

Illinois Department of Natural Resources  
Division of Fisheries

# Charter Boat Fishing in Lake Michigan: 2007 Illinois Reported Harvest

Steven R. Robillard  
Illinois Department of Natural Resources  
Lake Michigan Program  
March 11, 2009

## Table of Contents

Executive Summary	1
Introduction	2
Methods	3
Results and Discussion	4
Literature Cited	5
Tables	6-8
Figures	9-10
Appendix (Lake Michigan Charter Boat Operator Monthly Catch Report)	11-12

## List of Tables

Table 1. Number of salmon and trout stocked in the Illinois waters of Lake Michigan, 1977-2007.	6
Table 2. Monthly totals of fishing effort and salmonid harvest from the Illinois waters of Lake Michigan by charter boat anglers in 2007.	7
Table 3. Number of salmonids, by Lake Michigan statistical grid <sup>a</sup> , harvested by charter boat anglers in 2007. No salmonids were harvested from grids 2305, 2306, 2405, 2406, 2502, 2505, 2506, 2606, or 2703.	8

## List of Figures

Figure 1. Estimated harvest of salmonids, by species, by charter boat sport anglers, 1997-2007. The numbers above the columns indicate the charter boat angler catch rate (number salmonids per 100 angler-hrs) in each year.	9
Figure 2. Estimated fishing effort (angler-hours) by anglers fishing from shore, private boats, and from charter boats, 1997-2007. Non-charter effort estimates from Brofka and Czesny (2008).	9
Figure 3. Illinois charter boat and non-charter boat harvest rates for all salmonids, 1997-2007. The dashed line represents the 1979-2007 average charter boat harvest rate. Non-charter harvest rate estimates from Brofka and Czesny (2008).	10

## **Executive Summary**

Illinois charter boat operator permits were issued to 117 individuals in 2007. Illinois residents accounted for approximately 83% of 19,394 sport anglers which fished on charter boats and harvested a reported 51,067 salmon and trout and 2,573 yellow perch from the Illinois waters of Lake Michigan. Coho salmon comprised the greatest portion (65%) of the charter boat angler harvest; Chinook salmon (25%), lake trout (3%), rainbow trout (3%), and brown trout (3%) constituted smaller percentages of the harvest. The percentage of coho in the harvest was near the middle of the range (43-83%; 1987-2007) and likely attributable to reduced effort and a decrease in the number and percentage of Chinook salmon in the harvest. Although the total harvest declined from the previous year, the 2007 overall harvest rate (56 fish per 100 angler-hours) was higher than the 51 fish per 100 angler-hours in 2006.

## Introduction

Non-native salmonids have become an integral part of the Lake Michigan fish community and the sport fishery. Pacific salmon and various trout species have been stocked in Lake Michigan since the late 1960s; 12.8 million salmonid fingerlings are annually stocked lakewide (10-year mean). Chinook salmon have comprised the greatest portion of salmonids stocked in Lake Michigan since 1978. Lake trout, which are native to Lake Michigan, also are stocked to meet criteria set forth by the *Lakewide Management Plan for Lake Trout Rehabilitation in Lake Michigan*. In some years, Atlantic salmon and tiger trout also have been stocked in low numbers, and splake, a hybrid of lake trout and brook trout, have been stocked in Wisconsin waters each year since 1984 and Michigan waters since 1987. Salmonid stocking in Illinois waters constitutes approximately 6.4% of the salmonids stocked lakewide (Table 1).

The purposes for stocking these fish are to re-establish self sustaining lake trout populations and provide sport fishing opportunities. The expansion of the Welland Canal bypassed Niagara Falls which acted as a natural barrier to aquatic invaders from the Atlantic Ocean. The alewife, a fish native to the Atlantic Ocean first discovered in Lake Michigan in 1950, drastically altered the Lake Michigan food web and negatively impacted native planktivores. The original introduction of the Pacific salmon was to control alewife (*Alosa pseudoharengus*) population growth.

