

Illinois Department of Natural Resources  
Division of Fisheries

# Charter Boat Fishing in Lake Michigan: 2016 Illinois Reported Harvest

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Lake Michigan Program  
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## Executive Summary

Illinois charter boat operator permits were issued to 113 individuals in 2016. Illinois residents accounted for approximately 76% of 16,811 sport anglers who fished on charter boats and harvested a reported 38,439 salmon and trout from the Illinois waters of Lake Michigan; only one yellow perch was reported in the harvest. Coho salmon comprised the greatest portion (50%) of the charter boat angler harvest; Chinook salmon (8%), lake trout (26%), rainbow trout (16%), and brown trout (1%) constituted smaller percentages of the harvest. The percentage of coho in the harvest was below average (1979-2016 average 65%; range 43-83%). The total harvest and effort declined from 2015. The 2016 overall harvest rate (43 fish per 100 angler-hours) was similar to the 42 fish per 100 angler-hours in 2015 but below the long-term average (48 fish/angler-hour, 1979-2016).

## 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. Approximately 12 million salmonid fingerlings were annually stocked lakewide during 1976-2012; current stocking plans call for approximately 10.5 million salmon and trout. Chinook salmon comprised the greatest portion of salmonids stocked in Lake Michigan until 2005, after which stocked Chinook salmon and lake trout numbers were similar. Lake trout, which are native to Lake Michigan, also are stocked to meet criteria set forth by *A Fisheries Management Implementation Strategy for the Rehabilitation of Lake Trout in Lake Michigan* and to achieve the Salmonine Objective of the Fish Community Objectives for Lake Michigan. Salmonid stocking in Illinois waters (Table 1) constitutes approximately 8.5% of the salmonids stocked lakewide.

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 population growth although a popular sport fishery was developed.

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 and Wildlife 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 2016.

## Methods

Lake Michigan Charter Boat Operator permits were issued to 113 individuals in 2016. 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 3,276 charter boat excursions in 2016 were summarized by season, month, and statistical grid, and trends in harvest and effort were compared to previous years. The 2016 harvest data represent reported fishing effort by 12,788 Illinois residents and 4,023 non-residents that chartered boats to fish in the Illinois waters of Lake Michigan. 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 per trip. 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 typically less than 1 fish per angler-hour.

## Results and Discussion

Similar to previous years, most salmonids harvested from Illinois waters of Lake Michigan in 2016 were coho salmon (Figure 1). Coho salmon accounted for 50% of the 2016 salmonid harvest and have comprised, on average, the greatest portion (65%<sup>1</sup>) of the salmonid harvest since 1979. The percentage of coho in the harvest was less than in 2015 (58%). Lake trout (26%), rainbow trout (16%),

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<sup>1</sup> Average 1979-2016

and brown trout (1%) constituted smaller percentages of the 2016 harvest. Both the number harvested and the percentage of Chinook salmon in the harvest increased compared to 2015. Harvest of rainbow trout nearly doubled and brown trout harvest decreased 38%. Lake trout harvest decreased 10% but was still more than double the typical harvest.

Charter boat angler effort (89,408 angler-hours) declined 6% from 2015 (94,983 angler-hours). Non-charter boat salmonid fishing effort also declined between 2015 and 2016 (decreased 8%; C. Roswell, INHS, pers. comm.). Charter boat sportfishing accounted for approximately 21%<sup>2</sup> of the total fishing effort directed at salmonids in the Illinois portion of Lake Michigan prior to 1999. More recently, charter boats have comprised 29%<sup>3</sup> of the total angler effort for salmonids, due to a slow decline in shore-based salmon fishing since 1988 and a drop in non-charter boat effort following 1998 (Figure 2).

Charter boat harvest rate in 2016 (43 fish per 100 angler-hours) was similar to the harvest rate in 2015 (42 fish per 100 angler-hours) and 2014 (43 fish per 100 angler-hours) (Figure 1). 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).

