

Comprehensive Fisheries Survey of Pier Lake, Oneida County Wisconsin during 2013.

Waterbody Identification Code 1529700



John Kubisiak
Senior Fisheries Biologist
Rhinelanders
April, 2014



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EXECUTIVE SUMMARY

A comprehensive fisheries survey was conducted in Pier Lake during spring and fall, 2013. We captured low numbers of gamefish including largemouth bass, northern pike (population estimate = 2.1 adults per acre) and walleye. There was a remnant muskellunge population, which were last stocked in 1986. Panfish species were abundant, with good size structure. We found high catches of yellow perch, black crappie and bluegill, moderate catches of pumpkinseed, yellow bullhead and bluegill x pumpkinseed hybrids and low catches of rock bass and black bullhead. Non-game species in the catch include golden shiner and white sucker. I recommend continuing to manage Pier Lake for largemouth bass, northern pike and panfish. Willow Region Sportsmans Club has created a secondary walleye fishery through stocking.

Lake and location:

Pier Lake, west-central Oneida County, T37N R04E Section 3. Pier Lake is in the town of Lynn, about 22 road miles southwest of Minocqua. Pier is part of the Tomahawk River and Upper Wisconsin River watersheds. It is a drainage lake on Bootjack Creek, which drains to Willow Lake. Unnamed Lake 33-16, a 10.5-acre spring lake surrounded by bog, is connected to the west side of Pier by a short channel.

Physical/Chemical attributes (Andrews and Threinen 1966):

Morphometry: 257 acres with maximum depth of 12 feet.

Watershed: 7 square miles, including 36 acres of adjoining wetlands.

Lake type: Drainage lake.

Basic water chemistry: Soft – alkalinity 26 mg/l, conductance 65 μ mhos.

Water clarity: Clear water of moderate transparency.

Littoral substrate: 55% sand, 35% muck, with some gravel and rubble.

Aquatic vegetation: emergent and submergent vegetation moderate in density.

Winterkill: reported in 1965 and 1989.

Boat landing: town-owned concrete plank ramp off South Pier Lake Road. Parking for about two vehicles with trailers and one additional vehicle.

Other features: Shoreline 60% upland with a wetland fringe adjoining a portion of the lake basin.

Purpose of Survey: Assess status of game and panfish species and develop management recommendations.

Dates of fieldwork: Walleye and northern pike netting, May 7 – 15 2013. Panfish netting, June 10 – 14 2013. Electrofishing May 21 and September 12, 2013.

BACKGROUND

Four nights of netting were performed using 4 “large mesh” and 2 “small mesh” fyke nets during August 29 to September 2, 1955 (Burdick, 1955). Catch per net night included 2.1 walleye, 0.78 northern pike, 0.22 largemouth bass, 31 crappies, 17 bullheads, 10.2 bluegill, 4.9 “sunfish”, 4.3 rock bass, “approximately” 4.2 suckers and 2.2 perch. A paragraph clipped from the annual management book indicated “It is recommended that yellow walleyes be stocked.”

A single round of electrofishing was completed on July 7, 1961 (Morehouse 1961). They found abundant small perch and recommended stocking muskellunge to reduce perch numbers. Eight northern pike and 8 walleye were captured, and both species were assumed to be naturally reproducing. One muskellunge, 1 largemouth bass, bluegill, black crappie, rock bass, bullheads, golden shiner, chubs, shiners and suckers were also encountered

A contract and state fisherman’s daily report from June 20, 1963 lists 1 walleye (8”), 2 northern pike (12”), 1 bullhead (6”), 40 crappie (5-7”) and 50 bluegill (4-6”).

Eight fyke nets (two were ¼-inch mesh and 6 were ¾-inch mesh) were fished for 3 nights during May 24-27, 1971 for a total of 24 net-nights (Berndt 1972). Gamefish catch per net-night included 0.6 walleye, 0.4 northern pike, and 0.08 muskellunge. Panfish and non-game catch per net-night included 10.8 crappie, 3.4 yellow bullhead, 2.0 perch, 1.7 bluegill, 0.4 pumpkinseed, 0.2 white sucker and 0.08 rock bass. A combined sucker and redhorse catch was estimated at 14 per net night. Eight seine hauls covering 22,800 square feet were conducted on July 22, 1971. The catch included 44 largemouth, 12 northern pike, 1 muskellunge, 477 bluegill, 414 darters, 321 black crappie, 250 bluntnose minnow, 188 yellow perch and 28 pumpkinseed. All fish were listed as “fingerling” except 6 of the pike were “adult.” A species list includes johnny darter, and also lists black bullhead as “present.”