Charter boat operators receive a fee to provide sport anglers access to offshore fishing opportunities for salmonids. A catch reporting system is mandated through Illinois statutes governing charter boat licensees that engage in such activities in Illinois waters (Fish Code of Illinois, Section 5/10-135). This report summarizes the reported charter boat angler effort and salmonid harvest from the Illinois waters of Lake Michigan in 2007.

## Methods

Lake Michigan Charter Boat Operator permits were issued to 117 individuals in 2007. In addition, operators also received standardized catch report forms (Appendix). Data requested on the catch report included: date of fishing trip, jurisdictional grid fished, number of resident and non-resident sport anglers, number of fishing lines used, total number of hours fished (excluding running time), and number and species of harvested fish. State regulations require that charter boat operators submit these completed catch reports on a monthly basis, even in months when no charter trips occur.

Harvest and fishing effort data from 3,760 charter boat excursions were summarized by season, month, and statistical grid, and trends in harvest and effort were compared between years. These harvest data represent reported fishing effort by 16,168 Illinois residents and 3,226 non-residents that chartered boats to fish in the Illinois waters of Lake Michigan in 2007. Since the number of fishing lines per angler was not equivalent among trips, fishing effort was instead expressed as angler-hours and calculated by multiplying the total number of anglers by number of hours fished. Seasonal harvest rate was calculated by dividing the total harvest of all salmonids by total effort for the season. Harvest rate for each statistical grid was based on total number of salmonids harvested within the grid divided by the fishing effort within the grid. All harvest rates were then standardized to 100 angler-hours because harvest rates were less than 1 fish per angler-hour.

## Results and Discussion

Similar to previous years, most salmonids harvested from Illinois waters of Lake Michigan in 2007 were coho salmon (Figure 1). Coho salmon accounted for 65% of the 2007 salmonid harvest and have comprised the greatest portion (66.2%<sup>1</sup>) of the salmonid harvest since 1979. The percentage of coho in the harvest increased from 2006 and is likely attributable to a decrease in the number and percentage of Chinook salmon (25%) in the harvest. Lake trout (3%), rainbow trout (3%), and brown trout (3%) constituted smaller percentages of the 2007 harvest. The 2007 harvest of Chinook salmon in Illinois waters declined for the first time in six years. Harvests of coho salmon, Chinook salmon, and rainbow trout declined between 2006 and 2007; lake trout harvest increases slightly and brown trout more than doubled.

Charter boat angler effort (91,499 angler-hours) declined by 12% from 2006 (117,910 angler-hours). The non-charter salmonid fishing effort was also declined (28%) between 2006 and 2007. Charter boat sportfishing previously accounted for approximately 22%<sup>2</sup> of the total fishing effort directed at salmonids in the Illinois portion of Lake Michigan. More recently, charter boats have comprised 30%<sup>3</sup> of the total angler effort for salmonids, due to a slow decline in shore-based salmon fishing since 1988 and a 50% reduction in non-charter boat effort after 1998 (Figure 2).

Overall harvest rate was influenced by both the number of coho and Chinook salmon in the harvest. There was a moderate increase in harvest rate from 51 fish per 100 angler-hours in 2006 to 56 fish per 100 angler-hours in 2007, but harvest rate was similar to the long-term average (Figure 3). Similar to previous years, the harvest rate of anglers fishing on charter boats was approximately twice that of anglers fishing on non-chartered boats (Figure 3).

---

<sup>1</sup> Average 1979-2007; <sup>2</sup> Average 1988-1998; <sup>3</sup> Average 1999-2007.

Most chartered fishing trips typically occur during the months of May and June. In 2007 however, less trips were conducted in June than usual (Table 2). The spring coho season which usually extends into June was abbreviated in 2007; most coho salmon (65%) were harvested in May. Similar numbers of Chinook salmon were harvested in July and August. Data from previous years indicate that coho salmon harvests are usually highest in spring, while other salmonids are more equally represented in the late-summer harvests.

