

Unassessed catch and harvest of nearshore species in Illinois waters
NA05NMF4071218
Recipient: Illinois Department of Natural Resources

Interjurisdictional Fisheries Act
October 1, 2005 – September 30, 2007

Final Report

Principle Investigator: Sergiusz J. Czesny, Ph.D. Illinois Natural History Survey Lake Michigan Biological Station 400 17 th Street Zion, Illinois 60099	Principle Investigator: Jan Savitz, Ph.D. Biology Department Loyola University of Chicago 6525 North Sheridan Road Chicago, Illinois 60626
---	--

Executive Summary

Smallmouth and largemouth bass at five bass tournaments on Lake Michigan, at the Illinois-Indiana state boundary, were checked for passive integrated-transponder (PIT) tags during 2006 and 48 smallmouth and 63 largemouth bass were implanted with PIT tags to assess movement of bass by tournament anglers. Only one smallmouth bass, of 129 bass returned to the tournament weigh in, had a PIT tag and this smallmouth bass was not tagged during this study. Over 2,000 largemouth and smallmouth bass have been implanted with PIT tags since 2000. The recapture of a single tagged bass implies that tournament anglers likely have little impact on bass movements through relocation.

A winter yellow perch creel survey was conducted along the Chicago shoreline of Lake Michigan from mid-November 2006 through February 2007. Five pedestrian and one launch ramp were visited periodically on both weekends and week days. Interviews were conducted with 262 fishing parties. Based on the information collected, it is estimated that anglers fished 37,000 hours and harvested 30,000 yellow perch while releasing 61,000 yellow perch at those sites. The mean size of yellow perch harvested was 21.8 cm in length and 116 g in weight.

Introduction

Smallmouth bass have developed into an important sport fishery along the shoreline of Lake Michigan and several studies have examined the fishery including roving creel surveys, analyses of population sizes and recruitment (Savitz and Funk 2001), and sonic tracking studies for location and movements (Savitz, unpub.data). In 2005 and 2006, PIT (passive integrated transmitter, BioMark Inc.) tags were injected into smallmouth bass and largemouth bass caught by tournament anglers. This project was part of a collaborative study with the Illinois and Indiana Departments of Natural Resources (IL-DNR and IN-DNR). Both smallmouth and largemouth bass have been PIT-tagged and released along the north and south portions of Illinois

waters by IL-DNR since 2000. The objectives of this portion of the study were to determine what, if any, influence transport by fishing tournament anglers may have on the home range and population estimates for largemouth and smallmouth bass near the Illinois-Indiana state border and to provide additional data for areas not sampled by the two Departments.

A winter creel survey was last conducted along the Illinois shoreline of Lake Michigan in 1988-1989 (Horns 1989). Since then, the fall/winter fishery along the Chicago lake front has not been assessed. This portion of the survey is an effort to measure that fishery to account for a period of the year which is not sampled.

Sampling Methods

Smallmouth bass 2005-2006

Smallmouth and largemouth bass were caught by bass tournament anglers. The minimum length was generally 12 inches (305 mm) - IL-DNR has tagged all bass greater than 250 mm collected during electrofishing surveys in 2000-2006. After the tournament fish were brought to the weigh-in location, the fish were placed in an aerated cattle trough filled with water. The fish were removed from the trough by a net with rubber mesh and measured for length. The dorsal fin was inspected for evidence of a tag and a BioMark Mini Portable Reader was used to ascertain the number from any tagged fish. For fish which did not contain a tag, a 14-mm PIT tag (BioMark, Inc.) was injected below the dorsal fin in the posterior portion of the fish. The third dorsal spine was then removed to aid in identifying recaptured fish since the PIT tag is injected subcutaneously. Tags and injector syringes were sterilized in 92% isopropyl alcohol. Fish were then returned to tournament officials who released the fish near the tournament weigh-in site.

Winter creel 2006-2007

We used methods similar to the standard Lake Michigan shoreline creel survey (Brofka and Czesny 2007). The two differences were that clerks moved along on a route, trying to get ten interviews at each site before moving to the next site, and that only perch anglers were interviewed. The clerk would always start at Navy Pier at 7:00 AM (because of the parking situation). They would then go to the next site (either north or south depending on the schedule) and continue until all of the sites were visited. The clerk would always end at the launch ramp at Calumet Park (and stay there for an hour if there were boat trailers in the lot).

Results

Smallmouth bass 2005-2006

Fish were tagged and checked for evidence of recapture at five tournaments on Lake Michigan and in the Illinois River during April through October. Nine other tournaments were cancelled for a variety of reasons. One hundred twenty-nine fish were sampled: 62 smallmouth bass (SMB) and 67 largemouth bass (LMB). Over the course of the tournaments, only one smallmouth bass with a PIT tag was recaptured; no PIT-tagged largemouth bass were encountered (Table 1).

Table 1. Number of smallmouth and largemouth bass tagged and recaptured during 2005-2006. No bass were tagged on 23 April or 25 June due to equipment failure.

	Tagged		Recaptured		Total Sampled	
	SMB	LMB	SMB	LMB	SMB	LMB
23 April	0	0	1	0	1	0
25 June	0	0	0	0	13	4
20 August	12	15	0	0	12	15
17 Sept	23	19	0	0	23	19
15 October	13	29	0	0	13	29
Totals	48	63	1	0	62	67

The one smallmouth bass with a PIT tag had been previously tagged by IL-DNR (Table 2). No bass tagged by us or Indiana DNR in 2005 or 2006 were caught by tournament anglers and returned to the weigh-in. The one recaptured smallmouth bass had been at liberty for almost two years and had grown 65 mm.