A single round of electrofishing was completed on April 20, 2010 (Kubisiak 2010). Catch per mile of shoreline included 11.1 northern pike, 7.5 walleye, 6.5 largemouth bass, 1.6 smallmouth bass and 0.2 muskellunge. Panfish and nongame species were collected along two, ½-mile reaches and included 120 bluegill, 82 yellow perch, 60 black crappie, 9 pumpkinseed, 2 bluegillxpumpkinseed hybrids, 6 white sucker and 1 golden shiner.

Fall electrofishing surveys were conducted in 1982, 94 and 2007. The 1982 survey mentions that one grass pickerel was captured and indicates that occasional partial winterkills have been reported from Pier Lake.

METHODS

Pier Lake was still about 10 - 15% ice covered when we set 6 standard fyke nets (¾-inch mesh, bar measure) on May 7, 2013. These nets targeted walleye and northern pike. The nets were pulled on May 15, and effort totaled 48 net-nights. Four standard ¾-inch nets and one 3/8-inch net for smaller fish were set June 10 and pulled June 14 to target panfish, for a total of 20 net-nights.

An electrofishing boat using alternating current was used to collect gamefish along the entire shoreline on May 21, 2013. The shoreline was also electrofished on September 12, 2013, targeting juvenile gamefish.

Length or length category (nearest half-inch) was recorded for all gamefish and for panfish in June. Adult gamefish captured in spring were given a left-ventral fin clip and juveniles were given a top-tail clip for use in mark-recapture population estimates. Age structures (scales or spines) were removed from ten fish per species, per half-inch group.

RESULTS AND DISCUSSION

Walleye

During netting just after ice-out, 35 walleye were captured in 8 nights, including 6 immature fish and 1 immature recapture, at a rate of 0.73 walleye per net night (Table 1). The electrofishing sample on May 28 yielded 48 walleye (9.5 fish per mile) including 2 recaptures of juvenile fish, so a population estimate could not be calculated. Walleye size was scattered from 6 to 29 inches (Figure 1).

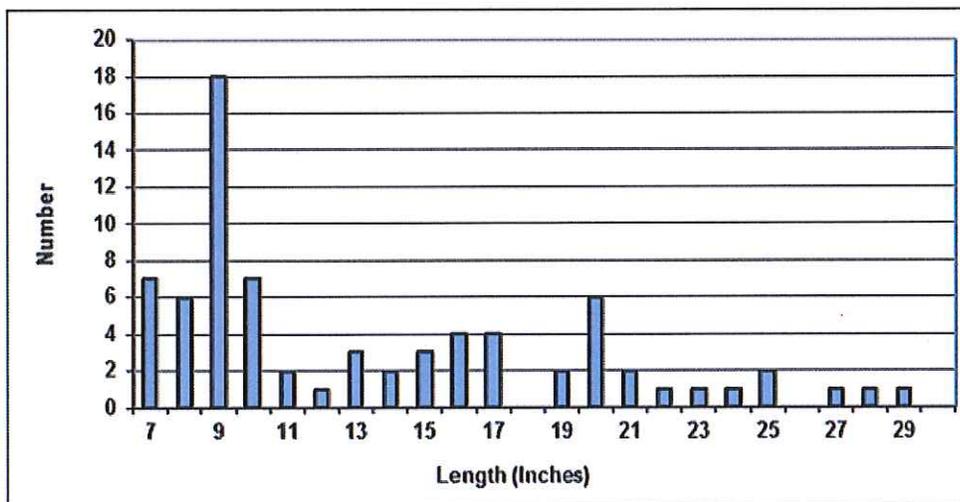
Table 1. Catch per unit effort during a 2013 survey of Pier Lake, Oneida County WI. Netting catch rates are reported as number of fish per net night, while electrofishing catch rates are number of fish per mile of shoreline. Blank cells during shocking runs indicate a species was not targeted.

