



NORTH LAKE, WASHTENAW COUNTY
Fisheries Survey
September 27-30, 2010

Lake Description:

North Lake is a 227-acre, natural lake located in northwestern Washtenaw County in the Pinckney Recreation Area. This lake is heavily developed with mainly permanent residences. The lake's bottom type from shore to approximately the 5-foot contour is mainly sand and marl. Despite this, there are extensive growths of submerged aquatic vegetation including some areas with dense stands of the exotic starry stonewort. The substrate of the deeper sections of the lake is composed of marl and pulpy peat. North Lake has a maximum depth of 58 feet and outlets through a culvert under North Lake Road on the northeast corner of the lake. There is a gravel ramp, public boat launch off North Lake Road also in the northeast section of the lake.

History:

Bluegills, largemouth bass, and yellow perch were stocked in North Lake from the late 1930s to the mid-1940s. This practice was discontinued after research showed that it was not necessary to stock these species since adequate natural reproduction was occurring. Northern pike were stocked in 1960 but a follow-up survey resulted in the capture of no northerners.

A survey of this lake in June of 1985 indicated that the bluegill population was dominated by small and thin, slow-growing fish. As a result, a partial treatment of the lake with the chemical Antimycin was proposed. Partial treatments with Antimycin have been successful in the past, providing improved fishing for a number of years on lakes with slow growing panfish populations. The goal of the Antimycin treatment is to selectively thin stunted panfish populations without adversely affecting larger sport fish in the lake. Historically, selective thinning using this chemical has improved bluegill growth rates over time and the cost of the treatment is significantly less than a treatment using rotenone which would remove the entire fish population.

On May 3, 1988, a general survey of North Lake was made to determine the current status of the fishery. Results of this survey showed a significant improvement in average length of bluegills, pumpkinseeds, largemouth bass, and black crappie. Because of these improvements, it was decided not to treat North Lake in 1988. In 1985, only 36% of the bluegills captured were of acceptable size to anglers (>6 inches). Over 80% of the bluegills caught during the 1988 survey were over 6-inches.

In early June of 1992, North Lake was surveyed again. Bluegill, crappie, and largemouth bass all exhibited increases in average length, even though growth rates generally remained unchanged. Bluegills averaged 6.7 inches and nearly all of them (98%) were over 6 inches, what anglers consider to be "keeper" size. Largemouth bass are seldom caught with trap or gill nets, yet a total of 21 bass averaging over 13 inches were caught. A clear trend of improved fish average size was evident.

Because of the healthy pumpkinseed sunfish and snail population which existed in North Lake and because of the improvement in the overall fishery since 1988, the introduction of redear sunfish was recommended. Redears were stocked in North Lake in 1991, 1992, and in 1993.



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Survey Purpose and Methods:

This sampling was conducted by MSU students under the guidance of Dr. Mary Bremigan as the third part of a three-year study (2008-2010) on the effect of early-season, catch and release bass fishing regulations. Sampling was done for four consecutive nights using a boomshocker. The entire lake shoreline was sampled each night with all largemouth bass measured, weighed, marked for population estimates, and either scale or spine samples collected for growth analysis. Water temperatures remained fairly steady through this sampling period at 64-65°F. This report both presents the basic catch data for the 2010 sampling period and summarizes the data from the 3-year study.

Survey Results:

A total of 493 largemouth bass with an average length of 10.0 inches were caught during the four nights of sampling in 2010. Almost 12% (59 fish) of the total catch exceeded the minimum size limit of 14 inches. This is better than in 2009 (7%) and comparable to 2008 (16%). Total catch rates were very similar to 2009 based on miles of lake shore sampled and slightly higher based on hours sampled (Table 1).

A population estimate was calculated using the Schumacher-Eschmeyer Method which looks at recaptures over multiple sampling days. The estimated adult (>9 inches) largemouth bass population in North Lake for 2010 was 1,761 adult bass. This equates to about 7.8 adult bass per acre of lake surface and while it is better than the density calculated in 2009 (4.8 per acre), it is still less than a third found in 2008 (Table 1).

Table 1. Largemouth bass catch statistics and population estimates for North Lake (2008-2010).

