	-
	30 3	2	-	-	-	42	⑭	-	42	⑭
	31 3	③	-	-	-	29	-	23	55	③
	32 -	21	⑤	-	-	-	11	②	34	②
T	15	③	23	⑤	-	85	⑭	12	②	237
83. Keweenaw	28 9	-	-	-	-	-	1	2	12	-
	29 14	-	-	-	-	4	25	25	68	-
	30 15	①	-	1	8	32	②	5	128	②
	31 3	25	①	-	-	22	30	141	④	221
	32 -	17	-	-	-	51	-	12	80	-
T	41	①	42	①	8	109	②	61	308	⑥
84. Isle Royale	28 -	-	-	-	-	-	-	-	-	-
	29 -	-	-	-	-	-	-	-	-	-
	30 -	-	-	-	-	-	-	-	-	-
	31 -	-	-	-	-	-	-	4	④	4
	32 -	-	-	-	-	-	-	4	④	4
T	-	-	-	-	-	-	-	4	④	4
<b>Total</b>	28 106	95	106	18	25	9	278	⑥3	532	①
	29 96	④	45	27	②	37	92	193	⑩	284
	30 119	②	74	①	155	⑭	27	189	⑧	840
	31 69	③	163	①	26	1	84	2390	⑥3	257
	32 134	③	159	③1	5	18	343	⑨	63	257
T	524	⑫	536	③3	319	⑬	743	⑨	32	8160
Total for this page	234	⑭	181	⑮	84	48	85	7	1320	⑮

# Non-trout Waters Upper Peninsula Sheet 4

Total for This Page	Bullheads	Gars	Dogfish	Smelt	100 and 130 white fish	Lake trout	65 Suckers	Mulllets & Redhorses	Crapp	Chubs and Shiners	Gatfish	Brook Trout	Brown Trout	Rainbow Trout	Other spp.	Name No	Unnamed	Total of County and Year
																		3749
77. Alger	28 29 30 31 32 T	1 1 1 49 98 147																16 110 232 136 207 701
78. Luce	28 29 30 31 32 T																	1A 1 15 5 3A 573 146 2 760
79. Chippewa	28 29 30 31 32 T	1 1 43 1 43				1 1 1 1 1	1 1 3 1 3											70 18 42 3 6 139 126 348 213 154 432 1273
80. Ontonaga	28 29 30 31 32 T																	7 20 89 55 66 237
81. Houghton	28 29 30 31 32 T	1 1 1 4 1 4					5 5 10 8 1 28											12 25 190 251 92 628
82. Baraga	28 29 30 31 32 T																	12 75 190 251 92 628
83. Keweenaw	28 29 30 31 32 T	1 1 2 1 2					1 7 1 25 1 32											12 75 190 251 92 628
84. St. Ignace	28 29 30 31 32 T																	12 75 190 251 92 628
<b>Total</b>	28 29 30 31 32 T	41 33 27 198 237 228 110				1 1 1 1 1 1 1	74 126 198 324 188 100	10	1	2		27						14 138 455 455 455

No returns these spp.

No returns these spp.

No returns these spp.

Trout waters  
South of T. 20  
Sheet 1

	Brook Trout	Brown Trout	Rainbow Trout	Sm.-mouth Bass	lg.-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Total, this sheet
1. Berrien	28	55	1	-	-	-	-	-	-	55
	29	2	1	-	-	-	-	-	-	2
	30	19	3	1	-	-	-	-	-	23
	31	75 (2)	1	2	-	-	-	-	-	78 (2)
	T	151 (2)	4	3	-	-	-	-	-	158 (2)
2. Cass	28	129	-	23	-	-	-	-	-	152
	29	48	2	2	-	-	-	-	-	52
	30	169	17	19	-	-	-	-	-	205
	31	-	-	-	-	-	-	-	-	-
	T	348	19	44	-	-	-	-	-	411
3. St. Joseph	28									
	29									
	30									
	31									
	T	21								21
4. Branch	28									
	29									
	30									
	31									
	T									
5. Hillsdale	28									
	29									
	30	43								43
	31									
	T	43								43
6. Kenawee	28									
	29									
	30									
	31									
	T									
7. Monroe	28									
	29									
	30									
	31									
	T									
8. Van Buren	28									
	29	43 (4)	2	5 (4)						50 (4)
	30	10 (2)	5 (1)	3						18 (2)
	31	20 (20)	2 (2)	7 (7)						29 (29)
	T	73 (25)	9 (3)	15 (11)						97 (42)
Total, this sheet	636 (30)	32 (3)	62 (11)							730 (44)

no records

no records

no records

Trout waters

South of T. 20

Sheet 2

Perch	Walleyes	Northern Pike	Bullheads	Gars	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mulletts and Redhorses	Carp	Chubs and Shiners	Catfish	Other spp.	Name No.	Unnamed	Total for County and Year
1. Berrien 28 29 30 31 32 T									3			1					55 2 27 78 162
2. Cass 28 29 30 31 32 T																	152 52 205 - 2 411
3. St. Joseph 28 29 30 31 32 T					No records these years.												- - - - 21 21
4. Branch 28 29 30 31 32 T					No records these years.												- - - - - -
5. Hillsdale 28 29 30 31 32 T					No records these years.												- - 43 - 43
6. Lenawee 28 29 30 31 32 T					No records these years.												- - - - - -
7. Monroe 28 29 30 31 32 T					No records these years.												- - - - - -
8. Van Buren 28 29 30 31 32 T					No records these years.												- 50 18 29 97 734
Total, this sheet									3			1					50 18 29 97 734

Trout Waters  
S. of T. 20  
Sheet 3

	Brook Trout	Brown Trout	Rainbow Trout	Sm-mouth Bass	lg-mouth Bass	Bluegill	Common Rock Bass	Black Crappie	Total, this sheet
9. Kalamazoo	28 24 29 37 30 - 31 - 32 19 T 80	28 3 29 - 30 - 31 11 32 14 T 31	28 4 29 2 30 - 31 - 32 6 T 12						31 39 - 30 100
10. Calhoun	28 - 29 - 30 48 (21) 31 6 32 - T 54 (21)	28 - 29 - 30 31 31 31 32 - T 32	28 - 29 - 30 - 31 - 32 - T -						49 (21) 37 86 (31)
11. Jackson	28 - 29 - 30 - 31 48 32 - T 48	28 - 29 - 30 - 31 - 32 - T -	28 - 29 - 30 3 (3) 31 - 32 - T 3 (3)						3 (3) 48 51 (3)
12. Washtenaw	28 29 30 31 32 T								<u>no returns</u>
13. Wayne	28 29 30 31 32 T								<u>no returns</u>
14. Allegan	28 19 (3) 29 - 30 31 31 13 32 - T 63 (3)	28 - 29 - 30 17 (3) 31 - 32 1 T 18 (3)	28 - 29 - 30 1 (1) 31 - 32 1 T 2 (1)						19 (3) 49 (4) 13 2 83 (7)
15. Barry	28 49 29 115 30 20 31 37 32 22 (4) T 243 (4)	28 - 29 - 30 - 31 3 32 - T 3	28 - 29 - 30 - 31 - 32 - T -						49 115 20 40 22 (4) 246 (4)
16. Eaton	28 29 30 31 32 T								<u>no returns</u>
Total, this sheet	488 (28)	67 (3)	11 (4)						566 (35)

