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Waters of Lakes Michigan, Huron, Erie, and
Superior, and Their Important Tributary Streams,
April 1, 1991 - March 31, 1992**

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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,
and their Important Tributary Streams,
April 1, 1991 - March 31, 1992**

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Abstract.—Sportfishing catch and effort were sampled on lakes Michigan, Huron, Erie, and Superior from April 1, 1991 through March 31, 1992. 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 75,000 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 6.7 million angler hours in all areas of the Michigan waters of the Great Lakes that were surveyed. Total harvest was estimated to be over 5.3 million fish. Yellow perch were the most abundant species in the sport catch in most sample areas, totaling 4.4 million fish. In addition to yellow perch, sport anglers harvested an estimated 263,000 walleye, 99,000 lake trout, 87,000 chinook salmon, 46,000 coho salmon, 40,000 rainbow trout, and 18,000 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 75,000 anglers at the end of their fishing trips during the 1991 license year, April 1, 1991 through March 31, 1992. Approximately 63,600 of these anglers were contacted during the April through November open-water season. A total of 11,900 anglers were interviewed during the winter ice fishing season, January through March 1992.

During the 1991 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 Harbor Beach to Rogers City, and from St. Ignace to Drummond Island (Figure 2). Also, the St. Mary's River, which is a major tributary to Lake Huron, was surveyed from the rapids in Sault Ste. Marie to Potagannissing Bay (Figures 2 and 3). A creel survey, focused on the boat fishery, was conducted on Lake Erie from Point Mouillee to the Michigan-Ohio state line (Figure 4). Seven areas were sampled on western and central Lake Superior during the 1991 open-water season, from Black River Harbor to Munising Bay (Figure 3).

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 3). The total number of fishing areas surveyed during the 1991 license year was greatly increased compared to 1989-90. During the 1989-90 license years the number of areas surveyed were curtailed due to budget constraints.

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) and Rakoczy (1992b).

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 2,328,243 ($\pm 159,906$) hours fishing the Michigan waters of Lake Michigan at the 15 areas surveyed during the March 15 through November 15, 1991 open-water season (Table 2). The number of hours fished converts to an estimated 538,520 ($\pm 32,819$) individual angler trips or 483,382 ($\pm 31,359$) angler days. Total angling effort by mode of fishing was 86% boat, 11% pier, and 3% shore.

Total angler effort in 1991 at 10 major sample areas combined increased slightly compared to the same period in 1990 (Table 3). Estimated angler effort in 1991 was approximately 50% less than the 1985-86 estimates. St. Joseph had the greatest amount of angler activity in 1991 of all the survey sites, with an estimated 388,867 ($\pm 46,759$) angler hours.

The average length of a fishing trip (all modes of fishing) was 4.3 hours. Anglers made approximately 1.1 fishing trips per day. Boat trips were the longest in duration, averaging 4.8 hours. Pier and shore trips averaged 2.8 and 2.4 hours, respectively.

Fishermen caught an estimated 1,400,337 ($\pm 149,081$) fish comprising 27 species during 1991 (Table 2). The bulk of this catch (85%) came from the boat fishery, while pier and shore anglers harvested 13% 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 78% of all the fish harvested. An estimated 1,098,284 ($\pm 145,054$) 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 1991 was 9.21 (± 0.07) inches. During 1991, 19% of all Lake Michigan angler parties interviewed said their target species was yellow perch. The largest perch catch (259,949 $\pm 62,108$ fish) of all areas sampled in 1991 occurred at St. Joseph (Table 7.)

Yellow perch catch rates at seven Lake Michigan sample areas in 1991 combined decreased significantly (31%) compared to 1990 (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. The greatest catch rate for yellow perch during 1991 was 0.639 (± 0.201) fish per angler hour at St. Joseph. The greatest changes in catch rates for yellow perch in 1991 compared to 1990 occurred at Muskegon (-72%), St. Joseph (-55%), and Grand Haven (+55%) (Table 7).

Although yellow perch are important to the Lake Michigan sport fishery, many anglers (55%) seek the various species of salmonids. The percentage of anglers seeking salmonids in 1991 was 12% greater than 1990. The Lake Michigan salmonid catch, exclusive of lake whitefish, in the study area was estimated at 186,188 ($\pm 15,838$) fish. The vast majority of the salmonid harvest (93%) came from the boat fishery (non-charter) (Table 4). The salmonid catch was composed of 32% lake trout, 25%

chinook salmon, 19% rainbow trout, 15% coho salmon, and 9% brown trout. Lake trout and rainbow trout are becoming a larger component of the salmonid catch. Lake trout made up 15-16% of the salmonid catch in 1985-86, and now (1990-91) make up 25-32% of the total harvest (Rakoczy and Rogers 1987; 1988a, b; 1992a). During the same period, rainbow trout ranged from 4-5% of the salmonid harvest to 18-19% during the past two seasons.

The total salmonid harvest (charter and non-charter) at nine important Lake Michigan fishing areas (index ports) combined increased 21% in 1991 compared to 1990. Catch rates for all salmonids combined in 1991 was 0.132 (± 0.009) fish per hour compared to 0.118 (± 0.009) in 1990. The increase in the salmonid catch at these ports in 1991 was mainly due to a 53% increase in catch rates for rainbow trout and a slight increase (7%) in angler effort at these ports compared to 1990 (Tables 8 and 9).

The lake trout was the most abundant salmonid in the sport catch in 1991. An estimated 59,770 ($\pm 8,193$) were harvested from all the ports sampled (Table 2). Data collected from the sport fishery during 1991 indicated that creel lake trout averaged 26.29 (± 0.20) inches in length and weighed 6.75 (± 0.19) pounds. The harvest of lake trout at nine index ports increased 31% in 1991 compared to 1990 (Table 8). The catch rate for lake trout (0.044 ± 0.006 fish per hour) at the nine ports combined did not change significantly in 1991 compared to 1990 (Table 9).

Chinook salmon have historically been one of the most important salmonids in the Lake Michigan sport fishery in terms of numbers and weight of fish harvested (Rakoczy and Rogers 1991c). An estimated 46,046 ($\pm 8,339$) chinook salmon were creel by anglers during 1991 at all sample areas combined (Table 2). Biological data collected from the Lake Michigan sport catch during 1991 indicated that their mean size was 25.63 (± 0.45) inches or 8.45 (± 0.46) pounds. The harvest of chinook in 1991 at the nine index ports increased slightly in numbers of fish compared to 1990 (Table 8). The harvest of chinook salmon has decreased each season from 1986-90. Catch rates for chinook at these nine areas combined were virtually

unchanged in 1991 compared to 1990, but were significantly lower (69%) 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 1985-86, age-0.3 and age-0.4 chinook salmon made up 53-71% of the sport catch at the nine index ports (Table 10). During the past two seasons (1990-91), these same age groups have only accounted for 30-34% 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 1984-87 year classes of chinook salmon throughout their life span in the lake was 20.16, 20.43, 13.56, and 11.83, respectively (Table 11). Although there are no return data for the 1983 year class at age 0.1, the return of age groups 0.2 through 0.4 was 33.1 fish per 1,000 stocked, nearly four times the return of the 1987 year class at those same ages. Decreased survival of Lake Michigan chinook salmon has been attributed to bacterial kidney disease (Nelson and Hnath 1990).

An estimated 35,773 ($\pm 7,462$) rainbow trout were harvested from all Lake Michigan ports sampled during 1991 (Table 2). Seventy-nine percent of the harvest was taken during June, July, and August in the boat fishery. This was consistent with data collected during the past three years. However, in 1987, 68% of the harvest came during September and October from pier and shore fisheries (Rakoczy and Rogers 1988b). The mean size of rainbow trout in the Lake Michigan sport catch during 1991 was 25.78 (± 0.30) inches or 6.50 (± 0.21) pounds. The catch and catch rate for rainbow have increased each year since 1986 at the nine index ports (Table 8). The 1991 harvest and catch rate for rainbow at the index ports was 59% and 53% greater, respectively, than 1990.

An estimated 27,990 ($\pm 6,776$) coho salmon were harvested in all survey areas

combined in 1991 (Table 2). The average size of coho harvested by the sport fishery was 20.87 (± 0.42) inches and 3.92 (± 0.29) pounds. The catch and catch rate for coho at the nine index ports combined were virtually unchanged compared to 1990 (Tables 8 and 9). Historically (1985-90), catch rates for coho salmon varied greatly from year to year. The catch rate noted for 1991 (0.018 \pm 0.004 fish per hour) was 23% below the previous 5-year (1986-90) average (Table 9). The difference was not significant.

A total of 16,045 ($\pm 3,510$) brown trout with an average size of 20.38 (± 0.99) inches or 4.27 (± 0.22) pounds were estimated to have been caught by Lake Michigan anglers at all survey areas in 1991 (Table 2). The brown trout catch or catch rate has not significantly changed since 1987 at the nine index ports (Table 8). The catch rate for brown trout (0.009 \pm 0.002 fish per hour) in 1991 at the nine index ports was virtually unchanged compared to the previous 5-year average.

Lake Huron

A total of 17 sportfishing areas were surveyed on Lake Huron during the 1991 April through October open-water season. The last large scale survey of Lake Huron occurred during the 1988 season (Rakoczy and Rogers 1990). During 1991, Lake Huron anglers spent an estimated 2,350,813 ($\pm 138,138$) hours fishing at all areas combined (Table 12). An estimated 543,981 ($\pm 32,310$) angler trips were made during the season or 496,144 ($\pm 31,130$) angler days.

Angler effort by mode of fishing was 97% boat, 2% shore, and 1% pier (Tables 13, 14, and 15). The average length of a Lake Huron fishing trip (all modes of fishing) was 4.3 hours. Anglers made approximately 1.1 fishing trips per day. Boat trips were the longest in duration, averaging 4.4 hours. Pier and shore trips averaged 2.5 and 2.1 hours, respectively.

The waters of Saginaw Bay had the greatest concentration of fishing effort (54%) on Lake Huron. Anglers spent an estimated 1,257,888 ($\pm 114,980$) hours, 278,667

(±24,911) trips, or 267,034 (±24,547) days fishing Saginaw Bay (Table 16). Angler effort on Saginaw Bay during 1991 did not change significantly compared to 1989, the last open water season the Bay was surveyed (Table 17). Lake Huron anglers harvested an estimated 1,968,319 (±287,972) fish comprising 33 species (Table 12). Anglers fishing from boats harvested 98% of all fish. During 1991, 24% of all anglers interviewed on Lake Huron responded that their target species was yellow perch and 38% were seeking the various species of salmonids. On Saginaw Bay, 49% of all anglers interviewed responded that they were fishing for yellow perch while 22% were fishing for walleye.

Yellow perch dominated the sport catch on Lake Huron, making up 86% of all fish harvested. An estimated 1,694,207 (±286,784) yellow perch were taken by all modes of fishing. The average size of yellow perch kept by Lake Huron anglers in 1991 was 8.02 (±0.05) inches. Most (87%) yellow perch were taken by anglers fishing in Saginaw Bay. The 1991 harvest of yellow perch from Saginaw Bay (1,381,431 ± 278,855) did not differ significantly from 1989 (Table 17). The average size of yellow perch kept by Saginaw Bay anglers was 7.81 (±0.05) inches. The catch rate (1.108 ±0.246 fish per hour) for Saginaw Bay yellow perch in 1991 did not differ significantly compared to the 1986-89 average (0.980 ± 0.165).

The walleye is becoming an important species to the Lake Huron sport fishery. An estimated 83,533 (±13,443) walleye were harvested from all areas surveyed (Table 12). Seventy-three percent of the walleye harvest came from Saginaw Bay (Table 17). The mean size of walleye taken by the Saginaw Bay sport fishery was 20.31 (±0.29) inches and 3.35 (±0.16) pounds. The 1991 harvest (61,028 ± 10,817) and catch rate (0.049 ±0.010) for Saginaw Bay walleye were virtually unchanged compared to 1989.

In addition to yellow perch and walleye, Lake Huron anglers also harvested an estimated 74,027 (±10,021) salmonids (Table 12). Although the salmonid catch was composed of nine species, three species dominated the catch,

chinook salmon (50%), pink salmon (23%), and lake trout (20%).

The mean size of chinook salmon harvested by Lake Huron anglers during 1991 was 30.83 (±0.55) inches and 13.63 (±0.60) pounds. The estimated harvest of chinook salmon (40,325 ± 4,446) at 12 Lake Huron index ports during 1991 decreased significantly (55%) compared to 1988, the last season all ports were surveyed (Table 18). Part of the decline in the harvest of chinook was caused by a 30% decline in angler effort (hours) at these ports. However, catch rates for chinook also declined (37%) from 0.043 (±0.006) fish per hour in 1988 to 0.027 (±0.003) in 1991 (Table 19). The catch rate for chinook at these index ports in 1991 declined significantly (25%) compared to the 1986-88 average catch rate.

Lake Huron anglers harvested an estimated 18,010 (±2,717) lake trout from the index ports (Table 18). The mean size of lake trout in the sport catch was 24.95 (±0.38) inches and 6.13 (±0.31) pounds. The 1991 lake trout harvest declined (66%) compared to the 1986-88 harvest at the index ports (Table 18). The estimated catch rate of 0.015 (±0.002) lake trout per hour during 1991 was the poorest success rate noted for the Lake Huron index ports since 1986 (Table 19).

Pink salmon make an important contribution to the Lake Huron sport fishery during odd-numbered years. During 1991, an estimated 17,041 (±8,494) pink salmon were harvested at the index ports with a mean size of 16.05 (±0.64) inches and 2.05 (±1.45) pounds. The 1991 harvest of pink salmon decreased 38% compared to the 1987 harvest (Table 18). The decline can be mostly attributed to a 35% decline in angler effort in 1991 compared to 1987. Catch rates for pink salmon (0.012 ± 0.006) at these ports were unchanged in 1991 compared to 1987 (Table 19).

During 1991, coho salmon, rainbow trout, and brown trout made relatively limited contributions to the Lake Huron sport catch. The harvest of 642 (±296) coho salmon was the smallest estimated seasonal catch since 1986 (Table 18). Stocking of coho salmon into Lake Huron was discontinued by MDNR during

1990. The catch ($3,311 \pm 535$) and catch rate ($0.002 \pm <0.001$) of rainbow trout did not change significantly compared to the 1986-88 average. In general, the brown trout harvest has been declining since 1986. The 1991 catch rate for brown trout ($0.001 \pm <0.001$) declined significantly (67-86%) compared to 1986-87 estimates at the index ports (Table 19).

Lake Erie

Approximately 30 miles of Lake Erie shoreline, from Point Mouillee to the Michigan-Ohio state line, were surveyed in 1991. Anglers spent an estimated 766,031 ($\pm 120,402$) hours fishing from boats in the survey area (Table 20). A total of 141,372 ($\pm 21,845$) angler trips or 140,657 ($\pm 21,790$) angler days were spent in the area. Total angler effort decreased significantly (66%) in 1991 compared to 1990 (Table 21). Angler effort has been declining on Lake Erie since 1988. The average length of a boat fishing trip on Lake Erie was 5.4 hours. The average angler made 1.0 trips per day.

Boat anglers harvested an estimated 555,519 ($\pm 84,077$) fish comprising 20 species (Table 20). Seventy-one percent of all Lake Erie anglers interviewed responded that they were target fishing for walleye, while 15% said they were seeking yellow perch. Walleye, however, made up only 19% of the total catch with an estimated harvest of 107,682 ($\pm 22,873$) fish. In 1990, walleye made up 47% of the catch. The mean size of walleye in the catch was 19.15 (± 0.28) inches or 2.55 (± 0.12) pounds. The walleye harvest in 1991 decreased significantly by 83% compared to 1990 (Table 21). The harvest has decreased each year since 1988. The majority of the 1991 walleye catch (74%) was taken during May and June. This was not consistent with the previous 2 years (1989-90) when most (68-82%) of the harvest occurred during June and July. The catch rate for walleye (0.170 ± 0.039) in 1991 also declined significantly (48%) compared to 1990 (Table 21).

Lake Erie anglers harvested an estimated 365,327 ($\pm 80,078$) yellow perch during 1991.

The mean total length of yellow perch kept by Lake Erie anglers was 8.14 (± 0.02) inches. The yellow perch harvest during the period May through September 1991 decreased compared to the same period in 1990 (Table 21). This was due to the decline in angler effort (67%) since catch rates for this species increased (98%) in 1991 compared to 1990.

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 28,477 ($\pm 7,116$) white perch, 20,018 ($\pm 5,251$) channel catfish, and 13,504 ($\pm 5,054$) white bass 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 205,644 ($\pm 7,561$) hours fishing the seven survey areas on western and central Lake Superior (Table 22). This translates to 54,138 ($\pm 2,311$) individual angler trips, or 49,445 ($\pm 2,134$) angler days. Angler effort increased significantly by 78% compared to 1990. Marquette had the greatest amount of angler activity of all Lake Superior sample areas, accounting for 42% of the total effort. The average length of a Lake Superior fishing trip (all modes of fishing) was 3.8 hours and anglers made 1.1 fishing trips per day.

Lake Superior anglers harvested an estimated 48,139 ($\pm 4,426$) fish comprising 18 species (Table 22). Most anglers (64%) interviewed on Lake Superior said they were fishing for the various species of salmonids. Lake trout made up 56% of the salmonid catch (excluding lake whitefish). The remainder of the salmonid catch was made up mainly of coho

salmon (33%) and chinook salmon (7%), with small numbers of rainbow trout, splake, and brown trout. A few Atlantic salmon, brook trout, and pink salmon were also noted in the catch.

The lake trout harvest for all survey areas combined was estimated at 21,435 ($\pm 3,589$) fish and did not differ significantly from 1990 (Table 22). Lake trout averaged 22.65 (± 0.26) inches and 4.10 (± 0.19) pounds. The catch rate for lake trout at all survey areas combined in 1991 was 0.104 (± 0.017) fish per hour compared to 0.143 (± 0.019) for these same areas in 1990.

Lake Superior anglers also caught an estimated 12,566 ($\pm 1,838$) coho salmon and 2,512 (± 640) chinook salmon in 1991 (Table 22). The 1991 catch and catch rate for coho salmon increased significantly compared to 1990. The 1991 catch was 12 times greater than in 1990, while catch rate increased by 600%. The 1991 chinook salmon catch also increased (130%) significantly compared to 1990, but the catch rate did not change significantly.

In addition to salmonids, Lake Superior anglers caught an estimated 3,977 ($\pm 1,107$) walleye in 1991 compared to 3,232 ($\pm 1,002$) in 1990. Most (96%) of the walleye catch came from the port of Ontonagon. The walleye catch rate (0.106 ± 0.032) at Ontonagon in 1991 did not differ significantly from 1990 (0.125 ± 0.042).

St. Marys River

During 1991, anglers spent an estimated 596,493 ($\pm 55,183$) hours, and made 161,879 ($\pm 18,037$) fishing trips on the St. Marys River from the rapids in Sault Ste. Marie to Detour. Angler effort decreased (21%) compared to 1987, the last year that the river system was surveyed (Rakoczy and Rogers 1988b).

The sport catch was estimated at 221,823 ($\pm 53,724$) fish representing 25 species (Table 23). Species of importance and their contribution (percent) to the catch were: yellow perch (41%), walleye (12%), northern pike

(12%), rock bass (9%), pink salmon (8%), and lake herring (7%).

The 1991 yellow perch catch (91,019 $\pm 42,750$) and catch rate (0.153 ± 0.073) significantly decreased by 71% and 64%, respectively, compared to 1987 (Table 23). The 1991 walleye catch (26,435 $\pm 9,033$) was virtually unchanged compared to 1987, while the catch rate of 0.0443 (± 0.016) walleye per hour increased by 29% compared to 1987. The increase was not significant.

In the 1987 survey, lake herring was the second most abundant species making up 24% of the total catch. The 1991 estimated catch (14,528 $\pm 10,160$) and catch rate (0.024 ± 0.017) of lake herring significantly declined by 90% and 87%, respectively, compared to 1987. During each of the survey years (1987 and 1991) most of the lake herring came from the Neebish Island to Raber Bay sample area.

Winter Ice Fisheries

Catch and sportfishing effort were surveyed on various areas of lakes Superior, Huron and Michigan during the winter months of 1992. 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 1988b). During 1992, anglers spent an estimated 357,651 ($\pm 33,017$) hours fishing the Bay's waters (Table 24). This amounted to an estimated 93,878 ($\pm 9,356$) angler trips, or 83,481 ($\pm 8,470$) angler days. The average length of an ice fishing trip on Saginaw Bay was 3.8 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 1992 increased (21%) compared to 1991, however the change was not significant (Table 25).

Saginaw Bay ice anglers caught an estimated 916,552 ($\pm 157,463$) fish representing 19 species (Table 24). Most (85%) angler parties interviewed on Saginaw Bay during the 1992 ice fishery responded that they were fishing for yellow perch. Yellow perch made up 99% of all fish harvested. The total harvest and catch rate for yellow perch in 1992 was not significantly different than the 1991 estimates (Table 25). The area from Sebawaing to Sand Point had the greatest estimated catch (357,653 $\pm 104,733$) for yellow perch of all the Saginaw Bay survey sites and the catch was virtually unchanged compared to 1991. The area from Sand Point to Port Austin had the greatest catch rate (3.996 ± 1.987) of all the Saginaw Bay survey sites in 1992.

Four percent of all angler parties interviewed on Saginaw Bay during the winter ice fishery indicated that their target species were walleye. The 1992 winter walleye catch and catch rate did not differ significantly compared to 1991.

Little Bay de Noc is the largest winter ice fishery on Lake Michigan. Angler effort for the 1992 winter ice fishery was estimated at 257,559 ($\pm 28,427$) hours and did not change significantly compared to 1991 (Table 26). Anglers harvested an estimated 249,804 ($\pm 47,082$) yellow perch and 4,612 ($\pm 1,447$) walleye from Little Bay de Noc. The 1992 catch and catch rate for yellow perch and walleye did not change significantly compared to 1991. In general, the harvest for yellow perch has been trending upward since 1988. The 1992 walleye harvest and catch rate were the smallest estimates during the past four ice seasons (1988-91) (Table 26).

Three areas were surveyed on Lake Superior during the winter of 1992, Keweenaw Bay, Munising Bay, and Marquette. On Keweenaw Bay anglers spent an estimated 34,427 ($\pm 5,228$) hours fishing through the ice (Table 27). Angler effort in 1992 declined (63%) significantly compared to 1991. Mild winter weather resulted in poor ice conditions

during a portion of the survey period, therefore, limiting angler access to the ice.

Keweenaw Bay anglers caught an estimated 2,609 ($\pm 2,505$) lake trout and 1,842 (± 740) siscowet lake trout during the winter of 1992. Siscowet lake trout, also known as fat trout, made up 41% of the total lake trout catch (fat and lean trout) on Keweenaw Bay in 1992 compared to 69% in 1991 (Table 27). The catch and catch rate of siscowets declined on Keweenaw Bay compare to 1991. For lake trout, the 1992 catch declined, but the catch rate increased compared to 1991.

In addition to lake trout, Keweenaw Bay anglers harvested an estimated 643 (± 739) coho salmon and 686 (± 761) chinook salmon during the 1992 ice fishery. The 1992 coho catch declined (89%) significantly compared to 1991. Historically (1988-91), the winter coho harvest has had fluctuated widely (Table 27). The 1992 chinook salmon catch was virtually unchanged compared to the winter of 1991.

The winter ice fishery at Munising Bay (34,214 $\pm 12,695$ hours) was similar in size, in terms of angler effort, to Keweenaw Bay. Ice anglers on Munising Bay harvested an estimated 21,012 ($\pm 12,438$) rainbow smelt, 5,862 ($\pm 2,136$) lake whitefish, and 2,224 (± 702) coho salmon among eight species which were observed in the catch. At Marquette, ice fishing effort was estimated at 7,894 ($\pm 1,022$) angler hours and the catch consisted mainly of coho salmon (1,844 ± 450).

Summary

During the 1991 license year anglers spent an estimated 6.7 million angler hours in the Michigan waters of the Great Lakes that were surveyed. This accounted for an estimated 1.5 million individual fishing trips and 1.4 million angler days. Total catch was estimated to be over 5.3 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 4.4 million fish. In addition to yellow perch, sport anglers harvested an estimated 263,000 walleye,

99,000 lake trout, 87,000 chinook salmon, 46,000 coho salmon, 40,000 rainbow trout, and 18,000 brown trout.

The Lake Michigan salmonid catch was composed of 32% lake trout, 25% chinook salmon, 19% rainbow trout, 15% coho salmon, and 9% brown trout. The total salmonid harvest at nine important Lake Michigan fishing areas (index ports) combined increased 21% in 1991 compared to 1990. The increase in the salmonid catch at these ports in 1991 was mainly due to a 53% increase in catch rates for rainbow trout and a slight increase (7%) in angler effort compared to 1990.

The waters of Saginaw Bay had the greatest concentration of fishing effort (54%) on Lake Huron. Angler effort on Saginaw Bay during 1991 did not change significantly compared to 1989, the last open-water season the Bay was surveyed. The 1991 harvest and catch rate of yellow perch and walleye from Saginaw Bay did not differ significantly compared to 1989. The Lake Huron salmonid catch was dominated by three species, chinook salmon (50%), pink salmon (23%), and lake trout (20%).

The 1991 walleye harvest on Lake Erie decreased significantly by 83% compared to 1990. The walleye harvest has decreased each

year since 1988. The yellow perch harvest on Lake Erie during 1991 also decreased compared to 1990. However, this decrease was mainly due to a 67% decline in angler effort since catch rates for this species increased (98%) in 1991 compared to 1990.

Acknowledgments

This report could not have been prepared without the help of Richard Rogers, who was a Fisheries Technician at the Charlevoix Fisheries Station. The success of the Great Lakes Creel Monitoring Program and the timely reporting of results each year were largely due to his diligence.

The author wishes 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 interviews, fishing pressure counts, and supervision of seasonal workers. Paul Wei of the Management Information Division wrote the interview and count data entry programs. 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.

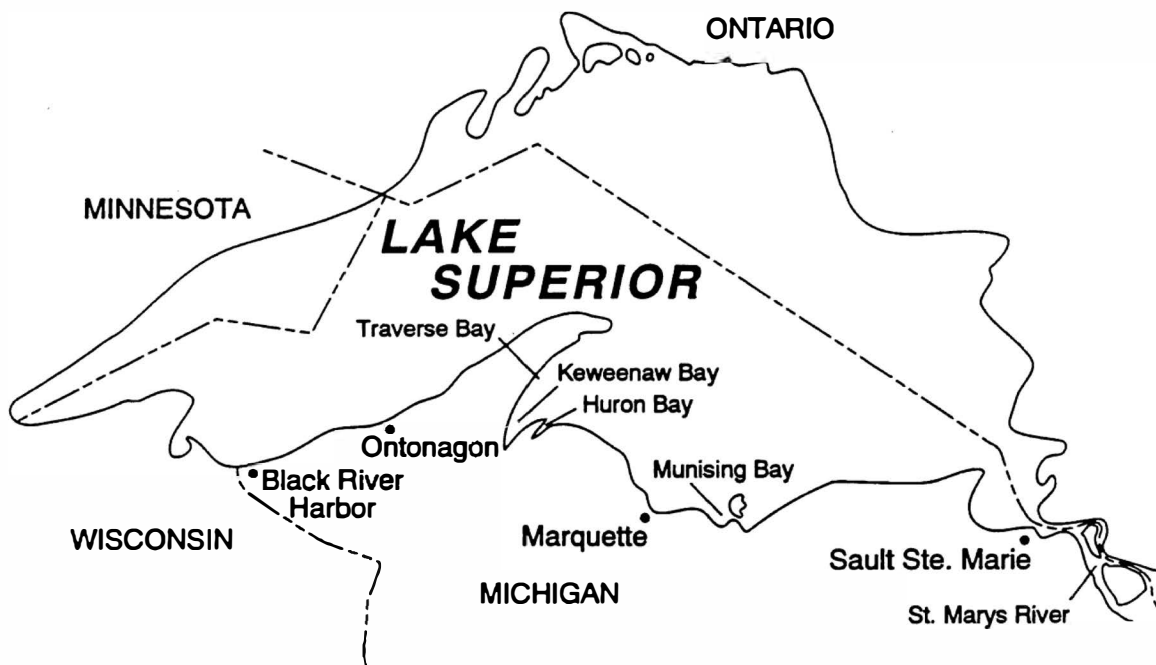


Figure 3.—Lake Superior survey area.

