

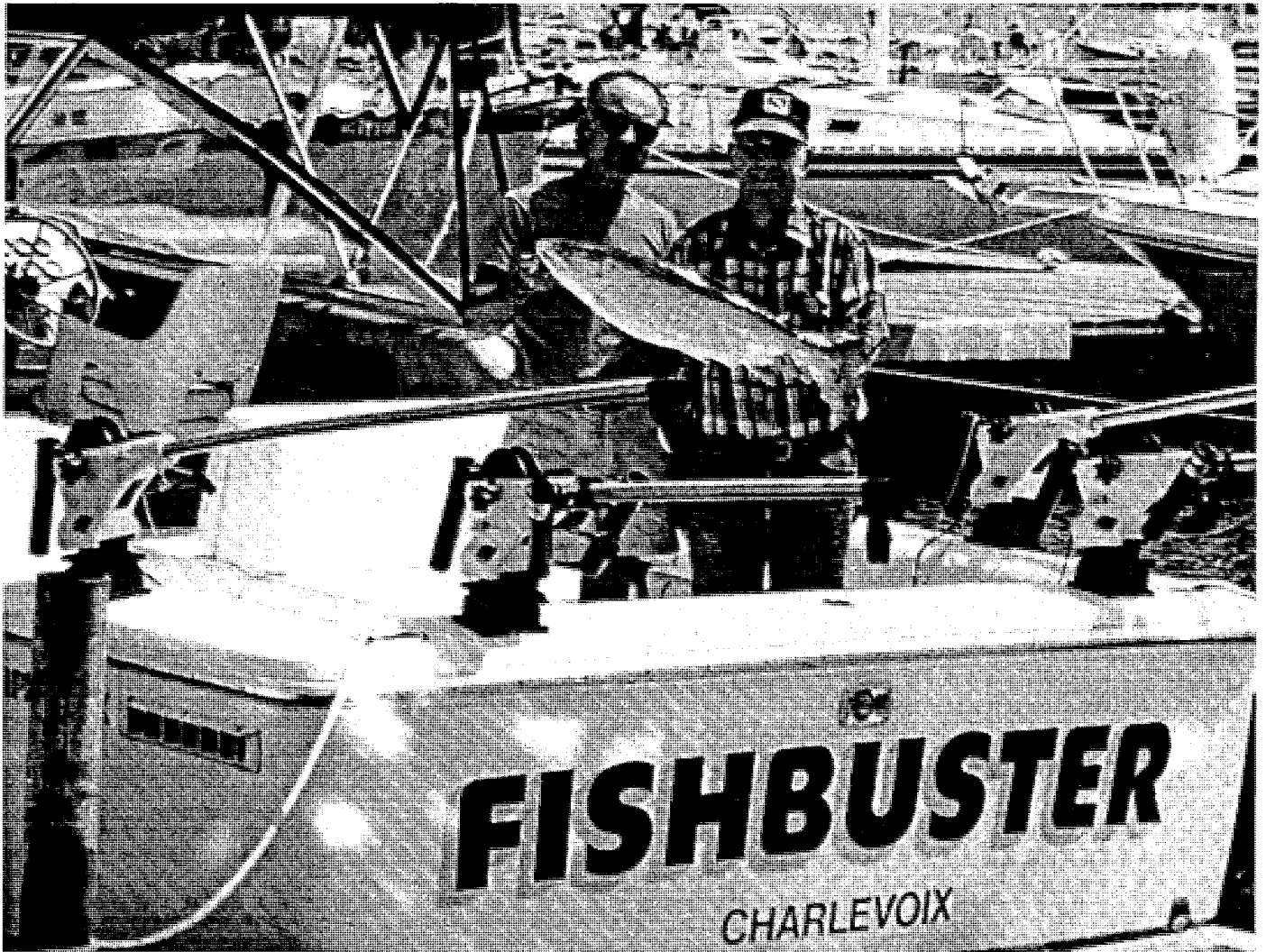
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Sportfishing Catch and Effort from the Michigan Waters of Lakes Michigan, Huron, Erie, and Superior, April 1, 1992-March 31, 1993

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STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

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**Sportfishing Catch and Effort from the Michigan Waters
of Lakes Michigan, Huron, Erie, and Superior,
April 1, 1992 - March 31, 1993**

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Abstract.—Sportfishing catch and effort were sampled on lakes Michigan, Huron, Erie, and Superior from April 1, 1992 through March 31, 1993. The objective of the creel monitoring program is to obtain a continuous record of sport catch, catch rates, and catch composition for the Great Lakes and important anadromous river fisheries. Over 79,000 anglers were interviewed at the completion of their fishing trips. Catch and effort estimates were calculated by month for all areas sampled. It was estimated that anglers spent 5.9 million angler hours in all areas of the Michigan waters of the Great Lakes that were surveyed. Total harvest was estimated to be over 4.3 million fish. Yellow perch were the most abundant species in the sport catch in most sample areas, totaling 3.4 million fish. In addition to yellow perch, sport anglers harvested an estimated 324,000 walleye, 76,000 chinook salmon, 75,000 lake trout, 51,000 rainbow trout, 49,000 coho salmon, and 14,000 brown trout.

Michigan's Great Lakes sport fishery has been monitored with a statewide contact creel survey program since 1983. The objective of the program is to obtain a continuous record of sport catch, catch rates, and catch composition for the Great Lakes and important anadromous river fisheries.

A fundamental requirement for sound management of the Great Lakes fisheries is knowledge of the response of fish stocks to fishing and the contributions of various fish stocks to the fisheries. Success and future value of the Great Lakes and anadromous stream fisheries depends on long-term

consequences of current management. It is essential that management decisions be based on a sound empirical knowledge of the history, current status, and dynamics of fish communities.

Fishing statistics are needed for stock assessment and to facilitate stock identification. Coupled with fish marking studies, these kinds of data can identify Great Lakes and anadromous fish stocks and determine their distribution, movements, and contribution to various sport fisheries. Data collected from this program have been used to develop, test, and improve decision models

which help discern management strategies for Great Lakes fish communities and fisheries.

Study Area and Methods

Michigan Department of Natural Resources (MDNR) Fisheries Division personnel interviewed over 79,000 anglers at the end of their fishing trips during the 1992 license year, April 1, 1992 through March 31, 1993. Approximately 69,000 of these anglers were contacted during the March through October open-water season. A total of 10,300 anglers were interviewed during the winter ice fishing season, January through March 1993.

During the 1992 open-water season, creel surveys were conducted at important ports and angling areas on Lake Michigan from New Buffalo to Harbor Springs and on Big and Little Bays de Noc (Figure 1). Lake Huron creel surveys were conducted from Lexington to Rogers City (Figure 2). A creel survey, focused on the boat fishery, was conducted on Lake Erie from Point Mouillee to the Michigan-Ohio state line (Figure 3). Seven areas were sampled on western and central Lake Superior during the 1992 open-water season, from Black River Harbor to Munising Bay (Figure 4).

Winter ice fisheries were sampled on lakes Michigan, Huron and Superior. On Lake Michigan, Little Bay de Noc was surveyed (Figure 1). On Lake Huron, Saginaw Bay was surveyed (Figure 2). On Lake Superior, Keweenaw, Munising, and Marquette Bays were sampled (Figure 4).

The creel survey used in Michigan is based on a stratified design using simple random sampling within strata. Strata included port fished by month, by weekday-weekend (holiday), and by mode of fishing. Catch and effort estimates were made for each strata and then combined to give monthly and seasonal figures. Each work schedule was specifically tailored for the area being sampled. Both weekend days and three randomly selected weekdays were sampled each week. The entire angling day from dawn

to 1 hour past dusk was covered. This was accomplished by breaking each day into two 8-hour work shifts, then randomly selecting the actual shift to be worked. When an individual was responsible for sampling more than one area, the port or fishing areas were also randomly selected for each day.

Two types of data were collected for each area sampled: angler party interviews for catch rates and angler (or boat) counts for effort. An angler party was defined as one or more anglers who fished together. Angler parties were interviewed at the completion of their fishing trips at various boat launching ramps, marinas, piers, and along the shoreline. Anglers were queried as to their mode of fishing (i.e., boat, shore, pier, open ice, or shanty ice), where they fished, how long they fished, what they fished for, the numbers (by species) of fish they kept, and the number of fishing trips they made or intended to make that day. Additional data were collected on each angler in the party such as age and sex, zip code or county of residence, and the types of angling methods used (casting, still fishing, trolling, etc.). These data were recorded on an angler interview form by census personnel (Figure 5).

Instantaneous and interval counts were used to sample fishing effort. Instantaneous counts were used when all boats or anglers in a sample area could be observed from a given point at one time. Interval counts were used when the sample area was too large to be observed from one point. In this case, the number of boats or anglers passing the observation point during a 30-minute period was used to determine the number of fishermen in the entire sampling area. All counts of boat trailers, pier anglers, shore anglers, open-ice anglers, and ice shanties were instantaneous. However, both instantaneous and interval boat counts were made depending on the sampling area. The type and number of boating access points within the sample area determined the type of boat count used. Interval counts were used in cases where boat access to the open lake was

limited to harbor areas where all boats exited through defined channels.

Most fishing effort counts were done from the ground by creel clerks at randomly selected times. Instantaneous counts made from airplanes of boats, pier, and shore anglers were used only when ground counts were not feasible, such as areas with many access points or restricted visibility. Air flights were used to make fishing effort counts on Saginaw Bay and Lake Erie. Local flight service companies were contracted to make aerial counts. Five flights were made each week at randomly selected starting times--one each weekend day, and one on each of three randomly selected week days. All effort counts, whether accomplished from the ground or air, were recorded on count data forms by census clerks or contract pilots (Figure 6).

Newly hired, seasonal creel clerks were trained on-site by permanent fisheries technicians at the beginning of the field season. Count and interview data forms, completed by both seasonal and permanent personnel, were reviewed throughout the field season at Charlevoix Fisheries Research Station prior to computer entry. The software used for data entry employed range checks on various data fields for each count or interview record that was keyed. In addition, a module of the creel catch estimate software performed a final check of the data before catch estimates were made.

Catch and effort estimates were made for each port or fishing area by month. Standard mathematical formulas for creel census (Ryckman 1981) were used to calculate all estimates. Three measures of fishing effort were calculated: angler hours, angler trips, and angler days. An angler trip is one completed fishing excursion. An angler day is composed of one or more fishing excursions during a 24-hour period. Error bounds for all catch and effort estimates in this report are defined as two standard errors of the mean (2 times the square root of the variance, divided by the number of observations for an estimate) and approximate true 70-95%

confidence limits, depending on sample size. Error bounds for all mean length and weight data are 95% confidence limits.

Statistical significance in the analysis comparing lakewide or port estimates between years is based on two standard error limits. Information from the previous year is contained in Rakoczy (1992a). Also, prior to August 1, 1989, the charter boat mode of fishing was included as part of this study. As a result of legislation in Michigan during 1989, charter boat operators are required to report their clients catch and angling effort monthly to MDNR. Therefore, after that date charter boats were no longer covered by this study. However, in order to make valid year-to-year comparisons, catch and effort reported by charter fishermen were added to the catch and effort estimates generated by this study. All charter boat data used in this report for year-to-year comparisons are from Rakoczy and Rogers (1991a, b), Rakoczy (1992b) and Rakoczy and Svoboda (1993).

Scientific and common names of fish species observed during this study are contained in Table 1. Detailed catch estimates by month, species, and sample area are contained in the appendices.

Results

Lake Michigan

Anglers spent an estimated 2,259,415 ($\pm 129,443$) hours fishing the Michigan waters of Lake Michigan at the 18 areas surveyed during the March 15 through October 31, 1992 open-water season (Table 2). The number of hours fished converts to an estimated 534,182 ($\pm 27,606$) individual angler trips or 481,005 ($\pm 24,888$) angler days. Total angling effort by mode of fishing was 84% boat, 13% pier, and 3% shore.

Total angler effort in 1992 at 10 major sample areas combined decreased 12% as compared to the same period in 1991 (Table 3). Angler effort, after declining approximately 50% since the middle 1980's,

has leveled off around 2.1 million angler hours during the past three seasons. Ludington had the greatest amount of angler activity in 1992 of all the survey sites, with an estimated 324,365 ($\pm 60,353$) angler hours.

The average length of a fishing trip (all modes of fishing) was 4.2 hours. Anglers made approximately 1.1 fishing trips per day. Boat trips were the longest in duration, averaging 4.7 hours. Pier and shore trips averaged 2.8 and 2.7 hours, respectively.

Fishermen caught an estimated 1,895,293 ($\pm 218,744$) fish comprising 31 species during 1992 (Table 2). The bulk of this catch (87%) came from the boat fishery, while pier and shore anglers harvested 11% and 2% of the total catch, respectively (Tables 4, 5, and 6).

The yellow perch was the most numerous species in the catch, making up 88% of all the fish harvested. An estimated 1,671,750 ($\pm 218,202$) yellow perch were harvested by all modes (non-charter) of sportfishing (Table 2). The mean total length of yellow perch kept by Lake Michigan anglers in 1992 was 9.48 (± 0.05) inches. During 1992, 28% of all Lake Michigan angler parties interviewed said their target species was yellow perch. This was an increase of 9% as compared to 1991 and was due in part to the addition of the port of South Haven to the survey program in 1992. The largest perch catch (439,121 \pm 145,012 fish) of all areas sampled in 1992 occurred at St. Joseph (Table 7.)

Yellow perch catch rates at seven Lake Michigan sample areas in 1992 combined increased significantly (63%) compared to 1991 and was the greatest catch rate noted since 1988 (Table 7). Anglers speculated that abnormally warm water temperatures during 1991 caused yellow perch to inhabit deeper waters, making them inaccessible to pier anglers, and harder to locate for boat anglers (Rakoczy 1992a). The greatest catch rate for yellow perch during 1992 was 2.568 (± 0.850) fish per angler hour at South Haven. The greatest changes in catch rates for yellow perch in 1992 compared to 1991 occurred at Muskegon (+188%), St. Joseph (+117%), and Manistee (+116%) (Table 7).

Although yellow perch are important to the Lake Michigan sport fishery, many anglers (46%) seek the various species of salmonines. The percentage of anglers seeking salmonines in 1992 was 9% less than 1991. The Lake Michigan catch of salmonines in the study area was estimated at 152,529 ($\pm 12,415$) fish. The vast majority of this harvest (90%) came from the boat fishery (non-charter) (Table 4). The catch of salmonines was composed of 29% rainbow trout, 23% chinook salmon, 22% coho salmon, 20% lake trout and 6% brown trout. Rainbow trout dominated the catch of salmonines in 1992 for the first time since the inception of the creel survey in 1985. Rainbow trout have become a larger component of the catch of salmonines during the past few seasons. During 1985-86, rainbow trout ranged from 4-5% of the harvest of salmonines to 19-29% during the past two seasons (Rakoczy and Rogers 1987; Rakoczy and Lockwood 1988; Rakoczy 1992a).

The total harvest of salmonines (charter and non-charter) at nine important Lake Michigan fishing areas (index ports) combined decreased 25% in 1992 compared to 1991. Catch rates for all salmonines combined in 1992 was 10.53 (± 0.75) fish per 100 angler hours compared to 13.19 (± 0.97) in 1991. The decrease in salmonines at these ports in 1992 was mainly due to a 42% decrease (8%) in angler effort at these ports compared to 1991 (Tables 8 and 9).

The rainbow trout was the most abundant salmonine in the sport catch. An estimated 43,555 ($\pm 6,547$) rainbow trout were harvested from all Lake Michigan ports sampled during 1992 (Table 2). Sixty-four percent of the harvest was taken during June, July, and August in the boat fishery. This was consistent with data collected during the past four years. However, in 1987, 68% of the harvest came during September and October from pier and shore fisheries (Rakoczy and Rogers 1988). The mean size of rainbow trout in the Lake Michigan sport catch during 1992 was 25.95 (± 0.29) inches or 7.13 (± 0.20) pounds. In general, the catch and catch rate

for rainbow trout has been trending upward since 1986 at the nine index ports (Table 8). The 1992 harvest and catch rate of rainbow at the index ports were virtually unchanged compared to 1991.

Chinook salmon have historically been one of the most important salmonines in the Lake Michigan sport fishery in terms of numbers and weight of fish harvested (Rakoczy and Rogers 1991c). An estimated 34,355 ($\pm 5,747$) chinook salmon were creel by anglers during 1992 at all sample areas combined (Table 2). Biological data collected from the Lake Michigan sport catch during 1992 indicated that their mean size was 25.46 (± 0.60) inches or 8.58 (± 0.55) pounds. The harvest of chinook in 1992 at the nine index ports decreased by 38% in numbers of fish compared to 1991 and was the smallest harvest since 1985 (Table 8). The harvest of chinook salmon has been trending downward since 1987. Catch rates for chinook at these nine areas combined decreased 32% in 1992 compared to 1991 and were significantly lower (79%) than the peak rate noted for 1986 (Table 9).

Biological data collected from the sport fishery since 1985 indicate that the age distribution of chinook salmon in the sport catch has changed markedly. In 1985 and 1986, age-0.3 and age-0.4 chinook salmon combined made up 53 and 71%, respectively, of the sport catch at the nine index ports (Table 10). During the past two seasons (1991-92), these same age groups have only accounted for 27 and 30% of the sport catch. Although the percentage of age-0.1 and age-0.2 chinook salmon in the sport catch has increased since the mid-1980s, their estimated harvest in numbers has not (Table 10). The return of chinook salmon by year class (effort adjusted) at the nine index ports has declined since the mid-1980s (Table 11). The effort adjusted return (per 1,000 fish stocked) of the 1984-85 year classes of chinook salmon throughout their life span in the lake was 20.19 and 20.46, respectively (Table 11). The return of the 1987 and 1988 year classes was 12.02 and 10.79, respectively, which was a

decline of 46% for the 1988 year class compared to the 1984 year class. Decreased survival of Lake Michigan chinook salmon has been attributed to bacterial kidney disease (Nelson and Hnath 1990).

An estimated 33,541 ($\pm 7,087$) coho salmon were harvested in all survey areas combined in 1992 (Table 2). The average size of coho harvested by the sport fishery was 20.64 (± 0.39) inches and 3.72 (± 0.24) pounds. The catch and catch rate for coho at the nine index ports combined increased 18% and 28%, respectively, compared to 1991 (Tables 8 and 9). Historically (1985-91), catch rates for coho salmon varied greatly from year to year. The catch rate noted for 1992 (2.29 \pm 0.43 fish per 100 angler hours) was virtually unchanged compared to the previous 5-year (1987-91) average (Table 9).

A total of 30,688 ($\pm 4,606$) lake trout were harvested from all the ports sampled during 1992 (Table 2). In 1991, lake trout was the most abundant member of the salmonine harvest. Data collected from the sport fishery during 1992 indicated that creel lake trout averaged 26.02 (± 0.27) inches in length and weighed 7.12 (± 0.25) pounds. The harvest and catch rate of lake trout at nine index ports decreased significantly by 46% and 42%, respectively, in 1992 compared to 1991 (Tables 8 and 9). Part of the decline in the lake trout harvest (approximately 8,000 fish) at the nine index ports was due to a new minimum size limit (24 inches) implemented on northern Lake Michigan during June, 1992. The old size limit was 10 inches. The regulation change reduced the lake trout harvest at two of the index ports (west Grand Traverse Bay and Charlevoix) by approximately 50%.

A total of 9,458 ($\pm 2,435$) brown trout with an average size of 19.62 (± 0.48) inches or 4.38 (± 0.39) pounds were estimated to have been caught by Lake Michigan anglers at all survey areas in 1992 (Table 2). The brown trout harvest and catch rate declined significantly by 44% and 39%, respectively, at the nine index ports during 1992 compared to the previous year (Tables 8 and 9). The

catch rate for brown trout (0.54 ± 0.14 fish per 100 angler hours) in 1992 was the lowest point estimate for the entire data series (1985-91).

Lake Huron

A total of 15 sportfishing areas were surveyed on Lake Huron during the 1992 April through October open-water season. During 1992, Lake Huron anglers spent an estimated 2,056,688 ($\pm 114,008$) hours fishing at all areas combined (Table 12). An estimated 452,822 ($\pm 24,982$) angler trips were made during the season or 425,631 ($\pm 23,531$) angler days.

Angler effort by mode of fishing was 91% boat, 6% pier and 3% shore (Tables 13, 14, and 15). The average length of a Lake Huron fishing trip (all modes of fishing) was 4.5 hours. Anglers made approximately 1.1 fishing trips per day. Boat trips were the longest in duration, averaging 4.9 hours. Pier and shore trips averaged 3.2 and 2.1 hours, respectively.

The waters of Saginaw Bay had the greatest concentration of fishing effort (61%) on Lake Huron. Anglers spent an estimated 1,254,998 ($\pm 100,013$) hours, 291,084 ($\pm 22,475$) trips, or 273,325 ($\pm 21,318$) days fishing Saginaw Bay (Table 16). Angler effort on Saginaw Bay during 1992 was virtually unchanged compared to 1991.

Lake Huron anglers harvested an estimated 1,356,411 ($\pm 136,109$) fish comprising 31 species (Table 12). Anglers fishing from boats harvested 89% of all fish. During 1992, 26% of all anglers interviewed on Lake Huron responded that their target species was yellow perch and 40% were seeking the various species of salmonines. On Saginaw Bay, 47% of all anglers interviewed responded that they were fishing for yellow perch while 26% were fishing for walleye.

Yellow perch dominated the sport catch on Lake Huron, making up 87% of all fish harvested. An estimated 1,178,893 ($\pm 135,322$) yellow perch were taken by all

modes of fishing. The average size of yellow perch kept by Lake Huron anglers in 1992 was 8.53 (± 0.07) inches. Most (83%) yellow perch were taken by anglers fishing in Saginaw Bay. The 1992 harvest of yellow perch from Saginaw Bay ($999,594 \pm 128,517$) decreased 28% compared to 1991 (Table 17). The average size of yellow perch kept by Saginaw Bay anglers was 8.11 (± 0.06) inches. The average size of yellow perch kept by Saginaw Bay anglers has increased by 0.73 inches since 1989 (Rakoczy and Rogers 1991a). The catch rate (0.833 ± 0.120 fish per hour) for Saginaw Bay yellow perch in 1992 decreased by 25% compared to 1991. The difference was not significant compared to the 1986-91 average (1.005 ± 0.411).

The walleye have become an important species to the Lake Huron sport fishery. An estimated 69,126 ($\pm 9,003$) walleye were harvested from all areas surveyed (Table 12). Eighty-nine percent of the walleye harvest came from Saginaw Bay (Table 16). The mean size of walleye taken by the Saginaw Bay sport fishery was 21.80 (± 0.41) inches and 4.03 (± 0.24) pounds. The 1992 harvest ($62,760 \pm 8,591$) and catch rate (0.052 ± 0.008) for Saginaw Bay walleye were virtually unchanged compared to 1991 (Table 17).

In addition to yellow perch and walleye, Lake Huron anglers also harvested an estimated 58,958 ($\pm 4,667$) salmonines (Table 12). Although the catch of salmonines was composed of eight species, two species dominated the catch, chinook salmon (64%) and lake trout (20%).

The mean size of chinook salmon harvested by Lake Huron anglers during 1992 was 29.59 (± 0.47) inches and 12.29 (± 0.49) pounds. The estimated harvest of chinook salmon ($36,333 \pm 3,437$) and the catch rate (3.56 ± 0.42 fish per 100 angler hours) at eight Lake Huron index ports during 1992 was little changed compared to 1991 (Tables 18 and 19). In addition, the 1992 catch rate for chinook at these ports was little changed (-13%) compared to the average of the four survey years (Table 19).

Lake Huron anglers harvested an estimated 13,134 ($\pm 2,692$) lake trout from the index ports (Table 18). The mean size of lake trout in the sport catch was 23.00 (± 0.42) inches and 5.12 (± 0.34) pounds. The 1992 lake trout harvest declined (27%) compared to 1991 (Table 18). The estimated catch rate of 1.70 (± 0.38) lake trout per hour 100 angler hours during 1992 was the poorest success rate noted for the Lake Huron index ports since 1986 (Table 19).

During 1992, rainbow trout and brown trout made relatively limited contributions to the Lake Huron sport catch. The harvest ($4,408 \pm 1,061$) and catch rate (0.43 ± 0.10 fish per 100 angler hours) of rainbow trout increased 36% and 34%, respectively, compared to 1991 (Tables 18 and 19). In general, the rainbow harvest and catch rate has been trending upward during the past three survey years (1988, 1991-92). The 1992 brown trout harvest ($3,262 \pm 555$) and catch rate (0.32 ± 0.05 fish per 100 angler hours) at the index ports increased significantly by 124 and 129% respectively compared to 1991 (Tables 18 and 19).

Lake Erie

Approximately 30 miles of Lake Erie shoreline, from Point Mouillee to the Michigan-Ohio state line, were surveyed in 1992. Anglers spent an estimated 792,737 ($\pm 120,008$) hours fishing from boats in the survey area (Table 20). A total of 150,541 ($\pm 23,168$) angler trips or 150,263 ($\pm 23,142$) angler days were spent in the area. Total angler effort was virtually unchanged in 1992 compared to 1991 (Table 21). Angler effort has declined (82%) significantly on Lake Erie since 1988. The average length of a boat fishing trip on Lake Erie was 5.3 hours. The average angler made 1.0 trips per day.

Boat anglers harvested an estimated 530,032 ($\pm 86,388$) fish comprising 17 species (Table 20). Eighty-one percent of all Lake Erie anglers interviewed responded that they were target fishing for walleye, while 11%

said they were seeking yellow perch. Walleye made up 41% of the total catch with an estimated harvest of 215,599 ($\pm 44,354$) fish (Table 20). The mean size of walleye in the catch was 17.47 (± 0.31) inches or 2.02 (± 0.12) pounds. The walleye harvest in 1992 increased significantly (89%) compared to 1991 (Table 21). The walleye harvest in 1992 increased for the first time compared to the previous year since 1988. The majority of the 1991 walleye harvest (67%) was taken during June and July. This was consistent with previous years (1989-90) when most (68-82%) of the harvest also occurred during these months (Rakoczy 1992a). The catch rate for walleye (0.316 ± 0.056) in 1992 also increased significantly (86%) compared to 1991 (Table 21).

Lake Erie anglers harvested an estimated 236,908 ($\pm 72,114$) yellow perch during 1992. The mean total length of yellow perch kept by Lake Erie anglers was 7.97 (± 0.07) inches. The yellow perch harvest during the period May through September 1992 decreased 48% compared to the same period in 1991 (Table 21). The decline was due to a similar decrease (48%) in the catch rate for yellow perch in 1992 compared to 1991.

The catch and effort estimates for yellow perch and walleye are an important component of interagency harvest quota calculations for Lake Erie. These data are used jointly with creel estimates from Ontario, Canada, New York, and Ohio on an annual basis in an effort to prevent overharvest of these two important species.

In addition to yellow perch and walleye, an estimated 31,816 ($\pm 14,481$) white bass, 22,989 ($\pm 7,643$) channel catfish, and 11,926 ($\pm 3,970$) white perch were harvested by Lake Erie anglers. The channel catfish harvest is most probably underestimated due to the fact that most fishing for this species occurs throughout the night. No creel sampling took place during the period 1 hour after dusk to 6 a.m.

Lake Superior

Anglers spent an estimated 199,638 ($\pm 15,093$) hours fishing the seven survey areas on western and central Lake Superior (Table 22). This translates to 51,171 ($\pm 3,667$) individual angler trips, or 47,101 ($\pm 3,601$) angler days. Angler effort was virtually unchanged compared to 1991. Marquette had the greatest amount of angler activity of all Lake Superior sample areas, accounting for 40% of the total effort. The average length of a Lake Superior fishing trip (all modes of fishing) was 3.9 hours and anglers made 1.1 fishing trips per day.

Lake Superior anglers harvested an estimated 57,365 ($\pm 12,227$) fish comprising 14 species (Table 22). Most anglers (74%) interviewed on Lake Superior said they were fishing for the various species of salmonines. Lake trout made up 66% of the salmonine harvest. The remainder of the salmonine catch was made up mainly of coho salmon (21%) and chinook salmon (7%), with small numbers of rainbow trout, splake, and brown trout. A few Atlantic salmon and pink salmon were also noted in the catch.

The lake trout harvest for all survey areas combined was estimated at 24,250 ($\pm 2,328$) fish and did not differ significantly from 1991 (Table 22). Lake trout averaged 22.79 (± 0.30) inches and 4.24 (± 0.20) pounds. The catch rate for lake trout at all survey areas combined in 1992 was 12.15 (± 1.48) fish per hour 100 angler hours compared to 14.30 (± 1.90) for these same areas in 1991.

Lake Superior anglers also caught an estimated 7,746 ($\pm 1,216$) coho salmon and 2,612 (± 530) chinook salmon in 1991 (Table 22). The 1992 catch and catch rate for coho salmon decreased significantly by 38% and 45%, respectively compared to 1991. The 1992 chinook salmon catch and catch rate did not change significantly compared to 1991.

In addition to salmonines, Lake Superior anglers caught an estimated 1,703 (± 678) walleye in 1992 compared to 3,977 ($\pm 1,107$) in 1991. All of the walleye harvest came from the port of Ontonagon.

Winter Ice Fisheries

Catch and sportfishing effort were surveyed on various areas of lakes Superior, Huron and Michigan during the winter months of 1993. The Saginaw Bay ice fishery is the largest and most important ice fishery, in terms of catch and effort, on Michigan's waters of the Great Lakes (Rakoczy and Rogers 1988). During 1993, anglers spent an estimated 311,648 ($\pm 29,040$) hours fishing the Bay's waters (Table 23). This amounted to an estimated 79,404 ($\pm 7,284$) angler trips, or 71,011 ($\pm 6,521$) angler days. The average length of an ice fishing trip on Saginaw Bay was 3.9 hours and anglers made an average of 1.1 trips per day.

Sport catch and effort for winter ice fisheries are largely dependent upon the duration of safe ice conditions each season. Mild winter conditions limited angler access to the ice on Saginaw Bay during 1988 and 1991. In 1984 and 1987, angler effort was twice the levels noted for 1988 and 1991. During those winters, solid ice conditions existed during the entire survey period (January-March) (Rakoczy 1992a). Angler effort for the Saginaw Bay ice fishery during 1993 did not change significantly compared to 1992 (Table 24).

Saginaw Bay ice anglers caught an estimated 326,439 ($\pm 50,971$) fish representing 13 species (Table 23). Most (67%) angler parties interviewed on Saginaw Bay during the 1993 ice fishery responded that they were fishing for yellow perch. The percentage of angler parties responding that their target species was yellow perch declined by 18% compared to 1992. Yellow perch made up 94% of all fish harvested. The total harvest and catch rate for yellow perch in 1993 declined significantly compared to 1992 (Table 24). The harvest and catch rate for yellow perch during 1993 each decreased by over 60% compared to 1992. The area from Sebawaing to Sand Point had the greatest estimated catch (136,669 $\pm 32,797$) and catch rate (1.786 ± 0.505) for yellow perch of all the Saginaw Bay survey sites. The catch (-62%)

and catch rate (-46%) in this area declined significantly compared to 1992.