Most chartered fishing trips typically occur during the months of May and June. The spring coho season in 2016 was non-typical, as it did not extend into June; most coho salmon (66%) were harvested in May (Table 2). Chinook salmon harvest was typical; the majority of Chinook salmon harvest is usually nearly evenly divided between July and August. For example in 2016, less than 2% of the Chinook salmon harvest occurred in May and July and August accounted for 35% and 28%, respectively. Similar to Chinook salmon, rainbow trout harvest typically is highest in July and August. Rainbow trout harvest was typical; 70% of the harvest occurred in July and August. Brown trout harvest primarily occurred early and late in the season. Overall, the majority of harvest occurred during May (38%) and was primarily driven by the coho salmon harvest (85% of May harvest).

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<sup>2</sup> Average 1988-1998; <sup>3</sup> Average 1999-2016.

No fishing was reported in five statistical grids. Approximately 43% of the salmonids were harvested from Grid 2302 which coincided with 40% of the fishing effort focused in that grid (Table 3). In general, harvest and effort are usually highest in the north and in grids closest to shore (i.e., 2302 and 2402). The harvest rate in grids 2302 (46 fish per 100 hrs) was above the overall average but harvest rate in 2402 was below. Harvest rates in other grids ranged from 12 to 80 fish per 100 hrs.

#### **Literature Cited**

Roswell, C., and S. J. Czesny. 2017. A survey of sportfishing in the Illinois portion of Lake Michigan. Aquatic Ecology Technical Report 2017(X). Illinois Natural History Survey. xxpp.

#### **Acknowledgements**

I wish to thank Pat Bevell for entering data and monitoring reporting compliance.

Table 1. Number of salmon and trout stocked in the Illinois waters of Lake Michigan, 1990-2016.

Year	Coho Salmon	Chinook Salmon	Lake Trout	Rainbow trout (Arlee)	Rainbow trout (Skamania)	Brown Trout	Total
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
2008	282,201	253,809	126,631	51,003	56,040	100,144	817,297
2009	300,559	236,983	118,160	45,285	56,714	100,550	858,251
2010	308,805	255,752	120,166	51,156	61,132	104,953	904,964
2011	281,429	235,972	122,058	101,789	0	104,579	843,769
2012	300,748	253,244	125,692	49,261	52,160	99,460	874,873
2013	310,288	227,336	124,021	56,335	42,933	102,281	863,194
2014	311,184	236,625	123,784	60,409	58,528	111,397	901,927
2015	305,630	197,504	124,094	62,751	64,092	112,870	866,941
2016	299,396	231,378	123,120	60,068	54,432	110,791	879,185

Table 2. Monthly totals of fishing effort and salmonid harvest from the Illinois waters of Lake Michigan by charter boat anglers in 2016.

Month	Trips	Number residents	Number non-residents	Effort (angler-hours)	Coho salmon	Chinook salmon	Lake trout	Rainbow trout	Brown trout	Total Catch
March	9	24	14	171	19	0	41	0	14	74
April	131	520	183	3,761	566	7	928	29	70	1,600
May	956	2,996	2,039	25,905	12,511	157	1,395	635	38	14,736
June	657	2,862	529	18,761	3,139	423	1,606	703	20	5,891
July	562	2,278	571	15,225	1,502	1,054	1,495	1,892	34	5,977
August	545	2,314	408	14,642	1,025	815	1,964	2,430	69	6,303
September	325	1,419	214	8,505	244	361	2,020	481	85	3,191
October	87	361	62	2,337	31	106	450	16	25	628
November	4	14	3	102	3	11	25	0	0	39
<b>Total</b>	<b>3,276</b>	<b>12,788</b>	<b>4,023</b>	<b>89,408.0</b>	<b>19,040</b>	<b>2,934</b>	<b>9,924</b>	<b>6,186</b>	<b>355</b>	<b>38,439</b>

Table 3. Number of salmonids, by Lake Michigan statistical grid <sup>a</sup>, harvested by charter boat anglers in 2016. No salmonids were harvested from grids 2305, 2506, 2605, 2606, and 2703.