Year	Total LMB	Distance (mi)	Time (hr)	CPE (mi)	CPE (hr)	Adults/Acre	Adult Pop. Est.
2008	711	15.22	9.11	46.71	78.05	27.70	6,287
2009	371	11.36	8.60	32.66	43.14	4.81	1,093
2010	493	15.12	8.52	32.61	57.86	7.78	1,761

Conclusions:

A realistic estimate of the adult bass population in North Lake looks to be around 1,200-1,500 or 5-7 adult bass per acre with at least 10% of the total bass population exceeding the minimum legal size limit of 14 inches. Larger fish seem to have a relative high mortality rate as evidenced by the sharp drop in numbers of fish over the 14-inch mark despite growth rates comparable to other lakes in the area. The heavy to moderate angling pressure and harvest observed on the lake is probably a large part of this.

There was a notable lack of young-of-the-year (< 4 inches) bass in the sampling conducted over the 3 years of this study. While there is obviously successful reproduction occurring, the success rate seems to be relatively low. A determination of nesting success is part of this overall research study and will be evaluated when the full research report is produced.

Survey Report by: Jeffrey Braunscheidel
Fisheries Biologist
Date Completed: 5/09/2012



Water: North Lake

T/R/S: 01S 04E 18

Status: Approved

Primary county: Washtenaw

Dis. county: Washtenaw

Survey begin: 09/27/2010

end: 09/30/2010

Special regs: No

Purpose: Research Project

Largemouth Bass Study 561.

Effort #	Gear Type	Effort start, end	Effort meas.	Net Inv. #	Location
1	Boom Shocker	09/27/2010 20:15 - 09/28/2010 01:14	2.02 Hours		Sampled entire perimeter of lake in 4 sections
2	Boom Shocker	09/28/2010 19:55 - 09/28/2010 23:54	1.95 Hours		Sampled entire perimeter of lake in 4 sections
3	Boom Shocker	09/29/2010 20:13 - 09/30/2010 01:00	2.33 Hours		Sampled entire perimeter of lake in 4 sections
4	Boom Shocker	09/30/2010 20:00 - 09/30/2010 23:35	2.22 Hours		Sampled entire perimeter of lake in 4 sections

Air temperatures		
Reading Datetime	Temperature	Collection/index site no.
09/27/2010 20:00:00	58	
09/29/2010 23:45:00	59	
09/30/2010 20:00:00	59	

Water temperature/oxygen readings						
Date/time	Reading depth	Temperature	Oxygen	pH	Collection/index site no.	SpCond mS/cm
09/27/2010 20:00:00	0	65				
09/29/2010 23:45:00	0	64				
09/30/2010 20:00:00	0	64				

Analysis by: Braunscheidel

Collection by: MSU Graduate Students and Staff under Mary Bremigan

Id. by: same



Water: North Lake

County T/R/S: Washtenaw

Watershed: Portage

01S 04E 18

Survey begin: 09/27/2010 end: 09/30/2010

Status: Approved

Survey purpose: Research Project

Species/strain	Inch group	No. caught	Lbs. caught
Largemouth bass	2	1	0.01
	3	1	0.02
	4	3	0.12
	5	32	2.46
	6	36	4.65
	7	69	13.93
	8	53	15.82
	9	86	36.36
	10	60	34.69
	11	46	35.34
	12	30	29.92
	13	17	21.57
	14	17	26.97
	15	15	29.31
	16	10	23.76
	17	9	25.71
	18	3	10.2
	19	4	16.04
	20	1	4.68
Avg. length: 10 in.	Sample totals:	493	331.56



Water: North Lake
Watershed: Portage
Survey begin: 09/27/2010 end: 09/30/2010
Survey purpose: Research Project

County T/R/S: Washtenaw
01S 04E 18
Status: Approved

Effort begin: 09/27/2010 20:15 Gear: Boom Shocker
end: 09/28/2010 01:14 No. of gear used: 1
Area covered: Perimeter of Lake. Effort quantity: 2.02 Hours, 3.78 Miles
Location: Sampled entire perimeter of lake in 4 sections.

