

**MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
FISHERIES DIVISION**

**Fisheries Research Report 1922**

**December 3, 1985**

**ON-SITE CREEL SURVEYS IN MICHIGAN, 1975-82<sup>1</sup>**

**James R. Ryckman**

**and**

**Roger N. Lockwood**

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<sup>1</sup>Contributions from Dingell-Johnson Project F-35-R, Michigan.

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## ABSTRACT

This report summarizes results of on-site creel surveys conducted on inland lakes, rivers, and the Great Lakes from 1975 to 1982 which are not given in other reports.

The inland lake fisheries varied considerably. For a May-September fishing season, total catch varied from 0.09 to 559 fish per acre, and catch rate from 0.0051 to 2.5861 fish per angler hour. Generally, fishing pressure was inversely related to lake size and was highest in Region III (southern Michigan). Large lakes tended to have lower catch per acre and lower catch per hour averages. Limited comparisons suggest that there has been a decline in inland lake fisheries since 1946-65 surveys.

Statistics for 13 Great Lakes surveys are given in this report. Fish per hour estimates ranged from a high of 2.12 for the Saginaw Bay winter perch fishery to a low of 0.253 for the Thunder Bay summer trout fishery. Fishing pressure ranged from a high of 15,156 hours per square mile for the 1978 summer Belle Isle fishery to a low of 341 hours per square mile the above-mentioned Thunder Bay fishery.

Five river fisheries were surveyed. Catch rates ranged from a high of 0.4354 fish per hour per angler for the Detroit River to a low of 0.0356 fish per hour per angler on the lower Au Sable River. The Detroit River had the highest fishing pressure, 22,709 fishing hours per linear mile, and the St. Joseph had the lowest, 2,958 fishing hours per linear mile.

Recommendations for planning creel surveys are given.



## INTRODUCTION

The Michigan Department of Natural Resources, Fisheries Division, conducted many creel surveys in 1975–82 to determine catch, catch rate, and fishing pressure for inland lakes, rivers, and specific Great Lakes areas. Survey results helped fishery managers evaluate the status and trends in fish populations and fisheries. The purpose of this report is to compile these data and make some broad comparisons.

Surveys were conducted throughout the state—in the Upper Peninsula (Region I), the northern Lower Peninsula (Region II), and the southern Lower Peninsula (Region III) (Fig. 1). Surveys were made on 17 inland lakes in Region I, 44 inland lakes in Region II, and 4 inland lakes in Region III. Surveys were conducted on one river in Region I, one in Region II, and three in Region III. Great Lakes surveys included one area in Region I, eight areas in Region II, and two areas in Region III.

Exact locations of all sites censused, surface areas, census dates, monthly and seasonal catches by species, and monthly and seasonal fishing pressure are given in the Appendix of this report. Refer to the Index of Waters in Appendix for a complete list of creel surveys in the Appendix.

This report, and that of Schneider and Lockwood (1979), compile most of the on-site creel census data for Michigan waters. Additional recent census studies are listed in Table 1. Refer also to numerous reports by G. R. Alexander, H. Gowing, W. C. Latta, M. H. Patriarche, and D. S. Shetter for older census data on lakes and streams within the Hunt Creek, Pigeon River, and Rifle River research areas.

## METHODS

All estimates in this report were based upon on-site creel surveys. Stratified direct-contact interviews of anglers were used to determine mean catch rates (catch per angler hour) for each species of fish and mean length of angler trips. Fishing pressure was determined by stratified-random instantaneous counts of shore anglers and fishing boats. From these data were determined the average number of anglers fishing at any moment during a fishing time stratum.

Counts were made from the ground, except for one census when an airplane was used to make fishing pressure counts for 40 inland lakes in District 5, Region II. For four of these lakes, counts were made from the ground and air simultaneously to determine the efficiency of the airplane for counting boats. Shore anglers were also counted on these four lakes by the census clerk because shore anglers could not be counted from the airplane. These four lakes were: Little Bear Lake, Big Bear Lake, East Twin Lake, and Little Wolf Lake. Comparisons of

on-ground counts to airplane counts indicated that the air observer saw 73.63% of the fishing boats on these lakes. The formulas for correcting boat counts, and ultimately boat fishing pressure, for the other 36 District 5 lakes counted only by the airplane are:

$$\text{On-ground estimated boat hours} = \text{airplane estimated boat hours} \times 1.3582$$

$$\text{Variance} = ((\text{airplane estimated boat hours})^2 \times 0.00335) \\ + (1.3582^2 \times \text{variance airplane estimated boat hours})$$

The ratio of total fishing hours (boat fishing hours plus shore fishing hours) to boat fishing hours for the four District 5 lakes was  $1.9504 \pm 0.3477$  to 1.000. This ratio was then used to expand the boat fishing hours on the remaining 36 lakes to total fishing hours (Appendix 24).

The creel survey estimates for all other lakes, rivers, and Great Lakes areas used the following formulas:

$$\text{Shore angler hours per time strata} = \text{mean angler count} \times \text{hours per fishing day} \times \text{days}$$

$$\text{Boat hours per time strata} = \text{mean boat count} \times \text{hours per fishing day} \times \text{days}$$

$$\text{Boat angler hours per time strata} = \text{boat hours} \times \text{mean anglers per boat}$$

$$\text{Angler trips per time strata} = \text{angler hours} / \text{hours per angler trip}$$

$$\text{Catch by species per time strata} = \text{catch per angler hour} \times \text{estimated angler hours}$$

All creel surveys were stratified by type of fishery (boat, shore, and pier), by weekend and weekday, by month, and by species of fish (Ryckman 1981). These stratified estimates were totaled to make monthly estimates which were then totaled to make seasonal estimates.

Estimates in Tables 2-8 are given with true 95% confidence limits ( $\alpha=0.05$ ). Estimates in the Appendix are listed with two standard errors.

### Inland Lakes Surveys

For the inland lakes in Region I, the sampled fishing season was limited to May through August or September, with the exception of Big Manistique Lake, Luce and Mackinac counties. This lake was censused from May 1978 through February 1979, and again from May 1979 through February 1980. Region II and III lakes were censused from May through September in most cases.

For the purpose of broad comparisons, the inland lakes were stratified by region and size because a two-way analysis of variance of 1946-65 surveys (data in Schneider and Lockwood 1979) had indicated those two factors explained most of the variation in fishing statistics among lakes. The four size strata used were 500 acres and less, 501 to 1,000 acres, 1,001 to 2,000 acres, and over 2,000 acres. The three statistics compared were:

1. Total fish caught per acre per season.
2. Total angling hours per acre per season.
3. Total fish caught per angler hour per season.

We compared the 1975–82 inland lake data to data collected from 22 inland lakes in 1946–65 (Schneider and Lockwood 1979). The 1946–65 data did not include any lakes from Region I and, therefore, no Region I comparisons can be made. Some of the 1946–65 data for hours per acre, catch per acre, and catch per hour were reported only as point estimates and ranges. Consequently, range was used as an estimate of standard deviation so that confidence limits could be calculated for those surveys (Snedecor and Cochran 1971).

### Great Lakes Surveys

The Great Lakes surveys encompassed specific fishing seasons, with the exception of the Les Cheneaux census (March 1979 through March 1981) and the Lake Erie census (May through November 1980). For the Lake Erie census, no shore fishing occurred in September–November.

The statistics compared for these areas were:

1. Average angler hours per square mile summed over the census months.
2. Average total catch per square mile summed over the census months.
3. Average monthly total catch per hour summed over the census months.

### River Surveys

The river surveys were also designed to sample specific seasonal fisheries. The one exception was the Detroit River survey which extended from June through November 1980.

For comparing river surveys, which were of short duration, we computed:

1. Average hours fished per linear mile of river summed over the census months.
2. Average total catch per linear mile of river summed over census months.
3. Average monthly total catch per hour summed over census months.

These statistics enable broad comparisons of fishing intensity and quality to be made among rivers for the census periods. More accurate comparisons of fishing quality between rivers should weight these statistics by multiplying them by the number of months that fishing actually occurs at each river.

## RESULTS AND DISCUSSION

### Inland Lake Surveys

The fisheries of inland lakes censused in 1975–82 varied greatly. Fishing pressure, measured in angler hours per season, ranged from 180 (Beaver House Lake) to 191,134 (Kent Lake) and averaged 17,228. Total catch per acre per season ranged from 0.09 (Brockies Pond) to 559 (Lake Ovid) and averaged 45. Fishing quality, measured as seasonal catch per angler hour, ranged from 0.0051 (Pretty Lake) to 2.5861 (Lake Ovid) and averaged 0.6951. The average catch per hour for 22 lakes sampled in 1946–65 was higher, 1.07 (Schneider and Lockwood 1979).

**Size and region comparisons.**—It is difficult to compare averages by region and lake size because some strata had small sample sizes and their averages were strongly affected by atypical fisheries. For example, the 1975–82 averages for Region III include two highly productive impoundments, Kent Lake and Lake Ovid.

Generally, fishing pressure was inversely related to lake size and was highest in Region III (Table 2). Often 501- to 1,000-acre lakes received the highest fishing pressure. These averages indicate that Regions I and II had comparable fishing intensity.

The largest lakes tended to have the lowest average catch per acre and catch per hour (Tables 3 and 4). Catch per acre averages were generally higher in Region III, but there were no apparent differences in catch per hour averages among the regions.

**Time trends.**—Comparison of strata averages for 1946–65 to those for 1975–82 indicate a general downward trend in fishing pressure, total catch per acre, and catch per hour (Tables 2–4). The major exception is for Region III lakes less than 500 acres; that average was inflated by the spectacular new fishery at Lake Ovid. Possible explanations for these declines include a shift towards salmon fishing on the Great Lakes, a shift towards relatively more winter fishing (nearly all the 1975–82 data were for the open-water season), and a continued shift in the attitude of anglers. Schneider and Lockwood (1979) noted that anglers had become less interested in panfish and more interested in game fish during the 1950's. A continuation of that trend would cause a decrease in both catch per acre and catch per hour.

**Time trends for two lakes.**—Two lakes, Whitmore (Washtenaw and Livingston counties) and Pontiac (Oakland County), were sampled in both time periods (Table 5). For Whitmore Lake, there was a significant increase in fishing pressure, a significant decrease in total catch, and a large (1.12 versus 0.31) but non-significant decrease in catch per hour. For Pontiac Lake, there were significant decreases in all three fishery parameters.

These data suggest there has been a decline in fishing quality at Whitmore and Pontiac lakes as well. This may be true, but it could be due to limited sampling. The lakes were sampled only 1 year in 1975–82, compared to 12–14 years in 1950–65. Consequently, there was

no between-years error for the 1975–82 sample and the likelihood of 1 year being different from a 12–14 year average is very high.

### Great Lakes Surveys.

Estimates of pressure, catch, and catch per hour are summarized by site in Table 6. Catch per hour varied from 0.03 (Thunder Bay—mostly salmonids) to 2.13 (Saginaw Bay—mostly yellow perch, Perca flavescens). The pressure and catch figures are more difficult to compare because the lengths of the census periods were so variable. Consequently, estimates were computed on a monthly basis and the sites were ranked according to fishing pressure (Table 7). Even so, the monthly averages may not be representative because either good or poor seasons may have been excluded by the census. Rather surprisingly, the Lake Erie fishery received a high rank and the fisheries at Cedarville-Hessel and the north half of Saginaw Bay (winter only) received low ranks.

### River Surveys

River survey data are summarized in Table 8. These data present the same problems of interpretation as the Great Lakes data because the length of the census period was so variable. Projection of these estimates to a full year would require making very dangerous assumptions. These data can be used for future comparisons if census periods are carefully matched. More complete surveys have been made for the St. Joseph, Detroit, and Grand rivers since this report was compiled.

The estimates in Table 8 indicate that the Detroit River fishery supported the highest pressure, total catch, and catch per hour. The lower 7 miles of the St. Joseph River had a relatively small and poor fishery. However, small fish, such as yellow perch, were the mainstays of Detroit River anglers, whereas large salmonids were sought on the St. Joseph and other rivers.

## CONCLUSIONS AND RECOMMENDATIONS

Most of the 1975–82 creel surveys will provide useful reference data for making future comparisons. Because the surveys were of short duration, they alone are not adequate to document changes in fishing, environment, or fish populations. The limited comparisons which can be made to prior surveys suggest that there has been a decline in fishing quality at inland lakes over the last 30 years. This needs to be confirmed by repeating surveys at the same lakes sampled in 1946–65.

Future surveys should always be done with specific purposes outlined before implementation. If fishing trends, biological changes within fish populations, or environmental influences are to be detected, a census should extend at least 3 complete years or 3 complete seasons within 3 years. If an estimate of relative use (fishing effort) of different fishing sites is the goal, then several areas should be censused simultaneously, with angler counts only, for 1 year. This census should probably be repeated every 3 to 5 years. A good example of a census targeted at relative fishing pressure within an area is the one done on District 5 lakes in 1982. If the problem is to detect factors effecting angler success (catch or catch rates), then several continuous years of censusing are necessary to eliminate year-to-year variation in angler habits, fish catchability, and climatic factors.

One example of factors affecting catch was detected in the northern Saginaw Bay (Arenac County) ice fishing census. Four seasons of data indicate that 98.92% of the variability in winter yellow perch catch was related to the number of weeks that the Bay was ice covered (Fig. 2). This could not have been detected with only 1 or 2 years of data. Figure 2 is not implying that ice coverage is the only factor affecting winter perch catches in Saginaw Bay, other factors may be correlated with it.

Much care and thought should be exercised when using these data because they may not be typical. Note, too, that the averages are based on relatively few lakes and years. This is especially true when comparing the estimates from single-year or partial-year surveys to other single-year or partial-year estimates.

#### ACKNOWLEDGMENTS

Most of these creel census studies were supervised by fisheries managers. Nearly every District contributed to this effort. J. E. Duffy, J. L. Fenske, S. P. Sendek, K. D. Smith and A. D. Sutton assisted in the analyses of these data. The authors designed the census schedules and made the computations. The report was edited by J. C. Schneider.

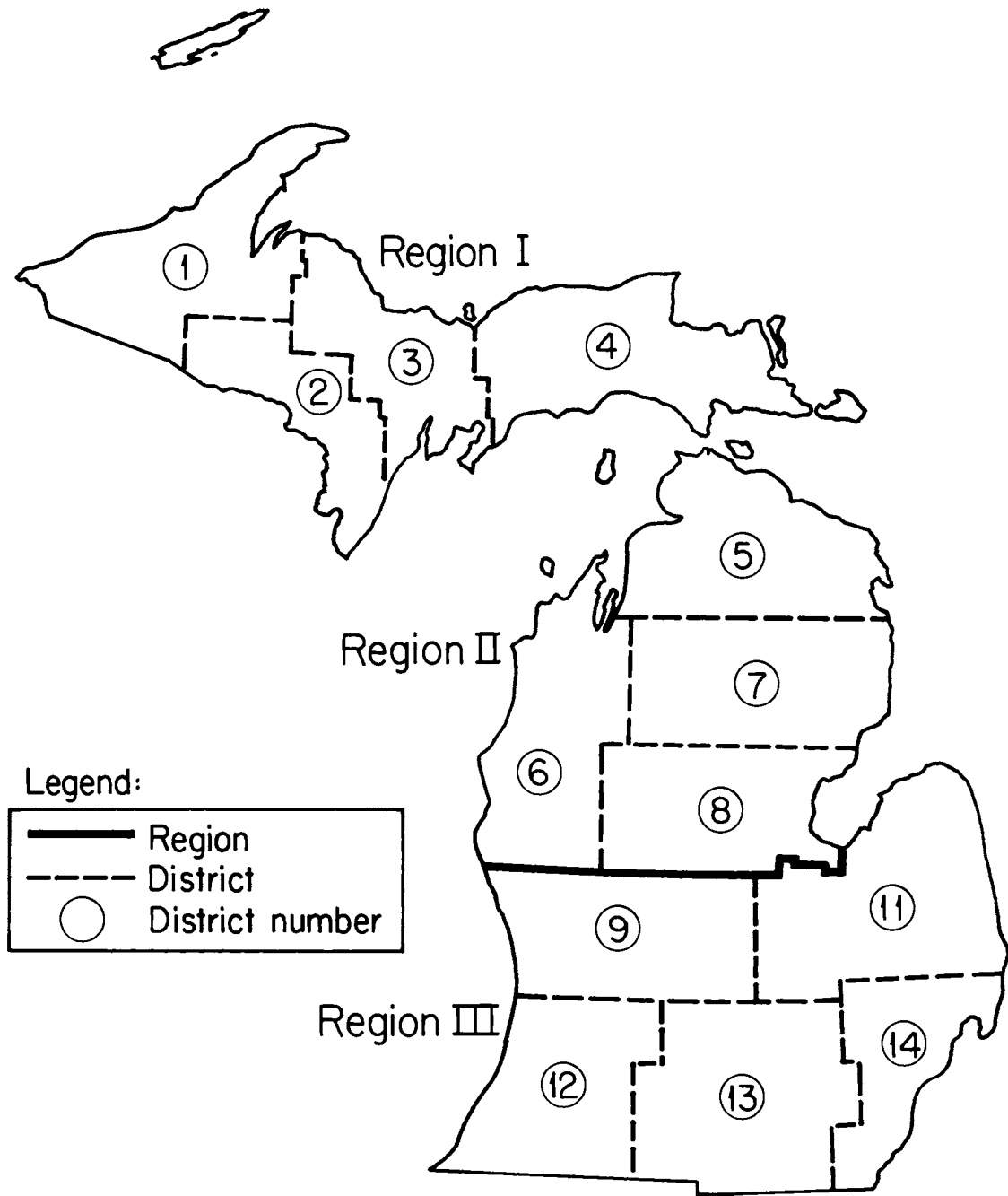


Figure 1. Map of Michigan showing Michigan Department of Natural Resources regions and districts.

