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A Survey of Sport Fishing in the Illinois Portion of Lake Michigan

March through September 2012

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A SURVEY OF SPORT FISHING IN THE ILLINOIS PORTION OF LAKE MICHIGAN

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University of Illinois
Prairie Research Institute
Illinois Natural History Survey

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Common Name	Scientific Name
Alewife	*Alosa pseudoharengus*
Bluegill sunfish	*Lepomis macrochirus*
Brown trout	*Salmo trutta*
Channel catfish	*Ictalurus punctatus*
Chinook salmon	*Oncorhynchus tshawytscha*
Coho salmon	*Oncorhynchus kisutch*
Common carp	*Cyprinus carpio*
Freshwater drum	*Aplodinotus grunniens*
Lake trout	*Salvelinus namaycush*
Largemouth bass	*Micropterus salmoides*
Northern pike	*Esox lucius*
Rainbow smelt	*Osmerus mordax*
Rainbow trout	*Oncorhynchus mykiss*
Rock bass	*Ambloplites rupestris*
Round goby	*Neogobius melanostomus*
Sea lamprey	*Petromyzon marinus*
Smallmouth bass	*Micropterus dolomieui*
White bass	*Morone chrysops*
White perch	*Morone americana*
Yellow perch	*Perca flavescens*

EXECUTIVE SUMMARY

The purpose of this study was to provide estimates of the non-charter sport fishing effort, harvest and expenditures of anglers fishing the Illinois portion of Lake Michigan. The information provided from this study is important to the management of the sport fisheries in the Illinois waters of Lake Michigan. A contact creel survey was used to collect data concerning the daily effort, harvest and expenditures on randomly selected days over a six month period (4/1 - 9/30). The data were summarized and extrapolated over the six month period to achieve estimates for specific locations as well as for the Illinois waters of the lake. The creel period was stratified by time period (segment = three week blocks) and type of day (weekday vs. weekend/holiday). Also, a March survey was conducted at selected sites along the Lake Michigan shoreline. That survey was stratified in a similar fashion as the main survey except that the segment is one month long instead of three weeks. All data are presented by month.

Conclusions:

1. 2012 saw an increase in angler effort (26.8% compared to 2011). Pedestrian effort increased 22.1% and boat effort increased 30.9%.

2. The number of yellow perch harvested increased 65.2% compared to 2011. The total harvest was nearly 94,000 fish. Mean length decreased to 25.2 cm (9.9 in) and mean weight decreased to 236 g (0.52 lb.), a 7.4% and 14.8% decrease respectively compared to 2011.

3. Coho salmon was the largest portion of the salmonid harvest in the Illinois waters of Lake Michigan and increased 64.7% compared to 2011. The total harvest was 48,800 fish. The average size coho in 2012 weighed 1,426 g (3.14 lb.), and measured 53.2 cm (20.9 in) in length, a decrease of 11.3% in weight and 2.4% decrease in length.

4. Chinook salmon harvest increased 131% compared to 2011 with a harvest of 13,700 fish. The average size Chinook increased compared to 2011 with length 73.6 cm (29.0 in) and weight 4,218 g (9.29 lb.), an increase of 6.5% and 9.4% respectively.

5. The rainbow trout harvest increased by 50.4% compared to 2011, with a harvest of nearly 4,700 fish. Rainbow trout length and weight increased compared to 2011 with length increasing 0.8% to 65.5 cm (25.8 in) and an increase in weight of 3.1% to 2,847 g (6.27lb.).

6. The lake trout harvest increased by 20.9% compared to 2011 to over 3,600 fish. The average size of lake trout harvested in 2012 increased compared to 2011 with an increase in length of 0.2% to 65.2 cm (25.7 in) and an increase of 11.6% in weight to 3,092 g (6.81 lb.).

7. The brown trout harvest increased by 8.8% compared to 2011 to 1,200 fish. Average length decreased by 3.4% to 51.8 cm (20.4 in) and average weight decreased by 19.1% to 1,580 g (3.48 lb.).

8. Total expenditures for boats, motors, trailers and fishing gear in 2012 were $2.8 million, 5.6% below 2011.
9. The 2012 March survey saw increases in angler effort, yellow perch, brown trout, lake trout, and coho salmon harvest; and decreases in rainbow trout harvest compared to 2011. Total effort was 26,000 angler hours, a 222% increase compared to 2011. Harvest of yellow perch (8,900), brown trout (1,800) and coho salmon (3,200) increased 3,160% for yellow perch, 2,000% for brown trout and 168% for coho salmon. Rainbow trout (40) decreased 45.3%. Twenty lake trout were harvested compared to none in 2011.

ABSTRACT

A survey of sport fishing in the Illinois portion of Lake Michigan was conducted from April 1 to September 30, 2011. The survey covered all legal sport fishing during that period excluding fishing from chartered boats and smelt fishing. It included angling by pedestrians and fishing from boats. The intent of the survey was to provide reliable estimates of sport fishing activity, sport fish harvest, expenditures for sport fishing, and the quality and distribution of sport fishing. Estimated total fishing effort for pedestrians and boaters was 464,900 angler-hours. Estimated total harvest included 93,800 yellow perch, 1,200 brown trout, 4,700 rainbow trout, 3,600 lake trout, 48,800 coho salmon, and 13,700 Chinook salmon. Estimated expenditures for boats, motors, trailers and fishing gear were over $2.8 million. Anglers travelled 2.4 million miles. The yield value of the sport fishing harvest was approximately $2.6 million.

One additional special survey was conducted. From March 1 to March 31 an early season survey was conducted at Waukegan Harbor, Montrose Harbor and Calumet Park for pedestrian anglers and Waukegan Harbor and Calumet Park for launched-boat anglers. Anglers from both groups fished an estimated total of 26,000 hours and harvested an estimated 8,900 yellow perch, 1,800 brown trout, 40 rainbow trout, 20 lake trout and 3,200 coho salmon. Estimated expenditures for boats, motors, trailers and fishing gear were nearly $64,000.

INTRODUCTION

This report summarizes a survey of sport fishing in the Illinois portion of Lake Michigan from April 1 to September 30, 2012. The survey covered all types of legal sport fishing during that period, with the exceptions of charter-boat fishing and smelt fishing. In addition, a supplemental survey of the early spring fishery from March 1 to March 31 was conducted. The intent of the project was to provide reliable estimates of sport fishing activity, sport fish harvest, expenditures for sport fishing, and quality of sport fishing. Biological data concerning length, weight, sea lamprey wounding and scarring and markings (fin clips and external tags) were also collected for individual fish. Results from the first twenty-four years of this series of annual surveys were reported elsewhere and were summarized by Brofka and Czesny (2010). Prior to these reports, the most recent creel survey of this type in Illinois was conducted in 1979 by Muench (Muench 1981).

Geographic setting

The geographic setting of this survey was the 63 mile Illinois shoreline of Lake Michigan (Figure 1). This area is highly developed and heavily industrialized. Chicago covers roughly one-third of the shoreline, and a series of smaller cities cover almost all of the remainder. This section of Lake Michigan lacks significant tributary streams. The slope of the near-shore lake bottom becomes progressively steeper as one moves from south to north, a geographic feature that influences the distribution and success of sport fishing. This progression means that boaters from Chicago must go considerably farther from shore to reach good salmon waters than boaters departing from North Point Marina.

Figure 1. The Illinois shoreline of Lake Michigan.

METHODS

The following groups were considered separately: (1) Pedestrian and launched-boat anglers. These anglers were studied directly through personal interviews and direct head counts conducted between 1 April and 30 September. (2) Anglers using moored boats. The data presented here are based entirely on extrapolations from estimates for anglers using launched boats.

Pedestrians and launched-boat anglers

Estimates of effort and harvest by pedestrian and launched-boat anglers were made for selected primary fishing areas, and those estimates were extrapolated to less heavily fished areas. For each primary fishing area, a modified stratified random sampling design similar to that suggested by Malvestuto (1996) was used. The fishing day was the primary sampling unit. Daily estimates of variables of interest (total harvest by species, expenditures by category, etc.) for each primary site were combined to form seasonal estimates using the formula for stratified random samples given by Cochran (1977).

Use of primary fishing areas

The primary fishing areas for pedestrian anglers were North Point Marina, Waukegan Harbor, Montrose Harbor, Belmont Harbor, Jackson Park, and Calumet Park. The primary fishing areas for launched boats were North Point Marina, Waukegan Harbor, Diversey Harbor, and Calumet Park. For each day of work, a creel clerk was assigned to visit three areas, two pedestrian areas and one launch area, in a prescribed order. The three areas were always one of three groups: (1) Waukegan Harbor (pedestrians), North Point Marina (pedestrians), North Point Marina (launched boats); (2) Montrose Harbor (pedestrians), Belmont Harbor (pedestrians), Diversey Harbor (launched boats); and (3) Jackson Park (pedestrians), Calumet Park (pedestrians), Calumet Park (launched boats). The launch ramps at Waukegan Harbor (added in 2006) were surveyed in the same manner as the launch ramp sites in the three groups. Estimates obtained for the primary fishing areas were extrapolated to all other areas based on the distribution of pedestrian anglers and boat trailers. These distributions were obtained by helicopter flights that were conducted on four weekends during the spring and summer. During each flight, pedestrian anglers were counted and recorded on a form divided by site and the type of pedestrian site: structure (piers and breakwalls), shore (shoreline) and harbor (inside enclosed harbors). Pedestrian anglers who were not at a recognized site were counted and listed in the vicinity of the closest recognized site; the sum of these became the total for "other areas" on the form. Boat trailers with a vehicle attached were counted in the parking lots of launch ramps and were listed on the form at the appropriate site. All of the data collected were combined for the season and averaged, and converted to percentages (Table 2).

Distribution of fishing

Pedestrians and launched boats

The survey recognized 23 fishing areas (Table 2). Helicopter flights in 1985-90 and 1992-2012 were used to determine the distribution of fishing. In 2012 the 23 areas accounted for 95.4% of the pedestrian anglers observed in the aerial surveys and 100% of the boat trailers parked near launch areas. Boats launched from the Calumet Yacht Club (25 to 50 launches per week in midsummer) were not included in this survey. In this survey, interviews were conducted at six pedestrian fishing areas and four launch areas. The pedestrian areas (North Point Marina, Waukegan Harbor, Montrose Harbor, Belmont Harbor, Jackson Park, and Calumet Park) accounted for 74.4% of the pedestrian anglers observed during the helicopter flights. The four launch areas (North Point Marina, Waukegan Harbor, Diversey Harbor, and Calumet Park) accounted for 76.9% of the boat trailers observed near launch areas.