Twenty-one percent of all angler parties interviewed on Saginaw Bay during the winter ice fishery indicated that their target species were walleye. This was an increase of 17 % compared to the 1992 season. The 1993 catch and catch rate for walleye increased significantly compared to 1992. The 1993 walleye catch increased 5.8 fold while the catch rate increased 6.4 fold compared to 1992 (Table 24).

Little Bay de Noc is the largest winter ice fishery on Lake Michigan. Angler effort for the 1993 winter ice fishery was estimated at 256,842 ($\pm 26,099$) hours and were virtually unchanged compared to 1992 (Table 25). Anglers harvested an estimated 36,902 ($\pm 9,224$) yellow perch and 5,275 ($\pm 2,099$) walleye from Little Bay de Noc. Both the 1992 catch and catch rate for yellow perch decreased significantly (85%) compared to 1992. The 1993 walleye harvest and catch rate did not change significantly compared to 1992 (Table 25).

Three areas were surveyed on Lake Superior during the winter of 1993, Keweenaw Bay, Munising Bay, and Marquette. On Keweenaw Bay anglers spent an estimated 64,148 ($\pm 8,639$) hours fishing through the ice (Table 26). Angler effort in 1993 increased (86%) significantly compared to 1992. Mild winter weather resulted in poor ice conditions during a portion of the 1992 survey period, limiting angler access to the ice (Rakoczy 1992a).

Keweenaw Bay anglers caught an estimated 2,748 (± 658) lake trout and 5,374 ($\pm 1,071$) siscowet lake trout during the winter of 1993. Siscowet lake trout, also known as fat trout, made up 66% of the total lake trout catch on Keweenaw Bay in 1993 compared to 69% in 1991 and 41% in 1992 (Table 26). The catch and catch rate of siscowets increased significantly on Keweenaw Bay compare to 1992. For lake trout (lean), the 1993 catch was virtually unchanged, but the catch rate decreased 43% compared to 1992. This change however, was not significant.

In addition to lake trout, Keweenaw Bay anglers harvested an estimated 3,496 (± 922) coho salmon and 965 (± 472) chinook salmon during the 1993 ice fishery. The 1993 coho catch increased significantly over 5 fold compared to 1992. Historically (1988-92), the winter coho harvest has fluctuated widely (Table 26). The 1993 chinook salmon catch was the largest noted for the data series (1988-93) (Table 26).

The winter ice fishery at Munising Bay (28,998 \pm 8,752 hours) was similar in size, in terms of angler effort, to the 1992 season. Ice anglers on Munising Bay harvested an estimated 12,319 ($\pm 5,184$) rainbow smelt, 1,771 ($\pm 1,173$) lake whitefish, and 3,034 (± 927) coho salmon among 11 species which were observed in the catch. At Marquette, ice fishing effort was estimated at 3,388 (± 676) angler hours and the catch consisted mainly of lake herring (822 \pm 629) and coho salmon (463 \pm 203).

Summary

During the 1992 license year anglers spent an estimated 5.9 million angler hours fishing in the Michigan waters of the Great Lakes that were surveyed. This accounted for an estimated 1.4 million individual fishing trips and 1.3 million angler days. Total catch was estimated to be over 4.3 million fish. Yellow perch were the most abundant species in the sport catch in most sample areas. The yellow perch catch for all areas surveyed was estimated at 3.4 million fish. In addition to yellow perch, sport anglers harvested an estimated 324,000 walleye, 76,000 chinook salmon, 75,000 lake trout, 51,000 rainbow trout, 49,000 coho salmon, and 14,000 brown trout.

The catch of Lake Michigan salmonines was composed of 29% rainbow trout, 23% chinook salmon, 22% coho salmon, 20% lake trout and 6% brown trout. Rainbow trout dominated the catch of Lake Michigan salmonines in 1992 for the first year since the inception of the creel survey program (1985).

The total harvest of salmonines (charter and non-charter) at nine important Lake Michigan fishing areas (index ports) combined decreased 25% in 1992 compared to 1991. The decrease in the catch of salmonines at these ports in 1992 was mainly due to a 42% decrease in catch rates for lake trout and a slight decrease (8%) in angler effort at these ports compared to 1991.

The waters of Saginaw Bay had the greatest concentration of fishing effort (61%) on Lake Huron. Angler effort on Saginaw Bay during 1992 was virtually unchanged compared to 1991. The 1992 harvest and catch rate of yellow perch from Saginaw Bay decreased compared to 1991. The harvest and catch rate of walleye from Saginaw Bay was virtually unchanged compared to 1991. The Lake Huron catch of salmonines was dominated by two species, chinook salmon (64%) and lake trout (20%).

The 1992 walleye harvest on Lake Erie increased significantly by 89% compared to 1991. The walleye harvest increased in 1992 for the first time compared to the previous year on Lake Erie since 1988. The yellow perch harvest on Lake Erie during 1992 decreased (48%) compared to 1991. The decrease was due to a similar (48%) decline in catch rates for this species.

Acknowledgments

The authors wish to thank the staffs of the fisheries districts and research stations who participated in the census program. These field units did the day to day work of angler inter-views, fishing pressure counts, and supervision of seasonal workers. Evelyn Davis keyed the data. Special thanks to Kelley Smith who wrote the computer programs for the calculation of the catch and effort estimates.

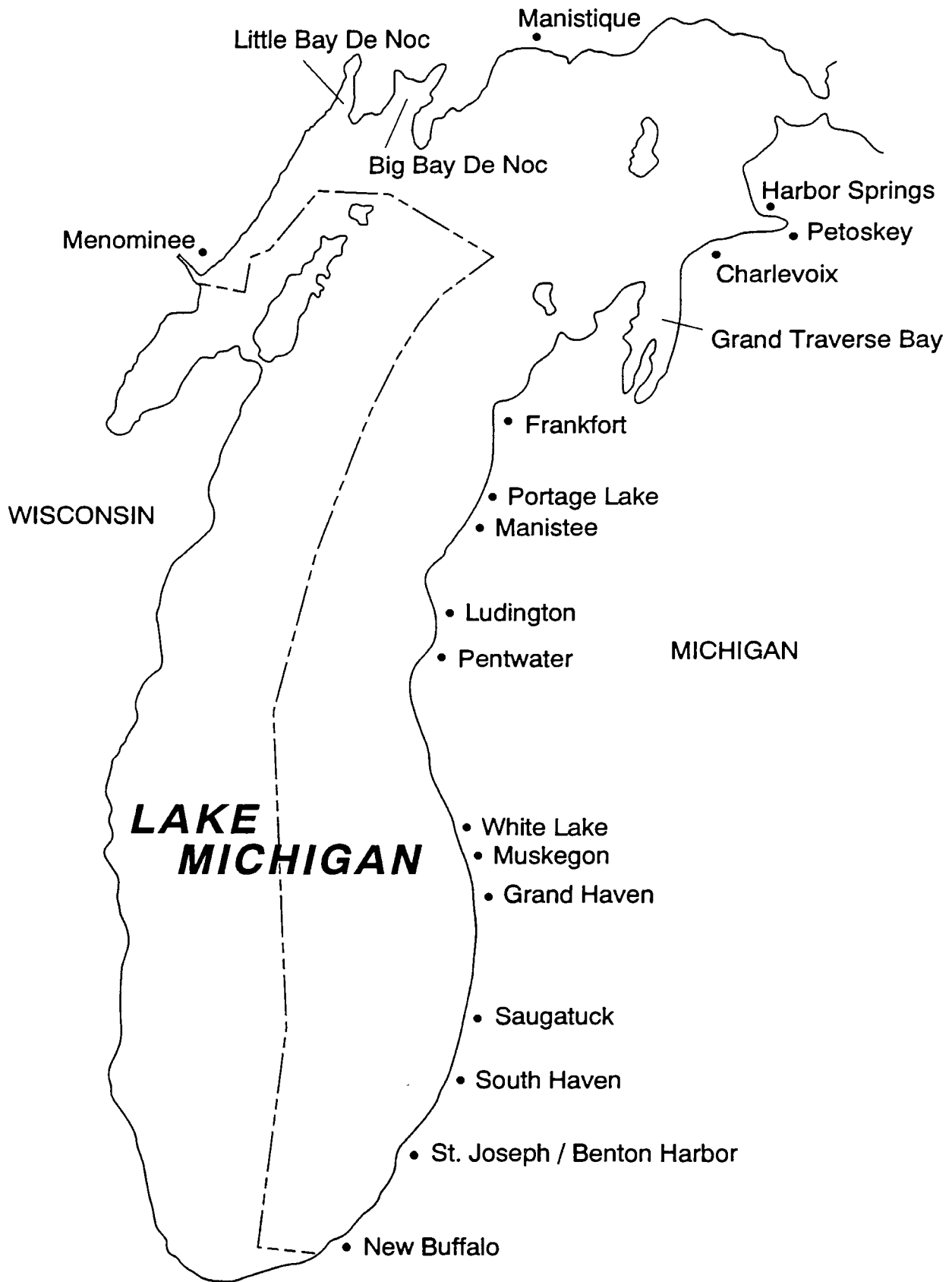


Figure 1.—Lake Michigan survey area.



Figure 2.—Lake Huron survey area.

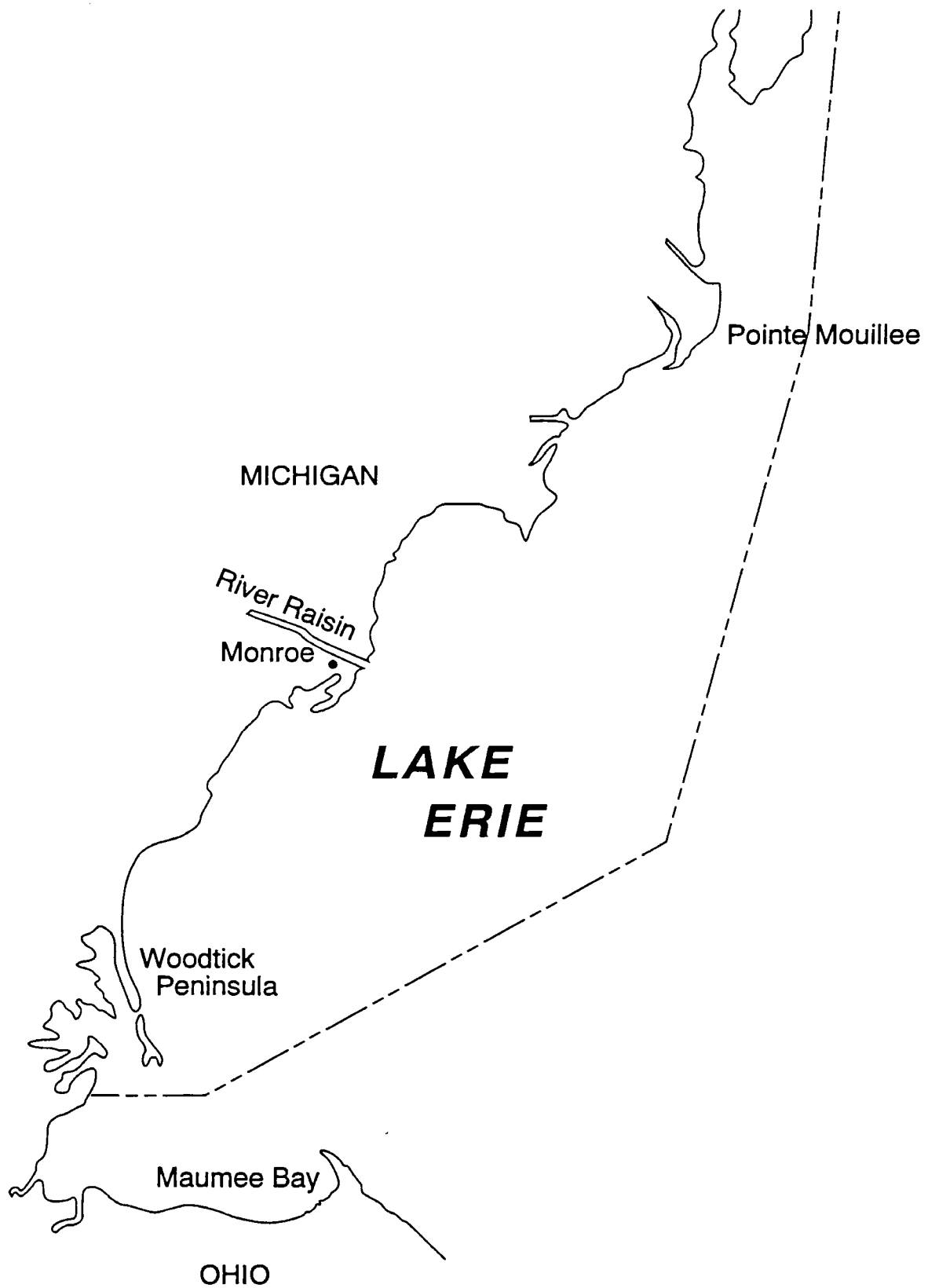


Figure 3.—Lake Erie survey area.

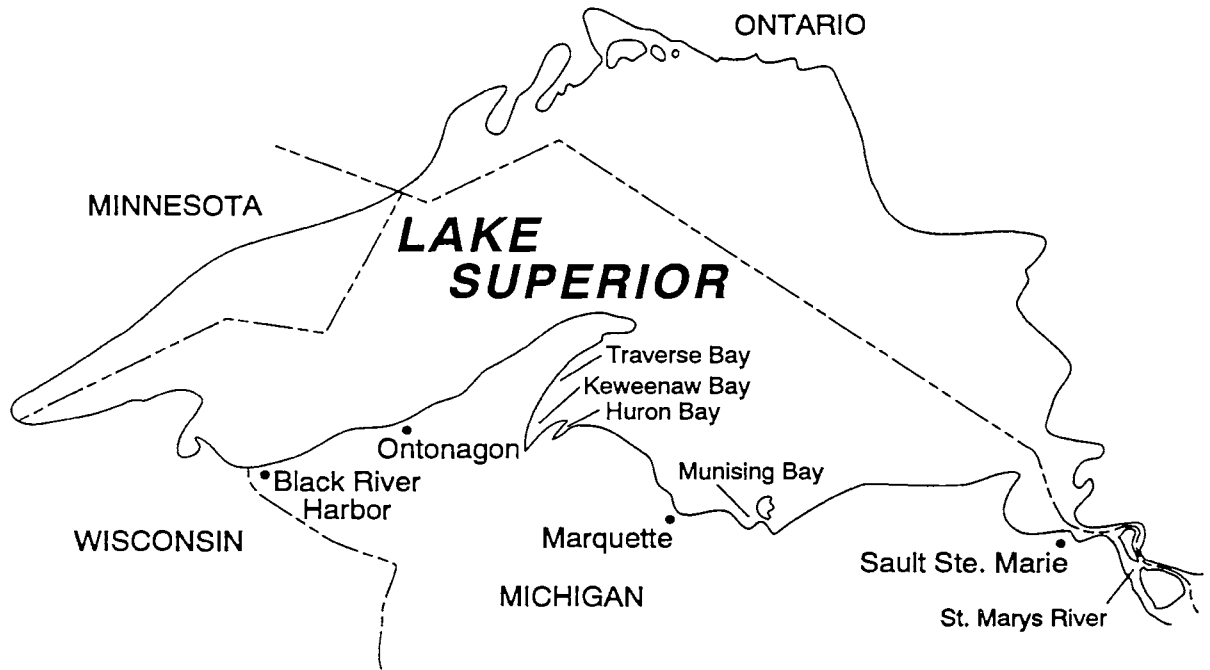


Figure 4.—Lake Superior survey area.

ANGLER PARTY INTERVIEW FORM

Project # : _____

Unit : _____

Soc. Sec. # : _____ - _____ - _____

Date : _____/_____/_____

Seq # : _____

Interview site : _____

Site Name : _____

Fishing site : _____

Site Name : _____

Fishery type		Mode of fishing		
<input type="checkbox"/> Gt Lk	<input type="checkbox"/> Anad	<input type="checkbox"/> Boat	<input type="checkbox"/> Shore	<input type="checkbox"/> Open ice
<input type="checkbox"/> In Lk	<input type="checkbox"/> In St	<input type="checkbox"/> Charter	<input type="checkbox"/> Non - f. shore	<input type="checkbox"/> Non - f. open ice
		<input type="checkbox"/> Non - f. boat	<input type="checkbox"/> Pier / dock	<input type="checkbox"/> Shanty ice
			<input type="checkbox"/> Non - f. pier / dock	

Start date : _____/_____/_____ Day of week : _____

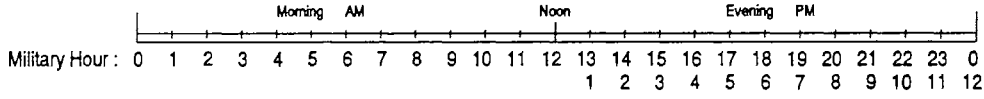
1 = Monday	5 = Friday
2 = Tuesday	6 = Saturday
3 = Wednesday	7 = Sunday
4 = Thursday	8 = Holiday

End time : _____

Start time : _____

Hrs fished : _____

Comp. trip : Y N



Ang #	ler	tps	Sex	Age	Zip code	Residence (county / state)	Cnty code	Fishing methods							
								cast	stil	trol	fly	drif	spea	dip	snag
1								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Use this side or use this side, not both!

Target sp. : _____	<input type="checkbox"/> Anything	<input type="checkbox"/> Salmon	<input type="checkbox"/> Trout	<input type="checkbox"/> Salmon & Trout	<input type="checkbox"/> Walleye & Perch
code : _____	<input type="checkbox"/> Bass	<input type="checkbox"/> Panfish	<input type="checkbox"/> Bass & Bluegill	<input type="checkbox"/> Pike & Bass	<input type="checkbox"/> Pike & Perch

Catch data

Code	Species	# kept	Code	Species	# kept	Code	Species	# kept
ATL	Atlantic salmon	_____	MUS	Muskellunge	_____	BUF	Buffalo (spp)	_____
BKT	Brook trout	_____	TMU	Tiger musky	_____	LNS	Longnose sucker	_____
BNT	Brown trout	_____	BCR	Black crappie	_____	QIL	Quillback	_____
CHS	Chinook salmon	_____	BLG	Bluegill	_____	RHS	Redhorse (spp)	_____
COH	Coho salmon	_____	GSF	Green sunfish	_____	CWS	White sucker	_____
LHR	Lake herring	_____	LMB	Largemouth bass	_____	BOW	Bowfin	_____
LAT	Lake trout	_____	LSF	Longear sunfish	_____	BUR	Burbot	_____
LWF	Lake whitefish	_____	OSF	Orange. sunfish	_____	DRU	Freshwater drum	_____
PKS	Pink salmon	_____	PSF	Pumpkinseed	_____	GAR	Gar (spp)	_____
RBT	Rainbow trout	_____	RSF	Redear sunfish	_____	GZS	Gizzard shad	_____
RWF	Round whitefish	_____	RKB	Rockbass	_____	MOO	Mooneye	_____
SPL	Splake	_____	SMB	Smallmouth bass	_____	STR	Sturgeon	_____
SMT	Rainbow smelt	_____	WAR	Warmouth	_____	OTH	Other	_____
SAU	Sauger	_____	WCR	White crappie	_____			_____
WAE	Walleye	_____	BLB	Black bullhead	_____			_____
YEP	Yellow perch	_____	BRB	Brown bullhead	_____			_____
WHB	White bass	_____	CCF	Channel catfish	_____			_____
WHP	White perch	_____	YLB	Yellow bullhead	_____			_____
NOP	Northern pike	_____	CAR	Carp	_____			_____

Figure 5.—Angler party interview form.

Table 1.—List of common and scientific names of fish observed in study.

Common name	Scientific Name
Rainbow smelt	<i>Osmerus mordax</i>
Northern pike	<i>Esox lucius</i>
Black bullhead	<i>Ictalurus melas</i>
Yellow bullhead	<i>Ictalurus natalis</i>
Brown bullhead	<i>Ictalurus nebulosus</i>
Channel catfish	<i>Ictalurus punctatus</i>
Burbot	<i>Lota lota</i>
White perch	<i>Morone americana</i>
White bass	<i>Morone chrysops</i>
Freshwater drum	<i>Aplodinotus grunniens</i>
Lake herring	<i>Coregonus artedii</i>
Lake whitefish	<i>Coregonus clupeaformis</i>
Round whitefish	<i>Prosopium cylindraceum</i>
Chinook salmon	<i>Oncorhynchus tshawytscha</i>
Coho salmon	<i>Oncorhynchus kisutch</i>
Pink salmon	<i>Oncorhynchus gorbuscha</i>
Rainbow trout	<i>Oncorhynchus mykiss</i>
Atlantic salmon	<i>Salmo salar</i>
Brown trout	<i>Salmo trutta</i>
Brook trout	<i>Salvelinus fontinalis</i>
Lake trout	<i>Salvelinus namaycush</i>
Splake	<i>S. fontinalis x S. namaycush</i>
White sucker	<i>Catostomus commersoni</i>
Redhorses	<i>Moxostoma spp.</i>
Rock bass	<i>Ambloplites rupestris</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Bluegill	<i>Lepomis macrochirus</i>
Redear sunfish	<i>Lepomis microlophus</i>
Smallmouth bass	<i>Micropterus dolomieu</i>
Largemouth bass	<i>Micropterus salmoides</i>
White crappie	<i>Pomoxis annularis</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
Yellow perch	<i>Perca flavescens</i>
Walleye	<i>Stizostedion vitreum</i>

Table 2.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Lake Michigan, by all modes of sportfishing, at all survey areas combined (18), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	35 (58)	0 (0)	6 (14)	0 (0)	41 (60)
Coho salmon	0.0148 (0.0032)	1,008 (1,505)	10,769 (5,708)	5,851 (2,159)	1,972 (1,287)	2,839 (1,448)	8,499 (2,351)	2,146 (1,165)	457 (280)	33,541 (7,087)
Chinook salmon	0.0152 (0.0027)	0 (0)	1,752 (1,786)	2,406 (1,871)	765 (840)	6,141 (2,252)	18,568 (4,289)	4,119 (1,441)	604 (299)	34,355 (5,747)
Rainbow trout	0.0193 (0.0031)	6 (13)	1,052 (468)	2,069 (1,120)	6,199 (2,392)	10,482 (3,513)	14,326 (3,536)	6,044 (3,193)	3,377 (794)	43,555 (6,547)
Atlantic salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	282 (583)	26 (53)	1 (2)	0 (0)	309 (585)
Brown trout	0.0042 (0.0011)	493 (463)	3,217 (1,455)	1,499 (1,060)	1,042 (1,143)	1,618 (897)	1,209 (534)	142 (208)	238 (180)	9,458 (2,435)
Brook trout	0.0001 (0.0002)	0 (0)	0 (0)	287 (633)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	287 (633)
Lake trout	0.0136 (0.0022)	0 (0)	0 (0)	6,477 (1,899)	4,261 (1,387)	11,809 (3,410)	8,018 (2,009)	123 (140)	0 (0)	30,688 (4,606)
Splake	0.0001 (0.0001)	0 (0)	34 (69)	110 (237)	45 (91)	106 (218)	0 (0)	0 (0)	0 (0)	295 (342)
Rainbow smelt	0.0020 (0.0015)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	68 (93)	4,347 (3,352)	4,415 (3,353)
Northern pike	0.0005 (0.0003)	0 (0)	0 (0)	81 (98)	64 (130)	138 (214)	550 (559)	188 (206)	57 (83)	1,078 (659)
White sucker	0.0002 (0.0002)	0 (0)	40 (59)	162 (301)	144 (233)	88 (107)	0 (0)	0 (0)	58 (70)	492 (406)
Redhorses	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	5 (10)
Yellow bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	19 (40)	0 (0)	0 (0)	19 (40)
Brown bullhead	0.0004 (0.0006)	0 (0)	0 (0)	33 (67)	84 (139)	811 (1,489)	0 (0)	0 (0)	0 (0)	928 (1,497)
Channel catfish	0.0006 (0.0003)	0 (0)	0 (0)	213 (173)	514 (482)	229 (180)	370 (374)	46 (54)	62 (93)	1,434 (668)
White perch	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	56 (121)	25 (51)	0 (0)	81 (131)
White bass	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	24 (49)	0 (0)	40 (82)	0 (0)	0 (0)	64 (96)
Rockbass	0.0020 (0.0008)	0 (0)	0 (0)	485 (728)	1,177 (822)	1,419 (1,007)	1,271 (1,165)	64 (94)	107 (179)	4,523 (1,902)

Table 2.—Continued:

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Pumpkinseed	0.0009 (0.0008)	0 (0)	0 (0)	648 (1,197)	497 (1,027)	306 (568)	603 (521)	13 (25)	0 (0)	2,067 (1,756)
Bluegill	0.0000 (0.0000)	0 (0)	0 (0)	40 (82)	18 (36)	5 (11)	49 (87)	0 (0)	0 (0)	112 (125)
Smallmouth bass	0.0091 (0.0019)	0 (0)	0 (0)	4,111 (1,918)	7,224 (2,587)	4,663 (2,037)	2,440 (1,426)	1,998 (1,126)	192 (293)	20,628 (4,232)
Largemouth bass	0.0004 (0.0002)	0 (0)	0 (0)	290 (326)	280 (232)	238 (342)	82 (113)	37 (66)	0 (0)	927 (542)
White crappie	0.0005 (0.0005)	0 (0)	82 (172)	260 (377)	314 (633)	0 (0)	347 (748)	0 (0)	21 (44)	1,024 (1,065)
Black crappie	0.0004 (0.0004)	0 (0)	0 (0)	570 (706)	39 (79)	147 (195)	61 (125)	10 (20)	0 (0)	827 (747)
Yellow perch	0.7399 (0.1055)	0 (0)	43,400 (27,204)	201,272 (54,385)	521,191 (139,808)	480,632 (128,701)	352,556 (83,132)	60,782 (29,539)	11,917 (4,564)	1,671,750 (218,202)
Walleye	0.0083 (0.0023)	0 (0)	0 (0)	8,667 (4,249)	616 (478)	977 (606)	3,817 (1,953)	1,649 (551)	2,952 (1,600)	18,678 (5,033)
Freshwater drum	0.0005 (0.0003)	0 (0)	192 (389)	76 (96)	37 (75)	544 (530)	234 (224)	14 (28)	0 (0)	1,097 (706)
Lake whitefish	0.0022 (0.0013)	23 (34)	123 (111)	307 (418)	137 (161)	565 (674)	3,613 (2,895)	13 (26)	220 (237)	5,001 (3,018)
Round whitefish	0.0029 (0.0010)	0 (0)	730 (485)	26 (43)	74 (89)	22 (45)	107 (176)	702 (759)	4,791 (2,045)	6,452 (2,244)
Burbot	0.0003 (0.0005)	0 (0)	31 (48)	510 (927)	0 (0)	54 (69)	0 (0)	0 (0)	0 (0)	595 (931)
Other	0.0003 (0.0002)	0 (0)	0 (0)	182 (317)	203 (239)	36 (52)	95 (114)	0 (0)	51 (103)	567 (429)
Total	0.8388 (0.1081)	1,530 (1,575)	61,422 (27,903)	236,632 (54,755)	546,926 (139,883)	524,186 (128,862)	416,956 (83,479)	78,190 (29,807)	29,451 (6,312)	1,895,293 (218,744)
Angler hours		6,405 (2,331)	112,118 (21,423)	309,958 (36,472)	391,290 (44,194)	487,627 (72,992)	648,712 (79,103)	192,935 (33,394)	110,370 (17,535)	2,259,415 (129,443)
Angler trips		1,522 (600)	27,260 (4,237)	73,395 (8,529)	92,505 (9,418)	117,568 (15,262)	148,355 (17,263)	45,423 (6,413)	28,154 (3,202)	534,182 (27,606)
Angler days		1,503 (601)	24,412 (4,154)	64,260 (7,487)	85,705 (8,852)	108,064 (14,061)	131,877 (15,096)	41,127 (5,751)	24,057 (2,948)	481,005 (24,888)

Table 3.—Estimated angler (charter and non-charter) effort (hours) at ten Lake Michigan survey areas, April through October, 1985-92. Bounds on the error of estimation in parentheses.

Area	1985	1986	1987	1988	1989	1990	1991	1992
New Buffalo	270,897 (45,486)	481,717 (151,319)	151,089 (92,752)	268,490 (72,843)	229,668 (85,620)	120,676 (30,285)	117,750 (84,716)	113,046 (44,127)
St. Joseph	834,003 (116,076)	607,060 (128,426)	369,500 (93,567)	424,635 (75,266)	440,627 (57,896)	292,064 (49,378)	388,867 (46,759)	322,592 (47,081)
Grand Haven	586,641 (66,939)	700,543 (152,499)	759,713 (145,251)	428,996 (121,822)	225,797 (37,108)	246,367 (44,054)	241,264 (40,106)	146,989 (16,517)
Muskegon	508,738 (114,646)	319,636 (53,425)	340,095 (73,750)	230,296 (58,704)	164,664 (35,554)	143,895 (38,653)	103,767 (31,851)	174,407 (32,796)
Ludington	714,442 (151,419)	833,763 (258,924)	614,485 (169,613)	376,995 (117,169)	442,578 ^d (85,069)	287,517 (47,285)	304,735 (70,738)	324,365 (60,353)
Manistee	629,126 (96,422)	681,144 (141,842)	509,415 (125,973)	435,687 (102,153)	283,544 (51,078)	222,637 (54,872)	235,056 (45,281)	239,396 (56,783)
Frankfort	322,122 (49,044)	593,406 (192,736)	547,140 (193,979)	262,501 (58,305)	365,263 (176,322)	279,720 (80,854)	250,786 (63,228)	252,712 (53,490)
Grand Traverse Bay ^a	466,505 (26,749)	335,002 (24,912)	284,478 (22,721)	262,402 (17,127)	260,728 (20,770)	191,900 (11,149)	223,139 (12,211)	191,459 (8,828)
Charlevoix	155,168 (35,350)	100,014 (24,447)	90,043 (12,480)	62,287 ^c (12,761)	64,042 ^c (12,003)	65,906 ^c (11,442)	48,529 ^c (8,453)	57,028 ^c (5,676)
Little Bay de Noc ^b	158,157 (21,126)	239,073 (21,787)	154,421 (16,300)	157,723 (19,726)	237,044 ^d (67,741)	316,145 (36,008)	377,499 (32,508)	251,902 (35,557)
Total	4,645,799 (264,969)	4,891,358 (437,609)	3,820,379 (356,508)	2,922,773 (240,138)	2,713,955 (243,796)	2,166,827 (141,867)	2,351,392 (155,934)	2,073,896 (128,898)

^a Includes the east and west arms of Grand Traverse Bay and the port of Elk Rapids.