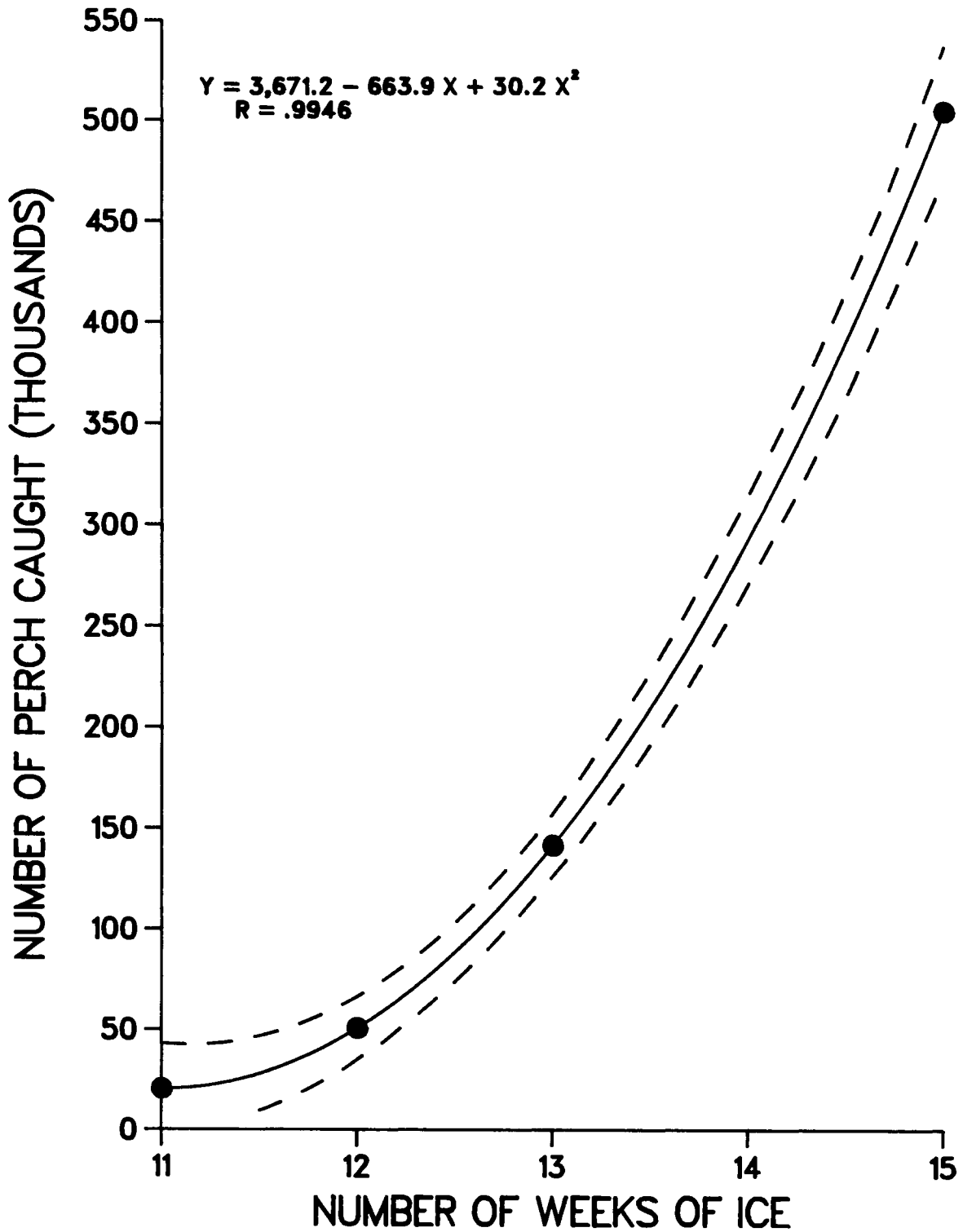


Figure 2. Relationship between winter harvest of yellow perch and number of weeks of ice cover for northern Saginaw Bay, 1974-78.



Table 1. Summary of on-site creel census studies conducted since 1965 which are not included in this report.

Water type and site	County	Years	Reference
<u>Inland lakes</u>			
Long	Barry	1974-80	Beyerle (1980)
Round	Van Buren	1977-80	Beyerle (1984)
Osterhout	Allegan	1978-79	Beyerle (1984)
Manistee	Kalkaska	1975-78	Laarman (1980)
Jewett	Ogemaw	1979-82	Schneider (1983)
Mill	Washtenaw	1969	Schneider (1973)
Iron	Iron	1981	Siler and Beyerle (1984)
District 14	Oakland	1973-74	Ryckman and Alward (1976)
<u>Great Lakes</u>			
Lake Michigan	Many	1978-79	Patriarche (1980)
Anchor Bay, Lake St. Clair	Macomb	1976-82	Galbraith and Schneider (1984)
Muskegon Reef and South Haven	Muskegon	1381-82	Merna and Galbraith (1984)
Little Bay de Noc	Delta	1965	Wagner (1968)
Huron, Superior, and Michigan	Many	1969-72	Rybicki (1973)
Grand Traverse Bay	Grand Traverse	1971-72	Kapetsky and Ryckman (1973)
<u>Rivers</u>			
Huron River and Impoundments	Washtenaw and Wayne	1972-78	Laarman (1979) and Carl (1976)
Huron	Oakland	1975	Carl et al. (1977)
Huron	Baraga	1972	Wagner and Stauffer (1978)
Au Sable	Crawford	1959-76 1979-83	Alexander et al. (1979) Clark and Alexander (1985)
Salmon snagging sites	Many	1975	Carl (1977)
Pere Marquette	Lake	1982-83	Kruger (1985)

Table 2. Inland lake fishing pressure in angler hours per acre  $\pm 95\%$  confidence limits.  
(Number of lakes and lake seasons in each sample are in parentheses.)<sup>1</sup>

Region	Lake size (acres)	Years	
		1946-65	1975-82
I	$\leq 500$	no estimate (0)	$11 \pm 3$ (11,11)
	501-1,000	no estimate (0)	$55 \pm 6$ (3,2)
	1,001-2,000	no estimate (0)	$23 \pm 2$ (2,4)
	$> 2,000$	no estimate (0)	$6 \pm 1$ (2,4)
II	$\leq 500$	$78 \pm 8$ (1,1)	$69 \pm 11$ (35,35)
	501-1,000	$148 \pm 29$ (1,20)	$18 \pm 5$ (3,3)
	1,001-2,000	$41 \pm 6$ (2,26)	$30 \pm 5$ (26,26)
	$> 2,000$	$36 \pm 14$ (2,21)	$3 \pm 0.3$ (1,1)
III	$\leq 500$	$77 \pm 16$ (10,99)	$208 \pm 22$ (2,3)
	501-1,000	$183 \pm 50$ (5,45)	$88 \pm 4$ (2,2)
	1,001-2,000	$79 \pm 19$ (1,2)	no estimate (0)
	$> 2,000$	no estimate (0)	no estimate (0)

<sup>1</sup> The first number is the number of lakes sampled, the second is the number of lake seasons. One lake season is any sample of fishing effort, catch, and catch rate collected on any lake from May to October; i.e., one lake sampled for 2 seasons would constitute 2 lake seasons.

Table 3. Inland lakes total catch per acre  $\pm 95\%$  confidence limits. (Number of lakes and lake seasons in each sample are in parentheses.)<sup>1</sup>

Region	Lakes size (acres)	Years	
		1946-65	1975-82
I	$\leq 500$	no estimate (0)	$15 \pm 9$ (11,11)
	501-1,000	no estimate (0)	$51 \pm 6$ (3,2)
	1,001-2,000	no estimate (0)	$20 \pm 2$ (2,4)
	$> 2,000$	no estimate (0)	$3 \pm 0$ (2,4)
II	$\leq 500$	20 (1,1)	$23 \pm 12$ (4,4)
	501-1,000	$48 \pm 10$ (1,1)	$18 \pm 20$ (2,2)
	1,001-2,000	$32 \pm 11$ (2,20)	$15 \pm 2$ (1,1)
	$> 2,000$	$12 \pm 1$ (2,21)	$1 \pm 1$ (1,1)
III	$\leq 500$	$130 \pm 18$ (9,94)	$978 \pm 178$ (2,3)
	501-1,000	$170 \pm 42$ (5,43)	$33 \pm 5$ (2,2)
	1,001-2,000	$82 \pm 94$ (1,2)	no estimate (0)
	$> 2,000$	no estimate (0)	no estimate (0)

<sup>1</sup> See Table 2.

Table 4. Inland lake total catch per angler hour  $\pm 95\%$  confidence limits. (Number of lakes and lake seasons in each sample are in parentheses.)<sup>1</sup>

Region	Lakes size (acres)	Years	
		1946-65	1975-82
I	$\leq 500$	no estimate (0)	$0.23 \pm 0.13$ (11,11)
	501-1,000	no estimate (0)	$0.93 \pm 0.16$ (3,2)
	1,001-2,000	no estimate (0)	$1.08 \pm 0.17$ (2,4)
	$> 2,000$	no estimate (0)	$0.42 \pm 0.07$ (2,4)
II	$\leq 500$	$1.66 \pm 0.90$ (1,1)	$0.74 \pm 0.23$ (4,4)
	501-1,000	$0.61 \pm 0.10$ (1,20)	$1.81 \pm 1.32$ (2,2)
	1,001-2,000	$0.76 \pm 0.16$ (2,26)	$0.54 \pm 0.07$ (1,1)
	$> 2,000$	$0.42 \pm 0.05$ (2,21)	$0.34 \pm 0.19$ (1,1)
III	$\leq 500$	$1.19 \pm 0.71$ (10,99)	$1.75 \pm 0.42$ (2,3)
	501-1,000	$1.07 \pm 0.16$ (5,57)	$0.38 \pm 0.06$ (2,2)
	1,001-2,000	$1.04 \pm 1.08$ (1,2)	no estimate (0)
	$> 2,000$	no estimate (0)	no estimate (0)

<sup>1</sup> See Table 2.

Table 5. Average May-October fishing statistics ( $\pm 95\%$  confidence limits) for two lakes during early and recent years. Number of seasons sampled are in parentheses.

Lake and fishing statistic	Years	
	1950-65	1980
<u>Whitmore Lake</u>	(12)	(1)
Total hours/acre	$70 \pm 16$	$95 \pm 7$
Total fish/acre	$89 \pm 28$	$29 \pm 9$
Catch/hour/angler	$1.12 \pm 0.03$	$0.31 \pm 1.00$
<u>Pontiac Lake</u>	(14)	(1)
Total hours/acre	$126 \pm 29$	$81 \pm 6$
Total fish/acre	$153 \pm 134$	$37 \pm 6$
Catch/hour/angler	$1.12 \pm 0.10$	$0.45 \pm 0.08$

Table 6. Great Lakes survey estimates  $\pm 95\%$  confidence limits.

Region	Area and dates censused	Hours fished per square mile	Total fish caught per square mile	Total catch per hour per angler	Months in fishing season
I	Cedarville-Hessel, Lake Huron (Mar 1979-81)	2,923 $\pm 249$	6,026 $\pm 838$	2.06 $\pm 0.34$	25 —
II	Northern Saginaw Bay (winter 1974-78)	1,570 $\pm 116$	3,349 $\pm 304$	2.13 $\pm 0.25$	14 —
	Thunder Bay-Portland, Lake Huron (Apr-May 1979) <sup>1</sup>	341 $\pm 161$	— —	— —	2 —
	Thunder Bay, Lake Huron (Apr-Sep 1979)	2,032 $\pm 249$	51 $\pm 18$	0.03 $\pm 0.01$	6 —
	Thunder Bay, Lake Huron (Fish Festival 1981)	294 $\pm 66$	30 $\pm 6$	0.10 $\pm 0.03$	29 —
	Rockport area, Lake Huron (Apr-Sep 1979)	1,346 $\pm 177$	147 $\pm 74$	0.11 $\pm 0.06$	6 —
	Oscoda area, Lake Huron (May-Sep 1978)	6,218 $\pm 166$	436 $\pm 166$	0.07 $\pm 0.04$	5 —
	Tawas Bay, Lake Huron (Jan-Mar 1978)	1,308 $\pm 125$	956 $\pm 255$	0.73 $\pm 0.21$	3 —
	(May-Sep 1978)	4,427 $\pm 354$	3,440 $\pm 968$	0.78 $\pm 0.23$	5 —
	Iosco-Arenac counties, Lake Huron (May-Sep 1978)	3,791 $\pm 649$	1,408 $\pm 649$	0.37 $\pm 0.24$	5 —
III	Belle Isle (Jun-Aug 1978)	15,156 $\pm 464$	4,277 $\pm 552$	0.28 $\pm 0.04$	3 —
	(Sep-Nov 1980)	2,529 $\pm 385$	261 $\pm 141$	0.10 $\pm 0.06$	3 —
	Lake Erie (May-Aug 1980)	8,481 $\pm 950$	9,601 $\pm 1,607$	1.13 $\pm 0.23$	4 —

<sup>1</sup> No interviews collected.

Table 7. Great Lakes areas ranked by fishing pressure and catch.

Area and date	Hours fished per square mile per month	Fishing pressure rank	Total fish caught per square mile per month	Total catch rank
Belle Isle (Jun-Aug 1978)	5,052 ± 155	1	1,426 ± 184	2
Lake Erie (May-Aug 1980)	2,120 ± 237	2	2,400 ± 402	1
Oscoda Area, Lake Huron (May-Sep 1978)	1,244 ± 33	3	87 ± 33	9
Thunder Bay (Fishing Festival 1981)	1,013 ± 226	4	164 ± 35	8
Tawas Bay (May-Sep 1978)	885 ± 71	5	688 ± 184	3
Belle Isle (Sep-Nov 1980)	843 ± 129	6	87 ± 47	10
Iosco-Arenac counties, Lake Huron (May-Sep 1978)	758 ± 130	7	282 ± 130	5
Tawas Bay, Lake Huron (Jan-Mar 1978)	436 ± 42	8	319 ± 85	4
Thunder Bay-Propert, Lake Huron (Apr-Sep 1979)	339 ± 42	9	9 ± 2	12
Rockport Area, Lake Huron (Apr-Sep 1979)	224 ± 30	10	25 ± 13	11
Thunder Bay-Portland, Lake Huron (Apr-May 1979)	170 ± 80	11	—	—
Cedarville-Hessel, Lake Huron (Mar 1979-81)	116 ± 10	12	241 ± 34	6
Northern Saginaw Bay (winter 1974-78)	112 ± 8	13	239 ± 22	7

Table 8. River survey estimates  $\pm 95\%$  confidence limits.

Region	River and dates censused	Hours fished per linear mile	Total fish caught per linear mile	Catch per hour per angler	Months surveyed in season
I	Escanaba River (Sep-Oct 1981)	5,008 $\pm 1,668$	860 $\pm 360$	0.17 $\pm 0.09$	2
II	Lower Au Sable River (Dec 1977-Jun 1978)	12,381 $\pm 879$	442 $\pm 248$	0.04 $\pm 0.02$	7
III	Grand River System (Mar-Apr 1979-80, 82)	11,201 $\pm 1,357$	2,017 $\pm 465$	0.18 $\pm 0.05$	2
	St. Joseph River (Mar-Apr 1982)	2,958 $\pm 143$	226 $\pm 60$	0.08 $\pm 0.02$	2
	Detroit River (Jun-Nov 1980)	22,709 $\pm 1,748$	9,887 $\pm 1,521$	0.44 $\pm 0.07$	6



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Report approved by W. C. Latta

Typed by G. M. Zurek

APPENDIX

Appendix 1. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Corner Lake, spring - summer 1978  
T 43-44N, R 18-19W, Sec 1, 6, 31, and 36, Delta, Schoolcraft, and Alger counties  
144 acres

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Northern pike	0.0337 (0.0508)	0 (0)	77 (113)	0 (0)	0 (0)	77 (113)
Yellow perch	0.0083 (0.0177)	19 (40)	0 (0)	0 (0)	0 (0)	19 (40)
Smallmouth bass	0.0070 (0.0155)	0 (0)	16 (35)	0 (0)	0 (0)	16 (35)
Bluegill	0.0083 (0.0177)	19 (40)	0 (0)	0 (0)	0 (0)	19 (40)
Sunfish	0.0709 (0.1387)	162 (312)	0 (0)	0 (0)	0 (0)	162 (312)
Total catch	0.1282 (0.1546)	200 (317)	93 (118)	0 (0)	0 (0)	293 (338)
Angler hours	— —	583 (291)	820 (456)	683 (547)	200 (230)	2,286 (803)
Angler trips	— —	364 (199)	513 (300)	427 (351)	125 (146)	1,429 (524)

Appendix 2. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Skeels Lake, spring - summer 1978  
 T 43-44N, R 18-19W, Sec 1 and 36, Delta and Alger counties  
 91 acres

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Northern pike	0.1885 (0.2232)	7 (16)	353 (408)	11 (14)	0 (0)	371 (409)
Yellow perch	0.0351 (0.0496)	8 (19)	38 (78)	23 (46)	0 (0)	69 (93)
Smallmouth bass	0.0056 (0.0075)	0 (0)	0 (0)	11 (14)	0 (0)	11 (14)
Bluegill	0.0696 (0.1424)	0 (0)	0 (0)	137 (274)	0 (0)	137 (274)
Rock bass	0.0569 (0.0854)	0 (0)	66 (133)	46 (91)	0 (0)	112 (161)
Sunfish	0.0727 (0.0695)	15 (37)	94 (93)	34 (69)	0 (0)	143 (122)
Crappie	0.0193 (0.0405)	0 (0)	38 (78)	0 (0)	0 (0)	38 (78)
Total catch	0.4477 (0.3380)	30 (45)	589 (453)	262 (301)	0 (0)	881 (546)
Angler hours	—	133 (126)	703 (233)	724 (765)	408 (255)	1,968 (849)
Angler trips	—	49 (49)	260 (114)	269 (296)	151 (105)	729 (338)