Species	walleye netting	May 21 electrofishing	panfish netting	Sept 12 electrofishing
walleye	0.73	9.5	0.25	1.2
largemouth bass	1.2	3.0	0.25	2.4
muskellunge	0.10	0.59	0	0
northern pike	2.9	3.0	0.20	0.8
black bullhead	0.042		0.20	
black crappie	73.7		15.3	
bluegill	21.9		167.7	
hybrid bluegill x pumpkinseed	1.5		3.3	
golden shiner	0.56		0.25	
pumpkinseed	1.6		6.1	
rock bass	0.10		0.050	
white sucker	0.42		0.25	
yellow bullhead	29.3		14.3	
yellow perch	13.6		0.10	

Table 2. Fish stocking record during 1975 through 2013 in Pier Lake, Oneida County Wisconsin.

Year	Species	Size	Number	Comments
1975	muskellunge	lg fingerling (10 inch)	250	Sept 22
1976	walleye	lg fingerling	12,360	Aug 17 & Sept 23
1977	muskellunge	lg fingerling (8 inch)	500	
1978	walleye	sm fingerling (2 inch)	12,000	Aug 1
1981	walleye	sm fingerling (3 inch)	12,075	Aug 12 & 18
1986	muskellunge	lg fingerling (8 inch)	500	Sept 22
2000	walleye	lg fingerling (6-8 inch)	1,000	Tomahawk Fishing Unlimited
2001	walleye	lg fingerling (6 inch)	1,000	Private stocking
2002	walleye	lg fingerling (7-10 inch)	1,000	Willow Region Sportsmans Club
2003	walleye	lg fingerling (9 inch)	1,000	Willow Region Sportsmans Club
2004	walleye	lg fingerling (7 inch)	1,000	Willow Region Sportsmans Club
2005	walleye	lg fingerling (7 inch)	1,015	Willow Region Sportsmans Club
2006	walleye	lg fingerling	500	Willow Region Sportsmans Club
2007	walleye	lg fingerling (6 inch)	1,000	Willow Region Sportsmans Club
2008	walleye	lg fingerling (8 inch)	1,000	Willow Region Sportsmans Club
2009	walleye	lg fingerling (8 inch)	1,000	Willow Region Sportsmans Club
2010	walleye	lg fingerling (8 inch)	1,000	Willow Region Sportsmans Club
2011	walleye	lg fingerling (8 inch)	1,619	Willow Region Sportsmans Club
2012	walleye	lg fingerling (8 inch)	1,000	Willow Region Sportsmans Club
2013	walleye	lg fingerling (8 inch)	1,000	Willow Region Sportsmans Club

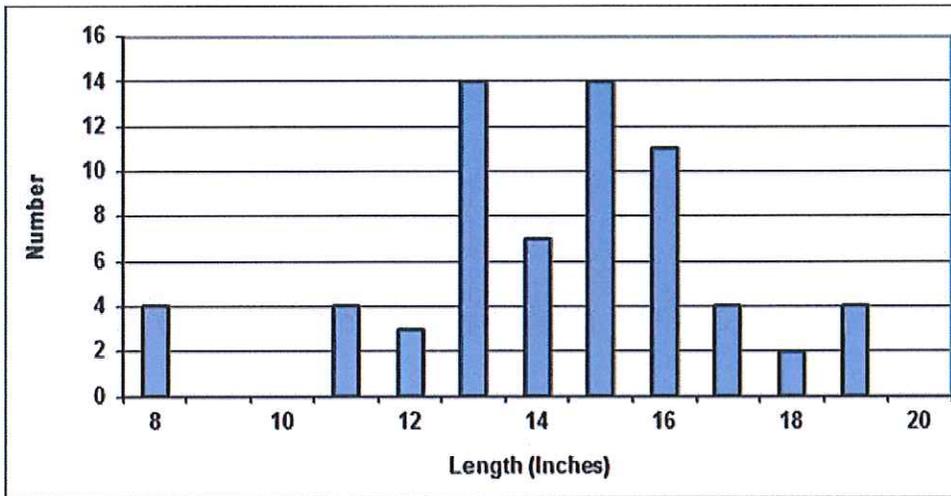
Figure 1. Length-frequency of walleye during 2013 in Pier Lake, Oneida County WI.