^b Includes the Ford River access site.

^c May through September.

^d May through October.

Table 4.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Michigan boat fishery (non-charter) at all survey areas combined (18), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	35 (58)	0 (0)	6 (14)	0 (0)	41 (60)
Coho salmon	0.0160 (0.0039)	862 (1,501)	8,629 (5,661)	5,494 (2,149)	1,944 (1,286)	2,839 (1,448)	8,246 (2,342)	1,922 (1,150)	399 (267)	30,335 (7,039)
Chinook salmon	0.0171 (0.0032)	0 (0)	1,405 (1,771)	2,357 (1,869)	742 (839)	6,073 (2,249)	18,331 (4,285)	3,001 (1,399)	457 (272)	32,366 (5,726)
Rainbow trout	0.0193 (0.0036)	0 (0)	283 (340)	1,584 (1,083)	3,892 (2,158)	10,021 (3,500)	14,092 (3,528)	5,490 (3,148)	1,145 (552)	36,507 (6,392)
Atlantic salmon	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	282 (583)	26 (53)	0 (0)	0 (0)	308 (585)
Brown trout	0.0039 (0.0013)	304 (452)	2,494 (1,419)	1,209 (1,035)	853 (1,115)	1,382 (845)	956 (498)	3 (11)	121 (152)	7,322 (2,349)
Brook trout	0.0002 (0.0004)	0 (0)	0 (0)	287 (633)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	287 (633)
Lake trout	0.0162 (0.0027)	0 (0)	0 (0)	6,477 (1,899)	4,219 (1,384)	11,764 (3,408)	8,018 (2,009)	123 (140)	0 (0)	30,601 (4,603)
Splake	0.0001 (0.0001)	0 (0)	0 (0)	110 (237)	45 (91)	106 (218)	0 (0)	0 (0)	0 (0)	261 (335)
Rainbow smelt	0.0007 (0.0005)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	68 (93)	1,207 (938)	1,275 (943)
Northern pike	0.0006 (0.0004)	0 (0)	0 (0)	81 (98)	64 (130)	138 (214)	550 (559)	188 (206)	57 (83)	1,078 (659)
White sucker	0.0000 (0.0000)	0 (0)	7 (16)	15 (31)	30 (48)	19 (40)	0 (0)	0 (0)	0 (0)	71 (72)
Redhorses	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	5 (10)
Yellow bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	19 (40)	0 (0)	0 (0)	19 (40)
Brown bullhead	0.0001 (0.0001)	0 (0)	0 (0)	33 (67)	84 (139)	0 (0)	0 (0)	0 (0)	0 (0)	117 (154)
Channel catfish	0.0002 (0.0002)	0 (0)	0 (0)	31 (63)	49 (99)	118 (134)	198 (351)	14 (23)	62 (93)	472 (405)
White perch	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	56 (121)	25 (51)	0 (0)	81 (131)
White bass	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	24 (49)	0 (0)	40 (82)	0 (0)	0 (0)	64 (96)
Rockbass	0.0013 (0.0008)	0 (0)	0 (0)	485 (728)	505 (606)	175 (257)	1,169 (1,153)	64 (94)	21 (44)	2,419 (1,518)

Table 4.—Continued:

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Pumpkinseed	0.0008 (0.0008)	0 (0)	0 (0)	648 (1,197)	497 (1,027)	0 (0)	433 (391)	13 (25)	0 (0)	1,591 (1,625)
Bluegill	0.0000 (0.0000)	0 (0)	0 (0)	40 (82)	0 (0)	0 (0)	6 (11)	0 (0)	0 (0)	46 (83)
Smallmouth bass	0.0087 (0.0022)	0 (0)	0 (0)	3,866 (1,885)	4,786 (2,403)	3,244 (1,653)	2,407 (1,425)	1,902 (1,119)	192 (293)	16,397 (3,928)
Largemouth bass	0.0004 (0.0003)	0 (0)	0 (0)	285 (326)	280 (232)	118 (243)	44 (95)	0 (0)	0 (0)	727 (478)
White crappie	0.0004 (0.0005)	0 (0)	82 (172)	260 (377)	0 (0)	0 (0)	347 (748)	0 (0)	21 (44)	710 (856)
Black crappie	0.0003 (0.0003)	0 (0)	0 (0)	570 (706)	0 (0)	81 (142)	0 (0)	0 (0)	0 (0)	651 (720)
Yellow perch	0.7752 (0.1261)	0 (0)	35,222 (26,830)	179,598 (54,023)	418,022 (138,618)	432,225 (127,894)	335,079 (82,852)	58,829 (29,504)	7,784 (4,121)	1,466,759 (216,707)
Walleye	0.0098 (0.0027)	0 (0)	0 (0)	8,667 (4,249)	616 (478)	977 (606)	3,749 (1,948)	1,649 (551)	2,952 (1,600)	18,610 (5,031)
Freshwater drum	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	0 (0)	225 (409)	44 (88)	14 (28)	0 (0)	283 (419)
Lake whitefish	0.0026 (0.0016)	9 (19)	123 (111)	307 (418)	137 (161)	565 (674)	3,613 (2,895)	13 (26)	220 (237)	4,987 (3,018)
Round whitefish	0.0011 (0.0008)	0 (0)	11 (22)	26 (43)	74 (89)	0 (0)	107 (176)	531 (687)	1,377 (1,454)	2,126 (1,621)
Burbot	0.0003 (0.0005)	0 (0)	26 (47)	510 (927)	0 (0)	54 (69)	0 (0)	0 (0)	0 (0)	590 (931)
Other	0.0003 (0.0002)	0 (0)	0 (0)	182 (317)	203 (239)	19 (39)	70 (103)	0 (0)	51 (103)	525 (425)
Total	0.8760 (0.1293)	1,175 (1,568)	48,282 (27,517)	213,122 (54,391)	437,071 (138,682)	470,460 (128,035)	397,600 (83,197)	73,855 (29,762)	16,066 (4,815)	1,657,631 (217,197)
Angler hours		2,537 (2,203)	75,469 (21,189)	278,539 (36,295)	306,380 (43,588)	413,856 (72,691)	594,738 (78,963)	157,479 (33,252)	63,201 (17,209)	1,892,199 (128,810)
Angler trips		555 (563)	16,407 (4,105)	63,102 (8,417)	63,723 (9,105)	88,235 (14,997)	124,731 (17,078)	32,286 (6,282)	12,676 (2,958)	401,715 (27,124)
Angler days		555 (563)	15,514 (4,054)	54,875 (7,373)	59,378 (8,547)	82,490 (13,825)	112,094 (14,948)	30,089 (5,639)	11,586 (2,693)	366,581 (24,450)

Table 5.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Michigan pier fishery at all survey areas combined (12), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0105 (0.0028)	146 (107)	2,140 (733)	357 (212)	28 (57)	0 (0)	253 (212)	186 (177)	53 (81)	3,163 (824)
Chinook salmon	0.0021 (0.0010)	0 (0)	96 (77)	49 (89)	23 (45)	68 (123)	197 (163)	160 (182)	30 (38)	623 (304)
Rainbow trout	0.0174 (0.0044)	6 (13)	114 (181)	93 (130)	2,193 (1,006)	302 (219)	174 (210)	413 (522)	1,923 (531)	5,218 (1,307)
Atlantic salmon	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	1 (2)
Brown trout	0.0064 (0.0020)	189 (100)	620 (304)	290 (226)	189 (253)	236 (303)	243 (194)	29 (53)	117 (98)	1,913 (599)
Lake trout	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	42 (85)	45 (90)	0 (0)	0 (0)	0 (0)	87 (124)
Rainbow smelt	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (19)	10 (19)
White sucker	0.0004 (0.0004)	0 (0)	27 (56)	0 (0)	0 (0)	40 (80)	0 (0)	0 (0)	58 (70)	125 (120)
Channel catfish	0.0032 (0.0018)	0 (0)	0 (0)	182 (162)	465 (472)	111 (120)	172 (130)	32 (49)	0 (0)	962 (532)
Rockbass	0.0019 (0.0014)	0 (0)	0 (0)	0 (0)	253 (302)	117 (156)	102 (161)	0 (0)	86 (173)	558 (414)
Pumpkinseed	0.0006 (0.0012)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	170 (345)	0 (0)	0 (0)	170 (345)
Bluegill	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	18 (36)	5 (11)	43 (86)	0 (0)	0 (0)	66 (94)
Smallmouth bass	0.0016 (0.0014)	0 (0)	0 (0)	212 (351)	93 (144)	90 (162)	6 (13)	93 (123)	0 (0)	494 (431)
Largemouth bass	0.0007 (0.0009)	0 (0)	0 (0)	5 (9)	0 (0)	120 (241)	38 (62)	37 (66)	0 (0)	200 (258)
Black crappie	0.0005 (0.0007)	0 (0)	0 (0)	0 (0)	0 (0)	66 (134)	61 (125)	10 (20)	0 (0)	137 (184)
Yellow perch	0.6663 (0.0889)	0 (0)	8,051 (4,496)	21,289 (6,254)	101,584 (18,169)	47,376 (14,345)	17,477 (6,813)	1,416 (1,255)	2,690 (1,325)	199,883 (25,396)
Walleye	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	68 (137)	0 (0)	0 (0)	68 (137)
Freshwater drum	0.0027 (0.0019)	0 (0)	192 (389)	76 (96)	37 (75)	319 (337)	190 (206)	0 (0)	0 (0)	814 (568)

Table 5.—Continued:

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Lake whitefish	0.0000 (0.0000)	14 (28)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14 (28)
Round whitefish	0.0065 (0.0023)	0 (0)	13 (26)	0 (0)	0 (0)	22 (45)	0 (0)	13 (27)	1,901 (691)	1,949 (693)
Burbot	0.0000 (0.0000)	0 (0)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (11)
Other	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	0 (0)	17 (35)	25 (50)	0 (0)	0 (0)	42 (61)
Total	0.7218 (0.0899)	355 (150)	11,258 (4,587)	22,553 (6,276)	104,925 (18,208)	48,934 (14,360)	19,219 (6,843)	2,390 (1,392)	6,868 (1,602)	216,502 (25,486)
Angler hours		3,868 (761)	24,445 (2,835)	26,857 (3,356)	75,889 (7,238)	62,888 (6,332)	48,680 (4,638)	21,098 (2,694)	36,243 (2,865)	299,968 (12,220)
Angler trips		967 (208)	6,864 (851)	8,854 (1,290)	24,272 (2,255)	24,989 (2,674)	21,795 (2,496)	8,110 (1,119)	11,503 (929)	107,354 (4,797)
Angler days		948 (209)	6,082 (777)	8,300 (1,241)	22,522 (2,166)	22,226 (2,430)	18,436 (2,095)	6,795 (957)	9,487 (991)	94,796 (4,367)

Table 6.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Michigan shore fishery at all survey areas combined (9), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0006 (0.0008)	— (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	38 (58)	5 (10)	43 (59)
Chinook salmon	0.0203 (0.0059)	— (0)	251 (221)	0 (0)	0 (0)	0 (0)	40 (55)	958 (293)	117 (117)	1,366 (389)
Rainbow trout	0.0272 (0.0083)	— (0)	655 (266)	392 (255)	114 (228)	159 (195)	60 (121)	141 (116)	309 (210)	1,830 (546)
Brown trout	0.0033 (0.0034)	— (0)	103 (108)	0 (0)	0 (0)	0 (0)	10 (20)	110 (201)	0 (0)	223 (229)
Splake	0.0005 (0.0010)	— (0)	34 (69)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	34 (69)
Rainbow smelt	0.0465 (0.0479)	— (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3,130 (3,218)	3,130 (3,218)
White sucker	0.0044 (0.0057)	— (0)	6 (12)	147 (299)	114 (228)	29 (58)	0 (0)	0 (0)	0 (0)	296 (381)
Brown bullhead	0.0121 (0.0222)	— (0)	0 (0)	0 (0)	0 (0)	811 (1,489)	0 (0)	0 (0)	0 (0)	811 (1,489)
Rockbass	0.0230 (0.0159)	— (0)	0 (0)	0 (0)	419 (467)	1,127 (961)	0 (0)	0 (0)	0 (0)	1,546 (1,068)
Pumpkinseed	0.0046 (0.0085)	— (0)	0 (0)	0 (0)	0 (0)	306 (568)	0 (0)	0 (0)	0 (0)	306 (568)
Smallmouth bass	0.0556 (0.0227)	— (0)	0 (0)	33 (47)	2,345 (946)	1,329 (1,179)	27 (54)	3 (6)	0 (0)	3,737 (1,513)
White crappie	0.0047 (0.0095)	— (0)	0 (0)	0 (0)	314 (633)	0 (0)	0 (0)	0 (0)	0 (0)	314 (633)
Black crappie	0.0006 (0.0012)	— (0)	0 (0)	0 (0)	39 (79)	0 (0)	0 (0)	0 (0)	0 (0)	39 (79)
Yellow perch	0.0760 (0.0340)	— (0)	127 (160)	385 (381)	1,585 (1,098)	1,031 (1,074)	0 (0)	537 (711)	1,443 (1,446)	5,108 (2,264)
Round whitefish	0.0353 (0.0207)	— (0)	706 (484)	0 (0)	0 (0)	0 (0)	0 (0)	158 (320)	1,513 (1,261)	2,377 (1,388)
Total	0.3147 (0.0756)	— (0)	1,882 (629)	957 (549)	4,930 (1,682)	4,792 (2,459)	137 (145)	1,945 (867)	6,517 (3,754)	21,160 (4,943)
Angler hours		— (0.0)	12,204 (1,405)	4,562 (1,262)	9,021 (889)	10,883 (1,930)	5,294 (819)	14,358 (1,493)	10,926 (1,767)	67,248 (3,756)
Angler trips		— (0.0)	3,989 (615)	1,439 (483)	4,510 (849)	4,344 (923)	1,829 (329)	5,027 (647)	3,975 (800)	25,113 (1,831)
Angler days		— (0.0)	2,816 (467)	1,085 (385)	3,805 (783)	3,348 (825)	1,347 (269)	4,243 (592)	2,984 (675)	19,628 (1,593)

Table 7.—Estimated yellow perch catch rate (fish per angler hour), number harvested, and angler effort (hours) at selected Lake Michigan ports and fishing areas, April through October, 1988-92. Bounds on the error of estimation in parentheses.

Area	1988		1989		1990		1991		1992	
	Rate	Harvest	Rate	Harvest	Rate	Harvest	Rate	Harvest	Rate	Harvest
St. Joseph	1.356	575,937	0.730	313,077	1.409	348,313	0.639	259,949	1.389	439,121
	(0.668)	(266,099)	(0.196)	(84,235)	(0.592)	(128,800)	(0.201)	(62,108)	(0.578)	(145,012)
Grand Haven	0.365	156,496	0.595	121,713	0.359	74,151	0.555	133,937	0.401	58,917
	(0.226)	(85,951)	(0.277)	(52,258)	(0.158)	(28,632)	(0.339)	(63,900)	(0.152)	(15,439)
Muskegon	0.829	190,964	1.102	174,434	1.460	195,984	0.407	42,274	1.173	204,510
	(0.382)	(73,156)	(0.475)	(64,152)	(0.578)	(53,233)	(0.445)	(39,137)	(0.515)	(76,731)
Ludington	0.473	178,483	0.284	115,202	0.516	119,587	0.371	113,002	0.764	247,818
	(0.306)	(101,864)	(0.112)	(38,771)	(0.201)	(39,674)	(0.208)	(40,971)	(0.366)	(86,280)
Manistee	0.684	298,088	0.433	115,093	0.182	36,484	0.119	27,969	0.257	61,574
	(0.502)	(210,724)	(0.232)	(57,456)	(0.090)	(14,952)	(0.097)	(19,188)	(0.151)	(29,096)
West Grand Traverse Bay	0.061	8,771	0.177	24,167	0.347	31,445	0.120	14,042	0.110	10,827
	(0.045)	(6,431)	(0.094)	(12,406)	(0.154)	(13,693)	(0.065)	(7,227)	(0.070)	(6,484)
Little Bay de Noc	0.384	60,504	0.403	95,468	0.357	112,798	0.509	191,480	0.361	90,500
	(0.209)	(32,156)	(0.171)	(30,042)	(0.096)	(27,533)	(0.125)	(44,106)	(0.130)	(30,010)
Total	0.669	1,469,243	0.522	959,154	0.645	918,762	0.443	782,653	0.720	1,113,267
	(0.167)	(373,369)	(0.077)	(140,823)	(0.118)	(151,608)	(0.066)	(116,261)	(0.149)	(190,756)
Angler hours		2,197,822		1,837,704		1,424,918		1,768,583		1,547,100
		(220,751)		(144,156)		(111,738)		(114,058)		(108,353)

Table 8.— Estimated sport fishing catch and effort (charter and non-charter) for nine Lake Michigan index ports combined (New Buffalo, St. Joseph, Grand Haven, Muskegon, Ludington, Manistee, Frankfort, West Grand Traverse Bay, and Charlevoix) April through October (May through August for lake trout), 1985-92. Two standard errors in parentheses.

Species	1985	1986	1987	1988	1989	1990	1991	1992
Coho salmon	75,585 (13,667)	107,588 (22,779)	86,876 (19,062)	36,646 (12,950)	75,364 (25,170)	33,229 (5,218)	33,258 (6,440)	39,370 (6,910)
Chinook salmon	338,855 (42,266)	404,035 (93,386)	259,718 (58,951)	106,287 (21,557)	80,114 (18,036)	58,022 (7,299)	60,223 (8,260)	37,580 (5,350)
Rainbow trout	29,846 (7,932)	23,296 (12,655)	26,981 (6,028)	29,081 (6,999)	29,854 (5,736)	33,725 (4,959)	53,582 (7,446)	50,521 (6,175)
Brown trout	33,488 (6,762)	50,897 (15,265)	19,350 (6,197)	16,336 (5,142)	14,430 (4,014)	13,669 (3,124)	16,563 (3,283)	9,254 (2,370)
Lake trout	87,620 (15,752)	113,382 (44,421)	79,929 (18,234)	67,955 (12,594)	79,886 (13,014)	51,283 (6,196)	67,123 (7,215)	35,953 (4,310)
Angler hours	4,303,895 (263,743)	3,938,697 (435,727)	3,534,084 (356,012)	2,633,377 (239,188)	2,355,718 (233,999)	1,732,593 (136,970)	1,862,224 (152,309)	1,717,801 (117,981)

Table 9.—Estimated catch rates (fish per 100 angler hours) of salmonines by charter and non-charter anglers at nine Lake Michigan index ports combined April through October (May through August for lake trout), 1985-92. Bounds on the error of estimation in parentheses.

Species	1985	1986	1987	1988	1989	1990	1991	1992
Coho salmon	1.76 (0.34)	2.73 (0.65)	2.46 (0.59)	1.39 (0.51)	3.20 (1.11)	1.92 (0.34)	1.79 (0.38)	2.29 (0.43)
Chinook salmon	7.87 (0.98)	10.26 (2.37)	7.35 (1.67)	4.04 (0.82)	3.40 (0.77)	3.35 (0.42)	3.23 (0.44)	2.19 (0.31)
Rainbow trout	0.69 (0.18)	0.59 (0.32)	0.76 (0.17)	1.10 (0.27)	1.27 (0.24)	1.95 (0.29)	2.88 (0.40)	2.94 (0.36)
Brown trout	0.78 (0.16)	1.29 (0.39)	0.55 (0.18)	0.62 (0.20)	0.61 (0.17)	0.79 (0.18)	0.89 (0.18)	0.54 (0.14)
Lake trout	2.59 (0.50)	3.57 (1.48)	3.03 (0.78)	3.38 (0.72)	4.42 (0.91)	3.90 (0.59)	4.40 (0.64)	2.57 (0.37)

Table 10.—Estimated chinook salmon harvest at nine Lake Michigan index ports, number stocked (thousands) by the State of Michigan and effort adjusted return per 1,000 fish stocked by age and year class, 1985-92.

Year	Harvest	Age	Percent by age	Harvest by age	Year class	Number stocked	Return	Effort adjusted return
1985	338,855	0.1	13	44,051	1984	3350	13.15	3.06
		0.2	33	111,822	1983	2980	37.52	8.72
		0.3	43	145,708	1982	2580	56.48	13.12
		0.4	10	33,886	1981	2250	15.06	3.50
		0.5	1	3,389	1980	2580	1.31	0.31
1986	404,035	0.1	6	24,242	1985	2260	10.73	2.72
		0.2	23	92,928	1984	3350	27.74	7.04
		0.3	54	218,179	1983	2980	73.21	18.59
		0.4	17	68,686	1982	2580	26.62	6.76
1987	259,718	0.1	14	36,361	1986	2400	15.15	4.29
		0.2	27	70,124	1985	2260	31.03	8.78
		0.3	35	90,901	1984	3350	27.13	7.68
		0.4	23	59,735	1983	2980	20.05	5.67
		0.5	1	2,597	1982	2580	1.01	0.28
1988	106,287	0.1	19	20,195	1987	2430	8.31	3.16
		0.2	25	26,572	1986	2400	11.07	4.20
		0.3	35	37,200	1985	2260	16.46	6.25
		0.4	20	21,257	1984	3350	6.35	2.41
		0.5	1	1,063	1983	2980	0.36	0.14
1989	80,114	0.1	22	17,625	1988	2670	6.60	2.80
		0.2	32	25,636	1987	2430	10.55	4.48
		0.3	28	22,432	1986	2400	9.35	3.97
		0.4	18	14,421	1985	2260	6.38	2.71

Table 10.—Continued:

Year	Harvest	Age	Percent by age	Harvest by age	Year class	Number stocked	Return	Effort adjusted return
1990	58,022	0.1	30	17,407	1989	3778	4.61	2.66
		0.2	36	20,888	1988	2670	7.82	4.51
		0.3	26	15,086	1987	2430	6.21	3.58
		0.4	8	4,642	1986	2400	1.93	1.12
		0.5	<1					
1991	60,223	0.1	36	21,680	1990	3639	5.96	3.20
		0.2	33	19,874	1989	3778	5.26	2.83
		0.3	24	14,454	1988	2670	5.41	2.91
		0.4	6	3,613	1987	2430	1.49	0.80
		0.5	<1					
1992	37,580	0.1	45	16,911	1991	3311	5.11	2.97
		0.2	28	10,522	1990	3639	2.89	1.68
		0.3	20	7,516	1989	3778	1.99	1.16
		0.4	7	2,631	1988	2670	0.99	0.57

Table 11.—Estimated chinook salmon return (effort adjusted) by age and year class to the Lake Michigan sport fishery at nine index ports, 1985-92.

Year class	Age					Total
	0.1	0.2	0.3	0.4	0.5	
1981				3.50		
1982			13.12	6.76	0.28	
1983		8.72	18.59	5.67	0.14	
1984	3.06	7.04	7.68	2.41		20.19
1985	2.72	8.78	6.25	2.71		20.46
1986	4.29	4.20	3.97	1.12		13.58
1987	3.16	4.48	3.58	0.80		12.02
1988	2.80	4.51	2.71	0.57		10.79
1989	2.66	2.83	1.16			
1990	3.20	1.68				
1991	2.97					

Table 12.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Lake Huron, by all modes of sportfishing, at all survey areas combined (15), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0002 (0.0001)	0 (0)	4 (9)	43 (88)	153 (197)	169 (110)	0 (0)	0 (0)	369 (242)
Coho salmon	0.0003 (0.0001)	0 (0)	178 (159)	136 (136)	163 (139)	128 (97)	71 (85)	10 (21)	686 (283)
Chinook salmon	0.0185 (0.0020)	2 (4)	2,061 (1,074)	1,120 (539)	9,490 (1,612)	11,182 (1,506)	11,252 (2,382)	2,881 (895)	37,988 (3,576)
Rainbow trout	0.0026 (0.0006)	82 (87)	335 (207)	251 (150)	1,958 (900)	996 (386)	668 (347)	981 (365)	5,271 (1,134)
Atlantic salmon	0.0000 (0.0000)	0 (0)	0 (0)	22 (44)	17 (34)	0 (0)	0 (0)	0 (0)	39 (56)
Brown trout	0.0014 (0.0003)	615 (208)	304 (243)	69 (56)	1,269 (365)	428 (234)	186 (104)	102 (90)	2,973 (559)
Brook trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	3 (7)	0 (0)	19 (39)	0 (0)	22 (40)
Lake trout	0.0056 (0.0013)	0 (0)	1,429 (1,624)	2,781 (1,207)	5,425 (1,669)	1,869 (603)	106 (90)	0 (0)	11,610 (2,693)
Rainbow smelt	0.0001 (0.0002)	0 (0)	123 (238)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	128 (238)
Northern pike	0.0005 (0.0002)	14 (34)	30 (36)	0 (0)	259 (225)	405 (287)	284 (318)	7 (17)	999 (487)
White sucker	0.0005 (0.0006)	872 (1,307)	81 (128)	16 (32)	50 (102)	0 (0)	0 (0)	18 (38)	1,037 (1,318)
Redhorses	0.0000 (0.0000)	8 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (14)
Black bullhead	0.0000 (0.0000)	0 (0)	2 (4)	0 (0)	0 (0)	13 (26)	0 (0)	0 (0)	15 (26)
Yellow bullhead	0.0001 (0.0002)	120 (246)	19 (32)	0 (0)	0 (0)	0 (0)	11 (23)	0 (0)	150 (249)
Brown bullhead	0.0001 (0.0001)	0 (0)	8 (14)	65 (128)	32 (66)	0 (0)	14 (22)	0 (0)	119 (146)
Channel catfish	0.0107 (0.0029)	28 (48)	4,083 (2,621)	6,955 (4,263)	3,905 (1,406)	5,016 (2,398)	1,757 (1,057)	296 (240)	22,040 (5,826)
White perch	0.0006 (0.0005)	43 (50)	126 (142)	265 (349)	130 (153)	89 (116)	432 (823)	80 (116)	1,165 (934)
White bass	0.0027 (0.0019)	45 (92)	1,512 (1,502)	2,741 (3,646)	916 (500)	212 (203)	181 (143)	31 (39)	5,638 (3,984)

Table 12.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Rockbass	0.0007 (0.0006)	33 (73)	750 (1,137)	269 (306)	351 (515)	9 (20)	13 (23)	29 (30)	1,454 (1,288)
Pumpkinseed	0.0004 (0.0004)	211 (228)	111 (128)	0 (0)	9 (19)	0 (0)	0 (0)	449 (786)	780 (829)
Bluegill	0.0008 (0.0014)	0 (0)	0 (0)	116 (176)	0 (0)	204 (417)	35 (73)	1,202 (2,649)	1,557 (2,688)
Smallmouth bass	0.0018 (0.0017)	0 (0)	970 (1,234)	468 (485)	666 (416)	61 (76)	68 (104)	1,555 (3,360)	3,788 (3,638)
Largemouth bass	0.0005 (0.0004)	129 (294)	110 (130)	678 (847)	0 (0)	68 (101)	87 (116)	33 (68)	1,105 (921)
White crappie	0.0001 (0.0001)	0 (0)	0 (0)	68 (141)	88 (159)	15 (32)	0 (0)	0 (0)	171 (215)
Black crappie	0.0005 (0.0004)	80 (173)	303 (342)	316 (484)	26 (52)	9 (20)	0 (0)	259 (346)	993 (710)
Yellow perch	0.5732 (0.0731)	123,551 (40,603)	60,642 (19,636)	188,567 (53,606)	297,318 (74,851)	226,136 (54,285)	153,254 (57,190)	129,425 (39,800)	1,178,893 (135,322)
Walleye	0.0336 (0.0048)	405 (350)	2,990 (1,055)	4,503 (2,731)	26,958 (5,451)	23,746 (5,047)	8,716 (3,905)	1,808 (1,387)	69,126 (9,003)
Freshwater drum	0.0036 (0.0028)	68 (160)	285 (247)	840 (441)	4,264 (5,704)	1,496 (654)	398 (335)	141 (145)	7,492 (5,777)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	25 (55)	36 (76)	0 (0)	0 (0)	61 (94)
Round whitefish	0.0002 (0.0002)	0 (0)	111 (140)	0 (0)	30 (62)	0 (0)	0 (0)	174 (256)	315 (298)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	53 (73)	53 (73)
Other	0.0002 (0.0001)	65 (130)	106 (124)	44 (86)	15 (30)	33 (42)	36 (43)	67 (70)	366 (222)
Total	0.6595 (0.0756)	126,371 (40,630)	76,673 (20,072)	210,338 (54,000)	353,520 (75,327)	272,320 (54,605)	177,588 (57,392)	139,601 (40,077)	1,356,411 (136,109)
Angler hours		72,100 (13,638)	201,881 (33,882)	262,918 (38,853)	600,529 (67,386)	481,310 (53,981)	330,027 (49,506)	107,923 (15,771)	2,056,688 (114,008)
Angler trips		30,610 (7,374)	47,955 (8,159)	57,212 (8,167)	118,346 (13,718)	99,435 (10,910)	71,575 (10,634)	27,689 (4,018)	452,822 (24,982)
Angler days		24,322 (5,606)	44,981 (7,536)	55,094 (7,991)	113,564 (13,216)	94,902 (10,471)	67,617 (10,139)	25,151 (3,810)	425,631 (23,531)