Appendix 3.. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Straits Lake, spring - summer 1978  
T 44N, R 18W, Sec 21, 30, and 31, Schoolcraft County  
189 acres

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Northern pike	0.3003 (0.3860)	74 (150)	162 (243)	0 (0)	0 (0)	236 (286)
Smallmouth bass	0.0420 (0.0934)	0 (0)	33 (72)	0 (0)	0 (0)	33 (72)
Largemouth bass	0.0165 (0.0489)	0 (0)	13 (38)	0 (0)	0 (0)	13 (38)
Bluegill	0.0356 (0.0729)	28 (56)	0 (0)	0 (0)	0 (0)	28 (56)
Rock bass	0.0356 (0.0729)	28 (56)	0 (0)	0 (0)	0 (0)	28 (56)
Total catch	0.4300 (0.4331)	130 (170)	208 (256)	0 (0)	0 (0)	338 (308)
Angler hours	—	350 (135)	345 (276)	46 (123)	45 (64)	786 (337)
Angler trips	—	247 (105)	244 (198)	32 (87)	32 (45)	555 (245)

Appendix 4. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Cisco Lake, summer 1977  
T 44-45N, R 41W, Sec 4, 5, 9, 32, and 33, Gogebic County  
506 acres

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Yellow perch	0.4667 (0.1838)	2,184 (1,342)	4,096 (3,249)	2,663 (1,813)	2,351 (1,607)	1,347 (988)	0 (0)	12,641 (4,382)
Rock bass	0.0603 (0.0548)	150 (199)	405 (458)	138 (111)	877 (1,360)	64 (164)	0 (0)	1,634 (1,462)
Sunfish	0.2246 (0.1001)	226 (198)	843 (574)	958 (544)	3,330 (2,322)	725 (908)	0 (0)	6,082 (2,623)
Bluegill	0.1160 (0.0578)	104 (145)	332 (271)	691 (380)	1,719 (1,300)	295 (423)	0 (0)	3,141 (1,452)
Largemouth bass	0.0035 (0.0032)	3 (7)	0 (0)	23 (39)	60 (71)	8 (20)	0 (0)	94 (84)
Smallmouth bass	0.0046 (0.0035)	0 (0)	20 (27)	33 (42)	71 (76)	0 (0)	0 (0)	124 (91)
Bullhead	0.0007 (0.0014)	0 (0)	0 (0)	0 (0)	19 (39)	0 (0)	0 (0)	19 (39)
Northern pike	0.0943 (0.0399)	507 (305)	941 (578)	218 (151)	803 (668)	84 (205)	0 (0)	2,553 (969)
Walleye	0.0137 (0.0080)	71 (81)	55 (101)	141 (127)	88 (84)	17 (41)	0 (0)	372 (204)
Total catch	0.9843 (0.2766)	3,245 (1,414)	6,692 (3,393)	4,865 (1,945)	9,318 (3,461)	2,540 (1,432)	0 (0)	26,660 (5,597)
Angler hours	— —	4,470 (1,665)	7,418 (1,585)	4,777 (1,324)	8,174 (3,769)	1,950 (2,030)	296 (498)	27,085 (5,061)
Angler trips	— —	1,203 (563)	2,691 (716)	1,729 (522)	4,425 (1,323)	755 (695)	148 (52)	10,951 (1,827)

Appendix 5. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Cisco Lake, summer 1978  
T 44-45N, R 41W, Sec 4, 5, 9, 32, and 33, Gogebic County  
506 acres

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Yellow perch	0.2582 (0.0698)	1,388 (701)	551 (249)	2,515 (959)	2,821 (1,136)	7,275 (1,662)
Rock bass	0.1059 (0.0357)	505 (235)	1,077 (760)	846 (357)	556 (261)	2,984 (910)
Sunfish	0.2140 (0.0669)	166 (112)	789 (365)	2,616 (1,237)	2,457 (1,058)	6,028 (1,672)
Bluegill	0.1793 (0.0558)	377 (234)	948 (493)	2,096 (1,011)	1,629 (786)	5,050 (1,392)
Largemouth bass	0.0059 (0.0034)	21 (20)	54 (76)	51 (37)	41 (31)	167 (92)
Smallmouth bass	0.0076 (0.0038)	4 (6)	33 (39)	145 (92)	31 (26)	213 (103)
Bullhead	0.0027 (0.0016)	24 (22)	0 (0)	6 (10)	45 (37)	75 (44)
Northern pike	0.0793 (0.0221)	851 (282)	623 (368)	334 (154)	426 (212)	2,234 (533)
Walleye	0.0211 (0.0070)	414 (156)	27 (30)	53 (38)	101 (73)	595 (179)
Total catch	0.8740 (0.1637)	3,750 (848)	4,102 (1,077)	8,662 (1,906)	8,107 (1,775)	24,621 (2,943)
Angler hours	—	5,706 (1,506)	6,840 (2,400)	7,987 (1,838)	7,638 (2,261)	28,171 (4,064)
Angler trips	—	1,182 (309)	1,938 (616)	2,284 (534)	2,513 (705)	7,917 (1,121)



Appendix 6. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Gogebic Lake, summer 1976  
T 46-48N, R 42W, Gogebic and Ontonagon counties  
15,530 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug		
Yellow perch	0.1313 (0.0643)	177 (147)	416 (342)	927 (549)	539 (663)	2,059 (938)	
Rock bass	0.0233 (0.0312)	12 (25)	4 (6)	347 (483)	2 (5)	365 (484)	
Sunfish	0.0038 (0.0045)	0 (0)	60 (70)	0 (0)	0 (0)	60 (70)	
Smallmouth bass	0.0687 (0.0846)	93 (118)	88 (46)	105 (141)	791 (1,312)	1,077 (1,326)	
Northern pike	0.0231 (0.0184)	171 (250)	178 (125)	13 (26)	0 (0)	362 (281)	
Walleye	0.0859 (0.0381)	551 (448)	667 (296)	97 (91)	32 (42)	1,347 (546)	
Total catch	0.3361 (0.1186)	1,004 (548)	1,413 (478)	1,489 (751)	1,364 (1,471)	5,270 (1,805)	
Angler hours	—	5,082 (1,305)	5,033 (2,140)	3,378 (1,015)	2,186 (802)	15,679 (2,821)	
Angler trips	—	1,185 (500)	1,242 (629)	948 (671)	716 (130)	4,091 (1,054)	

Appendix 7. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Gogebic Lake, summer 1977  
T 46-48N, R 42W, Gogebic and Ontonagon counties  
15,530 acres

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Yellow perch	0.1745 (0.0703)	1,155 (1,111)	293 (279)	211 (877)	2,924 (1,012)	1,229 (532)	107 (238)	5,419 (1,856)
Rock bass	0.0048 (0.0047)	25 (38)	8 (20)	17 (98)	73 (84)	27 (40)	0 (0)	150 (142)
Sunfish	0.0002 (0.0001)	0 (0)	5 (13)	0 (0)	0 (0)	0 (0)	0 (0)	5 (13)
Smallmouth bass	0.0023 (0.0058)	18 (25)	14 (13)	29 (174)	11 (21)	0 (0)	0 (0)	72 (178)
Largemouth bass	0.0036 (0.0085)	0 (0)	0 (0)	0 (0)	95 (262)	17 (34)	0 (0)	112 (264)
Northern pike	0.0027 (0.0032)	28 (35)	0 (0)	0 (0)	56 (81)	0 (0)	0 (0)	84 (88)
Walleye	0.1527 (0.0874)	1,113 (1,092)	76 (107)	27 (255)	1,882 (749)	482 (560)	1,164 (2,053)	4,744 (2,522)
Total catch	0.3408 (0.1246)	2,339 (1,559)	396 (300)	284 (935)	4,541 (1,291)	1,755 (774)	1,271 (2,067)	10,586 (3,152)
Angler hours	—	5,247 (3,602)	912 (460)	1,736 (876)	13,001 (2,537)	6,527 (3,117)	3,639 (3,658)	31,062 (6,594)
Angler trips	—	1,223 (516)	225 (114)	688 (487)	4,256 (775)	2,125 (1,161)	1,636 (1,724)	10,153 (2,332)

Appendix 8. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Thousand Island Lake, spring - fall 1977  
 T 44N, R 41W, Sec 1-3, 10-12, Gogebic County  
 1,020 acres

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Yellow perch	0.3951 (0.1750)	1,669 (1,325)	4,886 (4,289)	4,007 (2,569)	2,277 (2,727)	1,107 (1,022)	0 (0)	13,946 (5,935)
Rock bass	0.0294 (0.0177)	240 (261)	153 (170)	49 (74)	277 (414)	320 (316)	0 (0)	1,039 (612)
Sunfish	0.0922 (0.0519)	0 (0)	354 (375)	461 (364)	1,191 (1,341)	1,249 (1,059)	0 (0)	3,255 (1,787)
Bluegill	0.1280 (0.0731)	174 (353)	769 (955)	1,199 (976)	1,001 (1,309)	1,375 (1,626)	0 (0)	4,518 (2,519)
Largemouth bass	0.0031 (0.0047)	0 (0)	56 (132)	29 (47)	25 (91)	0 (0)	0 (0)	110 (167)
Smallmouth bass	0.0167 (0.0150)	74 (72)	38 (52)	357 (467)	119 (206)	0 (0)	0 (0)	588 (526)
Bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Northern pike	0.0604 (0.0366)	100 (101)	1,094 (1,192)	508 (179)	197 (305)	233 (209)	0 (0)	2,132 (1,265)
Walleye	0.0141 (0.0091)	179 (174)	85 (164)	138 (128)	62 (146)	33 (77)	0 (0)	497 (315)
Total catch	0.7389 (0.2146)	2,436 (1,412)	7,435 (4,577)	6,748 (2,821)	5,149 (3,359)	4,317 (2,227)	0 (0)	26,085 (6,866)
Angler hours	— —	4,602 (949)	7,018 (1,647)	9,038 (1,914)	11,033 (3,389)	3,480 (2,109)	130 (52)	35,301 (4,337)
Angler trips	— —	755 (306)	2,464 (608)	3,273 (745)	4,038 (1,242)	1,247 (182)	65 (52)	11,842 (7,611)

Appendix 9. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Thousand Island Lake, summer 1978  
 T 44N, R 41W, Sec 1-3, 10-12, Gogebic County  
 1.020 acres

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Yellow perch	0.2039 (0.0692)	662 (738)	2,201 (1,345)	2,538 (1,225)	2,267 (1,312)	7,668 (2,361)
Rock bass	0.0919 (0.0364)	323 (267)	1,022 (643)	1,349 (949)	761 (500)	3,455 (1,279)
Sunfish	0.0523 (0.0305)	96 (132)	108 (118)	224 (181)	1,539 (1,085)	1,967 (1,114)
Bluegill	0.0976 (0.0417)	306 (304)	216 (175)	1,136 (667)	2,010 (1,273)	3,668 (1,479)
Largemouth bass	0.0039 (0.0070)	0 (0)	0 (0)	129 (260)	19 (30)	148 (262)
Smallmouth bass	0.0264 (0.0109)	53 (87)	372 (213)	369 (240)	198 (195)	992 (385)
Bullhead	0.0005 (0.0010)	0 (0)	0 (0)	0 (0)	19 (39)	19 (39)
Northern pike	0.0474 (0.038)	297 (231)	524 (358)	391 (284)	572 (687)	1,784 (857)
Walleye	0.0327 (0.0159)	449 (351)	312 (247)	131 (108)	336 (361)	1,228 (571)
Total catch	0.5566 (0.1212)	2,186 (954)	4,755 (1,582)	6,267 (1,760)	7,721 (2,326)	20,929 (3,452)
Angler hours	—	4,024 (1,829)	9,640 (2,711)	13,811 (3,064)	10,124 (2,907)	37,599 (5,342)
Angler trips	—	1,200 (505)	2,795 (795)	4,100 (951)	3,163 (911)	11,258 (1,619)

Appendix 10. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Beaver House Lake, spring - summer 1978  
T 49N, R 11W, Sec 33, Luce County  
42 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Rainbow trout	0.2456 (0.7906)	44 (110)	0 (0)	0 (0)	0 (0)	0 (0)	44 (110)
Angler hours	—	180 (367)	0 (0)	0 (0)	0 (0)	0 (0)	180 (367)
Angler trips	—	19 (39)	0 (0)	0 (0)	0 (0)	0 (0)	19 (39)

Appendix 11. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Brockies Pond, spring - summer 1978  
T 47N, R 11W, Sec 36, Luce County  
4 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Brook trout	0.0180 (0.0213)	0 (0)	5 (0)	0 (0)	0 (0)	0 (0)	5 (0)
Angler hours	—	7 (15)	26 (22)	206 (327)	39 (17)	0 (0)	278 (329)
Angler trips	—	3 (7)	10 (10)	74 (112)	17 (8)	0 (0)	104 (113)

Appendix 12. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Brush Lake, spring – summer 1978  
T 49N, R 11W, Sec 34, Luce County  
9 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	0.3873 (0.6673)	4 (9)	65 (117)	38 (86)	0 (0)	3 (0)	110 (146)
Angler hours	— —	50 (111)	182 (273)	51 (102)	0 (0)	1 (0)	284 (312)
Angler trips	— —	15 (33)	54 (83)	15 (31)	0 (0)	1 (0)	85 (95)

Appendix 13. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Buckies Pond, spring - summer 1978  
T 46N, R 11W, Sec 1, Luce County  
6 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Brook trout	0.1594 (0.3146)	3 (8)	0 (0)	0 (0)	0 (0)	30 (60)	33 (61)
Angler hours	— —	39 (47)	58 (67)	44 (62)	0 (0)	66 (100)	207 (143)
Angler trips	— —	17 (15)	25 (41)	20 (39)	0 (0)	39 (64)	101 (87)



Appendix 14. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Camp 8 Lake, spring - summer 1978  
T 49N, R 11W, Sec 34, Luce County  
67 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Rainbow trout	0.0452 (0.1176)	20 (50)	0 (0)	0 (0)	0 (0)	0 (0)	20 (50)
Angler hours	— —	304 (206)	117 (233)	21 (42)	0 (0)	4 (0)	446 (314)
Angler trips	— —	84 (59)	33 (67)	6 (12)	0 (0)	2 (0)	125 (90)

Appendix 15. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Pretty Lake, spring - summer 1978  
T 49N, R 11W, Sec 34, Luce County  
46 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	0.0051 (0.0119)	0 (0)	0 (0)	9 (21)	0 (0)	0 (0)	9 (21)
Angler hours	— —	577 (160)	402 (321)	360 (244)	196 (139)	236 (164)	1,771 (484)
Angler trips	— —	153 (58)	444 (351)	214 (146)	129 (113)	116 (100)	1,056 (413)

Appendix 16. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Silver Creek Pond, spring – summer 1978  
T 47N, R 11W, Sec 35, Luce County  
3 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Brook trout	0.1707 (0.1349)	73 (86)	26 (64)	81 (109)	0 (0)	44 (57)	224 (163)
Angler hours	— —	553 (210)	305 (203)	335 (244)	0 (0)	119 (134)	1,312 (404)
Angler trips	— —	132 (60)	83 (69)	106 (84)	0 (0)	37 (44)	358 (132)

Appendix 17. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Big Manistique Lake, May 1978 – February 1979  
 T 44-45N, R 11-12W, Luce and Mackinac counties  
 10,130 acres

Species	Total catch per hour	Month										Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
Northern pike	0.0336 (0.0132)	1,334 (743)	257 (222)	298 (294)	157 (152)	88 (124)	0 (0)	0 (0)	0 (0)	42 (92)	0 (0)	2,176 (857)
Yellow perch	0.2824 (0.1417)	4,715 (6,881)	1,217 (826)	5,076 (4,147)	4,650 (4,128)	393 (345)	82 (172)	0 (0)	1,024 (1,093)	417 (394)	697 (532)	18,271 (9,168)
Walleye	0.0984 (0.0225)	1,406 (622)	1,353 (730)	1,051 (806)	1,151 (667)	254 (203)	34 (40)	0 (0)	68 (58)	314 (223)	736 (454)	6,367 (1,453)
Smallmouth bass	0.0040 (0.0044)	70 (143)	27 (57)	0 (0)	107 (215)	57 (117)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	261 (289)
Largemouth bass	<0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	0 (0)	4 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (9)
Bluegill	0.0007 (0.0015)	0 (0)	47 (95)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	47 (95)
Rock bass	0.0020 (0.0019)	95 (122)	27 (54)	0 (0)	0 (0)	6 (12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	128 (124)
White sucker	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	13 (27)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	13 (27)

Appendix 17. Continued:

Species	Total catch per hour	Month										Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
Total catch	0.4215 (0.1444)	7,620 (6,951)	2,928 (1,131)	6,425 (4,235)	6,065 (4,190)	815 (436)	116 (177)	0 (0)	1,092 (1,095)	773 (462)	1,433 (699)	27,267 (9,339)
Angler hours	— —	16,297 (3,783)	15,465 (4,716)	14,716 (2,300)	9,737 (2,452)	3,684 (1,081)	1,154 (521)	0 (0)	1,435 (486)	925 (426)	1,278 (472)	64,691 (7,066)
Angler trips	— —	4,832 (1,151)	5,522 (1,732)	4,664 (1,031)	3,409 (843)	763 (272)	222 (91)	0 (0)	326 (129)	487 (282)	260 (97)	20,485 (2,507)