	Perch	Walleyes	Northern Pike	Bullheads	Gars	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mulletts and Redborses	Carp	Chubs and Shiners	Catfishes	Other spp.	Name	No.	Unnamed	Total for County and Year
9. Kalamazoo	28 29 30 31 32 T																		31 39 - 30 100
10. Calhoun	28 29 30 31 32 T					do.													- 49 (21) 37 86 (21)
11. Jackson	28 29 30 31 32 T					do.													- - 3 (3) 48 51 (3)
12. Washtenaw	28 29 30 31 32 T					do.													
13. Wayne	28 29 30 31 32 T					do.													
14. Allegan	28 29 30 31 32 T									1 5 5 5									19 (3) 54 (4) 13 2 88 (7)
15. Barry	28 29 30 31 32 T									26 1 1 26									49 115 46 40 22 (4) 272 (4)
16. Eaton	28 29 30 31 32 T																		
Total, this sheet										31									597 (35)

No returns for these spp.

No returns

Trout Waters  
S. of T. 20  
Sheet 5

Brook Trout    Brown Trout    Rainbow Trout    Sm.-mouth Bass    Hg.-mouth Bass    Bluegill    Common Sunfish    Rock Bass    Black Crappie    Total, this sheet

Location	28	29	30	31	32	T	Brook Trout	Brown Trout	Rainbow Trout	Sm.-mouth Bass	Hg.-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Total, this sheet	
17. Ingham																	
	28	29	30	31	32	T	5	1	2								8
18. Livingston																	
	28	29	30	31	32	T	5	1	2								8
19. Oakland																	
	28	29	30	31	32	T											
20. Macomb																	
	28	29	30	31	32	T	22	-	-								22
	28	29	30	31	32	T	22	-	-								22
21. Ottawa																	
	28	29	30	31	32	T											
22. Kent																	
	28	29	30	31	32	T	62 (4)	4	-								66 (4)
	29	30	31	32	T	30		1			37						68
	30	31	32	T		107		7			9						116
	31	32	T			214 (6)		7 (2)			8						229 (6)
	32	T				326 (7)		7 (2)			6 (4)						339 (13)
	T					739 (17)		19 (2)			60 (4)						818 (23)
23. Ionia																	
	28	29	30	31	32	T	4	-			8						12
	29	30	31	32	T												
	30	31	32	T		24 (5)		-			1						25 (5)
	31	32	T			21 (5)		-			-						24 (5)
	32	T				49 (10)		-			9						58 (10)
24. Clinton																	
	28	29	30	31	32	T											
Total, this sheet							815 (27)	20 (2)		74 (4)							906 (33)

No returns

No returns

No returns

No returns



	Perch	Walleyes	Northern Pike	Bullheads	Gars	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mulletts and Redhorses	Carp	Chubs and Shiners	Catfish	Other spp.	Name No.	Unnamed	Total for County and Year
17. Ingham 28 29 30 31 32 T																		
18. Livingston 28 29 30 31 32 T						do												8
19. Oakland 28 29 30 31 32 T						do												8
20. Macomb 28 29 30 31 32 T						do												22
21. Ottawa 28 29 30 31 32 T						do												22
22. Kent 28 29 30 31 32 T						do												66 (4) 68 116 229 (6) 339 (13) 818 (23)
23. Ionia 28 29 30 31 32 T						do												12 25 (5) 21 (5) 58 (10)
24. Clinton 28 29 30 31 32 T						do												
Total, this sheet																		906 (33)

No returns these spp.

do

do

do

do

do

do

do

Trout Waters  
S. of T. 20  
Sheet 7

	Brook Trout	Brown Trout	Rainbow Trout	Sm-mouth Bass	lg-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Total, this sheet
25. Shiawassee	28									
	29									
	30									
	31									
	32									
	T									
26. Genesee	28									
	29									
	30	10	-	-						10
	31									
	32	1	-	-						2
	T	11	-	-						12
27. Lapeer	28									
	29	90	-	79						109
	30	25 (10)	-	-						25 (10)
	31									
	32	17	1	-						18
	T	132 (10)	1	79						152 (10)
28. St. Clair	28									
	29									
	30									
	31									
	32									
	T									
29. Gratiot	28									
	29									
	30									
	31									
	32									
	T									
30. Saginaw	28									
	29									
	30									
	31									
	32									
	T									
31. Tuscola	28									
	29									
	30									
	31									
	32									
	T									
32. Sanilac	28									
	29									
	30									
	31									
	32									
	T									
Total, this sheet	143 (10)	1	20							164 (10)

No returns

No returns

	Perch	Walleyes	Northern Pike	Bullheads	Gars	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mullets and Redhorses	Carp Chubs and Shiners	Catfish	Other spp.	Unamed	Total for County and Year
25. Shawassee	28 29 30 31 32 T															
26. Genesee	28 29 30 31 32 T															1 1 10 2 12
27. Lapeer	28 29 30 31 32 T			1 1 1 1 1 1												109 25 (10) 30 164 (10)
28. St. Clair	28 29 30 31 32 T															
29. Gratiot	28 29 30 31 32 T															
30. Saginaw	28 29 30 31 32 T															
31. Tuscola	28 29 30 31 32 T															
32. Sanilac	28 29 30 31 32 T															
Total, this sheet															12	176 (10)

No returns, same spp.

do

No returns

Trout Waters  
S. of T. 20  
Sheet 9

Brook Trout    Brown Trout    Rainbow Trout    Smimouthly-mouth Bass    Bluegill    Common Rock Bass    Black Crappie    Total, this sheet

