



2014 Island Lake Survey – June 13th, 2014

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BACKGROUND - A fish survey was requested due to a moderately severe winterkill in Island Lake over the winter of 2013-14. The severity of the fish kill was unknown and many other lakes in the area had also reported dead fish. This survey also allowed for some monitoring of the stocking activities suggested when the lake was sampled in 2008. For lake morphology see the 2008 report.

FISH COMMUNITY - The Island Lake fish survey consisted of 45 minutes of electrofishing with a 5000 watt DC boat mounted electrofishing unit. All fish were measured, weighed and released. Fish data was summarized and entered into a standard table used in constructing a lake management plan and compared to findings from the 2008 survey (Table 1 at end of report). The following paragraphs describe the findings:

We captured 131 fish belonging to eight species (Table 2 at end of report). Due to their abundance, bluegill and common carp were sub-sampled for twenty minutes (45% of the sample). Largemouth bass were the next most abundant fish making up 47% of the sample (N=62). Also included in the sample were three green sunfish, two black bullheads, two channel catfish, two warmouth, and one yellow perch.

Largemouth bass were captured at a rate of 83 fish per hour (Table 1). We typically like to see largemouth bass abundance in the area of 60 fish per hour, based on catch per unit effort (fish per hour) so the catch of 83 per hour is above the desired rate but not high enough where bass will get stunted. We use relative weight (W_r) to measure the “plumpness” of a fish. A healthy fish will have a W_r value somewhere between 90 – 105. The average W_r value for this sample in Island Lake was 104, indicating that the bass are healthy and getting plenty to eat. This value is slightly higher than it was in 2008 when the average W_r was a healthy 94.

We caught 62 largemouth bass ranging in size from 1.8 to 17.4 inches, with the largest fish weighing 2.7 pounds (Table 2). The average length of bass in the sample was 9.1 inches. We typically like to see a broad size range of fish, from young of year to a few nice “trophy” size fish. The management goal listed in the 2008 report is a proportional stock density (PSD) somewhere between 40 - 60%. The PSD in Island Lake was 33 meaning that 33% of the stock (bass over 8 inches) is greater than the “quality” size of 12 inches. We also look at relative stock density (RSD) to determine the proportion of the stock over a given length – typically 15 and 18 inches. A good goal to shoot for is an RSD-15 of 15 – 30% and an RSD-18 of 1 – 10%. The RSD-15 in Island Lake was 15, meaning that 15% of the stock is longer than 15 inches. No fish over 18 inches were captured.

The presence of fish over 12 inches and less than six inches also allows for the calculation of a young to adult ratio (YAR). This ratio gives a good estimate of recruitment (spawning success) after a population becomes established. A healthy population should have at least one to three “young” fish (under 6 inches) for every adult fish (over 12 inches). The YAR in Island Lake was 0.71 (Table 1). This ratio is an underestimate of young fish for this survey as many young of year (YOY) were observed along the shallow shoreline.

Bluegill were captured at a rate of 158 fish per hour (Table 1). This is slightly higher than the recommended catch rate, as a healthy balanced system should have a catch rate around 120

fish per hour. This number is significantly lower than in the 2008 survey when the catch rate was 576 fish per hour. Bluegill in the sample ranged from 4.1 to 8.7 inches (Table 2). The average length bluegill in the sample was 6.1 inches. The PSD for bluegills was 27, which means 27% of the stock (fish over three inches) is larger than six inches. We typically try to manage for about 15-30% of the stock to be over 6 inches and about 6-10% to be over seven inches. As in 2008, two percent of the stock was longer than 8 inches. The relative weight value of 105 is on the high side of the range and considered healthy and suggests the bluegills are eating well! Overall, the bluegill population in Island Lake is excellent!

Two **channel catfish** were caught in the most recent survey. They measured 21.6 and 22.6 inches and weighed a healthy 3.9 and 4.4 pounds respectively.

Black crappie were not captured in the 2014 survey. Twenty-one black crappie were captured in the 2008 survey, but only one percent of the stock (fish over five inches) was over eight inches. The 2008 survey included some trap-netting which is a much more effective tool for sampling crappie populations. Electrofishing in the summer is not the best way to catch crappie so this absence from the sample is probably not indicative of the population in Island Lake. Black crappie were among the species reported in the winterkill. This species may need a few years to bounce back from that event.

One small (1.5 inch) **yellow perch** was captured in the survey. As with crappie, electrofishing in the summer is not the preferred sampling method. Angler reports or netting surveys are needed to assess this species.

Seven **common carp** were captured and ranged in size from 17.9 to 29.1 inches, with an average of 25.6 inches, indicating several year classes. An over-abundant carp population can be a serious issue in a shallow lake as carp tend to stir up sediments through their feeding behavior. This tends to increase turbidity which can deter vegetation growth and lead to many other problems in a lake. An aggressive removal program will be implemented (see below).