Table 2. Distribution of pedestrian anglers and boat trailers along the Illinois shoreline of Lake Michigan, determined by helicopter flights in 2012.

Area	Pedestrian anglers (%)	Boat trailers (%)
1. IL Beach State Park & North Point Marina	1.1	39.6
2. Waukegan Harbor and breakwalls	3.5	29.4
3. Great Lakes Naval Training Station	0.0	0.3
4. Forest Park	0.0	0.7
5. Central Park	0.1	2.0
6. Winnetka (Lloyd and Tower Parks)	0.3	3.6
7. Wilmette Harbor	2.6	NA
8. Northwestern Univ. and Dawes Park	0.0	6.3
9. Farwell Avenue pier	0.8	NA
10. Hollywood Avenue pier	1.5	NA
11. Foster Avenue pier	0.8	NA
12. Montrose Harbor and breakwalls	65.5	NA
13. Belmont Harbor	5.7	NA
14. Diversey Harbor and breakwalls	1.0	2.6
15. North Avenue pier	0.0	NA
16. Navy Pier	0.7	NA
17. Monroe Street breakwalls	1.5	NA
18. Burnham Harbor and vicinity	6.3	8.9
19. McCormick Place seawall	0.3	NA
20. 31st Street Marina	0.0	1.3
21. 50th Street access area	0.0	NA
22. 59th Street Harbor	0.3	NA
23. Jackson Park Harbor and breakwall	2.2	0.0
24. Calumet Park	0.1	5.3
25. other areas	5.0	0.0

Moored boats

The principal boat mooring areas are North Point Marina, Waukegan Harbor, Great Lakes Naval Training Station, Wilmette Harbor, and the Chicago Park District harbors. This survey did not include boats kept at moorings or on

land (lift service) in the Calumet or Chicago River systems. We used the number of power boats kept at moorings as an index of fishing activity from moored non-charter power boats (Table 3). Although some fishing occurs from sail boats, we assumed that it was a negligible portion of all fishing. Both private lift services, referred to as I/O service in Table 3, were included in the survey (Larsen Marine, at Waukegan Harbor and Skipper Bud's at North Point Marina).

Table 3. Mooring locations along the Illinois shoreline of Lake Michigan and numbers of non-charter power boats moored at each location, as determined by the marinas and port authorities. Total number of power boats per port in bold.

Mooring area	Number of power boats
North Point Marina	**1,065**
Public Moorings	995
Skipper Bud's I/O service	70
Waukegan Harbor	**746**
Public Moorings	626
Larsen Marine I/O service	120
Great Lakes Naval Training Station	**30**
Wilmette Harbor	**65**
Chicago Park District	**3,977**
Diversey	700
Burnham	824
other harbor moorings	2,453

Early spring survey

Only two site groups were surveyed in March. The Lake County group consisted of Waukegan Harbor (pedestrians) and Waukegan Harbor (launched boats). The Chicago group consisted of Montrose Harbor (pedestrians), Calumet Park (pedestrians), and Calumet Park (launched boats). These sites included virtually all the open boat ramps and the areas of heaviest concentrations of open water pedestrian anglers this early in the season (based on personal observations and previous surveys). No attempt was made to estimate moored boat effort, harvest or expenditures in the March survey because very few boats are at moorings at that time.

Selection of dates in a stratified random sample

The core fishing season (1 April through 30 September 2012) was stratified by segment and type of day. Each date fell within one segment and was either a week day (non holiday Monday through Friday) or a weekend day (weekends and holidays). The following 18 strata were formed:

1. week days 4/1 - 4/15
2. weekend days 4/1 - 4/15
3. week days 4/16 - 5/6
4. weekend days 4/16 - 5/6
5. week days 5/7 – 5/27
6. weekend days 5/7 - 5/27
7. week days 5/28- 6/17
8. weekend days 5/28- 6/17

9. week days 6/18 - 7/8	10. weekend days 6/18 - 7/8
11. week days 7/9 – 7/29	12. weekend days 7/9 – 7/29
13. week days 7/30 - 8/19	14. weekend days 7/30 - 8/19
15. week days 8/20 - 9/9	16. weekend days 8/20 - 9/9
17. week days 9/10 - 9/30	18. weekend days 9/10 - 9/30

Within each stratum, four dates per group of sites were selected at random with the restriction that all three groups were sampled at least one week day (Monday through Friday) and each weekend. This sampling process was conducted separately for each of the three groups of three areas. Three dates were selected from each stratum except 1 and, 2; in those strata, which were several days shorter than the others, fewer than four dates were selected for each group of areas. All three areas in each group were visited on the dates selected for that group.

The early spring survey (1 March through March 31) was treated in a similar fashion to the core survey except that the segment was one month.

1. week days 3/1 - 3/31	2. weekend days 3/1 - 3/31

Data collection

Data collection at pedestrian fishing areas consisted of counting all pedestrian anglers at the start and finish of a two-hour interview period and interviewing a representative sample of anglers during the two hours. At the eight primary pedestrian areas the interview period was always 0600 to 0800 or 0830 to 1030. Each interview was designed for one angling party (i.e., one or more anglers fishing together) rather than for one individual angler. By interviewing parties instead of all individuals in a party more interviews can be conducted in a given time frame, redundant information can be avoided, and annoyance to the party is minimized. At launch ramps, all trailers with vehicles attached (except personal watercraft trailers) were counted in the parking lot at the beginning and end of the sampling period (between 1100 and 1300) and a representative sample of all returning fishing parties was interviewed.

The interviewers (referred to as creel clerks) gathered information related to effort (number of angler-hours, number of angler-trips), expenditures for the present fishing trip (by category: major = boat, motor, or trailer; minor = fishing gear), distance driven to fishing locations (miles, round-trip), species sought, and harvest (by species). Clerks also weighed and measured fish in possession of the anglers, noted clipped fins, and noted sea lamprey wounds and scars. The data form and instructions to creel clerks are in (Brofka and Czesny, 2008).

Variables measured for each date

The data collected in the interviews on one date at one area were reduced to a set of variables describing daily fishing activity: (1) Harvest per angler-hour was determined for each species as the number of fish harvested by all parties interviewed divided by the number of hours of fishing by individuals in those parties. (2) Expenditures per angler-trip were determined in each of three categories (major, minor, and other). For all expenditures, total expenditures by all anglers interviewed were divided by the number of anglers interviewed. (3) Angler-hours (i.e., total time spent fishing by all anglers) and (4) angler-trips (i.e., total number of anglers who fished) were determined differently for pedestrians and boaters. For pedestrians, angler-hours was the average number of anglers (at start and finish of interviews) multiplied by the number of hours in the day (from 0.75 hour before sunrise to 0.75 hour after sunset), and angler-trips was angler-hours divided by the average duration of a pedestrian fishing trip (4.34 hours for all interviews with conventional pedestrian anglers). The number of fishing boats launched for the day was estimated by multiplying the number of fishing boats landing during the two-hour interview period by the estimated average ratio of the number of all boats returning in a day to the number returning between 11:00 and 13:00. That ratio was estimated to be 3.04 by monitoring all boat traffic at North Point Marina on 4 days in 2012. Angler-trips were then estimated as the total number of boats launched for the day multiplied by the average number of anglers per boat (2.60). Angler-hours were taken as angler-trips multiplied by the yearly average number of hours per angling trip by boaters (5.80). (5) Harvest was determined for each species as harvest per angler-hour multiplied by angler-hours, and (6) expenditures were determined for each category as expenditures per angler-trip multiplied by angler-trips.

Expansion of daily estimates

The formula given by Cochran (1977) for stratified random samples was employed to expand the daily estimates to form seasonal area-specific estimates of effort, harvest, and expenditures.

Seasonal averages of harvest per angler-hour were obtained for each primary fishing area by taking unweighted averages of daily values. In these calculations, seasonal averages for yellow perch included only data from anglers who were fishing for perch, and seasonal averages for salmonids included only data from anglers who were fishing for salmonids. Anglers who did not specify what they were fishing for were excluded from these calculations.

Extrapolation to other areas

Extrapolations of seasonal estimates from primary fishing areas to other areas were based on the distributions of pedestrian anglers and boat trailers (Table 2). The distribution of boat trailers was assumed to reflect the distribution of launched-boat anglers. In the extrapolations, harvest, effort, and expenditures at areas not visited were estimated by extension of estimates for the nearest primary fishing areas. Thus, for pedestrian anglers, estimates for Waukegan Harbor were extended to all other areas (except North Point Marina) north of and including Wilmette Harbor; estimates for Montrose Harbor were extended to all remaining areas north of Belmont Harbor; estimates for Belmont Harbor were extended to all remaining areas north of the Monroe Street breakwalls; estimates for Jackson Park were

extended to all areas south of Monroe Street except for Calumet Park. For launched boats, estimates for Waukegan Harbor were extended to all launch ramps north of Wilmette (including the "other" areas listed in Table 2, but excluding North Point Marina); estimates for Diversey were extended to Dawes Park; and results for Calumet Park were extended to the ramps at Jackson Park and Burnham Harbor.

Moored boats

Estimates of effort, harvest, and expenditures by anglers using moored boats were extrapolated from calculations for launched boats. First, the ratios of moored fishing boats to launched fishing boats for North Point Marina, and Diversey Harbor were estimated. On four dates during the spring and summer of 2012 counts were made of the numbers of fishing boats returning to moorings while simultaneous counts were made of the number of fishing boats returning to the launch ramp. Charter boats were excluded from the counts. The ratio of moored to launched boats was 0.87 in North Point Marina and 0.91 in Diversey Harbor. Using these figures, seasonal estimates of effort, harvest, and expenditures by anglers using launched boats at North Point and Diversey harbors were extrapolated to moored boats. Thus, for example, the moored boat harvest at North Point Marina for a given segment was estimated to be the launched boat harvest for that segment multiplied by 0.87. Values so derived for North Point and Diversey harbors were then extrapolated to other moored boats based on the distribution of moored power boats. Estimates for North Point Marina were extrapolated to boats moored in Waukegan Harbor, Wilmette Harbor, and Great Lakes Naval Training Station, and the estimates for Diversey Harbor were extrapolated to all other boats moored in Chicago.