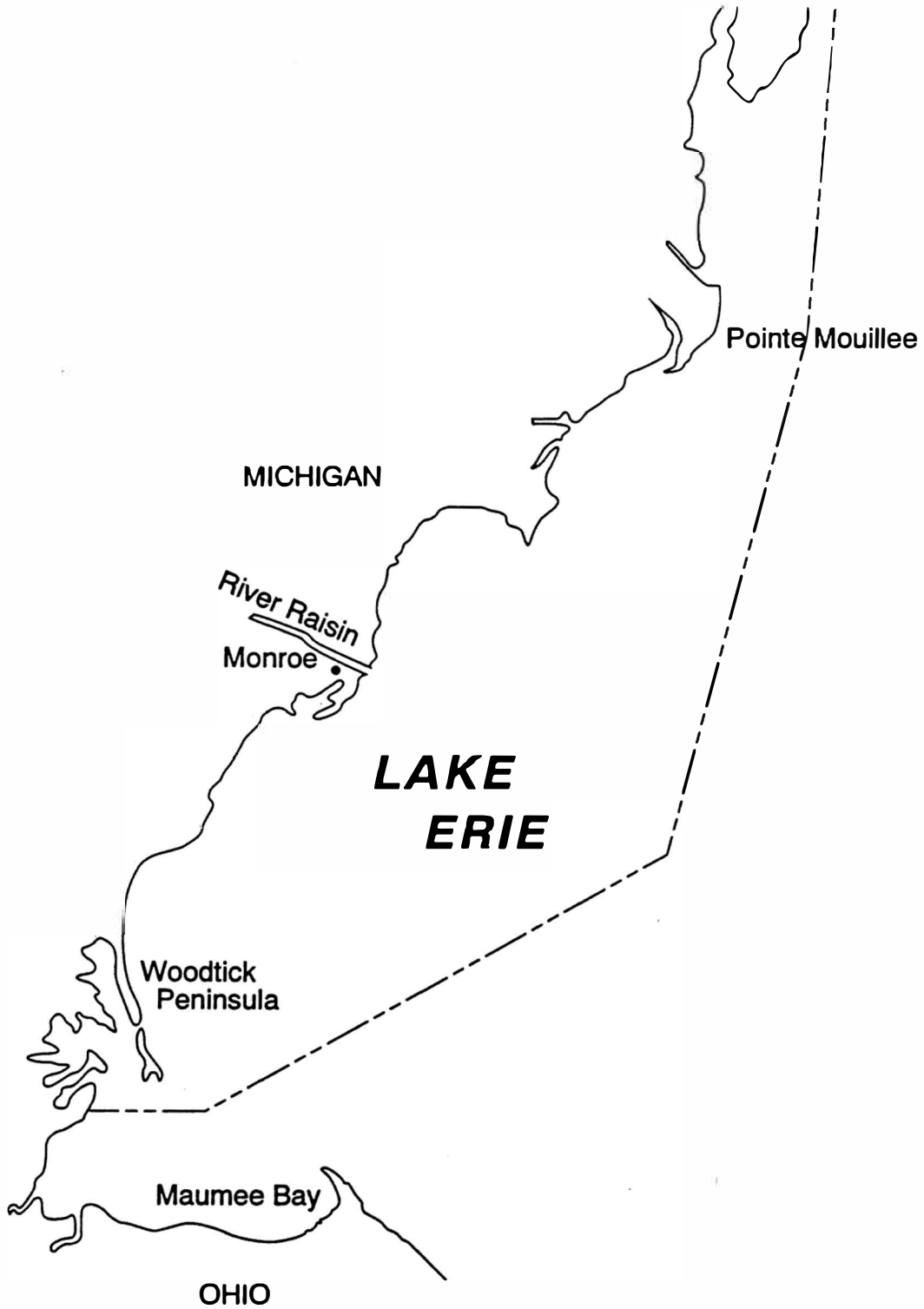


Figure 4.—Lake Erie survey area.

ANGLER PARTY INTERVIEW FORM

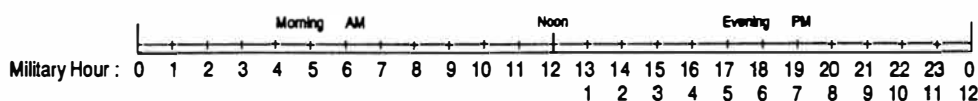
Project # : _____

Unit : _____ Soc. Sec. # : _____ - _____ - _____ Date : _____/_____/_____ Seq # : _____

Interview site : _____ Site Name : _____
 Fishing : _____ 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 : _____ End time : _____
 Start time : _____
 Hrs fished : _____
 Comp. trip : Y N



Ang #	Residence				Cntry	Fishing methods											
	ler	tps	Sex	Age		Zip code	(county / state)	code	cast	stil	trol	fly	drif	spea	dip	snag	lig
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	

Use this side or use this side, not both!

Target sp. : _____ Anything Salmon Trout Salmon & Trout Walleye & Perch
 code : _____ Bass Panfish Bass & Bluegill Pike & Bass 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	Spoke	_____	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.

SHORE AND BOAT COUNT FORM

Project # : Unit : Soc. Sec. # : - - Seq # :

Date	Wk Day	Lake	Site	Site Name	Begin Hour	Mo de	Count	Ty pe	Durat (Min)	Mo de	Count	Ty pe	Durat (Min)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Great Lakes : ER = Erie HU = Huron MI = Michigan SC = St. Clair SU = Superior

Day of Week : 1 = Mon 2 = Tues 3 = Wed 4 = Thur 5 = Fri 6 = Sat 7 = Sun 8 = Holiday

Military Hour : 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0

Morning AM
Evening PM

Noon
1 2 3 4 5 6 7 8 9 10 11 12

Mode of Fishing : 1 = Boat 2 = Shore 3 = Charter
 4 = Ice (open) 5 = Pier / dock 6 = Ice (shanty)
 7 = Trailer 8 = Car

Type of Count : 1 = Interval
 4 = Instantaneous

Figure 6.—Shore and boat count form.

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

Common name	Scientific name
Rainbow smelt	<i>Osmerus mordax</i>
Northern pike	<i>Esox lucius</i>
Muskellunge	<i>Esox masquinongy</i>
Black bullhead	<i>Ameiurus melas</i>
Yellow bullhead	<i>Ameiurus natalis</i>
Brown bullhead	<i>Ameiurus 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 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>Salvelinus namaycush</i> x <i>S. fontinalis</i>
White sucker	<i>Catostomus commersoni</i>
Redhorses	<i>Moxostoma</i> spp.
Rock bass	<i>Ambloplites rupestris</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Bluegill	<i>Lepomis macrochirus</i>
Longear sunfish	<i>Lepomis megalotis</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 (15), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month									Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Pink salmon	0.0000 (0.0000)	0 (0)	0 (0)	18 (36)	0 (0)	8 (17)	40 (76)	0 (0)	0 (0)	0 (0)	66 (86)
Coho salmon	0.0120 (0.0030)	2,740 (2,107)	8,067 (4,586)	5,146 (1,868)	2,486 (3,011)	1,050 (689)	4,487 (1,830)	3,821 (1,982)	193 (368)	0 (0)	27,990 (6,776)
Chinook salmon	0.0198 (0.0038)	64 (150)	640 (534)	4,604 (1,726)	3,363 (1,685)	8,899 (3,074)	21,439 (6,935)	6,747 (2,416)	290 (189)	0 (0)	46,046 (8,339)
Rainbow trout	0.0154 (0.0034)	31 (57)	389 (260)	922 (423)	6,486 (2,458)	8,363 (2,638)	14,443 (6,227)	1,769 (801)	3,134 (1,727)	236 (176)	35,773 (7,462)
Brown trout	0.0069 (0.0016)	1,017 (1,172)	4,506 (2,237)	5,018 (1,927)	1,162 (704)	1,907 (847)	2,060 (969)	344 (276)	31 (43)	0 (0)	16,045 (3,510)
Brook trout	0.0001 (0.0001)	0 (0)	224 (240)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	224 (240)
Lake trout	0.0257 (0.0039)	0 (0)	0 (0)	9,496 (2,619)	19,243 (4,812)	19,914 (5,315)	11,092 (2,978)	25 (24)	0 (0)	0 (0)	59,770 (8,193)
Splake	0.0001 (0.0002)	0 (0)	70 (140)	204 (413)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	274 (436)
Rainbow smelt	0.0001 (0.0002)	0 (0)	200 (404)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	200 (404)
Northern pike	0.0010 (0.0004)	0 (0)	0 (0)	531 (660)	546 (429)	168 (131)	471 (403)	270 (209)	348 (320)	0 (0)	2,334 (972)
White sucker	0.0055 (0.0109)	0 (0)	12,319 (25,199)	56 (79)	201 (285)	0 (0)	0 (0)	116 (242)	0 (0)	0 (0)	12,692 (25,202)
Black bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	15 (31)	294 (576)	0 (0)	0 (0)	0 (0)	309 (577)
Brown bullhead	0.0003 (0.0003)	0 (0)	371 (586)	369 (324)	46 (67)	14 (27)	0 (0)	0 (0)	0 (0)	0 (0)	800 (673)
Channel catfish	0.0008 (0.0006)	0 (0)	64 (128)	132 (171)	841 (927)	604 (914)	91 (137)	14 (28)	33 (50)	0 (0)	1,779 (1,328)
Rockbass	0.0047 (0.0043)	0 (0)	45 (91)	1,223 (1,701)	7,368 (9,701)	1,749 (1,337)	276 (399)	96 (143)	107 (174)	0 (0)	10,864 (9,950)
Pumpkinseed	0.0045 (0.0043)	0 (0)	0 (0)	3,767 (6,900)	867 (872)	504 (972)	4,571 (6,958)	479 (486)	242 (496)	0 (0)	10,430 (9,910)
Bluegill	0.0007 (0.0006)	0 (0)	0 (0)	215 (324)	283 (577)	428 (865)	318 (652)	368 (446)	0 (0)	0 (0)	1,612 (1,345)
Smallmouth bass	0.0051 (0.0011)	0 (0)	0 (0)	1,322 (664)	4,203 (1,500)	2,489 (1,268)	2,664 (1,192)	508 (327)	729 (739)	0 (0)	11,915 (2,524)
Largemouth bass	0.0000 (0.0000)	0 (0)	0 (0)	5 (11)	68 (136)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	73 (136)
White crappie	0.0000 (0.0000)	0 (0)	0 (0)	51 (103)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (103)
Black crappie	0.0006 (0.0006)	0 (0)	679 (951)	128 (193)	579 (1,022)	0 (0)	0 (0)	67 (112)	0 (0)	0 (0)	1,453 (1,414)

Table 2.—Continued:

Species	Total catch per hour	Month									Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Yellow perch	0.4717 (0.0702)	45 (92)	281,484 (67,159)	97,032 (38,401)	315,341 (90,133)	134,454 (45,681)	185,613 (61,944)	69,205 (31,072)	14,716 (6,468)	394 (693)	1,098,284 (145,054)
Walleye	0.0194 (0.0038)	0 (0)	0 (0)	20,478 (6,944)	6,707 (2,550)	4,347 (1,652)	7,410 (2,093)	2,821 (1,779)	3,383 (1,353)	0 (0)	45,146 (8,175)
Freshwater drum	0.0002 (0.0002)	0 (0)	0 (0)	160 (248)	62 (107)	158 (223)	21 (43)	143 (338)	0 (0)	0 (0)	544 (489)
Lake whitefish	0.0046 (0.0017)	38 (59)	13 (26)	1,272 (902)	201 (257)	2,187 (1,494)	5,356 (3,502)	726 (481)	991 (503)	0 (0)	10,784 (3,983)
Round whitefish	0.0018 (0.0009)	0 (0)	154 (272)	68 (126)	552 (577)	0 (0)	0 (0)	184 (290)	3,042 (1,945)	152 (174)	4,152 (2,079)
Burbot	0.0002 (0.0002)	0 (0)	139 (256)	159 (189)	94 (170)	28 (57)	18 (37)	0 (0)	20 (34)	0 (0)	458 (369)
Other	0.0001 (0.0001)	0 (0)	0 (0)	33 (67)	223 (224)	13 (28)	0 (0)	0 (0)	0 (0)	0 (0)	269 (235)
Total	0.6015 (0.0762)	3,935 (2,419)	309,364 (71,926)	152,409 (39,911)	370,922 (90,952)	187,299 (46,299)	260,664 (63,282)	87,703 (31,309)	27,259 (7,196)	782 (736)	1,400,337 (149,081)
Angler hours		19,784 (10,688)	282,017 (42,926)	304,758 (40,578)	525,989 (94,271)	374,395 (49,562)	532,885 (93,552)	221,315 (41,802)	65,418 (11,084)	1,682 (877)	2,328,243 (159,906)
Angler trips		4,594 (1,946)	73,921 (14,901)	75,069 (8,825)	113,806 (16,591)	92,113 (10,647)	114,282 (17,658)	49,215 (8,199)	15,104 (2,380)	416 (212)	538,520 (32,819)
Angler days		3,792 (1,869)	66,829 (14,684)	65,349 (7,974)	102,484 (16,197)	84,377 (10,112)	104,829 (16,544)	43,263 (7,680)	12,150 (1,832)	309 (162)	483,382 (31,359)

Table 3.—Estimated angler effort (hours) at ten Lake Michigan sample areas, April-October 1985-91. Bounds on the error of estimation in parentheses.

Area	Angler Effort Each Year						
	1985	1986	1987	1988	1989	1990	1991
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)	177,750 (84,716)
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)
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)
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)
Ludington	714,442 (151,419)	833,763 (258,924)	614,485 (169,613)	376,995 (117,169)	442,578 ⁴ (85,069)	287,517 (47,285)	304,735 (70,738)
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)
Frankfort	322,122 (49,044)	593,406 (192,736)	547,140 (193,979)	262,501 (58,305)	365,263 ⁴ (176,322)	279,720 (80,854)	250,786 (63,228)
Grand Traverse Bay ¹	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)
Charlevoix	155,168 (35,350)	100,014 (24,447)	90,043 (12,480)	62,287 ³ (12,761)	64,042 ³ (12,003)	65,906 ³ (11,442)	48,529 ³ (8,453)
Little Bay de Noc ²	158,157 (21,126)	239,073 (21,787)	154,421 (16,300)	157,723 (19,726)	237,044 ⁴ (67,741)	316,145 (36,008)	377,499 (32,508)
Total	4,645,799 (264,969)	4,891,358 (437,609)	3,820,379 (356,508)	2,922,773 (240,138)	2,713,955 (243,769)	2,166,827 (141,867)	2,351,392 (155,934)

¹Includes the East Arm, West Arm, and the port of Elk Rapids.

²Includes the Ford River access site.

³May through September.

⁴May 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 (15), 1991. 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)	8 (17)	40 (76)	0 (0)	0 (0)	48 (78)
Coho salmon	0.0122 (0.0035)	1,528 (2,032)	6,966 (4,542)	4,255 (1,664)	2,467 (3,011)	986 (676)	4,342 (1,806)	3,796 (1,982)	183 (368)	24,523 (6,662)
Chinook salmon	0.0219 (0.0045)	64 (150)	334 (272)	4,461 (1,712)	3,328 (1,685)	8,420 (3,024)	20,972 (6,926)	6,357 (2,408)	91 (131)	44,027 (8,294)
Rainbow trout	0.0159 (0.0039)	3 (10)	120 (159)	768 (377)	6,297 (2,452)	7,449 (2,578)	14,370 (6,226)	1,708 (797)	1,219 (1,560)	31,934 (7,393)
Brown trout	0.0068 (0.0018)	683 (1,140)	3,828 (2,208)	4,116 (1,856)	1,095 (696)	1,907 (847)	1,614 (862)	314 (272)	0 (0)	13,557 (3,412)
Brook trout	0.0001 (0.0001)	0 (0)	198 (234)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	198 (234)
Lake trout	0.0295 (0.0047)	0 (0)	0 (0)	9,351 (2,605)	19,157 (4,811)	19,613 (5,293)	11,023 (2,977)	24 (24)	0 (0)	59,168 (8,174)
Splake	0.0001 (0.0002)	0 (0)	70 (140)	204 (413)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	274 (436)
Northern pike	0.0011 (0.0005)	0 (0)	0 (0)	531 (660)	503 (425)	168 (131)	471 (403)	263 (209)	348 (320)	2,284 (971)
White sucker	0.0063 (0.0126)	0 (0)	12,319 (25,199)	15 (31)	201 (285)	0 (0)	0 (0)	116 (242)	0 (0)	12,651 (25,202)
Black bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	15 (31)	7 (15)	0 (0)	0 (0)	22 (34)
Brown bullhead	0.0004 (0.0003)	0 (0)	371 (586)	369 (324)	29 (58)	14 (27)	0 (0)	0 (0)	0 (0)	783 (673)
Channel catfish	0.0006 (0.0006)	0 (0)	0 (0)	132 (171)	422 (749)	544 (910)	91 (137)	14 (28)	0 (0)	1,203 (1,199)
Rockbass	0.0046 (0.0049)	0 (0)	0 (0)	1,139 (1,697)	6,807 (9,681)	1,016 (983)	232 (388)	69 (129)	26 (54)	9,289 (9,886)
Pumpkinseed	0.0043 (0.0049)	0 (0)	0 (0)	3,767 (6,900)	418 (665)	25 (51)	4,196 (6,934)	278 (351)	0 (0)	8,684 (9,811)
Bluegill	0.0001 (0.0001)	0 (0)	0 (0)	215 (324)	0 (0)	0 (0)	0 (0)	86 (186)	0 (0)	301 (374)
Smallmouth bass	0.0053 (0.0012)	0 (0)	0 (0)	1,155 (632)	3,205 (1,208)	2,489 (1,268)	2,621 (1,190)	469 (317)	729 (739)	10,668 (2,351)
Largemouth bass	0.0000 (0.0000)	0 (0)	0 (0)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (11)
White crappie	0.0000 (0.0000)	0 (0)	0 (0)	51 (103)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (103)
Black crappie	0.0006 (0.0007)	0 (0)	679 (951)	0 (0)	504 (1,011)	0 (0)	0 (0)	67 (112)	0 (0)	1,250 (1,393)
Yellow perch	0.4522 (0.0753)	0 (0)	270,756 (67,024)	91,765 (38,331)	204,073 (72,967)	104,988 (41,314)	170,257 (61,642)	58,160 (30,536)	8,218 (5,080)	908,217 (133,231)
Walleye	0.0222 (0.0044)	0 (0)	0 (0)	20,027 (6,880)	6,595 (2,540)	4,347 (1,652)	7,410 (2,093)	2,821 (1,779)	3,383 (1,353)	44,583 (8,117)

Table 4.—Continued:

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Freshwater drum	0.0002 (0.0002)	0 (0)	0 (0)	160 (248)	53 (105)	63 (77)	0 (0)	137 (338)	0 (0)	413 (439)
Lake whitefish	0.0054 (0.0020)	5 (15)	13 (26)	1,272 (902)	201 (257)	2,187 (1,494)	5,356 (3,502)	726 (481)	991 (503)	10,751 (3,983)
Round whitefish	0.0005 (0.0004)	0 (0)	0 (0)	68 (126)	552 (577)	0 (0)	0 (0)	130 (269)	268 (595)	1,018 (880)
Burbot	0.0001 (0.0001)	0 (0)	0 (0)	63 (81)	82 (168)	28 (57)	18 (37)	0 (0)	0 (0)	191 (199)
Other	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	223 (224)	13 (28)	0 (0)	0 (0)	0 (0)	236 (226)
Total	0.5907 (0.0829)	2,283 (2,335)	295,654 (71,792)	143,889 (39,816)	256,212 (73,960)	154,280 (41,955)	243,020 (62,975)	75,535 (30,771)	15,456 (5,611)	1,186,329 (137,548)
Angler hours		8,934 (10,186)	243,825 (42,700)	262,620 (40,313)	441,385 (92,685)	326,801 (49,118)	488,526 (93,437)	197,936 (41,715)	38,193 (10,188)	2,008,220 (158,523)
Angler trips		1,522 (1,737)	59,816 (14,792)	57,913 (8,561)	85,922 (15,671)	71,164 (10,092)	97,713 (17,545)	40,597 (8,107)	7,487 (2,070)	422,134 (31,943)
Angler days		1,522 (1,737)	54,540 (14,595)	49,903 (7,719)	77,725 (15,335)	65,377 (9,557)	89,965 (16,432)	36,413 (7,608)	5,968 (1,555)	381,413 (30,536)

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 (9), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month									Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Pink salmon	0.0001 (0.0002)	0 (0)	0 (0)	18 (36)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (36)
Coho salmon	0.0130 (0.0048)	1,212 (558)	1,101 (629)	891 (849)	19 (39)	64 (130)	145 (294)	3 (6)	10 (17)	0 (0)	3,445 (1,238)
Chinook salmon	0.0053 (0.0028)	0 (0)	0 (0)	143 (219)	35 (41)	479 (554)	467 (353)	250 (164)	15 (28)	0 (0)	1,389 (713)
Rainbow trout	0.0104 (0.0033)	28 (56)	116 (110)	82 (168)	189 (168)	914 (560)	73 (82)	22 (45)	1,162 (565)	165 (131)	2,751 (855)
Brown trout	0.0092 (0.0032)	334 (272)	678 (356)	902 (518)	67 (105)	0 (0)	446 (441)	0 (0)	3 (6)	0 (0)	2,430 (821)
Brook trout	0.0001 (0.0002)	0 (0)	26 (51)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	26 (51)
Lake trout	0.0014 (0.0013)	0 (0)	0 (0)	145 (266)	86 (100)	73 (160)	69 (76)	1 (2)	0 (0)	0 (0)	374 (335)
Rainbow smelt	0.0008 (0.0016)	0 (0)	200 (404)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	200 (404)
Channel catfish	0.0019 (0.0021)	0 (0)	64 (128)	0 (0)	344 (524)	60 (77)	0 (0)	0 (0)	33 (50)	0 (0)	501 (547)
Rockbass	0.0019 (0.0023)	0 (0)	45 (91)	56 (91)	0 (0)	391 (584)	0 (0)	0 (0)	0 (0)	0 (0)	492 (598)
Bluegill	0.0027 (0.0036)	0 (0)	0 (0)	0 (0)	0 (0)	428 (865)	0 (0)	282 (405)	0 (0)	0 (0)	710 (955)
Smallmouth bass	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	19 (38)	39 (80)	0 (0)	0 (0)	58 (89)
Yellow perch	0.6449 (0.2209)	45 (92)	10,630 (4,243)	3,390 (1,974)	107,603 (52,788)	29,363 (19,491)	12,629 (5,856)	6,415 (3,773)	31 (48)	394 (693)	170,500 (56,898)
Freshwater drum	0.0005 (0.0009)	0 (0)	0 (0)	0 (0)	0 (0)	95 (209)	21 (43)	6 (12)	0 (0)	0 (0)	122 (214)
Lake whitefish	0.0001 (0.0002)	33 (57)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	33 (57)
Round whitefish	0.0103 (0.0069)	0 (0)	22 (46)	0 (0)	0 (0)	0 (0)	0 (0)	54 (109)	2,508 (1,820)	152 (174)	2,736 (1,832)
Burbot	0.0010 (0.0012)	0 (0)	139 (256)	96 (171)	12 (25)	0 (0)	0 (0)	0 (0)	20 (34)	0 (0)	267 (311)
Total	0.7038 (0.2223)	1,652 (633)	13,021 (4,335)	5,723 (2,252)	108,355 (52,791)	31,867 (19,537)	13,869 (5,892)	7,072 (3,801)	3,782 (1,908)	711 (726)	186,052 (56,975)
Angler hours		10,850 (3,237)	28,532 (3,263)	32,774 (4,372)	75,811 (17,184)	40,818 (6,446)	39,735 (4,560)	18,089 (2,501)	16,345 (3,912)	1,412 (809)	264,366 (20,496)
Angler trips		3,072 (876)	10,265 (1,292)	13,260 (1,903)	24,549 (5,426)	16,631 (3,209)	14,074 (1,887)	6,411 (1,128)	4,285 (1,009)	354 (201)	92,901 (7,189)
Angler days		2,270 (689)	9,346 (1,219)	12,033 (1,755)	21,983 (5,192)	15,410 (3,132)	12,673 (1,805)	5,186 (956)	3,491 (812)	265 (153)	82,657 (6,831)

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 (10), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Coho salmon	0.0004 (0.0006)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (31)	0 (0)	0 (0)	22 (31)
Chinook salmon	0.0113 (0.0089)	306 (459)	0 (0)	0 (0)	0 (0)	0 (0)	140 (120)	184 (133)	0 (0)	630 (493)
Rainbow trout	0.0195 (0.0097)	153 (173)	72 (90)	0 (0)	0 (0)	0 (0)	39 (66)	753 (479)	71 (118)	1,088 (535)
Brown trout	0.0010 (0.0011)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	30 (43)	28 (43)	0 (0)	58 (61)
Lake trout	0.0041 (0.0084)	0 (0)	0 (0)	0 (0)	228 (465)	0 (0)	0 (0)	0 (0)	0 (0)	228 (465)
Northern pike	0.0009 (0.0011)	0 (0)	0 (0)	43 (61)	0 (0)	0 (0)	7 (15)	0 (0)	0 (0)	50 (63)
White sucker	0.0007 (0.0012)	0 (0)	41 (73)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	41 (73)
Black bullhead	0.0052 (0.0104)	0 (0)	0 (0)	0 (0)	0 (0)	287 (576)	0 (0)	0 (0)	0 (0)	287 (576)
Brown bullhead	0.0003 (0.0006)	0 (0)	0 (0)	17 (33)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	17 (33)
Channel catfish	0.0013 (0.0027)	0 (0)	0 (0)	75 (154)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	75 (154)
Rockbass	0.0195 (0.0173)	0 (0)	28 (56)	561 (629)	342 (694)	44 (91)	27 (60)	81 (165)	0 (0)	1,083 (959)
Pumpkinseed	0.0314 (0.0253)	0 (0)	0 (0)	449 (564)	479 (971)	375 (576)	201 (336)	242 (496)	0 (0)	1,746 (1,397)
Bluegill	0.0108 (0.0157)	0 (0)	0 (0)	283 (577)	0 (0)	318 (652)	0 (0)	0 (0)	0 (0)	601 (871)
Smallmouth bass	0.0214 (0.0166)	0 (0)	167 (205)	998 (891)	0 (0)	24 (48)	0 (0)	0 (0)	0 (0)	1,189 (916)
Largemouth bass	0.0012 (0.0024)	0 (0)	0 (0)	68 (136)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	68 (136)
Black crappie	0.0036 (0.0043)	0 (0)	128 (193)	75 (150)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	203 (244)
Yellow perch	0.3516 (0.1335)	98 (198)	1,877 (1,231)	3,665 (3,631)	103 (208)	2,727 (1,752)	4,630 (4,336)	6,467 (4,003)	0 (0)	19,567 (7,258)
Walleye	0.0101 (0.0174)	0 (0)	451 (943)	112 (225)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	563 (969)
Freshwater drum	0.0002 (0.0004)	0 (0)	0 (0)	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9 (18)
Round whitefish	0.0072 (0.0079)	132 (268)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	266 (341)	0 (0)	398 (434)
Other	0.0006 (0.0012)	0 (0)	33 (67)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	33 (67)

Table 6.—Continued:

Species	Total catch per hour	Month								Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Total	0.5023 (0.1444)	689 (593)	2,797 (1,583)	6,355 (3,892)	1,152 (1,298)	3,775 (2,042)	5,096 (4,352)	8,021 (4,082)	71 (118)	27,956 (7,712)
Angler hours		9,660 (2,944)	9,364 (1,527)	8,793 (1,117)	6,776 (1,515)	4,624 (846)	5,290 (1,002)	10,880 (1,939)	270 (339)	55,657 (4,487)
Angler trips		3,840 (1,253)	3,896 (984)	3,335 (475)	4,318 (1,106)	2,495 (647)	2,207 (488)	3,332 (604)	62 (67)	23,485 (2,239)
Angler days		2,943 (1,048)	3,413 (958)	2,776 (479)	3,590 (1,049)	2,191 (669)	1,664 (426)	2,691 (528)	44 (53)	19,312 (2,063)

Table 7.—Estimated yellow perch catch rate (fish per angler hour), number caught, and angler effort (hours) at selected Lake Michigan ports and fishing areas, April through October, 1985-91. Bounds on the error of estimation in parentheses.

Area	1985		1986		1987		1988		1989		1990		1991	
	Catch per hour	Number caught	Catch per hour	Number caught	Catch per hour	Number caught	Catch per hour	Number caught	Catch per hour	Number caught	Catch per hour	Number caught	Catch per hour	Number caught
St. Joseph	0.797 (0.026)	664,671 (193,119)	0.972 (0.055)	590,044 (307,649)	1.213 (0.864)	448,285 (298,522)	1.356 (0.668)	575,937 (266,099)	0.730 (0.196)	313,077 (84,235)	1.409 (0.592)	348,313 (128,800)	0.639 (0.201)	259,949 (62,108)
Grand Haven	0.187 (0.045)	110,083 (23,606)	0.114 (0.049)	79,972 (29,962)	0.281 (0.115)	213,199 (77,071)	0.365 (0.226)	156,496 (85,951)	0.595 (0.277)	121,713 (52,258)	0.359 (0.158)	74,151 (28,632)	0.555 (0.339)	133,937 (63,900)
Muskegon	0.108 (0.049)	54,923 (21,361)	0.167 (0.162)	53,516 (51,027)	0.904 (0.503)	307,326 (157,717)	0.829 (0.382)	190,964 (73,156)	1.102 (0.475)	174,434 (64,152)	1.460 (0.578)	195,984 (53,223)	0.407 (0.445)	42,274 (39,137)
Ludington	0.170 (0.080)	121,230 (51,031)	0.078 (0.061)	64,712 (46,674)	0.374 (0.182)	229,841 (92,112)	0.473 (0.306)	178,483 (101,864)	0.284 (0.112)	115,202 (38,771)	0.516 (0.201)	119,587 (39,674)	0.371 (0.208)	113,002 (40,971)
Manistee	0.035 (0.030)	22,286 (18,626)	0.332 (0.206)	226,199 (131,847)	0.265 (0.136)	134,736 (60,864)	0.684 (0.502)	298,088 (210,724)	0.433 (0.232)	115,093 (57,456)	0.182 (0.090)	36,484 (14,952)	0.119 (0.097)	27,969 (19,188)
West Grand Traverse Bay	0.207 (0.089)	58,453 (24,657)	0.439 (0.251)	76,971 (43,181)	0.654 (0.338)	102,182 (51,052)	0.061 (0.045)	8,771 (6,431)	0.177 (0.094)	24,167 (12,406)	0.347 (0.154)	31,445 (13,693)	0.120 (0.065)	14,042 (7,227)
Little Bay de Noc	0.483 (0.217)	64,609 (27,230)	0.700 (0.265)	139,828 (50,923)	0.463 (0.141)	57,750 (16,060)	0.384 (0.209)	60,504 (32,156)	0.403 (0.171)	95,468 (30,042)	0.357 (0.096)	112,798 (27,533)	0.509 (0.125)	191,480 (44,106)
Total	0.295 (0.057)	1,096,255 (206,419)	0.346 (0.098)	1,231,242 (349,527)	0.516 (0.127)	1,493,319 (367,400)	0.669 (0.167)	1,469,243 (373,369)	0.522 (0.077)	959,154 (140,823)	0.645 (0.118)	918,762 (151,608)	0.443 (0.066)	782,653 (116,261)
Angler hours		3,713,865 (253,547)		3,556,617 (361,386)		2,892,057 (288,228)		2,197,822 (220,751)		1,837,704 (144,156)		1,424,918 (111,738)		1,768,583 (114,058)

Table 8.—Estimated sport fishing catch and effort 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), 1985-91. Bounds on the error of estimation in parentheses.