SUMMARY - Based on the results of this survey, Island Lake's fish population is in good shape. Sampling in the Spring may give a better estimate of the size structure of largemouth bass, crappie, walleye and northern pike. One 17 inch walleye was collected while removing carp from the lake aside from this survey.

CARP REMOVAL - On June 27th, 2014 a common carp removal took place. Two hours of electrofishing removed 208 common carp with an average weight of four pounds for a total of over 800 pounds of carp removed.

RECOMMENDATIONS* - (*These recommendations are from the 2008 report – *New recommendations are in italics*)

1. **Nutrients** - Although it may be a losing battle because of the lake's large watershed, lakeshore homeowners can help prevent excess nutrient loading in the lake by practicing good lawn fertilizing techniques and leaving a buffer strip of native vegetation around the perimeter of the lake, where feasible. See the enclosed "Lake Notes" articles for more information. *Look into land use upstream of the lake to minimize erosion and run-off.*

2. **Dredging/Aeration** - There are two options to prevent future oxygen depletions and potential fish die offs from occurring at the lake.

a) One option is to dredge a portion of the lake to create an area of deep-water habitat that is >10 ft. deep (go to 12-14 ft. if possible) and about 10-20 acres in size. Dredging requires government permits, is very costly, and often needs to be redone in in-stream impoundments like Island Lake.

b) Another more cost effective option is to install and operate a diffuser type aeration system to de-stratify the lake and prevent periodic summer oxygen depletion and fish die-offs (see attached aeration and stratification articles). Lake Killarney in Cary, Illinois is an example of a good-sized lake (63 acres) that has been equipped with an aeration system.

An aerator also may be run during winter to reduce the likelihood of winter oxygen depletion and winterkill. Drawbacks of running the aerator during the winter are that open water may attract geese and introduce a safety hazard, particularly to area children. An alternative to winter aeration is to shovel snow off of the pond (e.g., making ice rinks or shoveling in a wagon wheel pattern) allowing light penetration and photosynthesis by plants and algae. Photosynthesis will add oxygen to the water under the ice. Shoveling is usually necessary when more than 2 in. of snow covers the ice. Make sure the ice is thick enough to support a person before attempting to remove the snow (>4 in. thick to be safe).

3. **Aquatic plants** - Encourage riparian landowners to introduce desirable emergent plants in shallow, shoreline areas of parts of the lake to increase habitat for fish and other wildlife. Desirable species include: pickerel weed (*Pontedaria cordata*), arrowheads (*Sagittaria* spp.), water willow (*Justica americana*), soft-stem bulrush (*Scirpus tabernaemontani*), and common bur reed (*Sparganium eurycarpum*). Avoid introducing other bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), and purple loosestrife (*Lythrum salicaria*). A list of potential sources for these plants is enclosed.

4. **Fish community**

*Remove as many **common carp** from the lake as possible. This can be done with a fish derby for prizes along with manual removal assisted by the IDNR. Contact IDNR district fishery biologist annually to schedule a carp removal.*

Natural reproduction of **largemouth bass** appears inadequate to maintain an abundant bass population, so continue stocking largemouth bass annually or every other year. Stock up to 700 bass fingerlings (10 fingerlings/acre; minimum size = 4-6 in.) or up to 350 larger bass (>8 in. long) as your budget allows. *Largemouth bass reproduction seemed adequate in 2014. I recommend lowering the stocking frequency to every two to three years.*

*Alternate stocking **walleye** and **northern pike** between years. Putting more fish in per year should increase the stocking success for that species.*

Stock walleye fingerlings to enhance the population of this important predator and sport fish. Stock large fingerlings (>6 in. long) at a rate of 10 fish/acre (700 fish total) every two or three years.

Continue stocking **northern pike** to maintain the pike fishery, but change the protocol to stocking 150 pike (minimum length = 10 in.) every three years. This should maintain a pike population as a bonus trophy fish for anglers while allowing saved resources to be used for other species that may survive and grow better in the lake.

Enhance and maintain the **channel catfish** population by stocking large fingerlings (>8 in. long) at a rate of up to 20 fish/acre or ~1,400 catfish total. Channel catfish will not successfully reproduce in small lakes with largemouth bass and must be restocked to maintain a fishery. Restocking should take place when it is known that large numbers of catfish were harvested or angler catch rates for catfish decline (every two to three years is probably a good bet).