Changes in creel survey methods

Creel survey methods have varied during the past twenty-six years of the creel survey, so comparisons should be made with caution, especially where estimates for anglers using moored boats are concerned.

Confidence intervals and bias

Estimates of harvest, effort, and expenditures are presented without confidence intervals. Confidence intervals presented without estimates of bias are meaningful only if bias is assumed to be negligible, an assumption that we are not willing to make. Although we have collected and will continue to collect data with which to partially assess biases, we are presently unable to make such assessments.

Yield values

Here the term yield value means the hypothetical market price of the sport fish harvest. The market prices of fillets were used. The estimated harvest for each species was multiplied by the average individual weight of fish weighed in our survey. That estimated harvested round weight was then multiplied by a factor to estimate the harvested market weight. For fillets, the factor was 0.40 because approximately 60% of the fish is wasted in the filleting process. Total harvested marketable weight was then multiplied by approximate market prices (prices observed on the internet by W.A. Brofka).

Missing data

On some dates creel clerks were unable to complete their assigned interviews. When data were missing from some but not all of the assigned dates in a stratum, estimates for the stratum were based only on data from the completed dates. In these cases, the sample size was smaller than for strata where all interview sets were completed and the estimates were not as precise as estimates derived from full data sets.

Alternate sites/ altered sites

Sometimes, because of unforeseen circumstances (i.e. construction) a primary site may be closed or less accessible during part or all of a sampling season.

RESULTS

All estimates derived in this survey are given here without qualification; for simplicity of expression, the word "approximately" is not repeated with each estimated value. Estimates are rounded in the following paragraphs.

Total fishing effort in the Illinois portion of Lake Michigan during the study period was 464,900 angler-hours. Anglers harvested 93,800 yellow perch, 48,800 coho salmon, 13,700 Chinook salmon, 4,700 rainbow trout, 3,600 lake trout and 1,200 brown trout. Expenditures for boats, motors, trailers, and fishing gear used on Lake Michigan fishing trips during the study period were over $2.8 million. Anglers drove 2.4 million miles (round trip). The yield value of the Illinois sport fishing harvest was $2.6 million.

Detailed results for 2012 are presented in Tables 4 - 10. Tables 4 and 5 list seasonal harvest and effort (angler hours) estimates for anglers. Tables 6 and 7 present effort and harvest for each segment. Table 8 provides yield values. Table 9 lists fin clip

abbreviations; fin clips observed by our creel clerks are listed in Table 10, with the number of occurrences of each clip or clip combination listed by species. Table 10 can assist in determining the contributions of different stockings of fish to the sport fishery in the Illinois portion of Lake Michigan.

Tables 11 and 12 report angler trips and expenditures among angler types and among years. Tables 13 and 14 compare angler hours and harvest by fish species between angler types and for each year. Table 15 compares minor fish species harvest for each year.

Pedestrian fishing

From April 1 - September 30, 2012, pedestrian anglers made nearly 53,000 trips to Lake Michigan (Table 11) and spent over 207,000 hours fishing (Table 4). Yellow perch was the predominant species in the harvest, with a harvest of over 74,000 fish (Table 4). Chinook salmon were the next most important species for pedestrian anglers, with a

harvest of nearly 1,500 (Table 4). Pedestrian anglers spent $266,000 ($4.93 per trip) for fishing gear and drove 910,000 miles (17.5 miles per trip; Table 11).

Boater fishing

Anglers who used boats made nearly 45,000 trips to Lake Michigan (Table 11) and spent nearly 258,000 hours fishing (Table 4). The most abundant species in their harvest were coho salmon (48,800), yellow perch (19,400), Chinook salmon (12,200), rainbow trout (4,700) and lake trout (3,600)(Table 4). For salmonids, North Point Marina was the most productive of the four primary boat areas, accounting for 53% of the lake trout, brown trout, rainbow trout, Chinook salmon, and coho salmon taken by anglers who used boats (Table 4). Waukegan Harbor accounted for 29% of the yellow perch harvested by boat anglers (Table 4). Expenditures by anglers using boats were $2,580,000 ($58 per trip), with 65% of that amount going for boats, motors, and trailers (Table 11). Boaters drove 1,510,000 miles (33.7 miles per trip; Table 11).

Yield values

The estimated yield values of the three most commonly harvested sport species were $1,114,000 for Chinook salmon, $917,000 for coho salmon, and $337,000 for yellow perch (Table 8). Currently, none of the species listed in Table 8 are commercially available from Lake Michigan except yellow perch from the Wisconsin portion of Green Bay. The values of all species are derived from the retail prices of those species commercially harvested or raised in other waters.

Comparisons with preceding years

Total angler fishing effort in 2012 increased by 26.8% compared to 2011 (Table 13). Pedestrian effort increased by 22.1%, boat effort increased by 30.9% compared to 2011 (Table 13). Angler success for salmonids (number of fish per angler hour) increased compared to 2011 (Figure 2a). Angler success for yellow perch increased compared to 2011 (Figure 2b).

The yellow perch harvest of 94,000 represented an increase of 65.2% compared to the 2011 harvest (Table 13 and Figure 4). The average weight of yellow perch kept by anglers decreased to 236g (0.52 lb.; Table 8). The average length decreased to 252 mm (Figure 5). Perch fishing for boat anglers was fair April – June and pedestrian anglers in Chicago did well in June (Tables 6 and 7, Figure 6). Perch fishing, both effort and success, was nearly nonexistent after the July closure.

The 2012 harvest of coho salmon increased by 64.7% compared to 2011 (Table 13 and Figure 7). Weight 1,426 g (3.14 lb.) of creeled coho salmon decreased 11.3% and length (532 mm) decreased 2.4% compared 2011 (Table 8 and Figure 8). 70% of the harvest occurred in May and June (Tables 6 and 7).

The Chinook salmon harvest was 13,656 fish for 2012, an increase of 131% compared to 2011 (Table 13 and Figure 9). Average length was 736 mm, an increase of 6.5% compared to 201 and the average weight increased 9.4% compared to 2011 at 4,218 g (9.29 lb.), (Table 8 and Figure 10). 63.7% of Chinook salmon harvest occurred in July, August and September (Tables 6 and 7).

The 2012 harvest of lake trout was 3,636, an increase of 20.9% compared to 2011, (Table 13). The average weight increased by 11.6% and average length increased by 0.2% compared to 2011 (Table 8). 44.9% of the harvest occurred in April (Tables 6 and 7).

The 2012 brown trout harvest (1,195) increased 8.8% compared to 2011 (Table 13). The average length (518 mm) decreased by 3.4% compared to 2011 and the average weight of 1,580g (3.48 lb.) decreased by 19.1% (Table 8). April and May accounted for 80.8% of the harvest (Tables 6 and 7).

The 2012 rainbow trout harvest (4,681) increased by 50.4% compared to 2011 (Table 13). The average length (655mm) and weight 2,847 g (6.27 lb.) increased 0.8% and 3.1% respectively compared to creeled rainbow trout from 2011 (Table 8).

Estimated expenditures for boats, motors, and trailers decreased by 28.1% compared to 2011 (Table 11). Minor expenditures increased by 69.5% and total mileage increased by 23.5%.

The 2012 early spring survey saw an increase in effort and increases in harvest of perch and all salmonids except rainbow trout compared to 2011. Angler effort increased by 222%, yellow perch harvest increased 3,160%, brown trout harvest increased 2,000%, coho salmon harvest increased 168% and rainbow trout harvest decreased 45.3%. Twenty-one lake trout were harvested compared to none in 2011 (Table14).

Minor species

In addition to the species for which results are presented in detail in Tables 4 - 14, creel clerks reported several other species of fish in possession of anglers (Table 15). For some species, an estimate has been made of the total number of fish harvested and numbers caught (numbers in parentheses). For other species, because so few fish were observed just the actual number observed is reported. Most of the minor species were harvested in or near the harbors. **Rock bass**, 2,001 (7,035); **bluegill sunfish**, 406 (1,531); **pumpkinseed sunfish** 42 (253); **common carp**, 216 (476); **freshwater drum**, 3,540 (6,943) ; **smallmouth bass**, 38 (9,184); **largemouth bass**, 0 (1,023); **channel catfish**, 4 fish observed, **northern pike**, 3 fish observed, **white bass**, 2 fish observed, **white perch**, 1 fish observed, anglers also harvested **alewives** for use as bait and caught **round gobies** (some were retained for food, most were not retained).

DISCUSSION

Changes in the fishery and the creel survey in 2012

A new marina was opened in May at 31st Street in Chicago. There are two floating fishing piers, a launch ramp with parking for 13 boat trailers and 1,000 slips for moored boats. This location was not included in the creel survey.

Unlike previous years, estimates of vehicle fuel costs were not included in this report. Prior to this year, an estimate of $0.10 per mile for fuel was applied to the total miles driven by anglers to and from creel locations. Due to rises in gas prices, this likely would drastically underestimate the actual amount spent by anglers on vehicle fuel. We plan to improve estimates of anglers' vehicle fuel costs in the future.

Angler effort

Total angler fishing effort in 2012 increased for both pedestrian and boat anglers compared to 2011. Effort increased 30.9% for boats and 22.1% for pedestrians. Effort has been declining since this survey began in 1986 with periods of stability interspersed. This latest increase may indicate the drop in 2011 was just a short term blip.

Yellow perch

Annual yellow perch harvests in Illinois were well over one million fish each year from 1986 through 1993 with the exception of 1989. Beginning in 1994 however, harvest fell to fewer than 600,000 and by 1997 fell to well under 60,000 (Brofka and Dettmers, 1997). 2001 saw increased harvest (169,967) due to the combination of the repeal of the slot limit and moving the month closure to July. The annual harvests from 2002 through 2009 saw a general increasing trend to around 300,000. The 2003-2012 average harvest was 222,400. 2012 saw increases in effort and harvest for pedestrian anglers and decreases for boat anglers compared to 2011 (the worst year since the late 1990's). Harvest increased 125% for pedestrian anglers but decreased 18.0% for boat anglers. Overall effort directed at yellow perch increased 17.0% and HPE (harvest per angler effort expressed in fish per angler hour) increased 41.4% to 0.72 yellow perch per angler hour.

