

Wisconsin's 2002 open water sportfishing effort and harvest from Lake Michigan and Green Bay

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Abstract - This paper documents the sport fishery in Wisconsin waters of Lake Michigan and Green Bay from March 1, 2002 through December 31, 2002. Fishing effort, harvest and harvest-rates were determined from 1) a stratified-random creel survey of launched-boat, pier, shore and stream anglers; 2) a randomized mail survey of moored-boat anglers; and 3) mandatory charter-boat reporting. Anglers spent an estimated 2,945,848 hours fishing on Lake Michigan and Green Bay during 2002 with boat-angler effort at 2,103,375 hours, or 71% of the total hours. The estimated harvest of 808,616 fish was dominated by Chinook salmon (275,454), yellow perch (242,309), coho salmon (102,313), and rainbow trout (74,031). The boat fishery, comprised of launched-boat, moored-boat and charter-boat anglers, dominated the fishery by harvesting an estimated 673,223 fish which was 83% of the total harvest and was dominated by Chinook salmon (228,457), yellow perch (191,745), coho salmon (95,727), and rainbow trout (68,316). Pier, shore and stream anglers harvested primarily yellow perch, Chinook salmon, brown trout, and coho salmon. Overall harvest-rates were highest for Chinook salmon at 0.0935 fish/hour and yellow perch at 0.0823 fish/hour.



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Before the 1920s, fish biomass and abundance in Lake Michigan was dominated by lake whitefish (*Coregonus clupeaformis*), lake trout (*Salvelinus namaycush*), bloater chubs (*C. hoyi*), and yellow perch (*Perca flavescens*). During the 1920s to 1950s, the accidental introductions of several exotic species, including the rainbow smelt (*Osmerus mordax*), sea lamprey (*Petromyzon marinus*) and alewife (*Alosa pseudoharengus*), had a major impact on the fish populations in Lake Michigan. These exotic species, along with a deterioration of spawning habitat and increased commercial fishing pressure, were responsible for the decline of native fish populations (Hansen *et al.* 1990).

In response to the increasing alewife population and declining Lake Michigan fishery, the Wisconsin Department of Natural Resources (WDNR) in 1963 experimentally introduced 9,000 rainbow trout into several Door Co. tributaries with a twofold purpose: 1) to control or limit the abundant alewife population and 2) to provide a sport fishery. This initial stocking, and efforts by other states (see Keller *et al.* 1990) proved to be very successful and Wisconsin's Lake Michigan stocking program expanded to include trouts (*Salmo* spp.), chars (*Salvelinus* spp.) and other pacific salmon (*Oncorhynchus* spp.). The stocking of non-native salmonids provided a practical way to control the alewife population and created a valuable sport fishery.

In order to manage the Lake Michigan sport fishery, assessments are conducted on both forage and predator-fish stocks. Since 1973, the US Fish and Wildlife Service has conducted bottom-trawl surveys in Lake Michigan to estimate the abundance of forage fish. These trawl estimates are based on a series of ten-minute tows along the contour of nine depths at each of seven index-stations (Eck 1992). Since 1969, WDNR has monitored the Lake Michigan sport fishery with a contact creel-survey. This provides a continuous record of harvest, harvest-rates and biological data of the harvest.

This paper reports the results of the annual survey of anglers fishing the Wisconsin waters of Lake Michigan. Data were collected from anglers at ramps, piers, shores and streams and from

moored-boat and charter-boat anglers. Estimates were then calculated for fishing effort, harvest and harvest-rates for 2002.

STUDY AREA AND METHODS

Geographical Area

Wisconsin's share of Lake Michigan is second only to Michigan and encompasses 495 miles of shoreline and 25 tributaries (Figure 1). The Wisconsin waters of Lake Michigan include Green Bay and portions of distinct north and south lake basins. For a complete description see Eggold (1995).

Creel-Survey Design

The open-water creel survey was conducted using a modified access-point design called the Wisconsin Hybrid. It differs from a true access-point design in that creel clerks visit several sites per site group. The fishing season for the open-water creel survey from March 15th to October 31st is stratified by statistical management unit (SMU) (i.e. counties), fishery types (i.e. ramp, pier, shore and stream), statistical survey periods (i.e. months or groups of months) and day type (i.e. weekday, weekend/holiday). Statistical management units were assigned based primarily on county lines and include units such as Kenosha, Racine, Milwaukee, etc. Survey sites within each SMU were placed into site groups. There may be one or several site groups in each SMU, depending on the time of year and SMU size. Site groups were selected randomly without replacement on a daily basis, and survey sites within a site group were visited randomly. Surveys were conducted on every weekend day and holiday and on either two or three days during the week, depending on the month. Each workday was comprised of two shifts, an AM and PM shift. Combined together, the two shifts covered the entire angling day. The clerk worked one shift per workday. The shifts were equal in duration, did not overlap and were sampled with equal probability. An example follows.

EXAMPLE:

Statistical Management Unit:	MILWAUKEE
Site Groups	MILW. SOUTH MILW. NORTH
Survey Sites	S. Shore Ramps McKinley Ramps
	S. Shore Pier McKinley Pier
	Oak Creek Milwaukee River
	Grant Park Riverfront Ramp
	S. Metro Pier N. City Shoreline

Three types of data were collected for each site sampled: counts of anglers, boat trailers or cars for effort, interviews of anglers or parties for harvest-rates and biological data on harvested fish.

Instantaneous counts were made by creel clerks at all sites in the survey. The type of count was dependent on the type of fishery. At most ramp sites, boat trailers were counted. At most pier, shore and stream sites, anglers were counted. However, due to poor access points on some tributaries, car counts were used. Car and trailer counts were corrected by the average number of anglers per car or boat from interview data. The time the count was completed and the count per site were recorded on the activity-count form.

Angler parties were interviewed at the completion of their fishing trips. Anglers were asked if they were state residents, what time they started their fishing trip, what they fished for and the number of caught and harvested fish. Biological information was taken on harvested fish, including species, length, weight, fin clip and tag numbers. Standard-weight calculations follow Hansen (1986).

Fishing-effort calculations. Fishing-effort estimates (expressed in angler hours) were derived from instantaneous counts of anglers at pier, breakwater, shore and stream sites and from counts of boat trailers at boat ramps and from counts of cars at stream sites. Counts were made at randomly-computed times at each site during each visit. We estimated angler effort and its variance within each stratum (SMU, fishery type, month and day type). The variance of angler effort includes variability among days and variability within days. Formulas for two-stage surveys were used to calculate variance. For a complete description see Eggold (1995).

Harvest and harvest-rate calculations. Harvest estimates were derived from interviews of anglers at all sites. The number of fish harvested and the hours fished from each interview were summed over all interviews in a stratum. The ratio of the two sums and the variance of the ratio were then calculated. The ratio was expanded by effort and summed across day types to estimate harvest. The harvest-rate was obtained by dividing harvest by effort. For a detailed description see Eggold (1995).

Moored-Boat Survey Design

Anglers who moored their boat on Lake Michigan (including Green Bay) were surveyed by questionnaire beginning in 1988. The earlier surveys (1982-1985) were based on voluntary information from moored-boat owners who received their survey form from sport-fishing clubs. However, during 1988, creel clerks were asked to compile a list of boat-registration numbers from boats moored on Lake Michigan during a day of bad weather. These numbers were used to develop a list of boat owners from the WDNR master file of registered boats. Beginning in 1988, a mail survey was sent to all moored-boat owners to obtain information on 1) whether they moored their boat on Lake Michigan; 2) the port of call; 3) whether the boat was used for fishing during that week; 4) the number of days fished; 5) number of anglers in the fishing party; 6) number of hours fished; and 7) the number of each species caught on each day during the past seven-day period.