Appendix 18. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Big Manistique Lake, May 1979 – February 1980  
 T 44–45N, R 11–12W, Luce and Mackinac counties  
 10,130 acres

Species	Total catch per hour	Month										Season	
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
Brook trout	0.0003 (0.0007)	15 (32)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	15 (32)
Cisco	0.0029 (0.0052)	115 (240)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (8)	15 (19)	134 (241)
Northern pike	0.0428 (0.0146)	0 (0)	73 (105)	162 (178)	70 (72)	335 (348)	69 (120)	0 (0)	403 (420)	458 (248)	404 (189)	1,974 (676)	
Yellow perch	0.3685 (0.1720)	2,691 (3,474)	3,102 (2,321)	110 (199)	509 (352)	1,741 (1,131)	11 (24)	0 (0)	1,892 (2,510)	2,246 (2,248)	4,673 (5,703)	16,975 (7,923)	
Walleye	0.1158 (0.0389)	2,129 (1,540)	1,122 (469)	472 (528)	606 (397)	719 (361)	26 (41)	0 (0)	106 (162)	114 (153)	41 (37)	5,335 (1,792)	
Smallmouth bass	0.0263 (0.0129)	88 (125)	23 (32)	117 (209)	860 (527)	123 (124)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1,211 (595)	
Rock bass	0.0036 (0.0051)	0 (0)	38 (76)	0 (0)	0 (0)	128 (225)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	166 (237)	
White sucker	0.0034 (0.0037)	58 (117)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	70 (109)	27 (55)	155 (169)	

Appendix 18. Continued:

Species	Total catch per hour	Month										Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
Total catch	0.5636 (0.1776)	5,096 (3,812)	4,358 (2,372)	861 (627)	2,045 (751)	3,046 (1,264)	106 (129)	0 (0)	2,401 (2,550)	2,892 (2,269)	5,160 (5,707)	25,965 (8,182)
Angler hours	— —	7,712 (1,436)	9,285 (1,328)	6,630 (1,346)	5,984 (1,388)	7,340 (1,676)	751 (489)	0 (0)	3,051 (2,416)	3,477 (1,035)	1,838 (557)	46,068 (4,223)
Angler trips	— —	2,588 (632)	2,959 (444)	2,315 (535)	1,927 (470)	1,760 (476)	296 (214)	0 (0)	1,486 (1,223)	942 (285)	558 (167)	14,831 (1,726)

Appendix 19. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

South Manistique Lake, spring – summer 1978  
 T 43–44N, R 12W, Mackinac County  
 4,001 acres

Species	Total catch per hour	Month					Season
		May 15–31	Jun	Jul	Aug	Sep 1–9	
Northern pike	0.0722 (0.0469)	102 (97)	3,035 (2,665)	1,063 (628)	193 (390)	47 (101)	4,440 (2,769)
Yellow perch	0.1512 (0.0610)	180 (154)	2,453 (2,568)	3,437 (1,333)	2,498 (1,400)	725 (902)	9,293 (3,342)
Walleye	0.2300 (0.1411)	216 (102)	9,477 (8,100)	3,386 (1,424)	778 (871)	280 (415)	14,137 (8,281)
Smallmouth bass	0.0051 (0.0058)	0 (0)	0 (0)	258 (334)	58 (117)	0 (0)	316 (354)
Largemouth bass	0.0124 (0.0141)	31 (43)	0 (0)	729 (853)	0 (0)	0 (0)	760 (854)
Bluegill	0.0186 (0.0148)	55 (65)	95 (201)	475 (417)	435 (743)	86 (143)	1,146 (890)
Rock bass	0.0239 (0.0241)	44 (50)	497 (1,027)	559 (924)	344 (453)	24 (50)	1,468 (1,456)
Sunfish	0.0036 (0.0032)	27 (40)	0 (0)	78 (108)	32 (65)	86 (143)	223 (195)
Crappie	0.0002 (0.0003)	12 (17)	0 (0)	0 (0)	0 (0)	0 (0)	12 (17)
Bullhead	0.0006 (0.0011)	6 (13)	0 (0)	30 (61)	0 (0)	0 (0)	36 (63)
Total catch	0.5178 (0.1819)	673 (233)	15,557 (8,967)	10,015 (2,466)	4,338 (1,909)	1,248 (1,019)	31,831 (9,551)
Angler hours	—	2,154 (445)	10,019 (8,624)	22,019 (5,497)	15,828 (4,444)	2,362 (1,214)	61,472 (11,225)
Angler trips	—	849 (184)	19,234 (4,821)	9,223 (2,409)	5,108 (1,658)	582 (333)	25,996 (5,651)

Appendix 20. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Deep Lake, spring – summer 1978  
T 43–44N, R 18W, Sec 6 and 31, Schoolcraft and Delta counties  
35 acres

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Northern pike	0.0660 (0.1482)	0 (0)	33 (71)	0 (0)	0 (0)	33 (71)
Yellow perch	0.0020 (0.0013)	0 (0)	0 (0)	1 (0)	0 (0)	1 (0)
Bluegill	0.2380 (0.5364)	0 (0)	119 (257)	0 (0)	0 (0)	119 (257)
Rock bass	0.1840 (0.5236)	90 (255)	0 (0)	2 (0)	0 (0)	92 (255)
Total catch	0.4900 (0.8026)	90 (255)	152 (267)	3 (0)	0 (0)	245 (369)
Angler hours	—	80 (160)	414 (279)	4 (0)	2 (0)	500 (322)
Angler trips	—	50 (101)	257 (178)	5 (0)	2 (0)	314 (205)



Appendix 2i. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

McDonald Lake, summer 1976  
 T 41-42N, R 13W, Sec 5, 6, 31, and 32, Schoolcraft County  
 1,612 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	1.0094 (0.3906)	6,881 (2,398)	2,361 (1,029)	2,793 (2,092)	3,204 (2,558)	3,533 (2,942)	18,772 (5,137)
Rock bass	0.0202 (0.0152)	0 (0)	36 (62)	69 (100)	47 (54)	223 (229)	375 (263)
Sunfish	0.0034 (0.0033)	0 (0)	0 (0)	27 (41)	28 (48)	8 (16)	63 (58)
Bluegill	0.0247 (0.0238)	0 (0)	138 (240)	9 (20)	174 (317)	139 (152)	460 (426)
Largemouth bass	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Smallmouth bass	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	3 (6)	0 (0)	3 (6)
Northern pike	0.3331 (0.1465)	2,335 (1,688)	2,244 (958)	783 (599)	534 (569)	298 (317)	6,194 (2,133)
Bullhead	0.010 (0.02)	0 (0)	0 (0)	61 (92)	173 (357)	9 (22)	243 (369)
Total catch	1.4040 (0.4880)	9,216 (2,933)	4,779 (1,427)	3,742 (2,181)	4,163 (2,664)	4,210 (2,972)	26,110 (5,597)
Angler hours	— —	4,268 (2,890)	4,844 (1,973)	3,683 (2,382)	3,672 (2,625)	2,130 (1,045)	18,597 (5,089)
Angler trips	— —	1,022 (698)	1,634 (688)	1,368 (886)	1,326 (944)	726 (438)	6,076 (1,682)

Appendix 22. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

McDonald Lake, summer 1977  
 T 41-42N, R 13W, Sec 5, 6, 31, and 32, Schoolcraft County  
 1,612 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	0.7292 (0.0671)	1,022 (541)	1,235 (240)	10,085 (534)	131 (68)	2 (3)	12,475 (802)
Rock bass	0.1455 (0.0357)	411 (555)	660 (126)	1,217 (140)	137 (53)	64 (12)	2,489 (589)
Sunfish	0.0663 (0.0058)	5 (6)	143 (29)	800 (58)	184 (7)	2 (3)	1,134 (65)
Bluegill	0.5091 (0.0523)	161 (114)	536 (96)	7,354 (644)	591 (190)	68 (13)	8,710 (688)
Largemouth bass	0.0002 <(0.0000)	0 (0)	0 (0)	0 (0)	4 (1)	0 (0)	4 (1)
Smallmouth bass	0.0165 <(0.0000)	0 (0)	272 (3)	0 (0)	10 (4)	0 (0)	282 (6)
Northern pike	0.1637 (0.0252)	541 (296)	561 (185)	1,213 (157)	290 (63)	195 (40)	2,800 (390)
Bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total catch	1.6305 (0.1305)	2,140 (837)	3,407 (343)	20,669 (865)	1,347 (218)	331 (44)	27,894 (1,273)
Angler hours	— —	2,086 (426)	2,094 (403)	10,955 (833)	1,502 (460)	471 (123)	17,108 (1,125)
Angler trips	— —	543 (128)	799 (156)	3,803 (452)	691 (191)	262 (73)	6,098 (536)

Appendix 23. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Beaver Lake, spring - summer 1977  
 T 29-30S, R 5E, Sec 2, 11, 13, and 35, Alpena County  
 866 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	1.0396 (1.0181)	0 (0)	1,326 (1,123)	168 (233)	1,210 (2,307)	0 (0)	2,704 (2,577)
Largemouth bass	0.0069 (0.0060)	4 (8)	14 (29)	0 (0)	0 (0)	0 (0)	18 (15)
Smallmouth bass	0.0623 (0.0251)	0 (0)	64 (47)	64 (66)	34 (72)	0 (0)	162 (54)
Bluegill	0.2845 (0.1230)	15 (31)	457 (483)	113 (96)	155 (235)	0 (0)	740 (273)
Sunfish	0.0111 (0.0167)	0 (0)	0 (0)	29 (43)	0 (0)	0 (0)	29 (43)
Northern pike	0.0423 (0.0174)	5 (10)	11 (25)	29 (47)	0 (0)	65 (52)	110 (38)
Rock bass	0.4133 (0.1643)	20 (42)	131 (210)	753 (576)	165 (340)	6 (13)	1,075 (352)
Rainbow trout	0.0085 (0.0075)	5 (10)	17 (36)	0 (0)	0 (0)	0 (0)	22 (19)
Bullhead	0.0154 (0.0317)	0 (0)	11 (70)	29 (43)	0 (0)	0 (0)	40 (82)
Total catch	1.8839 (1.1404)	49 (30)	2,031 (1,293)	1,185 (637)	1,564 (2,345)	71 (54)	4,900 (2,753)
Angler hours	—	67 (23)	665 (275)	1,028 (447)	628 (234)	213 (113)	2,601 (586)
Angler trips	—	7 (9)	319 (122)	347 (86)	262 (107)	61 (32)	996 (187)

Appendix 24. Estimated boat angler hours by month and season, adjusted from airplane counts, for 40 lakes in District 5 in 1982. (Two standard errors in parentheses.)

County, lake, and T.R.S.	Month					Season
	May	Jun	Jul	Aug	Sep	
<u>Alpena</u>						
Four Mile 31N, 7E, 12	728 (745)	1,172 (1,045)	831 (578)	757 (591)	435 (650)	3,923 (1,659)
9th St. Pond 31N, 8E, 21	770 (910)	1,384 (958)	1,200 (1,325)	1,791 (1,909)	400 (621)	5,545 (2,744)
Seven Mile 31N, 7E, 2,11	728 (745)	4,851 (2,416)	6,203 (4,452)	6,894 (2,987)	288 (44)	18,964 (5,927)
<u>Montmorency</u>						
Avery 30N, 2E, 3	1,843 (1,463)	2,526 (1,908)	5,487 (3,198)	8,648 (3,404)	896 (1,137)	19,400 (5,374)
Avalon 31N, 4E, 4,9	543 (323)	380 (767)	332 (491)	604 (911)	0 (0)	1,859 (1,328)
Clear 32N, 2E, 35	384 (483)	609 (689)	483 (548)	303 (391)	261 (374)	2,040 (1,140)
Crooked 30N, 2E, 22	800 (145)	844 (867)	2,438 (2,182)	1,889 (1,172)	336 (505)	6,307 (2,677)
East Twin <sup>1</sup> 29N, 1E, 26,34	971 (512)	1,686 (898)	2,612 (1,542)	2,759 (737)	0 (0)	8,028 (2,185)
Ess 31-32N, 4E	314 (355)	875 (754)	710 (1,023)	489 (317)	549 (379)	2,937 (1,409)
Gaylanta 30N, 1E, 22	871 (831)	912 (563)	2,287 (2,721)	2,263 (785)	336 (503)	6,669 (3,047)
Grass 32N, 3E, 26,35	1,642 (4,486)	3,155 (1,602)	2,928 (2,079)	6,652 (5,316)	1,518 (1,277)	15,895 (7,544)
Hillman Backwater 31N, 4E, 23	185 (272)	401 (412)	447 (679)	624 (718)	144 (289)	1,801 (1,141)
Lake Fifteen 30N, 2E, 15	100 (201)	633 (459)	1,562 (1,431)	263 (68)	— —	2,558 (1,517)
Long 32N, 4E, 29,32	1,143 (1,447)	2,362 (1,747)	4,876 (3,345)	5,672 (2,368)	810 (309)	14,863 (4,694)
McCormick 30N, 2E, 30	671 (182)	349 (380)	242 (500)	0 (0)	0 (0)	1,262 (654)
Rush 32N, 3E, 32	1,754 (1,521)	2,122 (1,342)	4,287 (3,215)	4,648 (4,926)	378 (556)	13,189 (6,247)

## Appendix 24. Continued:

County, lake, and T.R.S.	Month					Season
	May	Jun	Jul	Aug	Sep	
Sage 29N, 2E, 23	700 (613)	424 (374)	713 (755)	828 (352)	0 (0)	2,665 (1,100)
West Twin 29N, 1E, 29,31	2,156 (2,871)	3,025 (1,956)	6,816 (4,530)	5,476 (2,677)	112 (226)	17,585 (6,310)
<u>Oscoda</u>						
Little Wolf <sup>2</sup> 28N, 1E, 2,3	— —	127 (257)	1,396 (1,222)	1,268 (591)	— —	2,791 (1,381)
<u>Otsego</u>						
Big 30N, 2W, 8	300 (602)	210 (317)	400 (459)	364 (455)	112 (225)	1,386 (965)
Big Bass 29N, 2W, 1,2	271 (428)	773 (845)	1,404 (1,132)	303 (610)	224 (453)	2,975 (1,660)
Big Bear <sup>3</sup> 29N, 1W, 1	1,643 (447)	3,382 (1,299)	1,200 (901)	3,625 (1,396)	224 (233)	10,074 (2,168)
Big Bradford 29N, 3W, 29,31	1,443 (2,627)	2,348 (1,721)	4,287 (2,821)	6,153 (1,654)	1,008 (1,516)	15,239 (4,781)
Bridge 29N, 3W, 23	271 (428)	306 (307)	800 (401)	1,586 (982)	224 (453)	3,187 (1,271)
Chub 29N, 3W, 14	100 (201)	330 (365)	641 (825)	2,148 (608)	224 (453)	3,443 (1,195)
Dixon 30N, 3W, 14	100 (201)	490 (392)	1,079 (828)	0 (0)	224 (453)	1,893 (1,041)
Douglas 29N, 1W, 9	0 (0)	281 (403)	800 (762)	0 (0)	0 (0)	1,081 (862)
Guthrie 29N, 3W, 36	943 (864)	821 (516)	1,480 (1,337)	642 (617)	0 (0)	3,886 (1,783)
Heart 29N, 3W, 20	171 (249)	187 (276)	400 (459)	150 (305)	112 (226)	1,020 (702)
Lake 27 31N, 4W, 27	200 (402)	71 (144)	279 (404)	150 (305)	0 (0)	700 (662)
Little Bear <sup>4</sup> 29N, 1W, 2	300 (207)	139 (282)	762 (1,050)	303 (391)	224 (233)	1,728 (1,197)
Manuka 30N, 4W, 25,36	300 (602)	614 (386)	921 (992)	1,058 (909)	224 (453)	3,117 (1,590)
Opal 29N, 3W, 12	200 (402)	233 (470)	16,142 (31,409)	828 (352)	0 (0)	17,403 (31,417)

## Appendix 24. Continued:

County, lake, and T.R.S.	Month					Season
	May	Jun	Jul	Aug	Sep	
Otsego 29-30N, 3W	3,240 (1,708)	4,653 (2,494)	12,265 (5,632)	12,279 (5,027)	1,120 (1,558)	33,557 (8,280)
Porcupine 31N, 4W, 13	300 (602)	304 (335)	800 (991)	1,282 (649)	0 (0)	2,686 (1,366)
<u>Presque Isle</u>						
Bear Den 33N, 2E, 32	171 (200)	539 (384)	573 (679)	170 (342)	0 (0)	1,453 (875)
Big Tomahawk 33N, 2E, 22	428 (375)	1,329 (2,683)	211 (423)	927 (952)	261 (374)	3,156 (2,926)
Francis 33N, 3E, 21,22	185 (187)	233 (302)	0 (0)	0 (0)	144 (289)	562 (458)
Shupac 33N, 2E, 15	128 (186)	116 (235)	0 (0)	150 (305)	0 (0)	394 (428)
Tomahawk 33N, 2E, 21	4,994 (5,263)	4,683 (2,915)	6,928 (5,225)	7,935 (5,025)	720 (871)	25,260 (9,460)

<sup>1</sup> See also Appendix 25.

<sup>2</sup> See also Appendix 26.

<sup>3</sup> See also Appendix 27.

<sup>2</sup> See also Appendix 29.