Grid	Coho salmon	Chinook salmon	Lake trout	Rainbow trout	Brown trout	Total harvest	Effort (angler-hours)	Harvest rate <sup>b</sup>
2302	9690	1205	2775	2590	87	16347	35653.5	46
2303	3396	181	359	494	8	4438	8486	52
2304	1078	11	26	64	1	1180	1504	78
2305	0	0	0	0	0	0	0	na
2306	40	7	27	21	1	96	272	35
2402	1814	449	1309	786	106	4464	11183.5	40
2403	692	259	1301	670	86	3008	7370.5	41
2404	205	68	230	132	2	637	2228	29
2405	38	0	4	4	0	46	84	55
2406	1	2	0	1	0	4	33	12
2502	3	2	0	0	0	5	10	50
2503	639	270	1681	550	23	3163	9562.5	33
2504	368	269	1114	497	28	2276	5692	40
2505	365	0	3	18	0	386	480	80
2506	0	0	0	0	0	0	0	na
2603	288	47	550	132	8	1025	3310	31
2604	256	114	411	196	2	979	2468	40
2605	0	0	0	0	0	0	0	na
2606	0	0	0	0	0	0	0	na
2703	0	0	0	0	0	0	0	na
2704	165	48	128	30	3	374	999	37
2705	2	2	6	1	0	11	72	15

<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.

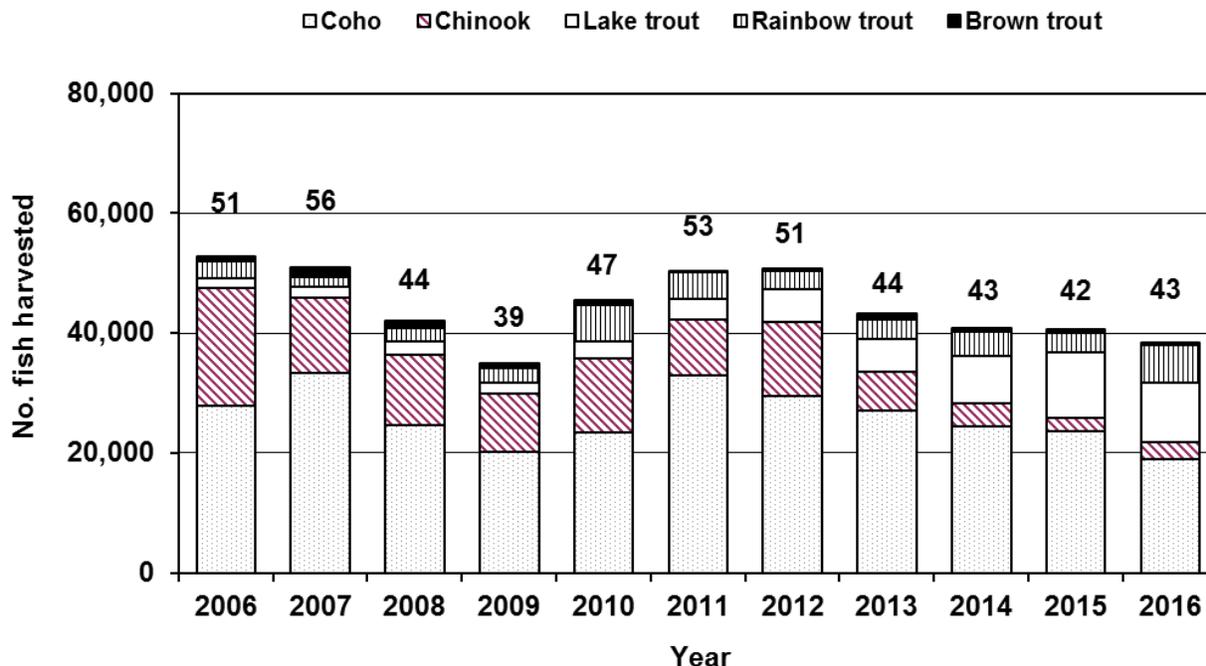


Figure 1. Reported harvest of salmonids, by species, by charter boat sport anglers, 2006-2016. The numbers above the columns indicate the charter boat angler catch rate (number salmonids per 100 angler-hours) in each year.