Coho salmon

Coho salmon have been the main component of both the boat and pedestrian salmonid fishery. In the boat fishery, coho salmon make up 60 to 70% of the salmonids harvested in a typical year. 2012 was a typical year with coho salmon accounting for 67.8% of salmonids harvested by the non-charter fishery. The 2012 harvest of over 48,800 coho salmon was a 64.7% increase compared to 2011. Mean weight of harvested coho salmon during 2012 was 1,426 g which was 11.3% lighter than the twenty-seven year mean.

Other salmonids

Coho salmon harvest has traditionally been concentrated in the spring and early to mid-summer. Other salmonids, especially lake trout and Chinook salmon, typically make up the majority of the harvest from mid-summer through

the fall. The lake trout harvest was stable from 1991 through 1997 with the exception of 1996. The lake trout harvest in 1998 was exceptional, the highest that this survey has ever seen at 12,000. 1999 and 2000 saw harvest return to the low level recorded in 1996. The past ten years has seen an average harvest of 1,640 fish. The harvest in 2006 (653) was the lowest ever observed by this survey. In 2012 the harvest increased to 3,636 fish, the highest number in the past ten years.

The Chinook fishery before 1988 was the mainstay of the summer/fall salmonid fishery. Chinook salmon are highly prized because they can attain a very large size and are extremely powerful fighters. Bacterial kidney disease (BKD) was blamed for die offs of Chinook salmon beginning in 1988. The harvest bottomed out in 1994 with 2,900 Chinook taken. Chinook salmon are now closely monitored in the hatchery and in the wild for BKD (Clark, 1996). The ten year average harvest (2003-2012) of Chinook salmon has been around 11,060 fish. Harvest in 2012 increased by 131% (13,656) compared to 2011. Mean weight increased 9.4% to 4,218g (9.29 lbs.) compared to 2011.

Brown trout are an important component of the spring salmonid fishery with a ten year average harvest (2003-2012) of 2,200 fish annually. The 2012 harvest of 1,195 browns was an increase of 9% from the 2011 harvest. The mean weight decreased to 1,580 g (3.48 lbs.).

Rainbow trout are a component of the spring and summer fishery. Some mature fish are caught in the spring by pedestrian anglers, but the majority of the fish are caught by the boat fishery. The average annual harvest for the past ten years has been 2,950. 2012 saw an increase of 50% compared to 2011 with a harvest of nearly 4,700 fish. The mean weight increased to 2,850 g (6.27 lbs.) in 2012.

Minor species

Certain species that have been present in the areas surveyed since the survey began have grown in prominence. Black bass (smallmouth and largemouth bass) inhabiting the harbors and shoreline of the Illinois portion of Lake Michigan have been known to bass anglers nationwide, as indicated by the national B.A.S.S. tournament based at Burnham Harbor July 19 - 23, 2000. Common carp and freshwater drum are being targeted both by anglers fishing for food and catch and release anglers using European carp tournament fishing techniques. Panfish other than yellow perch are being targeted or kept incidentally by pedestrian anglers, with rock bass being the most numerous; the average harvest for the past ten years has been 3% of the average annual yellow perch harvest. Estimated harvests of rock bass and freshwater drum have been similar to estimates of harvest for brown, lake, and rainbow trout for the past 10 years. Approximately 10% of total angling effort was directed at minor species in 2012.

Expenditures

2012 saw a decrease in major expenditures and increases in minor expenditures and mileage compared to 2011. Major expenditures (boat, motor and trailers) decreased 28%. Minor expenditures (tackle, bait, downriggers, etc.) increased 69% and mileage increased 23%.

Early spring (March) survey

The March survey is heavily influenced by the weather in March and the severity of the winter preceding March. During March of 2003 the shoreline and harbors were locked in ice for the first three weeks. 2004 was a marked improvement over 2003 with increases in all categories except lake trout and Chinook salmon (which remained the same at zero harvested). 2005 saw a decline in all categories. 2006 was similar to 2005. 2007 saw the harbors still frozen at the beginning of March. 2008 survey was similar to 2007 except that the harbors remained frozen longer. Ice again was a problem in 2009, especially at the Lake County group but the ice had cleared earlier from the Calumet ramp allowing boat access to the Calumet River where excellent yellow perch fishing occurred. Both ramps were clear at the beginning of the 2010 survey though there was some ice early at Montrose Harbor and drifting ice on the lake occasionally caused problems. 2011 saw some ice early in March in Waukegan Harbor which later revealed extensive winter storm damage to the launch ramps, closing them for repair. March, 2012 was one of the warmest Marches on record. Of the last ten years of March surveys, 2012 would rank first for total angler effort and coho salmon harvest, second for brown trout harvest, fifth for yellow perch harvest and eighth for rainbow trout harvest.

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Table 4. Effort (anglers-hours) and harvest (by species) by non-charter anglers in the Illinois portion of Lake Michigan during April-September, 2012. Wau. = Waukegan, Peds = Pedestrian

		Effort			**Harvest**					
Type of angler	Area	Total hours	Target perch	Target salmon	Yellow perch	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon
Peds	North Point	3,731	442	141	328	0	0	0	0	0
	Wau. Harbor	14,800	3,378	10,378	1,712	77	17	0	0	49
	Montrose	127,452	73,772	21,735	56,722	616	0	11	64	315
	Belmont	7,302	4,291	1,845	4,958	0	0	0	0	13
	Jackson	10,262	1,123	6,507	1,503	35	0	0	0	274
	Calumet	1,398	50	188	0	0	0	0	0	0
	others	42,227	9,192	23,379	9,185	151	5	1	3	813
	TOTALS	207,171	92,247	64,174	74,406	878	22	12	67	1,464
Boat	North Point	96,451	3,288	92,122	3,544	193	2,115	1,096	22,110	5,816
	Wau. Harbor	68,522	7,495	60,104	3,959	71	1,439	1,210	13,574	4,176
	Diversey	12,166	4,976	4,852	2,598	0	129	234	2,120	150
	Calumet	12,080	3,586	2,982	601	13	38	0	63	0
	others	68,543	18,118	41,231	8,741	39	938	1,084	10,910	2,051
	TOTALS	257,762	37,462	201,292	19,443	317	4,659	3,624	48,777	12,192
Summer	TOTALS	464,933	129,709	265,466	93,849	1,195	4,681	3,636	48,844	13,656

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Table 5. Effort (anglers-hours) and harvest (by species) by non-charter anglers at selected sites along the Illinois portion of Lake Michigan during March, 2012. Wau. = Waukegan, Cal. = Calumet, Peds = Pedestrian

	Effort			**Harvest**					
Location	Total hours	Target perch	Target salmon	Yellow perch	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon
Wau. Harbor	3,410	0	3,410	0	446	0	0	24	0
Wau. Ramp	5,692	284	5,365	0	902	41	21	1,234	0
Montrose	11,906	4,439	7,284	4,103	406	0	0	1,694	0
Cal. Park Peds	2,625	30	2,595	0	64	0	0	223	0
Cal. Park Ramp	2,368	679	1,691	4,780	10	0	0	49	0
Total	26,001	5,432	20,345	8,883	1,828	41	21	3,224	0

Table 6. Effort and harvest for each month by pedestrian anglers of the Illinois portion of Lake Michigan during April-September, 2012. Wau. = Waukegan

		Effort	**Harvest**							
Time Period	Area	Total hours	Target perch	Target salmon	Yellow perch	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon
April	North Point	59	0	0	0	0	0	0	0	0
	Wau. Harbor	1,501	0	1,501	0	52	0	0	0	0
	Montrose	8,344	563	6,706	91	430	0	0	50	0
	Belmont	270	0	91	0	0	0	0	0	0
	Jackson	743	0	721	0	35	0	0	0	0
	Calumet	67	0	7	0	0	0	0	0	0
	others	3,058	22	2,887	5	135	0	0	2	0
May	North Point	52	0	0	0	0	0	0	0	0
	Wau. Harbor	1,622	487	795	358	17	17	0	0	0
	Montrose	24,689	19,869	3,192	14,243	185	0	11	0	0
	Belmont	1,311	1,284	1,660	0	0	0	0	0	0
	Jackson	733	126	0	0	0	0	0	0	0
	Calumet	112	0	0	0	0	0	0	0	0
	others	4,214	1,890	405	1,345	14	5	1	0	0
June	North Point	1,232	422	0	328	0	0	0	0	0
	Wau. Harbor	3,164	1,966	1,050	1,277	8	0	0	0	0
	Montrose	56,642	49,280	135	42,115	0	0	0	14	0
	Belmont	3,269	2,916	31	3,297	0	0	0	0	0
	Jackson	2,113	997	0	1,503	0	0	0	0	0
	Calumet	393	0	0	0	0	0	0	0	0
	others	10,810	6,773	382	7,798	2	0	0	1	0
July	North Point	1,087	0	0	0	0	0	0	0	0
	Wau. Harbor	870	0	615	0	0	0	0	0	0
	Montrose	10,828	1,351	399	0	0	0	0	0	0
	Belmont	309	0	0	0	0	0	0	0	0
	Jackson	344	0	0	0	0	0	0	0	0
	Calumet	217	0	0	0	0	0	0	0	0
	others	1,876	69	247	0	0	0	0	0	0
August	North Point	734	20	0	0	0	0	0	0	0
	Wau. Harbor	2,207	684	1,223	0	0	0	0	0	0
	Montrose	11,456	2,314	670	173	0	0	0	0	0
	Belmont	398	90	0	0	0	0	0	0	0
	Jackson	799	0	256	0	0	0	0	0	0
	Calumet	256	50	0	0	0	0	0	0	0
	others	3,622	336	1,090	9	0	0	0	0	0
September	North Point	568	0	141	0	0	0	0	0	0
	Wau. Harbor	5,436	241	5,195	77	0	0	0	0	49
	Montrose	15,493	395	10,633	99	0	0	0	0	315
	Belmont	1,745	0	1,723	0	0	0	0	0	13
	Jackson	5,530	0	5,530	0	0	0	0	0	274
	Calumet	353	0	181	0	0	0	0	0	0
	others	18,647	97	18,364	28	0	0	0	0	813

Table 7. Effort and harvest by anglers using boats of the Illinois portion of Lake Michigan during April-September, 2012.