Largemouth Bass

We captured 73 largemouth bass during spring sampling, including only 6 recaptures of previously-marked fish and 5 fish less than 8 inches in length. Too few fish were recaptured to calculate a reliable population estimate. Size showed a broad peak between 13 and 17 inches with 63% of adult largemouth (including all fish 8 inches and larger) over 14 inches and 9% over 18 inches (Figure 2). The longest largemouth was 19.8 inches. Largemouth length-at-age was generally a little ahead of regional averages (Appendix A). No smallmouth bass were encountered during the survey.

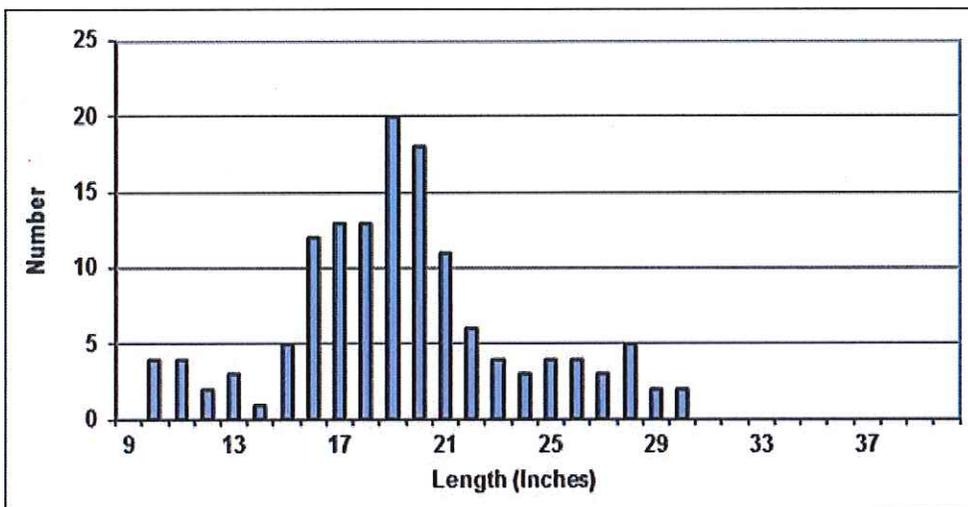
Figure 2. Length-frequency of adult largemouth bass during 2013 in Pier Lake, Oneida County Wisconsin.



Northern Pike

We captured 161 northern pike, including 17 recaptures of previously-marked fish and two immature fish less than 12 inches. The population was estimated at 555, or 2.1 adult pike per acre ($\pm 24\%$, coefficient of variation). Most northern pike ranged broadly in size from 16 to 22 inches, with good numbers out to about 30 inches. Average length was 19.4 inches; 11.5% of pike were 26 inches or larger and 1.4% (2 fish) exceeded 30 inches (Figure 3). The largest northern pike was a 30.5 inch female, aged at 9 years from a scale. Pike length-at-age was behind average for the region (Appendix A). Male pike grew slowly and topped out at about 21 inches, while females length-at-age ran about 2 years behind average.

Figure 3. Length-frequency of northern pike during 2013 in Pier Lake, Oneida County Wisconsin.