No fishing was reported in nine statistical grids (2305, 2306, 2405, 2406, 2502, 2505, 2506, 2606, and 2703). Approximately 66% of the salmonids were harvested from Grid 2302 however 57% of the fishing effort was focused in that grid (Table 3). The highest harvest rate (65 fish per 100 angler-hrs) occurred in Grid 2302. In general, harvest rates are usually highest in the north and in grids closest to shore (i.e., 2302 and 2402).

#### **Literature Cited**

Brofka, W. A. and S. J. Czesny. 2008. A survey of sportfishing in the Illinois portion of Lake Michigan. Aquatic Ecology Technical Report 2008(16). Illinois Natural History Survey. 57pp.

#### **Acknowledgements**

I wish to thank Pat Bevell, Lake Michigan Program office coordinator, for entering data and monitoring reporting compliance.

Table 1. Number of salmon and trout stocked in the Illinois waters of Lake Michigan, 1977-2007.

Year	Coho Salmon	Chinook Salmon	Lake Trout	Rainbow trout (Arlee)	Rainbow trout (Skamania)	Brown Trout	Total
1977	102,742	346,696	166,000	176,164		42,200	833,802
1978	252,377	611,331	116,000	39,848		12,800	1,037,936
1979	289,440	183,090	161,790	215,082			858,662
1980	39,000	152,181	87,000	112,880		22,762	434,623
1981	323,814	430,600	173,000	186,368		65,080	1,178,862
1982	158,675	793,270	203,800	169,950		18,300	1,547,795
1983	0	533,600	166,400	0		50,925	750,925
1984	276,800	537,750	100,000	164,678		88,452	1,167,680
1985	304,600	195,000	378,540	146,260		114,695	1,139,095
1986	312,191	215,000	302,000	151,908		59,324	1,040,423
1987	187,071	539,111	126,934	91,390	2,440	88,466	1,032,972
1988	297,272	456,805	166,548	116,584	12,214	94,695	1,131,904
1989	99,690	650,425	440,745	59,047	51,443	105,484	1,406,834
1990	302,600	479,400	27,843	51,100	55,084	102,510	1,018,537
1991	312,731	496,338	101,000	80,175	53,543	113,912	1,157,699
1992	308,581	352,669	100,033	52,076	53,195	100,107	966,661
1993	117,789	364,197	96,000	159,028	0	105,657	842,671
1994	328,004	285,583	96,700	51,618	46,080	100,528	908,513
1995	308,204	362,718	59,605	50,026	49,042	98,211	927,806
1996	305,581	365,427	60,900	50,071	51,980	85,160	919,119
1997	320,288	360,117	120,000	41,500	50,178	90,066	964,149
1998	305,835	366,172	60,000	50,050	52,933	99,748	874,738
1999	301,589	304,645	64,000	84,660	0	102,665	857,559
2000	302,300	305,706	0	100,000	0	100,000	808,006
2001	300,900	304,000	59,240	87,608	0	72,316	824,064
2002	300,932	305,341	61,024	46,003	60,461	100,000	873,761
2003	249,066	299,462	60,771	50,886	75,968	100,000	836,153
2004	300,076	302,673	60,300	48,423	64,300	100,000	875,772
2005	301,006	295,242	62,832	55,338	56,058	100,000	870,476
2006	304,242	242,542	67,849	49,462	55,201	93,000	812,276
2007	301,377	252,265	56,381	50,982	66,334	100,000	827,339



Table 2. Monthly totals of fishing effort and salmonid harvest from the Illinois waters of Lake Michigan by charter boat anglers in 2007.