	Brook Trout	Brown Trout	Rainbow Trout	Smimouthly-mouth Bass	Bluegill	Common Rock Bass	Black Crappie	Total, this sheet
33. Midland	28	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-
T	-	-	-	-	-	-	-	-
34. Bay	28	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-
T	-	-	-	-	-	-	-	-
35. Huron	28	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-
T	-	-	-	-	-	-	-	-
36. Muskegon	28	119 (65)	5 (5)	58 (57)	-	-	-	182 (127)
29	75 (28)	1 (5)	2 (2)	-	-	-	-	78 (28)
30	1	-	-	-	-	-	-	1
31	109	-	-	-	-	-	-	109
32	-	-	-	-	-	-	-	-
T	304 (93)	6 (5)	60 (57)	-	-	-	-	370 (155)
37. Montcalm	28	28	2	-	-	-	-	30
29	2	-	2	-	-	-	-	5
30	48	-	-	-	-	-	-	48
31	-	-	-	-	-	-	-	-
32	78	2	2	-	-	-	-	83
T	136	2	4	-	-	-	-	142
38. Newaygo	28	656	1	2	-	-	-	659
29	62	-	-	117	-	-	-	179
30	414 (23)	2	19	-	-	-	-	435 (23)
31	280 (16)	7	12	-	1	-	-	300 (16)
32	160 (21)	3 (1)	15	80	-	-	-	258 (22)
T	1572 (60)	13 (1)	165	81	-	-	-	1831 (61)
39. Mecosta	28	279 (29)	-	1	-	-	-	280 (29)
29	275 (19)	2	7	-	-	-	-	284 (19)
30	352 (6)	-	-	-	-	-	-	352 (6)
31	405	8	10	-	-	-	-	423
32	128	3	2 (1)	-	-	-	-	138 (1)
T	1439 (54)	13	20 (1)	-	-	-	-	1479 (55)
40. Isabella	28	105	3	1	-	-	-	109
29	15	-	-	-	-	-	-	15
30	53 (45)	1 (1)	30 (13)	-	-	-	-	84 (59)
31	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-
T	173 (45)	4 (1)	31 (13)	-	-	-	-	208 (59)
Total, this sheet	3566 (252)	38 (7)	278 (71)	82	5	-	-	3969 (330)

*no returns*

Trout Waters S. 7 T. 20 Sheet 10

	Perch	Walleyes Northern Pike	Bull head	Gars	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mullets and Redhorses	Carp Chubs and shiners	Catfish	Other sp.	Unnamed	Total for County and Year	
	Name														No.	
33. Midland	28														—	
	29														—	
	30														—	
	31														—	
	32														—	
	T														—	
34. Bay	28	<i>no returns</i>														
	29															
	30															
	31															
	32															
	T															
35. Huron	28	<i>no returns</i>														
	29															
	30															
	31															
	32															
	T															
36. Muskegon	28	<i>no returns these spp.</i>													182	
	29															78
	30															1
	31															109
	32															
	T															370
37. Montcalm	28	<i>dw</i>													30	
	29															5
	30															48
	31															
	32															83
	T															164
38. Newaygo	28	—	—	—	—	—	—	—	—	—	—	—	—	—	659	
	29	—	—	—	—	—	—	—	—	—	—	—	—	—	179	
	30	—	—	—	—	—	—	—	—	—	—	—	—	—	435	
	31	1	—	—	2	—	—	—	—	—	—	—	—	—	303	
	32	—	—	—	—	—	—	—	—	—	—	—	—	—	258	
	T	1	—	—	2	—	—	—	—	—	—	—	—	—	1834	
39. Mecosta	28	—	—	—	—	—	—	—	—	—	—	—	—	—	317	
	29	—	—	—	—	—	—	—	—	—	—	—	—	—	391	
	30	—	—	—	—	—	—	—	—	—	—	—	—	—	252	
	31	—	—	—	—	—	—	—	—	—	—	—	—	—	425	
	32	33	2	—	—	—	—	—	—	—	—	—	—	—	155	
	T	33	46	—	—	—	—	—	12	2	1	1	—	—	1540	
40. Isabella	28	<i>no returns these spp.</i>														
	29															
	30															
	31															
	32															
	T															
Total, this sheet	1	33	48					14							4035	

182 (127)  
78 (28)  
1  
109  
370 (155)  
30  
5  
48  
83  
659  
179  
435 (23)  
303 (16)  
258 (22)  
1834 (61)  
317 (29)  
391 (19)  
252 (6)  
425  
155 (4)  
1540 (58)  
109  
15  
84 (59)  
208 (59)  
4035 (338)

Trout Waters  
S. of T. 20  
Sheet 11

	Brook Trout	Brown Trout	Rainbow Trout	Sm.-mouth Bass	Lg.-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Crappie	Totals, this sheet
41. Gladwin	28	15	-	-	-	-	-	-	-	15
	29	171 (25)	7	-	-	-	-	-	-	178 (25)
	30	56	-	-	-	-	-	-	-	56
	31	1 (1)	-	2 (2)	-	-	-	-	-	3 (2)
	32	-	-	-	-	-	-	-	-	-
	T	243 (26)	7	2 (2)	-	-	-	-	-	-
42. Arenac	28	184	-	-	-	-	-	-	-	184
	29	-	-	-	-	-	-	-	-	-
	30	48	1	10	-	-	-	-	-	59
	31	62	1	7	-	-	-	-	-	70
	32	128 (29)	6 (1)	33 (4)	-	-	-	-	1	168 (34)
	T	422 (29)	9 (1)	50 (4)	-	-	-	-	1	481 (34)
43. Oceana	28	125 (9)	2	16 (7)	-	-	-	-	-	143 (16)
	29	131 (36)	-	7	-	-	-	-	-	138 (36)
	30	89 (10)	-	36	-	-	-	-	-	125 (10)
	31	108	1	4	-	-	-	-	-	113
	32	8 (2)	3	10 (3)	-	-	-	-	-	21 (5)
	T	461 (57)	6	73 (10)	-	-	-	-	-	540 (67)
44. Mason	28	166	2	22	-	-	-	-	-	190
	29	319	1	145 (26)	-	-	-	-	-	465 (26)
	30	170 (14)	13	52	-	-	-	-	-	235 (14)
	31	1	1	42 (10)	-	-	-	-	-	44 (10)
	32	138 (12)	74 (1)	252	-	-	-	-	-	464 (13)
	T	794 (26)	91 (1)	513 (26)	-	-	-	-	-	1398 (63)
45. Lake	28	120 (1)	181 (12)	540 (46)	-	-	-	-	-	841 (59)
	29	45 (1)	9 (2)	129 (86)	-	-	-	-	-	183 (52)
	30	127 (1)	11	265 (15)	-	-	-	-	-	403 (16)
	31	300 (100)	238 (193)	253 (109)	-	-	-	-	-	791 (402)
	32	90 (18)	167 (29)	254 (49)	-	-	-	-	-	511 (96)
	T	682 (134)	606 (236)	1441 (255)	-	-	-	-	-	2729 (625)
46. Osceola	28	45	7	12	-	-	-	-	-	64
	29	70	6	9	-	-	-	-	-	85
	30	165 (11)	3	12 (5)	-	-	-	-	-	180 (16)
	31	90 (3)	18 (4)	9	-	-	-	-	-	117 (7)
	32	3	-	1	-	-	-	-	-	4
	T	373 (14)	34 (4)	43 (5)	-	-	-	-	-	450 (23)
47. Clare	28	92 (31)	-	3	-	-	-	-	-	95 (31)
	29	332 (1)	1	25	-	-	-	-	-	358 (1)
	30	104	5	51	-	-	-	-	-	160
	31	16	-	27	-	-	-	-	-	43
	32	116	87	426	-	-	-	-	-	629
	T	660 (32)	93	532	-	-	-	-	-	1285 (32)
Total, this sheet	28	2144 (142)	206 (17)	683 (110)	-	-	-	-	-	3033 (249)
	29	1982 (127)	39 (2)	515 (66)	-	-	-	-	-	2534 (195)
	30	2047 (100)	78 (4)	483 (25)	1	-	-	-	-	2609 (128)
	31	1910 (198)	319 (100)	414 (14)	1	-	-	-	-	2644 (539)
	32	1200 (98)	363 (34)	1001 (61)	80	5	-	-	-	2650 (193)
	T	9283 (605)	1003 (257)	3096 (402)	82	5	-	-	1	13470 (1724)