Table 13.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Huron boat fishery (non-charter) at all survey areas combined (15), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0002 (0.0001)	0 (0)	4 (9)	43 (88)	153 (197)	169 (110)	0 (0)	0 (0)	369 (242)
Coho salmon	0.0003 (0.0001)	0 (0)	178 (159)	136 (136)	163 (139)	128 (97)	27 (36)	0 (0)	632 (272)
Chinook salmon	0.0185 (0.0022)	2 (4)	2,061 (1,074)	1,120 (539)	9,490 (1,612)	11,028 (1,498)	9,663 (2,306)	1,358 (808)	34,722 (3,501)
Rainbow trout	0.0022 (0.0006)	25 (49)	311 (201)	251 (150)	1,958 (900)	970 (382)	285 (166)	278 (199)	4,078 (1,043)
Atlantic salmon	0.0000 (0.0000)	0 (0)	0 (0)	22 (44)	17 (34)	0 (0)	0 (0)	0 (0)	39 (56)
Brown trout	0.0014 (0.0003)	529 (195)	214 (163)	69 (56)	1,269 (365)	428 (234)	170 (101)	31 (32)	2,710 (517)
Brook trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	3 (7)	0 (0)	19 (39)	0 (0)	22 (40)
Lake trout	0.0062 (0.0015)	0 (0)	1,419 (1,623)	2,781 (1,207)	5,425 (1,669)	1,869 (603)	106 (90)	0 (0)	11,600 (2,692)
Rainbow smelt	0.0001 (0.0002)	0 (0)	123 (238)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	128 (238)
Northern pike	0.0005 (0.0003)	14 (34)	8 (18)	0 (0)	259 (225)	405 (287)	269 (317)	7 (17)	962 (485)
White sucker	0.0001 (0.0002)	133 (343)	0 (0)	15 (32)	50 (102)	0 (0)	0 (0)	18 (38)	216 (361)
Black bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	13 (26)	0 (0)	0 (0)	13 (26)
Yellow bullhead	0.0000 (0.0000)	0 (0)	14 (31)	0 (0)	0 (0)	0 (0)	11 (23)	0 (0)	25 (39)
Brown bullhead	0.0001 (0.0001)	0 (0)	7 (14)	63 (128)	32 (66)	0 (0)	14 (22)	0 (0)	116 (146)
Channel catfish	0.0112 (0.0031)	28 (48)	4,024 (2,621)	6,884 (4,263)	3,112 (1,120)	4,927 (2,395)	1,721 (1,054)	296 (240)	20,991 (5,762)
White perch	0.0006 (0.0005)	13 (29)	124 (142)	238 (344)	112 (149)	89 (116)	432 (823)	80 (116)	1,088 (930)
White bass	0.0030 (0.0021)	41 (91)	1,512 (1,502)	2,741 (3,646)	916 (500)	212 (203)	181 (143)	22 (34)	5,625 (3,984)
Rockbass	0.0002 (0.0002)	0 (0)	146 (201)	152 (276)	72 (108)	9 (20)	13 (23)	0 (0)	392 (359)
Pumpkinseed	0.0003 (0.0005)	0 (0)	71 (110)	0 (0)	9 (19)	0 (0)	0 (0)	394 (784)	474 (792)

Table 13.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Bluegill	0.0008 (0.0014)	0 (0)	0 (0)	44 (90)	0 (0)	204 (417)	35 (73)	1,202 (2,649)	1,485 (2,684)
Smallmouth bass	0.0018 (0.0019)	0 (0)	752 (1,205)	376 (473)	578 (396)	61 (76)	68 (104)	1,555 (3,360)	3,390 (3,625)
Largemouth bass	0.0005 (0.0005)	0 (0)	89 (125)	661 (846)	0 (0)	33 (69)	87 (116)	0 (0)	870 (866)
White crappie	0.0001 (0.0001)	0 (0)	0 (0)	68 (141)	88 (159)	15 (32)	0 (0)	0 (0)	171 (215)
Black crappie	0.0004 (0.0004)	0 (0)	274 (341)	313 (484)	26 (52)	9 (20)	0 (0)	141 (312)	763 (672)
Yellow perch	0.5564 (0.0765)	15,295 (8,572)	57,084 (19,564)	185,612 (53,587)	293,735 (74,824)	225,933 (54,285)	153,144 (57,190)	113,357 (39,219)	1,044,160 (129,159)
Walleye	0.0365 (0.0053)	209 (144)	2,710 (1,040)	4,503 (2,731)	26,958 (5,451)	23,746 (5,047)	8,687 (3,905)	1,756 (1,384)	68,569 (8,995)
Freshwater drum	0.0036 (0.0031)	68 (160)	133 (148)	751 (427)	3,943 (5,694)	1,437 (648)	388 (334)	95 (99)	6,815 (5,761)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	25 (55)	36 (76)	0 (0)	0 (0)	61 (94)
Round whitefish	0.0001 (0.0001)	0 (0)	80 (128)	0 (0)	30 (62)	0 (0)	0 (0)	0 (0)	110 (142)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	39 (66)	39 (66)
Other	0.0002 (0.0001)	65 (130)	45 (77)	42 (86)	15 (30)	33 (42)	36 (43)	67 (70)	303 (199)
Total	0.6452 (0.0794)	16,422 (8,586)	71,383 (19,965)	206,890 (53,981)	348,438 (75,292)	271,754 (54,604)	175,356 (57,388)	120,696 (39,495)	1,210,939 (129,961)
Angler hours		21,430 (5,812)	185,630 (33,763)	249,593 (38,787)	587,091 (67,344)	470,711 (53,947)	292,623 (48,989)	69,629 (15,209)	1,876,707 (112,938)
Angler trips		6,190 (1,811)	40,894 (8,031)	51,482 (8,081)	113,809 (13,679)	95,170 (10,876)	62,213 (10,502)	15,883 (3,577)	385,641 (23,697)
Angler days		5,749 (1,656)	38,648 (7,437)	49,925 (7,928)	109,540 (13,183)	90,895 (10,438)	59,000 (10,024)	15,255 (3,509)	369,012 (22,725)

Table 14.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Huron pier fishery at all survey areas combined (7), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0005 (0.0007)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	44 (77)	10 (21)	54 (80)
Chinook salmon	0.0274 (0.0067)	0 (0)	0 (0)	0 (0)	0 (0)	154 (159)	1,509 (593)	1,493 (383)	3,156 (724)
Rainbow trout	0.0088 (0.0037)	8 (16)	24 (49)	0 (0)	0 (0)	26 (55)	340 (300)	611 (282)	1,009 (419)
Brown trout	0.0017 (0.0018)	48 (48)	90 (180)	0 (0)	0 (0)	0 (0)	0 (0)	53 (77)	191 (202)
Lake trout	0.0001 (0.0002)	0 (0)	10 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (20)
Northern pike	0.0003 (0.0004)	0 (0)	19 (31)	0 (0)	0 (0)	0 (0)	15 (30)	0 (0)	34 (43)
White sucker	0.0007 (0.0011)	0 (0)	80 (128)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	81 (128)
Redhorses	0.0001 (0.0002)	6 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (13)
Channel catfish	0.0078 (0.0075)	0 (0)	8 (17)	0 (0)	793 (849)	89 (116)	5 (8)	0 (0)	895 (857)
White perch	0.0004 (0.0006)	1 (3)	0 (0)	27 (58)	18 (36)	0 (0)	0 (0)	0 (0)	46 (68)
White bass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9 (19)	9 (19)
Rockbass	0.0079 (0.0107)	0 (0)	535 (1,116)	98 (127)	279 (504)	0 (0)	0 (0)	0 (0)	912 (1,231)
Pumpkinseed	0.0002 (0.0005)	0 (0)	28 (64)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	28 (64)
Bluegill	0.0006 (0.0013)	0 (0)	0 (0)	72 (151)	0 (0)	0 (0)	0 (0)	0 (0)	72 (151)
Smallmouth bass	0.0014 (0.0014)	0 (0)	0 (0)	77 (106)	88 (128)	0 (0)	0 (0)	0 (0)	165 (166)
Largemouth bass	0.0003 (0.0006)	0 (0)	0 (0)	0 (0)	0 (0)	35 (74)	0 (0)	0 (0)	35 (74)
Black crappie	0.0008 (0.0012)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	97 (143)	97 (143)
Yellow perch	0.2589 (0.0731)	16,592 (6,102)	2,674 (1,555)	2,230 (1,215)	3,583 (2,026)	203 (232)	110 (146)	4,435 (4,432)	29,827 (8,059)

Table 14.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Walleye	0.0007 (0.0007)	5 (9)	36 (56)	0 (0)	0 (0)	0 (0)	29 (60)	12 (25)	82 (86)
Freshwater drum	0.0046 (0.0035)	0 (0)	129 (196)	16 (34)	321 (337)	59 (87)	10 (21)	0 (0)	535 (401)
Round whitefish	0.0018 (0.0023)	0 (0)	31 (55)	0 (0)	0 (0)	0 (0)	0 (0)	174 (256)	205 (262)
Burbot	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14 (30)	14 (30)
Other	0.0005 (0.0008)	0 (0)	59 (96)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	59 (96)
Total	0.3256 (0.0764)	16,660 (6,102)	3,723 (1,943)	2,521 (1,237)	5,082 (2,283)	566 (330)	2,062 (688)	6,908 (4,468)	37,522 (8,264)
Angler hours		12,097 (3,537)	10,423 (2,485)	9,885 (1,793)	13,438 (2,380)	9,808 (1,820)	31,812 (7,006)	27,760 (2,795)	115,223 (9,369)
Angler trips		4,572 (1,362)	4,133 (1,156)	3,984 (782)	4,537 (1,027)	3,684 (764)	7,268 (1,464)	7,507 (1,061)	35,685 (2,951)
Angler days		3,643 (1,122)	3,803 (966)	3,798 (749)	4,024 (929)	3,426 (726)	6,809 (1,414)	6,444 (855)	31,947 (2,622)

Table 15.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Huron shore fishery at all survey areas combined (10), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0017 (0.0014)	0 (0)	0 (0)	0 (0)	— (0)	0 (0)	80 (75)	30 (50)	110 (90)
Rainbow trout	0.0028 (0.0023)	49 (70)	0 (0)	0 (0)	— (0)	0 (0)	43 (52)	92 (118)	184 (147)
Brown trout	0.0011 (0.0011)	38 (57)	0 (0)	0 (0)	— (0)	0 (0)	16 (22)	18 (36)	72 (71)
Northern pike	0.0000 (0.0000)	0 (0)	3 (8)	0 (0)	— (0)	0 (0)	0 (0)	0 (0)	3 (8)
White sucker	0.0114 (0.0195)	739 (1,261)	1 (2)	0 (0)	— (0)	0 (0)	0 (0)	0 (0)	740 (1,261)
Redhorses	0.0000 (0.0000)	2 (5)	0 (0)	0 (0)	— (0)	0 (0)	0 (0)	0 (0)	2 (5)
Black bullhead	0.0000 (0.0000)	0 (0)	2 (4)	0 (0)	— (0)	0 (0)	0 (0)	0 (0)	2 (4)
Yellow bullhead	0.0019 (0.0038)	120 (246)	5 (9)	0 (0)	— (0)	0 (0)	0 (0)	0 (0)	125 (246)
Brown bullhead	0.0000 (0.0000)	0 (0)	1 (2)	2 (5)	— (0)	0 (0)	0 (0)	0 (0)	3 (5)
Channel catfish	0.0024 (0.0020)	0 (0)	51 (44)	71 (74)	— (0)	0 (0)	31 (87)	0 (0)	153 (122)
White perch	0.0005 (0.0007)	29 (41)	2 (4)	0 (0)	— (0)	0 (0)	0 (0)	0 (0)	31 (41)
White bass	0.0001 (0.0003)	4 (11)	0 (0)	0 (0)	— (0)	0 (0)	0 (0)	0 (0)	4 (11)
Rockbass	0.0023 (0.0019)	33 (73)	69 (83)	19 (36)	— (0)	0 (0)	0 (0)	29 (30)	150 (120)
Pumpkinseed	0.0043 (0.0037)	211 (228)	12 (16)	0 (0)	— (0)	0 (0)	0 (0)	55 (59)	278 (236)
Smallmouth bass	0.0036 (0.0042)	0 (0)	218 (269)	15 (26)	— (0)	0 (0)	0 (0)	0 (0)	233 (270)
Largemouth bass	0.0031 (0.0048)	129 (294)	21 (34)	17 (42)	— (0)	0 (0)	0 (0)	33 (68)	200 (307)

Table 15.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Black crappie	0.0021 (0.0029)	80 (173)	29 (33)	3 (7)	— (0)	0 (0)	0 (0)	21 (47)	133 (182)
Yellow perch	1.6200 (0.6858)	91,664 (39,216)	884 (624)	725 (748)	— (0)	0 (0)	0 (0)	11,633 (5,122)	104,906 (39,561)
Walleye	0.0073 (0.0059)	191 (318)	244 (171)	0 (0)	— (0)	0 (0)	0 (0)	40 (89)	475 (372)
Freshwater drum	0.0022 (0.0024)	0 (0)	23 (23)	73 (106)	— (0)	0 (0)	0 (0)	46 (106)	142 (152)
Other	0.0001 (0.0002)	0 (0)	2 (4)	2 (4)	— (0)	0 (0)	0 (0)	0 (0)	4 (6)
Total	1.6670 (0.6904)	93,289 (39,241)	1,567 (709)	927 (762)	— (0)	0 (0)	170 (128)	11,997 (5,127)	107,950 (39,588)
Angler hours		38,573 (11,821)	5,828 (1,360)	3,440 (1,381)	— (0)	791 (561)	5,592 (1,352)	10,534 (3,103)	64,758 (12,460)
Angler trips		19,848 (7,017)	2,928 (860)	1,746 (894)	— (0)	581 (417)	2,094 (804)	4,299 (1,493)	31,496 (7,337)
Angler days		14,930 (5,236)	2,530 (748)	1,371 (663)	— (0)	581 (417)	1,808 (563)	3,452 (1,213)	24,672 (5,512)

Table 16.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Saginaw Bay (Port Austin to Tawas), by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0000 (0.0000)	0 (0)	0 (0)	43 (88)	0 (0)	0 (0)	0 (0)	0 (0)	43 (88)
Coho salmon	0.0001 (0.0001)	0 (0)	53 (108)	73 (121)	0 (0)	0 (0)	11 (25)	0 (0)	137 (164)
Chinook salmon	0.0028 (0.0010)	0 (0)	888 (992)	244 (199)	931 (559)	207 (231)	1,030 (512)	269 (151)	3,569 (1,294)
Rainbow trout	0.0007 (0.0003)	77 (86)	100 (158)	36 (55)	98 (133)	27 (43)	143 (118)	338 (244)	819 (358)
Atlantic salmon	0.0000 (0.0000)	0 (0)	0 (0)	22 (44)	17 (34)	0 (0)	0 (0)	0 (0)	39 (56)
Brown trout	0.0003 (0.0002)	129 (108)	126 (144)	37 (39)	30 (62)	14 (29)	18 (29)	54 (82)	408 (215)
Lake trout	0.0026 (0.0015)	0 (0)	1,274 (1,620)	960 (878)	590 (404)	440 (431)	26 (37)	0 (0)	3,290 (1,935)
Rainbow smelt	0.0001 (0.0002)	0 (0)	123 (238)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	128 (238)
Northern pike	0.0007 (0.0004)	14 (34)	30 (36)	0 (0)	259 (225)	257 (229)	269 (317)	0 (0)	829 (454)
White sucker	0.0008 (0.0011)	872 (1,307)	1 (2)	15 (32)	50 (102)	0 (0)	0 (0)	18 (38)	956 (1,312)
Redhorses	0.0000 (0.0000)	8 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (14)
Black bullhead	0.0000 (0.0000)	0 (0)	2 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (4)
Yellow bullhead	0.0001 (0.0002)	120 (246)	19 (32)	0 (0)	0 (0)	0 (0)	11 (23)	0 (0)	150 (249)
Brown bullhead	0.0001 (0.0001)	0 (0)	8 (14)	65 (128)	32 (66)	0 (0)	14 (22)	0 (0)	119 (146)
Channel catfish	0.0165 (0.0048)	26 (48)	4,057 (2,621)	6,872 (4,262)	2,998 (1,117)	4,728 (2,391)	1,729 (1,056)	296 (240)	20,706 (5,760)
White perch	0.0007 (0.0007)	43 (50)	70 (88)	238 (344)	53 (90)	21 (43)	432 (823)	80 (116)	937 (911)
White bass	0.0045 (0.0032)	45 (92)	1,512 (1,502)	2,741 (3,646)	916 (500)	207 (203)	169 (141)	31 (39)	5,621 (3,984)
Rockbass	0.0011 (0.0010)	33 (73)	750 (1,137)	259 (306)	306 (512)	9 (20)	13 (23)	29 (30)	1,399 (1,287)
Pumpkinseed	0.0006 (0.0006)	211 (228)	111 (128)	0 (0)	0 (0)	0 (0)	0 (0)	449 (786)	771 (828)

Table 16.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Bluegill	0.0012 (0.0022)	0 (0)	0 (0)	44 (90)	0 (0)	204 (417)	35 (73)	1,202 (2,649)	1,485 (2,684)
Smallmouth bass	0.0018 (0.0027)	0 (0)	238 (272)	82 (135)	325 (357)	34 (50)	49 (96)	1,546 (3,360)	2,274 (3,394)
Largemouth bass	0.0009 (0.0008)	129 (294)	110 (130)	678 (847)	0 (0)	33 (69)	87 (116)	33 (68)	1,070 (918)
White crappie	0.0001 (0.0001)	0 (0)	0 (0)	68 (141)	88 (159)	15 (32)	0 (0)	0 (0)	171 (215)
Black crappie	0.0008 (0.0006)	80 (173)	303 (342)	316 (484)	26 (52)	9 (20)	0 (0)	259 (346)	993 (710)
Yellow perch	0.8972 (0.1289)	123,551 (40,603)	60,331 (19,634)	175,903 (52,612)	271,353 (74,268)	214,016 (54,142)	151,435 (57,163)	129,425 (39,800)	1,126,014 (134,539)
Walleye	0.0491 (0.0080)	287 (341)	1,248 (621)	4,372 (2,726)	26,719 (5,440)	18,748 (4,588)	8,546 (3,903)	1,717 (1,383)	61,637 (8,702)
Freshwater drum	0.0052 (0.0046)	68 (160)	138 (149)	621 (359)	4,050 (5,697)	1,101 (537)	379 (334)	141 (145)	6,498 (5,749)
Round whitefish	0.0001 (0.0001)	0 (0)	80 (128)	0 (0)	30 (62)	0 (0)	0 (0)	0 (0)	110 (142)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	53 (73)	53 (73)
Other	0.0002 (0.0001)	65 (130)	47 (77)	44 (86)	15 (30)	33 (42)	36 (43)	67 (70)	307 (199)
Total	0.9885 (0.1335)	125,758 (40,629)	71,619 (20,007)	193,738 (53,001)	308,886 (74,701)	240,103 (54,396)	164,432 (57,316)	136,007 (40,065)	1,240,543 (135,239)
Angler hours		65,975 (13,478)	119,969 (30,671)	194,897 (36,307)	386,461 (58,050)	264,635 (45,813)	157,291 (43,278)	65,770 (14,848)	1,254,998 (100,013)
Angler trips		28,444 (7,319)	30,350 (7,609)	41,967 (7,714)	79,483 (11,924)	56,031 (9,376)	35,942 (9,451)	18,867 (3,840)	291,084 (22,475)
Angler days		22,357 (5,563)	28,256 (7,040)	40,707 (7,630)	77,014 (11,663)	53,780 (9,144)	34,124 (9,094)	17,087 (3,660)	273,325 (21,318)

Table 17.—Estimated yellow perch and walleye catch per hour, number harvested, and angler effort (hours) for Saginaw Bay (Port Austin to Tawas) during April through September, 1983-92. Bounds on the error of estimation in parentheses.

Year	Yellow perch		Walleye		Angler hours
	Catch per hour	Number harvested	Catch per hour	Number harvested	
1983 ¹	1.980	1,300,888	0.003	2,128	656,932
	(0.666)	(407,367)	(0.002)	(1,450)	(80,557)
1986	0.857	1,603,623	0.032	59,203	1,871,136
	(0.151)	(281,629)	(0.014)	(25,319)	(145,336)
1987	1.276	2,329,021	0.035	63,461	1,825,524
	(0.179)	(327,449)	(0.007)	(12,059)	(116,250)
1988	0.828	1,182,625	0.070	100,129	1,428,189
	(0.168)	(239,915)	(0.018)	(25,077)	(155,718)
1989	0.958	1,078,377	0.050	56,301	1,125,229
	(0.160)	(178,247)	(0.010)	(10,580)	(94,873)
1991	1.108	1,381,431	0.049	61,028	1,247,144
	(0.246)	(278,885)	(0.010)	(10,817)	(114,821)
1992	0.833	999,594	0.052	62,760	1,200,334
	(0.120)	(128,517)	(0.008)	(8,591)	(98,905)

¹Ryckman, 1986

Table 18.—Estimated sportfishing catch and effort (charter and non-charter) for eight Lake Huron ports combined (Rogers City, Rockport, Alpena, Harrisville, Oscoda, Tawas, Port Austin, and Harbor Beach), April through October, 1986-88 and 1991-92. Bounds on the error of estimation in parentheses.

Species	1986	1987	1988	1991	1992
Chinook salmon	57,145 (8,556)	73,021 (8,249)	77,144 (8,567)	38,499 (4,382)	36,333 (3,437)
Rainbow trout	4,794 (6,524)	5,228 (1,227)	2,129 (725)	3,248 (527)	4,408 (1,061)
Brown trout	15,085 (5,709)	7,072 (1,323)	2,381 (822)	1,458 (567)	3,262 (555)
Lake trout	53,246 (11,502)	41,777 (7,312)	62,314 (35,837)	18,008 (2,717)	13,134 (2,692)
Angler hours	1,746,802 (156,652)	1,637,613 (109,394)	1,582,971 (147,056)	1,013,740 (77,347)	1,019,620 (71,572)

Table 19.—Catch rates (fish per 100 angler hours) of salmonines by charter and non-charter anglers at eight Lake Huron ports combined, April through October (May through August for lake trout), 1986-88 and 1991-92. Bounds on the error of estimation in parentheses.

Species	1986	1987	1988	1991	1992
Chinook salmon	3.27 (0.57)	4.46 (0.59)	4.87 (0.71)	3.80 (0.52)	3.56 (0.42)
Rainbow trout	0.27 (0.37)	0.32 (0.07)	0.13 (0.05)	0.32 (0.05)	0.43 (0.10)
Brown trout	0.86 (0.33)	0.43 (0.08)	0.15 (0.05)	0.14 (0.06)	0.32 (0.05)
Lake trout	4.42 (1.05)	2.96 (0.55)	5.30 (3.11)	2.23 (0.38)	1.70 (0.38)

Table 20.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Erie boat fishery (non-charter), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0000 (0.0000)	10 (15)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (15)
Rainbow trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	13 (28)	0 (0)	0 (0)	13 (28)
Lake trout	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	52 (68)	0 (0)	0 (0)	0 (0)	52 (68)
Northern pike	0.0000 (0.0000)	0 (0)	0 (0)	7 (14)	21 (45)	0 (0)	0 (0)	0 (0)	28 (47)
Yellow bullhead	0.0000 (0.0000)	29 (60)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	29 (60)
Channel catfish	0.0290 (0.0106)	255 (403)	1,118 (706)	2,041 (1,801)	6,197 (5,080)	7,321 (4,044)	5,008 (3,265)	1,049 (1,298)	22,989 (7,643)
White perch	0.0150 (0.0055)	0 (0)	2,533 (1,447)	1,231 (1,130)	1,459 (1,005)	2,721 (2,448)	2,355 (1,693)	1,627 (1,587)	11,926 (3,970)
White bass	0.0401 (0.0192)	1,123 (2,386)	14,984 (8,007)	8,012 (10,522)	3,983 (4,226)	1,572 (1,657)	1,939 (2,917)	203 (256)	31,816 (14,481)
Rockbass	0.0012 (0.0008)	0 (0)	35 (44)	0 (0)	288 (447)	207 (211)	447 (403)	0 (0)	977 (639)
Bluegill	0.0014 (0.0016)	95 (205)	68 (90)	0 (0)	0 (0)	516 (925)	456 (846)	7 (12)	1,142 (1,273)
Smallmouth bass	0.0015 (0.0007)	0 (0)	10 (20)	306 (394)	238 (184)	370 (251)	148 (170)	102 (138)	1,174 (548)
Largemouth bass	0.0003 (0.0003)	0 (0)	90 (143)	85 (129)	62 (105)	0 (0)	0 (0)	0 (0)	237 (219)
White crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	59 (127)	59 (127)
Black crappie	0.0001 (0.0001)	63 (136)	37 (77)	0 (0)	18 (37)	0 (0)	0 (0)	0 (0)	118 (161)
Yellow perch	0.2988 (0.1016)	0 (0)	1,089 (528)	7,357 (3,313)	4,363 (2,107)	11,950 (5,845)	123,793 (51,852)	88,356 (49,618)	236,908 (72,114)
Walleye	0.2720 (0.0695)	759 (655)	31,545 (10,831)	44,486 (15,341)	99,552 (37,836)	37,519 (13,398)	1,704 (1,775)	34 (74)	215,599 (44,354)

Table 20.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Freshwater drum	0.0086 (0.0040)	53 (77)	2,135 (1,625)	1,544 (2,127)	1,157 (970)	1,079 (590)	740 (573)	74 (137)	6,782 (2,968)
Other	0.0002 (0.0002)	72 (105)	45 (81)	20 (41)	0 (0)	5 (11)	31 (49)	0 (0)	173 (148)
Total	0.6686 (0.1487)	2,459 (2,523)	53,689 (13,674)	65,089 (19,138)	117,390 (38,495)	63,273 (15,494)	136,621 (52,106)	91,511 (49,662)	530,032 (86,388)
Angler hours		15,802 (6,843)	118,632 (41,469)	179,924 (55,255)	189,869 (65,924)	170,619 (61,779)	88,496 (35,176)	29,395 (13,507)	792,737 (120,008)
Angler trips		3,205 (1,292)	21,926 (7,564)	36,040 (12,328)	35,317 (12,045)	30,255 (11,260)	17,627 (6,768)	6,171 (2,863)	150,541 (23,168)
Angler days		3,205 (1,292)	21,774 (7,516)	35,914 (12,309)	35,317 (12,045)	30,255 (11,260)	17,627 (6,768)	6,171 (2,863)	150,263 (23,142)

Table 21.—Estimated yellow perch and walleye catch per hour, number harvested, and angler effort (hours) for the Lake Erie boat (charter and non-charter) during May through September, 1986-92. Bounds on the error of estimation in parentheses.

Year	Yellow perch		Walleye		Angler hours
	Catch per hour	Number harvested	Catch per hour	Number harvested	
1986	0.308 (0.088)	616,775 (175,555)	0.302 (0.055)	605,666 (110,365)	2,003,342 (250,754)
1987	0.132 (0.062)	310,342 (146,740)	0.382 (0.064)	901,202 (151,019)	2,357,615 (305,725)
1988	0.073 (0.047)	318,786 (205,749)	0.458 (0.096)	1,995,530 (419,052)	4,356,500 (702,517)
1989	0.259 (0.061)	905,040 (211,605)	0.305 (0.059)	1,067,851 (204,768)	3,495,520 (543,137)
1990	0.200 (0.199)	463,813 (172,100)	0.328 (0.069)	763,522 (145,589)	2,324,865 (294,644)
1991	0.397 (0.112)	309,188 (72,714)	0.170 (0.039)	132,322 (22,873)	779,447 (119,971)
1992	0.206 (0.066)	162,349 (52,331)	0.316 (0.056)	249,480 (44,345)	789,116 (119,049)

Table 22.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Lake Superior, by all modes of sportfishing, for all survey areas combined (7), 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0000 (0.0000)	0 (0)	0 (0)	6 (12)	0 (0)	0 (0)	0 (0)	0 (0)	6 (12)
Coho salmon	0.0388 (0.0068)	3,859 (991)	2,097 (532)	238 (123)	150 (106)	164 (127)	1,082 (396)	156 (117)	7,746 (1,216)
Chinook salmon	0.0131 (0.0028)	90 (75)	933 (288)	664 (327)	210 (139)	220 (127)	370 (204)	125 (92)	2,612 (530)
Rainbow trout	0.0042 (0.0023)	169 (114)	188 (114)	112 (106)	7 (11)	25 (30)	246 (404)	98 (85)	845 (457)
Atlantic salmon	0.0002 (0.0003)	5 (11)	2 (4)	0 (0)	0 (0)	0 (0)	29 (59)	0 (0)	36 (60)
Brown trout	0.0033 (0.0012)	237 (145)	279 (159)	29 (59)	9 (19)	29 (43)	40 (63)	27 (33)	650 (239)
Lake trout	0.1215 (0.0148)	79 (90)	2,219 (592)	3,936 (835)	7,339 (1,594)	6,680 (1,054)	1,694 (623)	2,303 (568)	24,250 (2,328)
Splake	0.0020 (0.0011)	89 (107)	78 (119)	0 (0)	0 (0)	16 (26)	9 (18)	206 (156)	398 (226)
Rainbow smelt	0.0553 (0.0580)	11,049 (11,554)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11,049 (11,554)
Northern pike	0.0004 (0.0007)	0 (0)	58 (116)	0 (0)	0 (0)	14 (29)	0 (0)	0 (0)	72 (120)
Yellow perch	0.0107 (0.0101)	9 (18)	17 (34)	907 (1,668)	697 (948)	505 (580)	0 (0)	0 (0)	2,135 (2,005)
Walleye	0.0085 (0.0034)	0 (0)	646 (345)	835 (559)	91 (123)	122 (115)	9 (19)	0 (0)	1,703 (678)
Lake whitefish	0.0055 (0.0033)	306 (293)	279 (323)	375 (457)	12 (24)	0 (0)	37 (59)	90 (123)	1,099 (647)
Round whitefish	0.0086 (0.0076)	772 (1,348)	67 (79)	17 (33)	0 (0)	0 (0)	89 (183)	775 (649)	1,720 (1,510)
Other	0.0152 (0.0059)	85 (159)	26 (33)	571 (514)	996 (864)	868 (441)	216 (172)	282 (242)	3,044 (1,149)
Total	0.2873 (0.0650)	16,749 (11,682)	6,889 (1,007)	7,690 (2,098)	9,511 (2,057)	8,643 (1,301)	3,821 (908)	4,062 (934)	57,365 (12,227)
Angler hours		26,504 (3,453)	32,801 (2,357)	36,384 (2,912)	42,207 (13,849)	29,289 (2,297)	21,012 (1,772)	11,441 (1,279)	199,638 (15,093)
Angler trips		9,423 (1,175)	7,609 (615)	8,517 (811)	9,036 (3,175)	6,963 (608)	5,667 (540)	3,956 (540)	51,171 (3,667)
Angler days		7,497 (998)	6,976 (589)	8,235 (805)	8,994 (3,175)	6,581 (592)	5,120 (507)	3,698 (534)	47,101 (3,601)

Table 23.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Saginaw Bay (Port Austin to Tawas) winter ice fishery, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Rainbow trout	0.0000 (0.0000)	0 (0)	0 (0)	6 (11)	6 (11)
Brown trout	0.0000 (0.0000)	0 (0)	2 (5)	0 (0)	2 (5)
Northern pike	0.0025 (0.0013)	345 (295)	438 (273)	0 (0)	783 (402)
Channel catfish	0.0000 (0.0000)	0 (0)	0 (0)	1 (2)	1 (2)
White perch	0.0001 (0.0002)	0 (0)	6 (13)	15 (29)	21 (32)
White bass	0.0001 (0.0001)	13 (27)	12 (26)	0 (0)	25 (37)
Bluegill	0.0000 (0.0000)	0 (0)	0 (0)	3 (7)	3 (7)
Black crappie	0.0096 (0.0095)	1,375 (2,697)	333 (701)	1,269 (962)	2,977 (2,948)
Yellow perch	0.9886 (0.1870)	201,064 (41,633)	62,089 (23,034)	44,950 (17,581)	308,103 (50,724)
Walleye	0.0449 (0.0135)	1,470 (790)	5,294 (1,998)	7,229 (3,370)	13,993 (3,997)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	6 (11)	6 (11)
Round whitefish	0.0001 (0.0002)	16 (36)	0 (0)	0 (0)	16 (36)
Burbot	0.0011 (0.0016)	0 (0)	54 (78)	276 (457)	330 (464)
Other	0.0006 (0.0008)	0 (0)	36 (53)	137 (214)	173 (220)
Total	1.0475 (0.1905)	204,283 (41,729)	68,264 (23,133)	53,892 (17,934)	326,439 (50,971)
Angler hours		139,773 (19,242)	104,671 (14,286)	67,204 (16,400)	311,648 (29,040)
Angler trips		39,087 (5,420)	25,567 (3,339)	14,750 (3,540)	79,404 (7,284)
Angler days		34,635 (4,841)	23,357 (3,101)	13,019 (3,077)	71,011 (6,521)

Table 24.—Estimated yellow perch and walleye catch per hour, number harvested, and angler effort (hours) for the Saginaw Bay ice fishery, January through March, 1984-93. Bounds on the error of estimation in parentheses.