Species	1985	1986	1987	1988	1989	1990	1991
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)
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)
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)
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)
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)
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)

Table 9.—Catch rates (fish per 100 angler hours) of salmonids at nine Lake Michigan index ports combined, April through October (May through August for lake trout), 1985-91. Bounds on the error of estimation in parentheses.

Species	1985	1986	1987	1988	1989	1990	1991
Coho salmon	0.018 (0.003)	0.027 (0.007)	0.025 (0.006)	0.014 (0.005)	0.032 (0.011)	0.019 (0.003)	0.018 (0.004)
Chinook salmon	0.079 (0.010)	0.103 (0.024)	0.073 (0.017)	0.040 (0.008)	0.034 (0.008)	0.033 (0.004)	0.032 (0.004)
Rainbow trout	0.007 (0.002)	0.006 (0.003)	0.008 (0.002)	0.011 (0.003)	0.013 (0.002)	0.019 (0.003)	0.029 (0.004)
Brown trout	0.008 (0.002)	0.013 (0.004)	0.005 (0.002)	0.006 (0.002)	0.006 (0.002)	0.008 (0.002)	0.009 (0.002)
Lake trout	0.026 (0.005)	0.036 (0.015)	0.030 (0.008)	0.034 (0.007)	0.044 (0.009)	0.039 (0.006)	0.044 (0.006)

Table 10.—Estimated chinook salmon harvest at nine Lake Michigan index ports and effort adjusted return per 1,000 fish stocked by age and year class, 1985-91.

Year	Estimated harvest	Age	Percent distribution	Estimated harvest by age	Year class	Number stocked (1,000s)	Return per 1,000 fish stocked	Effort adjusted return per 1,000 fish stocked
1985	339,033	0.1	13	44,074	1984	3,350	13.16	3.05
		0.2	33	111,881	1983	2,980	37.54	8.70
		0.3	43	145,784	1982	2,580	56.51	13.10
		0.4	10	33,903	1981	2,250	15.07	3.49
		0.5	1	3,390	1980	2,580	1.31	0.30
1986	404,035	0.1	6	24,242	1985	2,260	10.73	2.72
		0.2	23	92,928	1984	3,350	27.74	7.04
		0.3	54	218,179	1983	2,980	73.21	18.59
		0.4	17	68,686	1982	2,580	26.62	6.76
1987	259,718	0.1	14	36,361	1986	2,400	15.15	4.28
		0.2	27	70,124	1985	2,260	31.03	8.77
		0.3	35	90,901	1984	3,350	27.13	7.67
		0.4	23	59,735	1983	2,980	20.05	5.67
		0.5	1	2,597	1982	2,580	1.01	0.28
1988	106,377	0.1	19	20,212	1987	2,430	8.32	3.15
		0.2	25	26,594	1986	2,400	11.08	4.19
		0.3	35	37,232	1985	2,260	16.47	6.23
		0.4	20	21,275	1984	3,350	6.35	2.40
		0.5	1	1,064	1983	2,980	0.36	0.14
1989	80,114	0.1	22	17,625	1988	2,670	6.60	2.80
		0.2	32	25,636	1987	2,430	10.55	4.48
		0.3	28	22,432	1986	2,400	9.35	3.97
		0.4	18	14,421	1985	2,260	6.38	2.71
1990	58,674	0.1	30	17,602	1989	3,778	4.66	2.67
		0.2	36	21,123	1988	2,670	7.91	4.53
		0.3	26	15,255	1987	2,430	6.28	3.60
		0.4	8	4,694	1986	2,400	1.96	1.12
1991	61,952	0.1	36	22,303	1990	3,639	6.13	2.42
		0.2	33	20,444	1989	3,778	5.41	2.14
		0.3	24	14,868	1988	2,670	5.57	2.20
		0.4	6	3,717	1987	2,430	1.53	0.60

Table 11.—Estimated chinook salmon return (effort adjusted) by age and year class from the Lake Michigan sport fishery at nine index ports, 1985-91.

Year class	Age				
	0.1	0.2	0.3	0.4	0.5
1981				3.49	
1982			13.10	6.76	0.28
1983		8.70	18.59	5.67	0.14
1984	3.05	7.04	7.67	2.40	
1985	2.72	8.77	6.23	2.71	
1986	4.28	4.19	3.97	1.12	
1987	3.15	4.48	3.60	0.60	
1988	2.80	4.53	2.20		
1989	2.67	2.14			
1990	2.42				

Table 12.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Lake Huron, by all modes of sportfishing, for all survey areas combined (17), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0072 (0.0036)	0 (0)	50 (87)	50 (81)	1,921 (470)	12,732 (8,327)	2,288 (1,602)	0 (0)	17,041 (8,494)
Coho salmon	0.0002 (0.0001)	0 (0)	49 (56)	48 (52)	139 (94)	157 (129)	129 (237)	0 (0)	522 (296)
Chinook salmon	0.0158 (0.0021)	315 (515)	1,322 (629)	1,158 (420)	8,584 (1,226)	13,925 (1,922)	10,868 (3,705)	896 (591)	37,068 (4,484)
Rainbow trout	0.0012 (0.0002)	28 (45)	37 (45)	164 (152)	1,390 (318)	908 (297)	294 (249)	103 (88)	2,924 (535)
Atlantic salmon	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	64 (139)	0 (0)	0 (0)	0 (0)	64 (139)
Brown trout	0.0006 (0.0003)	85 (75)	82 (78)	115 (233)	475 (272)	246 (176)	401 (446)	77 (143)	1,481 (625)
Brook trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	9 (18)	7 (14)	11 (23)	0 (0)	27 (32)
Lake trout	0.0063 (0.0012)	0 (0)	1,349 (733)	4,943 (1,356)	5,659 (2,020)	2,904 (961)	3 (6)	0 (0)	14,858 (2,717)
Splake	0.0000 (0.0000)	0 (0)	28 (40)	0 (0)	14 (27)	0 (0)	0 (0)	0 (0)	42 (48)
Rainbow smelt	0.0000 (0.0000)	21 (46)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (46)
Northern pike	0.0065 (0.0023)	15 (20)	3,276 (1,719)	3,145 (1,492)	1,262 (1,005)	5,824 (4,499)	1,674 (1,255)	125 (169)	15,321 (5,295)
Muskellunge	0.0000 (0.0000)	0 (0)	38 (80)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	38 (80)
White sucker	0.0001 (0.0002)	129 (320)	0 (0)	60 (115)	1 (1)	0 (0)	0 (0)	0 (0)	190 (340)
Redhorses	0.0000 0.0000	26 (64)	2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	28 (64)
Black bullhead	0.0004 (0.0004)	112 (211)	737 (1,003)	72 (143)	1 (2)	33 (71)	0 (0)	0 (0)	955 (1,037)
Yellow bullhead	0.0002 (0.0002)	0 (0)	114 (230)	316 (473)	0 (0)	0 (0)	0 (0)	0 (0)	430 (526)
Brown bullhead	0.0042 (0.0047)	0 (0)	5 (13)	101 (153)	9,569 (11,107)	164 (236)	93 (189)	0 (0)	9,932 (11,112)
Channel catfish	0.0131 (0.0049)	295 (651)	6,295 (4,795)	14,297 (8,600)	6,153 (5,368)	3,299 (2,143)	499 (430)	61 (142)	30,899 (11,445)
White perch	0.0010 (0.0006)	71 (159)	389 (359)	148 (195)	161 (316)	733 (723)	965 (1,105)	0 (0)	2,467 (1,427)
White bass	0.0021 (0.0017)	1,298 (2,143)	430 (490)	954 (875)	649 (743)	171 (232)	1,487 (3,247)	0 (0)	4,989 (4,092)
Rockbass	0.0069 (0.0021)	6 (13)	1,733 (1,653)	5,668 (3,080)	6,316 (3,211)	1,090 (1,124)	775 (700)	58 (83)	16,246 (4,928)
Pumpkinseed	0.0019 (0.0012)	55 (84)	1,048 (1,530)	243 (227)	735 (1,267)	540 (586)	1,618 (1,750)	131 (180)	4,370 (2,728)

Table 12.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Bluegill	0.0004 (0.0003)	14 (20)	476 (632)	148 (167)	22 (44)	8 (13)	196 (307)	42 (95)	906 (730)
Smallmouth bass	0.0034 (0.0012)	0 (0)	2,012 (1,504)	3,277 (2,023)	1,258 (763)	496 (377)	825 (865)	14 (23)	7,882 (2,798)
Largemouth bass	0.0005 (0.0004)	0 (0)	20 (26)	926 (951)	0 (0)	74 (156)	253 (386)	0 (0)	1,273 (1,038)
White crappie	0.0000 (0.0000)	3 (6)	77 (160)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	80 (160)
Black crappie	0.0008 (0.0010)	57 (74)	1,206 (1,982)	411 (784)	0 (0)	0 (0)	19 (39)	83 (160)	1,776 (2,139)
Yellow perch	0.7207 (0.1291)	46,014 (25,578)	22,490 (8,704)	141,320 (44,606)	292,782 (61,580)	598,830 (170,719)	449,237 (208,421)	143,534 (56,117)	1,694,207 (286,784)
Walleye	0.0355 (0.0061)	879 (719)	7,540 (3,254)	10,740 (4,650)	40,659 (8,612)	21,810 (8,355)	1,901 (2,003)	4 (9)	83,533 (13,443)
Freshwater drum	0.0032 (0.0012)	121 (188)	766 (895)	3,155 (2,130)	1,556 (705)	1,832 (1,422)	19 (29)	10 (25)	7,459 (2,810)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	67 (74)	11 (25)	8 (17)	0 (0)	86 (80)
Round whitefish	0.0005 (0.0006)	1 (2)	0 (0)	25 (38)	1,171 (1,402)	68 (145)	0 (0)	0 (0)	1,265 (1,410)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	6 (12)	0 (0)	0 (0)	5 (10)	11 (16)
Other	0.0042 (0.0027)	1,625 (3,990)	55 (71)	6,707 (4,712)	1,540 (1,436)	0 (0)	0 (0)	0 (0)	9,927 (6,340)
Total	0.8373 (0.1320)	51,170 (26,004)	51,627 (11,277)	198,191 (46,180)	382,163 (63,611)	666,462 (171,225)	473,563 (208,514)	145,143 (56,121)	1,968,319 (287,972)
Angler hours		38,502 (11,481)	185,430 (29,888)	409,674 (47,751)	643,786 (62,649)	681,283 (82,889)	339,959 (69,785)	52,179 (10,560)	2,350,813 (138,138)
Angler trips		12,207 (2,827)	46,406 (6,766)	90,960 (10,535)	141,967 (16,665)	153,796 (18,638)	81,807 (15,516)	16,838 (3,650)	543,981 (32,310)
Angler days		11,173 (2,569)	42,690 (6,326)	83,698 (10,082)	130,236 (16,143)	138,160 (18,002)	75,501 (15,031)	14,686 (3,193)	496,144 (31,130)

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 (17), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0074 (0.0037)	0 (0)	50 (87)	50 (81)	1,921 (470)	12,732 (8,327)	2,288 (1,602)	0 (0)	17,041 (8,494)
Coho salmon	0.0002 (0.0001)	0 (0)	49 (56)	48 (52)	139 (94)	157 (129)	129 (237)	0 (0)	522 (296)
Chinook salmon	0.0160 (0.0022)	315 (515)	1,317 (629)	1,158 (420)	8,584 (1,226)	13,925 (1,922)	10,512 (3,702)	794 (580)	36,605 (4,481)
Rainbow trout	0.0013 (0.0003)	28 (45)	37 (45)	164 (152)	1,390 (318)	908 (297)	294 (249)	60 (79)	2,881 (534)
Atlantic salmon	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	64 (139)	0 (0)	0 (0)	0 (0)	64 (139)
Brown trout	0.0006 (0.0003)	80 (74)	77 (77)	115 (233)	475 (272)	246 (176)	400 (446)	0 (0)	1,393 (608)
Brook trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	9 (18)	7 (14)	0 (0)	0 (0)	16 (23)
Lake trout	0.0065 (0.0013)	0 (0)	1,344 (733)	4,943 (1,356)	5,659 (2,020)	2,892 (961)	3 (6)	0 (0)	14,841 (2,717)
Splake	0.0000 (0.0000)	0 (0)	28 (40)	0 (0)	14 (27)	0 (0)	0 (0)	0 (0)	42 (48)
Northern pike	0.0067 (0.0024)	13 (20)	3,233 (1,718)	3,142 (1,492)	1,262 (1,005)	5,824 (4,499)	1,674 (1,255)	121 (168)	15,269 (5,295)
Muskellunge	0.0000 (0.0000)	0 (0)	38 (80)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	38 (80)
White sucker	0.0000 (0.0000)	0 (0)	0 (0)	54 (114)	1 (1)	0 (0)	0 (0)	0 (0)	55 (114)
Black bullhead	0.0001 (0.0001)	17 (37)	277 (348)	0 (0)	0 (0)	33 (71)	0 (0)	0 (0)	327 (357)
Brown bullhead	0.0043 (0.0048)	0 (0)	0 (0)	95 (152)	9,569 (11,107)	164 (236)	93 (189)	0 (0)	9,921 (11,112)
Channel catfish	0.0126 (0.0050)	277 (650)	5,720 (4,756)	13,757 (8,594)	5,699 (5,361)	2,937 (2,132)	474 (429)	61 (142)	28,925 (11,419)
White perch	0.0010 (0.0006)	71 (159)	372 (357)	137 (194)	11 (22)	733 (723)	937 (1,104)	0 (0)	2,261 (1,390)
White bass	0.0022 (0.0018)	1,298 (2,143)	430 (490)	932 (874)	649 (743)	171 (232)	1,487 (3,247)	0 (0)	4,967 (4,092)
Rockbass	0.0068 (0.0022)	0 (0)	1,561 (1,633)	5,342 (3,053)	6,316 (3,211)	1,666 (1,124)	774 (700)	3 (6)	15,662 (4,904)
Pumpkinseed	0.0017 (0.0012)	0 (0)	945 (1,522)	92 (133)	733 (1,267)	537 (586)	1,618 (1,750)	0 (0)	3,925 (2,710)
Bluegill	0.0003 (0.0003)	0 (0)	394 (616)	55 (88)	22 (44)	0 (0)	196 (307)	0 (0)	667 (695)
Smallmouth bass	0.0032 (0.0012)	0 (0)	1,588 (1,200)	3,202 (2,020)	1,252 (763)	496 (377)	824 (865)	11 (22)	7,373 (2,645)
Largemouth bass	0.0006 (0.0005)	0 (0)	8 (16)	925 (951)	0 (0)	74 (156)	253 (386)	0 (0)	1,260 (1,038)

Table 13.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
White crappie	0.0000 (0.0000)	0 (0)	77 (160)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	77 (160)
Black crappie	0.0007 (0.0010)	0 (0)	1,108 (1,978)	411 (784)	0 (0)	0 (0)	19 (39)	0 (0)	1,538 (2,128)
Yellow perch	0.7257 (0.1327)	38,719 (25,064)	17,765 (8,037)	139,224 (44,580)	291,056 (61,501)	598,510 (170,718)	449,041 (208,421)	125,782 (55,024)	1,660,097 (286,486)
Walleye	0.0362 (0.0063)	620 (709)	7,219 (3,247)	10,708 (4,650)	40,607 (8,612)	21,802 (8,355)	1,901 (2,003)	0 (0)	82,857 (13,441)
Freshwater drum	0.0030 (0.0012)	121 (188)	732 (893)	2,951 (2,113)	1,241 (589)	1,784 (1,422)	18 (29)	0 (0)	6,847 (2,769)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	67 (74)	11 (25)	8 (17)	0 (0)	86 (80)
Round whitefish	0.0005 (0.0006)	0 (0)	0 (0)	12 (25)	1,171 (1,402)	68 (145)	0 (0)	0 (0)	1,251 (1,410)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	6 (12)	0 (0)	0 (0)	0 (0)	6 (12)
Other	0.0043 (0.0028)	1,574 (3,988)	14 (23)	6,607 (4,710)	1,540 (1,436)	0 (0)	0 (0)	0 (0)	9,735 (6,336)
Total	0.8422 (0.1356)	43,133 (25,494)	44,383 (10,663)	194,124 (46,148)	379,457 (63,532)	665,677 (171,224)	472,943 (208,514)	126,832 (55,028)	1,926,549 (287,669)
Angler hours		25,927 (10,943)	172,376 (29,705)	399,912 (47,699)	637,379 (62,638)	678,457 (82,887)	331,737 (69,743)	41,652 (10,148)	2,287,440 (137,979)
Angler trips		5,681 (1,994)	39,910 (6,515)	87,084 (10,491)	139,725 (16,650)	153,047 (18,637)	78,956 (15,468)	11,558 (3,173)	515,961 (32,099)
Angler days		5,312 (1,838)	37,314 (6,148)	80,445 (10,051)	128,607 (16,134)	137,533 (18,001)	73,000 (14,995)	10,528 (2,844)	472,739 (30,975)

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 (5), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0066 (0.0048)	0 (0)	5 (10)	0 (0)	0 (0)	0 (0)	89 (85)	101 (112)	195 (141)
Rainbow trout	0.0014 (0.0013)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	43 (39)	43 (39)
Brown trout	0.0026 (0.0048)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	77 (143)	78 (143)
Brook trout	0.0004 (0.0008)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (23)	0 (0)	11 (23)
Lake trout	0.0004 (0.0006)	0 (0)	5 (10)	0 (0)	0 (0)	6 (13)	0 (0)	0 (0)	11 (16)
White sucker	0.0043 (0.0108)	128 (320)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	128 (320)
Redhorses	0.0009 (0.0022)	26 (64)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	26 (64)
Channel catfish	0.0170 (0.0096)	0 (0)	0 (0)	75 (119)	226 (196)	181 (156)	25 (36)	0 (0)	507 (280)
White perch	0.0060 (0.0108)	0 (0)	0 (0)	0 (0)	150 (315)	0 (0)	28 (60)	0 (0)	178 (321)
Rockbass	0.0131 (0.0156)	0 (0)	104 (227)	265 (401)	0 (0)	24 (28)	1 (2)	0 (0)	394 (462)
Pumpkinseed	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)	0 (0)	0 (0)	3 (6)
Bluegill	0.0004 (0.0006)	8 (15)	0 (0)	0 (0)	0 (0)	5 (11)	0 (0)	0 (0)	13 (19)
Smallmouth bass	0.0150 (0.0306)	0 (0)	414 (907)	29 (56)	0 (0)	0 (0)	1 (1)	3 (6)	447 (909)
Yellow perch	0.4899 (0.1927)	2,214 (1,065)	4,352 (3,298)	1,854 (1,491)	1,640 (3,106)	306 (386)	196 (201)	4,016 (2,313)	14,578 (5,424)
Walleye	0.0009 (0.0018)	0 (0)	0 (0)	0 (0)	26 (53)	0 (0)	0 (0)	0 (0)	26 (53)
Freshwater drum	0.0091 (0.0120)	0 (0)	0 (0)	14 (22)	228 (353)	28 (29)	1 (1)	0 (0)	271 (355)
Round whitefish	0.0004 (0.0009)	0 (0)	0 (0)	13 (29)	0 (0)	0 (0)	0 (0)	0 (0)	13 (29)

Table 14.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Burbot	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (10)	5 (10)
Other	0.0019 (0.0042)	51 (128)	0 (0)	7 (15)	0 (0)	0 (0)	0 (0)	0 (0)	58 (129)
Total	0.5707 (0.2006)	2,427 (1,121)	4,880 (3,428)	2,257 (1,550)	2,270 (3,148)	553 (419)	353 (230)	4,245 (2,320)	16,985 (5,562)
Angler hours		5,522 (1,956)	5,069 (1,805)	3,938 (1,464)	3,983 (912)	1,759 (543)	4,296 (1,185)	5,193 (1,626)	29,760 (3,795)
Angler trips		2,616 (943)	2,355 (966)	1,648 (606)	1,584 (580)	526 (182)	1,339 (446)	1,687 (542)	11,755 (1,747)
Angler days		2,440 (897)	1,880 (740)	1,494 (545)	1,119 (431)	413 (167)	1,192 (413)	1,401 (463)	9,939 (1,499)

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), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0080 (0.0040)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	267 (128)	1 (2)	268 (128)
Brown trout	0.0003 (0.0004)	5 (10)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (14)
Lake trout	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	6 (13)	0 (0)	0 (0)	6 (13)
Rainbow smelt	0.0007 (0.0015)	21 (46)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (46)
Northern pike	0.0015 (0.0019)	2 (5)	43 (65)	3 (7)	0 (0)	0 (0)	0 (0)	4 (9)	52 (66)
White sucker	0.0002 (0.0004)	1 (3)	0 (0)	6 (13)	0 (0)	0 (0)	0 (0)	0 (0)	7 (13)
Redhorses	0.0001 (0.0003)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (5)
Black bullhead	0.0187 (0.0292)	95 (208)	460 (941)	72 (143)	1 (2)	0 (0)	0 (0)	0 (0)	628 (974)
Yellow bullhead	0.0128 (0.0158)	0 (0)	114 (230)	316 (473)	0 (0)	0 (0)	0 (0)	0 (0)	430 (526)
Brown bullhead	0.0003 (0.0004)	0 (0)	5 (13)	6 (10)	0 (0)	0 (0)	0 (0)	0 (0)	11 (16)
Channel catfish	0.0436 (0.0225)	18 (50)	575 (609)	465 (287)	228 (196)	181 (156)	0 (0)	0 (0)	1,467 (720)
White perch	0.0008 (0.0014)	0 (0)	17 (43)	11 (23)	0 (0)	0 (0)	0 (0)	0 (0)	28 (49)
White bass	0.0007 (0.0014)	0 (0)	0 (0)	22 (45)	0 (0)	0 (0)	0 (0)	0 (0)	22 (45)
Rockbass	0.0057 (0.0049)	6 (13)	68 (116)	61 (76)	0 (0)	0 (0)	0 (0)	55 (83)	190 (162)
Pumpkinseed	0.0131 (0.0095)	55 (84)	103 (156)	151 (184)	2 (4)	0 (0)	0 (0)	131 (180)	442 (313)

Table 15.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Bluegill	0.0067 (0.0067)	6 (13)	82 (144)	93 (142)	0 (0)	3 (7)	0 (0)	42 (95)	226 (224)
Smallmouth bass	0.0018 (0.0025)	0 (0)	10 (23)	46 (79)	6 (16)	0 (0)	0 (0)	0 (0)	62 (84)
Largemouth bass	0.0004 (0.0006)	0 (0)	12 (21)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	13 (21)
White crappie	0.0001 (0.0002)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)
Black crappie	0.0071 (0.0064)	57 (74)	98 (118)	0 (0)	0 (0)	0 (0)	0 (0)	83 (160)	238 (212)
Yellow perch	0.5811 (0.3662)	5,081 (4,993)	373 (537)	242 (257)	86 (229)	14 (33)	0 (0)	13,736 (10,774)	19,532 (11,892)
Walleye	0.0193 (0.0082)	259 (118)	321 (216)	32 (47)	26 (53)	8 (22)	0 (0)	4 (9)	650 (257)
Freshwater drum	0.0101 (0.0097)	0 (0)	34 (61)	190 (272)	87 (161)	20 (23)	0 (0)	10 (25)	341 (324)
Round whitefish	0.0000 (0.0000)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)
Other	0.0040 (0.0044)	0 (0)	41 (67)	93 (131)	0 (0)	0 (0)	0 (0)	0 (0)	134 (147)
Total	0.7374 (0.3761)	5,610 (5,000)	2,364 (1,316)	1,810 (745)	436 (346)	232 (163)	267 (128)	14,066 (10,777)	24,785 (11,983)
Angler hours		7,053 (2,869)	7,985 (2,757)	5,824 (1,676)	2,424 (768)	1,067 (377)	3,926 (2,130)	5,334 (2,428)	33,613 (5,459)
Angler trips		3,910 (1,768)	4,141 (1,548)	2,228 (741)	658 (383)	223 (112)	1,512 (1,132)	3,593 (1,722)	16,265 (3,237)
Angler days		3,421 (1,555)	3,496 (1,291)	1,759 (570)	510 (287)	214 (103)	1,309 (951)	2,757 (1,376)	13,466 (2,702)

Table 16.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Saginaw Bay, by all modes of sportfishing, 1991. 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)	10 (22)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (22)
Coho salmon	0.0001 (0.0002)	0 (0)	21 (30)	0 (0)	9 (19)	0 (0)	111 (236)	0 (0)	141 (239)
Chinook salmon	0.0017 (0.0007)	0 (0)	420 (266)	206 (171)	451 (389)	229 (258)	680 (634)	101 (112)	2,087 (856)
Rainbow trout	0.0001 (0.0001)	0 (0)	19 (29)	17 (37)	10 (20)	95 (134)	0 (0)	41 (39)	182 (149)
Brown trout	0.0002 (0.0002)	0 (0)	23 (34)	0 (0)	103 (192)	0 (0)	0 (0)	77 (143)	203 (242)
Brook trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (23)	0 (0)	11 (23)
Lake trout	0.0015 (0.0007)	0 (0)	432 (313)	579 (324)	482 (568)	363 (454)	0 (0)	0 (0)	1,856 (855)
Splake	0.0000 (0.0000)	0 (0)	11 (22)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (22)
Rainbow smelt	0.0000 (0.0000)	21 (46)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (46)
Northern pike	0.0009 (0.0009)	10 (18)	95 (83)	3 (7)	114 (151)	259 (282)	592 (1,037)	4 (9)	1,077 (1,089)
White sucker	0.0000 (0.0000)	1 (3)	0 (0)	6 (13)	0 (0)	0 (0)	0 (0)	0 (0)	7 (13)
Redhorses	0.0000 0.0000	0 (0)	2 (0)	0 (5)	0 (0)	0 (0)	0 (0)	0 (0)	2 (5)
Black bullhead	0.0006 (0.0008)	112 (211)	594 (981)	72 (143)	1 (2)	33 (71)	0 (0)	0 (0)	812 (1,016)
Yellow bullhead	0.0003 (0.0004)	0 (0)	114 (230)	316 (473)	0 (0)	0 (0)	0 (0)	0 (0)	430 (526)
Channel catfish	0.0225 (0.0093)	295 (651)	6,031 (4,777)	13,524 (8,585)	5,361 (5,355)	2,562 (2,115)	461 (428)	61 (142)	28,295 (11,415)
White perch	0.0020 (0.0012)	71 (159)	389 (359)	148 (195)	161 (316)	733 (723)	965 (1,105)	0 (0)	2,467 (1,427)

Table 16.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
White bass	0.0039 (0.0033)	1,298 (2,143)	430 (490)	954 (875)	514 (690)	162 (231)	1,487 (3,247)	0 (0)	4,845 (4,083)
Rockbass	0.0007 (0.0005)	6 (13)	424 (457)	336 (410)	37 (59)	20 (28)	1 (2)	55 (83)	879 (623)
Pumpkinseed	0.0005 (0.0003)	55 (84)	118 (159)	151 (184)	2 (4)	227 (346)	0 (0)	131 (180)	684 (467)
Bluegill	0.0003 (0.0002)	14 (20)	183 (213)	148 (167)	22 (44)	8 (13)	0 (0)	42 (95)	417 (291)
Smallmouth bass	0.0018 (0.0014)	0 (0)	560 (935)	1,317 (1,487)	266 (198)	53 (82)	60 (93)	13 (23)	2,269 (1,772)
Largemouth bass	0.0009 (0.0008)	0 (0)	20 (26)	836 (932)	0 (0)	74 (156)	166 (342)	0 (0)	1,096 (1,005)
White crappie	0.0000 (0.0000)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)
Black crappie	0.0014 (0.0018)	57 (74)	1,180 (1,981)	385 (782)	0 (0)	0 (0)	0 (0)	83 (160)	1,705 (2,137)
Yellow perch	1.1745 (0.2487)	38,904 (22,041)	20,685 (8,559)	123,834 (42,526)	234,957 (58,512)	552,191 (170,163)	405,903 (207,438)	100,977 (43,327)	1,477,451 (282,231)
Walleye	0.0456 (0.0096)	543 (704)	963 (654)	7,597 (4,093)	34,671 (7,879)	12,017 (5,782)	1,558 (1,953)	0 (0)	57,349 (10,817)
Freshwater drum	0.0048 (0.0020)	121 (188)	670 (870)	2,446 (1,779)	1,101 (618)	1,740 (1,420)	1 (1)	10 (25)	6,089 (2,521)
Other	0.0014 (0.0032)	1,574 (3,988)	48 (69)	123 (141)	0 (0)	4 (8)	0 (0)	0 (0)	1,749 (3,991)
Total	1.2658 (0.2528)	43,085 (22,524)	33,448 (10,194)	153,099 (43,672)	278,272 (59,295)	570,770 (170,284)	411,996 (207,480)	101,595 (43,328)	1,592,265 (282,765)
Angler hours		27,679 (8,722)	91,704 (20,549)	262,877 (43,278)	351,118 (48,050)	335,963 (73,561)	160,282 (55,610)	28,265 (6,047)	1,257,888 (114,980)
Angler trips		9,362 (2,589)	23,179 (4,700)	54,923 (9,250)	69,088 (9,571)	73,210 (15,943)	39,000 (12,451)	9,905 (2,318)	278,667 (24,911)
Angler days		8,367 (2,334)	21,468 (4,492)	53,041 (9,098)	66,281 (9,398)	70,947 (15,740)	38,223 (12,404)	8,707 (2,053)	267,034 (24,547)

Table 17.—Estimated yellow perch and walleye catch per hour, number caught, and angler effort (hours) for Saginaw Bay (Port Austin to Tawas) during April-September, 1983-91. Bounds on the error of estimation in parentheses.