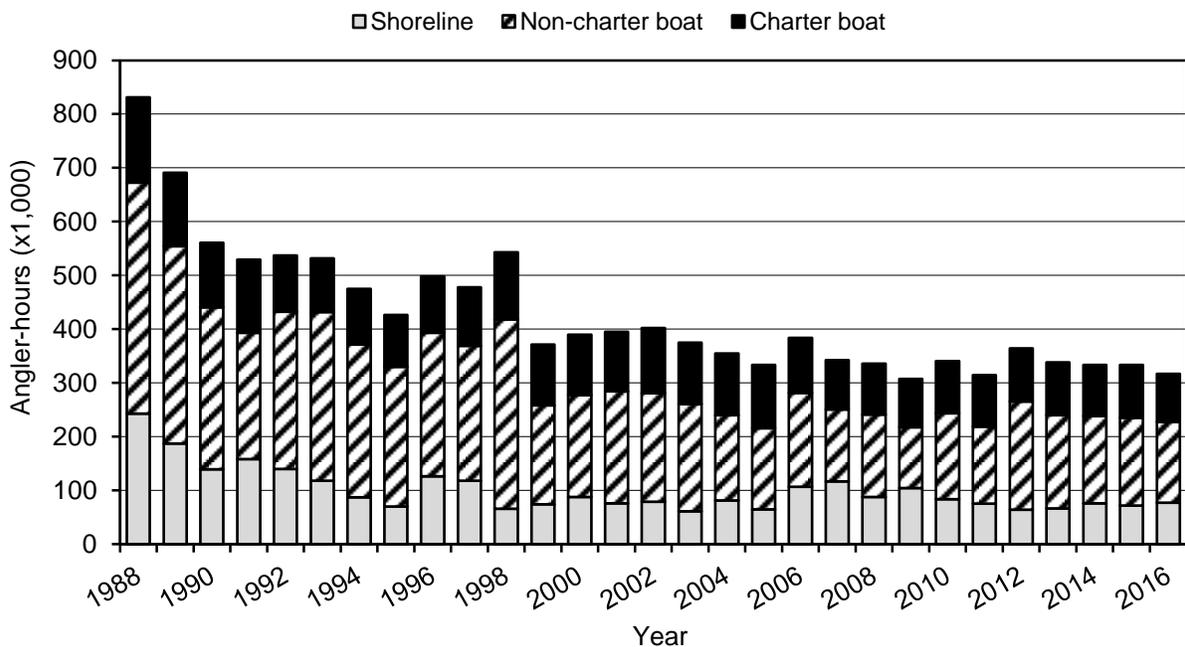


Figure 2. Fishing effort (angler-hours) by anglers fishing from shore, non-charter boats, and from charter boats, 1988-2016. Non-charter effort estimates from Roswell and Czesny (2017).