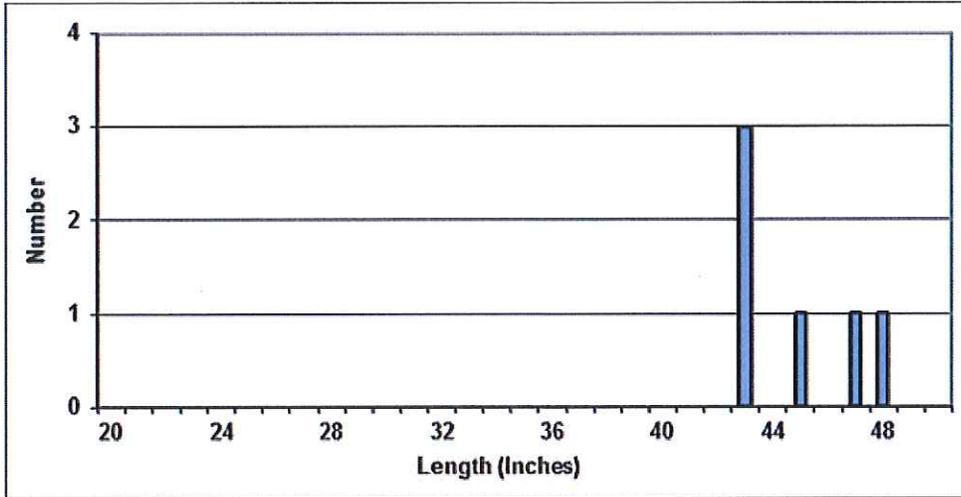


Muskellunge

We captured 8 muskellunge during the survey, including 2 recaptures of previously-marked fish. Adult muskellunge ranged from 43 to 48.9 inches in length (Figure 4). Muskellunge were stocked

three times from 1975 to 1986 (Table 2). It may be that the stocked fish pulled off some yearclasses, but we saw no indication of recent recruitment.

Figure 4. Length-frequency of muskellunge during 2013 in Pier Lake, Oneida County WI.



Panfish

Black crappie, yellow bullhead, bluegill and yellow perch catches were high during the early May netting period. Bluegill dominated the June catch, followed by black crappie, yellow bullhead and pumpkinseed (Table 1). During June panfish netting, bluegill size showed a broad peak from 6 to 8 inches, and 33% of bluegill were 7 inches or larger (Figure 5). Bluegill length-at-age was a little behind the regional average, while pumpkinseed was about average (Appendix A). Pumpkinseed usually run smaller than bluegill, but we saw fairly good size in Pier with 25% over 7 inches (Figure 6). Black crappie length-at age was generally smaller than average, but they showed good longevity and continued to grow at older ages. We found a yearclass of 4.5-inch, age-2 crappies coming up, along with good numbers of fish centered on 8.5 inches that were mostly ages 5 to 8 (Figure 7, Appendix A). Yellow bullhead showed a broad range of sizes, with most fish measuring 9 to 12.5 inches (Figure 8)

Figure 5. Length-frequency of bluegill during 2013 in Pier Lake, Oneida County Wisconsin.

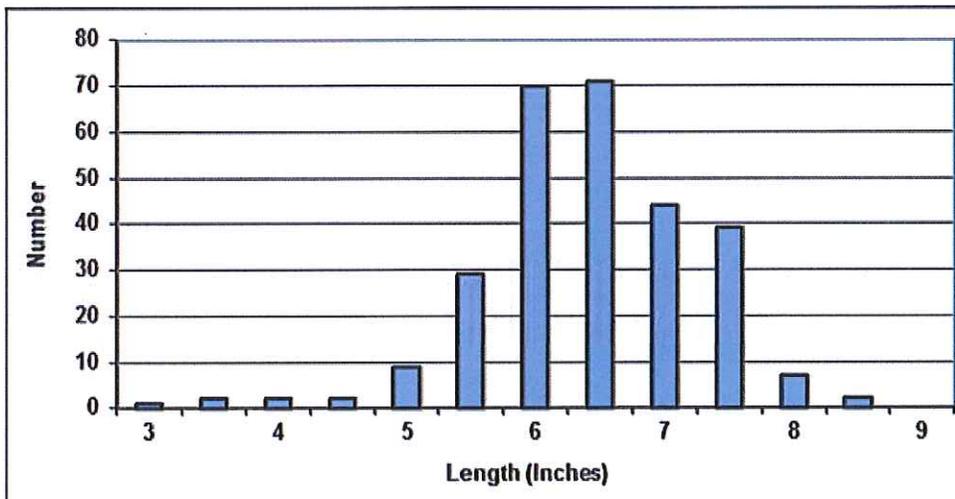


Figure 6. Length-frequency of pumpkinseed during 2013 in Pier Lake, Oneida County WI.