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

¹Ryckman (1986)

Table 18.—Estimated sport fishing catch and effort for twelve Lake Huron index ports combined (St. Ignace, Les Cheneaux Islands, Detour, Drummond Island, Rogers City, Rockport, Alpena, Harrisville, Oscoda, Tawas, Port Austin and Harbor Beach) April through October (May through August for lake trout), 1986-88 and 1991. Bounds on the error of estimation in parentheses.

Species	1986	1987	1988	1991
Pink salmon	104 (166)	27,486 (6,734)	570 (584)	17,041 (8,494)
Coho salmon	4,063 (1,990)	2,775 (904)	4,823 (5,169)	642 (296)
Chinook salmon	63,596 (8,817)	84,730 (8,781)	89,551 (12,203)	40,325 (4,446)
Rainbow trout	4,807 (6,514)	5,093 (1,223)	2,129 (925)	3,311 (535)
Brown trout	15,154 (5,673)	7,870 (1,389)	3,132 (1,171)	1,556 (608)
Lake trout	54,076 (11,566)	41,777 (7,312)	62,314 (35,837)	18,010 (2,717)
Angler hours	2,244,405 (171,853)	2,264,320 (129,973)	2,089,506 (155,850)	1,467,824 (89,818)

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

Species	1986	1987	1988	1991
Pink salmon	<0.001 (<0.001)	0.012 (0.003)	<0.001 (<0.001)	0.012 (0.006)
Coho salmon	0.002 (0.001)	0.001 (<0.001)	0.002 (0.002)	<0.001 (<0.001)
Chinook salmon	0.028 (0.004)	0.037 (0.004)	0.043 (0.006)	0.027 (0.003)
Rainbow trout	0.002 (0.003)	0.002 (0.001)	0.001 (<0.001)	0.002 (<0.001)
Brown trout	0.007 (0.003)	0.003 (0.001)	0.001 (0.001)	0.001 (<0.001)
Lake trout	0.034 (0.008)	0.029 (0.005)	0.039 (0.023)	0.015 (0.002)

Table 20.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Erie boat fishery (non-charter), 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Rainbow trout	0.0000 (0.0000)	18 (28)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (28)
Muskellunge	0.0000 (0.0000)	0 (0)	7 (13)	0 (0)	0 (0)	0 (0)	0 (0)	7 (13)
Black bullhead	0.0001 (0.0002)	69 (113)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	69 (113)
Yellow bullhead	0.0003 (0.0003)	162 (197)	44 (63)	0 (0)	0 (0)	0 (0)	0 (0)	206 (207)
Brown bullhead	0.0000 (0.0000)	3 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (7)
Channel catfish	0.0261 (0.0080)	3,382 (2,014)	2,457 (1,492)	5,709 (3,144)	4,876 (2,787)	2,583 (1,723)	1,011 (821)	20,018 (5,251)
White perch	0.0372 (0.0110)	10,232 (4,841)	8,624 (3,267)	4,774 (2,703)	2,468 (2,351)	2,193 (1,912)	186 (192)	28,477 (7,116)
White bass	0.0176 (0.0071)	9,350 (4,741)	1,716 (1,036)	380 (367)	365 (464)	847 (950)	846 (863)	13,504 (5,054)
Rockbass	0.0025 (0.0010)	128 (177)	147 (152)	579 (530)	384 (317)	436 (378)	209 (292)	1,883 (815)
Pumpkinseed	0.0008 (0.0008)	0 (0)	19 (38)	0 (0)	441 (586)	164 (232)	16 (33)	640 (632)
Warmouth	0.0000 (0.0000)	0 (0)	0 (0)	18 (37)	0 (0)	0 (0)	0 (0)	18 (37)
Bluegill	0.0040 (0.0043)	7 (15)	1,234 (2,488)	72 (148)	842 (1,787)	898 (1,032)	0 (0)	3,053 (3,236)
Redear sunfish	0.0002 (0.0004)	0 (0)	0 (0)	126 (258)	0 (0)	0 (0)	0 (0)	126 (258)
Smallmouth bass	0.0004 (0.0003)	8 (18)	120 (126)	108 (140)	25 (54)	37 (80)	30 (34)	328 (215)
Largemouth bass	0.0004 (0.0004)	0 (0)	72 (78)	0 (0)	0 (0)	119 (245)	127 (196)	318 (323)
White crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	111 (187)	111 (187)
Black crappie	0.0001 (0.0002)	8 (18)	0 (0)	0 (0)	0 (0)	59 (122)	0 (0)	67 (123)
Yellow perch	0.4769 (0.1286)	4,548 (2,435)	7,316 (3,409)	17,279 (9,207)	104,280 (38,973)	166,362 (60,548)	65,542 (33,543)	365,327 (80,078)
Walleye	0.1406 (0.0372)	28,492 (11,619)	50,827 (17,409)	24,554 (9,070)	3,762 (1,689)	47 (54)	0 (0)	107,682 (22,873)
Freshwater drum	0.0171 (0.0061)	3,460 (2,082)	3,813 (2,894)	2,313 (1,555)	1,964 (1,212)	1,019 (811)	510 (437)	13,079 (4,177)

Table 20.—Continued:

Species	Total catch per hour	Month					Season	
		May	Jun	Jul	Aug	Sep		Oct
Other	0.0008 (0.0006)	196 (228)	0 (0)	25 (51)	59 (72)	151 (257)	154 (199)	585 (407)
Total	0.7252 (0.1582)	60,063 (13,977)	76,396 (18,528)	55,937 (13,681)	119,466 (39,248)	174,915 (60,627)	68,742 (33,571)	555,519 (84,077)
Angler hours		156,843 (57,542)	275,175 (91,435)	136,099 (37,983)	92,994 (26,534)	79,828 (23,976)	25,092 (10,174)	766,031 (120,402)
Angler trips		29,749 (10,675)	48,012 (16,208)	23,979 (6,724)	18,608 (5,270)	14,913 (4,545)	6,111 (2,627)	141,372 (21,845)
Angler days		29,606 (10,632)	47,746 (16,179)	23,927 (6,718)	18,484 (5,256)	14,783 (4,511)	6,111 (2,627)	140,657 (21,790)

Table 21.—Estimated yellow perch and walleye catch per hour, number caught, and angler effort (hours) for the Lake Erie boat fishery during May-September, 1986-91. Bounds on the error of estimation in parentheses.

Year	Yellow perch		Walleye		Angler hours
	Catch per hour	Number caught	Catch per hour	Number caught	
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 (0.119)	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)

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), 1991. 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 (0.0002)	4 (9)	0 (0)	20 (24)	0 (0)	0 (0)	18 (36)	0 (0)	42 (44)
Coho salmon	0.0611 (0.0092)	8,048 (1,624)	2,918 (739)	372 (201)	238 (145)	192 (144)	717 (328)	81 (62)	12,566 (1,838)
Chinook salmon	0.0122 (0.0031)	287 (149)	1,325 (436)	257 (151)	56 (70)	264 (173)	323 (374)	0 (0)	2,512 (640)
Rainbow trout	0.0034 (0.0013)	119 (79)	301 (210)	74 (59)	2 (4)	15 (31)	90 (85)	90 (86)	691 (263)
Atlantic salmon	0.0003 (0.0004)	8 (16)	48 (65)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	56 (67)
Brown trout	0.0038 (0.0021)	142 (116)	363 (310)	112 (124)	0 (0)	19 (42)	142 (258)	10 (14)	788 (440)
Brook trout	0.0000 (0.0000)	4 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (8)
Lake trout	0.1042 (0.0179)	90 (121)	4,349 (2,990)	4,117 (767)	4,186 (833)	4,140 (902)	3,120 (819)	1,433 (1,076)	21,435 (3,589)
Splake	0.0012 (0.0009)	108 (66)	130 (168)	0 (0)	0 (0)	0 (0)	0 (0)	7 (13)	245 (181)
Northern pike	0.0016 (0.0012)	0 (0)	45 (91)	43 (86)	169 (198)	42 (62)	33 (68)	0 (0)	332 (252)
White sucker	0.0001 (0.0002)	0 (0)	12 (19)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12 (19)
Rockbass	0.0007 (0.0015)	0 (0)	0 (0)	0 (0)	153 (317)	0 (0)	0 (0)	0 (0)	153 (317)
Smallmouth bass	0.0002 (0.0002)	0 (0)	0 (0)	0 (0)	21 (29)	20 (41)	0 (0)	0 (0)	41 (50)
Yellow perch	0.0009 (0.0009)	0 (0)	31 (62)	38 (76)	55 (76)	63 (128)	0 (0)	0 (0)	187 (178)
Walleye	0.0193 (0.0054)	0 (0)	235 (244)	2,311 (920)	446 (267)	897 (479)	88 (137)	0 (0)	3,977 (1,107)
Lake whitefish	0.0074 (0.0034)	267 (207)	516 (511)	291 (367)	17 (35)	0 (0)	43 (85)	395 (219)	1,529 (704)

Table 22.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Round whitefish	0.0087 (0.0031)	67 (91)	483 (365)	0 (0)	0 (0)	0 (0)	128 (256)	1,104 (446)	1,782 (637)
Burbot	0.0001 (0.0001)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (16)	13 (19)
Other	0.0086 (0.0027)	13 (26)	55 (62)	695 (351)	303 (240)	562 (329)	146 (106)	0 (0)	1,774 (552)
Total	0.2341 (0.0232)	9,162 (1,658)	10,811 (3,212)	8,330 (1,337)	5,646 (998)	6,214 (1,108)	4,848 (1,049)	3,128 (1,190)	48,139 (4,426)
Angler hours		39,426 (4,306)	36,965 (2,451)	40,350 (3,444)	28,057 (2,868)	30,267 (2,736)	23,566 (1,905)	7,013 (1,194)	205,644 (7,561)
Angler trips		12,588 (1,401)	10,585 (1,051)	8,970 (895)	6,268 (659)	7,322 (742)	6,368 (609)	2,037 (339)	54,138 (2,311)
Angler days		10,588 (1,235)	9,542 (907)	8,718 (879)	6,041 (661)	6,916 (746)	5,862 (575)	1,778 (328)	49,445 (2,134)

Table 23.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the St. Mary's River from the rapids in Sault Ste. Marie to Detour, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0295 (0.0197)	0 (0)	0 (0)	31 (68)	7,056 (8,086)	10,486 (8,333)	0 (0)	17,573 (11,611)
Coho salmon	0.0001 (0.0001)	0 (0)	0 (0)	1 (1)	14 (17)	28 (49)	0 (0)	43 (52)
Chinook salmon	0.0008 (0.0006)	0 (0)	17 (20)	133 (239)	114 (102)	128 (128)	77 (137)	469 (321)
Rainbow trout	0.0003 (0.0004)	0 (0)	0 (0)	66 (131)	14 (27)	0 (0)	112 (242)	192 (277)
Atlantic salmon	0.0001 (0.0002)	0 (0)	0 (0)	64 (139)	0 (0)	0 (0)	0 (0)	64 (139)
Lake trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	2 (5)
Rainbow smelt	0.0001 (0.0002)	0 (0)	0 (0)	50 (102)	0 (0)	0 (0)	0 (0)	50 (102)
Northern pike	0.0438 (0.0136)	6,531 (3,981)	9,347 (4,289)	3,005 (1,805)	6,957 (4,690)	230 (277)	46 (102)	26,116 (7,719)
Muskellunge	0.0002 (0.0003)	35 (68)	0 (0)	0 (0)	0 (0)	66 (139)	0 (0)	101 (155)
White sucker	0.0001 (0.0002)	17 (28)	0 (0)	51 (102)	0 (0)	0 (0)	0 (0)	68 (106)
Redhorses	0.0020 (0.0038)	20 (30)	1,150 (2,330)	0 (0)	0 (0)	0 (0)	48 (104)	1,218 (2,333)
Black bullhead	0.0002 (0.0003)	143 (209)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	143 (209)
Yellow bullhead	0.0009 (0.0013)	0 (0)	532 (746)	0 (0)	0 (0)	0 (0)	0 (0)	532 (746)
Brown bullhead	0.0043 (0.0058)	13 (29)	209 (424)	0 (0)	1,667 (3,321)	452 (635)	216 (468)	2,557 (3,440)
Channel catfish	0.0009 (0.0007)	226 (219)	331 (383)	0 (0)	1 (3)	0 (0)	0 (0)	558 (441)
Rockbass	0.0311 (0.0322)	9,475 (18,489)	4,886 (4,072)	2,206 (2,403)	1,766 (1,669)	1,265 (894)	120 (201)	19,718 (19,179)

Table 23.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pumpkinseed	0.0038 (0.0039)	879 (1,518)	124 (253)	617 (1,259)	20 (40)	635 (1,224)	0 (0)	2,275 (2,335)
Bluegill	0.0138 (0.0279)	8,051 (16,644)	0 (0)	0 (0)	0 (0)	196 (307)	0 (0)	8,247 (16,647)
Smallmouth bass	0.0159 (0.0056)	1,300 (1,161)	1,578 (1,262)	408 (464)	3,313 (2,151)	2,621 (1,608)	277 (360)	9,497 (3,240)
Largemouth bass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	87 (178)	0 (0)	87 (178)
Black crappie	0.0002 (0.0003)	39 (81)	88 (179)	0 (0)	0 (0)	0 (0)	0 (0)	127 (196)
Yellow perch	0.1526 (0.0731)	2,042 (2,193)	6,759 (11,684)	4,193 (4,430)	21,470 (12,158)	19,485 (16,203)	37,070 (35,444)	91,019 (42,750)
Walleye	0.0443 (0.0157)	11,433 (6,016)	9,299 (3,737)	676 (943)	4,363 (5,500)	568 (531)	96 (156)	26,435 (9,033)
Lake whitefish	0.0003 (0.0006)	0 (0)	0 (0)	191 (394)	13 (27)	0 (0)	0 (0)	204 (395)
Lake herring	0.0244 (0.0172)	0 (0)	109 (222)	14,419 (10,158)	0 (0)	0 (0)	0 (0)	14,528 (10,160)
Total	0.3719 (0.0964)	40,204 (26,067)	34,429 (13,911)	26,111 (11,611)	46,770 (16,849)	36,247 (18,379)	38,062 (35,451)	221,823 (53,724)
Angler hours		104,446 (26,767)	139,787 (19,264)	141,620 (34,185)	126,213 (21,245)	70,141 (16,691)	14,286 (7,681)	596,493 (55,183)
Angler trips		27,098 (7,182)	36,584 (5,402)	43,918 (13,115)	32,603 (6,810)	16,525 (4,351)	5,151 (2,693)	161,879 (18,037)
Angler days		25,466 (6,414)	36,035 (5,335)	40,609 (12,836)	29,908 (6,574)	15,136 (4,162)	4,544 (2,339)	151,698 (17,331)

Table 24.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Saginaw Bay (Tawas to Port Austin) winter fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Pink salmon	0.0000 (0.0000)	0 (0)	3 (5)	0 (0)	3 (5)
Rainbow trout	0.0002 (0.0004)	0 (0)	0 (0)	67 (124)	67 (124)
Brown trout	0.0000 (0.0000)	0 (0)	0 (0)	12 (22)	12 (22)
Rainbow smelt	0.0000 (0.0000)	0 (0)	6 (12)	0 (0)	6 (12)
Northern pike	0.0080 (0.0037)	1,872 (1,145)	990 (606)	6 (12)	2,868 (1,296)
White sucker	0.0007 (0.0009)	0 (0)	0 (0)	259 (330)	259 (330)
Channel catfish	0.0000 (0.0000)	0 (0)	0 (0)	1 (2)	1 (2)
White perch	0.0031 (0.0016)	288 (228)	636 (495)	171 (173)	1,095 (572)
White bass	0.0002 (0.0003)	68 (139)	13 (26)	0 (0)	81 (141)
Rockbass	0.0001 (0.0002)	23 (50)	0 (0)	0 (0)	23 (50)
Pumpkinseed	0.0013 (0.0023)	64 (92)	411 (835)	0 (0)	475 (840)
Bluegill	0.0001 (0.0002)	51 (108)	0 (0)	0 (0)	51 (108)
Largemouth bass	0.0001 (0.0002)	22 (45)	0 (0)	0 (0)	22 (45)

Table 24.—Continued:

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
White crappie	0.0012 (0.0015)	0 (0)	364 (518)	56 (113)	420 (530)
Black crappie	0.0017 (0.0014)	144 (182)	88 (179)	387 (451)	619 (518)
Yellow perch	2.5379 (0.4987)	323,307 (84,911)	338,705 (84,419)	245,664 (102,237)	907,676 (157,445)
Walleye	0.0067 (0.0034)	69 (67)	892 (687)	1,443 (993)	2,404 (1,209)
Round whitefish	0.0013 (0.0025)	0 (0)	34 (49)	421 (865)	455 (866)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	15 (33)	15 (33)
Total	2.5627 (0.4998)	325,908 (84,920)	342,142 (84,431)	248,502 (102,247)	916,552 (157,463)
Angler hours		129,347 (21,462)	161,703 (18,301)	66,601 (17,163)	357,651 (33,017)
Angler trips		35,876 (6,459)	39,535 (4,722)	18,467 (4,849)	93,878 (9,356)
Angler days		32,634 (6,103)	35,573 (4,319)	15,274 (3,980)	83,481 (8,470)

Table 25.—Estimated yellow perch and walleye catch per hour, number caught, and angler effort (hours) for the Saginaw Bay (Port Austin to Tawas) ice fishery, January-March. Bounds on the error of estimation in parentheses.

Year	Yellow perch		Walleye		Angler hours
	Catch per hour	Number caught	Catch per hour	Number caught	
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)	675,729 (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)

¹ Ryckman (1986)

Table 26.—Estimated yellow perch (January-March) and walleye (January-February) catch per hour, number caught, and angler effort (hours) for the winter ice fishery on Little Bay de Noc, Lake Michigan, 1986-92. Bounds on the error of estimation in parentheses.

Year	Yellow perch		Walleye		Angler hours
	Catch per hour	Number caught	Catch per hour	Number caught	
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)	0.020 (0.007)	4,612 (1,447)	257,559 (28,427)

¹1987 data not reliable.

Table 27.—Estimated sport catch, catch rate (fish per hour), and angler effort (hours) for various species from the Keweenaw Bay winter ice fishery, February-March, 1988-92. Bounds on the error of estimation in parentheses.

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

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

² Only March was surveyed due to poor ice conditions caused by mild winter weather.

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APPENDICES

Appendix 1.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for New Buffalo, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	
Coho salmon	0.0331 (0.0251)	72 (156)	2,050 (1,251)	1,557 (1,012)	1,954 (2,993)	83 (113)	38 (57)	70 (149)	5,824 (3,407)
Chinook salmon	0.0138 (0.0108)	0 (0)	32 (34)	495 (460)	813 (1,295)	230 (217)	560 (474)	293 (296)	2,423 (1,500)
Rainbow trout	0.0069 (0.0068)	0 (0)	37 (36)	220 (201)	730 (1,013)	211 (170)	22 (46)	0 (0)	1,220 (1,048)
Brown trout	0.0025 (0.0019)	54 (141)	91 (71)	54 (71)	0 (0)	95 (111)	85 (126)	56 (84)	435 (255)
Lake trout	0.0174 (0.0168)	0 (0)	0 (0)	345 (287)	1,624 (2,460)	260 (209)	829 (627)	0 (0)	3,058 (2,563)
Channel catfish	0.0004 (0.0008)	0 (0)	0 (0)	0 (0)	9 (19)	0 (0)	60 (128)	0 (0)	69 (129)
Yellow perch	0.9631 (0.6170)	0 (0)	0 (0)	14,672 (16,677)	56,236 (54,448)	45,899 (27,542)	36,981 (31,348)	15,829 (12,421)	169,617 (71,682)
Lake whitefish	0.0000 (0.0000)	5 (15)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (15)
Total	1.0371 (0.6447)	131 (211)	2,210 (1,254)	17,343 (16,718)	61,366 (54,610)	46,778 (27,545)	38,575 (31,358)	16,248 (12,426)	182,651 (71,832)
Angler hours		2,062 (3,361)	11,144 (4,344)	18,579 (9,485)	71,363 (81,567)	25,785 (10,728)	32,195 (14,833)	14,983 (8,927)	176,111 (84,783)
Angler trips		374 (663)	2,420 (834)	3,496 (1,795)	11,657 (13,017)	3,891 (1,540)	5,481 (2,532)	2,359 (1,412)	29,678 (13,586)
Angler days		374 (663)	2,352 (820)	3,469 (1,782)	11,621 (13,014)	3,781 (1,485)	5,386 (2,496)	2,221 (1,332)	29,204 (13,560)

Appendix 2.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for St. Joseph, by all modes of sportfishing, 1991. 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	0.0340 (0.0150)	2,668 (2,101)	5,749 (4,390)	3,122 (1,268)	337 (282)	54 (80)	49 (74)	29 (47)	0 (0)	12,008 (5,039)
Chinook salmon	0.0080 (0.0035)	64 (150)	201 (168)	762 (449)	45 (65)	351 (372)	884 (838)	514 (544)	0 (0)	2,821 (1,180)
Rainbow trout	0.0057 (0.0029)	31 (57)	0 (0)	246 (203)	447 (450)	1,041 (824)	131 (129)	29 (48)	72 (53)	1,997 (973)
Brown trout	0.0071 (0.0045)	963 (1,163)	1,003 (999)	135 (136)	65 (95)	106 (127)	117 (115)	107 (180)	0 (0)	2,496 (1,562)
Brook trout	0.0001 (0.0002)	0 (0)	51 (119)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (119)
Lake trout	0.0102 (0.0035)	0 (0)	0 (0)	1,394 (760)	949 (517)	295 (347)	941 (558)	18 (23)	0 (0)	3,597 (1,130)
Channel catfish	0.0035 (0.0037)	0 (0)	64 (128)	0 (0)	747 (914)	426 (900)	0 (0)	0 (0)	0 (0)	1,237 (1,289)
Yellow perch	0.7186 (0.2009)	45 (92)	0 (0)	3,508 (3,358)	123,376 (37,647)	41,010 (29,623)	57,193 (28,936)	28,741 (26,722)	0 (0)	253,873 (62,108)
Walleye	0.0021 (0.0028)	0 (0)	0 (0)	200 (406)	528 (877)	0 (0)	0 (0)	0 (0)	0 (0)	728 (966)
Lake whitefish	0.0001 (0.0002)	33 (57)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	33 (57)
Total	0.7893 (0.2064)	3,804 (2,409)	7,068 (4,509)	9,367 (3,727)	126,494 (37,676)	43,283 (29,653)	59,315 (28,954)	29,438 (26,728)	72 (53)	278,841 (62,382)
Angler hours		17,722 (10,145)	33,749 (15,230)	36,670 (9,019)	114,231 (24,373)	53,013 (19,368)	63,210 (20,098)	31,570 (22,353)	3,100 (580)	353,265 (47,847)
Angler trips		4,220 (1,829)	7,047 (2,518)	7,211 (1,714)	21,753 (4,408)	10,021 (3,241)	11,794 (3,530)	5,987 (3,838)	775 (174)	68,808 (8,353)
Angler days		3,418 (1,748)	6,993 (2,514)	6,922 (1,692)	20,926 (4,309)	9,059 (3,066)	10,969 (3,371)	5,575 (3,652)	658 (162)	64,520 (8,058)

Appendix 3.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Grand Haven, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0081 (0.0075)	17 (19)	110 (168)	19 (39)	64 (130)	667 (925)	759 (1,156)	8 (16)	1,644 (1,496)
Chinook salmon	0.0235 (0.0111)	0 (0)	1,293 (1,259)	923 (791)	953 (772)	1,224 (1,112)	408 (432)	3 (7)	4,804 (2,057)
Rainbow trout	0.0066 (0.0039)	3 (5)	16 (37)	0 (0)	886 (619)	218 (346)	179 (216)	37 (31)	1,339 (743)
Brown trout	0.0049 (0.0032)	97 (86)	271 (212)	0 (0)	378 (494)	160 (231)	88 (175)	3 (6)	997 (617)
Lake trout	0.0235 (0.0114)	0 (0)	903 (1,226)	1,455 (868)	1,333 (923)	1,093 (1,196)	1 (2)	0 (0)	4,785 (2,130)
Rainbow smelt	0.0010 (0.0020)	200 (404)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	200 (404)
Channel catfish	0.0004 (0.0004)	0 (0)	0 (0)	10 (22)	29 (43)	0 (0)	0 (0)	33 (50)	72 (70)
Bluegill	0.0014 (0.0020)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	282 (405)	0 (0)	282 (405)
Smallmouth bass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	19 (38)	0 (0)	0 (0)	19 (38)
Yellow perch	0.6557 (0.3387)	192 (330)	2,247 (1,695)	87,156 (51,622)	6,709 (5,017)	32,881 (37,174)	4,567 (2,889)	31 (48)	133,783 (63,900)
Freshwater drum	0.0008 (0.0017)	0 (0)	0 (0)	0 (0)	0 (0)	21 (43)	143 (338)	0 (0)	164 (341)
Round whitefish	0.0002 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	45 (42)	45 (42)
Total	0.7260 (0.3446)	509 (529)	4,840 (2,457)	89,563 (51,635)	10,352 (5,222)	36,283 (37,224)	6,427 (3,198)	160 (89)	148,134 (63,997)
Angler hours		4,215 (2,018)	26,660 (15,847)	75,665 (27,043)	24,812 (5,393)	48,970 (20,045)	21,274 (13,795)	2,435 (896)	204,031 (40,106)
Angler trips		1,608 (828)	5,890 (3,070)	18,512 (6,695)	7,046 (1,485)	11,124 (3,784)	4,900 (2,706)	789 (355)	49,869 (8,883)
Angler days		1,465 (770)	5,844 (3,054)	17,702 (6,425)	6,533 (1,413)	10,909 (3,769)	4,777 (2,696)	784 (355)	48,014 (8,649)

Appendix 4.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Muskegon, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0099 (0.0119)	248 (442)	294 (908)	41 (87)	85 (110)	130 (204)	130 (258)	0 (0)	928 (1,071)
Chinook salmon	0.0252 (0.0224)	79 (209)	170 (423)	176 (235)	320 (300)	866 (1,265)	749 (1,339)	0 (0)	2,360 (1,939)
Rainbow trout	0.0199 (0.0167)	0 (0)	0 (0)	23 (49)	1,430 (1,341)	192 (265)	224 (433)	0 (0)	1,869 (1,435)
Brown trout	0.0107 (0.0179)	716 (1,618)	72 (157)	70 (146)	144 (172)	0 (0)	0 (0)	0 (0)	1,002 (1,641)
Lake trout	0.0275 (0.0230)	0 (0)	0 (0)	442 (478)	1,980 (1,880)	157 (328)	0 (0)	0 (0)	2,579 (1,967)
Rockbass	0.0022 (0.0045)	0 (0)	0 (0)	0 (0)	202 (407)	0 (0)	0 (0)	0 (0)	202 (407)
Bluegill	0.0046 (0.0094)	0 (0)	0 (0)	0 (0)	428 (865)	0 (0)	0 (0)	0 (0)	428 (865)
Yellow perch	0.4490 (0.4445)	17,401 (22,351)	0 (0)	18,809 (31,184)	373 (606)	5,503 (7,705)	0 (0)	0 (0)	42,086 (39,137)
Total	0.5489 (0.4591)	18,444 (22,415)	536 (1,014)	19,561 (31,189)	4,962 (2,597)	6,848 (7,822)	1,103 (1,431)	0 (0)	51,454 (39,322)
Angler hours		12,800 (12,268)	6,214 (3,985)	22,683 (12,213)	22,374 (12,432)	16,679 (13,764)	12,804 (18,839)	178 (141)	93,732 (31,851)
Angler trips		4,043 (3,709)	4,233 (1,284)	5,161 (2,691)	6,088 (3,552)	4,298 (3,529)	3,045 (4,082)	140 (125)	27,008 (8,025)
Angler days		3,931 (3,707)	4,233 (1,284)	5,118 (2,690)	6,055 (3,552)	4,298 (3,529)	2,793 (3,883)	140 (125)	26,568 (7,924)