Year	Yellow perch		Walleye		Angler hours
	Catch per hour	Number harvested	Catch per hour	Number harvested	
1984 ¹	2.454 (0.379)	1,570,402 (219,616)	0.007 (0.011)	4,481 (7,338)	639,887 (75,182)
1987	4.794 (0.832)	3,153,609 (446,851)	0.001 (0.001)	636 (388)	657,770 (65,934)
1988	2.418 (0.549)	675,723 (133,958)	0.017 (0.017)	4,658 (4,617)	279,505 (30,909)
1991	2.765 (0.519)	815,511 (127,974)	0.006 (0.004)	1,702 (1,142)	294,976 (30,401)
1992	2.538 (0.499)	907,676 (157,445)	0.007 (0.003)	2,404 (1,209)	357,651 (33,017)
1993	0.989 (0.187)	308,103 (50,724)	0.045 (0.014)	13,993 (3,997)	311,648 (29,040)

¹Ryckman, 1986

Table 25.—Estimated yellow perch and walleye catch per hour, number harvested, and angler effort (hours) for the ice fishery on Little Bay de Noc, January through March, 1986-93. Bounds on the error of estimation in parentheses.

Year	Yellow perch		Walleye		Angler hours
	Catch per hour	Number harvested	Catch per hour	Number harvested	
1986	0.824 (0.216)	226,409 (52,473)	0.020 (0.011)	4,890 (2,565)	274,745 (33,342)
1987 ¹					
1988	0.491 (0.191)	65,290 (22,140)	0.128 (0.076)	11,798 (6,435)	133,107 (25,403)
1989	0.476 (0.149)	87,083 (25,187)	0.036 (0.019)	6,062 (3,048)	182,963 (21,823)
1990	0.902 (0.186)	176,068 (32,411)	0.057 (0.017)	9,448 (2,758)	195,210 (18,176)
1991	0.974 (0.202)	215,532 (39,029)	0.029 (0.012)	5,183 (2,090)	221,355 (22,579)
1992	0.970 (0.212)	249,804 (47,082)	0.021 (0.007)	4,612 (1,447)	257,559 (28,427)
1993	0.144 (0.039)	36,902 (9,224)	0.021 (0.008)	5,275 (2,099)	256,842 (26,099)

¹1987 data not reliable.

Table 26.—Estimated catch per hour and number harvested of selected species and angler effort (hours) for the ice fishery on Keweenaw Bay, Feruary through March, 1988-93. Bounds on the error of estimation in parentheses.

Year	Coho salmon		Chinook salmon		Lake trout		Lake whitefish		Siscowet ¹		Angler hours
	Catch per hour	Number harvested	Catch per hour	Number harvested	Catch per hour	Number harvested	Catch per hour	Number harvested	Catch per hour	Number harvested	
1988	0.075	5,610	0.004	286	0.114	8,596	0.065	4,902			75,204
	(0.030)	(2,061)	(0.003)	(225)	(0.035)	(2,306)	(0.048)	(3,544)			(11,044)
1989	0.004	320	0.007	552	0.320	26,446	0.385	3,188			82,713
	(0.008)	(660)	(0.013)	(1,021)	(0.182)	(13,705)	(0.044)	(3,572)			(19,380)
1990 ²	0.060	661	0.030	332			0.001	106			11,031
	(0.041)	(413)	(0.035)	(373)			(0.019)	(212)			(2,951)
1991	0.062	5,774	0.007	683	0.048	4,414	0.003	267	0.106	9,776	92,480
	(0.025)	(1,998)	(0.005)	(442)	(0.019)	(1,521)	(0.003)	(234)	(0.035)	(2,570)	(18,268)
1992	0.019	643	0.020	686	0.076	2,609	0.010	345	0.054	1,842	34,427
	(0.022)	(739)	(0.022)	(761)	(0.074)	(2,505)	(0.012)	(393)	(0.023)	(740)	(5,228)
1993	0.055	3,496	0.015	965	0.043	2,748	0.006	404	0.084	5,374	64,148
	(0.016)	(922)	(0.008)	(472)	(0.012)	(658)	(0.004)	(239)	(0.020)	(1,071)	(8,639)

¹Siscowet lake trout were differentiated from lean lake trout beginning with the 1991 season.

²During 1990 only the month of March was surveyed due to poor ice conditions caused by mild winter weather.

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Appendix 1.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Little Bay de Noc, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	24 (50)	0 (0)	0 (0)	24 (50)
Chinook salmon	0.0005 (0.0005)	0 (0)	0 (0)	0 (0)	127 (133)	0 (0)	0 (0)	127 (133)
Rainbow trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	8 (17)	0 (0)	0 (0)	8 (17)
Brown trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	6 (11)	0 (0)	0 (0)	6 (11)
Northern pike	0.0035 (0.0026)	0 (0)	64 (130)	138 (214)	480 (548)	140 (194)	47 (80)	869 (638)
White sucker	0.0001 (0.0002)	0 (0)	0 (0)	19 (40)	0 (0)	0 (0)	0 (0)	19 (40)
Brown bullhead	0.0037 (0.0060)	33 (67)	84 (139)	811 (1,489)	0 (0)	0 (0)	0 (0)	928 (1,497)
Channel catfish	0.0009 (0.0007)	31 (63)	0 (0)	95 (126)	28 (57)	7 (14)	62 (93)	223 (179)
White perch	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	25 (51)	0 (0)	25 (51)
White bass	0.0003 (0.0005)	0 (0)	24 (49)	0 (0)	40 (82)	0 (0)	0 (0)	64 (96)
Rockbass	0.0137 (0.0070)	485 (728)	880 (760)	1,170 (965)	822 (878)	64 (94)	21 (44)	3,442 (1,679)
Pumpkinseed	0.0076 (0.0070)	648 (1,197)	497 (1,027)	306 (568)	433 (391)	13 (25)	0 (0)	1,897 (1,722)
Bluegill	0.0002 (0.0004)	40 (82)	0 (0)	0 (0)	6 (11)	0 (0)	0 (0)	46 (83)
Smallmouth bass	0.0129 (0.0093)	91 (131)	1,671 (1,913)	84 (129)	1,167 (1,223)	35 (70)	192 (293)	3,240 (2,298)

Appendix 1.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
White crappie	0.0024 (0.0030)	260 (377)	314 (633)	0 (0)	0 (0)	0 (0)	21 (44)	595 (738)
Black crappie	0.0027 (0.0029)	570 (706)	39 (79)	81 (142)	0 (0)	0 (0)	0 (0)	690 (724)
Yellow perch	0.3607 (0.1301)	53,264 (26,788)	9,214 (6,190)	8,752 (6,056)	14,997 (10,150)	2,203 (1,373)	2,070 (1,766)	90,500 (30,010)
Walleye	0.0706 (0.0223)	8,362 (4,237)	606 (478)	897 (594)	3,238 (1,859)	1,649 (551)	2,952 (1,600)	17,704 (4,985)
Other	0.0002 (0.0003)	27 (54)	0 (0)	0 (0)	28 (58)	0 (0)	0 (0)	55 (79)
Total	0.4801 (0.1399)	63,811 (27,170)	13,393 (6,654)	12,353 (6,372)	21,404 (10,451)	4,136 (1,498)	5,365 (2,405)	120,462 (30,665)
Angler hours		66,840 (18,628)	39,261 (16,770)	25,198 (9,674)	59,893 (16,376)	19,579 (3,514)	40,160 (16,186)	250,931 (35,557)
Angler trips		18,090 (5,082)	11,464 (4,394)	7,787 (2,651)	11,513 (3,178)	4,864 (908)	7,423 (2,654)	61,141 (8,374)
Angler days		12,974 (3,704)	9,220 (3,575)	6,556 (2,350)	10,057 (2,867)	4,801 (901)	6,633 (2,374)	50,241 (6,833)

Appendix 2.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the boat fishery on Big Bay de Noc, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Northern pike	0.0026 (0.0024)	81 (98)	0 (0)	0 (0)	45 (97)	39 (65)	165 (152)
White perch	0.0009 (0.0020)	0 (0)	0 (0)	0 (0)	56 (121)	0 (0)	56 (121)
Rockbass	0.0009 (0.0015)	0 (0)	44 (89)	11 (23)	0 (0)	0 (0)	55 (92)
Smallmouth bass	0.1584 (0.0528)	3,244 (1,794)	2,428 (1,367)	2,131 (1,465)	784 (578)	1,589 (1,082)	10,176 (2,956)
Yellow perch	0.5058 (0.2324)	16,315 (6,700)	56 (69)	2,940 (2,661)	12,891 (11,926)	297 (601)	32,499 (13,949)
Walleye	0.0141 (0.0108)	305 (321)	10 (21)	80 (120)	511 (582)	0 (0)	906 (676)
Other	0.0056 (0.0062)	155 (312)	185 (236)	19 (39)	0 (0)	0 (0)	359 (393)
Total	0.6881 (0.2492)	20,100 (6,951)	2,723 (1,392)	5,181 (3,040)	14,287 (11,955)	1,925 (1,239)	44,216 (14,281)
Angler hours		24,269 (4,943)	11,369 (1,793)	9,623 (3,012)	13,975 (8,492)	5,018 (1,434)	64,254 (10,530)
Angler trips		5,617 (1,233)	3,022 (564)	2,173 (719)	3,624 (2,214)	1,183 (412)	15,619 (2,725)
Angler days		4,228 (959)	2,309 (490)	1,770 (606)	3,624 (2,214)	1,183 (412)	13,114 (2,569)

Appendix 3.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the boat fishery at Harbor Springs, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jun	Jul	Aug	
Chinook salmon	0.0096 (0.0107)	0 (0)	0 (0)	144 (157)	144 (157)
Rainbow trout	0.0043 (0.0087)	0 (0)	0 (0)	65 (131)	65 (131)
Lake trout	0.0188 (0.0183)	89 (132)	116 (175)	76 (153)	281 (267)
Smallmouth bass	0.0219 (0.0341)	0 (0)	327 (504)	0 (0)	327 (504)
Yellow perch	0.0174 (0.0354)	0 (0)	0 (0)	260 (526)	260 (526)
Burbot	0.0014 (0.0029)	0 (0)	21 (43)	0 (0)	21 (43)
Total	0.0734 (0.0561)	89 (132)	464 (535)	545 (585)	1,098 (804)
Angler hours		2,082 (766)	5,011 (2,030)	7,871 (2,437)	14,964 (3,263)
Angler trips		426 (183)	1,421 (544)	1,969 (621)	3,816 (846)
Angler days		372 (184)	1,421 (544)	1,969 (621)	3,762 (846)

Appendix 4.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for shore fishery on the Bear River (Petoskey), by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Rainbow trout	0.1613 (0.1120)	334 (312)	--- (0)	155 (204)	406 (473)	895 (602)
Brook trout	0.0014 (0.0030)	8 (17)	--- (0)	0 (0)	0 (0)	8 (17)
Rainbow smelt	1.2710 (1.1545)	7,050 (6,287)	--- (0)	0 (0)	0 (0)	7,050 (6,287)
Other	0.0256 (0.0528)	142 (292)	--- (0)	0 (0)	0 (0)	142 (292)
Total	1.4593 (1.1674)	7,534 (6,302)	--- (0)	155 (204)	406 (473)	8,095 (6,323)
Angler hours		2,101 (691)	--- (0)	1,611 (572)	1,835 (338)	5,547 (959)
Angler trips		441 (200)	--- (0)	671 (303)	618 (191)	1,730 (410)
Angler days		393 (192)	--- (0)	671 (303)	618 (191)	1,682 (406)

Appendix 5.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Petoskey, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Chinook salmon	0.0065 (0.0067)	0 (0)	0 (0)	40 (62)	153 (187)	---	193 (197)
Rainbow trout	0.0090 (0.0085)	53 (107)	0 (0)	0 (0)	212 (224)	---	265 (248)
Lake trout	0.1006 (0.0409)	1,297 (884)	584 (350)	1,082 (602)	9 (19)	---	2,972 (1,125)
Redhorses	0.0002 (0.0004)	0 (0)	5 (10)	0 (0)	0 (0)	---	5 (10)
Yellow bullhead	0.0006 (0.0013)	0 (0)	0 (0)	0 (0)	19 (40)	---	19 (40)
Rockbass	0.0058 (0.0091)	0 (0)	170 (265)	0 (0)	0 (0)	---	170 (265)
Smallmouth bass	0.0107 (0.0152)	175 (343)	0 (0)	141 (285)	0 (0)	---	316 (446)
Yellow perch	0.0378 (0.0566)	0 (0)	788 (1,595)	165 (336)	163 (331)	---	1,116 (1,663)
Total	0.1711 (0.0753)	1,525 (954)	1,547 (1,654)	1,428 (749)	556 (443)	---	5,056 (2,098)
Angler hours		3,550 (1,735)	8,506 (2,041)	8,144 (1,894)	9,342 (2,852)	---	29,542 (4,347)
Angler trips		1,346 (689)	1,969 (448)	2,946 (780)	3,819 (1,246)	---	10,080 (1,684)
Angler days		1,260 (666)	1,772 (427)	2,907 (778)	3,498 (1,179)	---	9,437 (1,619)

Appendix 6.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Charlevoix, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Coho salmon	0.0027 (0.0050)	0 (0)	0 (0)	0 (0)	139 (259)	0 (0)	139 (259)
Chinook salmon	0.0725 (0.0235)	0 (0)	0 (0)	1,201 (917)	1,189 (519)	1,343 (436)	3,733 (1,140)
Rainbow trout	0.0082 (0.0076)	0 (0)	0 (0)	170 (239)	241 (304)	10 (19)	421 (387)
Brown trout	0.0010 (0.0014)	0 (0)	4 (8)	0 (0)	49 (73)	0 (0)	53 (73)
Lake trout	0.0656 (0.0301)	64 (85)	638 (546)	229 (353)	2,447 (1,354)	0 (0)	3,378 (1,504)
Smallmouth bass	0.0018 (0.0024)	0 (0)	0 (0)	0 (0)	0 (0)	93 (123)	93 (123)
Largemouth bass	0.0006 (0.0013)	0 (0)	0 (0)	0 (0)	0 (0)	31 (65)	31 (65)
Other	0.0008 (0.0016)	0 (0)	0 (0)	0 (0)	42 (85)	0 (0)	42 (85)
Total	0.1533 (0.0415)	64 (85)	642 (546)	1,600 (1,011)	4,107 (1,508)	1,477 (458)	7,890 (1,952)
Angler hours		1,433 (590)	3,645 (1,144)	7,745 (3,076)	25,133 (4,238)	13,516 (1,771)	51,472 (5,676)
Angler trips		383 (167)	526 (221)	1,889 (871)	5,858 (1,055)	3,830 (584)	12,486 (1,513)
Angler days		383 (167)	500 (218)	1,889 (871)	5,708 (1,037)	3,613 (569)	12,093 (1,494)

Appendix 7.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Elk Rapids, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0012 (0.0016)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	38 (58)	5 (10)	43 (59)
Chinook salmon	0.0128 (0.0112)	0 (0)	0 (0)	0 (0)	0 (0)	323 (397)	60 (59)	91 (104)	474 (415)
Rainbow trout	0.0362 (0.0132)	453 (205)	392 (255)	114 (228)	159 (195)	99 (145)	56 (70)	67 (80)	1,340 (479)
Brown trout	0.0006 (0.0009)	0 (0)	0 (0)	0 (0)	0 (0)	10 (20)	11 (22)	0 (0)	21 (30)
Lake trout	0.0024 (0.0050)	0 (0)	0 (0)	0 (0)	0 (0)	88 (183)	0 (0)	0 (0)	88 (183)
White sucker	0.0078 (0.0102)	0 (0)	147 (299)	114 (228)	29 (58)	0 (0)	0 (0)	0 (0)	290 (380)
Rockbass	0.0033 (0.0066)	0 (0)	0 (0)	0 (0)	121 (243)	0 (0)	0 (0)	0 (0)	121 (243)
Smallmouth bass	0.0903 (0.0393)	0 (0)	33 (47)	1,949 (812)	1,329 (1,179)	27 (54)	3 (6)	0 (0)	3,341 (1,433)
Yellow perch	0.0273 (0.0168)	0 (0)	385 (381)	84 (168)	0 (0)	0 (0)	542 (457)	0 (0)	1,011 (618)
Lake whitefish	0.0065 (0.0136)	0 (0)	0 (0)	0 (0)	0 (0)	240 (500)	0 (0)	0 (0)	240 (500)
Total	0.1883 (0.0513)	453 (205)	957 (549)	2,261 (890)	1,638 (1,221)	787 (682)	710 (470)	163 (132)	6,969 (1,825)
Angler hours		5,283 (621)	4,562 (1,262)	5,274 (460)	7,963 (1,652)	6,465 (1,315)	3,707 (883)	3,764 (580)	37,018 (2,786)
Angler trips		1,645 (295)	1,439 (483)	1,757 (318)	2,467 (631)	1,809 (387)	1,144 (311)	1,302 (277)	11,563 (1,069)
Angler days		1,179 (242)	1,085 (385)	1,492 (318)	1,940 (558)	1,477 (333)	832 (243)	890 (213)	8,895 (914)

Appendix 8.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the east arm of Grand Traverse Bay, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0214 (0.0115)	22 (33)	158 (243)	0 (0)	0 (0)	615 (458)	310 (265)	0 (0)	1,105 (583)
Rainbow trout	0.0064 (0.0043)	37 (76)	58 (120)	0 (0)	66 (78)	33 (67)	75 (91)	63 (101)	332 (222)
Brown trout	0.0004 (0.0008)	0 (0)	0 (0)	0 (0)	0 (0)	23 (47)	0 (0)	0 (0)	23 (47)
Lake trout	0.0224 (0.0113)	0 (0)	495 (441)	176 (173)	118 (136)	294 (264)	76 (123)	0 (0)	1,159 (572)
Rainbow smelt	0.0112 (0.0108)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	581 (559)	581 (559)
White sucker	0.0004 (0.0006)	0 (0)	15 (31)	8 (16)	0 (0)	0 (0)	0 (0)	0 (0)	23 (35)
Smallmouth bass	0.0194 (0.0127)	0 (0)	17 (34)	322 (419)	307 (363)	299 (319)	58 (118)	0 (0)	1,003 (651)
Yellow perch	0.0514 (0.0310)	28 (58)	62 (125)	0 (0)	36 (74)	87 (175)	1,192 (1,407)	1,257 (694)	2,662 (1,586)
Lake whitefish	0.0849 (0.0575)	123 (111)	56 (88)	97 (139)	523 (669)	3,373 (2,851)	0 (0)	220 (237)	4,392 (2,945)
Round whitefish	0.0088 (0.0123)	0 (0)	0 (0)	0 (0)	0 (0)	26 (52)	352 (625)	75 (91)	453 (634)
Burbot	0.0005 (0.0009)	26 (47)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	26 (47)
Other	0.0010 (0.0020)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (103)	51 (103)
Total	0.2282 (0.0733)	236 (157)	861 (542)	603 (474)	1,050 (781)	4,750 (2,924)	2,063 (1,574)	2,247 (938)	11,810 (3,614)
Angler hours		3,560 (938)	6,019 (1,773)	3,982 (1,221)	9,687 (2,257)	17,434 (3,289)	7,184 (1,829)	3,890 (989)	51,756 (5,074)
Angler trips		902 (250)	1,500 (463)	1,036 (331)	2,639 (649)	4,076 (857)	2,238 (575)	1,192 (334)	13,583 (1,409)
Angler days		815 (232)	1,371 (451)	909 (310)	2,295 (619)	3,709 (819)	1,957 (545)	997 (277)	12,053 (1,335)

Appendix 9.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the west arm of Grand Traverse Bay, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0005 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	48 (98)	0 (0)	48 (98)
Chinook salmon	0.0231 (0.0097)	447 (317)	449 (346)	0 (0)	114 (141)	904 (735)	199 (146)	51 (74)	2,164 (898)
Rainbow trout	0.0048 (0.0051)	165 (151)	258 (450)	0 (0)	0 (0)	0 (0)	28 (56)	0 (0)	451 (478)
Brown trout	0.0030 (0.0026)	103 (108)	55 (79)	0 (0)	28 (57)	0 (0)	99 (200)	0 (0)	285 (247)
Lake trout	0.0504 (0.0149)	0 (0)	2,228 (1,033)	807 (517)	796 (436)	889 (568)	0 (0)	0 (0)	4,720 (1,359)
Splake	0.0004 (0.0008)	34 (69)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	34 (69)
Rainbow smelt	0.0407 (0.0354)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	61 (91)	3,756 (3,305)	3,817 (3,306)
White sucker	0.0001 (0.0002)	6 (12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (12)
Channel catfish	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	23 (47)	0 (0)	0 (0)	0 (0)	23 (47)
Smallmouth bass	0.0042 (0.0044)	0 (0)	0 (0)	52 (105)	0 (0)	157 (316)	185 (240)	0 (0)	394 (410)
Yellow perch	0.1156 (0.0697)	3,824 (2,351)	2,480 (4,994)	34 (70)	1,621 (2,977)	0 (0)	509 (463)	2,359 (1,577)	10,827 (6,484)
Freshwater drum	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14 (28)	0 (0)	14 (28)
Lake whitefish	0.0037 (0.0046)	0 (0)	251 (409)	40 (81)	42 (84)	0 (0)	13 (26)	0 (0)	346 (426)
Round whitefish	0.0413 (0.0218)	717 (484)	0 (0)	0 (0)	0 (0)	0 (0)	337 (429)	2,815 (1,922)	3,869 (2,028)
Burbot	0.0054 (0.0098)	0 (0)	510 (927)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	510 (927)
Total	0.2937 (0.0861)	5,296 (2,429)	6,231 (5,231)	933 (538)	2,624 (3,014)	1,950 (981)	1,493 (735)	8,981 (4,136)	27,508 (7,826)

Appendix 9.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Angler hours		13,297 (2,141)	16,890 (2,993)	10,629 (2,686)	14,172 (2,910)	20,547 (2,948)	11,631 (1,971)	6,506 (1,617)	93,672 (6,664)
Angler trips		3,974 (715)	4,153 (781)	2,562 (648)	3,354 (749)	5,444 (838)	3,182 (552)	2,434 (709)	25,103 (1,900)
Angler days		2,975 (585)	3,316 (694)	2,225 (617)	2,998 (734)	4,744 (836)	2,809 (535)	2,049 (634)	21,116 (1,769)

Appendix 10.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Frankfort, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	9 (19)	0 (0)	6 (14)	0 (0)	15 (24)
Coho salmon	0.0179 (0.0081)	0 (0)	0 (0)	0 (0)	481 (449)	2,643 (1,323)	589 (563)	281 (244)	3,994 (1,526)
Chinook salmon	0.0251 (0.0111)	0 (0)	5 (10)	37 (59)	1,845 (1,400)	3,219 (1,517)	144 (122)	358 (244)	5,608 (2,083)
Rainbow trout	0.0378 (0.0148)	6 (12)	33 (73)	1,595 (1,611)	1,574 (985)	3,022 (1,575)	866 (731)	1,358 (592)	8,454 (2,634)
Atlantic salmon	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	29 (51)	26 (53)	1 (2)	0 (0)	56 (74)
Brown trout	0.0074 (0.0040)	496 (566)	84 (83)	0 (0)	589 (480)	425 (287)	4 (9)	52 (51)	1,650 (802)
Lake trout	0.0169 (0.0094)	0 (0)	333 (334)	446 (550)	2,568 (1,760)	410 (251)	16 (36)	0 (0)	3,773 (1,891)
White sucker	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	44 (66)	44 (66)
Yellow perch	0.0048 (0.0036)	0 (0)	0 (0)	0 (0)	1,044 (748)	26 (55)	0 (0)	0 (0)	1,070 (750)
Freshwater drum	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	24 (52)	0 (0)	0 (0)	0 (0)	24 (52)
Round whitefish	0.0065 (0.0033)	13 (26)	0 (0)	0 (0)	22 (45)	0 (0)	0 (0)	1,422 (647)	1,457 (649)
Burbot	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	22 (48)	0 (0)	0 (0)	0 (0)	22 (48)
Total	0.1170 (0.0341)	515 (567)	455 (352)	2,078 (1,703)	8,207 (2,651)	9,771 (2,585)	1,626 (932)	3,515 (946)	26,167 (4,338)
Angler hours		9,313 (5,401)	10,307 (4,696)	20,122 (17,542)	58,969 (31,934)	86,720 (36,338)	20,049 (12,036)	18,143 (4,137)	223,623 (53,490)
Angler trips		2,102 (1,012)	2,693 (1,128)	4,533 (3,145)	13,540 (6,551)	17,766 (6,967)	4,638 (2,210)	4,655 (964)	49,927 (10,462)
Angler days		1,769 (989)	2,633 (1,119)	4,374 (3,118)	12,372 (5,881)	16,128 (6,309)	4,236 (2,112)	3,963 (914)	45,475 (9,573)

Appendix 11.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Onekama, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0065 (0.0060)	0 (0)	0 (0)	60 (129)	216 (241)	65 (102)	0 (0)	341 (292)
Chinook salmon	0.0192 (0.0139)	0 (0)	0 (0)	318 (389)	607 (508)	81 (128)	0 (0)	1,006 (653)
Rainbow trout	0.0387 (0.0251)	0 (0)	95 (121)	472 (589)	1,152 (855)	308 (447)	0 (0)	2,027 (1,137)
Atlantic salmon	0.0048 (0.0111)	0 (0)	0 (0)	253 (581)	0 (0)	0 (0)	0 (0)	253 (581)
Brown trout	0.0038 (0.0047)	31 (46)	0 (0)	71 (154)	95 (174)	3 (11)	0 (0)	200 (237)
Lake trout	0.0053 (0.0063)	0 (0)	6 (12)	153 (280)	120 (149)	0 (0)	0 (0)	279 (317)
Rockbass	0.0122 (0.0156)	0 (0)	74 (144)	117 (156)	449 (765)	0 (0)	0 (0)	640 (794)
Bluegill	0.0001 (0.0002)	0 (0)	0 (0)	5 (11)	0 (0)	0 (0)	0 (0)	5 (11)
Largemouth bass	0.0010 (0.0019)	0 (0)	0 (0)	0 (0)	52 (96)	0 (0)	0 (0)	52 (96)
White crappie	0.0066 (0.0144)	0 (0)	0 (0)	0 (0)	347 (748)	0 (0)	0 (0)	347 (748)
Yellow perch	0.1471 (0.1682)	5,580 (8,247)	1,591 (1,547)	7 (14)	532 (1,014)	0 (0)	0 (0)	7,710 (8,452)
Round whitefish	0.0013 (0.0017)	0 (0)	54 (79)	0 (0)	0 (0)	13 (27)	0 (0)	67 (83)
Other	0.0003 (0.0006)	0 (0)	18 (36)	0 (0)	0 (0)	0 (0)	0 (0)	18 (36)
Total	0.2470 (0.1837)	5,611 (8,247)	1,838 (1,561)	1,456 (990)	3,570 (1,812)	470 (477)	0 (0)	12,945 (8,657)

Appendix 11.—Continued:

Species	Total catch per hour	Month					Season	
		May	Jun	Jul	Aug	Sep		Oct
Angler hours		10,022 (7,344)	6,005 (2,464)	10,746 (7,702)	21,066 (12,831)	2,965 (2,547)	1,613 (308)	52,417 (17,045)
Angler trips		1,876 (1,291)	1,380 (566)	3,180 (2,338)	3,736 (2,073)	726 (527)	1,461 (223)	12,359 (3,475)
Angler days		1,818 (1,264)	1,380 (566)	2,821 (2,053)	3,675 (2,072)	663 (524)	1,014 (596)	11,371 (3,325)

Appendix 12.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Manistee, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0139 (0.0083)	0 (0)	0 (0)	66 (152)	46 (92)	2,298 (1,536)	498 (521)	143 (127)	3,051 (1,637)
Chinook salmon	0.0262 (0.0159)	0 (0)	0 (0)	83 (96)	467 (544)	4,873 (3,089)	297 (297)	32 (78)	5,752 (3,153)
Rainbow trout	0.0287 (0.0139)	109 (229)	0 (0)	811 (961)	903 (1,076)	2,836 (1,828)	1,115 (1,048)	525 (315)	6,299 (2,583)
Brown trout	0.0140 (0.0087)	1,427 (1,212)	165 (212)	840 (1,108)	270 (393)	301 (334)	0 (0)	77 (137)	3,080 (1,740)
Lake trout	0.0070 (0.0048)	0 (0)	9 (19)	133 (168)	492 (629)	903 (731)	0 (0)	0 (0)	1,537 (979)
Rainbow smelt	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (19)	10 (19)
Northern pike	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (22)	10 (22)
White sucker	0.0003 (0.0004)	27 (56)	0 (0)	0 (0)	40 (80)	0 (0)	0 (0)	4 (9)	71 (98)
Rockbass	0.0004 (0.0007)	0 (0)	0 (0)	9 (18)	0 (0)	0 (0)	0 (0)	86 (173)	95 (174)
Bluegill	0.0001 (0.0002)	0 (0)	0 (0)	18 (36)	0 (0)	0 (0)	0 (0)	0 (0)	18 (36)
Smallmouth bass	0.0005 (0.0008)	0 (0)	0 (0)	0 (0)	80 (161)	0 (0)	35 (75)	0 (0)	115 (178)
Largemouth bass	0.0005 (0.0010)	0 (0)	0 (0)	0 (0)	120 (241)	0 (0)	0 (0)	0 (0)	120 (241)
White crappie	0.0004 (0.0008)	82 (172)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	82 (172)
Black crappie	0.0006 (0.0009)	0 (0)	0 (0)	0 (0)	66 (134)	61 (125)	0 (0)	0 (0)	127 (183)
Yellow perch	0.2803 (0.1512)	8,498 (5,949)	23,872 (25,524)	5,423 (3,350)	9,830 (5,116)	10,087 (10,853)	247 (450)	3,511 (2,076)	61,468 (29,096)
Freshwater drum	0.0023 (0.0028)	192 (389)	0 (0)	0 (0)	321 (472)	0 (0)	0 (0)	0 (0)	513 (612)