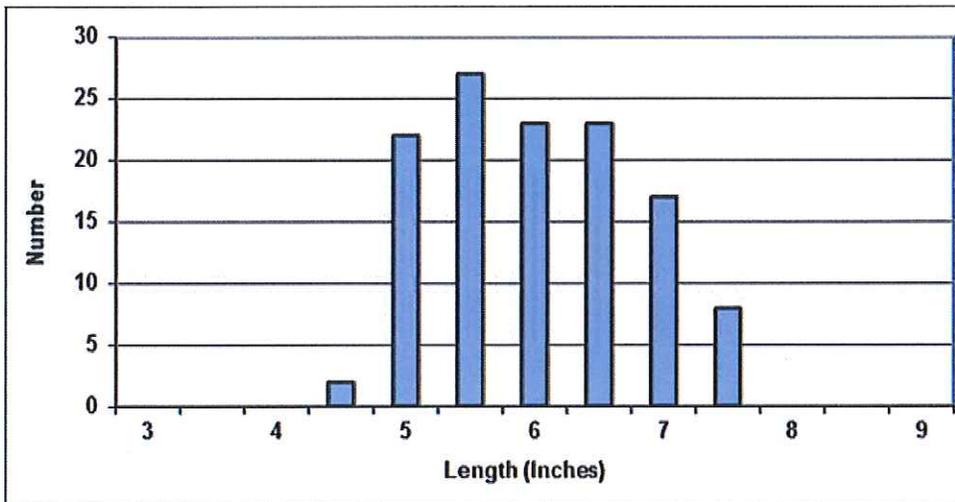


Figure 7. Length-frequency of black crappie during 2013 in Pier Lake, Oneida County WI.

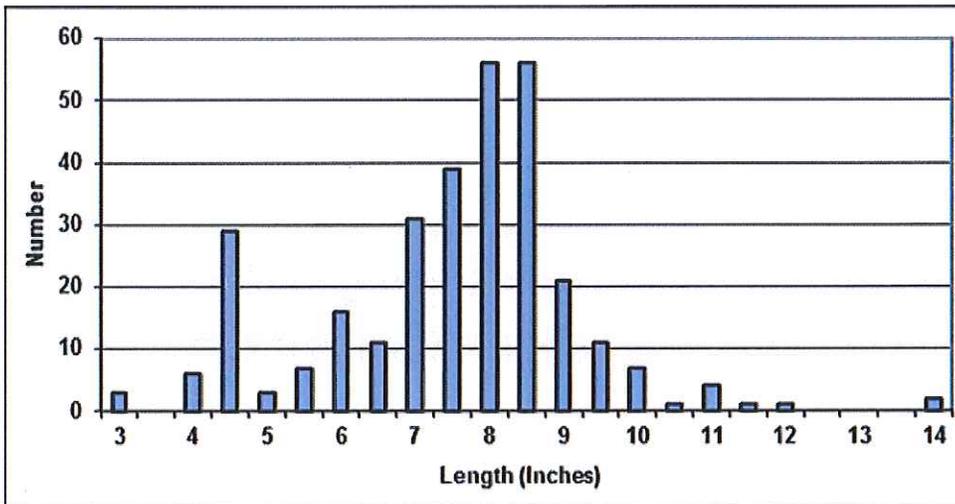
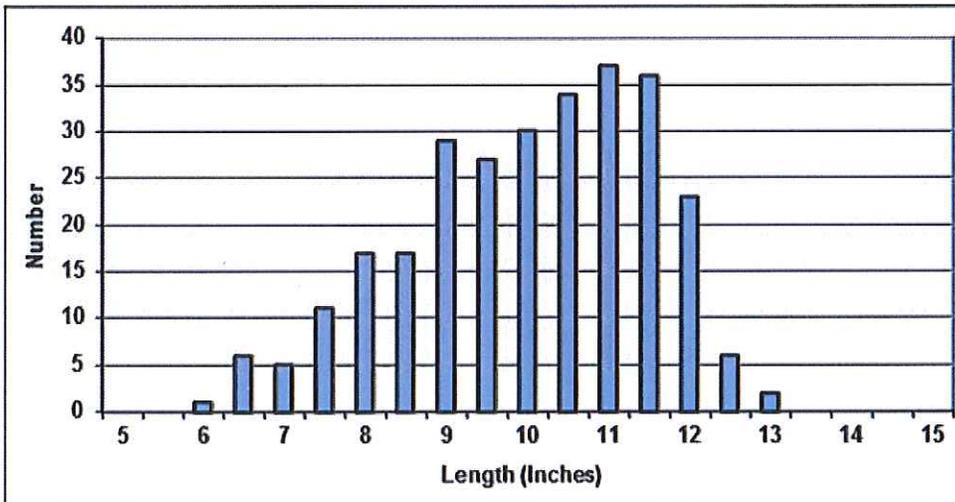