Month	Trips	Number residents	Number non-residents	Effort (angler-hours)	Coho salmon	Chinook salmon	Lake trout	Rainbow trout	Brown trout	Total Catch
Mar	0	0	0	0.0	0	0	0	0	0	0
Apr	97	312	213	2861.5	224	11	182	9	146	572
May	918	3348	1413	17317	21722	193	13	149	124	22201
June	742	3604	342	19389	7680	1038	174	307	175	9374
July	696	3074	479	17866.5	2356	4703	281	638	176	8154
Aug	747	3205	555	19202.5	1263	4620	422	388	432	7125
Sept	428	1983	187	11126	157	1786	362	98	389	2792
Oct	123	596	37	3462.5	9	303	237	6	208	763
Nov	9	46	0	274	0	0	79	1	6	86
<b>Total</b>	<b>3,760</b>	<b>16,168</b>	<b>3,226</b>	<b>91,499.0</b>	<b>33,411</b>	<b>12,654</b>	<b>1,750</b>	<b>1,596</b>	<b>1,656</b>	<b>51,067</b>

Table 3. Number of salmonids, by Lake Michigan statistical grid <sup>a</sup>, harvested by charter boat anglers in 2007. No salmonids were harvested from grids 2305, 2306, 2405, 2406, 2502, 2505, 2506, 2606, or 2703.

Grid	Coho salmon	Chinook salmon	Lake trout	Rainbow trout	Brown trout	Total harvest	Effort (angler-hours)	Harvest rate <sup>b</sup>
2302	23,664	7,601	1,084	981	568	33,898	52,292.0	65
2303	747	656	115	124	42	1,684	4,839.0	35
2304	4	4	3	1	0	12	60.0	20
2305	0	0	0	0	0	0	0.0	NA
2306	0	0	0	0	0	0	0.0	NA
2402	5,988	2,338	175	167	642	9,310	17,416.0	53
2403	294	232	202	27	48	803	2,558.5	31
2404	0	0	5	0	0	5	20.0	25
2405	0	0	0	0	0	0	0.0	NA
2406	0	0	0	0	0	0	0.0	NA
2502	0	0	0	0	0	0	0.0	NA
2503	666	449	54	29	98	1,296	3,456.5	37
2504	224	151	42	34	22	473	1,152.5	41
2505	0	0	0	0	0	0	0.0	NA
2506	0	0	0	0	0	0	0.0	NA
2603	639	114	10	58	157	978	2,745.0	36
2604	934	763	49	142	54	1,942	5,601.5	35
2605	92	197	6	6	3	304	531.0	57
2606	0	0	0	0	0	0	0.0	NA
2703	0	0	0	0	0	0	0.0	NA
2704	106	131	3	20	16	276	628.0	44
2705	53	18	2	7	6	86	199.0	43

<sup>a</sup> See Appendix for grid map of Illinois waters.

<sup>b</sup> Harvest rate (fish per 100 angler-hours) = total harvest / effort x 100.