Total, this sheet

Trout Waters S. of T. 20 Sheet 12

Name	No.	Perch	Walleyes	Northern Pike	Bullheads	Gars	Dogfish	Smelt	Cisco and	Whitefish	Lake Trout	Suckers	Mulletts and Redhorses	Carp	Chubs and Shiners	Catfishes	Other spp.	Unnamed	Total for County and Year
41. Gladwin	28 29 30 31 32 T			1 1 1 1 1								2 2 2 2 2							15 185 60 3 263
42. Arenac	28 29 30 31 32 T										12 1 1 1 12								196 59 70 168 493
43. Oceana	28 29 30 31 32 T	5 1 5 1 1																	143 138 130 115 21 545
44. Mason	28 29 30 31 32 T			1 1 1 4 16															190 466 246 44 468 1414
45. Lake	28 29 30 31 32 T																		841 183 403 791 511 2729
46. Osceola	28 29 30 31 32 T			1 1 17 55 1 72	1 1 1 5 5							1 1 15 15							64 85 197 199 4 549
47. Clare	28 29 30 31 32 T												1 1 6 6						95 358 166 43 629 1291
	28 29 30 31 32 T	5 1 6		37 15 28 57 18	5 5						12		6 6 6		3 7 10			3082 2549 2687 2731 2683 13732	
Total this sheet		5		95	5						12		6		9				7284

Trout Waters  
No. of T. 20

Treatment

Sheet	Bullheads	Gars	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mulletts & Redhorses	Carp	Chubs and Shiners	Satz fish	Brook Trout	Brown Trout	Rainbow Trout	Other spp.		Unnamed	Total this year
															Name	No.		
48. Manistee	28 29 30 31 32 T											684 776 <sup>(6)</sup> 1176 <sup>(58)</sup> 706 <sup>(26)</sup> 135 3477 <sup>(88)</sup>	1 1 2 1 3	140 120 <sup>(2)</sup> 66 <sup>(2)</sup> 76 <sup>(2)</sup> 95 497 <sup>(6)</sup>			824 896 <sup>(5)</sup> 1244 <sup>(58)</sup> 782 <sup>(28)</sup> 231 3977 <sup>(94)</sup>	
49. Wexford	28 29 30 31 32 T											346 <sup>(13)</sup> 361 <sup>(14)</sup> 421 <sup>(9)</sup> 566 <sup>(21)</sup> 32 1726 <sup>(22)</sup>	1 1 20 <sup>(3)</sup> 1 25 47 <sup>(3)</sup>	63 <sup>(2)</sup> 85 <sup>(2)</sup> 133 <sup>(11)</sup> 45 <sup>(6)</sup> 19 345 <sup>(23)</sup>			409 <sup>(25)</sup> 447 <sup>(21)</sup> 574 <sup>(23)</sup> 612 <sup>(39)</sup> 76 2118 <sup>(108)</sup>	
50. Missaukee	28 29 30 31 32 T	1 1 1 5 1 5					1 1 4 1 4		14 14			143 <sup>(42)</sup> 570 <sup>(54)</sup> 462 <sup>(20)</sup> 457 <sup>(32)</sup> 56 <sup>(11)</sup> 1688 <sup>(89)</sup>	1 2 <sup>(1)</sup> 1 1 1 3 <sup>(1)</sup>	115 <sup>(6)</sup> 90 <sup>(6)</sup> 15 <sup>(3)</sup> 30 11 261 <sup>(21)</sup>			258 <sup>(52)</sup> 662 <sup>(63)</sup> 477 <sup>(53)</sup> 510 <sup>(32)</sup> 68 <sup>(11)</sup> 1975 <sup>(211)</sup>	
51. Roscommon	28 29 30 31 32 T											104 39 7 13 163	3 - - 13 16	4 2 - - 6			111 41 7 26 185	
52. Ogemaw	28 29 30 31 32 T						1 1 5 1 5		1 1 50 1 50			923 703 <sup>(32)</sup> 560 <sup>(16)</sup> 555 <sup>(46)</sup> - 2741 <sup>(24)</sup>	11 13 <sup>(1)</sup> 59 25 <sup>(4)</sup> 1 109 <sup>(6)</sup>	193 <sup>(35)</sup> 69 <sup>(12)</sup> 131 126 <sup>(9)</sup> 5 524 <sup>(56)</sup>			1127 <sup>(35)</sup> 785 <sup>(45)</sup> 751 <sup>(16)</sup> 761 <sup>(59)</sup> 6 3430 <sup>(155)</sup>	
53. Iosco	28 29 30 31 32 T						15 1 1 1 15					254 <sup>(8)</sup> 325 <sup>(2)</sup> 331 <sup>(1)</sup> 431 <sup>(52)</sup> 133 <sup>(7)</sup> 1424 <sup>(24)</sup>	3 <sup>(2)</sup> 31 16 <sup>(1)</sup> 20 <sup>(5)</sup> 13 <sup>(1)</sup> 83 <sup>(9)</sup>			272 <sup>(10)</sup> 356 <sup>(2)</sup> 347 <sup>(2)</sup> 451 <sup>(61)</sup> 146 <sup>(8)</sup> 1572 <sup>(83)</sup>		
54. Benzie	28 29 30 31 32 T					3 3						195 <sup>(7)</sup> 455 <sup>(36)</sup> 620 <sup>(45)</sup> 827 <sup>(23)</sup> 101 2198 <sup>(25)</sup>	3 8 5 <sup>(5)</sup> 3 2 21 <sup>(5)</sup>	102 <sup>(7)</sup> 190 <sup>(10)</sup> 210 <sup>(8)</sup> 256 76 <sup>(2)</sup> 834 <sup>(8)</sup>			300 <sup>(14)</sup> 653 <sup>(30)</sup> 835 <sup>(98)</sup> 1089 <sup>(23)</sup> 179 <sup>(3)</sup> 3056 <sup>(168)</sup>	
55. Gr. Treven	28 29 30 31 32 T	1 1 16 1 1 16										88 178 239 <sup>(2)</sup> 54 <sup>(2)</sup> 30 589 <sup>(4)</sup>	76 22 <sup>(1)</sup> 15 <sup>(2)</sup> 6 <sup>(2)</sup> 24 143 <sup>(6)</sup>	22 25 22 <sup>(3)</sup> - 1 70 <sup>(3)</sup>			186 225 <sup>(1)</sup> 292 <sup>(17)</sup> 60 <sup>(5)</sup> 55 818 <sup>(23)</sup>	
Totals, this sheet	74					3	24		1	64		4056 636 <sup>(20)</sup>	342 20	2620 186			17188 842	