		Effort		Harvest						
Time period	Area	Total hours	Target perch	Target salmon	Yellow perch	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon
April	North Point	11,201	1,862	8,531	2,502	0	0	38	5,891	81
	Waukegan	6,051	1,525	4,534	34	0	0	0	1,951	102
	Diversey	0	0	0	0	0	0	0	0	0
	Calumet	2,322	1,003	939	0	0	0	0	0	0
	others	4,334	1,272	2,904	14	0	0	0	779	41
May	North Point	24,062	1,425	22,667	1,042	51	226	94	8,818	1,410
	Waukegan	19,140	4,206	14,119	3,657	0	14	196	6,247	769
	Diversey	1,914	0	867	0	0	0	0	290	0
	Calumet	2,026	363	136	0	13	0	0	0	0
	others	14,225	2,083	8,254	1,461	11	6	78	3,238	307
June	North Point	25,646	0	25,646	0	58	847	449	5,167	1,448
	Waukegan	15,346	1,764	13,602	268	39	403	204	3,154	507
	Diversey	6,601	4,976	1,635	2,598	0	92	46	1,662	28
	Calumet	5,546	1,995	542	205	0	0	0	63	0
	others	27,639	14,702	11,395	6,941	15	196	199	5,575	274
July	North Point	17,877	0	17,811	0	0	660	172	1,495	1,599
	Waukegan	16,652	0	16,530	0	12	745	266	1,828	1,587
	Diversey	1,740	0	439	0	0	0	0	92	46
	Calumet	455	225	0	395	0	0	0	0	0
	others	11,486	62	7,985	327	5	298	106	1,054	753
August	North Point	15,779	0	15,779	0	85	326	343	737	1,278
	Waukegan	6,873	0	6,858	0	20	53	258	176	326
	Diversey	0	0	0	0	0	0	0	0	0
	Calumet	366	0	0	0	0	0	0	0	0
	others	3,047	0	2,882	0	8	21	103	70	164
September	North Point	1,887	0	1,887	0	0	54	0	0	0
	Waukegan	4,460	0	4,460	0	0	224	288	0	799
	Diversey	1,912	0	1,912	0	0	38	189	75	75
	Calumet	1,365	0	1,365	0	0	38	0	0	0
	others	7,811	0	7,811	0	0	218	597	193	513

Table 8. Yield values of fish harvested by non-charter sport anglers in the Illinois waters of Lake Michigan during April - September 2012. All fish are assumed to be prepared as fillets with 60% waste. Prices for all except brown trout (used lake trout value) are those current in national markets in November, 2012.

Species	Total harvest	Av. wt. (lbs.)	Round wt. (lbs.)	Market wt. (lbs.)	Price per pound	Yield value
Yellow perch	93,849	0.52	48,802	19,521	$17.27	$337,128
Brown trout	1,195	3.48	4,159	1,664	$7.75	$12,896
Rainbow trout	4,681	6.27	29,350	11,740	$12.50	$146,750
Lake trout	3,636	6.81	24,761	9,904	$7.75	$76,756
Coho salmon	48,844	3.14	153,370	61,348	$14.95	$917,153
Chinook salmon	13,656	9.29	126,864	50,746	$21.95	$1,113,875

Combined yield value of all species: $2,604,558

Table 9. Fin clip abbreviations.

Name of fin or bone	Abbreviation
Adipose fin	ad
Dorsal fin	do
Left maxillary bone	lm
Right maxillary bone	rm
Left pectoral fin	lp
Right pectoral fin	rp
Left ventral fin	lv
Right ventral fin	rv

Table 10. Fin clip summary for salmonids harvested by non-charter anglers in the Illinois waters of Lake Michigan during 2011. Typically, only a portion of the salmonids stocked each year are marked. However, all lake trout stocked are clipped. Lake trout examined by clerks which exhibit no fin clips are one of four possibilities: 1. the lake trout is naturally produced (wild). 2. the lake trout failed to receive a fin clip in the hatchery. 3. the lake trout regenerated the missing fin or fins. 4. the clerk did not examine the lake trout thoroughly enough and missed the clip or clips.

	Species				
Clip	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon
ad	0	0	0	0	1
lp	1	0	4	0	0
rp	0	1	0	0	0
rp, lv	0	0	1	0	0
lv	0	0	1	0	0
rv	0	0	3	0	0
no clip	22	9	6	74	42

Table 11. Estimated number of angler trips and expenditures by non-charter anglers in the Illinois portion of Lake Michigan, during 2003 - 2012. NA = not applicable.

		Effort	Expenditures		
Type of angler	Year	(angler-trips)	Major (boat)	Minor (gear)	Miles (travel)
Pedestrians	2003	69,578	NA	$747,000	1,170,000
	2004	79,062	NA	$882,000	1,360,000
	2005	85,449	NA	$574000	1,530,000
	2006	74,719	NA	$973,000	1,240,000
	2007	75,041	NA	$477,000	1,290,000
	2008	83,841	NA	$1,128,000	1,440,000
	2009	90,555	NA	$900,000	1,650,000
	2010	61,303	NA	$502,000	1,040,000
	2011	40,781	NA	$163,000	730,000
	2012	52,758	NA	$266,000	910,000
Boats	2003	50,306	$6,550,000	$828,000	1,970,000
	2004	42,205	$11,663,000	$1,140,000	1,560,000
	2005	37,582	$7,386,000	$636,000	1,390,000
	2006	52,277	$12,293,000	$2,116,000	1,740,000
	2007	42,034	$6,914,000	$600,000	1,040,000
	2008	47,636	$2,949,000	$1,469,000	1,360,000
	2009	41,349	$7,584,000	$624,000	1,230,000
	2010	55,701	$12,171,000	$895,000	1,760,000
	2011	37,061	$2,320,000	$532,000	1,230,000
	2012	44,863	$1,668,000	$912,000	1,510,000
Season Totals	2003	119,884	$6,550,000	$1,576,000	3,130,000
	2004	121,267	$11,633,000	$2,022,000	2,920,000
	2005	123,031	$7,386,000	$1,210,000	2,920,000
	2006	126,996	$12,293,000	$3,089,000	2,980,000
	2007	117,075	$6,914,000	$1,077,000	2,330,000
	2008	131,477	$2,949,000	$2,597,000	2,880,000
	2009	131,904	$7,584,000	$1,524,000	2,880,000
	2010	117,004	$12,171,000	$1,397,000	2,800,000
	2011	77,842	$2,320,000	$695,000	1,960,000
	2012	97,621	$1,668,000	$1,178,000	2,420,000

Table 12. March fishing effort and expenditures by non-charter anglers at selected sites in the Illinois portion of Lake Michigan, during 2003 - 2012. NA = not applicable

		Effort	Expenditures		
Type of angler	Year	(angler-trips)	Major (boat)	Minor (gear)	Miles (travel)
Pedestrians	2003	1,987	NA	$24,000	40,000
	2004	4,231	NA	$94,000	80,000
	2005	2,652	NA	$49,000	60,000
	2006	3,378	NA	$38,000	70,000
	2007	2,812	NA	$26,000	50,000
	2008	1,656	NA	$33,000	30,000
	2009	1,750	NA	$42,500	40,000
	2010	2,292	NA	$51,400	51,000
	2011	1,667	NA	$5,300	27,000
	2012	4,517	NA	$47,400	85,000
Launched Boats	2003	356	$0	$1,000	7,000
	2004	787	$0	$36,000	20,000
	2005	566	$0	$19,000	13,000
	2006	594	$0	$33,000	12,000
	2007	835	$0	$36,000	8,000
	2008	605	$0	$37,000	9,000
	2009	1,925	$514,000	$61,000	50,000
	2010	2,067	$993,000	$83,000	55,000
	2011	215	$1,599,000	$400	3,000
	2012	1,417	$0	$16,400	31,000
March Totals	2003	2,343	$0	$25,000	50,000
	2004	5,017	$0	$130,000	100,000
	2005	3,218	$0	$68,000	76,000
	2006	3,972	$0	$71,000	82,000
	2007	3,647	$0	$62,000	58,000
	2008	2,261	$0	$70,000	37,000
	2009	3,675	$514,000	$103,000	90,000
	2010	4,359	$993,000	$135,000	106,000
	2011	1,882	$1,599,000	$5,700	30,000
	2012	5,934	$0	$63,800	116,000

Table 13. Fishing effort and harvest by non-charter anglers in the Illinois portion of Lake Michigan, in 2003 - 2012. Peds = Pedestrian anglers, Boat = Boat anglers.