Appendix 25. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

East Twin Lake, spring - summer 1982  
T 29N, R 1E, Sec 26, 27, and 34, Montmorency County  
974 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	1.6892 (2.3721)	392 (726)	178 (198)	0 (0)	21,494 (30,511)	282 (501)	22,346 (30,524)
Smallmouth bass	0.0044 (0.0057)	32 (45)	26 (58)	0 (0)	0 (0)	0 (0)	58 (73)
Bluegill	0.0129 (0.0224)	125 (274)	45 (101)	0 (0)	0 (0)	0 (0)	170 (292)
Rock bass	0.0016 (0.0027)	21 (35)	0 (0)	0 (0)	0 (0)	0 (0)	21 (35)
Sunfish	0.0435 (0.0699)	279 (666)	0 (0)	296 (615)	0 (0)	0 (0)	575 (906)
Total catch	1.7483 (2.3725)	849 (1,024)	249 (230)	296 (615)	21,494 (30,511)	282 (501)	23,170 (30,539)
Angler hours	—	917 (1,035)	1,346 (977)	4,624 (1,606)	5,605 (3,479)	736 (671)	13,229 (4,142)
Angler trips	—	280 (319)	521 (421)	3,074 (2,087)	3,226 (2,343)	164 (152)	7,265 (3,185)

Appendix 26. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Little Wolf Lake, spring - summer 1982  
T 28N, R 1E, Sec 2 and 3, Oscoda County  
86 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Northern pike	0.0185 (0.0313)	70 (164)	38 (73)	0 (0)	0 (0)	0 (0)	108 (180)
Yellow perch	0.2962 (0.3944)	14 (37)	0 (0)	118 (310)	1,594 (2,214)	0 (0)	1,726 (2,236)
Smallmouth bass	0.0055 (0.0120)	0 (0)	0 (0)	0 (0)	0 (0)	32 (69)	32 (69)
Largemouth bass	0.0024 (0.0047)	14 (37)	0 (0)	0 (0)	0 (0)	0 (0)	14 (37)
Bluegill	0.0208 (0.0325)	14 (37)	24 (68)	15 (39)	68 (166)	0 (0)	121 (186)
Total catch	0.3434 (0.4007)	112 (171)	62 (100)	133 (312)	1,662 (2,221)	32 (69)	2,001 (2,252)
Angler hours	— —	448 (773)	742 (460)	2,122 (805)	2,355 (1,321)	160 (129)	5,827 (1,794)
Angler trips	— —	202 (351)	499 (468)	1,977 (1,263)	1,555 (1,245)	64 (54)	4,297 (1,868)



Appendix 27. Estimated catch per hour, number caught, and fishing pressure by month and season for Big Bear Lake, Otsego County, in 1982. (Two standard errors in parentheses.)

Big Bear Lake, spring - summer 1982  
T 29N, R 1W, Sec 1, 2, and 36, Otsego County  
435 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	0.0109 (0.0136)	0 (0)	136 (202)	0 (0)	49 (100)	0 (0)	185 (225)
Walleye	0.0216 (0.0221)	46 (100)	196 (274)	126 (210)	0 (0)	0 (0)	368 (359)
Smallmouth bass	0.0119 (0.0116)	0 (0)	146 (168)	0 (0)	38 (77)	19 (38)	203 (189)
Rock bass	0.0732 (0.0921)	0 (0)	59 (120)	0 (0)	1,185 (1,519)	0 (0)	1,244 (1,524)
Bullhead	0.0012 (0.0026)	0 (0)	20 (44)	0 (0)	0 (0)	0 (0)	20 (44)
Total catch	0.1188 (0.1000)	46 (100)	557 (401)	126 (210)	1,272 (1,524)	19 (38)	2,020 (1,594)
Angler hours	— —	1,387 (1,438)	5,822 (2,710)	5,204 (3,525)	4,078 (1,697)	512 (127)	17,002 (4,973)
Angler trips	— —	442 (461)	2,187 (1,252)	2,669 (1,902)	2,657 (1,365)	278 (174)	8,233 (2,701)

Appendix 28. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Big Bradford Lake, winter 1978-79  
T 29N, R 3W, Sec 29, 31, and 32, Otsego County  
225 acres

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Rainbow trout	0.0041 (0.0044)	18 (26)	4 (8)	10 (19)	32 (33)
Northern pike	0.0008 (0.0016)	6 (12)	0 (0)	0 (0)	6 (12)
Yellow perch	2.0333 (0.6028)	7,708 (3,247)	5,478 (2,075)	2,268 (1,055)	15,454 (3,995)
Bluegill	0.1932 (0.1329)	959 (782)	448 (594)	62 (98)	1,469 (987)
Rock bass	0.0070 (0.0101)	0 (0)	29 (59)	24 (48)	53 (76)
Total catch	2.2387 (0.6316)	8,691 (3,340)	5,959 (2,159)	2,364 (1,061)	17,014 (4,116)
Angler hours	—	2,834 (805)	2,835 (663)	1,931 (358)	7,600 (1,103)
Angler trips	—	925 (280)	904 (221)	605 (128)	2,435 (379)

Appendix 29. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Little Bear Lake, spring – summer 1982  
T 29N, R 1W, Sec 2, Otsego County  
127 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	0.0155 (0.0320)	0 (0)	0 (0)	0 (0)	73 (152)	0 (0)	73 (152)
Sunfish sp.	0.2535 (0.5338)	0 (0)	830 (2,347)	0 (0)	364 (758)	0 (0)	1,194 (2,466)
Total catch	0.2690 (0.5360)	0 (0)	830 (2,347)	0 (0)	437 (773)	0 (0)	1,267 (2,471)
Angler hours	—	416 (477)	972 (1,172)	1,567 (1,055)	1,627 (985)	128 (116)	4,110 (1,923)
Angler trips	—	273 (431)	729 (954)	1,293 (1,275)	1,376 (1,256)	119 (113)	3,790 (2,076)

Appendix 30. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Burt Lake, summer 1977  
T 35-36N, R 3W, Cheboygan County  
17,120 acres

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Northern pike	0.0049 (0.0067)	183 (296)	38 (55)	0 (0)	0 (0)	221 (301)
Yellow perch	0.0051 (0.0035)	14 (29)	0 (0)	74 (63)	142 (142)	230 (158)
Walleye	0.0850 (0.0188)	670 (384)	724 (360)	1,802 (434)	673 (232)	3,869 (721)
Rock bass	0.0307 (0.0214)	0 (0)	0 (0)	313 (298)	1,082 (911)	1,395 (959)
Largemouth bass	0.0002 (0.0002)	0 (0)	0 (0)	7 (8)	0 (0)	7 (8)
Smallmouth bass	0.0005 (0.0005)	0 (0)	0 (0)	13 (16)	11 (21)	24 (26)
Crappie	0.2090 (0.1848)	0 (0)	0 (0)	1,389 (1,076)	8,123 (8,265)	9,512 (8,335)
Rainbow trout	0.0003 (0.0003)	0 (0)	0 (0)	10 (18)	4 (8)	14 (20)
Total catch	0.3357 (0.1894)	867 (486)	762 (364)	3,608 (1,180)	10,035 (8,320)	15,272 (8,425)
Angler hours	— —	12,088 (2,322)	13,050 (4,127)	10,196 (1,949)	10,180 (1,700)	45,514 (5,396)
Angler trips	— —	3,474 (812)	2,614 (1,039)	2,587 (508)	2,664 (464)	11,339 (1,487)

Appendix 31. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Missaukee Lake, spring - fall 1978  
T 22N, R 8W, Sec 1, 2, 11, and 12, Missaukee County  
1,707 acres

Species	Total catch per hour	Month							Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	
Northern pike	0.0314 (0.0071)	251 (203)	351 (125)	380 (144)	323 (132)	136 (61)	26 (21)	2 (5)	1,469 (315)
Yellow perch	0.0109 (0.0038)	54 (51)	135 (131)	80 (50)	179 (74)	49 (40)	11 (13)	0 (0)	508 (172)
Walleye	0.0028 (0.0012)	36 (41)	44 (31)	26 (18)	18 (17)	2 (4)	4 (9)	0 (0)	130 (58)
Smallmouth bass	0.0112 (0.0030)	134 (87)	139 (62)	82 (48)	64 (41)	42 (33)	64 (40)	0 (0)	525 (135)
Largemouth bass	0.0065 (0.0022)	26 (28)	38 (26)	77 (52)	92 (59)	59 (46)	14 (14)	0 (0)	306 (100)
Bluegill	0.2940 (0.0463)	613 (294)	2,306 (853)	3,678 (1,006)	5,848 (1,235)	1,260 (616)	46 (45)	0 (0)	13,751 (1,932)
Rock bass	0.0311 (0.0085)	379 (221)	326 (248)	363 (128)	256 (125)	96 (53)	34 (40)	0 (0)	1,454 (383)
Sunfish	0.0425 (0.0081)	359 (176)	439 (172)	357 (119)	653 (172)	160 (140)	19 (21)	0 (0)	1,987 (353)
Crappie	0.0882 (0.0410)	3,902 (1,889)	29 (51)	133 (131)	53 (39)	9 (11)	1 (3)	0 (0)	4,127 (1,895)
Bullhead	0.0201 (0.0051)	298 (148)	131 (58)	230 (132)	227 (89)	54 (40)	0 (0)	0 (0)	940 (229)
Total catch	0.5387 (0.0709)	6,052 (1,952)	3,938 (929)	5,406 (1,052)	7,713 (1,268)	1,867 (642)	219 (81)	2 (5)	25,197 (2,794)
Angler hours	—	7,017 (1,376)	7,549 (1,387)	13,051 (1,703)	13,721 (1,801)	4,073 (938)	1,135 (354)	226 (130)	46,772 (3,314)
Angler trips	—	2,125 (464)	2,470 (464)	4,494 (589)	4,500 (585)	1,276 (304)	374 (114)	99 (60)	15,339 (1,109)

Appendix 32. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Ovid Lake, summer 1977<sup>1</sup>  
 T 7 N, R 1 W, Sec. 34, Clinton County  
 412 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Bullhead	0.8895 (0.6871)	25,174 (27,741)	67,178 (73,882)	10,878 (7,853)	105 (111)	1,023 (1,002)	104,358 (79,315)
Largemouth bass <sup>1</sup>	1.0459 (0.6236)	15,311 (19,668)	40,859 (50,735)	64,602 (45,880)	1,477 (719)	459 (247)	122,708 (71,179)
Bluegill	0.0010 (0.0014)	0 (0)	0 (0)	72 (146)	8 (16)	38 (69)	118 (162)
Sunfish	0.0251 (0.0214)	0 (0)	0 (0)	2,832 (2,471)	50 (48)	63 (111)	2,945 (2,474)
Total catch	1.9615 (0.9491)	40,485 (34,006)	108,037 (89,624)	78,384 (46,613)	1,640 (729)	1,583 (1,040)	230,139 (106,600)
Angler hours	—	24,620 (9,419)	65,700 (12,817)	24,163 (3,054)	2,002 (341)	841 (205)	117,326 (16,201)
Angler trips	—	6,919 (3,087)	18,465 (5,562)	12,779 (2,528)	1,129 (277)	505 (137)	39,797 (6,852)

<sup>1</sup> The bass estimates are almost all undersize fish (<12 inches) that were caught and returned to the lake. The total catch of bass not returned to the lake was  $689 \pm 400$ . The total catch per hour for largemouth bass not returned was  $0.005 \pm 0.0035$ .

Appendix 33. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Ovid Lake, summer 1978<sup>1</sup>  
 T 7N, R 1W, Sec 34, Clinton County  
 412 acres

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Northern pike	0.0003 (0.0007)	0 (0)	0 (0)	0 (0)	19 (42)	0 (0)	19 (42)
Largemouth bass (returned) <sup>1</sup>	0.6879 (0.3039)	61 (128)	7,410 (5,712)	4,380 (2,533)	24,466 (15,156)	7,560 (8,549)	43,877 (18,489)
Largemouth bass (kept) <sup>1</sup>	1.2483 (0.4948)	0 (0)	5,308 (4,714)	0 (0)	43,465 (16,600)	30,846 (24,213)	79,619 (29,733)
Bluegill	0.0516 (0.0249)	531 (493)	494 (441)	1,148 (1,171)	924 (680)	197 (232)	3,294 (1,525)
Sunfish	0.0630 (0.0457)	354 (346)	123 (170)	925 (1,756)	2,473 (2,211)	141 (288)	4,016 (2,864)
Crappie	0.0004 (0.0008)	0 (0)	0 (0)	26 (52)	0 (0)	0 (0)	26 (52)
Bullhead	0.1292 (0.0647)	982 (2,045)	132 (236)	325 (407)	5,458 (2,881)	1,341 (1,764)	8,238 (3,977)
Total catch	2.5861 (0.8277)	1,928 (2,133)	13,467 (7,425)	6,804 (3,365)	76,805 (22,780)	40,085 (25,740)	139,089 (35,387)
Angler hours	—	8,855 (1,729)	9,737 (1,318)	4,918 (1,499)	27,096 (7,384)	13,176 (3,212)	53,783 (8,474)
Angler trips	—	3,372 (347)	5,213 (1,014)	1,577 (731)	8,439 (4,634)	10,115 (2,712)	28,716 (5,524)

<sup>1</sup> No size limit on largemouth bass.

Appendix 34. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Kent Lake, spring - fall 1980  
T 2N, R 7E, Sec 31,32, Oakland County  
1,200 acres

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0120 (0.0196)	32 (46)	206 (239)	28 (40)	0 (0)	2,025 (3,725)	8 (9)	2,299 (3,733)
Yellow perch	0.0271 (0.0084)	768 (787)	615 (467)	1,069 (681)	826 (445)	1,835 (949)	63 (52)	5,176 (1,550)
Walleye	0.0004 (0.0006)	8 (18)	73 (110)	0 (0)	0 (0)	0 (0)	0 (0)	81 (112)
Smallmouth bass	0.0070 (0.0080)	37 (55)	254 (484)	13 (25)	766 (1,521)	258 (496)	18 (17)	1,346 (1,673)
Largemouth bass	0.0108 (0.0111)	275 (391)	91 (81)	117 (101)	1,302 (2,077)	223 (143)	64 (39)	2,072 (2,123)
Bluegill	0.1017 (0.0473)	4,309 (4,334)	3,469 (1,776)	3,283 (4,827)	3,847 (3,527)	4,440 (4,679)	87 (122)	19,435 (8,921)
Rock bass	0.0002 (0.0002)	16 (34)	20 (30)	0 (0)	0 (0)	0 (0)	0 (0)	36 (45)
Sunfish	0.0237 (0.0115)	931 (835)	1,251 (1,285)	1,087 (1,096)	767 (979)	485 (423)	5 (10)	4,526 (2,165)
Crappie	0.4946 (0.1497)	43,754 (24,460)	21,044 (9,804)	16,174 (6,756)	7,722 (2,550)	5,682 (4,742)	264 (148)	94,529 (27,732)
Carp	0.0104 (0.0146)	611 (763)	33 (67)	1,329 (2,679)	0 (0)	4 (9)	2 (3)	1,979 (2,787)
Bowfin	0.0031 (0.0064)	590 (1,215)	0 (0)	0 (0)	11 (22)	0 (0)	0 (0)	601 (1,216)
Bullhead	0.0026 (0.0019)	256 (317)	62 (64)	121 (160)	48 (45)	15 (29)	0 (0)	502 (365)
Total catch	0.6936 (0.1602)	51,587 (24,914)	27,118 (10,073)	23,221 (8,822)	15,289 (5,170)	14,967 (7,720)	400 (204)	132,582 (29,772)
Bass released	0.0291 (0.0090)	62 (81)	1,513 (854)	1,496 (1,116)	1,310 (620)	1,022 (614)	152 (225)	5,555 (1,671)
Angler hours	—	42,281 (11,415)	42,024 (4,606)	48,336 (5,638)	37,242 (3,652)	18,800 (2,595)	2,542 (570)	191,134 (14,273)
Angler trips	—	12,782 (4,413)	11,668 (1,705)	13,758 (1,901)	7,710 (1,514)	4,192 (932)	1,050 (540)	51,160 (5,427)



Appendix 35. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Pontiac Lake, spring - fall 1980  
T 3N, R 8E, Sec 11-14, Oakland County  
585 acres

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0112 (0.0076)	191 (291)	12 (17)	232 (198)	51 (44)	36 (39)	8 (11)	530 (357)
Tiger musky	0.0016 (0.0031)	0 (0)	0 (0)	74 (149)	0 (0)	0 (0)	0 (0)	74 (149)
Yellow perch	0.0180 (0.0127)	230 (190)	101 (91)	59 (42)	79 (61)	349 (549)	36 (75)	854 (598)
Largemouth bass	0.0489 (0.0139)	343 (219)	921 (499)	661 (295)	261 (116)	114 (82)	17 (20)	2,317 (636)
Bluegill	0.1887 (0.0546)	2,654 (1,801)	2,662 (1,067)	2,381 (1,231)	1,071 (558)	169 (155)	0 (0)	8,937 (2,497)
Rock bass	0.0551 (0.0355)	1,524 (1,511)	847 (707)	201 (113)	26 (21)	11 (21)	0 (0)	2,609 (1,672)
Sunfish	0.1090 (0.0422)	1,617 (1,455)	1,467 (1,062)	1,503 (694)	497 (336)	80 (73)	0 (0)	5,164 (1,961)
Crappie	0.0119 (0.0121)	110 (132)	171 (185)	277 (526)	4 (5)	1 (3)	0 (0)	563 (573)
Bowfin	0.0003 (0.0004)	7 (15)	0 (0)	6 (11)	0 (0)	0 (0)	0 (0)	13 (19)
White sucker	0.0001 (0.0001)	0 (0)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)
Longnose sucker	0.0007 (0.0013)	0 (0)	0 (0)	0 (0)	0 (0)	34 (60)	0 (0)	34 (60)
Bullhead	0.0064 (0.0040)	57 (82)	70 (93)	154 (137)	18 (25)	4 (7)	2 (4)	305 (187)
Grass pickerel	0.0001 (0.0003)	6 (12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (12)
Total catch	0.4520 (0.0813)	6,739 (2,799)	6,254 (1,751)	5,548 (1,567)	2,007 (667)	798 (586)	63 (78)	21,409 (3,762)
Bass released	0.1330 (0.0282)	1,573 (670)	1,818 (683)	1,566 (572)	809 (297)	499 (488)	32 (30)	6,297 (1,253)
Angler hours	—	12,478 (2,610)	11,305 (1,273)	12,082 (1,283)	8,095 (1,372)	3,091 (648)	308 (129)	47,359 (3,521)
Angler trips	—	3,152 (717)	3,389 (487)	3,071 (404)	2,148 (388)	915 (221)	107 (46)	12,782 (1,056)