Trout Waters  
N. of T. 20m  
Sheet 2

	Sm-mouth Bass	Lg-mouth Bass	Bluegill	Common Sunfish	Rock Bass	Black Chappie	Perch	Walleyes	Northern Pike	Total	Perch
48. Manistee	28 -								2	826	
	29 -								-	896 (8)	
	30 6								-	1250 (58)	
	31 -								-	782 (28)	
	32 -								-	231	
	T 6								2	3985 (94)	
49. Wexford	28									409 (25)	
	29									447 (21)	
	30									574 (33)	
	31									612 (39)	
	32									76	
	T									2118 (108)	
50. Missaukee	28									258 (52)	
	29									662 (63)	
	30									477 (53)	
	31									511 (32)	
	32									69 (11)	
	T									1976 (211)	
51. Tuscon	28									-	
	29	1							-	111	
	30	3							2	46	
	31	1							-	7	
	32	1							-	26	
	T	3							2	190	
52. Ogema	28								6 (6)	1133 (41)	
	29								-	788 (45)	
	30								3	757 (16)	
	31								1 (1)	762 (60)	
	32								-	6	
	T								10 (7)	3440 (162)	
53. Iosco	28								-	272 (10)	
	29								-	356 (2)	
	30								9	356 (2)	
	31								-	451 (61)	
	32								-	146 (8)	
	T								9	1581 (83)	
54. Benzie	28				1				-	300 (14)	
	29				1				-	653 (30)	
	30				3				7	845 (98)	
	31				1				-	1089 (23)	
	32				1				-	179 (3)	
	T				8				7	3066 (168)	
55. Gr. Traverse	28								-	186	
	29								-	225 (1)	
	30								8 (2)	300 (19)	
	31								-	60 (5)	
	32								-	55	
	T								8 (2)	826 (25)	
Total, this sheet	9				3		1		38 (9)	17182 (851)	

No returns for those years

Trout Waters

N. of T. 20

Sheet 3

	Bullheads	Gars	Dogfish	Smelt Cisco and Whitefish	Lake Trout	Suckers & Mulletts & Redhorses	Carp	Chubs and Stunners	Catfish	Brook Trout	Brown Trout	Rainbow Trout	Other spp. Name No.	Unnamed	Total this sheet
56. Kalkaska	28 29 30 31 32 T					13 <sup>(13)</sup> - - - - 13 <sup>(13)</sup>				549 <sup>(33)</sup> 560 <sup>(3)</sup> 345 <sup>(40)</sup> 487 <sup>(8)</sup> 26 1967 <sup>(104)</sup>	- - 8 - - 8	2 <sup>(1)</sup> 24 <sup>(2)</sup> 46 8 1 81 <sup>(3)</sup>		564 <sup>(47)</sup> 584 <sup>(5)</sup> 399 <sup>(60)</sup> 495 <sup>(8)</sup> 27 2069 <sup>(120)</sup>	
57. Crawford	28 29 30 31 32 T									545 <sup>(3)</sup> 525 <sup>(33)</sup> 515 <sup>(40)</sup> 452 <sup>(16)</sup> 60 2097 <sup>(144)</sup>	50 75 <sup>(10)</sup> 118 <sup>(5)</sup> 100 <sup>(1)</sup> - 343 <sup>(16)</sup>	105 52 <sup>(6)</sup> 93 <sup>(3)</sup> 94 <sup>(8)</sup> 2 346 <sup>(17)</sup>		700 <sup>(3)</sup> 652 <sup>(99)</sup> 726 <sup>(48)</sup> 646 <sup>(27)</sup> 62 2786 <sup>(177)</sup>	
58. Oscoda	28 29 30 31 32 T									98 77 <sup>(28)</sup> 120 5 6 306 <sup>(25)</sup>	29 21 <sup>(5)</sup> - 11 - 61 <sup>(5)</sup>	20 21 <sup>(1)</sup> - 3 - 44 <sup>(1)</sup>		147 119 <sup>(34)</sup> 120 19 6 411 <sup>(34)</sup>	
59. Alcona	28 29 30 31 32 T									352 <sup>(23)</sup> 179 308 43 882 <sup>(20)</sup>	- - - - -	- - - - -		352 <sup>(20)</sup> 179 308 43 882 <sup>(20)</sup>	
60. Keelaxau	28 29 30 31 32 T				1 1 1 1 1 T					121 88 167 249 <sup>(10)</sup> 2 627 <sup>(10)</sup>	2 - - - 2 2	3 - - 2 1 6		126 88 167 251 <sup>(10)</sup> 5 637 <sup>(10)</sup>	
61. Antwerp	28 29 30 31 32 T									792 <sup>(23)</sup> 460 548 <sup>(6)</sup> 863 <sup>(62)</sup> 380 <sup>(2)</sup> 3043 <sup>(11)</sup>	2 10 - 2 5 19	16 <sup>(1)</sup> 35 104 <sup>(10)</sup> 42 44 241 <sup>(1)</sup>		810 <sup>(23)</sup> 505 652 <sup>(16)</sup> 907 <sup>(62)</sup> 429 <sup>(2)</sup> 3303 <sup>(122)</sup>	
62. Otsego	28 29 30 31 32 T				1 1 1 1 1 T					1436 <sup>(9)</sup> 1144 <sup>(3)</sup> 964 <sup>(3)</sup> 1767 <sup>(5)</sup> 449 5762 <sup>(135)</sup>	- - 10 2 - 12	40 91 14 6 14 165		1476 <sup>(9)</sup> 1237 <sup>(28)</sup> 994 <sup>(13)</sup> 1775 <sup>(85)</sup> 463 5945 <sup>(135)</sup>	
63. Montmorency	28 29 30 31 32 T									197 <sup>(11)</sup> 616 <sup>(5)</sup> 210 46 26 <sup>(2)</sup> 1095 <sup>(23)</sup>	- - - - - -	4 13 <sup>(6)</sup> - - - 17 <sup>(6)</sup>		201 <sup>(11)</sup> 629 <sup>(21)</sup> 210 46 26 <sup>(7)</sup> 1112 <sup>(39)</sup>	
Total, this sheet					8	13 <sup>(13)</sup>				15779 <sup>(589)</sup>	445 <sup>(21)</sup>	900 <sup>(38)</sup>		17145 <sup>(657)</sup>	