		Effort	Harvest					
Angler type	Year	(angler-hours)	Yellow perch	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon
Peds	2003	251,773	139,234	1,181	309	0	4,713	1,122
	2004	287,683	169,212	1,474	436	16	4,301	2,790
	2005	307,076	275,632	1,294	250	0	2,211	2,459
	2006	276,536	188,535	692	304	0	348	2,734
	2007	251,912	216,437	1,110	311	34	491	2,543
	2008	284,555	144,144	1,854	395	0	2,179	2,313
	2009	325,802	147,941	745	507	0	2,366	2,922
	2010	231,121	93,986	630	384	0	4,712	1,755
	2011	169,723	33,071	664	312	0	4,759	1,155
	2012	207,171	74,406	878	22	12	67	1,464
Boat	2003	246,897	31,822	223	2,931	1,969	24,836	10,047
	2004	210,989	42,536	663	2,420	1,628	23,906	10,792
	2005	188,564	27,412	1,095	3,000	1,286	19,035	11,856
	2006	260,217	128,173	2,203	2,651	663	18,286	11,984
	2007	221,692	71,166	638	2,145	849	29,808	8,617
	2008	261,825	173,285	2,594	1,895	1,662	13,799	8,637
	2009	217,193	115,601	854	1,206	689	15,361	3,985
	2010	293,884	107,928	1,973	2,591	958	26,143	6,467
	2011	196,848	23,725	434	2,800	3,008	24,859	4,747
	2012	257,762	19,443	317	4,659	3,624	48,777	12,192
Season	2003	498,670	171,056	1,404	3,240	1,969	29,549	11,169
	2004	498,672	211,748	2,137	2,856	1,644	28,207	13,582
	2005	495,640	303,044	2,389	3,250	1,286	21,246	14,315
	2006	536,753	316,708	2,895	2,955	663	18,634	14,718
	2007	473,604	287,603	1,748	2,456	883	30,299	11,159
	2008	546,380	317,429	4,447	2,289	1,660	15,979	10,950
	2009	542,995	263,542	1,599	1,713	689	17,727	6,907
	2010	525,005	201,914	2,603	2,975	958	30,855	8,222
	2011	366,571	56,796	1,098	3,112	3,008	29,618	5,902
	2012	464,933	93,849	1,195	4,681	3,636	48,844	13,656

Table 14. March fishing effort and harvest by non-charter anglers at selected sites in the Illinois portion of Lake Michigan, in 2003 - 2012. Peds = Pedestrian, Lau'd = Launched boat anglers

		Effort	Harvest					
Angler type	Year	(angler-hours)	Yellow perch	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon
Peds	2003	9,136	0	175	22	0	15	0
	2004	18,848	170	1,396	360	0	469	0
	2005	11,244	492	762	85	0	173	0
	2006	11,560	0	1,467	65	0	259	0
	2007	9,819	373	764	0	0	386	0
	2008	5,940	261	347	52	0	797	0
	2009	6,296	108	160	85	0	84	0
	2010	8,642	0	549	97	0	65	0
	2011	6,937	28	15	75	0	292	0
	2012	17,941	4,103	915	0	0	1,941	0
Lau'd	2003	1,780	4,145	10	0	0	0	0
	2004	3,935	9,464	198	9	0	88	0
	2005	2,830	5,308	346	0	0	111	0
	2006	3,199	4,456	478	0	0	182	0
	2007	4,199	10,165	382	9	0	98	0
	2008	3,117	1,024	81	0	0	0	0
	2009	10,109	19,214	10	0	0	37	0
	2010	10,907	16,928	451	0	206	113	0
	2011	1,144	0	72	0	0	909	0
	2012	8,059	4,780	912	41	21	1,283	0
March Totals	2003	10,916	4,145	185	22	0	15	0
	2004	22,783	9,634	1,594	369	0	557	0
	2005	14,074	5,800	1,108	85	0	284	0
	2006	14,759	4,456	1,945	65	0	441	0
	2007	14,018	10,538	1,146	9	0	484	0
	2008	9,057	1,285	428	52	0	797	0
	2009	16,405	19,322	170	85	0	121	0
	2010	19,549	16,928	1,000	97	206	178	0
	2011	8,081	28	87	75	0	1,201	0
	2012	26,000	8,883	1,827	41	21	3,224	0

Table 15. Minor species harvest by non-charter anglers in the Illinois portion of Lake Michigan, in 2003 - 2012.

Year	Smallmouth bass	Largemouth bass	Rock bass	Bluegill sunfish	Pumpkinseed sunfish	Common carp	Freshwater drum
2003	283	0	7,067	514	1,046	193	3,195
2004	0	0	11,003	3,634	1,143	85	1,160
2005	124	18	9,512	848	601	268	3,921
2006	46	97	6,697	550	28	147	2,990
2007	252	49	10,650	269	20	154	1,965
2008	80	45	7,561	405	0	43	2,033
2009	76	0	3,934	298	0	240	1,482
2010	51	0	1,938	402	9	8	1,768
2011	0	4	575	309	0	238	2,946

2012	38	0	2,001	406	42	216	3,540

Figure 2 (a). Salmonid harvest per unit effort, derived from the Illinois sport fishing surveys of Lake Michigan, 2003-2012

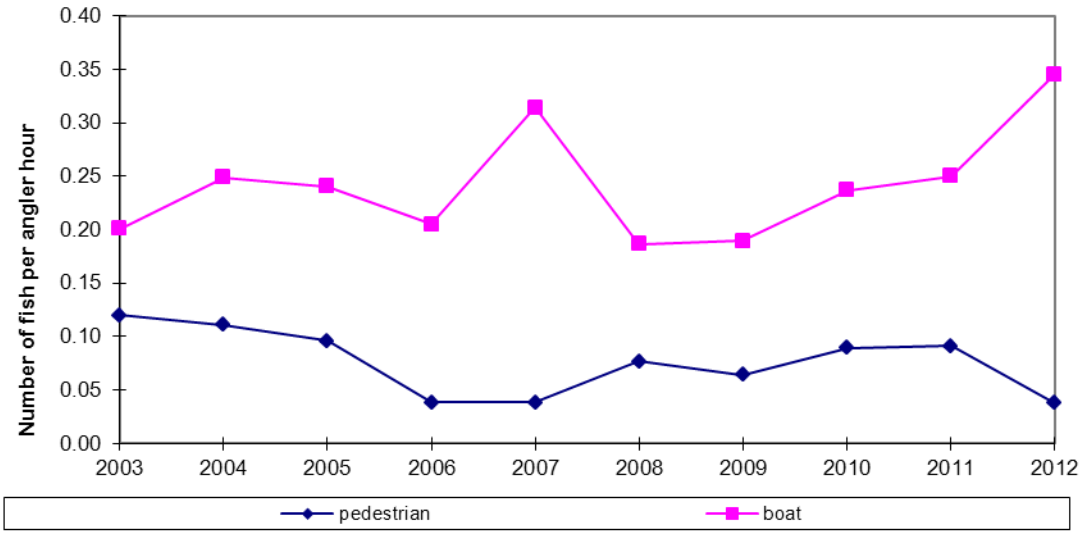


Figure 2 (b). Yellow perch harvest per unit effort, derived from Illinois sport fishing surveys of Lake Michigan, 2003-2012

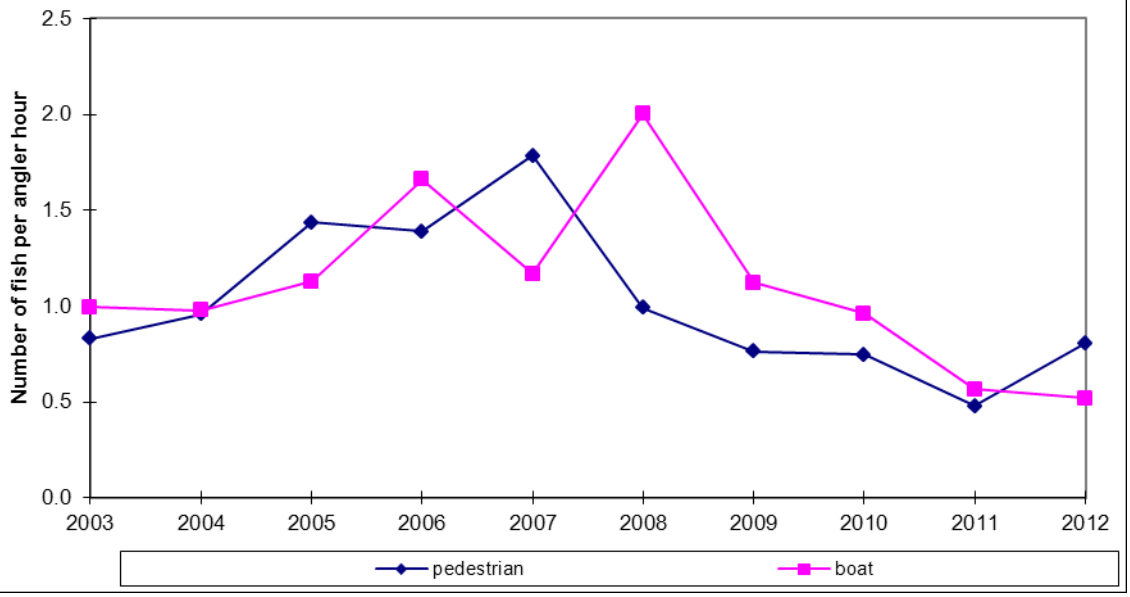


Figure 3 (a). Directed angler effort for salmonids in the Illinois portion of Lake Michigan, 2003-2012

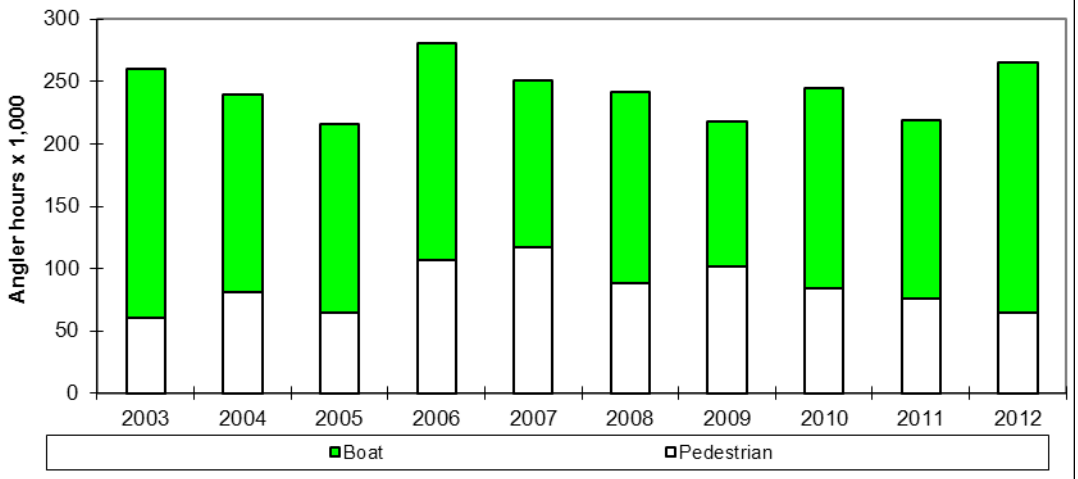


Figure 3 (b). Directed angler effort for yellow perch in the Illinois portion of Lake Michigan, 2003-2012