Appendix 5.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Ludington, by all modes of sportfishing, 1991. 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)	0 (0)	0 (0)	5 (11)	0 (0)	0 (0)	5 (11)
Coho salmon	0.0090 (0.0055)	0 (0)	54 (71)	26 (53)	163 (198)	1,667 (1,154)	333 (263)	0 (0)	2,243 (1,203)
Chinook salmon	0.0510 (0.0264)	0 (0)	1,364 (764)	702 (481)	1,650 (1,335)	7,900 (5,241)	1,151 (770)	0 (0)	12,767 (5,537)
Rainbow trout	0.0450 (0.0247)	65 (96)	100 (128)	819 (664)	1,145 (962)	8,033 (5,117)	1,000 (602)	82 (110)	11,244 (5,287)
Brown trout	0.0107 (0.0057)	339 (313)	1,233 (960)	134 (135)	196 (214)	735 (615)	45 (57)	0 (0)	2,682 (1,210)
Brook trout	0.0004 (0.0007)	101 (163)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	101 (163)
Lake trout	0.0266 (0.0130)	0 (0)	841 (472)	1,448 (1,006)	2,230 (1,923)	2,142 (1,429)	3 (5)	0 (0)	6,664 (2,641)
Yellow perch	0.4509 (0.2076)	0 (0)	51,300 (28,164)	12,335 (7,312)	24,209 (19,088)	24,856 (21,623)	61 (148)	0 (0)	112,761 (40,971)
Freshwater drum	0.0004 (0.0009)	0 (0)	95 (211)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	95 (211)
Round whitefish	0.0005 (0.0007)	0 (0)	0 (0)	113 (169)	0 (0)	0 (0)	0 (0)	23 (47)	136 (175)
Burbot	0.0001 (0.0002)	0 (0)	23 (47)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	23 (47)
Other	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	13 (28)	0 (0)	0 (0)	0 (0)	13 (28)
Total	0.5947 (0.2371)	505 (366)	55,010 (28,196)	15,577 (7,430)	29,606 (19,257)	45,338 (22,912)	2,593 (1,025)	105 (120)	148,734 (41,800)
Angler hours		4,788 (1,448)	31,365 (12,063)	42,020 (13,819)	39,100 (24,305)	106,605 (62,996)	24,366 (10,249)	1,863 (1,010)	250,107 (70,738)
Angler trips		1,919 (600)	7,446 (2,808)	9,756 (2,751)	9,222 (4,565)	21,914 (11,959)	3,984 (1,569)	432 (256)	54,673 (13,498)
Angler days		1,774 (572)	6,814 (2,629)	8,165 (2,352)	8,779 (4,379)	20,892 (11,335)	3,537 (1,448)	373 (231)	50,334 (12,751)

Appendix 6.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Manistee, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Coho salmon	0.0097 (0.0053)	0 (0)	9 (20)	79 (121)	447 (595)	857 (549)	622 (579)	0 (0)	0 (0)	2,014 (1,003)
Chinook salmon	0.0376 (0.0161)	5 (12)	253 (429)	402 (410)	2,310 (1,610)	4,522 (2,272)	285 (268)	12 (27)	0 (0)	7,789 (2,860)
Rainbow trout	0.0421 (0.0157)	79 (154)	39 (44)	3,660 (1,951)	1,579 (1,075)	2,226 (1,283)	133 (142)	796 (515)	189 (168)	8,701 (2,636)
Brown trout	0.0158 (0.0087)	971 (845)	1,143 (1,277)	342 (398)	552 (412)	254 (265)	14 (29)	0 (0)	0 (0)	3,276 (1,656)
Lake trout	0.0319 (0.0149)	0 (0)	590 (1,015)	1,676 (1,322)	3,203 (2,065)	1,121 (639)	0 (0)	0 (0)	0 (0)	6,590 (2,730)
Northern pike	0.0002 (0.0005)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	40 (90)	0 (0)	0 (0)	40 (90)
Rockbass	0.0014 (0.0021)	45 (91)	56 (91)	0 (0)	189 (419)	0 (0)	0 (0)	0 (0)	0 (0)	290 (438)
Bluegill	0.0002 (0.0004)	0 (0)	35 (74)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	35 (74)
Smallmouth bass	0.0000 (0.0000)	0 (0)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (11)
Largemouth bass	0.0000 (0.0000)	0 (0)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (11)
Yellow perch	0.1352 (0.0974)	13,985 (8,695)	10,333 (16,985)	3,222 (1,896)	0 (0)	35 (56)	0 (0)	0 (0)	394 (693)	27,969 (19,188)
Freshwater drum	0.0005 (0.0011)	0 (0)	0 (0)	0 (0)	95 (209)	0 (0)	0 (0)	0 (0)	0 (0)	95 (209)
Round whitefish	0.0068 (0.0063)	0 (0)	46 (118)	69 (159)	0 (0)	0 (0)	0 (0)	1,281 (1,262)	20 (43)	1,416 (1,278)
Burbot	0.0002 (0.0003)	0 (0)	20 (52)	0 (0)	0 (0)	0 (0)	0 (0)	20 (34)	0 (0)	40 (62)
Other	0.0001 (0.0002)	0 (0)	0 (0)	29 (58)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	29 (58)
Total	0.2817 (0.1143)	15,085 (8,738)	12,534 (17,070)	9,479 (3,085)	8,375 (2,959)	9,015 (2,755)	1,094 (660)	2,109 (1,364)	603 (714)	58,294 (19,910)
Angler hours		16,691 (8,352)	25,624 (22,894)	33,373 (13,691)	41,554 (17,750)	64,050 (28,869)	18,461 (10,478)	5,948 (3,194)	1,206 (776)	206,907 (45,281)
Angler trips		4,969 (2,065)	6,427 (4,967)	7,840 (3,092)	10,260 (4,542)	12,722 (5,344)	4,087 (2,273)	1,159 (609)	286 (176)	47,750 (9,657)
Angler days		4,531 (2,040)	5,597 (4,693)	6,548 (2,676)	9,856 (4,370)	11,092 (4,842)	3,981 (2,244)	989 (513)	226 (144)	42,820 (9,012)

Appendix 7.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Frankfort, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month								Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Pink salmon	0.0002 (0.0003)	0 (0)	18 (36)	0 (0)	0 (0)	35 (75)	0 (0)	0 (0)	0 (0)	53 (83)
Coho salmon	0.0155 (0.0095)	3 (6)	0 (0)	30 (49)	154 (181)	1,079 (900)	1,840 (1,447)	185 (368)	0 (0)	3,291 (1,753)
Chinook salmon	0.0339 (0.0210)	3 (5)	153 (137)	289 (280)	2,181 (1,914)	3,741 (3,328)	721 (612)	91 (131)	0 (0)	7,179 (3,902)
Rainbow trout	0.0384 (0.0220)	38 (49)	125 (190)	778 (747)	1,792 (1,375)	3,511 (3,273)	165 (135)	1,683 (1,614)	47 (52)	8,139 (3,978)
Brown trout	0.0209 (0.0095)	1,020 (661)	2,007 (1,021)	395 (510)	332 (426)	679 (637)	4 (8)	0 (0)	0 (0)	4,437 (1,525)
Brook trout	0.0000 (0.0000)	9 (19)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9 (19)
Lake trout	0.0340 (0.0195)	0 (0)	843 (608)	1,283 (1,093)	3,240 (2,789)	1,834 (1,760)	0 (0)	0 (0)	0 (0)	7,200 (3,527)
Yellow perch	0.0011 (0.0023)	241 (500)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	241 (500)
Round whitefish	0.0066 (0.0066)	22 (46)	0 (0)	22 (47)	0 (0)	0 (0)	54 (109)	1,159 (1,310)	132 (169)	1,389 (1,327)
Burbot	0.0012 (0.0015)	139 (256)	96 (171)	12 (25)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	247 (309)
Total	0.1518 (0.0564)	1,475 (870)	3,242 (1,224)	2,809 (1,448)	7,699 (3,681)	10,879 (5,110)	2,784 (1,581)	3,118 (2,115)	179 (177)	32,185 (7,143)
Angler hours		12,747 (5,540)	18,633 (8,942)	24,709 (15,523)	48,204 (27,644)	69,845 (51,442)	26,391 (14,045)	11,025 (6,189)	476 (409)	212,030 (63,228)
Angler trips		3,069 (1,256)	4,682 (2,054)	4,823 (2,867)	10,829 (5,774)	13,610 (9,354)	5,727 (2,815)	2,970 (1,637)	130 (117)	45,840 (12,061)
Angler days		2,593 (989)	4,043 (1,829)	4,285 (2,608)	10,096 (5,335)	12,205 (8,446)	4,726 (2,432)	2,014 (1,109)	83 (73)	40,045 (10,866)

Appendix 8.—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, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	16 (32)	0 (0)	16 (32)
Chinook salmon	0.0121 (0.0062)	306 (459)	70 (90)	0 (0)	213 (212)	454 (381)	290 (251)	41 (50)	1,374 (689)
Rainbow trout	0.0008 (0.0011)	0 (0)	0 (0)	29 (58)	0 (0)	48 (97)	0 (0)	9 (20)	86 (115)
Brown trout	0.0019 (0.0017)	89 (111)	0 (0)	39 (78)	60 (121)	0 (0)	0 (0)	28 (43)	216 (187)
Lake trout	0.0683 (0.0215)	0 (0)	2,567 (1,222)	3,200 (1,640)	1,622 (1,110)	338 (270)	3 (6)	0 (0)	7,730 (2,343)
White sucker	0.0001 (0.0002)	13 (26)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	13 (26)
Channel catfish	0.0008 (0.0011)	0 (0)	0 (0)	0 (0)	52 (106)	22 (44)	14 (28)	0 (0)	88 (118)
Smallmouth bass	0.0087 (0.0073)	0 (0)	0 (0)	484 (605)	29 (59)	249 (502)	148 (223)	79 (114)	989 (827)
Yellow perch	0.1241 (0.0647)	929 (1,271)	320 (438)	0 (0)	0 (0)	3,158 (3,747)	7,848 (5,304)	1,787 (2,871)	14,042 (7,227)
Lake whitefish	0.0058 (0.0063)	13 (26)	0 (0)	174 (251)	452 (668)	16 (31)	0 (0)	0 (0)	655 (715)
Round whitefish	0.0049 (0.0046)	132 (268)	22 (44)	0 (0)	0 (0)	0 (0)	130 (269)	266 (341)	550 (512)
Burbot	0.0002 (0.0004)	0 (0)	20 (40)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	20 (40)
Total	0.2278 (0.0709)	1,482 (1,383)	2,999 (1,303)	3,926 (1,769)	2,428 (1,324)	4,285 (3,811)	8,449 (5,322)	2,210 (2,894)	25,779 (7,728)
Angler hours		11,489 (3,058)	12,047 (2,021)	23,393 (4,699)	26,157 (5,077)	25,064 (4,532)	12,036 (2,492)	2,967 (886)	113,153 (9,425)
Angler trips		3,689 (1,160)	3,366 (594)	5,810 (1,179)	6,438 (1,322)	5,634 (1,222)	3,342 (734)	992 (275)	29,271 (2,635)
Angler days		3,258 (1,082)	3,204 (605)	5,166 (1,129)	5,852 (1,287)	4,516 (1,087)	2,715 (638)	816 (252)	25,527 (2,474)

Appendix 9.—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, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0145 (0.0113)	14 (28)	44 (89)	0 (0)	0 (0)	224 (185)	679 (716)	0 (0)	961 (745)
Rainbow trout	0.0065 (0.0052)	14 (28)	87 (178)	0 (0)	0 (0)	53 (106)	0 (0)	277 (268)	431 (340)
Brown trout	0.0002 (0.0004)	14 (28)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14 (28)
Lake trout	0.0588 (0.0326)	0 (0)	1,156 (1,173)	438 (533)	1,885 (1,633)	425 (421)	0 (0)	0 (0)	3,904 (2,122)
White sucker	0.0030 (0.0043)	0 (0)	0 (0)	201 (285)	0 (0)	0 (0)	0 (0)	0 (0)	201 (285)
Smallmouth bass	0.0148 (0.0116)	0 (0)	0 (0)	134 (208)	0 (0)	851 (735)	0 (0)	0 (0)	985 (764)
Yellow perch	0.0813 (0.0614)	0 (0)	0 (0)	2,092 (2,871)	0 (0)	3,172 (2,836)	0 (0)	137 (216)	5,401 (4,041)
Lake whitefish	0.1253 (0.0587)	0 (0)	103 (212)	27 (54)	1,735 (1,336)	5,340 (3,502)	174 (273)	942 (490)	8,321 (3,796)
Round whitefish	0.0054 (0.0080)	0 (0)	0 (0)	348 (526)	0 (0)	0 (0)	0 (0)	9 (19)	357 (526)
Burbot	0.0003 (0.0006)	0 (0)	0 (0)	0 (0)	0 (0)	18 (37)	0 (0)	0 (0)	18 (37)
Total	0.3100 (0.0971)	42 (48)	1,390 (1,209)	3,240 (2,988)	3,620 (2,110)	10,083 (4,590)	853 (766)	1,365 (599)	20,593 (6,071)
Angler hours		2,477 (1,309)	9,567 (2,855)	9,803 (2,007)	14,865 (3,810)	20,003 (3,770)	6,319 (2,346)	3,388 (977)	66,422 (7,006)
Angler trips		511 (297)	2,877 (887)	2,214 (486)	4,165 (1,207)	5,112 (992)	1,688 (659)	1,056 (311)	17,623 (2,021)
Angler days		424 (251)	2,457 (849)	2,009 (465)	3,688 (1,131)	4,660 (962)	1,547 (637)	907 (264)	15,692 (1,918)

Appendix 10.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Elk Rapids, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0007 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (31)	0 (0)	22 (31)
Chinook salmon	0.0100 (0.0051)	0 (0)	0 (0)	0 (0)	0 (0)	91 (42)	100 (105)	143 (123)	334 (167)
Rainbow trout	0.0127 (0.0077)	153 (173)	72 (90)	0 (0)	0 (0)	0 (0)	32 (64)	169 (153)	426 (256)
Brown trout	0.0009 (0.0013)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	30 (43)	0 (0)	30 (43)
Lake trout	0.0188 (0.0168)	0 (0)	90 (132)	129 (265)	228 (465)	182 (85)	0 (0)	0 (0)	629 (558)
White sucker	0.0037 (0.0073)	0 (0)	7 (15)	0 (0)	0 (0)	0 (0)	116 (242)	0 (0)	123 (242)
Rockbass	0.0003 (0.0006)	0 (0)	0 (0)	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)	9 (18)
Smallmouth bass	0.0457 (0.0312)	0 (0)	179 (210)	1,119 (1,004)	0 (0)	191 (81)	39 (81)	0 (0)	1,528 (1,032)
Largemouth bass	0.0020 (0.0040)	0 (0)	0 (0)	68 (136)	0 (0)	0 (0)	0 (0)	0 (0)	68 (136)
Yellow perch	0.0706 (0.0535)	98 (198)	830 (706)	1,031 (1,403)	0 (0)	0 (0)	384 (796)	16 (37)	2,359 (1,772)
Freshwater drum	0.0003 (0.0006)	0 (0)	0 (0)	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)	9 (18)
Lake whitefish	0.0529 (0.0294)	0 (0)	1,169 (877)	0 (0)	0 (0)	0 (0)	552 (396)	49 (112)	1,770 (969)
Round whitefish	0.0077 (0.0177)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	259 (595)	259 (595)
Other	0.0010 (0.0020)	0 (0)	33 (67)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	33 (67)
Total	0.2273 (0.0766)	251 (263)	2,380 (1,158)	2,365 (1,751)	228 (465)	464 (125)	1,275 (935)	636 (638)	7,599 (2,447)
Angler hours		4,520 (2,134)	6,685 (1,272)	6,205 (932)	3,249 (1,083)	3,460 (825)	4,119 (1,300)	5,199 (779)	33,437 (3,345)
Angler trips		1,515 (735)	1,906 (391)	2,108 (345)	1,182 (426)	1,255 (392)	1,011 (293)	1,241 (347)	10,218 (1,163)
Angler days		955 (462)	1,608 (384)	1,671 (350)	888 (370)	1,013 (430)	853 (275)	916 (269)	7,904 (976)

Appendix 11.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Charlevoix, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Chinook salmon	0.0522 (0.0339)	0 (0)	0 (0)	236 (281)	615 (415)	1,470 (1,350)	2,321 (1,440)
Rainbow trout	0.0024 (0.0046)	0 (0)	0 (0)	100 (203)	0 (0)	7 (15)	107 (204)
Brown trout	0.0008 (0.0012)	0 (0)	15 (32)	21 (42)	0 (0)	0 (0)	36 (53)
Lake trout	0.1143 (0.0471)	732 (429)	2,606 (1,407)	838 (801)	901 (798)	0 (0)	5,077 (1,855)
Smallmouth bass	0.0027 (0.0042)	0 (0)	82 (168)	0 (0)	0 (0)	39 (80)	121 (186)
Burbot	0.0018 (0.0037)	0 (0)	82 (168)	0 (0)	0 (0)	0 (0)	82 (168)
Total	0.1743 (0.0628)	732 (429)	2,785 (1,427)	1,195 (874)	1,516 (899)	1,516 (1,352)	7,744 (2,371)
Angler hours		849 (395)	5,790 (1,932)	8,857 (2,251)	9,958 (2,929)	18,979 (7,343)	44,433 (8,453)
Angler trips		359 (200)	1,057 (370)	3,072 (840)	2,308 (734)	5,381 (2,182)	12,177 (2,486)
Angler days		359 (200)	964 (347)	3,072 (840)	2,308 (734)	4,569 (2,112)	11,272 (2,422)

Appendix 12.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Petoskey, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Pink salmon	0.0003 (0.0006)	0 (0)	0 (0)	8 (17)	0 (0)	8 (17)
Chinook salmon	0.0040 (0.0039)	0 (0)	0 (0)	28 (45)	87 (99)	115 (109)
Rainbow trout	0.0057 (0.0084)	0 (0)	0 (0)	156 (240)	9 (14)	165 (240)
Brown trout	0.0028 (0.0036)	4 (9)	48 (97)	11 (24)	17 (25)	80 (103)
Lake trout	0.2220 (0.1060)	35 (49)	3,667 (2,599)	1,592 (1,012)	1,084 (409)	6,378 (2,819)
Channel catfish	0.0014 (0.0024)	0 (0)	0 (0)	31 (64)	9 (19)	40 (67)
Smallmouth bass	0.0058 (0.0088)	0 (0)	0 (0)	58 (123)	109 (220)	167 (252)
Yellow perch	0.0244 (0.0345)	0 (0)	0 (0)	264 (432)	436 (882)	700 (982)
Total	0.2664 (0.1153)	39 (50)	3,715 (2,601)	2,148 (1,136)	1,751 (1,002)	7,653 (3,010)
Angler hours		667 (297)	10,444 (2,733)	11,729 (4,206)	5,887 (1,281)	28,727 (5,185)
Angler trips		118 (54)	3,121 (898)	4,201 (1,466)	1,543 (349)	8,983 (1,755)
Angler days		118 (54)	3,017 (890)	3,890 (1,329)	1,543 (349)	8,568 (1,638)

Appendix 13.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Harbor Springs, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Chinook salmon	0.0435 (0.0565)	0 (0)	13 (28)	359 (638)	271 (502)	643 (812)
Rainbow trout	0.0018 (0.0027)	17 (36)	0 (0)	10 (14)	0 (0)	27 (39)
Brown trout	0.0037 (0.0077)	0 (0)	54 (111)	0 (0)	0 (0)	54 (111)
Lake trout	0.1068 (0.1079)	0 (0)	326 (348)	1,208 (1,478)	45 (107)	1,579 (1,522)
Smallmouth bass	0.0058 (0.0092)	0 (0)	86 (134)	0 (0)	0 (0)	86 (134)
Yellow perch	0.0513 (0.1085)	0 (0)	758 (1,587)	0 (0)	0 (0)	758 (1,587)
Total	0.2129 (0.1717)	17 (36)	1,237 (1,634)	1,577 (1,610)	316 (513)	3,147 (2,351)
Angler hours		791 (506)	5,592 (1,986)	4,941 (3,139)	3,456 (2,464)	14,780 (4,486)
Angler trips		217 (161)	1,386 (563)	1,349 (987)	1,016 (671)	3,968 (1,329)
Angler days		217 (161)	1,228 (540)	1,349 (987)	1,016 (671)	3,810 (1,320)

Appendix 14.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Big Bay de Noc, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	40 (60)	0 (0)	10 (20)	0 (0)	50 (63)
Rainbow trout	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	13 (26)	0 (0)	0 (0)	0 (0)	13 (26)
Splake	0.0005 (0.0010)	70 (140)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	70 (140)
Northern pike	0.0039 (0.0024)	0 (0)	52 (63)	218 (294)	32 (46)	136 (145)	141 (120)	32 (39)	611 (360)
White sucker	0.0795 (0.1635)	12,306 (25,199)	15 (31)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12,321 (25,199)
Black bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	15 (31)	7 (15)	0 (0)	0 (0)	22 (34)
Brown bullhead	0.0041 (0.0042)	371 (586)	220 (219)	29 (58)	14 (27)	0 (0)	0 (0)	0 (0)	634 (629)
Channel catfish	0.0009 (0.0011)	0 (0)	103 (161)	0 (0)	42 (72)	0 (0)	0 (0)	0 (0)	145 (176)
Rockbass	0.0020 (0.0033)	0 (0)	14 (28)	0 (0)	289 (498)	0 (0)	5 (10)	0 (0)	308 (499)
Smallmouth bass	0.0383 (0.0138)	0 (0)	675 (470)	2,011 (853)	1,883 (1,161)	642 (406)	210 (184)	519 (678)	5,940 (1,719)
Yellow perch	0.9244 (0.3706)	119,963 (47,381)	2,010 (1,639)	1,966 (2,480)	7,234 (6,496)	7,054 (5,387)	4,670 (6,096)	317 (396)	143,214 (48,604)
Walleye	0.0194 (0.0094)	0 (0)	1,871 (1,171)	286 (304)	508 (428)	187 (220)	93 (98)	68 (88)	3,013 (1,309)
Freshwater drum	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	51 (73)	0 (0)	0 (0)	0 (0)	51 (73)
Other	0.0013 (0.0015)	0 (0)	0 (0)	194 (216)	0 (0)	0 (0)	0 (0)	0 (0)	194 (216)
Total	1.0753 (0.4216)	132,710 (53,669)	4,960 (2,088)	4,704 (2,666)	10,121 (6,633)	8,026 (5,409)	5,129 (6,101)	936 (791)	166,586 (54,799)
Angler hours		97,794 (32,641)	13,721 (1,877)	14,730 (2,567)	11,636 (2,687)	11,033 (2,888)	3,977 (1,016)	2,032 (983)	154,923 (33,062)
Angler trips		27,227 (13,349)	3,880 (577)	3,130 (565)	2,864 (710)	3,381 (980)	1,199 (335)	496 (249)	42,177 (13,435)
Angler days		25,959 (13,341)	3,039 (517)	2,577 (510)	2,161 (575)	2,829 (867)	977 (307)	344 (190)	37,886 (13,406)

Appendix 15.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Little Bay de Noc, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0003 (0.0005)	0 (0)	0 (0)	0 (0)	28 (56)	0 (0)	77 (167)	0 (0)	105 (176)
Rainbow trout	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9 (18)	9 (18)
Brown trout	0.0008 (0.0010)	166 (335)	99 (159)	0 (0)	12 (23)	13 (27)	0 (0)	0 (0)	290 (373)
Brook trout	0.0002 (0.0004)	63 (128)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	63 (128)
Splake	0.0005 (0.0010)	0 (0)	204 (413)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	204 (413)
Northern pike	0.0045 (0.0024)	0 (0)	479 (657)	328 (313)	136 (123)	335 (376)	89 (146)	316 (318)	1,683 (899)
White sucker	0.0001 (0.0002)	0 (0)	34 (71)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	34 (71)
Black bullhead	0.0008 (0.0016)	0 (0)	0 (0)	0 (0)	0 (0)	287 (576)	0 (0)	0 (0)	287 (576)
Brown bullhead	0.0004 (0.0006)	0 (0)	149 (239)	17 (33)	0 (0)	0 (0)	0 (0)	0 (0)	166 (241)
Channel catfish	0.0003 (0.0004)	0 (0)	29 (59)	75 (154)	24 (48)	0 (0)	0 (0)	0 (0)	128 (172)
Rockbass	0.0267 (0.0264)	0 (0)	1,153 (1,698)	7,359 (9,701)	1,069 (1,095)	276 (399)	91 (142)	107 (174)	10,055 (9,920)
Pumpkinseed	0.0277 (0.0264)	0 (0)	3,767 (6,900)	867 (872)	504 (972)	4,571 (6,958)	479 (486)	242 (496)	10,430 (9,910)
Bluegill	0.0023 (0.0025)	0 (0)	180 (315)	283 (577)	0 (0)	318 (652)	86 (186)	0 (0)	867 (944)
Smallmouth bass	0.0055 (0.0027)	0 (0)	463 (420)	287 (244)	519 (492)	603 (638)	72 (101)	131 (272)	2,075 (984)
White crappie	0.0001 (0.0002)	0 (0)	51 (103)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (103)
Black crappie	0.0039 (0.0038)	679 (951)	128 (193)	579 (1,022)	0 (0)	0 (0)	67 (112)	0 (0)	1,453 (1,414)
Yellow perch	0.5090 (0.1252)	128,675 (41,087)	11,812 (9,862)	8,360 (5,370)	8,756 (4,290)	14,344 (7,512)	7,105 (4,779)	12,428 (5,778)	191,480 (44,106)
Walleye	0.1101 (0.0233)	0 (0)	18,407 (6,832)	5,893 (2,375)	3,839 (1,596)	7,223 (2,081)	2,728 (1,776)	3,315 (1,350)	41,405 (8,011)
Freshwater drum	0.0003 (0.0004)	0 (0)	65 (131)	53 (105)	12 (24)	0 (0)	0 (0)	0 (0)	130 (170)
Burbot	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	28 (57)	0 (0)	0 (0)	0 (0)	28 (57)

Appendix 15.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Total	0.6937 (0.1386)	129,583 (41,100)	37,020 (13,981)	24,101 (11,442)	14,927 (4,833)	27,970 (10,519)	10,794 (5,134)	16,548 (5,972)	260,943 (47,028)
Angler hours		69,603 (15,924)	96,686 (20,995)	65,988 (9,555)	38,119 (5,594)	52,470 (5,348)	26,036 (11,933)	27,283 (8,297)	376,185 (32,508)
Angler trips		15,904 (3,768)	22,961 (4,710)	15,478 (2,378)	11,485 (1,773)	13,090 (1,545)	6,505 (2,245)	5,054 (1,422)	90,477 (7,391)
Angler days		12,594 (3,063)	17,425 (3,567)	11,487 (1,827)	9,318 (1,561)	11,193 (1,429)	4,992 (1,741)	4,209 (1,184)	71,218 (5,861)

Appendix 16.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Drummond Island area boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0230 (0.0323)	0 (0)	0 (0)	0 (0)	5,775 (8,049)	0 (0)	0 (0)	5,775 (8,049)
Northern pike	0.0151 (0.0175)	406 (591)	278 (324)	0 (0)	3,061 (4,307)	0 (0)	46 (102)	3,791 (4,361)
Black bullhead	0.0006 (0.0009)	143 (209)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	143 (209)
Channel catfish	0.0011 (0.0015)	0 (0)	283 (371)	0 (0)	0 (0)	0 (0)	0 (0)	283 (371)
Rockbass	0.0070 (0.0061)	146 (298)	1,291 (1,403)	206 (420)	0 (0)	119 (244)	0 (0)	1,762 (1,514)
Green sunfish	0.0035 (0.0072)	0 (0)	0 (0)	881 (1,799)	0 (0)	0 (0)	0 (0)	881 (1,799)
Pumpkinseed	0.0083 (0.0093)	879 (1,518)	0 (0)	617 (1,259)	0 (0)	594 (1,222)	0 (0)	2,090 (2,320)
Bluegill	0.0019 (0.0026)	293 (595)	0 (0)	0 (0)	0 (0)	196 (307)	0 (0)	489 (670)
Smallmouth bass	0.0118 (0.0074)	1,282 (1,161)	1,138 (1,100)	0 (0)	0 (0)	547 (828)	0 (0)	2,967 (1,801)
Largemouth bass	0.0003 (0.0006)	0 (0)	0 (0)	0 (0)	0 (0)	87 (178)	0 (0)	87 (178)
Yellow perch	0.2210 (0.1589)	259 (376)	187 (295)	206 (420)	721 (1,015)	17,020 (16,113)	37,057 (35,444)	55,450 (38,953)
Walleye	0.0417 (0.0273)	3,863 (3,057)	2,739 (2,170)	440 (899)	3,228 (5,406)	201 (422)	0 (0)	10,471 (6,653)
Other	0.0004 (0.0008)	0 (0)	109 (222)	0 (0)	0 (0)	0 (0)	0 (0)	109 (222)
Total	0.3360 (0.1705)	7,271 (3,738)	6,025 (2,875)	2,350 (2,446)	12,785 (10,658)	18,764 (16,192)	37,103 (35,444)	84,298 (40,746)
Angler hours		36,752 (11,643)	44,823 (10,464)	73,984 (28,938)	56,139 (15,066)	28,605 (11,450)	10,596 (7,519)	250,899 (38,692)
Angler trips		10,097 (3,349)	12,361 (3,046)	25,205 (12,073)	17,300 (5,899)	7,205 (3,194)	3,677 (2,610)	75,845 (14,767)
Angler days		10,097 (3,349)	12,105 (2,990)	23,922 (11,947)	15,322 (5,705)	6,345 (3,043)	3,088 (2,244)	70,879 (14,482)