Fishing effort and harvest calculations. Fishing effort was calculated by harbor and month for each month of the survey. Party size and number of hours fished on each trip were multiplied, summed for each month and harbor, and divided by the number of responses received for the month. This total was multiplied by the boat count and the number of days in the month to obtain estimated angler-hours for the entire moored-boat population. Harvest estimates were calculated by harbor and month for each species based on harvest per boat. The harvest data were expanded similarly to effort estimates.

Harvest-rate calculations. Harvest-rate, the number of fish harvested per angler hour, was obtained by

dividing the reported harvest of each species by fishing effort.

This type of survey is biased because interested and successful anglers tend to return the survey at a higher rate than other moored-boat owners. Therefore, estimated harvest will tend to be an overestimate of actual harvest but should be comparable among years and locations. For a detailed description of the calculations and formulas see Eggold (1993).

Charter-Boat Census Design

At the beginning of the fishing season, a packet of information was sent to each licensee. This packet included instructions on how to properly report chartered trips, a sample of a completed monthly report, grid map of Lake Michigan, list of wardens, coded-wire tag collection stations, fin-clip list, sea lamprey information and a supply of monthly-report forms.

Each license holder was required by law to report all paid charters. The report for each calendar month was due by the 10th of the following month to the WDNR Plymouth Field Station. If a report was late or incorrectly filled out a warning letter was sent. Subsequent violations were referred directly to a Wisconsin Conservation Warden.

The information obtained from each trip included: license number, fishing port, date of fishing trip, grid fished, number of resident and nonresident anglers, number of fish harvested, time trip started (a.m., p.m., evening), number of lines fished and number of hours fished. This information had to be recorded within half an hour after completing each trip and returning to the dock or shore. The number of lake trout, coho salmon, brown trout, steelhead, Chinook salmon and other species harvested, any tag numbers and the number of lampreys attached to Chinook salmon and lake trout had to be recorded prior to midnight of the day of each trip. The data were received at the Plymouth Field Station, entered and checked for errors.

RESULTS

Fishing effort in Wisconsin waters of Lake Michigan and Green Bay was estimated at 2,945,848 (\pm 46,743) hours during the 2002 open-water season of March 1 - December 31 (Table 1). Effort showed a slight increase over 2001, and was only 0.15% below the ten-year average (Figure 2). Effort was 22% below the average in Green Bay, while in Lake Michigan, effort was 9% above the average. Despite the decline, Green Bay anglers had the most fishing effort of any SMU, at 703,539 (\pm 25,846) hours or 24% of all angler hours for 2002. Kewaunee County anglers were second at 423,035 (\pm 20,511) hours.

Angler hours were disproportionately spread among the four fishery types. Boat anglers spent 2,103,375 (\pm 42,650) hours or 71% of all angler hours fishing on Lake Michigan or Green Bay (Figure 2). Stream anglers fished the second most at 369,285 (\pm 13,646) hours or 13% of the total. Shore and pier anglers fished 267,930 (\pm 10,884) and 205,258 (\pm 7,822) hours respectively. These were the highest effort-estimates since 1992 for shore and 1995 for pier.

Anglers harvested an estimated 527,027 (\pm 8,220) salmonids during the 2002 season (Table 2, Figure 3). Chinook salmon dominated the 2002 salmonid harvest, comprising 275,454 (\pm 6,522) fish or 52% of the total. This was the highest Chinook harvest since 1987, fueled mainly by an extremely abundant year-class that was stocked in 1999. Coho salmon harvest was second to Chinook at 102,313 (\pm 3,546), 19% of the total. Rainbow trout harvest was 74,031 (\pm 2,250) fish or 14% of the total. Lake trout harvest declined to 39,865 (\pm 1,463), 8% of the total. Brown trout comprised 7% of the harvest at 35,220 (\pm 2,290), followed by brook trout at 144 (\pm 61).

The combined harvest-rate for salmonids of 0.1789 was the highest of the past ten years, and well above the ten-year average of 0.1457 (Table 2, Figure 3).

Anglers harvested an estimated 242,309 (\pm 17,398) yellow perch during 2002 (Table 3). Anglers harvested 144,562 (\pm 15,661) yellow perch in Green Bay, continuing a long-term decline (Table 3, Figure 4). The harvest-rate was 0.2055 fish/hour. Lake Michigan anglers harvested 97,747 (\pm 7,578)

yellow perch and had a harvest-rate of 0.0436 fish/hour (Table 3, Figure 4). Yellow perch harvest from all areas combined was second only to Chinook salmon, with an overall harvest-rate of 0.0823 fish/hour (Table 4). As usual, the majority of the perch harvest (79%) was from boats, but the pier fishery had the highest general harvest-rate for perch at 0.0989 fish/hour. The majority of the harvest took place in the summer months from June through September.

Perch harvest remained well (59%) below the ten-year average of 591,231 (\pm 43,058, Table 3, Figure 4). On Lake Michigan perch harvest was 97,747 (\pm 7,578), which was 38% below the ten-year average and 27% below the 2001 harvest. Green Bay experienced a 30% decline from 2001 perch harvest to 144,562 (\pm 21,110). This was the lowest Green Bay perch harvest of the last ten years, and was 67% below average (Table 3).

Perch harvest continues to be focused on the 1998 year-class, which first recruited to the sport fishery during 2000 at age 2. Age was assigned using the anal spines of 418 Lake Michigan and 129 Green Bay angler-caught yellow perch during 2002. The 1998 year-class represented 70.5% of the total on Green Bay and 93.5% on Lake Michigan. This is corroborated by DNR's winter 2002-03 assessment catch of Lake Michigan perch, where 90% were from the 1998 year-class.

Management actions currently in place to protect the dwindling yellow perch population include: 1) closure of the Lake Michigan commercial season for yellow perch; 2) a 20,000 pound commercial quota for yellow perch in Green Bay (down from 200,000 pounds in 2000); and 3) a drop in the sport bag to five per day with a May 1 to June 15 closure on Lake Michigan and ten per day with a March 16 to May 19 closure on Green Bay. These measures are intended to protect the remaining yellow perch stocks by decreasing harvest.

The Lake Michigan yellow perch sport fishing season was changed in 2002, adopted by the Natural Resources Board first by Emergency Order, then through a Permanent Order. Previously, perch fishing in Lake Michigan had been closed from June 1 to 30, a traditional high-harvest month, but most spawning is complete by early June. The change

closes the season from May 1 to June 15, to limit the harvest of pre-spawn and spawning perch while allowing harvest in late June, after the perch have laid their eggs.

The estimated harvest of 12 major species was 808,616 (\pm 19,537) fish for 2002 (Table 4). The majority of the harvest came from boat anglers (Table 5) who harvested 673,223 (\pm 18,656) fish or 83% of the total. Pier, shore and stream anglers accounted for 36,329 (\pm 2,758), 40,933 (\pm 2,768) and 58,131 (\pm 4,288) fish respectively or 4%, 5% and 7% of the total (Tables 6-8).