Figure 8. Length-frequency of yellow bullhead during 2013 in Pier Lake, Oneida County WI.



MANAGEMENT RECOMMENDATIONS

Largemouth bass and northern pike are the dominant gamefish in Pier Lake, with lower numbers of stocked walleye and a remnant muskellunge population. Largemouth bass length-at-age was generally average or better for the region, while pike were growing slow. Despite the slow pike growth, both largemouth bass and northern pike showed good numbers of quality-size fish. Bluegill, black crappie and yellow bullhead dominated the panfish catch, followed by yellow perch, pumpkinseed and hybrid bluegill x pumpkinseed. Rock bass and black bullhead were also present, with non-game species including golden shiner and white sucker. Pier should continue to be managed with largemouth bass and northern pike as the dominant game species. Walleye stocked by Willow Region Sportsmans Club currently provide a secondary gamefish opportunity.

ACKNOWLEDGEMENTS

Steve Timler and I supervised the field work for this survey. Jonathan Pyatskowit, Tim Tobias and volunteer Jacob Richter assisted on the water. Timler assigned fish ages and Jason Halverson and Timler entered and proofed data.

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Cover image courtesy of Oneida County website. www.co.oneida.wi.gov

APPENDIX A FISH AGE RESULTS

An age-length key was created from the aged subsample and applied against the full length-frequency to estimate averages.

Table A.1. Male northern pike length at age in Pier Lake, Oneida County Wisconsin during 2014.

Age	Number of fish	avg. length	Northern WI avg.
2	5	11.9	13.4
3	3	15.7	16.2
4	6	17.4	18.9
5	10	18.0	20.6
6	12	18.3	22.3
7	7	20.7	23.4
8	6	19.7	24.8
9	1	17.4	23.9
10			
11	2	26.3	

Table A.2. Female northern pike length at age in Pier Lake, Oneida County Wisconsin during 2014.

Age	Number of fish	avg. length	Northern WI avg.
2			
3	3	13.5	16.9
4	3	19.2	20.4
5	10	18.7	23.1
6	16	21.7	24.4
7	12	23.2	27.3
8	10	25.2	28.8
9	4	29.1	32.1
10	3	27.0	
11	1	22.8	

Table A.3. Largemouth bass length at age in Pier Lake, Oneida County Wisconsin during 2014.

Age	Number of fish	avg. length	Northern WI avg.
1			3.5
2	7	7.0	6.6
3	3	8.1	8.9
4	3	11.6	10.5
5	6	12.8	12.1
6	6	13.9	13.6
7	20	15.3	14.9
8	10	15.8	15.8
9	3	17.3	16.2
10	4	19.4	17.1
13	1	17.6	18.3

Table A.4. Black crappie length at age in Pier Lake, Oneida County Wisconsin during 2014.

Age	Number of fish	avg. length	Northern WI avg.
1	4	3.1	3.4
2	17	4.7	5.3
3	10	6.0	7.1
4	25	6.8	9.0
5	10	7.6	10.0
6	24	8.4	10.7
7	21	9.0	11.6
8	12	9.4	11.7
9	2	12.2	10.4
10	2	13.3	11.6

Table A.5. Bluegill length at age in Pier Lake, Oneida County Wisconsin during 2014.