Appendix 12.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Round whitefish	0.0008 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	81 (168)	0 (0)	84 (125)	165 (209)
Burbot	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	11 (26)	0 (0)	0 (0)	0 (0)	11 (26)
Total	0.3764 (0.1662)	10,335 (6,091)	24,046 (25,525)	7,383 (3,665)	12,646 (5,340)	21,440 (11,564)	2,192 (1,291)	4,482 (2,120)	82,524 (29,504)
Angler hours		17,891 (6,058)	16,343 (13,378)	25,321 (12,766)	33,670 (11,570)	91,916 (50,402)	19,970 (12,615)	14,145 (3,505)	219,256 (56,783)
Angler trips		4,463 (1,401)	4,317 (3,178)	6,253 (2,785)	9,132 (2,673)	23,215 (11,646)	4,518 (2,578)	3,063 (719)	54,961 (13,029)
Angler days		3,830 (1,259)	3,668 (2,726)	5,608 (2,613)	7,357 (2,168)	18,230 (9,568)	3,562 (2,152)	2,518 (636)	44,773 (10,822)

Appendix 13.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Ludington, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	26 (55)	0 (0)	0 (0)	0 (0)	26 (55)
Coho salmon	0.0095 (0.0047)	0 (0)	0 (0)	0 (0)	205 (216)	1,541 (746)	866 (862)	28 (49)	2,640 (1,161)
Chinook salmon	0.0210 (0.0087)	0 (0)	0 (0)	49 (50)	1,014 (758)	3,684 (1,571)	1,005 (1,085)	67 (87)	5,819 (2,057)
Rainbow trout	0.0388 (0.0164)	0 (0)	1 (2)	126 (121)	3,624 (2,577)	4,162 (1,744)	2,453 (2,328)	385 (217)	10,751 (3,894)
Brown trout	0.0044 (0.0024)	197 (190)	313 (408)	46 (66)	370 (387)	167 (138)	25 (52)	103 (105)	1,221 (624)
Lake trout	0.0102 (0.0064)	0 (0)	0 (0)	94 (117)	2,005 (1,596)	697 (415)	24 (54)	0 (0)	2,820 (1,654)
Northern pike	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	25 (52)	9 (22)	0 (0)	34 (56)
White sucker	0.0001 (0.0001)	7 (16)	0 (0)	22 (45)	0 (0)	0 (0)	0 (0)	10 (21)	39 (52)
Smallmouth bass	0.0002 (0.0004)	0 (0)	44 (97)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	44 (97)
Yellow perch	0.8835 (0.3662)	7,935 (6,729)	20,123 (18,979)	68,942 (28,455)	109,846 (75,020)	37,851 (24,515)	0 (0)	0 (0)	244,697 (86,280)
Freshwater drum	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	44 (88)	0 (0)	0 (0)	44 (88)
Round whitefish	0.0004 (0.0003)	0 (0)	26 (43)	20 (41)	0 (0)	0 (0)	0 (0)	76 (75)	122 (96)
Total	0.9686 (0.3767)	8,139 (6,732)	20,507 (18,984)	69,299 (28,456)	117,090 (75,086)	48,171 (24,643)	4,382 (2,710)	669 (272)	268,257 (86,418)
Angler hours		5,369 (3,139)	15,363 (13,233)	45,466 (15,076)	82,811 (45,198)	92,167 (26,575)	30,790 (21,858)	4,999 (1,827)	276,965 (60,353)
Angler trips		1,987 (1,096)	3,933 (3,089)	12,176 (3,349)	19,325 (9,256)	21,385 (5,578)	6,240 (3,976)	1,402 (489)	66,448 (12,442)
Angler days		1,726 (1,071)	3,616 (2,965)	10,707 (3,105)	16,342 (8,026)	16,983 (4,485)	5,114 (3,281)	1,160 (430)	55,648 (10,727)

Appendix 14.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Muskegon, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0063 (0.0047)	0 (0)	0 (0)	113 (186)	118 (243)	824 (687)	0 (0)	0 (0)	1,055 (752)
Chinook salmon	0.0100 (0.0064)	0 (0)	124 (266)	45 (91)	72 (150)	1,223 (933)	213 (270)	0 (0)	1,677 (1,022)
Rainbow trout	0.0166 (0.0106)	0 (0)	0 (0)	104 (147)	310 (323)	2,083 (1,625)	279 (319)	7 (15)	2,783 (1,694)
Brown trout	0.0029 (0.0030)	8 (18)	333 (415)	140 (272)	0 (0)	0 (0)	0 (0)	0 (0)	481 (497)
Lake trout	0.0086 (0.0058)	0 (0)	0 (0)	0 (0)	443 (538)	1,003 (756)	0 (0)	0 (0)	1,446 (928)
Splake	0.0016 (0.0021)	0 (0)	110 (237)	45 (91)	106 (218)	0 (0)	0 (0)	0 (0)	261 (335)
Channel catfish	0.0003 (0.0006)	0 (0)	0 (0)	49 (99)	0 (0)	0 (0)	0 (0)	0 (0)	49 (99)
Smallmouth bass	0.0085 (0.0053)	0 (0)	470 (555)	709 (545)	254 (320)	0 (0)	0 (0)	0 (0)	1,433 (841)
Largemouth bass	0.0041 (0.0029)	0 (0)	290 (326)	280 (232)	118 (243)	0 (0)	0 (0)	0 (0)	688 (468)
Yellow perch	1.2165 (0.5153)	20,402 (25,509)	1,875 (2,588)	24,804 (7,502)	52,316 (35,641)	104,594 (62,479)	162 (258)	0 (0)	204,153 (76,731)
Total	1.2753 (0.5209)	20,410 (25,509)	3,202 (2,722)	26,289 (7,536)	53,737 (35,651)	109,727 (62,515)	654 (491)	7 (15)	214,026 (76,774)
Angler hours		12,785 (9,500)	20,085 (6,243)	26,713 (6,216)	37,990 (13,618)	61,302 (26,443)	8,168 (4,784)	782 (394)	167,825 (32,796)
Angler trips		2,513 (1,748)	4,933 (1,594)	5,871 (1,327)	7,932 (2,629)	14,547 (6,399)	2,166 (1,229)	394 (218)	38,356 (7,535)
Angler days		2,513 (1,748)	4,933 (1,594)	5,871 (1,327)	7,932 (2,629)	13,944 (6,186)	1,903 (1,083)	306 (181)	37,402 (7,331)

Appendix 15.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Grand Haven, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0203 (0.0128)	18 (27)	1,686 (1,358)	28 (57)	221 (323)	357 (344)	25 (36)	0 (0)	2,335 (1,439)
Chinook salmon	0.0065 (0.0083)	0 (0)	0 (0)	0 (0)	124 (258)	608 (917)	20 (45)	0 (0)	752 (954)
Rainbow trout	0.0131 (0.0103)	0 (0)	407 (602)	5 (11)	595 (961)	76 (111)	77 (119)	353 (209)	1,513 (1,165)
Brown trout	0.0035 (0.0073)	14 (21)	383 (844)	0 (0)	0 (0)	11 (21)	0 (0)	0 (0)	408 (845)
Brook trout	0.0025 (0.0055)	0 (0)	287 (633)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	287 (633)
Lake trout	0.0136 (0.0114)	0 (0)	0 (0)	0 (0)	1,373 (1,283)	195 (179)	0 (0)	0 (0)	1,568 (1,295)
Channel catfish	0.0040 (0.0027)	0 (0)	106 (130)	188 (235)	100 (118)	44 (52)	20 (42)	0 (0)	458 (301)
Largemouth bass	0.0003 (0.0006)	0 (0)	0 (0)	0 (0)	0 (0)	30 (60)	0 (0)	0 (0)	30 (60)
Yellow perch	0.5048 (0.1524)	312 (173)	4,264 (2,219)	14,101 (4,287)	30,486 (13,832)	6,178 (3,405)	814 (1,691)	1,971 (3,043)	58,126 (15,439)
Round whitefish	0.0027 (0.0017)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	315 (194)	315 (194)
Burbot	0.0000 (0.0000)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (11)
Total	0.5714 (0.1589)	349 (177)	7,133 (2,874)	14,322 (4,294)	32,899 (13,931)	7,499 (3,550)	956 (1,697)	2,639 (3,056)	65,797 (15,672)
Angler hours		3,137 (1,011)	24,206 (9,680)	12,947 (3,167)	31,159 (7,860)	27,203 (9,172)	8,204 (4,469)	8,299 (1,474)	115,155 (16,517)
Angler trips		967 (325)	6,075 (2,406)	3,581 (913)	8,485 (2,173)	7,633 (2,206)	2,287 (1,015)	2,381 (435)	31,409 (4,188)
Angler days		967 (325)	6,075 (2,406)	3,581 (913)	8,326 (2,154)	6,589 (1,904)	2,082 (959)	2,131 (417)	29,751 (4,011)

Appendix 16.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Holland, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0036 (0.0036)	25 (56)	24 (55)	74 (156)	182 (240)	0 (0)	0 (0)	305 (297)
Chinook salmon	0.0156 (0.0214)	873 (1,694)	0 (0)	0 (0)	228 (287)	224 (504)	0 (0)	1,325 (1,791)
Rainbow trout	0.0158 (0.0209)	319 (410)	36 (60)	74 (116)	131 (198)	744 (1,675)	31 (33)	1,335 (1,741)
Brown trout	0.0016 (0.0022)	0 (0)	12 (24)	0 (0)	122 (185)	0 (0)	2 (5)	136 (187)
Lake trout	0.0127 (0.0097)	517 (535)	120 (197)	153 (199)	281 (499)	4 (10)	0 (0)	1,075 (783)
Smallmouth bass	0.0001 (0.0002)	0 (0)	0 (0)	10 (21)	0 (0)	0 (0)	0 (0)	10 (21)
Largemouth bass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	6 (14)	0 (0)	6 (14)
Yellow perch	0.5618 (0.2796)	1,708 (1,437)	21,270 (13,650)	6,304 (6,794)	18,319 (14,312)	9 (19)	0 (0)	47,610 (20,961)
Walleye	0.0008 (0.0016)	0 (0)	0 (0)	0 (0)	68 (137)	0 (0)	0 (0)	68 (137)
Freshwater drum	0.0006 (0.0008)	0 (0)	0 (0)	52 (65)	0 (0)	0 (0)	0 (0)	52 (65)
Round whitefish	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (9)	4 (9)
Other	0.0003 (0.0006)	0 (0)	0 (0)	0 (0)	25 (50)	0 (0)	0 (0)	25 (50)
Total	0.6130 (0.2870)	3,442 (2,322)	21,462 (13,652)	6,667 (6,800)	19,356 (14,329)	987 (1,749)	37 (35)	51,951 (21,128)
Angler hours		15,584 (9,579)	14,626 (6,192)	16,253 (6,033)	29,545 (12,347)	7,917 (8,202)	826 (465)	84,751 (19,658)
Angler trips		3,622 (1,852)	4,510 (1,675)	4,772 (1,410)	6,837 (2,562)	1,511 (1,039)	381 (213)	21,633 (3,989)
Angler days		3,604 (1,851)	4,493 (1,675)	4,772 (1,410)	6,837 (2,562)	1,511 (1,039)	381 (213)	21,598 (3,989)

Appendix 17.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for South Haven, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0011 (0.0013)	27 (42)	10 (24)	72 (149)	39 (57)	0 (0)	0 (0)	148 (167)
Chinook salmon	0.0028 (0.0032)	50 (63)	33 (48)	35 (52)	83 (107)	169 (401)	5 (11)	375 (426)
Rainbow trout	0.0033 (0.0018)	44 (52)	14 (25)	184 (178)	14 (21)	0 (0)	198 (125)	454 (226)
Brown trout	0.0001 (0.0002)	11 (23)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (23)
Lake trout	0.0061 (0.0037)	83 (112)	136 (144)	469 (420)	140 (111)	3 (6)	0 (0)	831 (471)
Rainbow smelt	0.0001 (0.0003)	0 (0)	0 (0)	0 (0)	0 (0)	7 (18)	0 (0)	7 (18)
Channel catfish	0.0003 (0.0005)	0 (0)	0 (0)	0 (0)	37 (75)	7 (18)	0 (0)	44 (77)
Pumpkinseed	0.0013 (0.0027)	0 (0)	0 (0)	0 (0)	170 (345)	0 (0)	0 (0)	170 (345)
Bluegill	0.0003 (0.0006)	0 (0)	0 (0)	0 (0)	43 (86)	0 (0)	0 (0)	43 (86)
Black crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	10 (20)	0 (0)	10 (20)
Yellow perch	2.5675 (0.8503)	56,339 (32,120)	103,295 (54,007)	137,300 (61,643)	48,701 (28,507)	2,503 (4,006)	0 (0)	348,138 (92,612)
Freshwater drum	0.0009 (0.0013)	0 (0)	0 (0)	0 (0)	128 (184)	0 (0)	0 (0)	128 (184)
Total	2.5839 (0.8522)	56,554 (32,120)	103,488 (54,007)	138,060 (61,645)	49,355 (28,510)	2,699 (4,026)	203 (125)	350,359 (92,615)
Angler hours		17,644 (8,529)	36,570 (15,147)	44,602 (14,822)	25,638 (8,706)	9,022 (10,838)	2,119 (465)	135,595 (26,746)
Angler trips		3,651 (1,666)	7,551 (2,875)	9,056 (2,833)	4,918 (1,500)	1,875 (2,198)	609 (161)	27,660 (5,116)
Angler days		3,651 (1,666)	7,479 (2,840)	9,056 (2,833)	4,899 (1,495)	1,875 (2,198)	609 (161)	27,569 (5,095)

Appendix 18.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for St. Joseph, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0499 (0.0221)	1,008 (1,505)	8,924 (5,288)	2,944 (1,332)	482 (614)	389 (523)	232 (289)	17 (25)	0 (0)	13,996 (5,722)
Chinook salmon	0.0124 (0.0089)	0 (0)	1,052 (1,728)	619 (595)	385 (796)	839 (1,053)	546 (873)	42 (46)	0 (0)	3,483 (2,418)
Rainbow trout	0.0164 (0.0066)	6 (13)	135 (190)	293 (584)	2,734 (1,318)	911 (766)	140 (173)	8 (16)	361 (226)	4,588 (1,668)
Brown trout	0.0054 (0.0026)	493 (463)	858 (494)	102 (95)	0 (0)	55 (120)	0 (0)	0 (0)	4 (9)	1,512 (694)
Lake trout	0.0105 (0.0070)	0 (0)	0 (0)	1,264 (1,047)	39 (79)	1,370 (1,562)	274 (260)	0 (0)	0 (0)	2,947 (1,900)
Channel catfish	0.0023 (0.0020)	0 (0)	0 (0)	76 (96)	277 (409)	11 (22)	261 (358)	12 (26)	0 (0)	637 (553)
Smallmouth bass	0.0005 (0.0006)	0 (0)	0 (0)	37 (75)	93 (144)	0 (0)	6 (13)	0 (0)	0 (0)	136 (163)
Yellow perch	1.5371 (0.5782)	0 (0)	2,401 (1,768)	15,005 (6,716)	213,074 (120,505)	100,043 (73,146)	74,088 (29,205)	26,158 (15,989)	59 (122)	430,828 (145,012)
Freshwater drum	0.0011 (0.0010)	0 (0)	0 (0)	76 (96)	37 (75)	147 (226)	62 (93)	0 (0)	0 (0)	322 (273)
Lake whitefish	0.0001 (0.0001)	23 (34)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	23 (34)
Other	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	17 (35)	0 (0)	0 (0)	0 (0)	17 (35)
Total	1.6358 (0.5863)	1,530 (1,575)	13,370 (5,861)	20,416 (6,979)	217,121 (120,517)	103,782 (73,177)	75,609 (29,223)	26,237 (15,989)	424 (257)	458,489 (145,170)
Angler hours		6,405 (2,331)	35,806 (15,855)	45,705 (11,428)	77,468 (19,626)	55,897 (36,260)	41,285 (10,093)	14,256 (5,087)	3,458 (1,213)	280,280 (47,081)
Angler trips		1,522 (600)	7,443 (2,880)	7,618 (1,810)	15,952 (4,027)	12,082 (7,406)	8,183 (1,884)	2,742 (915)	990 (333)	56,532 (9,354)
Angler days		1,503 (601)	7,374 (2,878)	7,548 (1,808)	15,477 (3,926)	11,922 (7,404)	7,836 (1,841)	2,707 (910)	939 (328)	55,306 (9,299)

Appendix 19.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for New Buffalo, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0493 (0.0281)	1,827 (2,149)	1,169 (1,019)	1,249 (1,102)	1,173 (1,158)	4 (9)	0 (0)	0 (0)	5,422 (2,866)
Chinook salmon	0.0056 (0.0042)	231 (322)	128 (151)	133 (214)	72 (158)	42 (50)	12 (31)	0 (0)	618 (448)
Rainbow trout	0.0225 (0.0137)	147 (244)	211 (287)	565 (599)	1,440 (1,209)	52 (48)	25 (51)	29 (73)	2,469 (1,405)
Brown trout	0.0034 (0.0048)	114 (188)	22 (46)	0 (0)	235 (479)	0 (0)	0 (0)	0 (0)	371 (517)
Lake trout	0.0165 (0.0099)	0 (0)	187 (223)	993 (882)	442 (434)	192 (167)	0 (0)	0 (0)	1,814 (1,022)
Yellow perch	1.1741 (0.4727)	0 (0)	0 (0)	58,515 (31,352)	19,942 (14,090)	23,782 (12,641)	26,146 (24,353)	690 (1,075)	129,075 (43,994)
Total	1.2713 (0.4851)	2,319 (2,195)	1,717 (1,093)	61,455 (31,390)	23,304 (14,205)	24,072 (12,642)	26,183 (24,353)	719 (1,077)	139,769 (44,127)
Angler hours		5,677 (5,895)	11,136 (9,156)	41,304 (15,748)	27,987 (10,855)	11,210 (4,312)	10,959 (6,921)	1,666 (2,120)	109,939 (23,567)
Angler trips		1,264 (1,284)	2,149 (1,855)	7,936 (3,016)	5,388 (2,153)	2,023 (787)	2,279 (1,469)	467 (604)	21,506 (4,687)
Angler days		1,264 (1,284)	2,097 (1,798)	7,936 (3,016)	5,388 (2,153)	1,970 (769)	2,279 (1,469)	467 (604)	21,401 (4,661)

Appendix 20.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the boat fishery at Rogers City, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		Jun	Jul	Aug	Sep	
Pink salmon	0.0010 (0.0008)	0 (0)	20 (28)	51 (48)	0 (0)	71 (56)
Coho salmon	0.0000 (0.0000)	0 (0)	0 (0)	1 (2)	0 (0)	1 (2)
Chinook salmon	0.0787 (0.0155)	14 (28)	410 (150)	2,628 (541)	2,310 (710)	5,362 (906)
Rainbow trout	0.0007 (0.0005)	0 (0)	19 (22)	28 (20)	0 (0)	47 (30)
Brown trout	0.0003 (0.0004)	0 (0)	6 (13)	17 (29)	0 (0)	23 (32)
Lake trout	0.0172 (0.0083)	82 (109)	856 (514)	229 (180)	6 (12)	1,173 (556)
Channel catfish	0.0003 (0.0004)	0 (0)	0 (0)	21 (29)	0 (0)	21 (29)
Yellow perch	0.0006 (0.0009)	28 (56)	0 (0)	14 (27)	0 (0)	42 (62)
Total	0.0990 (0.0186)	124 (126)	1,311 (537)	2,989 (575)	2,316 (710)	6,740 (1,067)
Angler hours		1,140 (367)	8,706 (1,382)	32,692 (4,390)	25,566 (5,134)	68,104 (6,905)
Angler trips		366 (131)	2,201 (363)	6,639 (950)	5,577 (1,130)	14,783 (1,526)
Angler days		366 (131)	2,201 (363)	6,639 (950)	5,577 (1,130)	14,783 (1,526)

Appendix 21.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Rockport, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		Jun	Jul	Aug	Sep	
Pink salmon	0.0007 (0.0007)	0 (0)	46 (47)	0 (0)	0 (0)	46 (47)
Coho salmon	0.0003 (0.0003)	0 (0)	0 (0)	19 (22)	0 (0)	19 (22)
Chinook salmon	0.0984 (0.0163)	0 (0)	2,681 (666)	4,208 (687)	31 (30)	6,920 (957)
Rainbow trout	0.0039 (0.0017)	0 (0)	160 (96)	117 (67)	0 (0)	277 (117)
Brown trout	0.0012 (0.0009)	13 (27)	23 (33)	31 (37)	16 (22)	83 (61)
Lake trout	0.0123 (0.0037)	88 (78)	340 (163)	440 (171)	0 (0)	868 (249)
Total	0.1168 (0.0177)	101 (83)	3,250 (695)	4,815 (712)	47 (37)	8,213 (999)
Angler hours		1,781 (528)	28,500 (5,178)	38,744 (3,634)	1,292 (360)	70,317 (6,358)
Angler trips		472 (146)	5,140 (959)	6,839 (669)	430 (141)	12,881 (1,187)
Angler days		472 (146)	5,140 (959)	6,839 (669)	430 (141)	12,881 (1,187)

Appendix 22.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Alpena, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0004 (0.0004)	0 (0)	0 (0)	0 (0)	29 (30)	0 (0)	0 (0)	0 (0)	29 (30)
Chinook salmon	0.0455 (0.0070)	2 (4)	19 (23)	33 (41)	2,767 (419)	454 (219)	247 (117)	108 (55)	3,630 (492)
Rainbow trout	0.0051 (0.0015)	5 (8)	0 (0)	0 (0)	374 (116)	19 (22)	10 (19)	0 (0)	408 (120)
Brown trout	0.0252 (0.0058)	486 (178)	22 (25)	19 (29)	1,201 (357)	165 (149)	97 (76)	21 (24)	2,011 (435)
Brook trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	3 (7)	0 (0)	0 (0)	0 (0)	3 (7)
Lake trout	0.0049 (0.0018)	0 (0)	17 (22)	0 (0)	371 (139)	3 (6)	0 (0)	0 (0)	391 (141)
Channel catfish	0.0006 (0.0006)	2 (3)	18 (27)	0 (0)	26 (37)	0 (0)	0 (0)	0 (0)	46 (46)
Smallmouth bass	0.0043 (0.0026)	0 (0)	7 (12)	9 (19)	303 (201)	0 (0)	19 (39)	4 (9)	342 (206)
Walleye	0.0102 (0.0032)	118 (79)	659 (232)	5 (10)	21 (30)	0 (0)	10 (19)	0 (0)	813 (248)
Freshwater drum	0.0002 (0.0002)	0 (0)	18 (21)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (21)
Total	0.0964 (0.0119)	613 (195)	760 (238)	66 (55)	5,095 (616)	641 (266)	383 (147)	133 (61)	7,691 (757)
Angler hours		4,376 (682)	6,582 (1,394)	3,437 (752)	55,994 (5,602)	4,244 (741)	4,355 (804)	778 (200)	79,766 (5,966)
Angler trips		1,459 (224)	1,793 (381)	831 (203)	7,017 (722)	909 (167)	941 (194)	105 (31)	13,055 (908)
Angler days		1,459 (224)	1,793 (381)	831 (203)	7,017 (722)	909 (167)	941 (194)	105 (31)	13,055 (908)

Appendix 23.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the boat fishery at Harrisville, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0010 (0.0011)	0 (0)	0 (0)	0 (0)	71 (77)	0 (0)	0 (0)	71 (77)
Coho salmon	0.0013 (0.0013)	0 (0)	3 (7)	0 (0)	77 (87)	11 (23)	0 (0)	91 (90)
Chinook salmon	0.0693 (0.0303)	18 (31)	87 (127)	246 (200)	907 (523)	2,975 (1,586)	790 (740)	5,023 (1,842)
Rainbow trout	0.0042 (0.0027)	0 (0)	5 (12)	60 (68)	148 (111)	37 (40)	56 (118)	306 (181)
Brown trout	0.0013 (0.0011)	0 (0)	0 (0)	0 (0)	51 (57)	32 (49)	10 (21)	93 (78)
Lake trout	0.0140 (0.0069)	36 (62)	216 (232)	522 (335)	183 (124)	54 (74)	0 (0)	1,011 (437)
Yellow perch	0.0018 (0.0028)	81 (177)	46 (88)	0 (0)	0 (0)	0 (0)	0 (0)	127 (198)
Walleye	0.0003 (0.0005)	0 (0)	0 (0)	0 (0)	0 (0)	19 (29)	0 (0)	19 (29)
Total	0.0930 (0.0345)	135 (190)	357 (279)	828 (396)	1,437 (564)	3,128 (1,589)	856 (750)	6,741 (1,917)
Angler hours		2,033 (1,430)	3,270 (2,685)	8,188 (4,743)	13,577 (6,782)	35,444 (14,369)	9,933 (3,842)	72,445 (17,291)
Angler trips		614 (435)	620 (536)	1,677 (995)	2,685 (1,341)	7,227 (2,956)	2,197 (859)	15,020 (3,569)
Angler days		614 (435)	609 (531)	1,575 (926)	2,593 (1,315)	6,470 (2,676)	1,902 (759)	13,763 (3,286)

Appendix 24.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Oscoda, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0007 (0.0013)	0 (0)	0 (0)	87 (189)	22 (46)	0 (0)	0 (0)	109 (195)
Coho salmon	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	5 (11)	0 (0)	5 (11)
Chinook salmon	0.0269 (0.0107)	109 (129)	120 (119)	1,091 (948)	1,431 (747)	1,337 (685)	111 (171)	4,199 (1,409)
Rainbow trout	0.0105 (0.0063)	41 (61)	0 (0)	1,017 (853)	416 (311)	51 (55)	109 (114)	1,634 (919)
Brown trout	0.0014 (0.0015)	119 (186)	0 (0)	0 (0)	95 (140)	7 (15)	0 (0)	221 (233)
Lake trout	0.0088 (0.0056)	10 (20)	441 (420)	711 (695)	193 (176)	20 (32)	0 (0)	1,375 (832)
Northern pike	0.0006 (0.0010)	0 (0)	0 (0)	0 (0)	87 (140)	0 (0)	0 (0)	87 (140)
White sucker	0.0005 (0.0008)	80 (128)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	80 (128)
Channel catfish	0.0056 (0.0056)	0 (0)	0 (0)	779 (848)	89 (116)	4 (8)	0 (0)	872 (856)
Smallmouth bass	0.0009 (0.0010)	0 (0)	73 (106)	37 (75)	27 (58)	0 (0)	0 (0)	137 (142)
Yellow perch	0.0114 (0.0170)	0 (0)	0 (0)	1,519 (2,568)	259 (549)	0 (0)	0 (0)	1,778 (2,626)
Walleye	0.0103 (0.0063)	1,041 (818)	70 (108)	212 (351)	146 (130)	46 (72)	91 (100)	1,606 (914)
Freshwater drum	0.0038 (0.0034)	85 (174)	87 (183)	133 (271)	271 (358)	18 (27)	0 (0)	594 (516)

Appendix 24.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Lake whitefish	0.0004 (0.0006)	0 (0)	0 (0)	25 (55)	36 (76)	0 (0)	0 (0)	61 (94)
Round whitefish	0.0013 (0.0017)	31 (55)	0 (0)	0 (0)	0 (0)	0 (0)	174 (256)	205 (262)
Total	0.0831 (0.0288)	1,516 (880)	791 (497)	5,611 (3,109)	3,072 (1,094)	1,488 (693)	485 (343)	12,963 (3,533)
Angler hours		17,598 (6,857)	13,762 (5,711)	36,189 (23,273)	47,023 (18,628)	36,992 (12,072)	4,442 (1,823)	156,006 (33,426)
Angler trips		4,424 (1,768)	3,329 (1,235)	6,943 (4,615)	8,913 (3,476)	8,064 (2,559)	1,119 (404)	32,792 (6,689)
Angler days		4,240 (1,688)	3,146 (1,171)	6,474 (4,418)	7,909 (3,037)	7,711 (2,472)	1,019 (379)	30,499 (6,262)

Appendix 25.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Tawas, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0047 (0.0025)	0 (0)	67 (106)	57 (57)	110 (175)	24 (48)	331 (233)	30 (50)	619 (323)
Rainbow trout	0.0038 (0.0021)	76 (86)	26 (55)	0 (0)	0 (0)	0 (0)	91 (100)	312 (238)	505 (278)
Atlantic salmon	0.0002 (0.0004)	0 (0)	0 (0)	22 (44)	0 (0)	0 (0)	0 (0)	0 (0)	22 (44)
Brown trout	0.0023 (0.0013)	128 (108)	30 (45)	37 (39)	30 (62)	14 (29)	7 (14)	54 (82)	300 (164)
Lake trout	0.0001 (0.0002)	0 (0)	0 (0)	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)	9 (18)
Rainbow smelt	0.0009 (0.0018)	0 (0)	115 (237)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	120 (237)
Northern pike	0.0021 (0.0019)	0 (0)	11 (24)	0 (0)	9 (19)	152 (182)	102 (165)	0 (0)	274 (248)
Channel catfish	0.0015 (0.0011)	0 (0)	0 (0)	75 (89)	52 (75)	35 (52)	35 (54)	0 (0)	197 (138)
White bass	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	0 (0)	21 (43)	0 (0)	9 (19)	30 (47)
Rockbass	0.0026 (0.0039)	0 (0)	36 (75)	51 (75)	255 (502)	0 (0)	0 (0)	0 (0)	342 (513)
Bluegill	0.0003 (0.0006)	0 (0)	0 (0)	44 (90)	0 (0)	0 (0)	0 (0)	0 (0)	44 (90)
Smallmouth bass	0.0032 (0.0032)	0 (0)	211 (269)	65 (133)	142 (291)	0 (0)	7 (15)	0 (0)	425 (418)
Yellow perch	1.1247 (0.2984)	13,382 (6,103)	4,604 (2,845)	14,423 (8,363)	44,957 (20,822)	50,057 (19,843)	18,830 (15,302)	1,787 (1,191)	148,040 (34,324)
Walleye	0.0093 (0.0050)	208 (330)	236 (207)	0 (0)	41 (85)	363 (367)	332 (324)	45 (90)	1,225 (638)
Freshwater drum	0.0005 (0.0006)	0 (0)	0 (0)	0 (0)	47 (69)	9 (18)	9 (21)	0 (0)	65 (74)
Burbot	0.0003 (0.0005)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	41 (67)	41 (67)