The coho harvest of 102,313 was the highest since 1997 and 21% above the ten-year average. Coho salmon were the second-most abundant salmonid and third-most abundant species harvested during 2002. Overall coho salmon harvest-rates were 0.0347 fish/hour (Table 4). Boat anglers harvested 94% of all coho salmon (95,727) and had a harvest-rate of 0.0455 fish/hour (Table 5). The remaining harvest was divided among the pier, shore and stream anglers at 1,548, 1,790 and 3,248 fish, respectively (Tables 6-8). Biological data collected on angler-caught coho salmon during 2002 show a mean weight of 3.5 (\pm 2.0) pounds, 14% below the ten-year average (Table 9). Mean length was 3% below the ten-year average at 21.0 (\pm 3.6) inches, while standard weight of a 22-inch coho was 3.5 pounds, 8% below the ten-year average (Table 9).

Anglers harvested 275,454 (\pm 6,522) Chinook salmon during 2002, the highest harvest since 1987 and 76% above the ten-year average of 156,121 (Table 2). The overall harvest-rate was 0.0935 fish/hour. Boat anglers harvested 228,457 (\pm 5,889) fish or 83% of all Chinook (Table 5). Boat angler harvest-rates were 0.1086. Pier, shore, and stream anglers also saw strong harvests of Chinook, primarily during the fall run. Despite sparse rainfall and low fall streamflows in the tributaries, record numbers of Chinook were seen at the egg-collection facilities. Average weight and length for Chinook salmon were above the ten-year average, at 12.3 (\pm 6.6) pounds and 30.7 (\pm 7.1) inches (Table 9). Standard weight of 9.4 pounds for a 30-inch Chinook was 5.5% below the ten-year average.

Rainbow trout harvest was 74,031 (\pm 2,250), 20%

below the ten-year average, but the highest harvest since 1999 (Table 2). The majority (92%) of the harvest occurred in the boat fishery with 68,316 (\pm 2,173) fish (Table 5). Stream anglers harvested 3,952 (\pm 531) steelhead with a harvest-rate of 0.0107 fish/hour (Table 8). Rainbow trout were similar in size to the ten-year average, at 6.2 (\pm 2.9) pounds and 25.8 (\pm 4.5) inches (Table 9). The standard weight of a 22-inch rainbow was 3.8 pounds.

Wisconsin anglers harvested 39,865 (\pm 1,463) lake trout in Lake Michigan, 28% above the low harvest of 2000, but still 22% below the ten-year average of 52,555. The overall harvest-rate was 0.0135 fish/hour (Table 4). Boat anglers harvested all but 112 lake trout (reported from pier and shore), with 39,753 (\pm 1,461). The boat harvest-rate was 0.0189 fish/hour (Table 5). Lake trout average size was 7.3 (\pm 3.2) pounds and 26.9 (\pm 3.4) inches with a standard weight of 5.3 pounds for a 25-inch lake trout (Table 9).

An estimated 35,220 (\pm 2,290) brown trout were harvested during 2002 from all surveyed areas, with an overall harvest-rate of 0.0120 fish/hour (Table 4). This was 15% below the ten-year average but 33% above the poor harvest of 2001. Boat anglers harvested the majority of brown trout, with 20,705 (\pm 1,914) and a harvest-rate of .0098 fish/hour (Table 5). Pier anglers harvested 4,183 (\pm 637) brown trout and had a harvest-rate of 0.0204 fish/hour (Table 6). This total was the highest of any species in the pier fishery except yellow perch. Brown trout harvest by shore anglers was behind yellow perch and Chinook salmon, at 8,305 (\pm 1,038) brown trout or 37% of the non-yellow perch shore harvest (Table 7). Shore harvest-rates were 0.0310 fish/hour. Brown trout biological data for 2002 were very similar to the ten-year average, with a mean size of 5.5 (\pm 3.2) pounds, 21.5 (\pm 4.6) inches (Table 9). The 2002 standard weight of 3.6 pounds for a 20-inch fish is slightly below the average.

Smallmouth bass harvest has declined considerably since 1997 and was 45% below the ten-year average at 18,561 (\pm 2,046) fish (Table 4). Overall harvest-rates were 0.0063 fish/hour. Again, boat anglers harvested the majority of the smallmouth bass, with 14,024 (\pm 1,926) fish or 76% of the total (Table 5). The boat harvest-rate was 0.0067

fish/hour.

White perch harvest was the lowest of the last ten years, at 1,829 (\pm 1,101), or 85% below the ten-year average harvest of 12,542 (Table 4). This is likely due to a cyclical drop in white perch population levels. Of the white perch harvested in 2002, 95% were in the boat fishery (Table 5).

Walleyes were the last species harvested in large numbers during the open-water fishing season. An estimated 16,039 (\pm 2,341) walleyes were harvested (Table 4). This is 30% below the ten-year average. Like smallmouth bass, walleye harvest-rates were lower than most salmonids at 0.0054 fish/hour. Boat anglers harvested 10,677 (\pm 2,246) walleyes (Table 5), followed by pier anglers with 3,297 (\pm 83, Table 6), stream anglers with 2,050 (\pm 655, Table 8), and shore anglers with only 15 (\pm 15, Table 7).

The remaining species, brook trout, splake and northern pike, comprised less than 0.4% of the total harvest and 0.5% of the non-yellow perch harvest (Table 4).

SUMMARY

Lake Michigan anglers spent an estimated 2,945,848 hours fishing on Lake Michigan and Green Bay with boat-angler effort of 2,103,375 hours or 71% of total hours. The estimated harvest of 808,616 fish was dominated by Chinook salmon (275,454) and to a lesser degree by yellow perch (242,309) and coho salmon (102,313).

Fishing effort during 2002 was 30% higher than the low observed during 2000, and almost equal to the ten-year average. Effort was 22% below the average in Green Bay, while in Lake Michigan, effort was 9% above the average. Green Bay has more shallow areas that are impacted by current low water levels, and reduced catch rates for yellow perch may have also contributed to the reduction in effort.

Mean lengths and weights of most salmonids were below average, except for Chinook salmon. Chinooks lengths and weights were 8% and 14% above the ten-year average, respectively. The

standard weights for all salmonids were slightly below their ten-year averages (Table 9). Harvest of Chinook and coho salmon were above average, and Chinook harvest was the highest since 1987 (Table 2). During 2002, the abundant adult Chinook population may have out-competed other species for food, as evidenced by small sizes of coho, steelhead, and one-year-old Chinook. A reduced Chinook population should increase the forage biomass and produce larger fish of all these species.

Harvest of smallmouth bass in 2002 remained 45% below the ten-year average, and walleye harvest was 30% below average (Table 4).

Perch harvest in 2002 declined again in both Green Bay and Lake Michigan. The harvest in Green Bay was 67% below average and that in Lake Michigan was 38% below average (Table 3). Assessment catches of recent year-classes have been very poor, suggesting a continued recruitment problem for yellow perch and few fish entering the fishery in the near future.

Nearshore fishing opportunities on Lake Michigan have declined with reduced yellow perch abundance and salmon and trout moving farther offshore. To augment the nearshore fishery, Arlee strain rainbow trout have been stocked on an experimental basis in Lake Michigan since 2001. Kenosha, Milwaukee, Sheboygan, Manitowoc, Algoma, and Sister Bay each received a stocking of 12,000 Arlees in the spring of 2001. Manitowoc and Milwaukee were stocked with an additional 7,500 Arlees in 2002. These fish were given a specific fin clip, and they have begun to show up in the creel survey. Arlees will be stocked annually through 2004, and another strain of rainbow trout will be stocked experimentally beginning in 2003.