Trout Waters  
 N.Y.T. 20  
 Sheet #

	Sm.-mouth Bass	Lg.-mouth Bass	Bluegills	Common Sunfish	Rock Bass	Black Crappie	Perch	Walleyes	Northern Pike	Total, this year only
56. Kalkaska	28									564 (47)
	29									584 (5)
	30									399 (60)
	31									495 (8)
	32									27
	T									2069 (120)
57. Crawford	28	1								700 (3)
	29	1						15 (15)		667 (114)
	30	1								726 (48)
	31	2	1			7				656 (27)
	32									62
	T	2	1			7			15 (15)	2811 (192)
58. Oscoda	28									147
	29									119 (34)
	30									120
	31									19
	32									6
	T									411 (34)
59. Alcona	28									352 (20)
	29									179
	30									308
	31									43
	32									
	T									882 (20)
60. L'Anse-au-Loup	28									126
	29							1		88
	30							4		197
	31							1		251 (10)
	32							1		5
	T							4		644 (10)
61. Antrim	28									810 (23)
	29									505
	30									652 (16)
	31									907 (62)
	32									429 (21)
	T									3303 (122)
62. Osego	28									1476 (9)
	29									1237 (28)
	30									994 (13)
	31									1775 (85)
	32									463
	T									5945 (135)
63. Montmorency	28									201 (11)
	29							13 (13)		642 (34)
	30									210
	31									46
	32									26 (7)
	T							13 (13)		1125 (52)
Total, this sheet	2	1			7			32 (32)		17187 (685)

No returns for these spp.

No returns for these spp.

do.

No returns for these spp.

do.

	Bullheads	Gars	Dogfish	Smelt	Cisco and Whitefish	Lake Trout	Suckers	Mullets and Redhorses	Carp	Chubs and Shiners	Catfishes	Brook Trout	Brown Trout	Rainbow Trout	Other spp.	Name No.	Unnamed	Total this sheet
69. Alpena	28 29 30 31 32 T											14 54 <sup>(2)</sup> 68 <sup>(2)</sup>						14 - 54 <sup>(2)</sup> 68 <sup>(2)</sup>
65. Charlevoix	28 29 30 31 32 T						- - 5 - 6					105 146 86 81 <sup>(2)</sup> 38 <sup>(1)</sup> 456 <sup>(24)</sup>	- - - 1 10 11	7 11 10 21 <sup>(18)</sup> 12 61 <sup>(18)</sup>				112 157 106 104 <sup>(4)</sup> 60 <sup>(1)</sup> 534 <sup>(42)</sup>
66. Emmet	28 29 30 31 32 T											372 <sup>(3)</sup> 581 <sup>(6)</sup> 153 <sup>(2)</sup> 253 242 <sup>(2)</sup> 462 <sup>(8)</sup>	3 - - 2 40 <sup>(18)</sup> 3	3 - - 2 45 <sup>(10)</sup>			378 <sup>(34)</sup> 582 <sup>(26)</sup> 153 <sup>(8)</sup> 255 282 <sup>(3)</sup> 1650 <sup>(99)</sup>	
67. Cheboygan	28 29 30 31 32 T						- - 4 - 4					352 <sup>(6)</sup> 339 382 <sup>(35)</sup> 156 <sup>(6)</sup> 98 <sup>(6)</sup> 1327 <sup>(97)</sup>	- - 46 6 - 52	139 <sup>(3)</sup> 98 224 136 19 616 <sup>(3)</sup>			491 <sup>(53)</sup> 437 656 <sup>(35)</sup> 298 <sup>(6)</sup> 117 <sup>(6)</sup> 1999 <sup>(100)</sup>	
68. Prasnue Isle	28 29 30 31 32 T						- - - 4 4					36 144 <sup>(13)</sup> 5 67 <sup>(15)</sup> 52 <sup>(4)</sup> 304 <sup>(32)</sup>	- 1 - - 100 110				36 145 <sup>(13)</sup> 5 67 <sup>(15)</sup> 66 <sup>(5)</sup> 319 <sup>(33)</sup>	
Toto	28 29 30 31 32 T						28 - 6 3 2 11	9 - 9 10 4 -				176 156 283 157 82 853	977 960 1086 867 363 4253				8783 336 9449 396 9106 449 9178 501 2330 93 38846 1775	
Totals this sheet						14						3757 244	66 32	733 32				4570 276

Trout Waters  
 N. of T. 20  
 Sheet 6

	Sm. mouth Bass	hg. mouth Bass	Bluegills	Common Rock Sunfish	Black Bass	Perch Crappie	Walleyes	Northern Pike	Total this sheet	
64. Alpena								14		
28										
29										
30								20	74	
31										
32										
T								20	88	
65. Charlevoix	No returns these spp.									
28									112	
29									157	
30									101	
31									104	
32									60	
T									534	
66. Emmet										
28									378	
29									582	
30									152	
31							4		259	
32							2		284	
T							6		1656	
67. Cheboygan										
28									491	
29									437	
30							30		690	
31							2		311	
32							20		137	
T							52		2066	
68. Presque Isle	No returns these spp.									
28									36	
29									145	
30									5	
31									67	
32									66	
T									319	
<b>Totals</b>										
28								8	8791	
29								6	342	
30	9			3			30	28	9479	
31	2	1		7		9	2	3	424	
32								1	9208	
T	11	1		10		9	52	103	453	

Total this sheet 8 52 33 4663 277

39032

Upper Peninsula

Trout Waters

Sheet 1

	Bullheads	Gars	Dogfish	Smelet Cisco and Whitefish	Lake Trout	Suckers	Mullets & Redkorses	Carp	Chubs and Shiners	<del>Salmon</del>	Brook Trout	Brown Trout	Rainbow Trout	Other spp. Name N	Unnamed	Total of Sheet
69. McMoniz	28 29 30 31 32 T										10 61 229 79 14 393		3 1 1 3			10 61 232 79 14 396
70. Dickinson	28 29 30 31 32 T					5		5			37 329 119 330 177 992					37 329 119 330 189 1002
71. Delta	28 29 30 31 32 T										39 422 49 101 300 1354	27 2 - - - 29	2 - 4 18 - 24			68 424 496 119 300 1407
72. Schoolcraft	28 29 30 31 32 T										117 204 590 388 72 1371		5 5 1 14 - 25			122 209 591 402 72 1396
73. Mackinac	28 29 30 31 32 T										92 217 420 236 47 1012		9 1 - 2 - 12			101 218 420 238 47 1024
74. Gogebic	28 29 30 31 32 T					- - 22 - - 22	- - 30 - - 30		- - 23 - - 23			346 884 1100 1288 69 3687	1 2 - 3 - 6	36 42 29 22 - 129		383 928 1174 1343 69 3897
75. Iron	28 29 30 31 32 T					- - - 1 1 2					14 494 621 1053 685 2867					14 495 621 1054 686 2870
76. Marquette	28 29 30 31 32 T										405 896 391 126 794 2612		37 2 18 - 171 228			442 899 424 127 965 2859
Total, this sheet						37	30	5	24	14	288	43	422			14849