Appendix 36. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Whitmore Lake, spring - fall 1980  
T 1N-1S, R 6E, Sec 5 and 32, Livingston and Washtenaw counties  
677 acres

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Shiner	0.0003 (0.0006)	20 (40)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	20 (40)
Northern pike	0.0015 (0.0011)	43 (51)	4 (9)	0 (0)	10 (16)	34 (41)	4 (6)	95 (68)
Tiger musky	0.0012 (0.0011)	20 (31)	0 (0)	19 (38)	32 (54)	6 (11)	3 (5)	80 (74)
Yellow perch	0.0395 (0.0142)	761 (429)	830 (644)	517 (406)	284 (172)	153 (117)	0 (0)	2,545 (899)
Smallmouth bass	0.0016 (0.0015)	6 (12)	9 (18)	7 (14)	62 (90)	6 (9)	11 (15)	101 (95)
Largemouth bass	0.0379 (0.0103)	441 (363)	621 (338)	510 (224)	531 (282)	298 (181)	45 (36)	2,446 (640)
Bluegill	0.1362 (0.0940)	1,809 (1,370)	3,538 (5,324)	1,820 (1,839)	392 (284)	1,232 (1,675)	0 (0)	8,791 (6,040)
Rock bass	0.0177 (0.0064)	185 (123)	249 (200)	467 (275)	201 (180)	40 (42)	0 (0)	1,142 (406)
Sunfish	0.0660 (0.0269)	378 (260)	1,929 (1,464)	892 (657)	522 (326)	535 (410)	0 (0)	4,256 (1,708)
Crappie	0.0017 (0.0013)	28 (35)	20 (41)	38 (57)	26 (32)	0 (0)	0 (0)	112 (84)
Bowfin	0.0018 (0.0036)	115 (232)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	115 (232)
Bullhead	0.0038 (0.0025)	57 (69)	26 (28)	112 (136)	48 (37)	3 (5)	0 (0)	246 (159)
Total catch	0.3092 (0.0997)	3,863 (1,530)	7,226 (5,573)	4,382 (2,032)	2,108 (585)	2,307 (1,739)	63 (40)	19,949 (6,394)
Bass released	0.0380 (0.0152)	1,071 (847)	581 (320)	140 (120)	312 (222)	325 (228)	26 (31)	2,455 (968)
Angler hours	—	9,936 (1,324)	19,038 (3,356)	14,599 (1,693)	11,984 (1,539)	7,877 (1,113)	1,093 (255)	64,526 (4,422)
Angler trips	—	2,655 (515)	5,239 (921)	3,336 (430)	2,731 (357)	1,976 (302)	296 (77)	16,234 (1,234)

Appendix 37. Estimated fishing pressure. (Two standard errors in parentheses.)<sup>1</sup>

Lake Huron, Thunder Bay, Huron Portland Cement Plant area, spring 1979  
T 31N, R 8E, Alpena County  
1 square mile

	Month		Season
	Apr	May	
Angler hours	93 (81)	248 (139)	341 (161)
Angler trips	50 (42)	91 (52)	141 (66)

<sup>1</sup> No interviews were taken; therefore, only estimates of fishing pressure were made.

Appendix 38. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Thunder Bay, spring - summer 1979  
T 30-31N, R 8-10E, Alpena County<sup>1</sup>  
42 square miles

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Festival <sup>2</sup>	Aug	Sep	
Rainbow trout	0.0005 (0.0007)	3 (6)	4 (9)	0 (0)	0 (0)	14 (29)	0 (0)	0 (0)	21 (31)
Brown trout	0.0096 (0.0056)	123 (92)	15 (26)	0 (0)	0 (0)	290 (227)	0 (0)	0 (0)	428 (246)
Brook trout	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	6 (11)	0 (0)	0 (0)	6 (11)
Lake trout	0.0126 (0.0071)	175 (214)	7 (15)	12 (24)	103 (141)	65 (172)	0 (0)	0 (0)	562 (310)
Coho salmon	0.0009 (0.0012)	0 (0)	0 (0)	0 (0)	0 (0)	38 (53)	0 (0)	0 (0)	38 (53)
Chinook salmon	0.0016 (0.0016)	0 (0)	0 (0)	0 (0)	0 (0)	72 (69)	0 (0)	0 (0)	72 (69)
Total catch	0.0253 (0.0096)	301 (233)	26 (31)	12 (24)	103 (141)	685 (299)	0 (0)	0 (0)	1,127 (406)
Angler hours	—	7,624 (2,954)	5,121 (1,828)	2,952 (923)	7,295 (2,378)	16,325 (3,163)	1,753 (794)	3,628 (939)	44,698 (5,486)
Angler trips	—	1,790 (609)	1,452 (613)	779 (254)	1,605 (509)	2,946 (609)	442 (205)	1,038 (269)	10,052 (1,248)

<sup>1</sup> This fishing area includes 7 square miles of water area within T 30N, R 8E; 20 square miles of water area within T 30N, R 9E; 3 square miles of water area within T 30N, R 10E; 6 square miles of water area within T 31N, R 8E; and 6 square miles of water area within T 31N, R 9E.

<sup>2</sup> The Fishing Festival was from July 28 to August 5, 1979.

Appendix 39. Estimated catch per hour, number caught, and fishing pressure. (Two standard errors in parentheses.)

Lake Huron, Thunder Bay, boat census during Fishing Festival  
 July 25-August 2, 1981  
 T 30-31N, R 8-10E, Alpena County<sup>1</sup>  
 42 square miles

Species	Total catch per hour	Number caught
Rainbow trout	0.0015 (0.0013)	18 (15)
Brown trout	0.0180 (0.0089)	223 (98)
Lake trout	0.0258 (0.0108)	318 (112)
Coho salmon	0.0006 (0.0013)	8 (16)
Chinook salmon	0.0549 (0.0220)	678 (225)
Channel catfish	0.0017 (0.0017)	21 (20)
Total catch	0.1026 (0.0318)	1,266 (271)
Angler hours	— —	12,335 (2,755)
Angler trips	— —	1,892 (437)

<sup>1</sup> This fishing area includes 7 square miles of water area within T 30N, R 8E; 20 square miles of water area within T 30N, R 9E; 3 square miles of water area within T 30N, R 10E; 6 square miles of water area within T 31N, R 8E; and 6 square miles of water area within T 31N, R 9E.

Appendix 40. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Rockport area, spring - summer 1979  
T 32-33N, R 8-9E, Alpena and Presque Isle counties<sup>1</sup>  
15 square miles

Species	Total catch per hour	Month						Season
		Apr	May	Jun	Jul	Aug	Sep	
Rainbow trout	0.0004 (0.0009)	0 (0)	7 (14)	0 (0)	0 (0)	0 (0)	0 (0)	7 (14)
Brown trout	0.0019 (0.0038)	0 (0)	30 (62)	0 (0)	0 (0)	0 (0)	0 (0)	30 (62)
Lake trout	0.1062 (0.0570)	83 (139)	170 (110)	100 (163)	426 (241)	937 (824)	0 (0)	1,716 (892)
Backcross <sup>2</sup>	0.0009 (0.0012)	0 (0)	14 (20)	0 (0)	0 (0)	0 (0)	0 (0)	14 (20)
Total catch	0.1094 (0.0572)	83 (139)	221 (129)	100 (163)	426 (241)	937 (824)	0 (0)	1,767 (894)
Angler hours	— —	1,550 (600)	2,904 (720)	3,001 (960)	3,414 (855)	3,300 (1,212)	1,983 (724)	16,152 (2,126)
Angler trips	— —	975 (317)	940 (239)	783 (273)	706 (168)	733 (290)	500 (185)	4,637 (615)

<sup>1</sup> This fishing area includes 3 square miles of water area within T 33N, R 8E, Presque Isle County; 7 square miles of water area within T 33N, R 9E, Presque Isle County; and 5 square miles of water area within T 32N, R 9E, Alpena County.

<sup>2</sup> Splake x brook trout hybrid.

Appendix 41. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Saginaw Bay, winter 1974-75  
T 18N, R 5-7E, Arenac County<sup>1</sup>  
57 square miles

Species	Total catch per hour	Month			Season
		Feb	Mar	Apr	
Smelt	0.0016 (0.0037)	155 (354)	0 (0)	0 (0)	155 (354)
Northern pike	0.0116 (0.0059)	1,116 (546)	0 (0)	0 (0)	1,116 (546)
Yellow perch	1.5597 (0.4172)	83,524 (30,049)	59,554 (16,956)	7,266 (6,200)	150,344 (35,056)
Sunfish	0.0006 (0.0011)	8 (34)	49 (98)	0 (0)	57 (103)
Total catch	1.5735 (0.4182)	84,803 (30,056)	59,603 (16,956)	7,266 (6,200)	151,672 (35,062)
Angler hours	—	56,056 (10,771)	36,990 (6,299)	3,348 (2,023)	96,394 (12,641)
Angler trips	—	7,817 (1,502)	4,586 (781)	336 (203)	12,739 (1,705)

<sup>1</sup> This fishing area includes 14 square miles of water area within T 18N, R 5E, 25 square miles of water area within T 18N, R 6E, and 18 square miles of water area within T 19N, R 7E.

Appendix 42. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Saginaw Bay, winter 1975-76  
T 18N, R-5-7E Arenac County<sup>1</sup>  
57 square miles

Species	Total catch per hour	Month				Season
		Dec	Jan	Feb	Mar	
Smelt	0.0084 (0.0152)	0 (0)	5 (4)	434 (782)	0 (0)	439 (782)
Northern pike	0.0096 (0.0123)	0 (0)	0 (0)	500 (628)	0 (0)	500 (628)
Yellow perch	0.7998 (0.5476)	2,460 (3,590)	6,266 (6,662)	26,156 (25,639)	6,701 (2,887)	41,583 (26,888)
Sunfish	0.0032 (0.0039)	0 (0)	48 (130)	116 (148)	0 (0)	164 (197)
Total catch	0.8210 (0.5480)	2,460 (3,590)	6,319 (6,663)	27,206 (25,659)	6,701 (2,887)	42,686 (26,907)
Angler hours	— —	1,980 (2,094)	26,262 (9,892)	17,780 (4,855)	5,922 (3,351)	51,994 (11,706)
Angler trips	— —	462 (532)	3,272 (1,202)	2,883 (797)	1,748 (1,546)	8,365 (2,180)

<sup>1</sup> This fishing area includes 14 square miles of water area within T 18N, R 5E, 25 square miles of water area within T 18N, R 6E, and 18 square miles of water area within T 19N, R 7E.



Appendix 43. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Saginaw Bay, winter 1976-77  
T 18N, R-5-7E Arenac County<sup>1</sup>  
57 square miles

Species	Total catch per hour	Month			Season
		Dec	Jan	Feb	
Smelt <sup>2</sup>	— —	— —	— —	— —	— —
Northern pike	0.0481 (0.0177)	17 (78)	1,011 (184)	1,274 (145)	2,302 (247)
Yellow perch	1.0920 (0.7332)	9,622 (16,896)	21,442 (19,382)	21,218 (15,260)	52,282 (29,900)
Sunfish <sup>2</sup>	— —	— —	— —	— —	— —
Total catch	1.1401 (0.7421)	9,639 (16,896)	22,453 (19,383)	22,492 (15,261)	54,584 (29,901)
Angler hours	— —	3,048 (3,647)	20,647 (14,515)	24,184 (7,717)	47,879 (16,839)
Angler trips	— —	443 (468)	3,160 (1,598)	2,936 (825)	6,539 (1,858)

<sup>1</sup> This fishing area includes 14 square miles of water area within T 18N, R 5E, 25 square miles of water area within T 18N, R 6E, and 18 square miles of water area within T 19N, R 7E.

<sup>2</sup> No catch records for smelt or sunfish were taken for this season.

Appendix 44. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Saginaw Bay, winter 1977-78  
T 18N, R 5-7E, Arenac County<sup>1</sup>  
57 square miles

Species	Total catch per hour	Month				Season
		Dec	Jan	Feb	Mar	
Smelt	0.0071 (0.0120)	0 (0)	216 (434)	938 (1,894)	0 (0)	1,154 (1,943)
Northern pike	0.0581 (0.0252)	9 (19)	6,944 (3,447)	2,438 (2,070)	0 (0)	9,391 (4,021)
Yellow perch	3.1024 (0.3401)	82,908 (23,341)	233,595 (25,355)	171,332 (26,352)	13,971 (6,390)	501,806 (43,851)
Sunfish	0.0135 (0.0272)	0 (0)	2,182 (4,397)	0 (0)	0 (0)	2,182 (4,397)
Total catch	3.1811 (0.3455)	82,917 (23,341)	242,937 (25,967)	174,708 (26,501)	13,971 (6,390)	514,533 (44,297)
Angler hours	—	24,930 (3,612)	87,325 (8,543)	47,056 (5,339)	2,438 (349)	161,749 (10,708)
Angler trips	—	7,800 (1,194)	25,182 (3,325)	14,984 (2,211)	783 (154)	48,749 (4,171)

<sup>1</sup> This fishing area includes 14 square miles of water area within T 18N,R 5E, 25 square miles of water area within T 18N, R 6E, and 18 square miles of water area within T 19N, R 7E.

Appendix 45. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Iosco-Arenac area (Site 3), spring - summer 1978  
T 19-21N, R 7-8E, Iosco and Arenac counties<sup>1</sup>  
27 square miles

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Yellow perch	0.3714 (0.2416)	2,632 (3,251)	19,644 (15,440)	0 (0)	15,740 (17,897)	0 (0)	38,016 (23,859)
Angler hours	—	7,093 (1,932)	13,437 (6,703)	26,828 (12,128)	22,859 (7,107)	32,150 (7,799)	102,367 (17,523)
Angler trips	—	2,185 (592)	3,558 (1,874)	7,234 (3,438)	3,403 (1,050)	5,220 (1,173)	21,600 (4,262)

<sup>1</sup> This fishing area includes 5 square miles of water area within T 21N, R 7E, Iosco County; 3 square miles of water area within T 19N, R 7E, Iosco County; 6 square miles of water area within T 19N, R 8E, Iosco County; 1 square mile of water area within T 20N, R 7E, Iosco County; and 12 square miles of water area within T 20N, R 8E, Iosco County.

Appendix 46. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Tawas Bay, winter 1977-78  
T 22N, R 8E, Iosco County<sup>1</sup>  
10 square miles

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Lake trout	0.0002 (0.0003)	0 (0)	3 (5)	0 (0)	3 (5)
Northern pike	0.0063 (0.0064)	4 (6)	69 (81)	9 (18)	82 (83)
Yellow perch	0.7245 (0.2069)	3,259 (1,765)	4,746 (1,634)	1,474 (849)	9,479 (2,551)
Total catch	0.7310 (0.2071)	3,263 (1,765)	4,818 (1,636)	1,483 (849)	9,564 (2,552)
Angler hours	— —	2,341 (402)	7,860 (1,077)	2,882 (484)	13,083 (1,247)
Angler trips	— —	801 (160)	2,446 (367)	1,207 (243)	4,454 (468)

<sup>1</sup> This fishing area includes approximately 10 square miles of water within Tawas Bay, Lake Huron. Most of the fishing occurred within 1 square mile.

Appendix 47. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Tawas Bay, spring – summer 1978  
T 21–22N, R 7–9E, Iosco County<sup>1</sup>  
50 square miles

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Rainbow trout	0.0007 (0.0015)	0 (0)	0 (0)	0 (0)	160 (322)	0 (0)	160 (322)
Brown trout	0.0038 (0.0031)	0 (0)	98 (199)	361 (354)	380 (536)	0 (0)	839 (673)
Lake trout	0.0006 (0.0008)	0 (0)	0 (0)	127 (180)	0 (0)	0 (0)	127 (180)
Chinook salmon	0.0021 (0.0037)	0 (0)	0 (0)	0 (0)	160 (322)	300 (753)	460 (819)
Yellow perch	0.7695 (0.2270)	51,212 (23,769)	35,079 (17,496)	58,099 (32,935)	25,929 (19,597)	0 (0)	170,319 (48,372)
Channel catfish	0.0004 (0.0009)	0 (0)	0 (0)	0 (0)	98 (197)	0 (0)	98 (197)
Total catch	0.7771 (0.2273)	51,212 (23,769)	35,177 (17,497)	58,587 (32,937)	26,727 (19,611)	300 (753)	172,003 (48,385)
Angler hours	— —	28,446 (4,802)	37,274 (6,408)	57,901 (6,777)	53,916 (6,287)	43,808 (12,808)	221,345 (17,709)
Angler trips	— —	7,869 (1,459)	11,947 (2,149)	17,535 (2,192)	15,905 (2,015)	16,322 (5,132)	69,588 (6,476)

<sup>1</sup> This fishing area includes 1 square mile of water area within T 22N, R 7E; 12 square miles of water area within T 22N, R 8E; 12 square miles of water area within T 22N, R 9E; 6 square miles of water area within T 21N, R 7E; and 1.9 square miles of water area within T 21N, R 8E.