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Table 1. Estimated angler effort (hours) by location in Wisconsin waters of Lake Michigan and Green Bay during March through December of 1993 through 2002. Standard deviations are in Italics.

Location	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
Kenosha Co.	195,609 <i>9,665</i>	189,877 <i>8,195</i>	164,111 <i>9,934</i>	157,607 <i>6,705</i>	188,561 <i>8,937</i>	174,437 <i>8,351</i>	183,774 <i>11,478</i>	112,930 <i>4,728</i>	197,660 <i>9,626</i>	206,959 <i>9,676</i>	177,153 <i>8,912</i>
Racine Co.	327,379 <i>19,740</i>	315,927 <i>13,911</i>	335,535 <i>18,995</i>	238,052 <i>13,846</i>	302,364 <i>15,472</i>	232,660 <i>15,844</i>	260,600 <i>15,917</i>	201,774 <i>13,269</i>	256,390 <i>14,248</i>	225,067 <i>10,421</i>	269,575 <i>15,386</i>
Milwaukee Co.	368,467 <i>13,736</i>	404,704 <i>14,303</i>	343,545 <i>12,115</i>	280,704 <i>9,625</i>	283,356 <i>10,492</i>	295,991 <i>9,162</i>	244,605 <i>8,620</i>	212,570 <i>8,106</i>	360,474 <i>12,942</i>	382,873 <i>13,579</i>	317,729 <i>11,483</i>
Ozaukee Co.	139,075 <i>8,437</i>	206,470 <i>11,873</i>	232,899 <i>16,115</i>	242,963 <i>11,915</i>	229,387 <i>12,796</i>	244,186 <i>13,831</i>	233,549 <i>14,891</i>	169,828 <i>8,650</i>	250,035 <i>13,942</i>	253,817 <i>12,917</i>	220,221 <i>12,754</i>
Sheboygan Co.	152,770 <i>8,747</i>	244,500 <i>13,999</i>	249,426 <i>16,183</i>	262,948 <i>14,697</i>	216,834 <i>13,730</i>	219,642 <i>12,123</i>	244,929 <i>14,004</i>	156,989 <i>10,983</i>	225,484 <i>10,826</i>	272,311 <i>14,403</i>	224,583 <i>13,142</i>
Manitowoc Co.	298,533 <i>15,475</i>	266,866 <i>11,121</i>	235,990 <i>9,038</i>	204,487 <i>9,673</i>	227,955 <i>11,713</i>	196,492 <i>9,398</i>	204,714 <i>11,257</i>	191,168 <i>8,107</i>	213,887 <i>10,491</i>	229,205 <i>10,329</i>	226,930 <i>10,831</i>
Kewaunee Co.	342,852 <i>17,627</i>	338,864 <i>18,617</i>	329,637 <i>16,500</i>	334,736 <i>23,955</i>	327,253 <i>19,421</i>	342,260 <i>28,589</i>	355,612 <i>19,833</i>	329,938 <i>16,718</i>	337,767 <i>23,521</i>	423,035 <i>20,511</i>	346,195 <i>20,844</i>
E. Door Co.	310,454 <i>16,293</i>	331,851 <i>19,768</i>	304,201 <i>17,298</i>	278,601 <i>15,113</i>	205,964 <i>16,043</i>	259,020 <i>12,907</i>	240,897 <i>13,553</i>	247,268 <i>18,263</i>	230,256 <i>20,757</i>	249,042 <i>15,121</i>	265,755 <i>16,687</i>
Green Bay	1,112,877 <i>39,002</i>	1,191,252 <i>34,804</i>	1,078,522 <i>32,379</i>	972,938 <i>34,570</i>	886,873 <i>35,678</i>	905,762 <i>35,986</i>	856,591 <i>29,469</i>	645,608 <i>22,318</i>	668,297 <i>28,669</i>	703,539 <i>25,846</i>	902,226 <i>32,250</i>
Total Effort	3,248,017 <i>56,181</i>	3,490,310 <i>53,615</i>	3,273,866 <i>53,193</i>	2,973,036 <i>52,708</i>	2,868,547 <i>53,164</i>	2,870,450 <i>55,770</i>	2,825,271 <i>49,492</i>	2,268,073 <i>40,453</i>	2,740,250 <i>51,873</i>	2,945,848 <i>46,743</i>	2,950,367 <i>51,514</i>

Table 2. Estimated harvest and total harvest-rate (number per hour, all anglers combined) of salmonids in Wisconsin waters of Lake Michigan and Green Bay during March through December of 1993 through 2002. Standard deviations are in Italics.

Species	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
Coho Salmon	74,304 <i>4,151</i>	110,001 <i>5,857</i>	65,647 <i>3,107</i>	104,715 <i>4,546</i>	138,423 <i>6,039</i>	59,203 <i>2,706</i>	56,297 <i>2,929</i>	87,927 <i>3,769</i>	47,474 <i>2,296</i>	102,313 <i>3,546</i>	84,630 <i>4,078</i>
Chinook Salmon	87,366 <i>3,707</i>	99,754 <i>4,424</i>	162,888 <i>5,953</i>	183,254 <i>7,746</i>	130,152 <i>5,050</i>	136,653 <i>4,702</i>	157,934 <i>5,740</i>	136,379 <i>7,753</i>	191,378 <i>8,281</i>	275,454 <i>6,522</i>	156,121 <i>6,169</i>
Rainbow Trout	104,765 <i>3,998</i>	114,774 <i>4,455</i>	117,508 <i>4,416</i>	77,099 <i>4,192</i>	94,470 <i>4,436</i>	110,888 <i>4,268</i>	84,248 <i>4,362</i>	71,829 <i>3,177</i>	72,854 <i>2,957</i>	74,031 <i>2,250</i>	92,247 <i>3,921</i>
Brown Trout	64,546 <i>3,735</i>	52,398 <i>2,695</i>	49,654 <i>2,630</i>	38,093 <i>2,160</i>	43,224 <i>3,411</i>	27,371 <i>2,062</i>	37,187 <i>4,362</i>	40,966 <i>2,289</i>	26,421 <i>1,827</i>	35,220 <i>2,290</i>	41,508 <i>2,855</i>
Brook Trout	1,967 <i>311</i>	7,482 <i>797</i>	1,914 <i>332</i>	419 <i>112</i>	299 <i>76</i>	159 <i>40</i>	574 <i>472</i>	199 <i>60</i>	263 <i>90</i>	144 <i>61</i>	1,342 <i>332</i>
Lake Trout	60,943 <i>2,776</i>	53,989 <i>2,337</i>	69,332 <i>2,797</i>	36,849 <i>1,806</i>	57,954 <i>2,371</i>	82,247 <i>3,624</i>	39,819 <i>2,168</i>	31,151 <i>1,614</i>	40,408 <i>1,894</i>	39,865 <i>1,463</i>	51,256 <i>2,367</i>
Total Harvest	393,891 <i>8,290</i>	438,398 <i>9,332</i>	466,943 <i>8,913</i>	440,429 <i>10,304</i>	464,522 <i>9,945</i>	416,521 <i>8,064</i>	376,059 <i>9,193</i>	368,451 <i>9,605</i>	378,798 <i>9,462</i>	527,027 <i>8,220</i>	427,104 <i>9,161</i>
Harvest-Rate	0.1213	0.1256	0.1426	0.1481	0.1619	0.1451	0.1331	0.1625	0.1382	0.1789	0.1457

Table 3. Estimated harvest and total harvest-rate (number per hour, all anglers combined) of yellow perch in Wisconsin waters of Lake Michigan and Green Bay during March through December of 1993 through 2002. Standard deviations are in Italics.