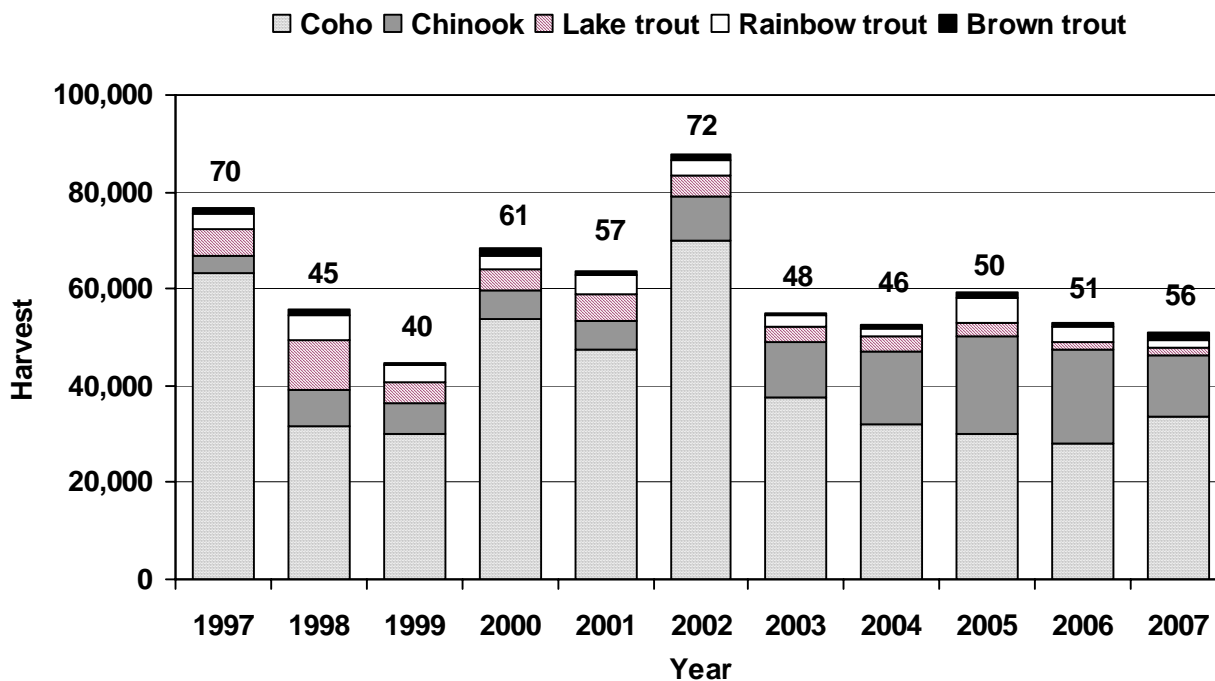


Figure 1. Estimated harvest of salmonids, by species, by charter boat sport anglers, 1997-2007. The numbers above the columns indicate the charter boat angler catch rate (number salmonids per 100 angler-hrs) in each year.

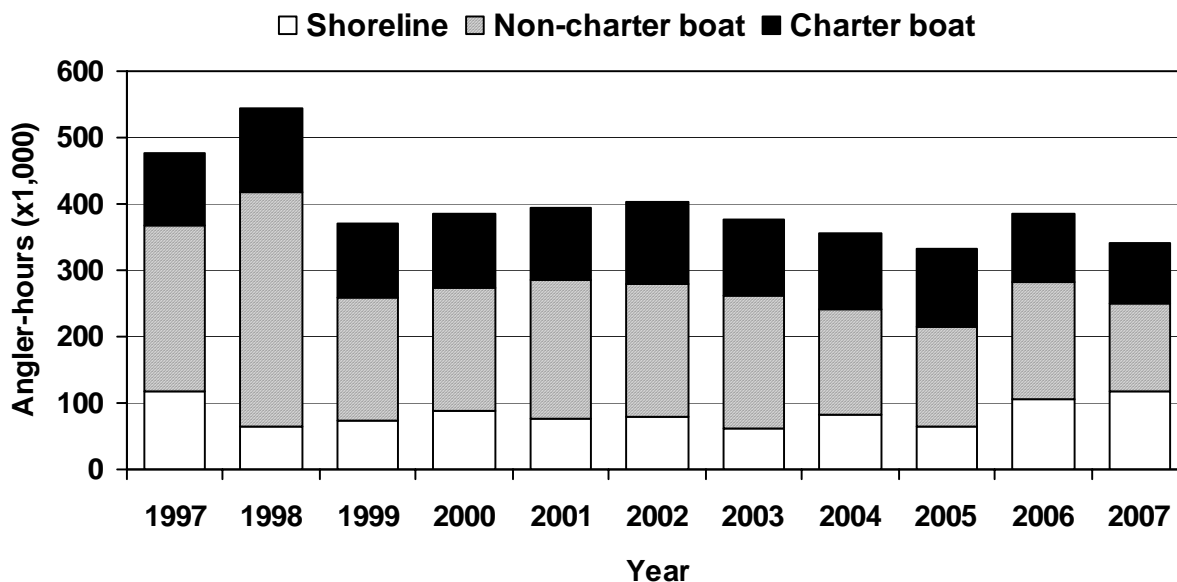


Figure 2. Estimated fishing effort (angler-hours) by anglers fishing from shore, private boats, and from charter boats, 1997-2007. Non-charter effort estimates from Brofka and Czesny (2008).