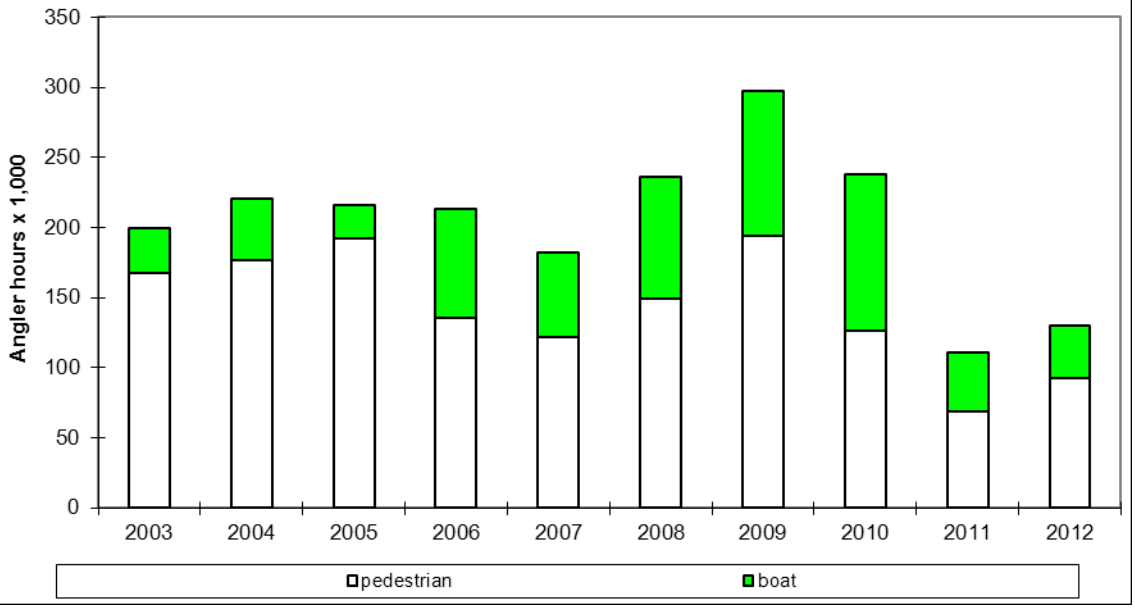


Figure 4. Total yellow perch non-charter sport harvest in the Illinois waters of Lake Michigan, 2003-2012

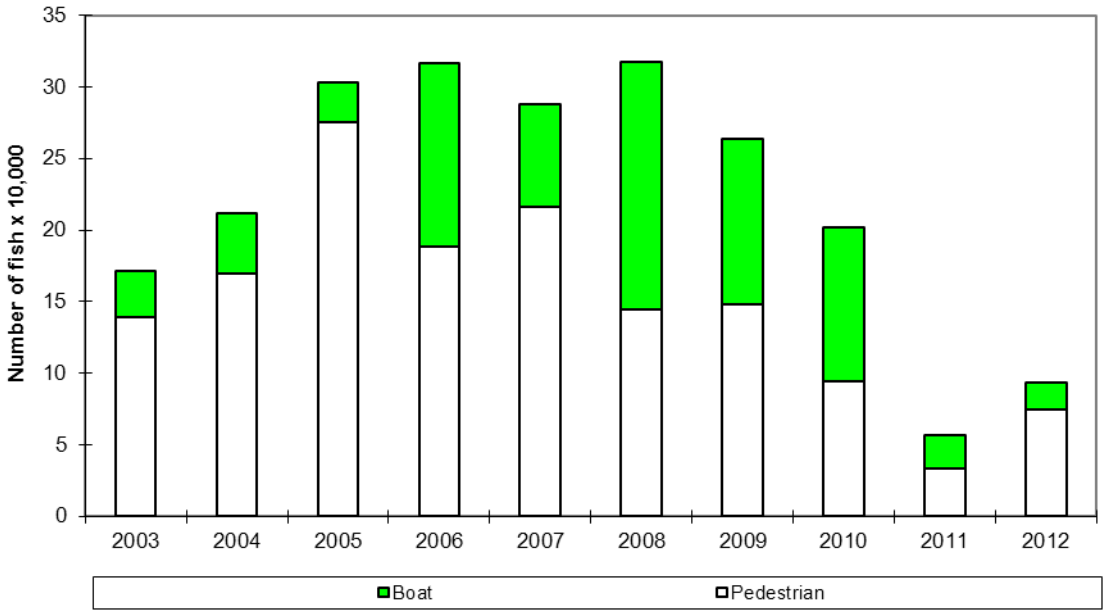


Figure 5. Average lengths of creeled yellow perch from the Illinois waters of Lake Michigan, 1986 - 2012

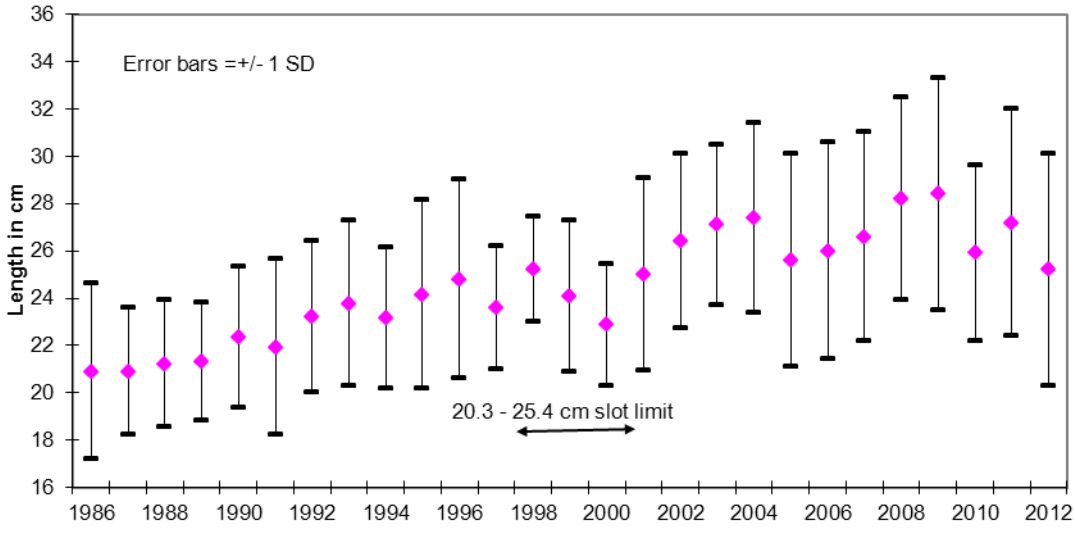


Figure 6. 2012 yellow perch sport harvest from the Illinois waters of Lake Michigan, per month

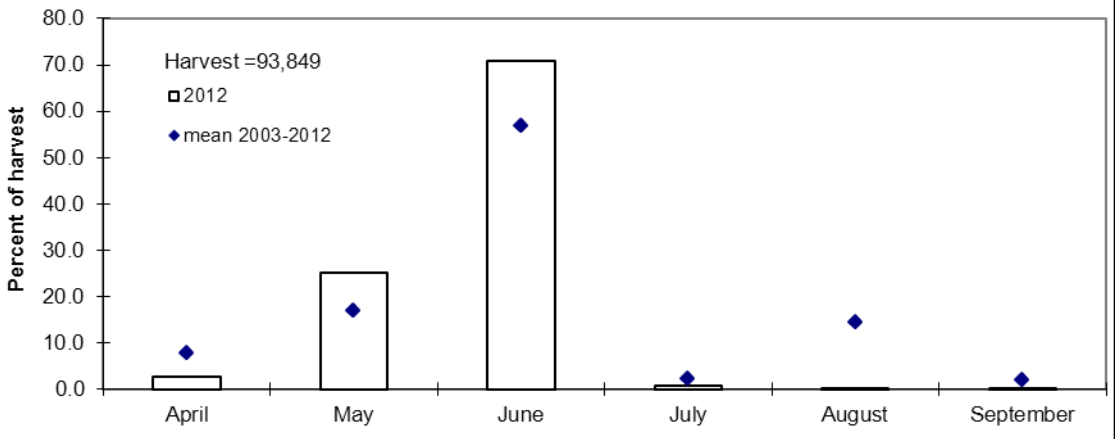


Figure 7. Total non-charter coho salmon sport harvest in the Illinois waters of Lake Michigan, 2003- 2012

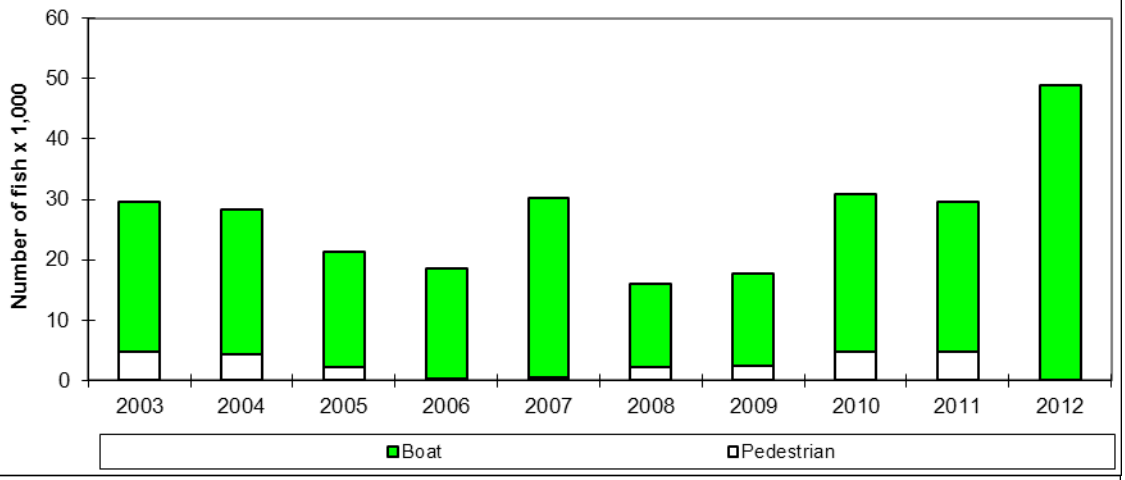


Figure 8. Average lengths of creeled coho salmon from the Illinois waters of Lake Michigan, 1986 - 2012