Appendix 25.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Total	1.1568 (0.3005)	13,794 (6,113)	5,336 (2,879)	14,788 (8,366)	45,643 (20,831)	50,675 (19,847)	19,744 (15,309)	2,278 (1,224)	152.258 (34.342)
Angler hours		13,871 (4,033)	15,388 (4,742)	15,739 (3,555)	33,162 (10,429)	28,205 (7,313)	19,037 (8,415)	6,220 (1,884)	131,622 (16,970)
Angler trips		4,687 (1,382)	4,970 (1,344)	4,276 (972)	8,170 (2,446)	8,158 (2,020)	5,632 (2,419)	2,412 (777)	38,305 (4,602)
Angler days		4,121 (1,249)	4,834 (1,324)	4,069 (924)	7,830 (2,330)	7,712 (1,939)	5,374 (2,381)	2,095 (701)	36,035 (4,418)

Appendix 26.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Au Gres, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0010 (0.0012)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	287 (348)	9 (19)	296 (349)
Brown trout	0.0001 (0.0002)	0 (0)	25 (55)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	25 (55)
Rainbow smelt	0.0000 (0.0000)	0 (0)	8 (17)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (17)
Northern pike	0.0007 (0.0009)	0 (0)	3 (8)	0 (0)	97 (119)	11 (21)	105 (238)	0 (0)	216 (267)
White sucker	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	50 (102)	0 (0)	0 (0)	0 (0)	50 (102)
Channel catfish	0.0058 (0.0037)	0 (0)	181 (351)	682 (773)	464 (400)	113 (111)	313 (537)	18 (38)	1,771 (1,088)
White perch	0.0001 (0.0002)	0 (0)	34 (70)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	34 (70)
White bass	0.0019 (0.0015)	0 (0)	0 (0)	34 (71)	373 (400)	89 (125)	86 (110)	8 (17)	590 (439)
Rockbass	0.0005 (0.0010)	0 (0)	11 (23)	133 (275)	0 (0)	0 (0)	0 (0)	0 (0)	144 (276)
Smallmouth bass	0.0004 (0.0005)	0 (0)	11 (23)	0 (0)	38 (78)	18 (37)	42 (95)	0 (0)	109 (130)
Largemouth bass	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	33 (69)	40 (89)	33 (68)	106 (132)
Yellow perch	1.5596 (0.4449)	10,435 (7,992)	13,718 (8,540)	115,129 (49,294)	161,649 (67,743)	123,777 (47,461)	40,928 (35,564)	14,659 (8,395)	480,295 (103,652)
Walleye	0.0255 (0.0108)	22 (38)	55 (120)	0 (0)	4,526 (2,504)	2,416 (1,501)	733 (604)	109 (226)	7,861 (2,992)
Freshwater drum	0.0037 (0.0021)	0 (0)	14 (24)	84 (98)	612 (494)	237 (237)	156 (271)	31 (51)	1,134 (622)
Round whitefish	0.0003 (0.0005)	0 (0)	49 (102)	0 (0)	30 (62)	0 (0)	0 (0)	0 (0)	79 (119)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12 (28)	12 (28)

Appendix 26.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Total	1.6000 (0.4500)	10,457 (7,992)	14,109 (8,549)	116,062 (49,301)	167,839 (67,794)	126,694 (47,486)	42,690 (35,577)	14,879 (8,399)	492,730 (103,705)
Angler hours		9,143 (4,207)	20,826 (11,675)	52,199 (19,333)	105,085 (38,299)	65,723 (25,249)	42,362 (25,404)	12,621 (4,930)	307,959 (57,461)
Angler trips		3,187 (1,448)	5,103 (2,979)	10,968 (4,066)	22,167 (8,261)	13,883 (5,133)	9,770 (5,457)	3,629 (1,371)	68,707 (12,400)
Angler days		2,645 (1,234)	5,049 (2,978)	10,744 (3,995)	21,589 (8,082)	13,627 (5,007)	9,421 (5,211)	3,217 (1,259)	66,292 (12,061)

Appendix 27.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Saganing Creek to the mouth of the Saginaw River, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (40)	0 (0)	18 (40)
Rainbow trout	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	36 (57)	0 (0)	36 (57)
Northern pike	0.0009 (0.0008)	14 (34)	0 (0)	0 (0)	119 (183)	94 (138)	62 (128)	0 (0)	289 (265)
White sucker	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (38)	18 (38)
Yellow bullhead	0.0003 (0.0007)	108 (245)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	108 (245)
Brown bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	32 (66)	0 (0)	9 (19)	0 (0)	41 (69)
Channel catfish	0.0097 (0.0053)	26 (48)	102 (174)	323 (400)	411 (451)	1,515 (1,333)	492 (572)	223 (226)	3,092 (1,597)
White perch	0.0019 (0.0027)	13 (29)	0 (0)	37 (78)	42 (87)	21 (43)	398 (821)	80 (116)	591 (839)
White bass	0.0098 (0.0117)	41 (91)	245 (359)	2,545 (3,642)	129 (132)	73 (149)	74 (86)	14 (30)	3,121 (3,667)
Rockbass	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	51 (104)	0 (0)	0 (0)	0 (0)	51 (104)
Bluegill	0.0008 (0.0014)	0 (0)	0 (0)	0 (0)	0 (0)	204 (417)	35 (73)	0 (0)	239 (423)
Largemouth bass	0.0008 (0.0011)	129 (294)	0 (0)	129 (212)	0 (0)	0 (0)	0 (0)	0 (0)	258 (362)
White crappie	0.0003 (0.0005)	0 (0)	0 (0)	0 (0)	76 (157)	15 (32)	0 (0)	0 (0)	91 (160)
Black crappie	0.0003 (0.0004)	0 (0)	12 (25)	49 (104)	26 (52)	0 (0)	0 (0)	0 (0)	87 (119)
Yellow perch	0.6128 (0.2106)	4,023 (3,945)	22,464 (12,958)	28,894 (14,102)	10,836 (7,147)	14,551 (9,035)	62,712 (39,038)	51,743 (34,146)	195,223 (56,612)
Walleye	0.0898 (0.0269)	49 (76)	312 (392)	4,065 (2,711)	9,624 (3,694)	7,079 (2,962)	6,137 (3,761)	1,337 (1,320)	28,603 (6,769)

Appendix 27.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Freshwater drum	0.0030 (0.0018)	0 (0)	58 (120)	219 (268)	93 (147)	421 (385)	91 (121)	64 (85)	946 (527)
Other	0.0003 (0.0003)	11 (25)	6 (12)	0 (0)	0 (0)	0 (0)	15 (34)	55 (68)	87 (81)
Total	0.7310 (0.2244)	4,414 (3,966)	23,199 (12,971)	36,261 (14,825)	21,439 (8,065)	23,973 (9,620)	70,079 (39,232)	53,534 (34,173)	232,899 (57,169)
Angler hours		4,364 (2,759)	24,533 (12,646)	49,254 (23,105)	89,793 (29,552)	78,368 (30,668)	53,652 (28,613)	18,637 (10,889)	318,601 (58,758)
Angler trips		1,675 (1,076)	5,713 (3,107)	10,614 (4,967)	15,913 (5,257)	16,055 (6,345)	10,704 (5,948)	3,826 (2,221)	64,500 (11,987)
Angler days		1,323 (848)	5,453 (2,941)	10,581 (4,963)	15,913 (5,257)	15,920 (6,321)	10,704 (5,948)	3,779 (2,193)	63,673 (11,907)

Appendix 28.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Essexville to the mouth of the Saginaw River, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0001 (0.0002)	0 (0)	8 (18)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (18)
Yellow bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (23)	0 (0)	11 (23)
Brown bullhead	0.0002 (0.0003)	0 (0)	7 (14)	0 (0)	0 (0)	0 (0)	5 (12)	0 (0)	12 (18)
Channel catfish	0.0865 (0.0366)	0 (0)	267 (322)	1,835 (1,252)	1,310 (710)	2,457 (1,906)	534 (491)	55 (71)	6,458 (2,461)
White perch	0.0010 (0.0010)	0 (0)	0 (0)	27 (41)	11 (22)	0 (0)	34 (53)	0 (0)	72 (71)
White bass	0.0193 (0.0200)	0 (0)	1,267 (1,458)	113 (135)	58 (53)	0 (0)	1 (1)	0 (0)	1,439 (1,465)
Rockbass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	9 (20)	2 (4)	0 (0)	11 (20)
Pumpkinseed	0.0001 (0.0002)	0 (0)	4 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (8)
Smallmouth bass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	6 (13)	0 (0)	0 (0)	3 (7)	9 (15)
Largemouth bass	0.0034 (0.0046)	0 (0)	58 (107)	150 (314)	0 (0)	0 (0)	47 (75)	0 (0)	255 (340)
White crappie	0.0011 (0.0020)	0 (0)	0 (0)	68 (141)	12 (25)	0 (0)	0 (0)	0 (0)	80 (143)
Black crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	9 (20)	0 (0)	0 (0)	9 (20)
Yellow perch	0.7069 (0.2321)	458 (671)	4,815 (3,243)	3,545 (2,794)	2,506 (1,645)	4,963 (3,809)	8,575 (4,607)	27,903 (12,233)	52,765 (14,383)
Walleye	0.1099 (0.0367)	3 (7)	550 (394)	193 (179)	5,032 (1,882)	2,014 (1,176)	184 (128)	226 (334)	8,202 (2,289)
Freshwater drum	0.0074 (0.0045)	68 (160)	41 (76)	171 (158)	47 (62)	175 (174)	3 (6)	46 (106)	551 (319)
Other	0.0021 (0.0022)	54 (128)	3 (7)	42 (86)	0 (0)	22 (34)	21 (26)	12 (18)	154 (161)

Appendix 28.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Total	0.9384 (0.2628)	583 (702)	7,020 (3,594)	6,144 (3,095)	8,982 (2,600)	9,649 (4,422)	9,417 (4,636)	28,245 (12,238)	70,040 (14,851)
Angler hours		992 (1,029)	7,779 (4,137)	11,535 (4,469)	20,745 (5,912)	19,527 (9,866)	4,951 (2,098)	9,110 (3,410)	74,639 (13,655)
Angler trips		449 (549)	1,652 (858)	1,994 (802)	4,403 (1,263)	3,851 (1,923)	946 (398)	2,762 (1,296)	16,057 (2,968)
Angler days		341 (403)	1,522 (788)	1,994 (802)	4,403 (1,263)	3,851 (1,923)	946 (398)	2,461 (1,099)	15,518 (2,844)

Appendix 29.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Quanicassee to Sebewaing, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0004 (0.0006)	0 (0)	0 (0)	0 (0)	34 (51)	0 (0)	0 (0)	0 (0)	34 (51)
White sucker	0.0002 (0.0004)	0 (0)	1 (2)	15 (32)	0 (0)	0 (0)	0 (0)	0 (0)	16 (32)
Black bullhead	0.0000 (0.0000)	0 (0)	2 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (4)
Yellow bullhead	0.0002 (0.0003)	12 (19)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	13 (19)
Brown bullhead	0.0000 (0.0000)	0 (0)	1 (2)	2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	3 (5)
Channel catfish	0.0533 (0.0485)	0 (0)	2,124 (2,212)	2,103 (3,419)	281 (239)	91 (136)	11 (26)	0 (0)	4,610 (4,082)
White perch	0.0025 (0.0040)	17 (38)	22 (43)	174 (333)	0 (0)	0 (0)	0 (0)	0 (0)	213 (338)
White bass	0.0023 (0.0024)	0 (0)	0 (0)	49 (76)	131 (181)	17 (36)	0 (0)	0 (0)	197 (200)
Rockbass	0.0007 (0.0009)	33 (73)	6 (10)	8 (16)	0 (0)	0 (0)	0 (0)	13 (20)	60 (78)
Pumpkinseed	0.0020 (0.0020)	96 (139)	3 (5)	0 (0)	0 (0)	0 (0)	0 (0)	75 (99)	174 (171)
Smallmouth bass	0.0002 (0.0003)	0 (0)	0 (0)	13 (20)	0 (0)	0 (0)	0 (0)	0 (0)	13 (20)
Largemouth bass	0.0003 (0.0006)	0 (0)	0 (0)	23 (48)	0 (0)	0 (0)	0 (0)	0 (0)	23 (48)
Black crappie	0.0015 (0.0024)	0 (0)	109 (202)	0 (0)	0 (0)	0 (0)	0 (0)	21 (47)	130 (207)
Yellow perch	0.6423 (0.3273)	35,272 (22,940)	842 (1,192)	511 (751)	104 (114)	287 (459)	0 (0)	18,576 (11,571)	55,592 (25,736)
Walleye	0.0602 (0.0271)	0 (0)	0 (0)	114 (227)	2,055 (961)	2,777 (1,788)	266 (310)	0 (0)	5,212 (2,066)
Freshwater drum	0.0042 (0.0038)	0 (0)	2 (5)	97 (131)	179 (230)	83 (176)	0 (0)	0 (0)	361 (318)

Appendix 29.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Other	0.0006 (0.0010)	0 (0)	36 (76)	0 (0)	15 (30)	0 (0)	0 (0)	0 (0)	51 (82)
Total	0.7707 (0.3438)	35,430 (22,941)	3,149 (2,522)	3,109 (3,527)	2,799 (1,041)	3,255 (1,860)	277 (311)	18,685 (11,572)	66,704 (26,147)
Angler hours		15,090 (8,537)	10,213 (7,464)	10,351 (4,013)	21,277 (7,529)	21,924 (11,173)	3,935 (3,268)	3,758 (1,710)	86,548 (18,434)
Angler trips		9,226 (5,742)	2,776 (2,097)	2,282 (984)	4,008 (1,425)	4,455 (2,271)	1,041 (906)	1,499 (718)	25,287 (6,845)
Angler days		7,014 (4,257)	2,584 (2,076)	2,066 (844)	3,787 (1,356)	4,162 (2,136)	1,015 (896)	1,240 (566)	21,868 (5,538)

Appendix 30.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Sebewaing to Sand Point, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
White sucker	0.0064 (0.0120)	675 (1,257)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	675 (1,257)
Yellow bullhead	0.0002 (0.0004)	0 (0)	18 (32)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (32)
Brown bullhead	0.0006 (0.0012)	0 (0)	0 (0)	63 (128)	0 (0)	0 (0)	0 (0)	0 (0)	63 (128)
Channel catfish	0.0396 (0.0255)	0 (0)	1,342 (1,307)	1,758 (2,026)	325 (546)	461 (515)	295 (497)	0 (0)	4,181 (2,574)
White perch	0.0001 (0.0002)	0 (0)	14 (31)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14 (31)
White bass	0.0018 (0.0017)	0 (0)	0 (0)	0 (0)	183 (171)	7 (14)	0 (0)	0 (0)	190 (172)
Rockbass	0.0018 (0.0020)	0 (0)	162 (203)	13 (33)	0 (0)	0 (0)	0 (0)	16 (23)	191 (207)
Pumpkinseed	0.0018 (0.0020)	115 (181)	56 (98)	0 (0)	0 (0)	0 (0)	0 (0)	20 (33)	191 (208)
Smallmouth bass	0.0155 (0.0320)	0 (0)	16 (32)	0 (0)	77 (158)	0 (0)	0 (0)	1,543 (3,360)	1,636 (3,364)
Largemouth bass	0.0041 (0.0073)	0 (0)	52 (73)	376 (756)	0 (0)	0 (0)	0 (0)	0 (0)	428 (760)
Black crappie	0.0050 (0.0055)	79 (173)	182 (275)	267 (473)	0 (0)	0 (0)	0 (0)	0 (0)	528 (574)
Yellow perch	0.7979 (0.3647)	47,806 (31,070)	585 (615)	2,856 (3,620)	4,301 (5,478)	7,085 (6,092)	10,197 (11,965)	11,408 (6,718)	84,238 (35,132)
Walleye	0.0354 (0.0195)	0 (0)	83 (138)	0 (0)	2,522 (1,786)	900 (649)	236 (383)	0 (0)	3,741 (1,943)
Freshwater drum	0.0291 (0.0540)	0 (0)	23 (36)	34 (65)	2,805 (5,664)	140 (141)	66 (130)	0 (0)	3,068 (5,668)
Other	0.0001 (0.0002)	0 (0)	2 (4)	2 (4)	0 (0)	11 (24)	0 (0)	0 (0)	15 (25)
Total	0.9394 (0.3829)	48,675 (31,096)	2,535 (1,497)	5,369 (4,246)	10,213 (8,101)	8,604 (6,150)	10,794 (11,982)	12,987 (7,512)	99,177 (35,926)

Appendix 30.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Angler hours		13,638 (7,292)	9,291 (3,718)	20,552 (7,015)	33,623 (12,978)	14,649 (5,547)	8,868 (8,278)	4,958 (2,327)	105,579 (19,732)
Angler trips		6,572 (3,748)	2,645 (1,073)	3,979 (1,489)	8,246 (3,527)	2,843 (1,082)	1,900 (1,792)	1,642 (762)	27,827 (5,901)
Angler days		5,047 (2,877)	2,303 (967)	3,675 (1,407)	8,111 (3,510)	2,802 (1,072)	1,716 (1,627)	1,523 (719)	25,177 (5,275)

Appendix 31.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Sand Point to Port Austin, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0002 (0.0004)	0 (0)	0 (0)	43 (88)	0 (0)	0 (0)	0 (0)	0 (0)	43 (88)
Coho salmon	0.0006 (0.0007)	0 (0)	53 (108)	73 (121)	0 (0)	0 (0)	11 (25)	0 (0)	137 (164)
Chinook salmon	0.0115 (0.0057)	0 (0)	821 (986)	187 (191)	821 (531)	183 (226)	394 (293)	230 (141)	2,636 (1,203)
Rainbow trout	0.0012 (0.0010)	1 (2)	74 (148)	36 (55)	98 (133)	27 (43)	16 (26)	26 (50)	278 (218)
Atlantic salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	17 (34)	0 (0)	0 (0)	0 (0)	17 (34)
Brown trout	0.0004 (0.0006)	1 (3)	71 (125)	0 (0)	0 (0)	0 (0)	11 (25)	0 (0)	83 (128)
Lake trout	0.0143 (0.0089)	0 (0)	1,274 (1,620)	951 (878)	590 (404)	440 (431)	26 (37)	0 (0)	3,281 (1,935)
Northern pike	0.0000 (0.0000)	0 (0)	8 (19)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (19)
White sucker	0.0009 (0.0016)	197 (357)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	197 (357)
Redhorses	0.0000 (0.0000)	8 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (14)
Channel catfish	0.0017 (0.0013)	0 (0)	41 (101)	96 (196)	155 (136)	56 (78)	49 (92)	0 (0)	397 (286)
White perch	0.0001 (0.0001)	13 (15)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	13 (15)
White bass	0.0002 (0.0003)	4 (11)	0 (0)	0 (0)	42 (86)	0 (0)	8 (17)	0 (0)	54 (88)
Rockbass	0.0026 (0.0049)	0 (0)	535 (1,116)	54 (104)	0 (0)	0 (0)	11 (23)	0 (0)	600 (1,121)
Pumpkinseed	0.0017 (0.0033)	0 (0)	48 (82)	0 (0)	0 (0)	0 (0)	0 (0)	354 (779)	402 (783)
Bluegill	0.0052 (0.0115)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1,202 (2,649)	1,202 (2,649)

Appendix 31.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Smallmouth bass	0.0004 (0.0006)	0 (0)	0 (0)	4 (8)	62 (107)	16 (33)	0 (0)	0 (0)	82 (112)
Black crappie	0.0010 (0.0014)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	238 (343)	239 (343)
Yellow perch	0.4776 (0.1590)	12,175 (6,313)	13,303 (11,145)	10,545 (6,917)	47,000 (20,229)	13,296 (12,314)	10,193 (8,963)	3,349 (4,186)	109,861 (29,506)
Walleye	0.0295 (0.0131)	5 (9)	12 (27)	0 (0)	2,919 (1,420)	3,199 (2,210)	658 (598)	0 (0)	6,793 (2,694)
Freshwater drum	0.0016 (0.0011)	0 (0)	0 (0)	16 (34)	267 (223)	36 (53)	54 (77)	0 (0)	373 (244)
Round whitefish	0.0001 (0.0003)	0 (0)	31 (78)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	31 (78)
Total	0.5509 (0.1691)	12,405 (6,323)	16,271 (11,363)	12,005 (6,981)	51,971 (20,292)	17,253 (12,521)	11,431 (8,989)	5,399 (5,029)	126,735 (29,874)
Angler hours		8,877 (3,600)	31,939 (23,138)	35,267 (17,683)	82,776 (25,706)	36,239 (14,641)	24,486 (15,952)	10,466 (7,352)	230,050 (45,218)
Angler trips		2,648 (1,040)	7,491 (5,593)	7,854 (3,678)	16,576 (4,926)	6,786 (2,681)	5,949 (3,759)	3,097 (2,135)	50,401 (9,800)
Angler days		1,866 (763)	6,511 (4,942)	7,578 (3,666)	15,381 (4,679)	5,706 (2,327)	4,948 (3,298)	2,772 (2,113)	44,762 (9,005)

Appendix 32.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Eagle Bay to Harbor Beach, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	25 (42)	0 (0)	0 (0)	25 (42)
Coho salmon	0.0011 (0.0009)	0 (0)	44 (92)	31 (51)	108 (131)	22 (33)	0 (0)	0 (0)	205 (171)
Chinook salmon	0.0297 (0.0110)	0 (0)	405 (329)	552 (463)	1,297 (837)	1,325 (755)	1,453 (1,129)	368 (200)	5,400 (1,705)
Rainbow trout	0.0037 (0.0018)	0 (0)	66 (84)	109 (117)	216 (189)	197 (168)	0 (0)	89 (108)	677 (310)
Brown trout	0.0006 (0.0006)	0 (0)	22 (48)	0 (0)	9 (19)	55 (83)	16 (32)	0 (0)	102 (103)
Lake trout	0.0190 (0.0090)	0 (0)	60 (74)	983 (661)	2,035 (1,310)	381 (264)	0 (0)	0 (0)	3,459 (1,493)
Northern pike	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (17)	7 (17)
White sucker	0.0000 (0.0000)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)
Channel catfish	0.0013 (0.0010)	0 (0)	0 (0)	65 (106)	25 (51)	146 (136)	0 (0)	0 (0)	236 (180)
White perch	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	18 (38)	0 (0)	0 (0)	18 (38)
White bass	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	5 (10)	0 (0)	0 (0)	5 (10)
Smallmouth bass	0.0051 (0.0070)	0 (0)	725 (1,204)	200 (400)	1 (3)	0 (0)	0 (0)	5 (11)	931 (1,269)
Yellow perch	0.1702 (0.0788)	0 (0)	32 (72)	10,822 (10,241)	13,569 (7,338)	5,483 (2,811)	1,012 (1,500)	0 (0)	30,918 (12,995)
Walleye	0.0255 (0.0125)	0 (0)	0 (0)	0 (0)	0 (0)	4,574 (2,085)	53 (93)	0 (0)	4,627 (2,087)
Freshwater drum	0.0013 (0.0011)	0 (0)	0 (0)	132 (179)	0 (0)	102 (93)	1 (2)	0 (0)	235 (202)
Total	0.2579 (0.0893)	0 (0)	1,354 (1,260)	12,895 (10,283)	17,260 (7,505)	12,333 (3,599)	2,535 (1,880)	469 (228)	46,846 (13,424)

Appendix 32.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Angler hours		1,749 (1,973)	19,417 (11,945)	24,278 (11,762)	51,032 (22,297)	49,871 (17,680)	29,266 (12,236)	6,066 (2,327)	181,679 (35,352)
Angler trips		707 (869)	3,620 (2,143)	4,629 (2,149)	10,317 (4,475)	9,651 (3,377)	5,576 (2,304)	1,300 (484)	35,800 (6,851)
Angler days		506 (653)	3,001 (1,852)	3,987 (1,793)	8,603 (3,821)	8,485 (3,040)	4,559 (1,912)	937 (379)	30,078 (5,892)

Appendix 33.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Port Sanilac, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0000 (0.0000)	4 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (9)
Coho salmon	0.0009 (0.0007)	41 (54)	29 (34)	19 (31)	0 (0)	0 (0)	0 (0)	89 (71)
Chinook salmon	0.0249 (0.0083)	84 (64)	50 (54)	53 (61)	22 (34)	1,285 (660)	921 (368)	2,415 (763)
Rainbow trout	0.0062 (0.0033)	48 (47)	64 (63)	0 (0)	26 (55)	268 (260)	192 (138)	598 (310)
Brown trout	0.0001 (0.0002)	11 (23)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (23)
Brook trout	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	19 (39)	0 (0)	19 (39)
Lake trout	0.0000 (0.0000)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)
Northern pike	0.0004 (0.0006)	0 (0)	0 (0)	0 (0)	19 (39)	15 (30)	0 (0)	34 (49)
Black bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	13 (26)	0 (0)	0 (0)	13 (26)
Channel catfish	0.0004 (0.0004)	8 (17)	9 (18)	0 (0)	20 (25)	0 (0)	0 (0)	37 (35)
White perch	0.0011 (0.0015)	0 (0)	27 (58)	77 (124)	0 (0)	0 (0)	0 (0)	104 (137)
Rockbass	0.0004 (0.0006)	0 (0)	0 (0)	36 (52)	0 (0)	0 (0)	0 (0)	36 (52)
Largemouth bass	0.0004 (0.0008)	0 (0)	0 (0)	0 (0)	35 (74)	0 (0)	0 (0)	35 (74)
Yellow perch	0.1560 (0.0602)	51 (103)	1,241 (759)	8,265 (4,989)	4,761 (2,298)	807 (899)	0 (0)	15,125 (5,618)
Walleye	0.0010 (0.0008)	0 (0)	0 (0)	0 (0)	81 (71)	13 (26)	0 (0)	94 (76)

Appendix 33.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Freshwater drum	0.0005 (0.0006)	0 (0)	0 (0)	51 (66)	0 (0)	0 (0)	0 (0)	51 (66)
Other	0.0002 (0.0004)	15 (32)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	15 (32)
Total	0.1927 (0.0619)	265 (148)	1,420 (767)	8,501 (4,992)	4,977 (2,302)	2,407 (1,147)	1,113 (393)	18,683 (5,683)
Angler hours		13,880 (2,189)	9,974 (1,822)	14,345 (5,622)	12,546 (3,411)	31,527 (6,864)	14,688 (1,660)	96,960 (10,061)
Angler trips		2,813 (465)	2,459 (484)	3,168 (1,111)	3,113 (839)	5,632 (1,298)	2,609 (352)	19,794 (2,049)
Angler days		2,789 (462)	2,437 (483)	3,168 (1,111)	3,093 (836)	5,632 (1,298)	2,609 (352)	19,728 (2,047)

Appendix 34.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Lexington, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0014 (0.0012)	40 (48)	0 (0)	7 (14)	9 (18)	44 (77)	10 (21)	110 (96)
Chinook salmon	0.0192 (0.0072)	538 (201)	20 (29)	14 (28)	0 (0)	584 (445)	314 (153)	1,470 (513)
Rainbow trout	0.0066 (0.0033)	80 (70)	37 (40)	14 (28)	18 (37)	159 (184)	197 (126)	505 (242)
Brown trout	0.0003 (0.0003)	4 (9)	0 (0)	0 (0)	0 (0)	0 (0)	17 (20)	21 (22)
Lake trout	0.0005 (0.0005)	29 (34)	11 (22)	0 (0)	0 (0)	0 (0)	0 (0)	40 (40)
Northern pike	0.0005 (0.0011)	0 (0)	0 (0)	0 (0)	42 (94)	0 (0)	0 (0)	42 (94)
Channel catfish	0.0016 (0.0013)	0 (0)	9 (19)	77 (79)	12 (27)	24 (48)	0 (0)	122 (98)
White perch	0.0014 (0.0020)	56 (112)	0 (0)	0 (0)	50 (101)	0 (0)	0 (0)	106 (151)
White bass	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	12 (24)	0 (0)	12 (24)
Rockbass	0.0002 (0.0003)	0 (0)	10 (21)	9 (19)	0 (0)	0 (0)	0 (0)	19 (28)
Pumpkinseed	0.0001 (0.0002)	0 (0)	0 (0)	9 (19)	0 (0)	0 (0)	0 (0)	9 (19)
Bluegill	0.0009 (0.0019)	0 (0)	72 (151)	0 (0)	0 (0)	0 (0)	0 (0)	72 (151)
Smallmouth bass	0.0014 (0.0029)	0 (0)	104 (214)	0 (0)	0 (0)	0 (0)	0 (0)	104 (214)
Yellow perch	0.0640 (0.0269)	147 (183)	527 (320)	2,612 (1,277)	1,603 (1,426)	0 (0)	0 (0)	4,889 (1,949)

Appendix 34.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Walleye	0.0043 (0.0036)	42 (61)	56 (114)	6 (12)	197 (230)	29 (60)	0 (0)	330 (271)
Freshwater drum	0.0013 (0.0016)	44 (91)	0 (0)	30 (63)	22 (45)	0 (0)	0 (0)	96 (119)
Other	0.0006 (0.0012)	44 (91)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	44 (91)
Total	0.1046 (0.0307)	1,024 (339)	846 (433)	2,778 (1,282)	1,953 (1,453)	852 (494)	538 (200)	7,991 (2,084)
Angler hours		22,402 (2,968)	10,379 (2,972)	11,114 (4,253)	17,978 (8,051)	8,294 (1,326)	6,246 (1,410)	76,413 (10,212)
Angler trips		4,341 (633)	2,539 (677)	2,400 (923)	4,655 (1,940)	2,186 (392)	1,492 (368)	17,613 (2,401)
Angler days		4,288 (637)	2,539 (677)	2,372 (917)	4,655 (1,940)	2,173 (390)	1,492 (368)	17,519 (2,399)