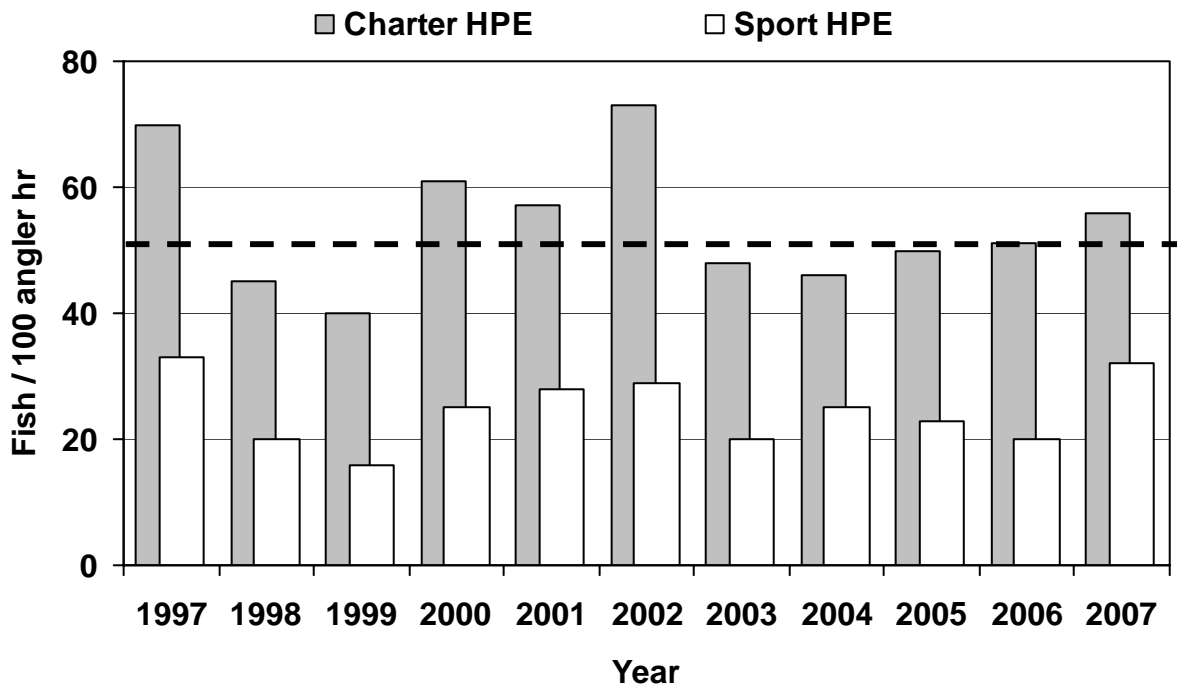


Figure 3. Illinois charter boat and non-charter boat harvest rates for all salmonids, 1997-2007. The dashed line represents the 1979-2007 average charter boat harvest rate. Non-charter harvest rate estimates from Brofka and Czesny (2008).



# LAKE MICHIGAN CHARTER BOAT OPERATOR MONTHLY CATCH REPORT

(See instructions for preparing this form on reverse side)

IL Charter Boat  
Operator Permit # \_\_\_\_\_ Operator's Name \_\_\_\_\_ (Please print)

Port \_\_\_\_\_ Month \_\_\_\_\_ Year 20 \_\_\_\_\_

Date	Location by Grid No.	No. of Anglers		No. Lines	Hours Fished	Lake Trout	Coho	Brown	Rainbow	Chinook	Yellow Perch	Tag Numbers (if any)
		IL Res	NonRes									
<b>TOTAL</b>												

**I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE.**

Prepared By	Date Prepared
-------------	---------------

The Illinois Department of Natural Resources is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined in the Fish Code of Illinois, Section 5/10-135. Disclosure of this information is required by law. Failure to provide such information could result in the denial of future charter boat permits under Section 5/20-35. This form has been approved by the Forms Management Center. Information given on this report is confidential and no information revealing private enterprise will be given out.