Location	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
Green Bay	775,117 <i>67,693</i>	1,091,837 <i>69,029</i>	802,668 <i>57,516</i>	429,466 <i>34,274</i>	204,267 <i>16,429</i>	219,366 <i>20,528</i>	235,400 <i>22,037</i>	216,832 <i>22,625</i>	206,109 <i>21,110</i>	144,562 <i>15,661</i>	432,562 <i>40,261</i>
Harvest-Rate	0.6965	0.9165	0.7442	0.4414	0.2303	0.2422	0.2748	0.3359	0.3084	0.2055	0.4396
Lake Michigan	545,901 <i>30,016</i>	289,905 <i>18,389</i>	246,945 <i>20,677</i>	95,100 <i>14,985</i>	31,146 <i>4,103</i>	37,831 <i>3,527</i>	33,605 <i>4,186</i>	74,843 <i>14,679</i>	133,660 <i>10,903</i>	97,747 <i>7,578</i>	158,668 <i>15,264</i>
Harvest-Rate	0.2557	0.1261	0.1125	0.0475	0.0157	0.0193	0.0171	0.0461	0.0645	0.0436	0.0748
Total Harvest	1,321,018 <i>74,049</i>	1,381,742 <i>71,436</i>	1,049,613 <i>61,119</i>	524,566 <i>37,407</i>	235,413 <i>16,934</i>	257,197 <i>20,829</i>	269,005 <i>22,432</i>	291,675 <i>26,971</i>	339,769 <i>23,759</i>	242,309 <i>17,398</i>	591,231 <i>43,058</i>
Harvest-Rate	0.4067	0.3959	0.3206	0.1764	0.0821	0.0896	0.0952	0.1286	0.1240	0.0823	0.1901

Table 4. Estimated harvest-rate (harvest per hour), harvest and effort for all survey areas and **ALL FISHERY TYPES** for Wisconsin waters of Lake Michigan and Green Bay during 2002. Standard deviations are in Italics.

Species	Harvest per Hour	Mar/Apr	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho Salmon	0.0347	155 <i>58</i>	18,609 <i>1,990</i>	37,384 <i>2,057</i>	22,055 <i>1,660</i>	14,909 <i>937</i>	8,783 <i>861</i>	418 <i>84</i>	102,313 <i>3,546</i>
Chinook Salmon	0.0935	0 <i>0</i>	2,449 <i>387</i>	32,163 <i>2,159</i>	88,253 <i>3,851</i>	77,639 <i>3,307</i>	74,501 <i>3,458</i>	449 <i>47</i>	275,454 <i>6,522</i>
Rainbow Trout	0.0251	3,612 <i>513</i>	1,477 <i>204</i>	13,040 <i>876</i>	25,082 <i>1,338</i>	21,760 <i>1,261</i>	9,030 <i>781</i>	30 <i>3</i>	74,031 <i>2,250</i>
Brown Trout	0.0120	12,044 <i>1,827</i>	3,681 <i>705</i>	2,900 <i>462</i>	5,208 <i>581</i>	5,184 <i>437</i>	5,974 <i>816</i>	229 <i>26</i>	35,220 <i>2,290</i>
Brook Trout	0.0000	0 <i>0</i>	0 <i>0</i>	21 <i>14</i>	16 <i>14</i>	30 <i>19</i>	77 <i>54</i>	0 <i>0</i>	144 <i>61</i>
Lake Trout	0.0135	136 <i>63</i>	2,306 <i>352</i>	13,331 <i>911</i>	12,283 <i>798</i>	8,796 <i>597</i>	2,973 <i>433</i>	40 <i>0</i>	39,865 <i>1,463</i>
Splake	0.0003	274 <i>172</i>	685 <i>420</i>	24 <i>24</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	983 <i>454</i>
Northern Pike	0.0006	177 <i>195</i>	816 <i>444</i>	18 <i>19</i>	0 <i>0</i>	489 <i>273</i>	368 <i>186</i>	0 <i>0</i>	1,868 <i>587</i>
White Perch	0.0006	30 <i>30</i>	0 <i>0</i>	0 <i>0</i>	573 <i>569</i>	1,226 <i>942</i>	0 <i>0</i>	0 <i>0</i>	1,829 <i>1,101</i>
Smallmouth Bass	0.0063	0 <i>0</i>	3,666 <i>804</i>	5,061 <i>802</i>	3,860 <i>787</i>	4,486 <i>1,440</i>	1,488 <i>453</i>	0 <i>0</i>	18,561 <i>2,046</i>
Yellow Perch	0.0823	1,764 <i>658</i>	0 <i>0</i>	29,113 <i>3,863</i>	94,071 <i>13,999</i>	63,106 <i>6,972</i>	54,255 <i>6,539</i>	0 <i>0</i>	242,309 <i>17,398</i>
Walleye	0.0054	2,462 <i>741</i>	8,250 <i>1,952</i>	297 <i>111</i>	1,507 <i>638</i>	2,412 <i>731</i>	1,111 <i>409</i>	0 <i>0</i>	16,039 <i>2,341</i>
Total Harvest	0.2745	20,654 <i>2,158</i>	41,939 <i>3,099</i>	133,352 <i>5,127</i>	252,908 <i>14,754</i>	200,037 <i>8,132</i>	158,560 <i>7,572</i>	1,166 <i>100</i>	808,616 <i>19,537</i>
Angler Hours		213,719	162,595	445,434	777,756	653,426	686,626	6,292	2,945,848

16,833 12,588 17,030 25,261 19,851 20,499 845 46,743

Table 5. Estimated harvest-rate (harvest per hour), harvest and effort for the **BOAT FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2002. Standard deviations are in *Italics*.