Species	Inch group	Number		Pounds	
Largemouth bass	3	1	A	0.02	C
	5	6	A	0.46	C
	6	5	A	0.65	C
	7	13	A	2.62	C
	8	13	A	3.88	C
	9	21	A	8.88	C
	10	13	A	7.52	C
	11	10	A	7.68	C
	12	9	A	8.98	C
	13	8	A	10.15	C
	14	5	A	7.93	C
	15	7	A	13.68	C
	16	4	A	9.50	C
	17	4	A	11.42	C
	18	1	A	3.40	C
	19	1	A	4.01	C
	Species total:		121		100.78
Grand total:		121		100.78	

A = Actual, C = Computed



Water: North Lake
Watershed: Portage
Survey begin: 09/27/2010 end: 09/30/2010
Survey purpose: Research Project

County T/R/S: Washtenaw
01S 04E 18
Status: Approved

Effort begin: 09/28/2010 19:55 Gear: Boom Shocker
end: 09/28/2010 23:54 No. of gear used: 1
Area covered: Perimeter of lake. Effort quantity: 1.95 Hours, 3.78 Miles
Location: Sampled entire perimeter of lake in 4 sections.

Species	Inch group	Number		Pounds	
Largemouth bass	4	2	A	0.08	C
	5	6	A	0.46	C
	6	7	A	0.90	C
	7	15	A	3.03	C
	8	14	A	4.18	C
	9	12	A	5.07	C
	10	13	A	7.52	C
	11	17	A	13.06	C
	12	13	A	12.96	C
	13	5	A	6.34	C
	14	5	A	7.93	C
	15	1	A	1.95	C
	16	2	A	4.75	C
	17	1	A	2.86	C
	18	1	A	3.40	C
	19	1	A	4.01	C
	20	1	A	4.68	C
Species total:		116		83.18	
Grand total:		116		83.18	

A = Actual, C = Computed



Water: North Lake

County T/R/S: Washtenaw

Watershed: Portage

01S 04E 18

Survey begin: 09/27/2010 end: 09/30/2010

Status: Approved

Survey purpose: Research Project

Effort begin: 09/29/2010 20:13

Gear: Boom Shocker

end: 09/30/2010 01:00

No. of gear used: 1

Area covered: Perimeter of lake.

Effort quantity: 2.33 Hours, 3.78 Miles

Location: Sampled entire perimeter of lake in 4 sections.

Species	Inch group	Number		Pounds	
Largemouth bass	4	1	A	0.04	C
	5	10	A	0.77	C
	6	19	A	2.45	C
	7	25	A	5.05	C
	8	14	A	4.18	C
	9	25	A	10.57	C
	10	15	A	8.67	C
	11	8	A	6.15	C
	12	5	A	4.99	C
	13	1	A	1.27	C
	14	4	A	6.35	C
	15	3	A	5.86	C
	16	3	A	7.13	C
	17	1	A	2.86	C
19	1	A	4.01	C	
Species total:		135		70.35	
Grand total:		135		70.35	

A = Actual, C = Computed



Water: North Lake
Watershed: Portage
Survey begin: 09/27/2010 end: 09/30/2010
Survey purpose: Research Project

County T/R/S: Washtenaw
 01S 04E 18
Status: Approved

Effort begin: 09/30/2010 20:00 Gear: Boom Shocker
end: 09/30/2010 23:35 No. of gear used: 1
Area covered: Perimeter of lake. Effort quantity: 2.22 Hours, 3.78 Miles
Location: Sampled entire perimeter of lake in 4 sections.

Species	Inch group	Number		Pounds	
Largemouth bass	2	1	A	0.01	C
	5	10	A	0.77	C
	6	5	A	0.65	C
	7	16	A	3.23	C
	8	12	A	3.58	C
	9	28	A	11.84	C
	10	19	A	10.98	C
	11	11	A	8.45	C
	12	3	A	2.99	C
	13	3	A	3.81	C
	14	3	A	4.76	C
	15	4	A	7.82	C
	16	1	A	2.38	C
	17	3	A	8.57	C
18	1	A	3.40	C	
19	1	A	4.01	C	
Species total:		121		77.25	
Grand total:		121		77.25	

A = Actual, C = Computed