Appendix 48. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Oscoda area, spring - summer 1978  
T 23-24N, R 9E, Iosco County<sup>1</sup>  
16 square miles

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Rainbow trout	0.0011 (0.0023)	0 (0)	0 (0)	0 (0)	111 (227)	0 (0)	111 (227)
Brown trout	0.0005 (0.0011)	53 (113)	0 (0)	0 (0)	0 (0)	0 (0)	53 (113)
Lake trout	0.0201 (0.0147)	848 (735)	0 (0)	551 (908)	498 (476)	108 (307)	2,005 (1,298)
Coho salmon	0.0013 (0.0032)	0 (0)	0 (0)	0 (0)	29 (59)	108 (307)	137 (312)
Chinook salmon	0.0165 (0.0149)	0 (0)	0 (0)	0 (0)	1,156 (807)	489 (1,110)	1,645 (1,373)
Yellow perch	0.0157 (0.0153)	192 (310)	708 (1,005)	299 (610)	362 (742)	0 (0)	1,561 (1,425)
Smallmouth bass	0.0003 (0.0006)	0 (0)	0 (0)	31 (64)	0 (0)	0 (0)	31 (64)
Channel catfish	0.0143 (0.0124)	64 (131)	1,258 (1,105)	104 (213)	0 (0)	0 (0)	1,426 (1,133)
Total catch	0.0698 (0.0356)	1,157 (816)	1,966 (1,494)	985 (1,116)	2,156 (1,218)	705 (1,192)	6,969 (2,655)
Angler hours	— —	7,209 (1,642)	6,331 (1,667)	12,828 (1,895)	19,078 (4,298)	54,049 (33,023)	99,495 (33,437)
Angler trips	— —	2,210 (518)	2,049 (647)	3,961 (834)	5,113 (1,246)	14,110 (8,541)	27,443 (8,711)

<sup>1</sup> This fishing area includes 6 square miles of water area within T 23N, R 9E and 10 square miles of water area within T 24N, R 9E.

Appendix 49. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Au Sable River, winter 1977-78  
 Foote Dam to mouth of river  
 T 23-24N, R-8-9E, Iosco County  
 9 linear miles

Species	Total catch per hour	Month		Season
		Dec	Jan	
Rainbow trout	0.0506 (0.0356)	205 (138)	9 (16)	214 (139)
Brown trout	0.0045 (0.0060)	19 (25)	0 (0)	19 (25)
Coho salmon	0.0229 (0.0367)	94 (153)	3 (7)	97 (153)
Chinook salmon	0.0031 (0.0048)	8 (17)	5 (10)	13 (20)
Northern pike	0.0019 (0.0038)	0 (0)	8 (16)	8 (16)
Total catch	0.0829 (0.0546)	326 (208)	25 (26)	351 (210)
Angler hours	—	3,901 (1,122)	332 (291)	4,233 (1,159)
Angler trips	—	1,005 (308)	89 (78)	1,094 (318)

Appendix 50. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Au Sable River, spring - early summer 1978  
Foote Dam to mouth of river  
T23-24N, R 8-9E, Iosco County  
9 linear miles

Species	Total catch per hour	Month				Season
		Mar	Apr	May	Jun	
Rainbow trout	0.0260 (0.0197)	268 (304)	966 (530)	1,717 (2,139)	0 (0)	2,951 (2,225)
Brown trout	0.0007 (0.0008)	71 (90)	8 (17)	0 (0)	0 (0)	79 (92)
Lake trout	0.0044 (0.0035)	40 (56)	440 (389)	16 (31)	0 (0)	496 (394)
Chinook salmon	0.0027 (0.0055)	0 (0)	0 (0)	310 (624)	0 (0)	310 (624)
Total catch	0.0338 (0.0208)	379 (322)	1,414 (658)	2,043 (2,228)	0 (0)	3,836 (2,346)
Angler hours	—	16,479 (2,314)	47,646 (4,226)	48,477 (6,654)	781 (115)	113,383 (8,216)
Angler trips	—	4,986 (772)	12,416 (1,728)	13,855 (2,513)	236 (49)	31,493 (3,147)



Appendix 51. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Cedarville-Hessel area, spring – fall 1979  
 T 41-42N, R 1W, Mackinac County<sup>1</sup>  
 16 square miles

Species	Total catch per hour	Month									Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Yellow perch	0.9576 (0.4388)	327 (736)	4,526 (6,049)	27,768 (9,809)	2,599 (4,592)	28,511 (29,876)	15,166 (14,406)	3,562 (5,356)	1,310 (13)	49 (82)	83,818 (35,822)
Brown trout	0.0054 (0.0087)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	347 (735)	114 (174)	8 (16)	469 (755)
Brook trout	0.0007 (0.0015)	0 (0)	0 (0)	0 (0)	0 (0)	64 (135)	0 (0)	0 (0)	0 (0)	0 (0)	64 (135)
Lake trout	0.0586 (0.0595)	0 (0)	0 (0)	0 (0)	5,133 (5,140)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5,133 (5,140)
Northern pike	0.0047 (0.0065)	0 (0)	0 (0)	241 (497)	0 (0)	151 (255)	23 (49)	0 (0)	0 (0)	0 (0)	415 (561)
Rock bass	0.0370 (0.0396)	0 (0)	0 (0)	0 (0)	2,055 (3,093)	451 (6,151)	635 (1,323)	82 (115)	13 (28)	0 (0)	3,236 (3,422)
Lake herring	0.1822 (0.3108)	0 (0)	0 (0)	0 (0)	0 (0)	15,945 (27,077)	0 (0)	0 (0)	0 (0)	0 (0)	15,945 (27,077)
Total catch	1.2462 (0.5574)	327 (736)	4,526 (6,049)	28,009 (9,822)	9,787 (7,555)	45,122 (40,326)	15,824 (14,467)	3,991 (5,407)	1,437 (176)	57 (83)	109,080 (45,337)
Angler hours	—	2,208 (540)	5,315 (1,365)	11,857 (3,329)	14,121 (4,979)	32,533 (7,655)	13,719 (10,366)	6,087 (2,227)	1,611 (680)	75 (86)	87,526 (14,464)
Angler trips	—	774 (190)	1,700 (972)	4,494 (1,349)	3,192 (1,326)	7,089 (1,996)	2,745 (2,101)	1,657 (617)	465 (197)	21 (24)	22,137 (3,657)

<sup>1</sup> This fishing area includes approximately 16 square miles of water area between Hessel and McKay Bay in northern Lake Huron.

Appendix 52. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Cedarville-Hessel area, winter 1979-80  
T 41-42N, R 1W, Mackinaw County<sup>1</sup>  
16 square miles

Species	Total catch per hour	Month				Season
		Dec	Jan	Feb	Mar	
Yellow perch	3.4374 (1.0067)	574 (544)	38,070 (12,968)	50,365 (20,388)	20,136 (5,676)	109,145 (24,826)
Rock bass	0.0115 (0.0101)	366 (315)	0 (0)	0 (0)	0 (0)	366 (315)
Angler hours	— —	1,135 (266)	10,293 (2,690)	14,634 (5,013)	5,690 (1,372)	31,752 (5,857)
Angler trips	— —	292 (63)	2,292 (697)	3,784 (1,280)	1,319 (337)	7,687 (1,497)

<sup>1</sup> This fishing area includes approximately 16 square miles of water area between Hessel and McKay Bay in northern Lake Huron.

Appendix 53. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Cedarville-Hessel area, spring – fall 1980  
 T 41–42N, R 1W, Mackinac County<sup>1</sup>  
 16 square miles

Species	Total catch per hour	Month								Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Yellow perch	2.2695 (0.3335)	17,646 (5,283)	9,790 (4,097)	11,276 (2,705)	24,875 (6,779)	15,595 (4,224)	7,400 (2,927)	5,342 (1,624)	5 (6)	91,929 (11,270)
Brown trout	0.0003 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14 (40)	0 (0)	14 (40)
Northern pike	0.0995 (0.0371)	0 (0)	652 (643)	606 (515)	724 (683)	864 (633)	1,185 (774)	0 (0)	0 (0)	4,031 (1,465)
Smallmouth bass	0.0018 (0.0022)	0 (0)	0 (0)	73 (90)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	73 (90)
Rock bass	0.1300 (0.0622)	0 (0)	0 (0)	952 (1,118)	2,362 (1,763)	1,342 (1,172)	494 (643)	116 (166)	0 (0)	5,266 (2,484)
Lake herring	0.2880 (0.1186)	0 (0)	0 (0)	5,187 (2,232)	6,479 (4,146)	0 (0)	0 (0)	0 (0)	0 (0)	11,666 (4,709)
Total catch	2.7891 (0.3835)	17,646 (5,283)	10,442 (4,147)	18,094 (2,559)	34,440 (8,168)	17,801 (4,429)	9,079 (3,095)	5,472 (1,633)	5 (6)	112,979 (12,550)
Angler hours	— —	6,019 (971)	4,170 (905)	7,369 (1,461)	10,739 (2,100)	6,872 (1,221)	3,715 (920)	1,605 (357)	17 (11)	40,506 (3,282)
Angler trips	— —	2,296 (486)	1,093 (298)	1,776 (369)	2,921 (623)	2,205 (432)	1,367 (356)	639 (159)	5 (4)	12,302 (1,090)

<sup>1</sup> This fishing area includes approximately 16 square miles of water area between Hessel and McKay Bay in northern Lake Huron.

Appendix 54. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Huron, Cedarville-Hessel area, winter 1980-81  
 T 41-42N, R 1W, R 1E, Mackinac County<sup>1</sup>  
 16 square miles

Species	Total catch per hour	Month				Season
		Dec	Jan	Feb	Mar	
Yellow perch	1.8591 (0.2498)	2,075 (275)	19,028 (3,096)	18,961 (5,803)	10,654 (1,605)	50,718 (6,776)
Northern pike	0.0375 (0.0338)	0 (0)	538 (545)	486 (744)	0 (0)	1,024 (922)
Lake herring	0.0870 (0.0696)	0 (0)	0 (0)	45 (89)	2,329 (1,896)	2,374 (1,898)
Total catch	1.9836 (0.2617)	2,075 (275)	19,566 (3,144)	19,492 (5,851)	12,983 (2,484)	54,116 (7,097)
Angler hours	—	692 (66)	9,665 (302)	10,417 (130)	6,507 (191)	27,281 (386)
Angler trips	—	179 (38)	2,138 (250)	2,528 (359)	1,376 (106)	6,221 (452)

<sup>1</sup> This fishing area includes approximately 16 square miles of water area between Hessel and McKay Bay in northern Lake Huron.

Appendix 55. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

St. Joseph River, spring 1982  
Downstream from the Berrien Springs Dam  
T 4-6S, R 17-19W, Berrien County  
7 linear miles

Species	Total catch per hour	Month		Season
		Mar	Apr	
Rainbow trout	0.0426 (0.0113)	388 (180)	494 (144)	882 (230)
Brown trout	0.0047 (0.0082)	93 (169)	5 (7)	98 (169)
Coho salmon	0.0014 (0.0017)	0 (0)	30 (35)	30 (35)
White sucker	0.0205 (0.0134)	164 (179)	260 (212)	424 (277)
Channel catfish	0.0010 (0.0018)	0 (0)	20 (37)	20 (37)
Carp	0.0004 (0.0006)	0 (0)	9 (13)	9 (13)
Redhorse sucker	0.0014 (0.0026)	26 (52)	4 (8)	30 (53)
Rock bass	0.0025 (0.0031)	0 (0)	52 (105)	52 (105)
Bullhead	0.0017 (0.0027)	0 (0)	36 (55)	36 (55)
Total catch	0.0203 (0.0206)	671 (309)	910 (308)	1,581 (421)
Angler hours	—	4,867 (458)	15,842 (887)	20,709 (998)
Angler trips	—	1,159 (138)	3,906 (370)	5,065 (395)

Appendix 56. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Escanaba River, fall 1981  
 Downstream from first dam, City of Escanaba  
 T 39N, R 22W, Delta County  
 0.8 linear miles

Species	Total catch per hour	Month		Season
		Sep	Oct	
Rainbow trout	0.0012 (0.0025)	5 (10)	0 (0)	5 (10)
Brown trout	0.0022 (0.0036)	9 (14)	0 (0)	9 (14)
Chinook salmon	0.1632 (0.0850)	369 (253)	289 (132)	658 (285)
Pink salmon	0.0040 (0.0083)	16 (33)	0 (0)	16 (33)
Total catch	0.1717 (0.0868)	399 (255)	289 (132)	688 (288)
Angler hours	—	2,169 (973)	1,837 (583)	4,006 (1,134)
Angler trips	—	446 (209)	460 (148)	906 (256)

Appendix 57. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Rogue River, spring 1980  
 Childsdale Dam to the Grand River  
 T 8N, R 11W, Kent County  
 5 linear miles

Species	Total catch per hour	Month		Season
		Mar 19-31	Apr	
Rainbow trout	0.1371 (0.0317)	149 (218)	6,198 (1,402)	6,347 (1,419)
Brown trout	0.0255 (0.0436)	49 (98)	1,311 (2,016)	1,180 (2,018)
Total catch	0.1626 (0.0542)	198 (239)	7,329 (2,456)	7,527 (2,467)
Angler hours	— —	4,934 (1,135)	41,363 (2,497)	46,297 (2,743)
Angler trips	— —	1,803 (578)	9,394 (2,380)	11,197 (2,449)

Appendix 58. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Grand River, spring 1979  
 Downstream from the 6th Street Dam, City of Grand Rapids  
 T 7N, R 11W, Kent County  
 2 linear miles

Species	Total catch per hour	Month		
		Mar 19-31	Apr	Season
Rainbow trout	0.1177 (0.0759)	1,029 (636)	1,732 (1,146)	2,761 (1,311)
Carp	0.0009 (0.0020)	21 (47)	0 (0)	21 (47)
White sucker	0.0070 (0.0086)	21 (47)	142 (182)	163 (188)
Redhorse sucker	0.0036 (0.0063)	0 (0)	85 (143)	85 (144)
Longnose sucker	0.0087 (0.0138)	0 (0)	204 (312)	204 (312)
Total catch	0.1379 (0.0838)	1,071 (639)	2,163 (1,211)	3,234 (1,369)
Angler hours	—	6,800 (3,533)	16,653 (9,606)	23,453 (10,235)
Angler trips	—	1,770 (1,032)	4,193 (2,362)	5,963 (2,578)



Appendix 59. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Grand River, spring 1980  
Downstream from the 6th Street Dam, City of Grand Rapids  
T 7N, R 11W, Kent County  
2 linear miles

Species	Total catch per hour	Month		
		Mar 19-31	Apr	Season
Rainbow trout	0.1619 (0.0387)	1,279 (357)	5,248 (1,417)	6,527 (1,461)
Drum	0.0012 (0.0024)	0 (0)	49 (98)	49 (98)
White sucker	0.0456 (0.0540)	13 (25)	1,823 (2,173)	1,836 (2,173)
Redhorse sucker	0.0017 (0.0030)	13 (25)	56 (116)	69 (119)
Total catch	0.2104 (0.0674)	1,305 (359)	7,176 (2,599)	8,481 (2,623)
Angler hours	—	10,889 (948)	29,418 (3,230)	40,307 (3,366)
Angler trips	—	2,789 (582)	7,219 (1,361)	10,008 (1,480)

Appendix 60. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Grand River, spring 1982  
From the North Lansing Dam, City of Lansing,  
Ingham County, to the 6th Street Dam,  
City of Grand Rapids, Kent County  
142 linear miles

Species	Total catch per hour	Month			Season
		Mar	Apr	May	
Rainbow trout	0.0614 (0.0169)	1,123 (693)	2,752 (779)	135 (253)	4,010 (1,073)
Brown trout	0.0022 (0.0017)	14 (28)	94 (98)	33 (49)	141 (113)
Brook trout	0.0006 (0.0008)	0 (0)	37 (53)	0 (0)	37 (53)
Coho salmon	0.0013 (0.0015)	0 (0)	86 (100)	0 (0)	86 (100)
Chinook salmon	0.0001 (0.0003)	0 (0)	9 (17)	0 (0)	9 (17)
Northern pike	0.0006 (0.0010)	0 (0)	27 (57)	14 (30)	41 (64)
Walleye	0.0005 (0.0009)	0 (0)	30 (61)	0 (0)	30 (61)
Bluegill	0.0006 (0.0010)	0 (0)	36 (62)	0 (0)	36 (62)
Rock bass	0.0046 (0.0062)	0 (0)	299 (407)	0 (0)	299 (407)
Sunfish sp.	0.0053 (0.0086)	0 (0)	345 (561)	0 (0)	345 (561)
Crappie sp.	0.0060 (0.0102)	0 (0)	391 (667)	0 (0)	391 (667)
Carp	0.0037 (0.0036)	0 (0)	213 (230)	26 (38)	239 (234)
White sucker	0.0708 (0.0355)	334 (688)	3,896 (2,160)	388 (390)	4,618 (2,300)
Redhorse sucker	0.0043 (0.0074)	0 (0)	278 (484)	0 (0)	278 (484)
Longnose sucker	0.0005 (0.0010)	0 (0)	32 (64)	0 (0)	32 (64)

## Appendix 60. Continued:

Species	Total catch per hour	Month			Season
		Mar	Apr	May	
Channel catfish	0.0003 (0.0006)	0 (0)	2 (4)	0 (0)	2 (4)
Total catch	0.1623 (0.0438)	1,471 (977)	8,527 (2,553)	596 (470)	10,594 (2,774)
Angler hours	— —	14,139 (1,847)	46,824 (3,693)	4,305 (1,244)	65,268 (4,312)
Angler trips	— —	8,050 (1,780)	17,128 (1,967)	1,907 (653)	27,085 (2,732)