Species	Harvest per hour	Mar/Apr	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho Salmon	0.0455	97 <i>40</i>	18,062 <i>1,985</i>	37,113 <i>2,055</i>	21,378 <i>1,645</i>	14,670 <i>935</i>	4,363 <i>570</i>	44 <i>0</i>	95,727 <i>3,474</i>
Chinook Salmon	0.1086	0 <i>0</i>	2,449 <i>387</i>	31,592 <i>2,158</i>	87,765 <i>3,847</i>	76,940 <i>3,304</i>	29,418 <i>2,039</i>	293 <i>0</i>	228,457 <i>5,889</i>
Rainbow Trout	0.0325	100 <i>70</i>	1,269 <i>179</i>	12,783 <i>870</i>	24,657 <i>1,331</i>	21,318 <i>1,258</i>	8,164 <i>758</i>	25 <i>0</i>	68,316 <i>2,173</i>
Brown Trout	0.0098	5,842 <i>1,537</i>	3,310 <i>697</i>	1,733 <i>335</i>	4,419 <i>539</i>	3,228 <i>313</i>	2,061 <i>560</i>	112 <i>0</i>	20,705 <i>1,914</i>
Brook Trout	0.0000	0 <i>0</i>	0 <i>0</i>	2 <i>0</i>	0 <i>0</i>	3 <i>0</i>	3 <i>0</i>	0 <i>0</i>	8 <i>0</i>
Lake Trout	0.0189	121 <i>61</i>	2,298 <i>352</i>	13,319 <i>911</i>	12,283 <i>798</i>	8,796 <i>597</i>	2,896 <i>430</i>	40 <i>0</i>	39,753 <i>1,461</i>
Splake	0.0002	218 <i>162</i>	168 <i>139</i>	24 <i>24</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	410 <i>214</i>
Northern Pike	0.0008	138 <i>193</i>	759 <i>442</i>	0 <i>0</i>	0 <i>0</i>	466 <i>272</i>	297 <i>170</i>	0 <i>0</i>	1,660 <i>580</i>
White Perch	0.0008	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	568 <i>569</i>	1,173 <i>940</i>	0 <i>0</i>	0 <i>0</i>	1,741 <i>1,099</i>
Smallmouth Bass	0.0067	0 <i>0</i>	2,450 <i>777</i>	4,028 <i>682</i>	3,011 <i>730</i>	3,680 <i>1,407</i>	855 <i>358</i>	0 <i>0</i>	14,024 <i>1,926</i>
Yellow Perch	0.0912	862 <i>130</i>	0 <i>0</i>	16,800 <i>3,399</i>	81,980 <i>13,829</i>	48,798 <i>6,175</i>	43,305 <i>6,284</i>	0 <i>0</i>	191,745 <i>16,746</i>
Walleye	0.0051	1,758 <i>591</i>	4,520 <i>1,892</i>	297 <i>111</i>	1,507 <i>638</i>	1,568 <i>731</i>	1,027 <i>401</i>	0 <i>0</i>	10,677 <i>2,246</i>
Total Harvest	0.3201	9,136 <i>1,674</i>	35,285 <i>3,022</i>	117,691 <i>4,755</i>	237,568 <i>14,585</i>	180,640 <i>7,445</i>	92,389 <i>6,735</i>	514 <i>0</i>	673,223 <i>18,656</i>
Angler Hours		88,618	129,137	350,507	681,565	555,428	296,581	1,539	2,103,375

15,076 12,345 15,866 24,463 19,233 14,809 0 42,650

Table 6. Estimated harvest-rate (harvest per hour), harvest and effort for the **PIER FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2002. Standard deviations are in *Italics*.

Species	Harvest	Mar/Apr	May	June	July	August	Sept/Oct	Season
	per hour							
Coho Salmon	0.0075	0 <i>0</i>	430 <i>146</i>	253 <i>89</i>	535 <i>198</i>	201 <i>53</i>	129 <i>44</i>	1,548 <i>270</i>
Chinook Salmon	0.0175	0 <i>0</i>	0 <i>0</i>	492 <i>39</i>	488 <i>188</i>	631 <i>154</i>	1,976 <i>382</i>	3,587 <i>454</i>
Rainbow Trout	0.0060	5 <i>5</i>	38 <i>29</i>	206 <i>86</i>	425 <i>136</i>	379 <i>88</i>	170 <i>96</i>	1,223 <i>209</i>
Brown Trout	0.0204	1,090 <i>252</i>	118 <i>46</i>	300 <i>141</i>	600 <i>191</i>	1,211 <i>236</i>	864 <i>477</i>	4,183 <i>637</i>
Brook Trout	0.0001	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	12 <i>12</i>	0 <i>0</i>	12 <i>12</i>
Lake Trout	0.0004	0 <i>0</i>	8 <i>8</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	68 <i>57</i>	76 <i>58</i>
Splake	0.0003	56 <i>59</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	56 <i>59</i>
Northern Pike	0.0001	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	14 <i>14</i>	0 <i>0</i>	14 <i>14</i>
White Perch	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	5 <i>5</i>	0 <i>0</i>	0 <i>0</i>	5 <i>5</i>
Smallmouth Bass	0.0099	0 <i>0</i>	826 <i>39</i>	792 <i>400</i>	210 <i>161</i>	121 <i>125</i>	75 <i>60</i>	2,024 <i>455</i>
Yellow Perch	0.0989	69 <i>0</i>	0 <i>0</i>	5,567 <i>1,184</i>	9,551 <i>2,077</i>	4,035 <i>827</i>	1,082 <i>504</i>	20,304 <i>2,580</i>
Walleye	0.0161	0 <i>0</i>	3,213 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	84 <i>83</i>	3,297 <i>83</i>
Total Harvest	0.1770	1,220 <i>259</i>	4,633 <i>161</i>	7,610 <i>1,264</i>	11,814 <i>2,114</i>	6,604 <i>889</i>	4,448 <i>808</i>	36,329 <i>2,758</i>
Angler Hours		8,164 <i>1,148</i>	10,513 <i>1,176</i>	33,517 <i>2,707</i>	49,876 <i>4,598</i>	51,934 <i>3,251</i>	51,254 <i>4,409</i>	205,258 <i>7,822</i>

Table 7. Estimated harvest-rate (harvest per hour), harvest and effort for the **SHORE FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2002. Standard deviations are in *Italics*.

Species	Harvest per hour	Mar/Apr	May	June	July	August	Sept/Oct	Season
Coho Salmon	0.0067	58 <i>42</i>	117 <i>42</i>	18 <i>18</i>	142 <i>96</i>	38 <i>28</i>	1,417 <i>278</i>	1,790 <i>302</i>
Chinook Salmon	0.0349	0 <i>0</i>	0 <i>0</i>	79 <i>58</i>	0 <i>0</i>	68 <i>33</i>	9,196 <i>912</i>	9,343 <i>914</i>
Rainbow Trout	0.0020	244 <i>75</i>	48 <i>26</i>	51 <i>52</i>	0 <i>0</i>	63 <i>30</i>	134 <i>64</i>	540 <i>119</i>
Brown Trout	0.0310	4,655 <i>934</i>	174 <i>64</i>	867 <i>285</i>	189 <i>103</i>	745 <i>193</i>	1,675 <i>269</i>	8,305 <i>1,038</i>
Brook Trout	0.0004	0 <i>0</i>	0 <i>0</i>	19 <i>14</i>	16 <i>14</i>	15 <i>15</i>	47 <i>47</i>	97 <i>53</i>
Lake Trout	0.0001	15 <i>15</i>	0 <i>0</i>	12 <i>12</i>	0 <i>0</i>	0 <i>0</i>	9 <i>9</i>	36 <i>21</i>
Splake	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Northern Pike	0.0006	0 <i>0</i>	57 <i>43</i>	18 <i>19</i>	0 <i>0</i>	9 <i>9</i>	65 <i>74</i>	149 <i>88</i>
White Perch	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Smallmouth Bass	0.0081	0 <i>0</i>	286 <i>190</i>	241 <i>132</i>	639 <i>245</i>	685 <i>279</i>	322 <i>227</i>	2,173 <i>493</i>
Yellow Perch	0.0690	833 <i>645</i>	0 <i>0</i>	6,746 <i>1,402</i>	2,540 <i>637</i>	5,695 <i>1,213</i>	2,671 <i>1,062</i>	18,485 <i>2,321</i>
Walleye	0.0001	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	15 <i>15</i>	0 <i>0</i>	15 <i>15</i>
Total Harvest	0.1528	5,805 <i>1,138</i>	682 <i>211</i>	8,051 <i>1,439</i>	3,526 <i>697</i>	7,333 <i>1,261</i>	15,536 <i>1,474</i>	40,933 <i>2,768</i>
Angler Hours		32,540	9,835	31,955	29,632	37,656	126,312	267,930

4,112

1,365

3,745

2,791

3,178

8,233

10,884

Table 8. Estimated harvest-rate (harvest per hour), harvest and effort for the **STREAM FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2002. Standard deviations are in *Italics*.