Appendix 35.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Point Mouillee to mouth of the Raisin River area boat fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0000 (0.0000)	7 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (14)
Lake trout	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	24 (34)	0 (0)	0 (0)	0 (0)	24 (34)
Northern pike	0.0000 (0.0000)	0 (0)	0 (0)	7 (14)	0 (0)	0 (0)	0 (0)	0 (0)	7 (14)
Channel catfish	0.0049 (0.0039)	0 (0)	115 (135)	266 (425)	223 (227)	634 (846)	68 (73)	11 (25)	1,317 (986)
White perch	0.0153 (0.0082)	0 (0)	799 (725)	410 (374)	779 (772)	810 (1,013)	1,056 (1,110)	258 (542)	4,112 (1,953)
White bass	0.0101 (0.0076)	20 (44)	1,289 (1,785)	854 (667)	340 (276)	183 (185)	35 (43)	0 (0)	2,721 (1,935)
Rockbass	0.0011 (0.0008)	0 (0)	0 (0)	0 (0)	24 (50)	141 (161)	121 (118)	0 (0)	286 (206)
Smallmouth bass	0.0017 (0.0011)	0 (0)	0 (0)	53 (109)	111 (111)	151 (143)	148 (170)	0 (0)	463 (271)
Largemouth bass	0.0004 (0.0005)	0 (0)	24 (50)	34 (70)	47 (100)	0 (0)	0 (0)	0 (0)	105 (132)
Black crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	18 (37)	0 (0)	0 (0)	0 (0)	18 (37)
Yellow perch	0.1913 (0.0770)	0 (0)	678 (440)	4,276 (2,596)	1,398 (1,019)	5,757 (4,066)	30,492 (11,358)	8,929 (10,999)	51,530 (16,568)
Walleye	0.2383 (0.0889)	56 (112)	8,782 (4,676)	20,253 (9,018)	23,490 (13,000)	10,684 (7,492)	913 (1,589)	0 (0)	64,178 (18,189)
Freshwater drum	0.0051 (0.0027)	0 (0)	183 (310)	253 (222)	451 (377)	373 (322)	100 (118)	0 (0)	1,360 (636)
Total	0.4683 (0.1461)	83 (121)	11,870 (5,088)	26,406 (9,428)	26,905 (13,074)	18,733 (8,636)	32,933 (11,525)	9,198 (11,012)	126,128 (24,787)
Angler hours		2,908 (1,432)	40,527 (20,005)	71,670 (30,043)	63,591 (32,403)	61,136 (42,826)	22,519 (6,132)	6,954 (5,823)	269,305 (65,271)
Angler trips		703 (319)	7,675 (3,797)	12,248 (5,097)	12,757 (6,301)	11,880 (8,535)	5,054 (1,414)	1,639 (1,378)	51,956 (12,528)
Angler days		703 (319)	7,557 (3,736)	12,122 (5,052)	12,757 (6,301)	11,880 (8,535)	5,054 (1,414)	1,639 (1,378)	51,712 (12,491)

Appendix 36.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the mouth of the Raisin River to Michigan-Ohio state line area boat fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0000 (0.0000)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)
Rainbow trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	13 (28)	0 (0)	0 (0)	13 (28)
Lake trout	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	28 (59)	0 (0)	0 (0)	0 (0)	28 (59)
Northern pike	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	21 (45)	0 (0)	0 (0)	0 (0)	21 (45)
Yellow bullhead	0.0001 (0.0002)	29 (60)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	29 (60)
Channel catfish	0.0414 (0.0165)	255 (403)	1,003 (693)	1,775 (1,750)	5,974 (5,075)	6,687 (3,955)	4,940 (3,264)	1,038 (1,298)	21,672 (7,579)
White perch	0.0149 (0.0072)	0 (0)	1,734 (1,252)	821 (1,066)	680 (643)	1,911 (2,229)	1,299 (1,279)	1,369 (1,492)	7,814 (3,457)
White bass	0.0556 (0.0294)	1,103 (2,386)	13,695 (7,806)	7,158 (10,501)	3,643 (4,217)	1,389 (1,647)	1,904 (2,917)	203 (256)	29,095 (14,352)
Rockbass	0.0013 (0.0012)	0 (0)	35 (44)	0 (0)	264 (444)	66 (136)	326 (385)	0 (0)	691 (605)
Bluegill	0.0022 (0.0025)	95 (205)	68 (90)	0 (0)	0 (0)	516 (925)	456 (846)	7 (12)	1,142 (1,273)
Smallmouth bass	0.0014 (0.0010)	0 (0)	10 (20)	253 (379)	127 (147)	219 (206)	0 (0)	102 (138)	711 (477)
Largemouth bass	0.0003 (0.0004)	0 (0)	66 (134)	51 (108)	15 (33)	0 (0)	0 (0)	0 (0)	132 (175)
White crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	59 (127)	59 (127)
Black crappie	0.0002 (0.0003)	63 (136)	37 (77)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	100 (156)
Yellow perch	0.3542 (0.1504)	0 (0)	411 (292)	3,081 (2,058)	2,965 (1,844)	6,193 (4,199)	93,301 (50,593)	79,427 (48,384)	185,378 (70,186)
Walleye	0.2893 (0.0952)	703 (645)	22,763 (9,770)	24,233 (12,411)	76,062 (35,533)	26,835 (11,107)	791 (792)	34 (74)	151,421 (40,454)

Appendix 36.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Freshwater drum	0.0104 (0.0059)	53 (77)	1,952 (1,595)	1,291 (2,115)	706 (894)	706 (494)	640 (561)	74 (137)	5,422 (2,898)
Other	0.0003 (0.0003)	72 (105)	45 (81)	20 (41)	0 (0)	5 (11)	31 (49)	0 (0)	173 (148)
Total	0.7716 (0.2169)	2,376 (2,520)	41,819 (12,693)	38,683 (16,654)	90,485 (36,207)	44,540 (12,864)	103,688 (50,816)	82,313 (48,426)	403,904 (82,756)
Angler hours		12,894 (6,691)	78,105 (36,325)	108,254 (46,374)	126,278 (57,411)	109,483 (44,526)	65,977 (34,637)	22,441 (12,187)	523,432 (100,706)
Angler trips		2,502 (1,252)	14,251 (6,542)	23,792 (11,225)	22,560 (10,265)	18,375 (7,344)	12,573 (6,619)	4,532 (2,509)	98,585 (19,488)
Angler days		2,502 (1,252)	14,217 (6,522)	23,792 (11,225)	22,560 (10,265)	18,375 (7,344)	12,573 (6,619)	4,532 (2,509)	98,551 (19,481)

Appendix 37.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Black River Harbor, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0259 (0.0132)	197 (138)	74 (76)	0 (0)	--- (0)	119 (130)	31 (50)	421 (210)
Chinook salmon	0.0174 (0.0117)	0 (0)	0 (0)	0 (0)	--- (0)	245 (185)	39 (40)	284 (189)
Rainbow trout	0.0160 (0.0250)	15 (30)	27 (40)	0 (0)	--- (0)	218 (402)	0 (0)	260 (405)
Atlantic salmon	0.0018 (0.0037)	0 (0)	0 (0)	0 (0)	--- (0)	29 (59)	0 (0)	29 (59)
Brown trout	0.0079 (0.0068)	100 (93)	0 (0)	0 (0)	--- (0)	29 (59)	0 (0)	129 (110)
Lake trout	0.0568 (0.0340)	162 (138)	132 (74)	282 (335)	--- (0)	335 (398)	14 (24)	925 (544)
Other	0.0060 (0.0062)	0 (0)	0 (0)	29 (60)	--- (0)	59 (77)	9 (14)	97 (99)
Total	0.1317 (0.0485)	474 (218)	233 (113)	311 (340)	--- (0)	1,034 (620)	93 (70)	2,145 (752)
Angler hours		2,962 (627)	1,211 (475)	2,244 (1,015)	--- (0)	8,393 (1,242)	1,476 (453)	16,286 (1,843)
Angler trips		519 (161)	197 (93)	439 (194)	--- (0)	1,636 (287)	339 (110)	3,130 (408)
Angler days		496 (159)	197 (93)	439 (194)	--- (0)	1,636 (287)	339 (110)	3,107 (407)

Appendix 38.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the boat fishery at Ontonagon, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Coho salmon	0.0067 (0.0049)	236 (176)	0 (0)	0 (0)	0 (0)	7 (15)	243 (177)
Chinook salmon	0.0030 (0.0025)	58 (70)	6 (11)	16 (32)	13 (26)	16 (34)	109 (89)
Rainbow trout	0.0004 (0.0009)	0 (0)	0 (0)	0 (0)	0 (0)	16 (34)	16 (34)
Brown trout	0.0002 (0.0004)	7 (14)	0 (0)	0 (0)	0 (0)	0 (0)	7 (14)
Lake trout	0.0540 (0.0201)	412 (269)	705 (411)	692 (482)	143 (168)	0 (0)	1,952 (708)
Yellow perch	0.0012 (0.0018)	0 (0)	15 (29)	0 (0)	29 (58)	0 (0)	44 (65)
Walleye	0.0471 (0.0192)	646 (345)	835 (559)	91 (123)	122 (115)	9 (19)	1,703 (678)
Lake whitefish	0.0060 (0.0101)	26 (53)	177 (356)	12 (24)	0 (0)	0 (0)	215 (361)
Other	0.0252 (0.0151)	0 (0)	0 (0)	429 (368)	481 (397)	0 (0)	910 (541)
Total	0.1439 (0.0354)	1,385 (480)	1,738 (780)	1,240 (620)	788 (451)	48 (54)	5,199 (1,196)
Angler hours		7,264 (1,399)	13,497 (1,836)	10,172 (1,912)	4,522 (928)	667 (356)	36,122 (3,158)
Angler trips		1,397 (295)	2,706 (401)	1,948 (390)	1,167 (262)	215 (118)	7,433 (695)
Angler days		1,397 (295)	2,706 (401)	1,948 (390)	1,167 (262)	215 (118)	7,433 (695)

Appendix 39.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Traverse Bay, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0023 (0.0036)	--- (0)	3 (6)	0 (0)	0 (0)	17 (27)	13 (30)	33 (41)
Chinook salmon	0.0001 (0.0002)	--- (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)
Rainbow trout	0.0017 (0.0033)	--- (0)	0 (0)	0 (0)	7 (14)	0 (0)	17 (37)	24 (40)
Brown trout	0.0004 (0.0010)	--- (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (12)	5 (12)
Lake trout	0.1224 (0.1428)	--- (0)	229 (270)	728 (1,053)	678 (354)	95 (82)	3 (7)	1,733 (1,146)
Other	0.1002 (0.1181)	--- (0)	384 (481)	471 (775)	212 (165)	119 (149)	232 (231)	1,418 (967)
Total	0.2271 (0.2427)	--- (0)	617 (552)	1,199 (1,307)	897 (391)	231 (172)	270 (236)	3,214 (1,500)
Angler hours		--- (0)	1,596 (1,020)	8,822 (13,529)	1,568 (520)	527 (228)	1,641 (859)	14,154 (13,606)
Angler trips		--- (0)	428 (285)	2,006 (3,105)	397 (150)	122 (56)	672 (388)	3,625 (3,146)
Angler days		--- (0)	428 (285)	2,006 (3,105)	397 (150)	122 (56)	672 (388)	3,625 (3,146)

Appendix 40.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Keweenaw Bay, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0352 (0.0156)	302 (160)	21 (26)	17 (35)	20 (42)	44 (46)	59 (83)	463 (196)
Chinook salmon	0.0609 (0.0195)	327 (124)	202 (142)	114 (100)	83 (71)	57 (61)	19 (29)	802 (235)
Rainbow trout	0.0020 (0.0030)	9 (16)	0 (0)	0 (0)	0 (0)	0 (0)	18 (37)	27 (40)
Atlantic salmon	0.0002 (0.0004)	2 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (4)
Brown trout	0.0010 (0.0015)	4 (6)	0 (0)	9 (19)	0 (0)	0 (0)	0 (0)	13 (20)
Lake trout	0.0189 (0.0108)	0 (0)	47 (59)	79 (96)	104 (76)	19 (31)	0 (0)	249 (139)
Yellow perch	0.0529 (0.0745)	0 (0)	0 (0)	473 (870)	224 (447)	0 (0)	0 (0)	697 (978)
Lake whitefish	0.0014 (0.0015)	19 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	19 (20)
Other	0.0191 (0.0144)	10 (20)	113 (154)	67 (84)	43 (56)	18 (28)	0 (0)	251 (187)
Total	0.1915 (0.0835)	673 (205)	383 (219)	759 (886)	474 (464)	138 (87)	96 (95)	2,523 (1,052)
Angler hours		3,056 (782)	2,537 (753)	3,119 (872)	2,233 (799)	1,297 (404)	930 (312)	13,172 (1,685)
Angler trips		651 (171)	581 (208)	877 (256)	604 (251)	270 (88)	607 (238)	3,590 (515)
Angler days		631 (166)	581 (208)	877 (256)	573 (241)	241 (83)	580 (232)	3,483 (505)

Appendix 41.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Marquette, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0497 (0.0119)	2,605 (812)	704 (375)	103 (76)	103 (93)	99 (104)	347 (237)	53 (58)	4,014 (941)
Chinook salmon	0.0087 (0.0032)	90 (75)	301 (200)	60 (56)	13 (26)	124 (102)	52 (47)	67 (77)	707 (261)
Rainbow trout	0.0034 (0.0018)	92 (81)	72 (77)	32 (54)	7 (11)	8 (17)	0 (0)	63 (67)	274 (142)
Atlantic salmon	0.0001 (0.0002)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (11)
Brown trout	0.0049 (0.0024)	175 (129)	157 (126)	0 (0)	0 (0)	29 (43)	11 (21)	22 (31)	394 (189)
Lake trout	0.1952 (0.0227)	4 (8)	1,204 (456)	2,055 (525)	4,204 (947)	4,853 (911)	1,175 (461)	2,286 (567)	15,781 (1,657)
Splake	0.0045 (0.0028)	75 (103)	66 (117)	0 (0)	0 (0)	16 (26)	0 (0)	206 (156)	363 (222)
Northern pike	0.0007 (0.0014)	0 (0)	58 (116)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	58 (116)
Lake whitefish	0.0070 (0.0055)	243 (282)	234 (318)	0 (0)	0 (0)	0 (0)	0 (0)	90 (123)	567 (442)
Round whitefish	0.0107 (0.0081)	22 (45)	67 (79)	0 (0)	0 (0)	0 (0)	0 (0)	775 (649)	864 (655)
Other	0.0033 (0.0018)	6 (13)	12 (25)	69 (94)	0 (0)	122 (81)	20 (24)	41 (72)	270 (148)
Total	0.2882 (0.0299)	3,317 (884)	2,875 (739)	2,319 (544)	4,327 (952)	5,251 (928)	1,605 (521)	3,603 (896)	23,297 (2,113)
Angler hours		17,810 (2,666)	10,293 (1,048)	9,635 (1,207)	12,088 (1,615)	16,268 (1,623)	7,347 (982)	7,394 (771)	80,835 (4,058)
Angler trips		5,940 (931)	3,002 (360)	2,792 (497)	2,606 (384)	3,996 (432)	2,372 (363)	2,338 (270)	23,046 (1,335)
Angler days		4,729 (798)	2,636 (335)	2,529 (488)	2,586 (383)	3,645 (415)	1,902 (316)	2,107 (263)	20,134 (1,215)

Appendix 42.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Au Train, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		Apr	May	Jun	Jul	Aug	Sep	
Pink salmon	0.0005 (0.0010)	0 (0)	0 (0)	6 (12)	0 (0)	0 (0)	0 (0)	6 (12)
Coho salmon	0.0448 (0.0230)	192 (229)	201 (106)	0 (0)	7 (14)	34 (57)	138 (120)	572 (286)
Chinook salmon	0.0136 (0.0103)	0 (0)	113 (115)	47 (53)	14 (29)	0 (0)	0 (0)	174 (130)
Rainbow trout	0.0052 (0.0050)	18 (39)	33 (39)	15 (30)	0 (0)	0 (0)	0 (0)	66 (63)
Brown trout	0.0009 (0.0020)	12 (26)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12 (26)
Lake trout	0.2002 (0.0555)	0 (0)	284 (182)	612 (385)	1,089 (386)	572 (288)	0 (0)	2,557 (643)
Round whitefish	0.0543 (0.1054)	694 (1,345)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	694 (1,345)
Other	0.0007 (0.0010)	0 (0)	4 (9)	0 (0)	0 (0)	5 (9)	0 (0)	9 (13)
Total	0.3203 (0.1252)	916 (1,365)	635 (243)	680 (390)	1,110 (387)	611 (294)	138 (120)	4,090 (1,525)
Angler hours		784 (490)	3,724 (749)	3,011 (812)	2,519 (538)	2,505 (686)	228 (133)	12,771 (1,496)
Angler trips		1,179 (290)	771 (164)	689 (210)	530 (121)	412 (121)	171 (109)	3,752 (443)
Angler days		949 (261)	700 (157)	689 (210)	530 (121)	412 (121)	171 (109)	3,451 (422)

Appendix 43.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Munising Bay, by all modes of sportfishing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		Apr	May	Jun	Jul	Aug	Sep	
Coho salmon	0.0761 (0.0253)	1,062 (520)	457 (236)	37 (54)	23 (35)	11 (14)	410 (257)	2,000 (630)
Chinook salmon	0.0203 (0.0120)	0 (0)	134 (97)	348 (284)	53 (82)	0 (0)	0 (0)	535 (311)
Rainbow trout	0.0068 (0.0049)	59 (69)	59 (66)	38 (76)	0 (0)	10 (21)	12 (24)	178 (126)
Brown trout	0.0034 (0.0034)	50 (63)	11 (21)	29 (59)	0 (0)	0 (0)	0 (0)	90 (89)
Lake trout	0.0400 (0.0143)	75 (89)	157 (132)	156 (149)	265 (180)	330 (198)	70 (100)	1,053 (359)
Splake	0.0013 (0.0015)	14 (28)	12 (21)	0 (0)	0 (0)	0 (0)	9 (18)	35 (39)
Rainbow smelt	0.4201 (0.4415)	11,049 (11,554)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11,049 (11,554)
Northern pike	0.0005 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	14 (29)	0 (0)	14 (29)
Yellow perch	0.0530 (0.0667)	9 (18)	17 (34)	892 (1,668)	224 (376)	252 (365)	0 (0)	1,394 (1,749)
Lake whitefish	0.0113 (0.0116)	63 (80)	0 (0)	198 (286)	0 (0)	0 (0)	37 (59)	298 (303)
Round whitefish	0.0062 (0.0076)	56 (71)	0 (0)	17 (33)	0 (0)	0 (0)	89 (183)	162 (199)
Other	0.0034 (0.0061)	79 (158)	0 (0)	5 (10)	0 (0)	5 (11)	0 (0)	89 (159)
Total	0.6425 (0.4508)	12,516 (11,568)	847 (298)	1,720 (1,726)	565 (426)	622 (417)	627 (338)	16,897 (11,720)
Angler hours		7,910 (2,139)	5,502 (968)	4,897 (1,077)	3,243 (643)	2,193 (634)	2,553 (525)	26,298 (2,786)
Angler trips		2,304 (657)	1,269 (282)	1,124 (268)	630 (149)	387 (121)	881 (201)	6,595 (813)
Angler days		1,819 (541)	1,116 (264)	1,105 (267)	608 (149)	387 (121)	833 (196)	5,868 (713)

Appendix 44.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Little Bay de Noc ice fishery, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Brown trout	0.0026 (0.0020)	124 (206)	277 (387)	267 (242)	668 (501)
Splake	0.0094 (0.0046)	685 (654)	900 (710)	824 (636)	2,409 (1,156)
Northern pike	0.0085 (0.0057)	1,107 (1,118)	1,069 (918)	2 (3)	2,178 (1,447)
White sucker	0.0011 (0.0022)	0 (0)	279 (559)	0 (0)	279 (559)
Rockbass	0.0003 (0.0004)	33 (67)	54 (109)	0 (0)	87 (128)
Yellow perch	0.1437 (0.0388)	18,134 (7,159)	12,655 (5,139)	6,113 (2,723)	36,902 (9,224)
Walleye	0.0205 (0.0084)	3,376 (1,758)	1,899 (1,147)	0 (0)	5,275 (2,099)
Burbot	0.0003 (0.0005)	0 (0)	0 (0)	72 (127)	72 (127)
Total	0.1864 (0.0422)	23,459 (7,488)	17,133 (5,436)	7,278 (2,810)	47,870 (9,670)
Angler hours		130,036 (20,168)	91,714 (8,759)	35,092 (14,419)	256,842 (26,294)
Angler trips		34,485 (5,817)	22,624 (2,581)	7,985 (3,512)	65,094 (7,269)
Angler days		32,850 (5,602)	22,243 (2,572)	7,889 (3,497)	62,982 (7,087)

Appendix 45.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Keweenaw Bay ice fishery, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month		Season
		Feb	Mar	
Coho salmon	0.0545 (0.0161)	1,842 (692)	1,654 (610)	3,496 (922)
Chinook salmon	0.0150 (0.0076)	307 (186)	658 (434)	965 (472)
Rainbow trout	0.0019 (0.0014)	83 (76)	42 (52)	125 (92)
Brown trout	0.0016 (0.0026)	101 (165)	0 (0)	101 (165)
Lake trout	0.0428 (0.0118)	724 (399)	2,024 (523)	2,748 (658)
Rainbow smelt	0.7396 (0.2335)	11,520 (5,632)	35,927 (12,325)	47,447 (13,551)
Northern pike	0.0000 (0.0000)	3 (7)	0 (0)	3 (7)
Siscowet	0.0838 (0.0202)	1,035 (567)	4,339 (909)	5,374 (1,071)
Lake herring	0.0154 (0.0198)	841 (1,254)	144 (120)	985 (1,260)
Yellow perch	0.0481 (0.0309)	1,296 (1,212)	1,789 (1,513)	3,085 (1,939)
Lake whitefish	0.0063 (0.0038)	358 (227)	46 (74)	404 (239)
Round whitefish	0.0018 (0.0020)	39 (60)	77 (110)	116 (125)
Burbot	0.0007 (0.0007)	23 (33)	24 (35)	47 (48)
Total	1.0117 (0.2553)	18,172 (5,987)	46,724 (12,486)	64,896 (13,847)
Angler hours		22,831 (6,481)	41,317 (5,712)	64,148 (8,639)
Angler trips		7,310 (1,940)	11,724 (1,680)	19,034 (2,566)
Angler days		7,310 (1,940)	11,724 (1,680)	19,034 (2,566)

Appendix 46.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for winter fishery at Marquette, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	March	Season
Coho salmon	0.1367 (0.0658)	463 (203)	463 (203)
Chinook salmon	0.0124 (0.0150)	42 (50)	42 (50)
Splake	0.0744 (0.0420)	252 (133)	252 (133)
Lake herring	0.2426 (0.1918)	822 (629)	822 (629)
Lake whitefish	0.0032 (0.0056)	11 (19)	11 (19)
Round whitefish	0.0030 (0.0063)	10 (21)	10 (21)
Total	0.4723 (0.2209)	1,600 (677)	1,600 (677)
Angler hours		3,388 (676)	3,388 (676)
Angler trips		1,105 (233)	1,105 (233)
Angler days		900 (199)	900 (199)

Appendix 47.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Munising Bay ice fishery, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Feb	Mar	Apr	
Coho salmon	0.1071 (0.0522)	512 (538)	1,413 (558)	834 (562)	2,759 (957)
Chinook salmon	0.0007 (0.0013)	0 (0)	14 (29)	3 (6)	17 (30)
Rainbow trout	0.0149 (0.0305)	0 (0)	384 (775)	0 (0)	384 (775)
Lake trout	0.0002 (0.0005)	6 (14)	0 (0)	0 (0)	6 (14)
Splake	0.0049 (0.0061)	93 (141)	0 (0)	33 (54)	126 (151)
Rainbow smelt	0.3806 (0.2275)	0 (0)	9,664 (4,794)	136 (243)	9,800 (4,800)
Lake herring	0.0013 (0.0023)	33 (57)	0 (0)	0 (0)	33 (57)
Yellow perch	0.0026 (0.0036)	34 (75)	33 (48)	0 (0)	67 (89)
Lake whitefish	0.0805 (0.0580)	1,343 (1,227)	419 (339)	311 (331)	2,073 (1,315)
Round whitefish	0.0130 (0.0130)	63 (97)	57 (85)	214 (287)	334 (315)
Burbot	0.0018 (0.0024)	5 (11)	42 (59)	0 (0)	47 (60)
Other	0.0004 (0.0009)	10 (23)	0 (0)	0 (0)	10 (23)
Total	0.6080 (0.2885)	2,099 (1,354)	12,026 (4,901)	1,531 (755)	15,656 (5,140)
Angler hours		12,012 (8,479)	9,800 (1,785)	3,940 (1,673)	25,752 (8,825)
Angler trips		2,563 (1,757)	2,524 (479)	1,279 (601)	6,366 (1,918)
Angler days		2,427 (1,686)	2,161 (435)	1,001 (463)	5,589 (1,802)

Appendix 48.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Tawas Bay ice fishery, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Northern pike	0.0250 (0.0131)	178 (103)	412 (268)	0 (0)	590 (287)
Black crappie	0.0004 (0.0008)	0 (0)	0 (0)	10 (21)	10 (21)
Yellow perch	0.1612 (0.0768)	2,521 (1,429)	866 (660)	424 (500)	3,811 (1,652)
Walleye	0.0085 (0.0112)	0 (0)	91 (134)	110 (226)	201 (263)
Round whitefish	0.0007 (0.0016)	16 (36)	0 (0)	0 (0)	16 (36)
Burbot	0.0093 (0.0192)	0 (0)	0 (0)	220 (451)	220 (451)
Total	0.2051 (0.0847)	2,715 (1,433)	1,369 (725)	764 (711)	4,848 (1,756)
Angler hours		9,797 (3,624)	11,253 (2,902)	2,585 (656)	23,635 (4,689)
Angler trips		3,880 (1,585)	4,175 (1,295)	968 (281)	9,023 (2,066)
Angler days		3,686 (1,522)	3,791 (1,205)	928 (276)	8,405 (1,961)

Appendix 49.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Au Gres ice fishery, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Northern pike	0.0024 (0.0036)	36 (74)	26 (53)	0 (0)	62 (91)
Yellow perch	1.1707 (0.6150)	20,389 (14,078)	7,499 (4,753)	2,788 (2,639)	30,676 (15,091)
Walleye	0.0269 (0.0168)	197 (322)	66 (83)	441 (256)	704 (420)
Burbot	0.0028 (0.0035)	0 (0)	26 (53)	47 (71)	73 (89)
Total	1.2027 (0.6173)	20,622 (14,082)	7,617 (4,754)	3,276 (2,652)	31,515 (15,098)
Angler hours		11,642 (3,689)	8,597 (2,553)	5,964 (1,778)	26,203 (4,826)
Angler trips		4,311 (1,448)	2,852 (880)	1,684 (514)	8,847 (1,771)
Angler days		3,951 (1,352)	2,646 (829)	1,619 (500)	8,216 (1,663)

Appendix 50.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the ice fishery in the area from Saganing Creek to the mouth of the Saginaw River, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Northern pike	0.0009 (0.0018)	131 (266)	0 (0)	0 (0)	131 (266)
Yellow perch	0.8853 (0.2896)	86,195 (30,212)	17,302 (9,473)	22,279 (15,648)	125,776 (35,318)
Walleye	0.0765 (0.0303)	681 (523)	3,957 (1,919)	6,228 (3,346)	10,866 (3,893)
Burbot	0.0002 (0.0004)	0 (0)	28 (57)	0 (0)	28 (57)
Other	0.0012 (0.0016)	0 (0)	33 (53)	137 (214)	170 (220)
Total	0.9641 (0.2978)	87,007 (30,218)	21,320 (9,666)	28,644 (16,003)	136,971 (35,534)
Angler hours		47,871 (12,880)	52,531 (12,565)	41,673 (15,628)	142,075 (23,833)
Angler trips		12,781 (3,328)	11,227 (2,646)	8,377 (3,336)	32,385 (5,404)
Angler days		10,736 (2,854)	10,395 (2,453)	7,303 (2,896)	28,434 (4,749)

Appendix 51.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the ice fishery in the area from Quanicassee to Sebewaing, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Rainbow trout	0.0002 (0.0004)	0 (0)	0 (0)	6 (11)	6 (11)
White perch	0.0004 (0.0008)	0 (0)	0 (0)	14 (29)	14 (29)
Bluegill	0.0001 (0.0002)	0 (0)	0 (0)	3 (7)	3 (7)
Black crappie	0.0460 (0.0760)	1,375 (2,697)	333 (701)	0 (0)	1,708 (2,787)
Yellow perch	0.1631 (0.1107)	4,328 (3,570)	400 (504)	1,331 (1,170)	6,059 (3,790)
Walleye	0.0553 (0.0249)	575 (495)	1,164 (533)	313 (175)	2,052 (748)
Lake whitefish	0.0002 (0.0004)	0 (0)	0 (0)	6 (11)	6 (11)
Burbot	0.0002 (0.0004)	0 (0)	0 (0)	9 (19)	9 (19)
Total	0.2654 (0.1462)	6,278 (4,502)	1,897 (1,015)	1,682 (1,184)	9,857 (4,764)
Angler hours		21,352 (8,636)	9,610 (3,746)	6,178 (2,749)	37,140 (9,807)
Angler trips		5,995 (2,595)	2,057 (833)	1,282 (597)	9,334 (2,790)
Angler days		5,302 (2,385)	1,854 (751)	1,078 (488)	8,234 (2,548)

Appendix 52.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the ice fishery in the area from Sebawaing to Sand Point, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Channel catfish	0.0000 (0.0000)	0 (0)	0 (0)	1 (2)	1 (2)
White bass	0.0003 (0.0004)	13 (27)	12 (26)	0 (0)	25 (37)
Black crappie	0.0162 (0.0128)	0 (0)	0 (0)	1,237 (961)	1,237 (961)
Yellow perch	1.7856 (0.5051)	86,223 (24,636)	32,543 (20,326)	17,903 (7,455)	136,669 (32,797)
Walleye	0.0022 (0.0018)	17 (35)	14 (29)	135 (125)	166 (133)
Total	1.8043 (0.5068)	86,253 (24,636)	32,569 (20,326)	19,276 (7,518)	138,098 (32,812)
Angler hours		47,702 (10,128)	18,578 (3,930)	10,260 (3,663)	76,540 (11,465)
Angler trips		11,715 (2,630)	4,207 (926)	2,313 (831)	18,235 (2,909)
Angler days		10,617 (2,330)	3,709 (876)	1,992 (716)	16,318 (2,590)

Appendix 53.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the ice fishery in the area from Sand Point to Port Austin, 1993. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Brown trout	0.0003 (0.0008)	0 (0)	2 (5)	0 (0)	2 (5)
White perch	0.0012 (0.0022)	0 (0)	6 (13)	1 (3)	7 (13)
Black crappie	0.0036 (0.0079)	0 (0)	0 (0)	22 (48)	22 (48)
Yellow perch	0.8443 (0.4300)	1,408 (778)	3,479 (2,098)	225 (237)	5,112 (2,250)
Walleye	0.0007 (0.0009)	0 (0)	2 (4)	2 (3)	4 (5)
Other	0.0005 (0.0010)	0 (0)	3 (6)	0 (0)	3 (6)
Total	0.8505 (0.4309)	1,408 (778)	3,492 (2,098)	250 (242)	5,150 (2,251)
Angler hours		1,409 (672)	4,102 (1,338)	544 (410)	6,055 (1,552)
Angler trips		405 (190)	1,049 (381)	126 (95)	1,580 (436)
Angler days		343 (163)	962 (362)	99 (76)	1,404 (404)