**Reports must be submitted for EACH month (March through November) and received on or before the 15<sup>th</sup> day of the following month, whether fishing occurred or not.**

**When no more fishing will occur for the season, the report must be submitted stating “NO MORE FISHING FOR CURRENT YEAR”, and reports will NOT have to be submitted for subsequent months.**

INSTRUCTIONS FOR PREPARING REPORT

CHARTER BOAT OPERATOR PERMIT NUMBER – Enter your **current** Illinois operator permit number.

PORT – Enter the port of your **departure**.

MONTH – Name of the month (and year) for which the report is being prepared.

DATE – Enter the date on which the fishing occurred. **Use a separate line for each trip.**

LOCATION BY GRID NUMBER – Refer to the lake chart below and determine the number of the grid in which most of the fishing was done. Enter this number in the space provided.

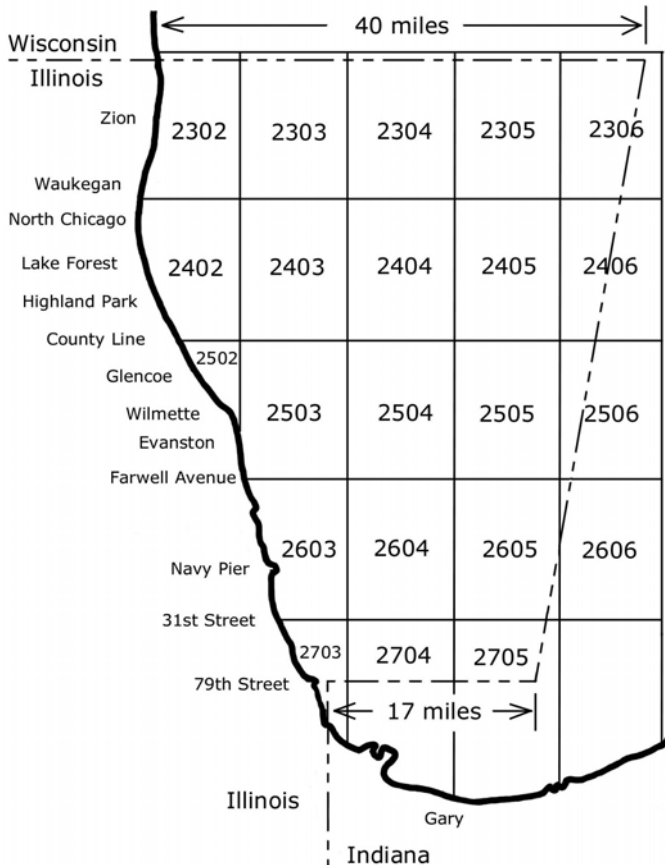
NUMBER OF ANGLERS, RESIDENT AND NON-RESIDENT – Enter the number of **Illinois** residents and non-resident anglers in the fishing party and include crew members if they fished.

NUMBER OF LINES – Enter the number of lines being fished from the boat.

HOURS FISHED – Enter the number of hours in which the party was engaged in fishing. **Do not include running time.**

CATCH DATA – Enter the number of fish of each species **kept** during the trip. Enter the color and number on any tags observed on those fish caught during the trip.

**Preparer of form must sign and date on the bottom of the form in the space provided.**



**Mail completed forms to:**

Illinois Department of Natural Resources  
 Division of Fisheries  
 Lake Michigan Program  
 9511 Harrison Street  
 Des Plaines, IL 60016

Unusual observations, comments, and requests for additional forms may be noted in the space below.

REMARKS:

Questions regarding this form? (847) 294-4134