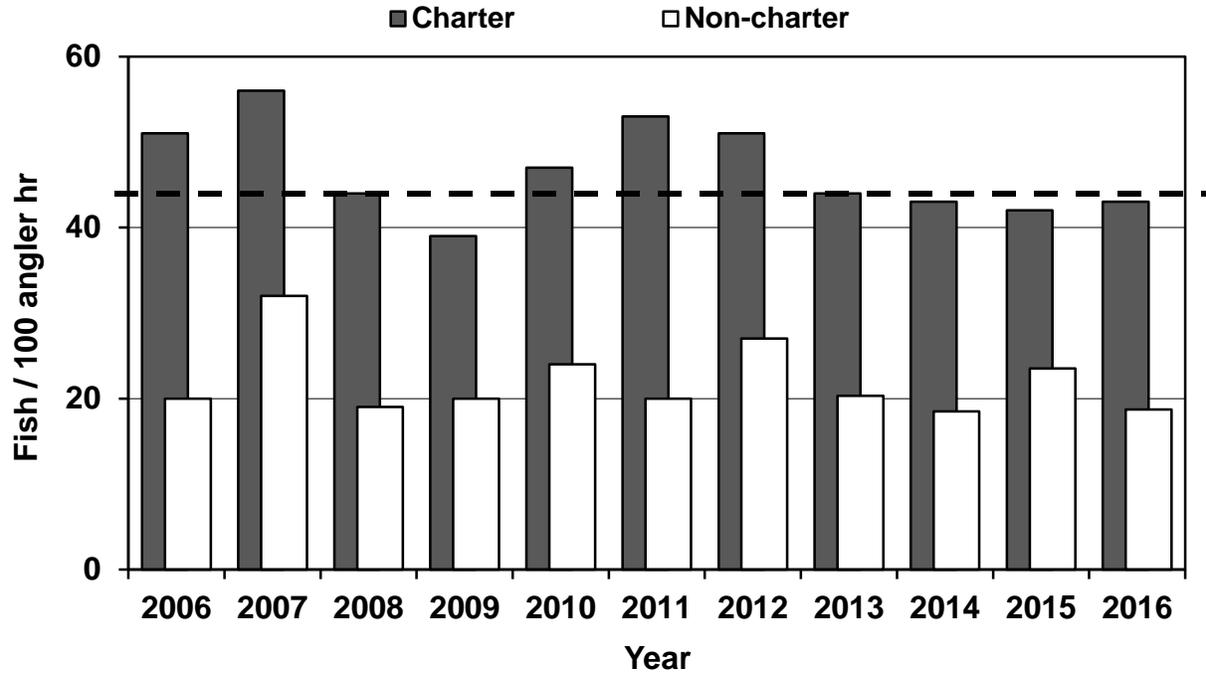


Figure 3. Illinois charter boat and non-charter boat harvest rates for all salmonids, 2006-2016. The dashed line represents the 1979-2016 average charter boat harvest rate. Non-charter harvest rate estimates from Roswell and Czesny (2017).



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.

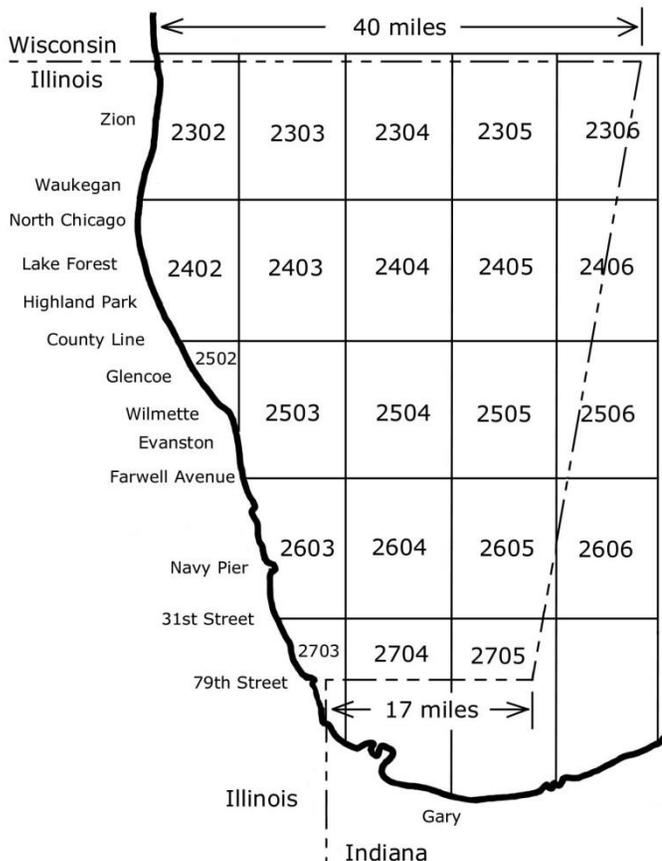
NUMBER OF ANGLERS, RESIDENT AND NON-RESIDENT – Enter the number of **Illinois** residents and non-resident anglers in the fishing party and include crew members if they fished.

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.**



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