Appendix 17.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Detour boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0846 (0.1053)	0 (0)	0 (0)	31 (68)	678 (562)	35 (56)	0 (0)	744 (569)
Coho salmon	0.0017 (0.0025)	0 (0)	0 (0)	1 (1)	14 (17)	0 (0)	0 (0)	15 (17)
Chinook salmon	0.0259 (0.0380)	0 (0)	17 (20)	133 (239)	75 (64)	3 (7)	0 (0)	228 (248)
Rainbow trout	0.0003 (0.0005)	0 (0)	0 (0)	2 (3)	1 (2)	0 (0)	0 (0)	3 (4)
Atlantic salmon	0.0073 (0.0174)	0 (0)	0 (0)	64 (139)	0 (0)	0 (0)	0 (0)	64 (139)
Lake trout	0.0002 (0.0005)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	2 (5)
White sucker	0.0001 (0.0001)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	1 (1)
Channel catfish	0.0001 (0.0003)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	1 (3)
Yellow perch	0.0001 (0.0002)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	1 (2)
Other	0.0020 (0.0035)	0 (0)	0 (0)	18 (26)	0 (0)	0 (0)	0 (0)	18 (26)
Total	0.1224 (0.1403)	0 (0)	17 (20)	251 (286)	771 (566)	38 (56)	0 (0)	1,077 (637)
Angler hours		0 (0)	347 (256)	4,848 (8,289)	2,326 (1,827)	1,278 (1,601)	653 (598)	8,799 (8,641)
Angler trips		0 (0)	63 (48)	1,036 (1,817)	373 (292)	1,167 (1,589)	0 (0)	2,639 (2,432)
Angler days		0 (0)	63 (48)	996 (1,746)	353 (274)	1,165 (1,589)	0 (0)	2,577 (2,377)

Appendix 18.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Les Cheneaux Islands area boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0327 (0.0139)	0 (0)	0 (0)	0 (0)	4,148 (1,994)	1,551 (1,166)	0 (0)	5,699 (2,310)
Chinook salmon	0.0055 (0.0036)	0 (0)	0 (0)	170 (316)	683 (504)	110 (144)	0 (0)	963 (612)
Rainbow trout	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	41 (83)	0 (0)	0 (0)	41 (83)
Brown trout	0.0010 (0.0015)	0 (0)	115 (233)	0 (0)	60 (120)	0 (0)	0 (0)	175 (262)
Northern pike	0.0596 (0.0178)	2,775 (1,612)	2,823 (1,454)	1,148 (994)	2,488 (1,268)	1,082 (707)	75 (134)	10,391 (2,798)
Muskellunge	0.0002 (0.0004)	38 (80)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	38 (80)
Brown bullhead	0.0560 (0.0641)	0 (0)	0 (0)	9,506 (11,106)	164 (236)	93 (189)	0 (0)	9,763 (11,110)
Channel catfish	0.0017 (0.0013)	0 (0)	125 (145)	124 (147)	52 (105)	0 (0)	0 (0)	301 (232)
Rockbass	0.0715 (0.0281)	1,163 (1,560)	3,996 (2,711)	4,978 (3,169)	1,666 (1,124)	655 (656)	3 (6)	12,461 (4,639)
Pumpkinseed	0.0092 (0.0079)	51 (107)	92 (133)	116 (139)	313 (473)	1,024 (1,253)	0 (0)	1,596 (1,357)
Smallmouth bass	0.0110 (0.0063)	150 (198)	497 (688)	833 (719)	246 (231)	193 (225)	1 (2)	1,920 (1,065)
White crappie	0.0004 (0.0008)	77 (160)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	77 (160)
Black crappie	0.0004 (0.0005)	26 (53)	26 (53)	0 (0)	0 (0)	19 (39)	0 (0)	71 (84)
Yellow perch	0.5934 (0.1488)	1,298 (1,482)	4,369 (3,096)	39,578 (15,740)	40,970 (13,326)	11,694 (6,824)	5,500 (3,951)	103,409 (22,345)
Walleye	0.0007 (0.0014)	0 (0)	115 (233)	0 (0)	0 (0)	0 (0)	0 (0)	115 (233)

Appendix 18.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Round whitefish	0.0067 (0.0080)	0 (0)	12 (25)	1,162 (1,402)	0 (0)	0 (0)	0 (0)	1,174 (1,402)
Other	0.0461 (0.0289)	7 (16)	6,498 (4,705)	1,522 (1,436)	0 (0)	0 (0)	0 (0)	8,027 (4,919)
Total	0.8965 (0.1889)	5,585 (2,704)	18,668 (6,466)	59,137 (19,667)	50,831 (13,603)	16,421 (7,109)	5,579 (3,953)	156,221 (26,213)
Angler hours		11,780 (6,186)	39,523 (11,015)	45,171 (11,015)	52,678 (11,895)	20,616 (8,040)	4,484 (2,391)	174,252 (22,199)
Angler trips		3,051 (1,765)	10,239 (2,907)	13,466 (3,325)	16,119 (3,729)	6,353 (2,550)	1,217 (649)	50,445 (6,592)
Angler days		1,906 (1,086)	5,973 (1,731)	8,408 (2,117)	10,268 (2,445)	4,391 (1,772)	1,011 (569)	31,957 (4,254)

Appendix 19.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the St. Ignace to St. Martins Bay area boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Pink salmon	0.0054 (0.0115)	0 (0)	0 (0)	0 (0)	95 (200)	0 (0)	95 (200)
Chinook salmon	0.0284 (0.0218)	0 (0)	0 (0)	14 (21)	483 (359)	0 (0)	497 (360)
Rainbow trout	0.0010 (0.0021)	0 (0)	0 (0)	0 (0)	18 (37)	0 (0)	18 (37)
Northern pike	0.0023 (0.0050)	0 (0)	41 (89)	0 (0)	0 (0)	0 (0)	41 (89)
Brown bullhead	0.0030 (0.0066)	0 (0)	0 (0)	53 (116)	0 (0)	0 (0)	53 (116)
Channel catfish	0.0087 (0.0113)	105 (165)	47 (102)	0 (0)	0 (0)	0 (0)	152 (194)
Yellow perch	0.0023 (0.0050)	0 (0)	41 (89)	0 (0)	0 (0)	0 (0)	41 (89)
Walleye	0.0181 (0.0236)	15 (32)	108 (233)	193 (329)	0 (0)	0 (0)	316 (404)
Total	0.0694 (0.0404)	120 (168)	237 (284)	260 (349)	596 (413)	0 (0)	1,213 (633)
Angler hours		1,139 (693)	2,047 (1,193)	2,675 (1,305)	5,505 (2,056)	6,120 (3,515)	17,486 (4,493)
Angler trips		362 (224)	589 (351)	626 (314)	1,400 (490)	2,056 (1,467)	5,033 (1,632)
Angler days		362 (224)	589 (351)	583 (290)	1,400 (490)	2,056 (1,467)	4,990 (1,628)

Appendix 20.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Rogers City boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		Jun	Jul	Aug	Sep	
Pink salmon	0.0047 (0.0025)	0 (0)	198 (201)	207 (115)	84 (116)	489 (259)
Chinook salmon	0.0831 (0.0169)	0 (0)	1,976 (514)	4,654 (903)	2,100 (1,214)	8,730 (1,598)
Rainbow trout	0.0038 (0.0021)	30 (62)	178 (125)	85 (51)	105 (151)	398 (212)
Brown trout	0.0048 (0.0044)	0 (0)	0 (0)	103 (83)	397 (446)	500 (454)
Lake trout	0.0182 (0.0073)	1,028 (626)	577 (347)	311 (226)	0 (0)	1,916 (751)
Channel catfish	0.0001 (0.0002)	0 (0)	0 (0)	8 (12)	0 (0)	8 (12)
Rockbass	0.0013 (0.0026)	0 (0)	132 (265)	0 (0)	0 (0)	132 (265)
Lake whitefish	0.0001 (0.0002)	0 (0)	9 (19)	0 (0)	0 (0)	9 (19)
Round whitefish	0.0001 (0.0002)	0 (0)	9 (18)	0 (0)	0 (0)	9 (18)
Total	0.1160 (0.0206)	1,058 (629)	3,079 (715)	5,368 (943)	2,686 (1,307)	12,191 (1,872)
Angler hours		1,055 (346)	20,799 (3,770)	68,844 (7,031)	14,361 (4,805)	105,059 (9,320)
Angler trips		502 (282)	4,720 (887)	14,308 (1,486)	3,186 (1,097)	22,716 (2,068)
Angler days		502 (282)	3,915 (768)	10,872 (1,182)	2,531 (890)	17,820 (1,691)

Appendix 21.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Rockport, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0448 (0.0196)	0 (0)	0 (0)	677 (320)	1,664 (447)	547 (1,088)	0 (0)	2,888 (1,219)
Coho salmon	0.0012 (0.0008)	0 (0)	0 (0)	22 (34)	50 (42)	8 (12)	0 (0)	80 (55)
Chinook salmon	0.1029 (0.0206)	0 (0)	0 (0)	2,087 (686)	3,939 (768)	606 (332)	0 (0)	6,632 (1,082)
Rainbow trout	0.0074 (0.0027)	0 (0)	0 (0)	235 (128)	234 (98)	5 (8)	0 (0)	474 (161)
Brown trout	0.0018 (0.0018)	0 (0)	0 (0)	61 (88)	54 (79)	3 (7)	0 (0)	118 (118)
Brook trout	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	7 (14)	0 (0)	0 (0)	7 (14)
Lake trout	0.0096 (0.0034)	0 (0)	0 (0)	300 (161)	319 (128)	0 (0)	0 (0)	619 (206)
Splake	0.0002 (0.0004)	0 (0)	0 (0)	14 (27)	0 (0)	0 (0)	0 (0)	14 (27)
Channel catfish	0.0008 (0.0009)	0 (0)	0 (0)	20 (29)	27 (49)	5 (11)	0 (0)	52 (58)
Yellow perch	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	3 (5)	0 (0)	0 (0)	3 (5)
Walleye	0.0004 (0.0004)	0 (0)	0 (0)	0 (0)	20 (25)	6 (12)	0 (0)	26 (28)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	3 (7)	0 (0)	0 (0)	0 (0)	3 (7)
Total	0.1694 (0.0323)	0 (0)	0 (0)	3,419 (791)	6,317 (909)	1,180 (1,138)	0 (0)	10,916 (1,657)
Angler hours		0 (0)	0 (0)	21,349 (4,688)	38,181 (5,642)	4,916 (1,314)	0 (0)	64,446 (7,452)
Angler trips		0 (0)	0 (0)	3,952 (871)	7,389 (1,099)	1,141 (313)	0 (0)	12,482 (1,437)
Angler days		0 (0)	0 (0)	3,952 (871)	7,389 (1,099)	1,141 (313)	0 (0)	12,482 (1,437)

Appendix 22.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Alpena, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0162 (0.0044)	0 (0)	0 (0)	0 (0)	869 (236)	29 (34)	48 (57)	0 (0)	946 (245)
Coho salmon	0.0015 (0.0012)	0 (0)	3 (6)	0 (0)	82 (69)	0 (0)	0 (0)	0 (0)	85 (69)
Chinook salmon	0.0637 (0.0106)	0 (0)	37 (35)	314 (144)	2,672 (484)	222 (106)	376 (159)	91 (86)	3,712 (548)
Rainbow trout	0.0115 (0.0031)	18 (36)	0 (0)	1 (1)	595 (162)	40 (47)	0 (0)	13 (27)	667 (175)
Brown trout	0.0068 (0.0032)	75 (70)	41 (59)	0 (0)	279 (162)	0 (0)	0 (0)	0 (0)	395 (186)
Brook trout	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	9 (18)	0 (0)	0 (0)	0 (0)	9 (18)
Lake trout	0.0140 (0.0038)	0 (0)	70 (51)	47 (47)	686 (199)	13 (13)	0 (0)	0 (0)	816 (211)
Northern pike	0.0001 (0.0002)	5 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (10)
Charmel catfish	0.0013 (0.0009)	0 (0)	25 (28)	5 (11)	45 (43)	0 (0)	0 (0)	0 (0)	75 (52)
Smallmouth bass	0.0008 (0.0014)	0 (0)	6 (11)	0 (0)	41 (82)	0 (0)	0 (0)	0 (0)	47 (83)
Walleye	0.0411 (0.0127)	326 (141)	2,018 (701)	13 (26)	37 (41)	2 (4)	0 (0)	0 (0)	2,396 (717)
Freshwater drum	0.0018 (0.0016)	0 (0)	0 (0)	0 (0)	104 (93)	0 (0)	0 (0)	0 (0)	104 (93)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	2 (5)
Round whitefish	0.0000 (0.0000)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)
Burbot	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	6 (12)	0 (0)	0 (0)	0 (0)	6 (12)
Total	0.1591 (0.0211)	425 (162)	2,200 (707)	380 (154)	5,427 (637)	306 (122)	424 (169)	104 (90)	9,266 (1,004)
Angler hours		4,880 (779)	8,757 (1,984)	2,511 (528)	34,934 (3,737)	3,427 (810)	3,217 (745)	518 (253)	58,244 (4,479)
Angler trips		1,879 (328)	2,610 (562)	588 (129)	5,173 (543)	717 (181)	888 (209)	167 (83)	12,022 (905)
Angler days		1,879 (328)	2,610 (562)	588 (129)	5,173 (543)	717 (181)	888 (209)	167 (83)	12,022 (905)

Appendix 23.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Harrisville boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0042 (0.0029)	0 (0)	0 (0)	146 (133)	122 (106)	0 (0)	0 (0)	268 (170)
Coho salmon	0.0008 (0.0008)	0 (0)	24 (39)	0 (0)	24 (24)	0 (0)	0 (0)	48 (46)
Chinook salmon	0.0801 (0.0364)	109 (164)	149 (137)	345 (245)	1,638 (949)	2,342 (1,410)	532 (555)	5,115 (1,817)
Rainbow trout	0.0046 (0.0031)	0 (0)	0 (0)	99 (102)	172 (144)	18 (25)	8 (18)	297 (179)
Brown trout	0.0001 (0.0002)	0 (0)	0 (0)	4 (8)	0 (0)	0 (0)	0 (0)	4 (8)
Lake trout	0.0288 (0.0141)	82 (149)	501 (412)	528 (373)	728 (450)	0 (0)	0 (0)	1,839 (730)
Channel catfish	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	5 (11)	9 (20)	0 (0)	14 (23)
Yellow perch	0.0018 (0.0040)	0 (0)	113 (248)	0 (0)	0 (0)	0 (0)	0 (0)	113 (248)
Walleye	0.0015 (0.0016)	0 (0)	0 (0)	4 (8)	76 (95)	18 (29)	0 (0)	98 (100)
Lake whitefish	0.0002 (0.0005)	0 (0)	0 (0)	15 (34)	0 (0)	0 (0)	0 (0)	15 (34)
Total	0.1223 (0.0467)	191 (222)	787 (502)	1,141 (478)	2,765 (1,070)	2,387 (1,411)	540 (555)	7,811 (1,993)
Angler hours		1,950 (2,130)	7,004 (4,300)	7,660 (4,513)	22,352 (11,604)	20,870 (11,845)	4,051 (3,316)	63,887 (18,148)
Angler trips		462 (445)	1,339 (832)	1,483 (878)	4,373 (2,296)	4,627 (2,601)	956 (803)	13,240 (3,787)
Angler days		462 (445)	1,231 (759)	1,322 (788)	4,155 (2,186)	4,082 (2,301)	872 (741)	12,124 (3,467)

Appendix 24.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Oscoda, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0004 (0.0006)	0 (0)	36 (76)	0 (0)	0 (0)	23 (43)	0 (0)	59 (87)
Coho salmon	0.0003 (0.0004)	0 (0)	0 (0)	25 (51)	12 (26)	10 (22)	0 (0)	47 (61)
Chinook salmon	0.0252 (0.0152)	0 (0)	54 (81)	455 (288)	1,398 (861)	2,111 (1,958)	0 (0)	4,018 (2,160)
Rainbow trout	0.0032 (0.0020)	0 (0)	74 (102)	136 (115)	100 (127)	166 (196)	41 (72)	517 (289)
Brown trout	0.0002 (0.0004)	0 (0)	0 (0)	28 (57)	0 (0)	0 (0)	0 (0)	28 (57)
Lake trout	0.0214 (0.0104)	56 (121)	1,335 (826)	1,266 (922)	762 (539)	0 (0)	0 (0)	3,419 (1,356)
Northern pike	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	16 (35)	0 (0)	0 (0)	16 (35)
White sucker	0.0003 (0.0006)	0 (0)	54 (114)	0 (0)	0 (0)	0 (0)	0 (0)	54 (114)
Channel catfish	0.0070 (0.0034)	0 (0)	249 (278)	482 (280)	362 (221)	24 (36)	0 (0)	1,117 (454)
Rockbass	0.0005 (0.0008)	0 (0)	0 (0)	82 (131)	0 (0)	0 (0)	0 (0)	82 (131)
Smallmouth bass	0.0024 (0.0030)	14 (30)	282 (436)	82 (125)	0 (0)	0 (0)	0 (0)	378 (455)
Largemouth bass	0.0006 (0.0013)	0 (0)	90 (190)	0 (0)	0 (0)	0 (0)	0 (0)	90 (190)
Yellow perch	0.0059 (0.0087)	0 (0)	806 (1,338)	140 (272)	0 (0)	0 (0)	0 (0)	946 (1,365)
Walleye	0.0077 (0.0051)	587 (556)	168 (230)	276 (301)	183 (284)	8 (18)	4 (9)	1,226 (731)
Freshwater drum	0.0055 (0.0076)	96 (212)	582 (1,142)	156 (226)	40 (33)	0 (0)	0 (0)	874 (1,184)

Appendix 24.—Continued:

Species	Total catch per hour	Month					Oct	Season
		May	Jun	Jul	Aug	Sep		
Lake whitefish	0.0003 (0.0004)	0 (0)	0 (0)	38 (62)	0 (0)	8 (17)	0 (0)	46 (64)
Round whitefish	0.0004 (0.0009)	0 (0)	0 (0)	0 (0)	68 (145)	0 (0)	0 (0)	68 (145)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (10)	5 (10)
Total	0.0814 (0.0307)	753 (608)	3,730 (2,042)	3,166 (1,133)	2,941 (1,096)	2,350 (1,969)	50 (73)	12,990 (3,303)
Angler hours		8,061 (4,979)	20,875 (9,179)	32,017 (12,370)	47,117 (23,001)	49,967 (34,307)	1,637 (828)	159,674 (44,371)
Angler trips		1,739 (1,103)	4,450 (1,972)	5,909 (2,428)	9,576 (4,801)	10,282 (6,896)	471 (204)	32,427 (9,036)
Angler days		1,724 (1,094)	4,239 (1,904)	5,772 (2,392)	9,090 (4,515)	9,829 (6,543)	433 (198)	31,087 (8,589)

Appendix 25.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Tawas, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0008 (0.0017)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	111 (236)	0 (0)	111 (236)
Chinook salmon	0.0031 (0.0021)	0 (0)	112 (91)	48 (66)	85 (96)	0 (0)	160 (246)	46 (95)	451 (302)
Rainbow trout	0.0010 (0.0009)	0 (0)	19 (29)	17 (37)	10 (20)	50 (104)	0 (0)	41 (39)	137 (122)
Brown trout	0.0013 (0.0017)	0 (0)	0 (0)	0 (0)	103 (192)	0 (0)	0 (0)	77 (143)	180 (239)
Brook trout	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (23)	0 (0)	11 (23)
Lake trout	0.0018 (0.0013)	0 (0)	32 (35)	186 (172)	10 (20)	33 (55)	0 (0)	0 (0)	261 (185)
Rainbow smelt	0.0001 (0.0002)	21 (46)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	21 (46)
Northern pike	0.0023 (0.0021)	8 (17)	32 (42)	0 (0)	0 (0)	259 (282)	34 (73)	0 (0)	333 (295)
Channel catfish	0.0013 (0.0009)	0 (0)	0 (0)	25 (36)	57 (63)	88 (102)	18 (27)	0 (0)	188 (128)
White perch	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	28 (60)	0 (0)	28 (60)
White bass	0.0007 (0.0010)	0 (0)	0 (0)	0 (0)	31 (64)	72 (139)	0 (0)	0 (0)	103 (153)
Rockbass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	14 (22)	0 (0)	0 (0)	14 (22)
Green sunfish	0.0002 (0.0004)	0 (0)	0 (0)	23 (49)	0 (0)	4 (8)	0 (0)	0 (0)	27 (50)
Pumpkinseed	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)	0 (0)	0 (0)	3 (6)
Bluegill	0.0002 (0.0003)	8 (15)	0 (0)	0 (0)	22 (44)	0 (0)	0 (0)	0 (0)	30 (46)
Smallmouth bass	0.0055 (0.0091)	0 (0)	0 (0)	690 (1,297)	48 (84)	17 (35)	39 (83)	0 (0)	794 (1,303)
Largemouth bass	0.0005 (0.0011)	0 (0)	0 (0)	0 (0)	0 (0)	74 (156)	0 (0)	0 (0)	74 (156)
Yellow perch	1.3015 (0.3932)	2,214 (1,065)	1,875 (1,260)	11,174 (7,685)	54,782 (22,881)	62,596 (32,091)	48,529 (22,497)	5,222 (3,540)	186,392 (46,193)
Walleye	0.0105 (0.0067)	26 (43)	10 (21)	147 (188)	1,171 (881)	147 (175)	0 (0)	0 (0)	1,501 (919)
Freshwater drum	0.0009 (0.0009)	0 (0)	0 (0)	43 (54)	67 (100)	15 (31)	0 (0)	0 (0)	125 (118)

Appendix 25.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Total	1.3321 (0.3964)	2,277 (1,067)	2,080 (1,265)	12,353 (7,799)	56,386 (22,900)	63,372 (32,094)	48,930 (22,500)	5,386 (3,544)	190,784 (46,226)
Angler hours		8,303 (2,385)	10,273 (2,898)	24,046 (9,678)	34,200 (11,179)	37,059 (16,377)	25,187 (10,424)	4,149 (1,524)	143,217 (24,737)
Angler trips		3,992 (1,300)	3,060 (835)	5,021 (1,849)	7,348 (2,351)	8,941 (3,929)	6,291 (2,603)	1,382 (581)	36,035 (5,821)
Angler days		3,607 (1,157)	2,847 (788)	4,926 (1,802)	7,162 (2,316)	8,558 (3,799)	6,015 (2,523)	1,161 (521)	34,276 (5,625)

Appendix 26.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Au Gres, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0018 (0.0019)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	514 (585)	40 (57)	554 (588)
Rainbow smelt	0.0000 (0.0000)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)
Northern pike	0.0019 (0.0035)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	558 (1,034)	0 (0)	558 (1,034)
Redhorses	0.0000 0.0000	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (5)
Black bullhead	0.0001 (0.0002)	0 (0)	6 (16)	0 (0)	0 (0)	33 (71)	0 (0)	0 (0)	39 (73)
Brown bullhead	0.0002 (0.0004)	0 (0)	0 (0)	69 (143)	0 (0)	0 (0)	0 (0)	0 (0)	69 (143)
Channel catfish	0.0072 (0.0047)	18 (50)	38 (55)	913 (1,208)	455 (330)	415 (371)	333 (372)	0 (0)	2,172 (1,360)
White perch	0.0038 (0.0040)	0 (0)	0 (0)	22 (44)	0 (0)	258 (419)	853 (1,093)	0 (0)	1,133 (1,171)
White bass	0.0069 (0.0111)	17 (39)	0 (0)	82 (145)	406 (680)	90 (185)	1,487 (3,247)	0 (0)	2,082 (3,326)
Rockbass	0.0001 (0.0002)	0 (0)	0 (0)	32 (66)	0 (0)	0 (0)	0 (0)	5 (12)	37 (67)
Bluegill	0.0003 (0.0004)	0 (0)	41 (86)	39 (82)	0 (0)	0 (0)	0 (0)	0 (0)	80 (119)
Smallmouth bass	0.0020 (0.0024)	0 (0)	103 (215)	449 (688)	22 (45)	0 (0)	20 (42)	10 (22)	604 (724)
Largemouth bass	0.0006 (0.0012)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	166 (342)	0 (0)	166 (342)
Yellow perch	2.2957 (0.7205)	29,309 (20,924)	4,817 (4,301)	56,998 (29,361)	128,313 (49,165)	310,526 (127,282)	148,611 (107,419)	9,433 (8,013)	688,007 (177,593)
Walleye	0.0315 (0.0129)	475 (693)	89 (125)	170 (289)	7,536 (3,156)	937 (1,178)	241 (498)	0 (0)	9,448 (3,489)
Freshwater drum	0.0043 (0.0041)	0 (0)	1 (3)	639 (1,157)	390 (318)	262 (248)	0 (0)	0 (0)	1,292 (1,225)
Total	2.3565 (0.7269)	29,819 (20,936)	5,098 (4,309)	59,413 (29,419)	137,122 (49,273)	312,521 (127,289)	152,783 (107,483)	9,488 (8,013)	706,244 (177,678)
Angler hours		8,711 (5,502)	18,415 (10,777)	46,511 (18,147)	92,556 (26,505)	84,258 (33,881)	41,984 (22,890)	7,264 (3,483)	299,699 (53,500)
Angler trips		2,648 (1,820)	4,029 (2,364)	9,021 (3,610)	17,519 (5,336)	17,689 (7,161)	9,492 (5,053)	2,796 (1,308)	63,194 (11,355)
Angler days		2,400 (1,649)	3,805 (2,244)	8,588 (3,479)	17,440 (5,320)	17,557 (7,091)	9,317 (5,038)	2,440 (1,164)	61,547 (11,188)

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, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0006 (0.0006)	2 (5)	56 (70)	0 (0)	114 (151)	0 (0)	0 (0)	0 (0)	172 (167)
Black bullhead	0.0026 (0.0035)	112 (211)	588 (981)	72 (143)	0 (0)	0 (0)	0 (0)	0 (0)	772 (1,014)
Yellow bullhead	0.0014 (0.0018)	0 (0)	90 (224)	316 (473)	0 (0)	0 (0)	0 (0)	0 (0)	406 (523)
Chanel catfish	0.0168 (0.0165)	50 (111)	438 (700)	1,606 (2,431)	1,936 (3,770)	804 (1,075)	101 (209)	0 (0)	4,935 (4,672)
White perch	0.0022 (0.0022)	71 (159)	230 (289)	95 (179)	0 (0)	253 (519)	0 (0)	0 (0)	649 (640)
White bass	0.0037 (0.0052)	672 (1,429)	382 (485)	0 (0)	39 (80)	0 (0)	0 (0)	0 (0)	1,093 (1,511)
Rockbass	0.0002 (0.0002)	6 (13)	16 (32)	33 (52)	0 (0)	0 (0)	0 (0)	0 (0)	55 (62)
Pumpkinseed	0.0009 (0.0009)	12 (29)	98 (153)	145 (184)	0 (0)	0 (0)	0 (0)	0 (0)	255 (241)
Bluegill	0.0000 (0.0000)	0 (0)	0 (0)	10 (22)	0 (0)	0 (0)	0 (0)	0 (0)	10 (22)
Largemouth bass	0.0001 (0.0001)	0 (0)	15 (23)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	16 (23)
Black crappie	0.0007 (0.0013)	2 (5)	209 (395)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	211 (395)
Yellow perch	0.9337 (0.6444)	7,027 (6,841)	2,425 (2,440)	36,333 (28,241)	4,093 (3,820)	90,201 (87,339)	122,290 (149,048)	12,447 (11,723)	274,816 (175,630)
Walleye	0.0750 (0.0353)	0 (0)	459 (521)	5,399 (3,961)	10,583 (5,510)	5,034 (5,170)	609 (1,364)	0 (0)	22,084 (8,655)
Freshwater drum	0.0061 (0.0060)	121 (188)	439 (832)	482 (958)	92 (188)	668 (1,101)	0 (0)	0 (0)	1,802 (1,701)
Other	0.0005 (0.0005)	61 (97)	2 (5)	92 (131)	0 (0)	0 (0)	0 (0)	0 (0)	155 (163)
Total	1.0445 (0.6568)	8,136 (6,998)	5,447 (2,987)	44,584 (28,643)	16,857 (7,696)	96,960 (87,507)	123,000 (149,054)	12,447 (11,723)	307,431 (175,925)
Angler hours		4,137 (2,880)	14,483 (8,267)	68,320 (29,470)	81,607 (26,292)	77,531 (49,383)	44,350 (42,472)	3,915 (2,772)	294,343 (76,724)
Angler trips		754 (470)	3,304 (1,776)	13,196 (5,710)	14,341 (4,679)	16,303 (10,279)	9,019 (8,637)	945 (671)	57,862 (15,446)
Angler days		716 (458)	3,147 (1,734)	13,186 (5,709)	14,341 (4,679)	16,303 (10,279)	9,019 (8,637)	945 (671)	57,657 (15,440)