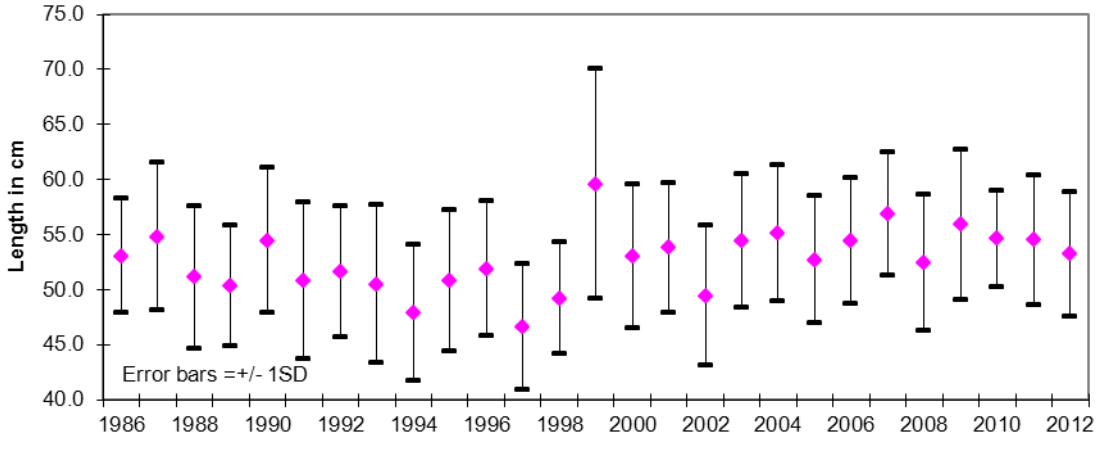


Figure 9. Total non-charter chinook salmon sport harvest in the Illinois waters of Lake Michigan, 2003-2012

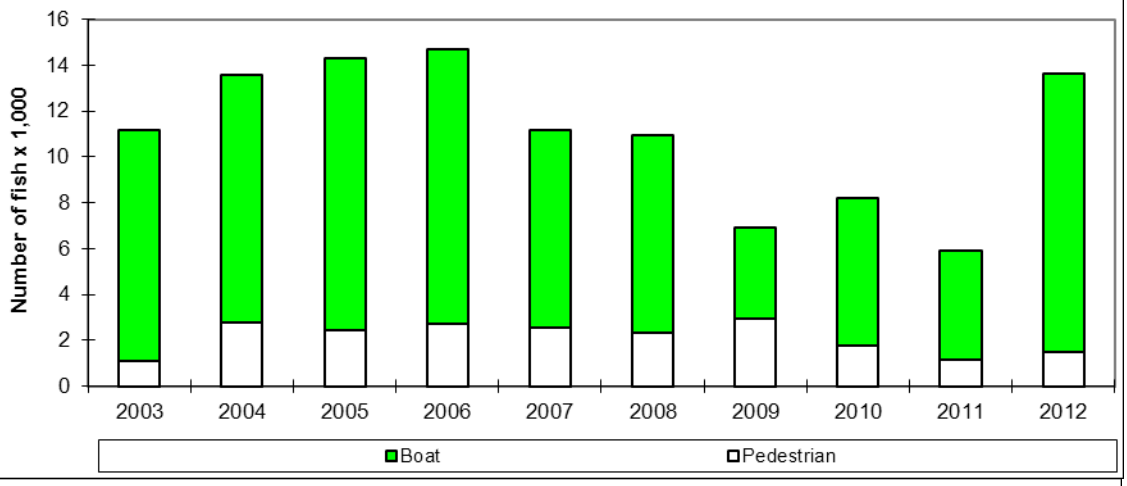
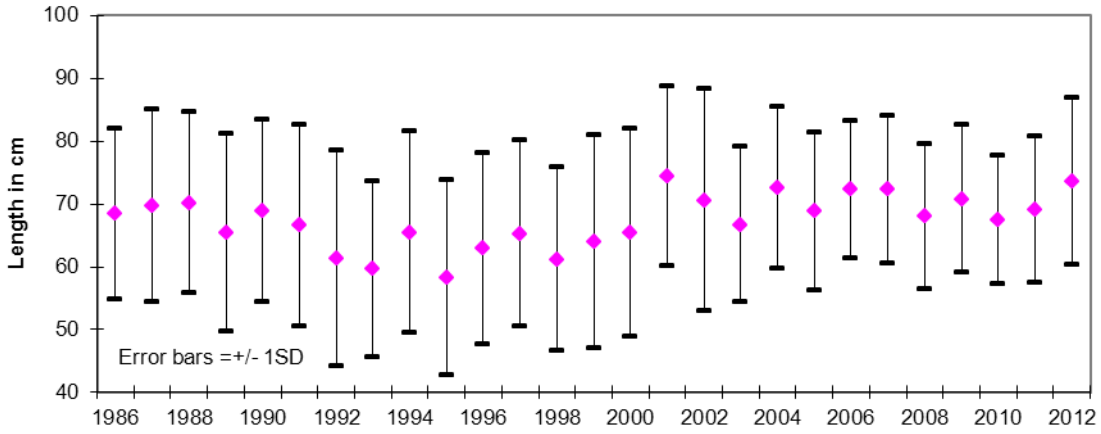


Figure 10. Average lengths of creeled chinook salmon from the Illinois waters of Lake Michigan, 1986 - 2012



APPENDIX A - COMPARISON OF THE CHARTER AND NON - CHARTER SALMONID BOAT FISHERY

A comparison was done to see if the charter and non - charter boat salmonid fisheries were targeting the same species (Tables A1 and A2). In general they have with similar percents of total harvest for both groups. A comparison of harvest per unit effort is also presented (Figure A1). As can be imagined the charter fishery generally outperformed the non - charter boat fishery in all years at a factor of 2 or 3 per angler hour. The combined harvest of both charter and non - charter anglers (boats and pedestrians) for 2003 - 2012 is presented (Figure A2). Harvest from early spring surveys are not included in the total.

Table A1. Non-charter boat harvest composition (boats only) April – September 2003 - 2012.

	Effort	Percent of total harvest					
Year	(angler-hours)	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon	Total salmonids
2003	199,369	0.60	7.30	4.90	62.10	25.10	40,006
2004	158,290	1.70	6.10	4.10	60.70	27.40	39,409
2005	151,010	3.00	8.30	3.50	52.50	32.70	36,272
2006	174,621	6.20	7.40	1.90	51.10	33.50	35,787
2007	133,974	1.50	5.10	2.00	70.90	20.50	42,057
2008	153,169	9.10	6.60	5.80	48.30	30.20	28.587
2009	116,514	3.90	5.50	3.10	69.50	18.00	22,095
2010	160,945	5.20	6.80	2.50	68.60	17.00	38,132
2011	143,331	1.20	7.80	8.40	69.30	13.20	35,848
2012	201,326	0.50	6.70	5.20	70.10	17.50	69,569

Table A2. Charter boat harvest composition April – September 2003 - 2012.

	Effort					Percent of total harvest	
Year	(angler-hours)	Brown trout	Rainbow trout	Lake trout	Coho salmon	Chinook salmon	Total salmonids
2003	112,068	1.00	4.20	5.00	69.60	20.30	54,471
2004	110,284	1.70	3.30	4.30	62.30	28.40	51,359
2005	114,599	2.40	8.60	4.00	51.20	33.70	58,473
2006	99,698	1.20	5.50	2.50	54.00	36.70	51,753
2007	87,763	2.90	3.20	2.90	66.50	24.60	50,218
2008	91,756	2.90	5.20	4.60	59.40	28.00	41,499
2009	88,221	2.00	6.70	5.30	59.10	26.90	34,349
2010	94,406	1.10	13.90	6.00	53.10	26.00	43,883
2011	91,235	0.50	8.60	7.00	67.60	16.30	48,585
2012	96,818	0.90	6.00	10.20	58.50	24.40	50,425

Figure A1. Comparsion of charter and non-charter boat salmonid harvest rates for the Illinois portion of Lake Michigan, 2003-2012

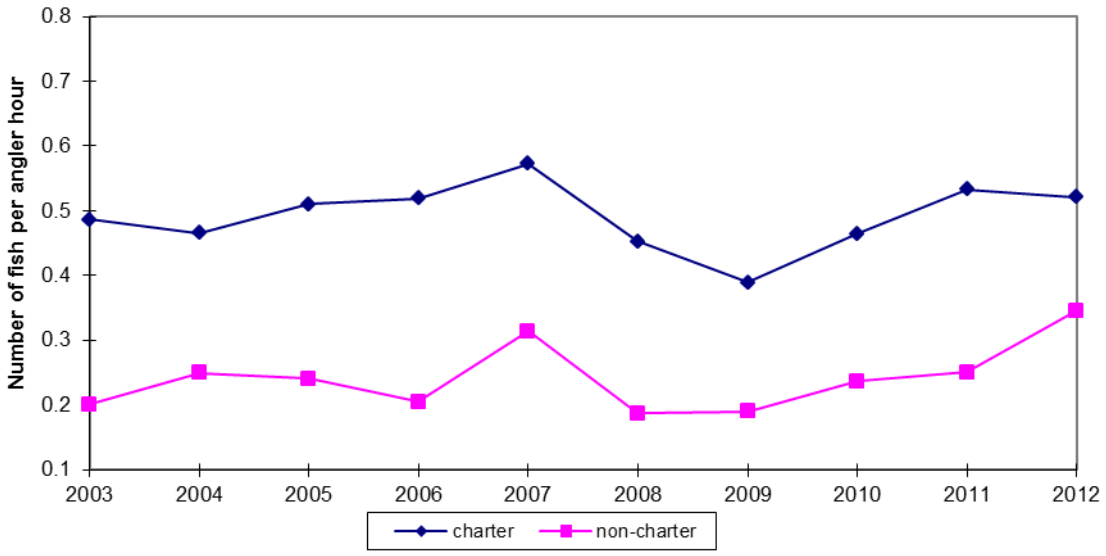


Figure A2. Illinois Lake Michigan sportfishing harvest (charter & regular combined) 2002 - 2011