Table 2. Smallmouth bass with PIT tag brought in to weigh in site by tournament anglers.

Tag No.	Tag Source	Species	Tagged / Last Captured	Length (mm)	Recapture	Length (mm)
45552E7401	IL-DNR	SBM	6/23/2004	360	4/23/2006	425

Winter creel 2006-2007

29,510 yellow perch were harvested, of which 47% were harvested at Montrose Harbor and nearly 32% were harvested at Navy Pier (Table 3). Effort and harvest would probably have been twice as high at Navy Pier if parking was not limited and expensive compared to Montrose Harbor much more available parking and is free. Of the 160 anglers interviewed at Navy Pier during the course of the survey, only 5 said that they would be fishing after 10 AM.

Table 3. Effort and number of yellow perch harvest and released during winter, 2006.

Location	Angler Hours	Fish Harvested	Fish Released
Montrose	22,902	13,954	37,941
Belmont	2,918	4,210	2,961
Navy Pier	6,700	9,330	18,956
Burnham Harbor	1,459	0	0
92 nd Street Lot	1,818	1,356	857
Calumet Ramp	1,310	660	1,850
Total	37,107	29,510	62,565

Yellow perch harvested in the winter survey were substantially smaller on average than fish harvested during the regular creel survey (Table 4.). The mean weight was 51% less than fish harvested in the 2006 survey and the mean length was 16% shorter.

Table 4. Mean lengths and weights of angler harvested perch.

Month	Mean Weight (g)	Mean Length (cm)	Sample Size
November	53	19	6
December	123	22.2	55
January	110	21.6	39
February	118	21.8	60
Total	116	21.8	160

Discussion

Bass tournament anglers fish in Illinois waters of Lake Michigan, Indiana waters, and the Illinois and Calumet River systems. After the fish are weighed by tournament officials, these fish are often released at the tournament site. This relocation of fish throughout the summer may have impacts on local fauna and lead to stockpiling of fish in specific areas.

IL-DNR has tagged and released 1,258 largemouth bass and 718 smallmouth bass in the Illinois waters of Lake Michigan since 2000 (personal communication, S. Robillard). Of these fish, 14% of the largemouth and 12% of the smallmouth bass have been recaptured at least once.

Recaptures have occurred almost exclusively at the site of tagging. Of concern was whether relocation by tournament anglers may affect where, or even whether, these fish are recaptured in assessments.

In summer 2005, both Illinois and Indiana DNRs tagged fish as the first of a two-year joint study of site fidelity, growth, and population estimates (Indiana only) of bass in the nearshore waters. In 2006, only Illinois DNR tagged bass. We monitored five bass tournaments to determine if anglers were transporting fish tagged by these agencies to the weigh-in site and also we tagged bass to monitor growth and movements through recaptures by the two DNRs.

Smallmouth bass appear to be the target of tournament anglers on Lake Michigan and largemouth bass are more frequently the target during river tournaments. None of the bass that we tagged in 2005 and 2006 were recaptured by either of the two DNRs. Illinois DNR samples approximately 1 km north of the launch ramp where most fish were released, yet none of the 200+ fish that were tagged were recaptured. Potentially there is little overlap in the waters that tournament anglers fish and that the management agencies sample and therefore they may have differing views on the structure of the fish populations. Our limited data from this study would indicate that tournament anglers will not have much impact on DNR bass assessments since the tournaments and assessments occur in different areas of the lake. In addition, two organized tournament circuits closed down and did not operate this year and club tournaments on Lake Michigan were minimal compared to previous years. The apparent decline in tournaments held

on Lake Michigan (36 tournaments in 2005) will likely diminish the chance that DNR assessments will be impacted.

Weather played an important role in the success of anglers during the creel survey. In the winter of 2006-2007 we had very mild weather until the second half of January. By the beginning of February the weather had changed and included below normal temperatures and then warmed at the end of February. Boaters used the ramp at Calumet until the middle of January and anglers were able to open water fish in the harbors and the river until about the same time. In February anglers ice fished in the harbors and there were sporadic open water angling opportunities at Navy Pier and the river depending on ice conditions.

Winter harvest was less than 9% of the estimated 2006 yellow perch harvest (334,000; April 01 through September 30) and the average yellow perch harvested was substantially smaller than during the summer. There was a significant difference between the number of yellow perch harvested during the previous winter creel surveys. In winter 1987, 2,900 yellow perch were harvested compared to 91,300 harvested in winter 1988 (Horns 1989). Because the current survey occurred for only one season and due to the large difference between the previous winter surveys, it is difficult to determine if yellow perch harvest during 2006 was typical.

References

- Brofka, W.A. and S. J. Czesny. 2007. A survey of sport fishing in the Illinois portion of Lake Michigan March through September, 2006. Aquatic Ecology Technical Report 07/30. Illinois Natural History Survey, Champaign, Illinois, 57 pp.
- Horns, W. H. 1989. A survey of sport fishing in the Illinois portion of Lake Michigan April 1988 through March 1989. Aquatic Ecology Technical Report 89/6. Illinois Natural History Survey, Champaign, Illinois, 36 pp.
- Savitz, J. L., and G. Funk. 2001. Population size and recruitment of smallmouth bass in Calumet Harbor of Lake Michigan. *Journal of Freshwater Ecology* 16:317-319.