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, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Brown bullhead	0.0000 (0.0000)	0 (0)	5 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (13)
Channel catfish	0.0193 (0.0286)	227 (640)	21 (41)	0 (0)	1,719 (3,617)	829 (1,739)	0 (0)	0 (0)	2,796 (4,064)
White perch	0.0005 (0.0011)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	71 (149)	0 (0)	71 (149)
White bass	0.0042 (0.0111)	609 (1,596)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	609 (1,596)
Largemouth bass	0.0027 (0.0057)	0 (0)	0 (0)	395 (821)	0 (0)	0 (0)	0 (0)	0 (0)	395 (821)
Yellow perch	1.0575 (0.8588)	0 (0)	2,723 (4,230)	0 (0)	10,379 (13,996)	31,608 (59,368)	64,354 (91,738)	43,795 (38,377)	152,859 (116,735)
Walleye	0.0073 (0.0079)	42 (119)	0 (0)	0 (0)	870 (1,067)	98 (213)	42 (88)	0 (0)	1,052 (1,098)
Freshwater drum	0.0028 (0.0056)	0 (0)	23 (58)	0 (0)	0 (0)	380 (797)	0 (0)	0 (0)	403 (799)
Other	0.0000 (0.0000)	0 (0)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)
Total	1.0944 (0.8629)	878 (1,724)	2,775 (4,231)	395 (821)	12,968 (14,495)	32,915 (59,399)	64,467 (91,738)	43,795 (38,377)	158,193 (116,827)
Angler hours		2,617 (5,044)	15,519 (11,744)	29,119 (14,706)	34,634 (16,877)	41,065 (24,854)	16,213 (17,503)	5,377 (2,565)	144,544 (39,939)
Angler trips		434 (830)	3,723 (2,580)	8,058 (4,711)	7,233 (3,772)	9,080 (5,707)	3,697 (3,906)	1,411 (842)	33,636 (9,607)
Angler days		365 (702)	3,708 (2,578)	8,058 (4,711)	6,785 (3,764)	9,080 (5,707)	3,697 (3,906)	1,411 (842)	33,104 (9,594)

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, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0002 (0.0003)	0 (0)	7 (16)	3 (7)	0 (0)	0 (0)	0 (0)	4 (9)	14 (20)
Black bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	1 (2)
Brown bullhead	0.0001 (0.0002)	0 (0)	0 (0)	2 (5)	10 (21)	0 (0)	0 (0)	0 (0)	12 (22)
Channel catfish	0.0693 (0.0488)	0 (0)	2,367 (2,779)	2,676 (2,925)	831 (1,098)	318 (334)	8 (18)	61 (142)	6,261 (4,197)
White perch	0.0009 (0.0012)	0 (0)	32 (70)	0 (0)	0 (0)	39 (80)	13 (30)	0 (0)	84 (110)
White bass	0.0028 (0.0022)	0 (0)	48 (72)	172 (166)	32 (58)	0 (0)	0 (0)	0 (0)	252 (190)
Rockbass	0.0002 (0.0005)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (53)	22 (53)
Pumpkinseed	0.0021 (0.0031)	0 (0)	0 (0)	0 (0)	2 (4)	101 (237)	0 (0)	89 (153)	192 (282)
Bluegill	0.0005 (0.0011)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	42 (95)	42 (95)
Smallmouth bass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	13 (27)	0 (0)	0 (0)	0 (0)	13 (27)
Black crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12 (28)	12 (28)
Yellow perch	0.2626 (0.1413)	0 (0)	0 (0)	3,581 (5,053)	776 (803)	5,362 (4,984)	1,344 (1,634)	12,663 (9,095)	23,726 (11,679)
Walleye	0.0798 (0.0376)	0 (0)	279 (331)	992 (648)	4,316 (2,729)	1,608 (1,045)	15 (33)	0 (0)	7,210 (3,012)
Freshwater drum	0.0086 (0.0081)	0 (0)	49 (95)	551 (701)	97 (99)	74 (80)	0 (0)	10 (25)	781 (719)
Other	0.0171 (0.0444)	1,513 (3,987)	27 (64)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	1,541 (3,988)
Total	0.4445 (0.1771)	1,513 (3,987)	2,809 (2,803)	7,978 (5,918)	6,078 (3,052)	7,502 (5,110)	1,380 (1,635)	12,903 (9,098)	40,163 (13,403)
Angler hours		1,997 (2,342)	8,792 (3,953)	30,284 (14,081)	21,920 (7,432)	20,019 (9,966)	4,086 (2,938)	3,257 (1,956)	90,355 (19,657)
Angler trips		626 (771)	2,538 (1,214)	5,912 (2,666)	4,735 (1,632)	4,116 (2,065)	3,056 (2,680)	1,333 (958)	22,316 (4,920)
Angler days		626 (771)	2,236 (1,052)	5,396 (2,451)	4,204 (1,499)	3,733 (1,903)	3,036 (2,678)	1,114 (769)	20,345 (4,620)

Appendix 30.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Sebawaing to Sand Point, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
White sucker	0.0001 (0.0002)	1 (3)	0 (0)	6 (13)	0 (0)	0 (0)	0 (0)	0 (0)	7 (13)
Yellow bullhead	0.0002 (0.0004)	0 (0)	24 (52)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	24 (52)
Brown bullhead	0.0003 (0.0005)	0 (0)	0 (0)	30 (53)	0 (0)	0 (0)	0 (0)	0 (0)	30 (53)
Chanel catfish	0.1133 (0.0886)	0 (0)	3,153 (3,821)	7,722 (7,583)	179 (168)	79 (171)	0 (0)	0 (0)	11,133 (8,495)
White perch	0.0023 (0.0023)	0 (0)	127 (201)	31 (63)	11 (22)	60 (89)	0 (0)	0 (0)	229 (230)
White bass	0.0072 (0.0087)	0 (0)	0 (0)	700 (847)	6 (12)	0 (0)	0 (0)	0 (0)	706 (847)
Rockbass	0.0029 (0.0036)	0 (0)	214 (342)	6 (13)	37 (59)	0 (0)	0 (0)	28 (63)	285 (353)
Pumpkinseed	0.0011 (0.0013)	43 (79)	20 (41)	6 (13)	0 (0)	0 (0)	0 (0)	42 (95)	111 (131)
Bluegill	0.0025 (0.0025)	6 (13)	142 (195)	99 (144)	0 (0)	3 (7)	0 (0)	0 (0)	250 (243)
Smallmouth bass	0.0022 (0.0020)	0 (0)	10 (23)	44 (84)	160 (168)	0 (0)	0 (0)	0 (0)	214 (189)
Largemouth bass	0.0045 (0.0045)	0 (0)	5 (13)	440 (441)	0 (0)	0 (0)	0 (0)	0 (0)	445 (441)
White crappie	0.0000 (0.0000)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)
Black crappie	0.0151 (0.0216)	55 (74)	971 (1,941)	385 (782)	0 (0)	0 (0)	0 (0)	71 (158)	1,482 (2,100)
Yellow perch	0.4795 (0.2357)	354 (277)	320 (465)	1,282 (1,762)	3,877 (3,608)	11,921 (8,991)	12,424 (16,328)	16,953 (10,362)	47,131 (21,708)
Walleye	0.0733 (0.0294)	0 (0)	115 (173)	698 (637)	4,112 (1,936)	2,281 (1,631)	0 (0)	0 (0)	7,206 (2,616)
Freshwater drum	0.0131 (0.0085)	0 (0)	144 (225)	706 (641)	305 (355)	129 (244)	0 (0)	0 (0)	1,284 (804)
Other	0.0002 (0.0003)	0 (0)	16 (25)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	16 (25)
Total	0.7178 (0.2697)	462 (298)	5,261 (4,343)	12,155 (7,936)	8,687 (4,117)	14,473 (9,143)	12,424 (16,328)	17,094 (10,364)	70,556 (23,590)
Angler hours		1,914 (940)	9,418 (4,977)	30,085 (7,765)	26,448 (8,991)	19,358 (8,677)	7,182 (6,197)	3,894 (1,996)	98,299 (16,866)
Angler trips		908 (437)	2,614 (1,302)	6,214 (1,576)	5,423 (1,846)	4,236 (2,015)	1,840 (1,574)	1,889 (1,115)	23,124 (3,944)
Angler days		653 (300)	2,372 (1,190)	5,830 (1,525)	5,000 (1,732)	3,715 (1,689)	1,710 (1,539)	1,528 (915)	20,808 (3,590)

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, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0001 (0.0002)	10 (22)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (22)
Coho salmon	0.0002 (0.0002)	21 (30)	0 (0)	9 (19)	0 (0)	0 (0)	0 (0)	30 (36)
Chinook salmon	0.0058 (0.0032)	308 (250)	158 (158)	366 (377)	229 (258)	6 (9)	15 (18)	1,082 (545)
Rainbow trout	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	45 (85)	0 (0)	0 (0)	45 (85)
Brown trout	0.0001 (0.0001)	23 (34)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	23 (34)
Lake trout	0.0085 (0.0048)	400 (311)	393 (274)	472 (568)	330 (451)	0 (0)	0 (0)	1,595 (835)
Splake	0.0001 (0.0002)	11 (22)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	11 (22)
Channel catfish	0.0043 (0.0031)	14 (29)	582 (516)	184 (193)	29 (60)	1 (2)	0 (0)	810 (555)
White perch	0.0015 (0.0022)	0 (0)	0 (0)	150 (315)	123 (252)	0 (0)	0 (0)	273 (403)
Rockbass	0.0025 (0.0027)	194 (302)	265 (401)	0 (0)	6 (17)	1 (2)	0 (0)	466 (502)
Pumpkinseed	0.0007 (0.0014)	0 (0)	0 (0)	0 (0)	123 (252)	0 (0)	0 (0)	123 (252)
Bluegill	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	5 (11)	0 (0)	0 (0)	5 (11)
Smallmouth bass	0.0034 (0.0050)	447 (910)	134 (221)	23 (34)	36 (74)	1 (1)	3 (6)	644 (940)
Yellow perch	0.5576 (0.1993)	8,525 (5,396)	14,466 (7,818)	32,737 (16,086)	39,977 (21,598)	8,351 (9,222)	464 (363)	104,520 (30,011)

Appendix 31.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Walleye	0.0472 (0.0210)	11 (23)	191 (343)	6,083 (2,941)	1,912 (1,219)	651 (1,303)	0 (0)	8,848 (3,457)
Freshwater drum	0.0021 (0.0020)	14 (29)	25 (44)	150 (315)	212 (204)	1 (1)	0 (0)	402 (379)
Other	0.0000 (0.0000)	0 (0)	7 (15)	0 (0)	0 (0)	0 (0)	0 (0)	7 (15)
Total	0.6343 (0.2105)	9,978 (5,496)	16,221 (7,862)	40,174 (16,374)	43,027 (21,643)	9,012 (9,314)	482 (363)	118,894 (30,256)
Angler hours		14,804 (7,146)	34,512 (10,327)	59,753 (19,214)	56,673 (27,643)	21,280 (17,395)	409 (201)	187,431 (39,921)
Angler trips		3,911 (1,680)	7,501 (2,172)	12,489 (3,926)	12,845 (6,396)	5,605 (4,816)	149 (69)	42,500 (9,331)
Angler days		3,353 (1,532)	7,057 (2,071)	11,349 (3,654)	12,001 (6,192)	5,429 (4,765)	108 (51)	39,297 (9,002)

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, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0004 (0.0006)	0 (0)	40 (84)	14 (29)	0 (0)	14 (32)	0 (0)	0 (0)	68 (94)
Coho salmon	0.0006 (0.0007)	0 (0)	25 (47)	24 (35)	0 (0)	57 (115)	0 (0)	0 (0)	106 (129)
Chinook salmon	0.0267 (0.0146)	315 (515)	756 (545)	418 (317)	281 (286)	604 (425)	2,540 (2,424)	172 (145)	5,086 (2,612)
Rainbow trout	0.0017 (0.0011)	10 (27)	18 (35)	42 (86)	135 (138)	122 (103)	0 (0)	0 (0)	327 (197)
Brown trout	0.0003 (0.0004)	10 (27)	18 (38)	0 (0)	0 (0)	29 (60)	1 (3)	0 (0)	58 (76)
Lake trout	0.0231 (0.0109)	0 (0)	709 (632)	1,453 (698)	1,820 (1,607)	406 (395)	3 (6)	0 (0)	4,391 (1,904)
Splake	0.0001 (0.0002)	0 (0)	17 (34)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	17 (34)
White sucker	0.0007 (0.0018)	128 (320)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	128 (320)
Redhorses	0.0001 (0.0002)	26 (64)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	26 (64)
Charmel catfish	0.0032 (0.0027)	0 (0)	134 (378)	64 (112)	121 (186)	282 (245)	0 (0)	0 (0)	601 (500)
White bass	0.0008 (0.0015)	0 (0)	0 (0)	0 (0)	135 (276)	9 (18)	0 (0)	0 (0)	144 (277)
Rockbass	0.0001 (0.0002)	0 (0)	0 (0)	22 (54)	0 (0)	0 (0)	0 (0)	0 (0)	22 (54)
Smallmouth bass	0.0016 (0.0017)	0 (0)	0 (0)	43 (79)	36 (63)	197 (287)	25 (53)	0 (0)	301 (309)
Yellow perch	0.2986 (0.1381)	7,110 (12,978)	248 (404)	11,970 (13,028)	17,900 (10,974)	4,945 (3,314)	14,620 (10,132)	0 (0)	56,793 (23,925)
Walleye	0.0607 (0.0252)	10 (27)	94 (113)	0 (0)	5,038 (3,328)	6,284 (2,656)	110 (129)	0 (0)	11,536 (4,261)
Freshwater drum	0.0021 (0.0020)	0 (0)	0 (0)	127 (264)	195 (236)	52 (70)	18 (29)	0 (0)	392 (362)
Lake whitefish	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	11 (25)	0 (0)	0 (0)	11 (25)
Round whitefish	0.0001 (0.0002)	0 (0)	0 (0)	13 (29)	0 (0)	0 (0)	0 (0)	0 (0)	13 (29)
Other	0.0003 (0.0008)	51 (128)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (128)

Appendix 32.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Total	0.4210 (0.1519)	7,660 (12,993)	2,059 (1,014)	14,190 (13,054)	25,661 (11,591)	13,012 (4,307)	17,317 (10,419)	172 (145)	80,071 (24,530)
Angler hours		5,943 (7,425)	25,287 (16,231)	28,612 (8,467)	49,231 (19,063)	48,751 (18,377)	29,727 (14,973)	2,628 (978)	190,179 (36,284)
Angler trips		966 (1,089)	4,906 (2,752)	5,906 (1,701)	11,309 (4,171)	9,031 (3,523)	5,902 (2,945)	445 (161)	38,465 (7,082)
Angler days		927 (1,023)	4,061 (2,383)	5,367 (1,585)	9,912 (3,732)	7,647 (3,108)	4,850 (2,442)	408 (164)	33,172 (6,230)

Appendix 33.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Point Mouillee to the mouth of the Raisin River, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Muskellunge	0.0000 (0.0000)	0 (0)	7 (13)	0 (0)	0 (0)	0 (0)	0 (0)	7 (13)
Yellow bullhead	0.0001 (0.0002)	41 (85)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	41 (85)
Channel catfish	0.0083 (0.0054)	37 (57)	243 (206)	1,524 (1,410)	389 (323)	193 (239)	0 (0)	2,386 (1,482)
White perch	0.0429 (0.0173)	4,633 (3,372)	3,990 (1,859)	2,093 (1,829)	533 (384)	1,032 (1,035)	0 (0)	12,281 (4,403)
White bass	0.0115 (0.0058)	1,906 (1,310)	963 (700)	159 (313)	34 (45)	87 (125)	137 (309)	3,286 (1,555)
Rockbass	0.0036 (0.0022)	128 (177)	107 (129)	219 (339)	281 (276)	124 (178)	167 (285)	1,026 (593)
Pumpkinseed	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	8 (15)	0 (0)	0 (0)	8 (15)
Warmouth	0.0001 (0.0002)	0 (0)	0 (0)	18 (37)	0 (0)	0 (0)	0 (0)	18 (37)
Bluegill	0.0003 (0.0006)	0 (0)	0 (0)	72 (148)	4 (8)	0 (0)	0 (0)	76 (148)
Redear sunfish	0.0004 (0.0008)	0 (0)	0 (0)	126 (258)	0 (0)	0 (0)	0 (0)	126 (258)
Smallmouth bass	0.0007 (0.0006)	8 (18)	92 (117)	87 (133)	25 (54)	0 (0)	0 (0)	212 (186)
Largemouth bass	0.0001 (0.0002)	0 (0)	22 (45)	0 (0)	0 (0)	0 (0)	0 (0)	22 (45)
Black crappie	0.0000 (0.0000)	8 (18)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (18)
Yellow perch	0.5057 (0.1790)	1,369 (1,104)	4,094 (2,677)	8,532 (5,781)	34,778 (14,796)	63,300 (30,414)	32,610 (26,952)	144,683 (43,728)

Appendix 33.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Walleye	0.1042 (0.0321)	7,031 (3,683)	17,479 (5,982)	4,108 (2,065)	1,147 (707)	47 (54)	0 (0)	29,812 (7,356)
Freshwater drum	0.0089 (0.0039)	286 (266)	857 (581)	797 (689)	473 (372)	121 (146)	0 (0)	2,534 (1,021)
Other	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	13 (27)	0 (0)	0 (0)	13 (27)
Total	0.6870 (0.2009)	15,447 (5,290)	27,854 (6,878)	17,735 (6,619)	37,685 (14,829)	64,904 (30,434)	32,914 (26,955)	196,539 (44,630)
Angler hours		54,100 (25,709)	108,196 (37,827)	42,611 (14,502)	34,644 (13,687)	34,881 (15,365)	11,662 (7,125)	286,094 (52,691)
Angler trips		10,686 (5,121)	18,849 (6,465)	7,416 (2,496)	7,318 (2,925)	6,365 (2,852)	3,619 (2,241)	54,253 (9,796)
Angler days		10,563 (5,058)	18,583 (6,392)	7,364 (2,478)	7,256 (2,914)	6,303 (2,831)	3,619 (2,241)	53,688 (9,701)

Appendix 34.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the mouth of the Raisin River to the Michigan-Ohio state line boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Rainbow trout	0.0000 (0.0000)	18 (28)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (28)
Black bullhead	0.0001 (0.0002)	69 (113)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	69 (113)
Yellow bullhead	0.0003 (0.0004)	121 (178)	44 (63)	0 (0)	0 (0)	0 (0)	0 (0)	165 (189)
Brown bullhead	0.0000 (0.0000)	3 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (7)
Channel catfish	0.0367 (0.0134)	3,345 (2,013)	2,214 (1,478)	4,185 (2,810)	4,487 (2,768)	2,390 (1,706)	1,011 (821)	17,632 (5,038)
White perch	0.0337 (0.0139)	5,599 (3,474)	4,634 (2,686)	2,681 (1,990)	1,935 (2,319)	1,161 (1,608)	186 (192)	16,196 (5,590)
White bass	0.0213 (0.0111)	7,444 (4,556)	753 (764)	221 (191)	331 (462)	760 (942)	709 (806)	10,218 (4,809)
Rockbass	0.0014 (0.0009)	0 (0)	40 (81)	188 (196)	103 (155)	312 (334)	42 (63)	685 (430)
Green sunfish	0.0004 (0.0008)	0 (0)	0 (0)	172 (357)	0 (0)	0 (0)	0 (0)	172 (357)
Pumpkinseed	0.0013 (0.0013)	0 (0)	19 (38)	0 (0)	433 (586)	164 (232)	16 (33)	632 (632)
Bluegill	0.0062 (0.0069)	7 (15)	1,234 (2,488)	0 (0)	838 (1,787)	898 (1,032)	0 (0)	2,977 (3,232)
Smallmouth bass	0.0002 (0.0002)	0 (0)	28 (47)	21 (43)	0 (0)	37 (80)	30 (34)	116 (108)
Largemouth bass	0.0006 (0.0007)	0 (0)	50 (64)	0 (0)	0 (0)	119 (245)	127 (196)	296 (320)
White crappie	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	111 (187)	111 (187)
Black crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	59 (122)	0 (0)	59 (122)

Appendix 34.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Yellow perch	0.4597 (0.1740)	3,179 (2,170)	3,222 (2,110)	8,747 (7,166)	69,502 (36,055)	103,062 (52,355)	32,932 (19,968)	220,644 (67,084)
Walleye	0.1623 (0.0581)	21,461 (11,020)	33,348 (16,349)	20,446 (8,832)	2,615 (1,534)	0 (0)	0 (0)	77,870 (21,658)
Freshwater drum	0.0220 (0.0098)	3,174 (2,065)	2,956 (2,835)	1,516 (1,394)	1,491 (1,153)	898 (798)	510 (437)	10,545 (4,050)
Other	0.0012 (0.0009)	196 (228)	0 (0)	25 (51)	46 (67)	151 (257)	154 (199)	572 (406)
Total	0.7480 (0.2247)	44,616 (12,938)	48,542 (17,204)	38,202 (11,973)	81,781 (36,338)	110,011 (52,435)	35,828 (20,010)	358,980 (71,253)
Angler hours		102,743 (51,479)	166,979 (83,244)	93,488 (35,106)	58,350 (22,731)	44,947 (18,405)	13,430 (7,263)	479,937 (108,260)
Angler trips		19,063 (9,367)	29,163 (14,863)	16,563 (6,244)	11,290 (4,384)	8,548 (3,539)	2,492 (1,370)	87,119 (19,526)
Angler days		19,043 (9,352)	29,163 (14,863)	16,563 (6,244)	11,228 (4,374)	8,480 (3,512)	2,492 (1,370)	86,969 (19,512)

Appendix 35.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Black River Harbor boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Coho salmon	0.0318 (0.0196)	53 (70)	112 (86)	23 (42)	54 (79)	74 (123)	316 (188)
Chinook salmon	0.0493 (0.0412)	67 (78)	0 (0)	0 (0)	152 (131)	271 (371)	490 (401)
Brown trout	0.0179 (0.0225)	144 (216)	15 (31)	0 (0)	19 (42)	0 (0)	178 (222)
Lake trout	0.0325 (0.0192)	59 (57)	47 (51)	56 (64)	19 (42)	142 (148)	323 (183)
Walleye	0.0015 (0.0038)	0 (0)	0 (0)	15 (38)	0 (0)	0 (0)	15 (38)
Siscowet lake trout	0.0162 (0.0138)	0 (0)	61 (97)	7 (11)	34 (74)	59 (56)	161 (135)
Total	0.1493 (0.0604)	323 (247)	235 (143)	101 (86)	278 (180)	546 (422)	1,483 (547)
Angler hours		1,754 (472)	2,576 (918)	599 (427)	1,985 (948)	3,017 (756)	9,931 (1,649)
Angler trips		426 (132)	464 (183)	87 (62)	370 (189)	687 (187)	2,034 (354)
Angler days		426 (132)	464 (183)	87 (62)	370 (189)	687 (187)	2,034 (354)

Appendix 36.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Ontonagon boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Coho salmon	0.0139 (0.0113)	288 (360)	111 (165)	5 (10)	47 (45)	51 (76)	502 (406)
Chinook salmon	0.0213 (0.0112)	654 (378)	103 (109)	9 (14)	0 (0)	0 (0)	766 (394)
Atlantic salmon	0.0003 (0.0006)	12 (25)	0 (0)	0 (0)	0 (0)	0 (0)	12 (25)
Brown trout	0.0070 (0.0069)	185 (219)	66 (110)	0 (0)	0 (0)	0 (0)	251 (245)
Lake trout	0.0544 (0.0189)	403 (343)	679 (378)	382 (224)	353 (168)	144 (292)	1,961 (651)
Northern pike	0.0007 (0.0014)	0 (0)	0 (0)	0 (0)	27 (54)	0 (0)	27 (54)
Walleye	0.1062 (0.0318)	235 (244)	2,311 (920)	431 (264)	759 (408)	88 (137)	3,824 (1,077)
Siscowet lake trout	0.0081 (0.0058)	0 (0)	0 (0)	162 (182)	131 (100)	0 (0)	293 (208)
Total	0.2120 (0.0449)	1,777 (706)	3,270 (1,020)	989 (392)	1,317 (458)	283 (331)	7,636 (1,418)
Angler hours		5,398 (1,244)	12,948 (2,628)	6,457 (1,539)	7,949 (1,430)	3,272 (834)	36,024 (3,683)
Angler trips		1,471 (379)	2,902 (633)	1,432 (359)	1,631 (318)	1,014 (288)	8,450 (926)
Angler days		1,471 (379)	2,902 (633)	1,432 (359)	1,631 (318)	1,014 (288)	8,450 (926)

Appendix 37.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Traverse Bay boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season
		Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0104 (0.0101)	2 (5)	33 (50)	0 (0)	77 (102)	8 (16)	120 (115)
Chinook salmon	0.0086 (0.0087)	38 (66)	39 (67)	0 (0)	22 (31)	0 (0)	99 (99)
Lake trout	0.2089 (0.1120)	269 (227)	597 (362)	284 (277)	762 (461)	489 (1,010)	2,401 (1,221)
Rockbass	0.0133 (0.0276)	0 (0)	153 (317)	0 (0)	0 (0)	0 (0)	153 (317)
Siscowet lake trout	0.0894 (0.0434)	576 (330)	75 (138)	303 (287)	74 (86)	0 (0)	1,028 (467)
Total	0.3306 (0.1305)	885 (406)	897 (508)	587 (399)	935 (481)	497 (1,010)	3,801 (1,354)
Angler hours		3,204 (821)	1,848 (544)	2,548 (1,107)	1,911 (780)	1,985 (1,015)	11,496 (1,958)
Angler trips		706 (186)	507 (162)	667 (313)	426 (178)	499 (254)	2,805 (505)
Angler days		706 (186)	507 (162)	667 (313)	426 (178)	499 (254)	2,805 (505)

Appendix 38.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Keweenaw Bay boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	May	Season
Coho salmon	0.0672 (0.0324)	219 (98)	219 (98)
Chinook salmon	0.0755 (0.0369)	246 (112)	246 (112)
Rainbow trout	0.0012 (0.0021)	4 (7)	4 (7)
Lake trout	0.0034 (0.0068)	11 (22)	11 (22)
White sucker	0.0037 (0.0059)	12 (19)	12 (19)
Lake whitefish	0.0353 (0.0319)	115 (102)	115 (102)
Siscowet lake trout	0.0169 (0.0193)	55 (62)	55 (62)
Total	0.2032 (0.0694)	662 (193)	662 (193)
Angler hours		3,258 (581)	3,258 (581)
Angler trips		724 (134)	724 (134)
Angler days		721 (133)	721 (133)

Appendix 39.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Huron Bay boat fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		Jun	Jul	Aug	Sep	
Coho salmon	0.0083 (0.0117)	5 (7)	8 (18)	0 (0)	44 (78)	57 (80)
Chinook salmon	0.0054 (0.0066)	13 (16)	0 (0)	20 (41)	4 (9)	37 (45)
Lake trout	0.1785 (0.0689)	97 (93)	324 (244)	729 (307)	69 (106)	1,219 (417)
Northern pike	0.0303 (0.0314)	0 (0)	159 (197)	15 (30)	33 (68)	207 (211)
Yellow perch	0.0012 (0.0027)	0 (0)	8 (18)	0 (0)	0 (0)	8 (18)
Walleye	0.0179 (0.0365)	0 (0)	0 (0)	122 (248)	0 (0)	122 (248)
Other	0.0328 (0.0220)	58 (68)	59 (72)	94 (103)	13 (27)	224 (145)
Total	0.2744 (0.0951)	173 (117)	558 (323)	980 (411)	163 (151)	1,874 (557)
Angler hours		1,314 (491)	1,875 (735)	2,841 (763)	799 (351)	6,829 (1,219)
Angler trips		228 (107)	438 (195)	649 (184)	184 (90)	1,499 (302)
Angler days		228 (107)	411 (191)	649 (184)	184 (90)	1,472 (300)