820

	Sm-mouth Bass	lg-mouth Bass	Bluegills	Common Sunfish	Rock Bass	Black Stappie	Percb	Walleye	Northern Pike	Total, up to vicinity
69. Menominee	28								-	10
	29								-	61
	30								3	235
	31								-	79
	32								-	14
	T								3	399
70. Dickinson	28								25	62
	29								5	334 (39)
	30								-	119 (17)
	31								5	335 (32)
	32								-	187
	T								35	1037 (88)
71. Delta	28								-	68 (9)
	29								-	424 (30)
	30								1	497 (11)
	31								-	119 (14)
	32								-	300
	T								1	1408 (64)
72. Schesocraft	28						-	-	-	122
	29						-	-	-	209
	30						-	1	15	607 (5)
	31						14	2	-	418 (33)
	32						-	-	-	72
	T						14	3	15	1428 (48)
73. Mackinaw	28						-	-	-	101 (7)
	29						-	-	-	218
	30						6	5	5	436 (62)
	31						-	-	-	238 (4)
	32						-	-	-	47
	T						6	5	5	1040 (73)
74. Gogebic	28						-	-	-	383
	29						-	-	-	928
	30						80	4	3	1267 (134)
	31						-	8	5	1356 (54)
	32						-	-	-	69
	T						80	12	8	3998 (188)
75. Iron	28						-	-	-	14 (11)
	29						-	-	-	495 (65)
	30						-	-	3	624 (29)
	31		4 (4)		1		-	1 (1)	-	1060 (31)
	32		-		-		10	-	-	696 (52)
	T		4 (4)		1		10	1 (1)	3	2889 (298)
76. Marquette	28								-	442 (24)
	29								-	899 (14)
	30								4	424 (34)
	31								-	127
	32								-	965 (4)
	T								4	2857 (76)
Total, this sheet	1		4 (4)		1		110	21 (1)	70	15056 (825)

Upper Peninsula

Trout Waters 591 Sheet 3

17665 (673)

	Bullheads	Gars	Dogfish	Smelt Cisco and Whitefish	Lake Trout	Suckers	Mullets & Redhorses	Carp	Chubs and Shiners	<del>Bullheads</del> Brook Trout	Brown Trout	Rainbow Trout	Other spp	Unnamed	Total this sheet
													Name No		
77. Alger	28 29 30 31 32 T					- - 19 7 - 26			15 50 - 20	278 345 641 241 462 1967	12 3 - 4 - 15	3 - 4 - 11 18			293 348 679 253 473 2046
78. Luce	28 29 30 31 32 T									34 56 356 212 11 669		1 - 1 - - 2			35 56 357 212 11 671
79. Chippewa	28 29 30 31 32 T				- - 1 47 - 48	- - - 31 - 31				162 555 1153 366 257 2493	- - - 5 - 5	- - 8 - 2 10			162 555 1167 444 259 2587
80. Ontonagon	28 29 30 31 32 T									71 394 255 339 188 1247		13 9 3 17 5 47			84 403 258 356 193 1294
81. Houghton	28 29 30 31 32 T					- - 4 2 8 14		- - 8 - - 8	- - - 2 2 - 2	1715 884 1023 1035 461 5718	2 8 - - 1 11	180 159 174 89 149 751	Grayling - 7 11 4 22		1897 1051 1216 1137 625 5926
82. Baraga	28 29 30 31 32 T									237 484 974 916 343 2954		7 38 13 47 24 129			244 522 987 963 369 3085
83. Keweenaw	28 29 30 31 32 T					- - - 26 - 26				115 195 283 459 201 253	- 8 - - - 8	11 4 3 12 40 70			126 207 286 497 241 1357
84. Isle Royal	28 29 30 31 32 T				- - - - 18 18	- - - - - -				16 46 381 247 680	- - - - -	- - - - 1 1			6 - 46 381 266 699
85. Ontonagon	28 29 30 31 32 T									3678 6420 8693 7550 4228 4165	42 24 12 3 3 3	304 261 241 22167 10333 4450			4024 6705 9073 7935 4777 122714



	Sm-mouth Bass	hg-mouth Bass	Bluegills	Common Sunfish	Rock Bass	Black crappie	Percy	Walleyes	Northern Pike	Total, years of residency
77. Alger	28								-	293 (6)
	29								-	348
	30								21	700 (12)
	31								14	267 (11)
	32								-	473 (10)
T									35	2081 (39)
78. Luce	28									35
	29									56
	30									357 (51)
	31									212 (15)
	32									11
T										671 (66)
79. Chippewa	28								-	162 (23)
	29								1	556 (11)
	30								1	1168 (30)
	31								-	444 (5)
	32								-	259 (30)
T									2	2589 (199)
80. Ontonagon	28									84
	29									403
	30									258 (2)
	31									356 (40)
	32	2					12			207 (5)
T		2					12			1305 (47)
81. Houghton	28									1897
	29									1051 (13)
	30						14		13	1244 (1)
	31								46	1184 (19)
	32						27	2	7	661 (45)
T							41	2	66	6037 (77)
82. Baraga	28									244 (36)
	29									522 (16)
	30									987 (29)
	31									963 (87)
	32									369 (52)
T										3085 (220)
83. Keweenaw	28									126
	29									207
	30									286
	31									497 (7)
	32									241
T										1357 (7)
84. Isle Royale	28									6
	29									-
	30									46
	31									381 (15)
	32									266
T										699 (15)
	28								25	4049 (119)
	29								6	6711 (288)
	30	2					100	10	65	9250 (427)
	31		5 (4)		1		14	11 (1)	70	8036 (467)
	32	2					37	14	7	4837 (17)
T		4	5 (4)		1		151	35 (1)	173	32883 (498)
Totals throughout	3	1		1			41	14	103	19829