Species	Harvest	Mar/Apr	May	June	July	August	Sept/Oct	Nov/Dec	Season
	per hour								
Coho Salmon	0.0088	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	2,874 <i>580</i>	374 <i>84</i>	3,248 <i>586</i>
Chinook Salmon	0.0923	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	33,911 <i>2,612</i>	156 <i>47</i>	34,067 <i>2,612</i>
Rainbow Trout	0.0107	3,263 <i>502</i>	122 <i>90</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	562 <i>148</i>	5 <i>3</i>	3,952 <i>531</i>
Brown Trout	0.0055	457 <i>205</i>	79 <i>70</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	1,374 <i>231</i>	117 <i>26</i>	2,027 <i>318</i>
Brook Trout	0.0001	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	27 <i>27</i>	0 <i>0</i>	27 <i>27</i>
Lake Trout	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Splake	0.0014	0 <i>0</i>	517 <i>396</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	517 <i>396</i>
Northern Pike	0.0001	39 <i>20</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	6 <i>6</i>	0 <i>0</i>	45 <i>21</i>
White Perch	0.0002	30 <i>30</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	53 <i>65</i>	0 <i>0</i>	0 <i>0</i>	83 <i>72</i>
Smallmouth Bass	0.0009	0 <i>0</i>	104 <i>69</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	236 <i>149</i>	0 <i>0</i>	340 <i>164</i>
Yellow Perch	0.0319	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	4,578 <i>2,885</i>	7,197 <i>1,378</i>	0 <i>0</i>	11,775 <i>3,197</i>
Walleye	0.0056	704 <i>447</i>	517 <i>478</i>	0 <i>0</i>	0 <i>0</i>	829 <i>0</i>	0 <i>0</i>	0 <i>0</i>	2,050 <i>655</i>
Total Harvest	0.1574	4,493 <i>704</i>	1,339 <i>635</i>	0 <i>0</i>	0 <i>0</i>	5,460 <i>2,886</i>	46,187 <i>3,026</i>	652 <i>100</i>	58,131 <i>4,288</i>
Angler Hours		84,397 <i>6,152</i>	13,110 <i>1,680</i>	29,455 <i>4,116</i>	16,683 <i>3,274</i>	8,408 <i>1,869</i>	212,479 <i>10,662</i>	4,753 <i>845</i>	369,285 <i>13,646</i>

Table 9. Average weight, average length and standard weight of salmonids from Wisconsin's Lake Michigan creel survey during 1993 through 2002, all areas and fishery types combined. std = standard deviation.

Year	Average weight (lbs.)	± 1 std	Average length (in.)	± 1 std	Standard weight (lbs.)
Coho salmon					
1993	3.7333	1.7396	21.2199	2.6774	3.9410
1994	3.3084	2.2217	20.1049	3.2844	3.8168
1995	3.1598	1.9908	20.3647	3.4795	3.6060
1996	4.6377	2.0180	22.5823	3.1358	3.8673
1997	3.0543	1.4843	20.2170	2.7918	3.5368
1998	3.3491	1.6776	21.0745	2.6494	3.5612
1999	7.1347	3.6900	25.1350	5.1092	4.2368
2000	4.0721	2.1511	22.0099	2.8268	4.1604
2001	4.7353	1.9752	22.6677	3.0532	4.0207
2002	3.5174	2.0263	21.0377	3.5987	3.5289
Chinook salmon					
1993	10.5038	8.3701	27.4037	8.3374	10.1905
1994	10.4453	8.3485	27.0273	8.7192	9.9749
1995	9.8882	8.1733	26.3952	8.1126	10.4336
1996	8.0482	6.7959	25.7176	7.1099	9.7475
1997	9.1569	6.2956	27.3781	6.7461	9.7349
1998	9.9393	6.1881	27.9896	6.3117	9.8589
1999	12.5209	6.0866	31.0947	5.7288	9.9412
2000	12.2476	6.7192	29.3772	6.8487	10.7068
2001	13.1640	6.1913	31.0019	6.1715	9.9143
2002	12.2901	6.6454	30.7430	7.1419	9.4467
Rainbow trout					
1993	6.8907	3.4246	26.2585	4.6655	3.5624
1994	6.2132	3.0697	25.5027	4.3581	3.8532
1995	6.2328	2.9497	25.4630	4.1472	3.8015
1996	6.7903	2.8603	25.8947	4.0637	3.8888
1997	6.8474	2.8552	26.6210	4.0443	3.7207
1998	6.1913	2.6461	25.9667	3.6238	3.5888
1999	7.2340	3.3254	25.9069	5.2089	3.9814
2000	6.1574	3.1588	25.4504	4.2857	3.9674
2001	6.9539	3.0306	25.6720	4.7128	4.4443
2002	6.2470	2.8717	25.8321	4.4530	3.7924
Brown trout					
1993	4.8219	2.9352	20.3673	3.9857	3.7333
1994	5.5798	3.9554	21.1341	4.7054	3.9035
1995	5.2797	3.4391	21.1004	3.9226	3.9589
1996	5.5350	3.8506	21.1594	4.2634	3.8506
1997	4.8983	2.8484	21.1254	4.0540	3.4188
1998	5.9500	3.9901	21.9235	5.1606	3.7211
1999	6.0660	3.4702	22.1970	4.5156	3.9397
2000	6.2217	3.5200	22.7410	3.8632	3.6338
2001	7.2119	4.6059	23.4689	5.5950	3.8042
2002	5.4742	3.2102	21.5383	4.6496	3.6206
Lake trout					
1993	7.7916	4.0955	26.8924	3.8634	5.8126
1994	7.1624	3.8173	26.3183	4.0057	5.7156
1995	8.7428	4.3848	27.3754	3.9492	6.5910
1996	7.5237	4.5938	26.3436	4.8990	5.4196
1997	7.3469	3.7751	26.5681	3.9708	5.6513
1998	8.4252	4.0276	27.4861	3.8883	5.6712
1999	9.2469	3.9323	28.0260	3.8194	6.0907
2000	8.1437	3.5085	27.4146	3.4736	5.7744
2001	8.8205	3.9134	27.6734	3.7005	6.1112
2002	7.3412	3.2020	26.9199	3.3907	5.3355

Figure 1. Outline of Lake Michigan, with Wisconsin waters bounded by a dashed line.