5. RECOMMENDED REGULATIONS – *Current regulations can be found at the end of this report (Table 3). Suggested modifications to the current regulations would be:*

Largemouth bass – *Protect fish from 14-18 inches. Anglers may harvest two largemouth bass – only one fish over 18 inches (trophy).*

Yellow Perch – *Keep catch and release until 2016 to allow population to re-establish or keep bag limit low (5-10 fish).*

Yellow / striped bass – *no daily limit – no size limit – unlimited harvest (not a desirable species).*

Walleye – *2 fish limit – 16 inch minimum length limit – This regulation will allow for harvest of this species as a put and take fishery, as walleye do not successfully reproduce in Island Lake.*

Channel catfish – *3 fish limit – 15 inch minimum limit. This regulation will allow for harvest a year or two sooner than the current 18 inch limit. Some anglers believe that the flavor of channel catfish gets worse as the fish ages.*

6. 2014 STOCKING NUMBERS – Below are the numbers of fish stocked in 2014:

325 Walleye (Two Generations) from 7" to 12"
140 Northern Pike approx 11" - 12"
750 Yellow Perch (Two generations) 4"-8"
10 Musky 11"-12"
50 Lbs of Fathead Minnows
20 Lbs of Lake Shiners

Table 1. Fish Population Indices

Species and Index	Desirable goal	2008 estimate	2014
Largemouth bass catch rate	60/hr	46/hr	83
Proportional Stock Density	40 - 60%	50	33
Relative Stock Density (15 in.)	15 - 30%	22	15
Relative Stock Density (18 in.)	1 - 10%	11	0
Young-to-Adult Ratio	1-3	0	0.71
Relative Weight (Wr)		94	104
Bluegill catch rate	120/hr	576/hr	158
Proportional Stock Density	15 - 30%	84	27
Relative Stock Density (7 in.)	6-10%	20	21
Relative Stock Density (8 in.)	1 -5%	2	2
Relative Weight (Wr)		93	105
Black crappie total catch	>20	21	0
Proportional Stock Density	40-60%	1	NA
Relative Stock Density (9 in.)	15-30%	0	NA
Relative Stock Density (10 in.)	1-10%	0	NA
Relative Weight (Wr)		99	NA
Channel catfish total catch	>10	13	2
Proportional Stock Density	50-70%	1	100
Relative Stock Density (20 in.)	15-30%	0	100
Relative Stock Density (24 in.)	5-10%	0	0
Walleye total catch	>5	5	0
Proportional Stock Density	40-60%	NA	NA
Relative Stock Density (16 in.)	15-30%	NA	NA
Relative Stock Density (20 in.)	1-5%	NA	NA
Northern pike total catch	>5	3	0
Proportional Stock Density	50-70%	NA	NA
Relative Stock Density (24 in.)	15-30%	NA	NA
Relative Stock Density (28 in.)	5-10%	NA	NA
Relative Stock Density (32 in.)	1-4%	NA	NA

NA indicates not applicable due to low catch

Table 2. Summary of catch

Species	Number Collected	Length (Inches)		Avg.	Weight (pounds)	
		Min	Max		Min	Max
Largemouth bass	62	1.77	17.44	9.06	0.05	2.70
Bluegill	52	4.09	8.74	6.10	0.05	0.50
Common Carp	7	17.91	29.06	25.59	3.07	11.06
Green sunfish	3	5.94	6.42	6.23	0.19	0.26
Black bullhead	2	5.59	6.06	5.83	0.16	0.19
Channel catfish	2	21.57	23.54	22.56	3.92	4.35
Warmouth	2	4.09	6.50	5.30	0.06	0.25
Yellow perch	1	1.50	1.50	1.50		
Grand Total	131					

Table 3. Regulations put in place by the Village of Island Lake – (revised 03/05/15)

ISLAND LAKE SLOT AND DAILY CREEL REGULATIONS

PER ORDINANCE # 1473-13

The following size, slot and daily creel regulations apply to harvesting fish from the waters of Island Lake:

<u>SPECIES</u>	<u>DAILY LIMIT</u>	<u>SIZE</u>
NORTHERN PIKE	1 (ONE)	MINIMUM 24"
MUSKELLUNGE	CATCH AND RELEASE	CATCH AND RELEASE
LARGEMOUTH BASS	2 (TWO)	14"-18" PROTECTED SLOT
<i>LARGEMOUTH BASS 14"-18" PROTECTED SLOT-TWO FISH LIMIT-ONLY ONE OVER 18"</i>		
SMALLMOUTH BASS	CATCH AND RELEASE	CATCH AND RELEASE
BLUEGILL	15 (FIFTEEN)	MINIMUM 7"
CRAPPIE (ALL TYPES)	10 (TEN)	MINIMUM 9"
PERCH	10 (TEN)	MINIMUM 8"
WALLEYE	2 (TWO)	MINIMUM 16"
CATFISH (ALL TYPES)	3 (THREE)	MINIMUM 15"

HARVESTING OF CARP FROM ISLAND LAKE IS ENCOURAGED

A PERSON FOUND TO BE IN VIOLATION OF THIS CHAPTER SHALL BE SUBJECT TO THE FOLLOWING MINIMUM FINES:
 \$100 for the 1st Offense- \$250 for the 2nd Offense and \$750 for the 3rd Offense and each offense thereafter.