No returns for these yrs

No returns for these yrs

Totals from summary sheets

	Brook	Brown	Rainbow	S. mouth Bass	L. mouth bass	Bluegill	Common Sunfish	Rock bass	Petaloglossa	Perc
Non-Trout S. of T. 20				337 (9)	1309 (13)	10400 (257)	2016 (73)	1287 (76)	676 (19)	7502 (263)
28				283 (3)	1245 (24)	7472 (75)	1231 (9)	1330 (10)	278	5652 (33)
29				270 (8)	1601 (248)	14750 (871)	1754 (119)	1355 (93)	1233 (76)	5325 (338)
30	1			282 (38)	862 (107)	10165 (989)	1268 (144)	837 (64)	1154 (54)	4967 (248)
31	25	3		367 (27)	840 (72)	10000 (638)	1675 (62)	1064 (92)	3402 (143)	6105 (278)
32	4		3	1539 (85)	5857 (582)	52787 (2830)	7544 (404)	5873 (353)	6743 (294)	28551 (1204)
T	330	3	3							
Trout S. of T. 20										
28	2144 (142)	206 (17)	683 (119)							
29	1982 (127)	37 (2)	515 (66)							
30	2047 (100)	78 (4)	483 (24)	1						5
31	1910 (198)	319 (20)	414 (141)	1						1
32	1200 (98)	363 (24)	1001 (61)	80	5					
T	9283 (665)	1003 (257)	3096 (462)	82	5					6
Non-Trout N. of T. 20										
28				371 (14)	370 (9)	1700 (6)	428	1232 (28)	41	2661 (73)
29				414 (10)	372 (9)	1443 (44)	384 (8)	1325 (23)	45	3150 (42)
30	18 (2)	4	4	551 (41)	235 (12)	2112 (110)	840 (19)	1473 (28)	141 (12)	3163 (140)
31	15 (2)			184 (5)	81 (11)	376 (55)	147 (19)	777 (18)	291	5704 (69)
32				410 (8)	49 (3)	772 (6)	141 (28)	701 (9)		3006 (48)
T	33 (2)	4	4	1930 (83)	1107 (44)	6403 (221)	1940 (74)	5508 (108)	518 (12)	17684 (367)
Trout N. of T. 20										
28	7602 (262)	176	977 (61)							
29	8334 (329)	155 (18)	960 (49)							
30	7705 (353)	283 (15)	1086 (81)	9				3		
31	8072 (443)	157 (8)	867 (50)	2	1			7		9
32	1879 (78)	82	363 (15)							
T	33592 (1465)	853 (41)	4253 (256)	11	1			10		9
Non-Trout Upper Rainier										
28				106	95	106	18	25	9	278 (63)
29				96 (4)	45	27 (2)	37	92		462 (24)
30				119 (2)	74 (1)	150 (14)	27	199	7	2102 (42)
31	7	3		69 (3)	163 (18)	26	1	84	16	2390 (63)
32	17			134 (3)	159 (31)	5	18	343 (9)		3528 (34)
T	24	3		524 (12)	536 (33)	319 (16)	101	743 (9)	32	8760 (226)
Trout Upper Rainier										
28	3678 (113)	42	304 (6)							
29	6420 (286)	24	261 (2)							
30	8693 (398)	12 (3)	261 (26)	2						100
31	7550 (425)	3	221 (27)		5 (4)		1			14
32	4328 (165)	3 (1)	403 (35)	2						37
T	30669 (1383)	84 (4)	1450 (96)	4	5 (4)					151

	valley	North Pike	Ball Kend	Sand	Bygones	Smelt	Cinco + Mudfish	Kyle trout	Sturgeon	Mullet + Yellow	Carp	Shad + Shiner	cutfish	Other fish	Name	No	Number	Totals
North trout S. of T. 20	28 54 (1)	583 (5)	1293 (2)	1 (1)	1				231 (14)		371 (3)		16			7	26084 (939)	
	29 203	749 (28)	791 (2)	1	20		2		157 (8)	4 (7)	38 (3)		2			31 (2)	19458 (184)	
	30 184 (27)	781 (103)	1345 (73)	14 (1)	240 (13)		70		581 (37)	71 (7)	328 (15)	11	15			22 (2)	29953 (2432)	
	31 231 (8)	750 (76)	194 (17)	48 (12)	169 (16)		3		70 (7)	71 (13)	35 (2)	13	4 (5)			32	23909 (2057)	
	32 182 (10)	329 (81)	247 (19)		26 (4)		1		14 (2)	19 (5)	33 (2)	58	46 (5)			73	25747 (1491)	
T	854 (45)	3192 (283)	7848 (22)	62 (14)	456 (40)		76		1796 (79)	171 (5)	1425 (20)	77	93 (10)			133 (4)	125151 (7100)	
Trout S. of T. 20	28	37						12									3082 (269)	
	29	15															2549 (195)	
	30	28 (4)							36	6		3					2687 (152)	
	31	57	5						17			7					2731 (539)	
	32	3 (3)	18						12								2683 (196)	
T	3 (3)	155 (4)	5					12	65	6		10					13732 (1331)	
North trout N. of T. 20	28 979 (6)	2753 (42)	372			120			134	25	2		1				11191 (178)	
	29 827 (4)	325 (27)	594		33				7								11846 (174)	
	30 832 (2)	398 (7)	90 (5)		25	119 (4)			26	18 (7)	30 (8)	7	2 (2)			10 (1)	14510 (657)	
	31 275 (11)	2390 (11)	322 (45)		50 (2)	1547 (225)	3	3	608 (2)	12	2	20				22 (2)	12858 (860)	
	32 374 (11)	1787 (38)	709 (1)		12	1			5							5	7972 (139)	
T	3287 (52)	14165 (283)	897 (104)	7	120 (2)	1467 (345)	3	3	780 (2)	55 (7)	34 (8)	27	22 (2)			37 (5)	58377 (1408)	
North trout N. of T. 20	28	8 (6)							28 (13)								8791 (342)	
	29	30 (28)															9479 (424)	
	30	30	55 (3)	16				6	9		1						9203 (452)	
	31	2	8 (1)	5				3	10			64					9207 (502)	
	32	20	2					2	4								2352 (93)	
T	52	103 (38)	21					11	51 (13)		1	64					39032 (1813)	
North trout Upper Pine creek	28 532 (1)	152 (2)	41						74 (6)				27				1464 (72)	
	29 193 (10)	284 (8)	33						126								1395 (48)	
	30 189 (8)	840 (46)	77				2		198	10	1	2					4002 (113)	
	31 257 (14)	853 (18)	237					3	854 (172)		1						4995 (271)	
	32 587 (13)	695 (13)	222				460		188								6474 (122)	
T	1758 (44)	2824 (17)	610				962	4	1470 (78)	10	120	2	27				18330 (637)	
Trout Upper Pine creek	28	25															4049 (119)	
	29	6															6711 (388)	
	30	10	65					1	52		8	39				7	9250 (427)	
	31	11 (1)	70					47 (5)	68	30		5 (5)				11	8031 (467)	
	32	14	7					18	14		5	2				4	4237 (197)	
T	33 (1)	173						66 (5)	134	30	13	46 (5)				22	32883 (1498)	