Appendix 61. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Erie, shore census, spring - summer 1980  
 T 5-8S, R 9-10E and 19-20E, Monroe County<sup>1</sup>  
 147 square miles

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Brown trout	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	33 (67)	33 (67)
Cisco	0.0096 (0.0166)	316 (637)	1,674 (3,351)	0 (0)	0 (0)	1,990 (3,411)
Northern pike	0.0005 (0.0008)	0 (0)	0 (0)	14 (25)	80 (167)	94 (169)
Yellow perch	0.3150 (0.1366)	546 (476)	15,841 (12,949)	11,391 (12,008)	37,337 (19,853)	65,115 (26,575)
Walleye	0.0473 (0.0789)	158 (226)	3,481 (6,883)	5,961 (14,718)	183 (293)	9,783 (16,252)
Smallmouth bass	0.0003 (0.0007)	0 (0)	3 (6)	0 (0)	68 (139)	71 (139)
Largemouth bass	0.0002 (0.0003)	0 (0)	0 (0)	39 (59)	0 (0)	39 (59)
Bluegill	0.0102 (0.0056)	567 (835)	333 (275)	246 (187)	958 (668)	2,104 (1,120)
Rock bass	0.0017 (0.0012)	86 (143)	45 (57)	77 (78)	148 (167)	356 (240)
Sunfish	0.0178 (0.0073)	365 (418)	452 (462)	677 (472)	2,186 (1,162)	3,680 (1,400)
Crappie	0.0086 (0.0082)	131 (264)	107 (113)	109 (158)	1,438 (1,648)	1,785 (1,680)
White bass	0.0759 (0.0286)	1,912 (1,663)	1,021 (746)	6,923 (3,899)	5,838 (3,350)	15,694 (5,453)
White perch	0.0004 (0.0005)	66 (105)	5 (10)	11 (21)	0 (0)	82 (107)
Drum	0.0747 (0.0204)	905 (931)	2,983 (1,580)	3,565 (1,224)	7,980 (2,800)	15,433 (3,564)
Carp	0.0105 (0.0049)	272 (254)	491 (638)	476 (325)	932 (600)	2,171 (968)
Goldfish	0.0003 (0.0006)	56 (114)	0 (0)	0 (0)	0 (0)	56 (114)
White sucker	0.0004 (0.0005)	0 (0)	0 (0)	18 (41)	61 (84)	79 (93)

## Appendix 61. Continued:

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Longnose sucker	0.0001 (0.0001)	0 (0)	0 (0)	6 (12)	0 (0)	6 (12)
Redhorse sucker	0.0002 (0.0003)	0 (0)	25 (62)	0 (0)	7 (14)	32 (64)
Bullhead	0.0085 (0.0037)	493 (457)	612 (420)	89 (72)	555 (367)	1,749 (725)
Channel catfish	0.0775 (0.0260)	1,918 (1,056)	6,689 (3,461)	4,774 (2,982)	2,639 (1,172)	16,020 (4,833)
Gar	0.0002 (0.0005)	51 (108)	0 (0)	0 (0)	0 (0)	51 (108)
Gizzard shad	0.0001 (0.0003)	26 (56)	0 (0)	0 (0)	0 (0)	26 (56)
Buffalo	0.0011 (0.0010)	0 (0)	74 (108)	156 (172)	0 (0)	230 (203)
Total catch	0.6611 (0.1846)	7,868 (2,581)	33,836 (15,563)	34,532 (19,668)	60,443 (20,488)	136,679 (32,488)
Angler hours	—	19,122 (4,505)	80,503 (22,926)	56,664 (17,891)	50,443 (7,143)	206,732 (30,282)
Angler trips	—	3,871 (990)	19,582 (5,632)	11,983 (4,254)	12,654 (2,441)	48,090 (7,534)

<sup>1</sup> This fishing area includes 4 square miles of water area within T 5S, R 20E; 29 square miles of water area within T 6S, R 19-20E; 53 square miles of water area within T 7S, R 19-20E; and 61 square miles of water area within T 8S, R 9-10E.

Appendix 62. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Lake Erie, boat census, spring – fall 1980  
 T 5–8S, R 9–10E and 19–20E, Monroe County<sup>1</sup>  
 147 square miles

Species	Total catch per hour	Month							Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	
Smelt	0.00002 (0.00003)	0 (0)	0 (0)	12 (25)	0 (0)	0 (0)	0 (0)	0 (0)	12 (25)
Yellow perch	0.9315 (0.2676)	5,418 (7,730)	85,973 (31,510)	61,530 (33,492)	117,825 (56,855)	271,832 (145,694)	88,432 (25,497)	29,671 (19,843)	660,681 (166,365)
Walleye	0.2586 (0.0602)	12,438 (8,595)	73,954 (17,808)	89,925 (27,849)	6,823 (4,010)	265 (336)	0 (0)	6 (15)	183,411 (34,391)
Northern pike	0.00001 (0.00001)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (5)	3 (5)
Smallmouth bass	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	36 (63)	0 (0)	0 (0)	0 (0)	36 (63)
Largemouth bass	0.0001 (0.0001)	0 (0)	0 (0)	37 (81)	0 (0)	0 (0)	0 (0)	0 (0)	37 (81)
Bluegill	0.0002 (0.0002)	0 (0)	77 (135)	0 (0)	0 (0)	0 (0)	24 (51)	51 (80)	152 (165)
Crappie	0.00003 (0.00007)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	24 (51)	0 (0)	24 (51)
Rock bass	0.0001 (0.0001)	0 (0)	0 (0)	37 (62)	17 (43)	0 (0)	19 (39)	0 (0)	73 (85)

Appendix 62. Continued:

Species	Total catch per hour	Month							Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	
Sunfish	0.0068 (0.0127)	132 (245)	0 (0)	143 (304)	15 (30)	4,480 (8,958)	31 (63)	0 (0)	4,801 (8,967)
White bass	0.0137 (0.0066)	1,151 (1,248)	3,815 (2,253)	996 (991)	1,168 (2,456)	1,020 (1,916)	1,543 (1,575)	0 (0)	9,693 (4,450)
White perch	0.0001 (0.0003)	0 (0)	91 (185)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	91 (185)
Drum	0.0202 (0.0070)	553 (992)	5,839 (3,063)	2,825 (1,841)	3,470 (2,175)	1,247 (1,190)	410 (863)	0 (0)	14,344 (4,544)
Carp	0.0003 (0.0004)	0 (0)	47 (65)	9 (19)	7 (15)	144 (300)	9 (19)	0 (0)	216 (308)
White sucker	0.0004 (0.0009)	0 (0)	0 (0)	0 (0)	314 (656)	0 (0)	0 (0)	0 (0)	314 (656)
Bullhead	0.0010 (0.0006)	0 (0)	37 (75)	135 (152)	133 (120)	221 (252)	174 (289)	0 (0)	700 (436)
Channel catfish	0.0361 (0.0140)	524 (592)	6,950 (4,562)	7,477 (3,960)	5,456 (3,509)	4,568 (6,021)	613 (699)	2 (5)	25,590 (9,268)
Quillback	0.00002 (0.00003)	0 (0)	12 (24)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12 (24)
Gizzard shad	0.0001 (0.0001)	0 (0)	33 (67)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	33 (67)

Appendix 62. Continued:

Species	Total catch per hour	Month							Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	
Buffalo	0.0001 (0.0001)	0 (0)	42 (86)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	42 (86)
Total catch	1.2693 (0.2976)	20,216 (11,686)	176,870 (36,678)	163,126 (43,789)	135,264 (57,203)	283,777 (146,111)	91,279 (25,572)	29,733 (19,843)	900,265 (170,492)
Angler hours	— —	33,540 (24,369)	268,001 (50,171)	244,821 (69,983)	77,944 (26,216)	58,547 (29,732)	18,524 (3,997)	7,873 (3,411)	709,250 (98,018)
Angler trips	— —	7,620 (5,149)	61,418 (13,471)	46,235 (13,121)	14,709 (5,097)	23,690 (10,382)	6,547 (1,519)	2,778 (920)	162,997 (22,739)

<sup>1</sup> This fishing area includes 4 square miles of water area within T 5S, R 20E; 29 square miles of water area within T 6S, R 19-20E; 53 square miles of water area within T 7S, R 19-20E; and 61 square miles of water area within T 8S, R 9-10E.



Appendix 63. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Belle Isle, Detroit River, summer 1978  
 T 25, R 12-13E, Wayne County  
 4 square miles

Species	Total catch per hour	Month			Season
		Jun	Jul	Aug	
Northern pike	0.0001 (0.0001)	0 (0)	0 (0)	5 (10)	5 (10)
Yellow perch	0.0466 (0.0145)	889 (664)	1,552 (685)	1,446 (730)	3,887 (1,202)
Walleye	0.0152 (0.0051)	234 (304)	568 (210)	465 (215)	1,267 (427)
Smallmouth bass	0.0062 (0.0043)	175 (273)	111 (96)	232 (204)	518 (354)
Bluegill	0.0214 (0.0090)	120 (121)	1,183 (638)	477 (377)	1,780 (751)
Rock bass	0.0173 (0.0058)	323 (300)	642 (264)	476 (263)	1,441 (479)
Sunfish	0.0450 (0.0177)	791 (704)	1,530 (931)	1,430 (904)	3,751 (1,476)
Crappie	0.0088 (0.0044)	232 (216)	309 (218)	192 (199)	733 (366)
White bass	0.0004 (0.0007)	35 (57)	0 (0)	0 (0)	35 (57)
Drum	0.0797 (0.0226)	1,421 (786)	3,056 (751)	2,164 (1,531)	6,641 (1,878)
Carp	0.0131 (0.0081)	412 (546)	559 (383)	122 (97)	1,093 (674)
White sucker	0.0087 (0.0033)	152 (166)	340 (166)	230 (141)	722 (273)
Redhorse sucker	0.0158 (0.0058)	156 (154)	721 (382)	441 (257)	1,318 (485)
Bullhead	0.0028 (0.0032)	25 (52)	209 (259)	0 (0)	234 (264)
Channel catfish	0.0006 (0.0005)	0 (0)	46 (43)	0 (0)	46 (43)
Sturgeon	0.0001 (0.0003)	11 (22)	0 (0)	0 (0)	11 (22)
Gizzard shad	0.0003 (0.0006)	26 (53)	0 (0)	0 (0)	26 (53)

## Appendix 63. Continued:

Species	Total catch per hour	Month			Season
		Jun	Jul	Aug	
Hornyhead chub	0.0002 (0.0003)	8 (16)	10 (20)	0 (0)	18 (26)
Total catch	0.2822 (0.0372)	5,010 (1,494)	10,836 (1,693)	7,680 (2,032)	23,526 (3,037)
Angler hours	— —	22,486 (1,424)	33,777 (1,391)	27,093 (1,057)	83,356 (2,253)
Angler trips	— —	6,423 (516)	9,651 (614)	7,739 (519)	23,813 (955)

Appendix 64. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Belle Isle, Detroit River, fall salmon survey, 1980  
T 2S, R 12-13E, Wayne County  
4 square miles

Species	Total catch per hour	Month			Season
		Sep	Oct	Nov	
Coho salmon	0.0229 (0.0135)	30 (66)	47 (41)	242 (164)	319 (182)
Northern pike	0.0006 (0.0009)	0 (0)	4 (8)	5 (10)	9 (13)
Yellow perch	0.0496 (0.0495)	651 (678)	39 (48)	0 (0)	690 (680)
Walleye	0.0126 (0.0115)	94 (115)	81 (108)	0 (0)	175 (158)
Largemouth bass	0.0034 (0.0068)	47 (94)	0 (0)	0 (0)	47 (94)
Bluegill	0.0126 (0.0199)	175 (275)	0 (0)	0 (0)	175 (275)
Rock bass	0.0004 (0.0008)	5 (11)	0 (0)	0 (0)	5 (11)
Crappie	0.0006 (0.0012)	0 (0)	8 (17)	0 (0)	8 (17)
Drum	0.0001 (<0.0001)	1 (0)	0 (0)	0 (0)	1 (0)
Redhorse sucker	0.0001 (0.0004)	0 (0)	2 (5)	0 (0)	2 (5)
Channel catfish	0.0001 (<0.0001)	2 (0)	0 (0)	0 (0)	2 (0)
Total catch	0.1030 (0.0581)	1,005 (750)	181 (127)	247 (164)	1,433 (778)
Angler hours	—	2,400 (566)	5,762 (1,311)	5,748 (1,564)	13,910 (2,118)
Angler trips	—	1,044 (330)	1,889 (449)	1,807 (553)	4,740 (786)

Appendix 65. Estimated catch per hour, number caught, and fishing pressure by month and season. (Two standard errors in parentheses.)

Detroit River, shore census, summer – fall 1980  
T 2-5S, R 10-12E, Wayne County<sup>1</sup>  
24 linear miles

Species	Total catch per hour	Month						Season
		Jun	Jul	Aug	Sep	Oct	Nov	
Coho salmon	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (18)	4 (18)
Northern pike	0.0002 (0.0004)	0 (0)	0 (0)	86 (191)	0 (0)	0 (0)	0 (0)	86 (191)
Musky	0.0001 (0.0003)	67 (146)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	67 (146)
Tiger musky	0.0001 (0.0001)	0 (0)	5 (10)	5 (10)	0 (0)	0 (0)	0 (0)	10 (14)
Yellow perch	0.1898 (0.0566)	22,818 (10,436)	26,583 (5,857)	21,134 (4,958)	15,431 (6,333)	13,432 (24,197)	4,022 (8,240)	103,420 (29,780)
Walleye	0.0233 (0.0136)	872 (1,493)	3,188 (1,318)	2,970 (1,979)	5,653 (6,764)	0 (0)	0 (0)	12,683 (7,324)
Smallmouth bass	0.0021 (0.0012)	87 (132)	342 (346)	599 (524)	90 (197)	0 (0)	0 (0)	1,118 (671)
Largemouth bass	0.0002 (0.0003)	0 (0)	29 (59)	72 (147)	0 (0)	0 (0)	0 (0)	101 (158)
Bluegill	0.0021 (0.0029)	17 (35)	47 (92)	718 (1,472)	370 (585)	0 (0)	0 (0)	1,152 (1,587)

Appendix 65. Continued:

Species	Total catch per hour	Month						Season
		Jun	Jul	Aug	Sep	Oct	Nov	
Rock bass	0.0306 (0.0082)	6,103 (3,346)	5,124 (1,413)	2,741 (1,064)	2,242 (1,872)	452 (647)	0 (0)	16,662 (4,272)
Sunfish	0.0003 (0.0005)	29 (62)	0 (0)	44 (88)	109 (222)	0 (0)	0 (0)	182 (247)
Crappie sp.	0.0001 (0.0001)	11 (25)	0 (0)	0 (0)	21 (43)	0 (0)	0 (0)	32 (50)
White bass	0.0260 (0.0112)	12,396 (5,812)	776 (1,222)	598 (536)	403 (469)	0 (0)	0 (0)	14,173 (5,982)
White perch	0.0007 (0.0008)	26 (57)	43 (89)	320 (445)	0 (0)	0 (0)	0 (0)	389 (457)
Drum	0.1153 (0.0212)	16,710 (6,797)	19,643 (5,309)	19,519 (4,394)	6,982 (4,021)	0 (0)	0 (0)	62,854 (10,481)
Carp	0.0063 (0.0036)	685 (749)	804 (635)	1,074 (944)	887 (1,357)	0 (0)	0 (0)	3,450 (1,923)
White sucker	0.0069 (0.0049)	0 (0)	208 (259)	3,347 (2,644)	205 (282)	16 (39)	0 (0)	3,776 (2,672)
Redhorse sucker	0.0069 (0.0062)	69 (139)	762 (620)	673 (694)	2,263 (3,218)	0 (0)	0 (0)	3,767 (3,353)
Longnose sucker	0.0130 (0.0071)	0 (0)	413 (629)	2,842 (1,248)	3,854 (3,593)	0 (0)	0 (0)	7,109 (3,855)

Appendix 65. Continued:

Species	Total catch per hour	Month						Season
		Jun	Jul	Aug	Sep	Oct	Nov	
Bullhead	0.0003 (0.0004)	29 (58)	54 (73)	0 (0)	97 (197)	0 (0)	0 (0)	180 (218)
Channel catfish	0.0105 (0.0049)	2 (4)	458 (336)	3,816 (1,914)	1,456 (1,813)	0 (0)	0 (0)	5,732 (2,658)
Sturgeon	0.0002 (0.0004)	0 (0)	109 (238)	25 (49)	0 (0)	0 (0)	0 (0)	134 (243)
Gizzard shad	0.0001 (0.0002)	13 (27)	0 (0)	49 (97)	0 (0)	0 (0)	0 (0)	62 (101)
Others	0.0003 (0.0005)	0 (0)	0 (0)	0 (0)	138 (282)	0 (0)	0 (0)	138 (282)
Total catch	0.4354 (0.0749)	59,934 (14,246)	58,588 (8,324)	60,632 (8,095)	40,201 (11,609)	13,900 (24,727)	4,026 (8,240)	237,281 (36,508)
Angler hours	— —	201,633 (34,965)	116,787 (14,067)	112,122 (11,622)	81,996 (13,695)	25,736 (3,192)	6,752 (2,760)	545,026 (41,963)
Angler trips	— —	32,989 (5,747)	24,167 (3,082)	23,882 (3,134)	16,865 (2,719)	7,498 (907)	1,438 (593)	106,839 (7,805)

<sup>1</sup> This fishing area includes 15 square miles of water area in T 2S, R 11–12E; 18 square miles of water area in T 3S, R 11E; 28 square miles of water area in T 4S, R 10–11E; and 14 square miles of water area in T 5S, R 10–11E.