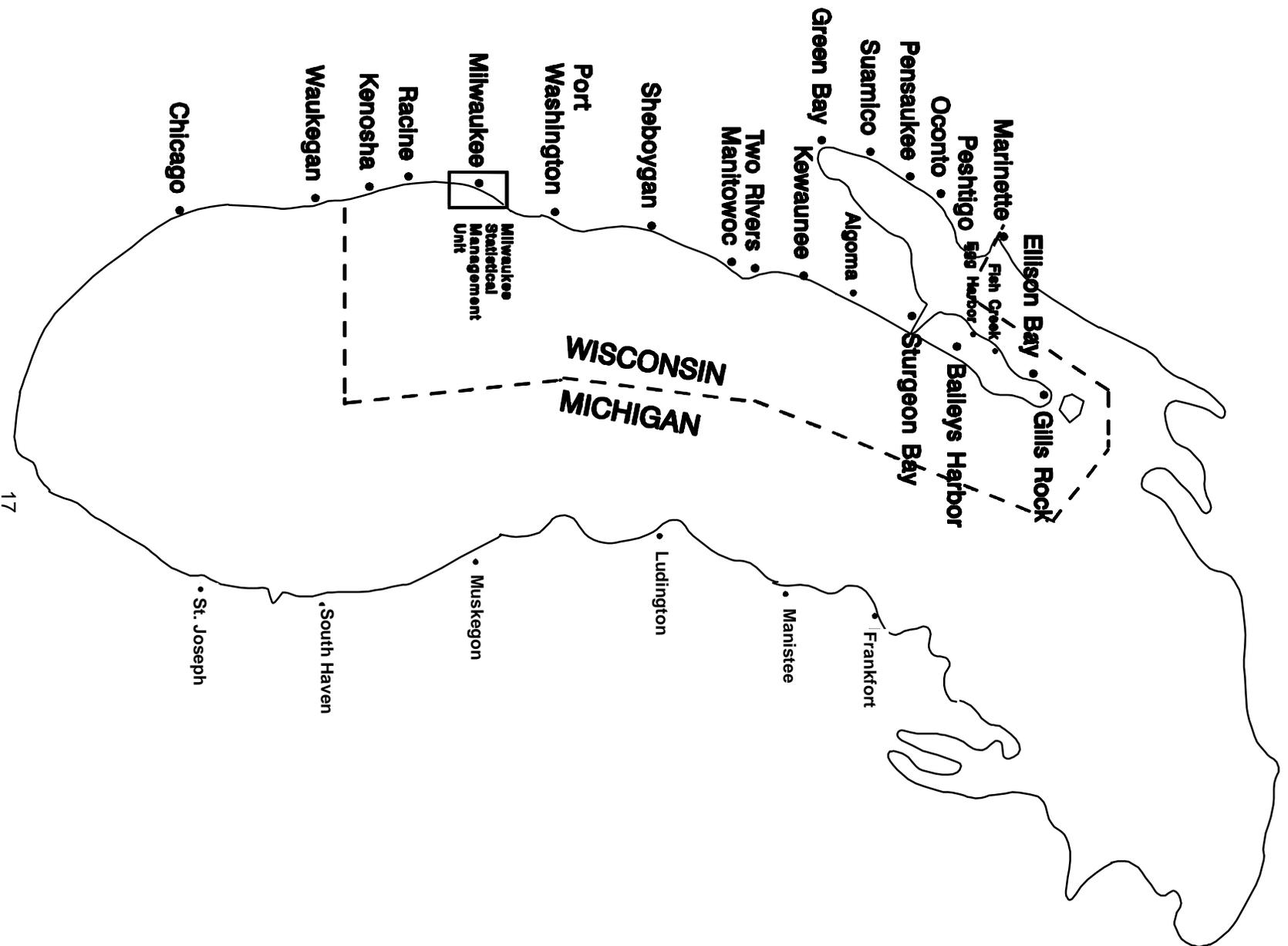


Figure 2. Fishing effort (angler hours) in Wisconsin waters of Lake Michigan and Green Bay from 1993 through 2002.

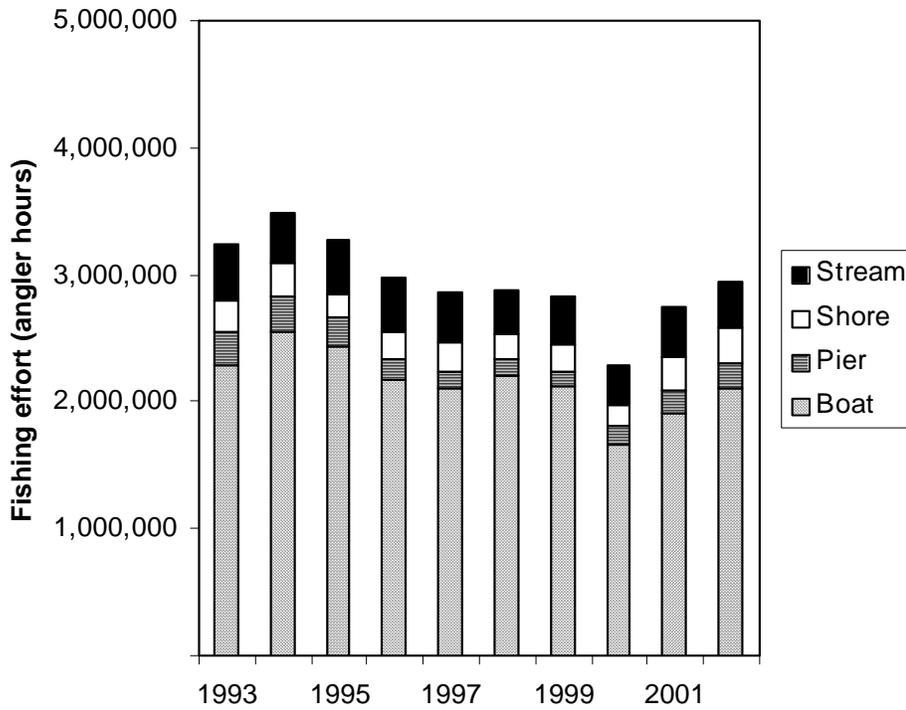


Figure 3. Trout and salmon harvest and harvest-rate from Wisconsin waters of Lake Michigan and Green Bay from 1993 through 2002.

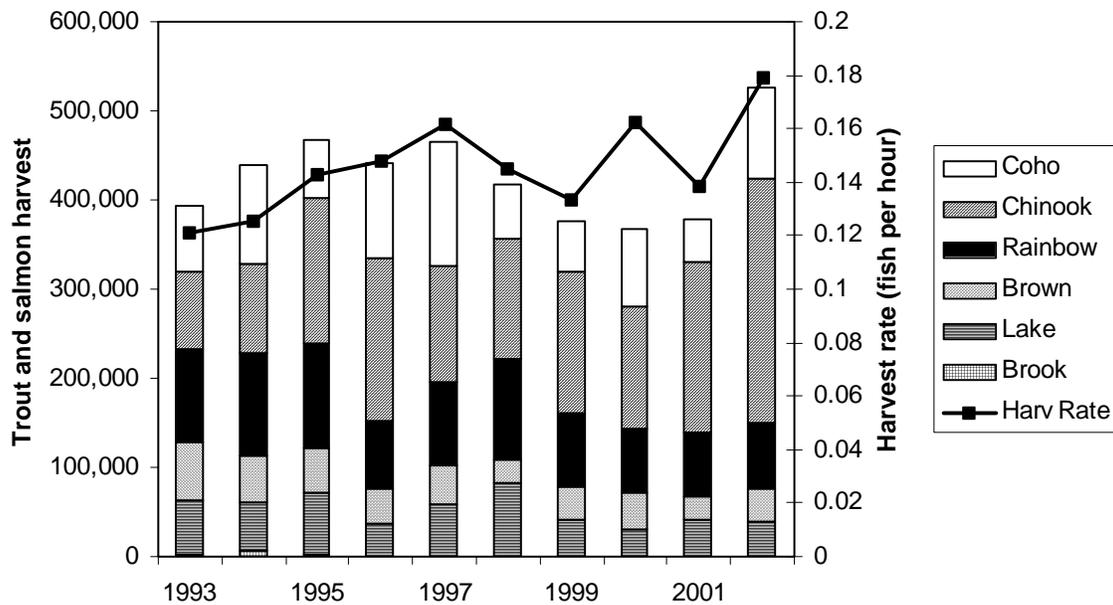


Figure 4. Yellow perch angler-harvest and harvest-rate from Wisconsin waters of Green Bay and Lake Michigan from 1993 through 2002.