Appendix 40.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Marquette, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0003 (0.0005)	4 (9)	0 (0)	0 (0)	0 (0)	0 (0)	18 (36)	0 (0)	22 (37)
Coho salmon	0.0842 (0.0161)	5,961 (1,267)	941 (392)	129 (75)	119 (114)	16 (18)	66 (51)	73 (60)	7,305 (1,336)
Chinook salmon	0.0077 (0.0026)	287 (149)	183 (105)	70 (71)	8 (16)	92 (106)	26 (33)	0 (0)	666 (225)
Rainbow trout	0.0035 (0.0017)	50 (43)	36 (42)	47 (54)	2 (4)	0 (0)	80 (83)	90 (86)	305 (144)
Atlantic salmon	0.0005 (0.0007)	8 (16)	36 (60)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	44 (62)
Brown trout	0.0024 (0.0030)	46 (48)	13 (26)	0 (0)	0 (0)	0 (0)	142 (258)	10 (14)	211 (264)
Lake trout	0.1123 (0.0154)	90 (121)	1,028 (430)	2,096 (531)	2,232 (590)	1,617 (442)	1,740 (560)	944 (370)	9,747 (1,215)
Splake	0.0028 (0.0021)	103 (65)	130 (168)	0 (0)	0 (0)	0 (0)	0 (0)	7 (13)	240 (181)
Walleye	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	16 (34)	0 (0)	0 (0)	16 (34)
Lake whitefish	0.0083 (0.0039)	103 (99)	165 (212)	0 (0)	17 (35)	0 (0)	43 (85)	395 (219)	723 (333)
Round whitefish	0.0188 (0.0071)	0 (0)	396 (320)	0 (0)	0 (0)	0 (0)	128 (256)	1,104 (446)	1,628 (606)
Burbot	0.0001 (0.0001)	5 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8 (16)	13 (19)
Lake herring	0.0001 (0.0002)	13 (26)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	13 (26)
Total	0.2411 (0.0265)	6,670 (1,289)	2,928 (729)	2,342 (544)	2,378 (602)	1,741 (456)	2,243 (682)	2,631 (629)	20,933 (1,980)
Angler hours		28,222 (3,769)	9,880 (1,186)	12,074 (1,275)	11,742 (1,845)	9,512 (1,340)	10,347 (985)	5,028 (628)	86,805 (4,879)
Angler trips		9,722 (1,271)	2,946 (404)	2,949 (454)	2,825 (424)	2,167 (344)	2,966 (401)	1,538 (225)	25,113 (1,579)
Angler days		8,057 (1,109)	2,727 (391)	2,718 (421)	2,625 (428)	2,060 (336)	2,486 (350)	1,279 (207)	21,952 (1,422)

Appendix 41.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Au Train, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		Apr	May	Jun	Jul	Aug	Sep	
Pink salmon	0.0007 (0.0010)	0 (0)	0 (0)	13 (19)	0 (0)	0 (0)	0 (0)	13 (19)
Coho salmon	0.0835 (0.0492)	1,239 (909)	300 (194)	5 (8)	0 (0)	0 (0)	66 (96)	1,610 (934)
Chinook salmon	0.0049 (0.0045)	0 (0)	82 (83)	12 (18)	0 (0)	0 (0)	0 (0)	94 (85)
Rainbow trout	0.0044 (0.0030)	40 (45)	31 (33)	14 (16)	0 (0)	0 (0)	0 (0)	85 (58)
Brown trout	0.0051 (0.0055)	91 (105)	7 (15)	0 (0)	0 (0)	0 (0)	0 (0)	98 (106)
Brook trout	0.0002 (0.0004)	4 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (8)
Lake trout	0.2180 (0.1575)	0 (0)	2,551 (2,929)	581 (258)	25 (34)	874 (598)	171 (133)	4,202 (3,004)
Round whitefish	0.0019 (0.0034)	36 (64)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	36 (64)
Total	0.3186 (0.1668)	1,410 (918)	2,971 (2,937)	625 (260)	25 (34)	874 (598)	237 (164)	6,142 (3,150)
Angler hours		5,570 (1,357)	8,013 (1,130)	3,067 (735)	210 (106)	1,513 (595)	906 (375)	19,279 (2,041)
Angler trips		1,396 (378)	2,759 (793)	543 (135)	45 (30)	315 (140)	213 (94)	5,271 (905)
Angler days		1,203 (346)	2,347 (620)	522 (132)	45 (30)	315 (140)	205 (91)	4,637 (742)

Appendix 42.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Munising Bay, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		Apr	May	Jun	Jul	Aug	Sep	
Pink salmon	0.0002 (0.0004)	0 (0)	0 (0)	7 (14)	0 (0)	0 (0)	0 (0)	7 (14)
Coho salmon	0.0761 (0.0228)	848 (456)	1,117 (459)	8 (13)	50 (57)	75 (110)	339 (242)	2,437 (702)
Chinook salmon	0.0036 (0.0034)	0 (0)	93 (102)	21 (31)	0 (0)	0 (0)	0 (0)	114 (107)
Rainbow trout	0.0093 (0.0067)	29 (50)	230 (203)	13 (19)	0 (0)	15 (31)	10 (20)	297 (213)
Brown trout	0.0016 (0.0018)	5 (10)	14 (28)	31 (48)	0 (0)	0 (0)	0 (0)	50 (56)
Lake trout	0.0491 (0.0163)	0 (0)	297 (230)	348 (186)	570 (316)	264 (244)	92 (91)	1,571 (505)
Splake	0.0002 (0.0004)	5 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (9)
Northern pike	0.0031 (0.0040)	0 (0)	45 (91)	43 (86)	10 (21)	0 (0)	0 (0)	98 (127)
Smallmouth bass	0.0013 (0.0016)	0 (0)	0 (0)	0 (0)	21 (29)	20 (41)	0 (0)	41 (50)
Yellow perch	0.0056 (0.0056)	0 (0)	31 (62)	38 (76)	47 (74)	63 (128)	0 (0)	179 (177)
Lake whitefish	0.0216 (0.0192)	164 (182)	236 (454)	291 (367)	0 (0)	0 (0)	0 (0)	691 (611)
Round whitefish	0.0037 (0.0058)	31 (64)	87 (175)	0 (0)	0 (0)	0 (0)	0 (0)	118 (186)
Total	0.1751 (0.0381)	1,082 (498)	2,150 (752)	800 (432)	698 (331)	437 (301)	441 (259)	5,608 (1,126)
Angler hours		5,634 (1,581)	8,662 (1,103)	5,167 (1,016)	5,326 (1,193)	3,919 (766)	3,314 (719)	32,022 (2,697)
Angler trips		1,470 (452)	2,259 (366)	1,178 (312)	934 (239)	1,523 (381)	878 (210)	8,242 (826)
Angler days		1,328 (421)	1,850 (326)	1,178 (312)	934 (239)	1,224 (395)	860 (206)	7,374 (798)

Appendix 43.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from Sweets Point to Neebish Island on the St. Mary's River, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0004 (0.0008)	0 (0)	0 (0)	0 (0)	78 (158)	0 (0)	0 (0)	78 (158)
Coho salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	23 (48)	0 (0)	23 (48)
Chinook salmon	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	39 (79)	0 (0)	0 (0)	39 (79)
Rainbow smelt	0.0002 (0.0004)	0 (0)	0 (0)	50 (102)	0 (0)	0 (0)	0 (0)	50 (102)
Northern pike	0.0380 (0.0148)	254 (267)	1,088 (1,022)	3,005 (1,805)	3,100 (1,679)	210 (274)	0 (0)	7,657 (2,696)
Muskellunge	0.0005 (0.0008)	35 (68)	0 (0)	0 (0)	0 (0)	66 (139)	0 (0)	101 (155)
White sucker	0.0003 (0.0005)	17 (28)	0 (0)	50 (102)	0 (0)	0 (0)	0 (0)	67 (106)
Redhorses	0.0061 (0.0117)	20 (30)	1,150 (2,330)	0 (0)	0 (0)	0 (0)	48 (104)	1,218 (2,333)
Yellow bullhead	0.0026 (0.0037)	0 (0)	532 (746)	0 (0)	0 (0)	0 (0)	0 (0)	532 (746)
Brown bullhead	0.0047 (0.0045)	13 (29)	209 (424)	0 (0)	58 (117)	452 (635)	216 (468)	948 (904)
Channel catfish	0.0014 (0.0012)	226 (219)	48 (97)	0 (0)	0 (0)	0 (0)	0 (0)	274 (240)
Rockbass	0.0318 (0.0198)	718 (949)	1,524 (2,803)	1,119 (1,538)	1,766 (1,669)	1,146 (860)	120 (201)	6,393 (3,833)
Pumpkinseed	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	20 (40)	41 (62)	0 (0)	61 (74)
Smallmouth bass	0.0302 (0.0139)	18 (33)	149 (189)	408 (464)	3,144 (2,129)	2,074 (1,379)	277 (360)	6,070 (2,611)
Black crappie	0.0006 (0.0009)	39 (81)	88 (179)	0 (0)	0 (0)	0 (0)	0 (0)	127 (196)

Appendix 43.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Yellow perch	0.1549 (0.0879)	852 (827)	6,115 (11,658)	3,986 (4,410)	17,939 (11,322)	2,276 (1,654)	13 (21)	31,181 (16,940)
Walleye	0.0778 (0.0329)	7,570 (5,181)	6,467 (3,037)	236 (286)	934 (979)	351 (321)	96 (156)	15,654 (6,102)
Lake herring	0.0715 (0.0518)	0 (0)	0 (0)	14,401 (10,158)	0 (0)	0 (0)	0 (0)	14,401 (10,158)
Total	0.4216 (0.1275)	9,762 (5,344)	17,370 (12,660)	23,255 (11,339)	27,078 (11,804)	6,639 (2,446)	770 (652)	84,874 (21,521)
Angler hours		33,679 (21,136)	44,467 (12,998)	54,353 (15,555)	48,649 (13,522)	18,479 (7,505)	1,684 (1,135)	201,311 (33,138)
Angler trips		8,943 (5,695)	10,392 (3,093)	13,884 (4,132)	10,674 (3,063)	4,078 (1,702)	621 (378)	48,592 (8,455)
Angler days		7,311 (4,689)	10,099 (3,031)	11,898 (3,621)	9,977 (2,912)	3,551 (1,493)	603 (372)	43,439 (7,425)

Appendix 44.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake George to Green Point boat fishery on the St. Mary's River, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Northern pike	0.2311 (0.1096)	5,871 (3,928)	7,773 (4,130)	0 (0)	0 (0)	13,644 (5,700)
Rockbass	0.1810 (0.3185)	8,611 (18,462)	2,071 (2,599)	0 (0)	0 (0)	10,682 (18,644)
Pumpkinseed	0.0021 (0.0043)	0 (0)	124 (253)	0 (0)	0 (0)	124 (253)
Bluegill	0.1314 (0.2833)	7,758 (16,633)	0 (0)	0 (0)	0 (0)	7,758 (16,633)
Smallmouth bass	0.0049 (0.0100)	0 (0)	291 (588)	0 (0)	0 (0)	291 (588)
Yellow perch	0.0235 (0.0363)	931 (1,996)	457 (718)	0 (0)	0 (0)	1,388 (2,121)
Walleye	0.0016 (0.0033)	0 (0)	93 (189)	0 (0)	0 (0)	93 (189)
Total	0.5756 (0.4545)	23,171 (25,237)	10,809 (4,977)	0 (0)	0 (0)	33,980 (25,723)
Angler hours		25,650 (10,948)	33,382 (7,463)	38,376 (11,853)	41,084 (11,916)	59,032 (13,250)
Angler trips		5,668 (2,601)	9,508 (2,257)	0 (0)	0 (0)	15,176 (3,444)
Angler days		5,668 (2,601)	9,508 (2,257)	0 (0)	0 (0)	15,176 (3,444)

Appendix 45.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the area from the rapids in Sault Ste. Marie to Neebish Island on the St. Mary's River, by all modes of sportfishing, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.1436 (0.1124)	0 (0)	0 (0)	0 (0)	525 (503)	10,451 (8,333)	0 (0)	10,976 (8,348)
Coho salmon	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	5 (10)	0 (0)	5 (10)
Chinook salmon	0.0026 (0.0025)	0 (0)	0 (0)	0 (0)	0 (0)	125 (128)	77 (137)	202 (187)
Rainbow trout	0.0025 (0.0037)	0 (0)	0 (0)	64 (131)	13 (27)	0 (0)	112 (242)	189 (277)
Northern pike	0.0134 (0.0121)	0 (0)	208 (431)	0 (0)	796 (792)	20 (42)	0 (0)	1,024 (903)
Brown bullhead	0.0210 (0.0435)	0 (0)	0 (0)	0 (0)	1,609 (3,319)	0 (0)	0 (0)	1,609 (3,319)
Smallmouth bass	0.0022 (0.0040)	0 (0)	0 (0)	0 (0)	169 (308)	0 (0)	0 (0)	169 (308)
Yellow perch	0.0392 (0.0571)	0 (0)	0 (0)	0 (0)	2,810 (4,312)	189 (400)	0 (0)	2,999 (4,331)
Walleye	0.0028 (0.0035)	0 (0)	0 (0)	0 (0)	201 (264)	16 (34)	0 (0)	217 (266)
Lake whitefish	0.0027 (0.0053)	0 (0)	0 (0)	191 (394)	13 (27)	0 (0)	0 (0)	204 (395)
Total	0.2301 (0.1380)	0 (0)	208 (431)	255 (415)	6,136 (5,537)	10,806 (8,344)	189 (278)	17,594 (10,036)
Angler hours		8,365 (3,788)	16,768 (6,075)	8,435 (4,533)	19,099 (6,178)	21,779 (9,412)	2,006 (1,085)	76,452 (14,133)
Angler trips		2,390 (1,082)	4,260 (2,290)	3,793 (2,422)	4,256 (1,453)	4,075 (1,818)	853 (544)	19,627 (4,242)
Angler days		2,390 (1,082)	4,260 (2,290)	3,793 (2,422)	4,256 (1,453)	4,075 (1,818)	853 (544)	19,627 (4,242)

Appendix 46.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Bear River (Emmet County) shore fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month				Season
		May	Jun	Jul	Aug	
Rainbow trout	0.1163 (0.1018)	267 (226)	0 (0)	0 (0)	0 (0)	267 (226)
Brook trout	0.0440 (0.0898)	101 (205)	0 (0)	0 (0)	0 (0)	101 (205)
White sucker	0.5512 (1.1200)	1,265 (2,555)	0 (0)	0 (0)	0 (0)	1,265 (2,555)
Total	0.7115 (1.1322)	1,633 (2,573)	0 (0)	0 (0)	0 (0)	1,633 (2,573)
Angler hours		2,295 (511)	0 (0)	0 (0)	1,128 (246)	2,295 (511)
Angler trips		886 (323)	0 (0)	0 (0)	0 (0)	886 (323)
Angler days		762 (319)	0 (0)	0 (0)	0 (0)	762 (319)

Appendix 47.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Dead River (Marquette County) shore fishery, 1991. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month					Season	
		May	Jun	Jul	Aug	Sep		
Pink salmon	0.0128 (0.0181)	0 (0)	0 (0)	0 (0)	0 (0)	36 (52)	71 (142)	107 (151)
Coho salmon	0.0234 (0.0227)	0 (0)	0 (0)	0 (0)	0 (0)	55 (79)	141 (172)	196 (189)
Chinook salmon	0.0584 (0.0281)	0 (0)	0 (0)	0 (0)	0 (0)	280 (157)	209 (169)	489 (231)
Lake whitefish	0.0061 (0.0123)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (103)	51 (103)
Round whitefish	0.0061 (0.0123)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (103)	51 (103)
Total	0.1067 (0.0445)	0 (0)	0 (0)	0 (0)	0 (0)	371 (183)	523 (315)	894 (364)
Angler hours		0 (0)	0 (0)	0 (0)	0 (0)	5,242 (628)	3,135 (392)	8,377 (740)
Angler trips		0 (0)	0 (0)	0 (0)	0 (0)	2,197 (347)	1,498 (267)	3,695 (438)
Angler days		0 (0)	0 (0)	0 (0)	0 (0)	1,389 (239)	1,160 (222)	2,549 (326)

Appendix 48.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Little Bay de Noc ice fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Brown trout	0.0018 (0.0012)	25 (37)	211 (248)	236 (197)	472 (319)
Splake	0.0033 (0.0031)	10 (21)	601 (760)	247 (252)	858 (801)
Rainbow smelt	0.0034 (0.0073)	0 (0)	0 (0)	875 (1,887)	875 (1,887)
Northern pike	0.0084 (0.0064)	845 (611)	1,198 (1,509)	110 (155)	2,153 (1,635)
White sucker	0.0026 (0.0048)	53 (106)	614 (1,231)	0 (0)	667 (1,236)
Rockbass	0.0015 (0.0024)	80 (127)	0 (0)	294 (588)	374 (602)
White crappie	0.0000 (0.0000)	0 (0)	10 (20)	0 (0)	10 (20)
Yellow perch	0.9699 (0.2118)	87,628 (18,878)	96,658 (22,697)	65,518 (36,677)	249,804 (47,082)
Walleye	0.0180 (0.0060)	2,499 (1,100)	2,113 (941)	23 (49)	4,635 (1,448)
Burbot	0.0006 (0.0008)	41 (60)	115 (216)	6 (12)	162 (224)
Total	1.0095 (0.2145)	91,181 (18,921)	101,520 (22,815)	67,309 (36,732)	260,010 (47,199)
Angler hours		87,331 (12,188)	127,817 (16,536)	42,411 (19,649)	257,559 (28,427)
Angler trips		23,306 (3,528)	31,219 (4,373)	10,421 (4,971)	64,946 (7,502)
Angler days		19,362 (2,996)	26,130 (3,794)	8,976 (4,377)	54,468 (6,521)

Appendix 49.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Keweenaw Bay ice fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month		Season
		Feb	Mar	
Coho salmon	0.0187 (0.0217)	169 (166)	474 (720)	643 (739)
Chinook salmon	0.0199 (0.0223)	204 (218)	482 (729)	686 (761)
Rainbow trout	0.0026 (0.0027)	41 (64)	50 (69)	91 (94)
Atlantic salmon	0.0000 (0.0000)	0 (0)	1 (3)	1 (3)
Brown trout	0.0009 (0.0010)	6 (8)	24 (31)	30 (32)
Lake trout	0.0758 (0.0737)	2,189 (2,445)	420 (546)	2,609 (2,505)
Rainbow smelt	0.0931 (0.1278)	926 (848)	2,280 (4,290)	3,206 (4,373)
Yellow perch	0.0315 (0.0226)	1,033 (759)	53 (61)	1,086 (761)
Lake whitefish	0.0100 (0.0115)	235 (322)	110 (226)	345 (393)
Round whitefish	0.0162 (0.0222)	50 (92)	507 (751)	557 (757)
Burbot	0.0005 (0.0008)	16 (25)	0 (0)	16 (25)
Siscowet lake trout	0.0535 (0.0232)	1,222 (593)	620 (456)	1,842 (748)

Appendix 49.—Continued:

Species	Total catch per hour	Month		Season
		Feb	Mar	
Total	0.3228 (0.1624)	6,091 (2,796)	5,021 (4,537)	11,112 (5,329)
Angler hours		19,705 (3,675)	14,722 (3,719)	34,427 (5,228)
Angler trips		6,201 (1,739)	4,503 (1,354)	10,704 (2,204)
Angler days		6,201 (1,739)	4,503 (1,354)	10,704 (2,204)

Appendix 50.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Marquette winter boat fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Mar	Season
Coho salmon	0.2336 (0.0645)	1,844 (450)	1,844 (450)
Chinook salmon	0.0016 (0.0017)	13 (14)	13 (14)
Rainbow trout	0.0003 (0.0008)	2 (5)	2 (5)
Atlantic salmon	0.0011 (0.0018)	9 (15)	9 (15)
Brown trout	0.0062 (0.0052)	49 (41)	49 (41)
Splake	0.0011 (0.0023)	9 (19)	9 (19)
Lake whitefish	0.0352 (0.0289)	278 (225)	278 (225)
Round whitefish	0.0006 (0.0008)	5 (7)	5 (7)
Other	0.0044 (0.0036)	35 (28)	35 (28)
Total	0.2843 (0.0739)	2,244 (506)	2,244 (506)
Angler hours		7,894 (1,022)	7,894 (1,022)
Angler trips		2,852 (386)	2,852 (386)
Angler days		2,248 (333)	2,248 (333)

Appendix 51.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Munising Bay ice fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month		Season
		Feb	Mar	
Coho salmon	0.0648 (0.0220)	604 (358)	1,620 (604)	2,224 (702)
Rainbow trout	0.0015 (0.0030)	0 (0)	53 (107)	53 (107)
Lake trout	0.0161 (0.0110)	234 (159)	317 (335)	551 (371)
Rainbow smelt	0.6127 (0.3707)	606 (882)	20,406 (12,407)	21,012 (12,438)
Yellow perch	0.0156 (0.0240)	475 (816)	60 (87)	535 (821)
Lake whitefish	0.1709 (0.0658)	4,755 (1,906)	1,107 (964)	5,862 (2,136)
Round whitefish	0.0112 (0.0165)	384 (562)	0 (0)	384 (562)
Burbot	0.0004 (0.0008)	0 (0)	13 (26)	13 (26)
Other	0.0169 (0.0150)	531 (503)	49 (71)	580 (508)
Total	0.9101 (0.3872)	7,589 (2,408)	23,625 (12,465)	31,214 (12,695)
Angler hours		17,020 (3,395)	17,276 (2,608)	34,296 (4,281)
Angler trips		3,718 (746)	4,120 (655)	7,838 (993)
Angler days		3,401 (701)	3,856 (641)	7,257 (950)

Appendix 52.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Tawas Bay ice fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Rainbow trout	0.0012 (0.0023)	0 (0)	0 (0)	65 (124)	65 (124)
Brown trout	0.0002 (0.0004)	0 (0)	0 (0)	10 (22)	10 (22)
Northern pike	0.0375 (0.0179)	1,049 (616)	946 (599)	5 (12)	2,000 (859)
Yellow perch	1.0614 (0.3740)	19,392 (8,026)	26,301 (11,787)	10,846 (7,653)	56,539 (16,184)
Walleye	0.0015 (0.0022)	0 (0)	41 (83)	40 (82)	81 (117)
Round whitefish	0.0085 (0.0163)	0 (0)	34 (49)	421 (865)	455 (866)
Burbot	0.0003 (0.0007)	0 (0)	0 (0)	15 (33)	15 (33)
Total	1.1107 (0.3807)	20,441 (8,050)	27,322 (11,803)	11,402 (7,703)	59,165 (16,231)
Angler hours		14,954 (4,566)	27,193 (8,636)	11,119 (4,943)	53,266 (10,948)
Angler trips		4,845 (1,438)	8,983 (3,053)	3,609 (1,598)	17,437 (3,734)
Angler days		4,492 (1,334)	8,325 (2,804)	3,246 (1,411)	16,063 (3,411)

Appendix 53.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Au Gres ice fishery, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Northern pike	0.0055 (0.0078)	248 (348)	0 (0)	0 (0)	248 (348)
White sucker	0.0019 (0.0038)	0 (0)	0 (0)	84 (169)	84 (169)
Yellow perch	2.1929 (0.8470)	42,633 (24,854)	19,889 (7,568)	36,605 (19,736)	99,127 (32,627)
Walleye	0.0146 (0.0136)	0 (0)	626 (600)	35 (63)	661 (603)
Total	2.2149 (0.8495)	42,881 (24,856)	20,515 (7,592)	36,724 (19,737)	100,120 (32,634)
Angler hours		17,747 (6,664)	16,210 (3,200)	11,246 (5,368)	45,203 (9,136)
Angler trips		5,013 (1,948)	4,837 (1,019)	3,115 (1,420)	12,965 (2,617)
Angler days		4,117 (1,674)	4,501 (982)	2,679 (1,206)	11,297 (2,285)

Appendix 54.—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, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Northern pike	0.0006 (0.0012)	0 (0)	44 (89)	0 (0)	44 (89)
White perch	0.0006 (0.0009)	14 (30)	34 (69)	0 (0)	48 (75)
Rockbass	0.0003 (0.0007)	23 (50)	0 (0)	0 (0)	23 (50)
Pumpkinseed	0.0061 (0.0109)	64 (92)	411 (835)	0 (0)	475 (840)
Bluegill	0.0007 (0.0015)	51 (108)	0 (0)	0 (0)	51 (108)
Black crappie	0.0020 (0.0026)	69 (96)	88 (179)	0 (0)	157 (203)
Yellow perch	1.9982 (1.0126)	25,116 (15,645)	53,678 (22,832)	76,945 (63,605)	155,739 (69,366)
Walleye	0.0099 (0.0071)	0 (0)	0 (0)	772 (520)	772 (520)
Total	2.0184 (1.0150)	25,337 (15,646)	54,255 (22,848)	77,717 (63,607)	157,309 (69,373)
Angler hours		24,814 (9,888)	30,049 (7,105)	23,075 (14,371)	77,938 (18,836)
Angler trips		7,176 (2,781)	7,623 (1,887)	6,554 (4,126)	21,353 (5,322)
Angler days		6,131 (2,328)	6,379 (1,611)	5,011 (3,309)	17,521 (4,355)

Appendix 55.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the ice fishery in the area from Essexville to the mouth of the Saginaw River, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Yellow perch	0.5593 (0.8417)	800 (1,147)	157 (225)	0 (0)	957 (1,169)
Walleye	0.0105 (0.0262)	18 (42)	0 (0)	0 (0)	18 (42)
Total	0.5698 (0.8476)	818 (1,148)	157 (225)	0 (0)	975 (1,170)
Angler hours		1,409 (1,483)	302 (253)	504 (688)	1,711 (1,504)
Angler trips		427 (438)	216 (205)	0 (0)	643 (484)
Angler days		410 (433)	204 (202)	0 (0)	614 (478)

Appendix 56.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the ice fishery in the area from Quanicassee to Sebewaing, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Rainbow smelt	0.0001 (0.0002)	0 (0)	6 (12)	0 (0)	6 (12)
White perch	0.0110 (0.0110)	115 (185)	378 (470)	22 (47)	515 (507)
Yellow perch	2.0775 (0.7189)	26,254 (12,644)	59,846 (23,485)	11,109 (7,912)	97,209 (27,821)
Walleye	0.0063 (0.0072)	35 (37)	225 (324)	34 (45)	294 (329)
Total	2.0949 (0.7209)	26,404 (12,645)	60,455 (23,492)	11,165 (7,912)	98,024 (27,828)
Angler hours		8,730 (3,649)	32,452 (7,933)	5,610 (2,570)	46,792 (9,102)
Angler trips		2,161 (913)	5,877 (1,457)	1,898 (795)	9,936 (1,894)
Angler days		1,824 (778)	5,700 (1,421)	1,509 (670)	9,033 (1,753)

Appendix 57.—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, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Northern pike	0.0053 (0.0084)	575 (901)	0 (0)	0 (0)	575 (901)
White perch	0.0030 (0.0021)	72 (84)	113 (105)	137 (166)	322 (214)
White bass	0.0007 (0.0012)	68 (139)	13 (26)	0 (0)	81 (141)
Largemouth bass	0.0002 (0.0004)	22 (45)	0 (0)	0 (0)	22 (45)
White crappie	0.0039 (0.0050)	0 (0)	364 (518)	56 (113)	420 (530)
Black crappie	0.0037 (0.0044)	75 (155)	0 (0)	332 (447)	407 (473)
Yellow perch	3.2853 (1.1402)	152,999 (68,817)	146,433 (75,295)	58,221 (23,745)	357,653 (104,733)
Walleye	0.0000 (0.0000)	0 (0)	0 (0)	5 (9)	5 (9)
Total	3.3021 (1.1419)	153,811 (68,823)	146,923 (75,297)	58,751 (23,750)	359,485 (104,739)
Angler hours		50,326 (16,119)	44,942 (11,197)	13,597 (5,098)	108,865 (20,278)
Angler trips		13,211 (5,052)	9,055 (2,290)	2,923 (1,083)	25,189 (5,652)
Angler days		12,911 (5,012)	8,188 (2,135)	2,565 (968)	23,664 (5,533)

Appendix 58.—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, 1992. Bounds on the error of estimation in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Pink salmon	0.0001 (0.0002)	0 (0)	3 (5)	0 (0)	3 (5)
Rainbow trout	0.0001 (0.0003)	0 (0)	0 (0)	2 (5)	2 (5)
Brown trout	0.0001 (0.0002)	0 (0)	0 (0)	2 (4)	2 (4)
Northern pike	0.0000 (0.0000)	0 (0)	0 (0)	1 (3)	1 (3)
White sucker	0.0075 (0.0123)	0 (0)	0 (0)	175 (284)	175 (284)
Channel catfish	0.0000 (0.0000)	0 (0)	0 (0)	1 (2)	1 (2)
White perch	0.0090 (0.0062)	87 (99)	111 (90)	12 (18)	210 (135)
Black crappie	0.0024 (0.0027)	0 (0)	0 (0)	55 (60)	55 (60)
Yellow perch	3.9956 (1.9869)	56,113 (37,230)	32,401 (13,717)	4,872 (4,468)	93,386 (39,927)
Walleye	0.0007 (0.0016)	16 (36)	0 (0)	0 (0)	16 (36)
Total	4.0155 (1.9895)	56,216 (37,230)	32,515 (13,717)	5,120 (4,477)	93,851 (39,928)
Angler hours		11,367 (4,716)	10,555 (3,354)	1,450 (1,318)	23,372 (5,935)
Angler trips		3,043 (1,254)	2,944 (986)	364 (342)	6,351 (1,631)
Angler days		2,749 (1,154)	2,276 (784)	264 (240)	5,289 (1,416)