Age	Number of fish	avg. length	Northern WI avg.
2	5	3.9	3.9
3	1	4.7	5.0
4	6	5.2	6.2
5	13	5.7	6.8
6	19	6.7	7.8
7	18	7.1	8.2
8	12	7.2	8.7
9	1	8.3	8.7

Table A.6. Pumpkinseed length at age in Pier Lake, Oneida County Wisconsin during 2014.

Age	Number of fish	avg. length	Northern WI avg.
2			3.6
3	3	4.7	4.8
4	19	5.6	5.7
5	12	6.2	6.5
6	15	6.9	6.8
7	11	7.1	7.3
8	1	7.6	7.3
9			
10	1	7.8	

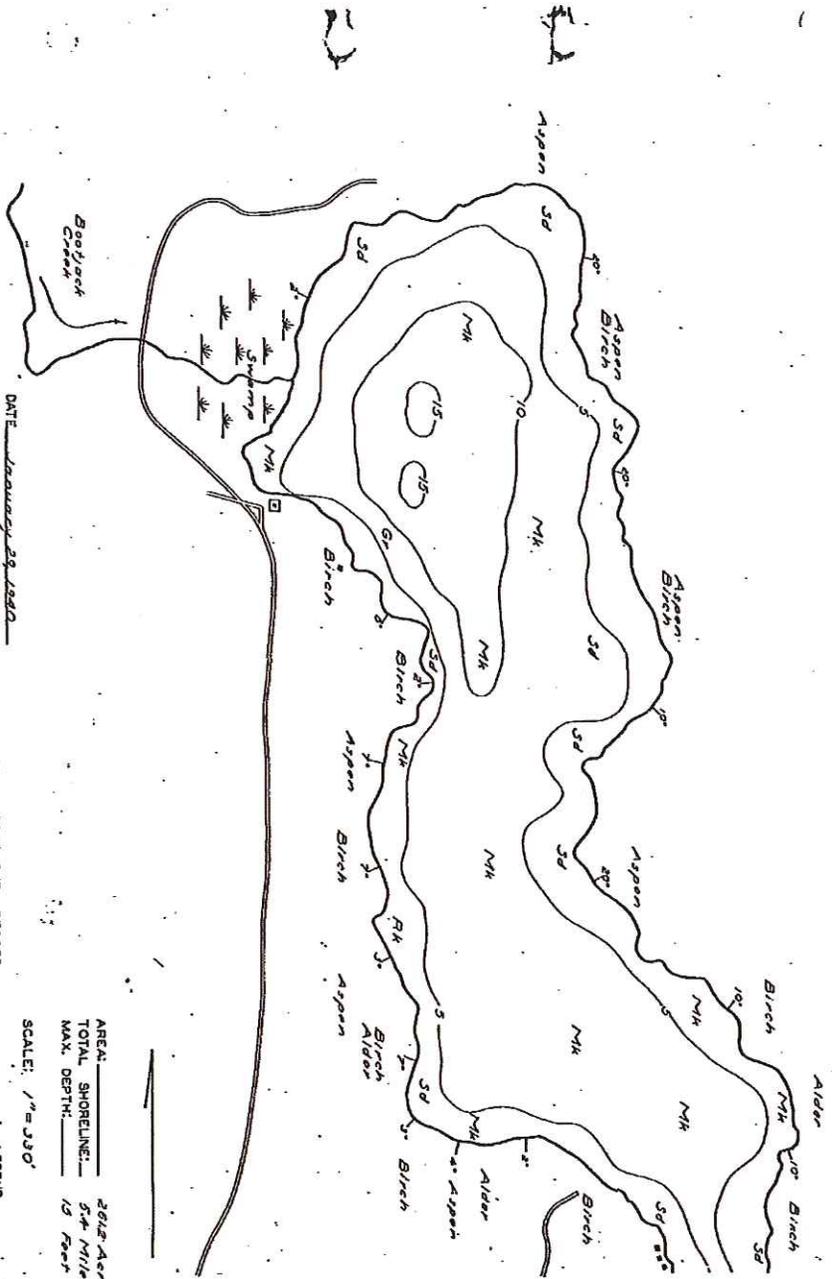
Table A.7. Hybrid bluegill x pumpkinseed length at age in Pier Lake, Oneida County Wisconsin during 2014.

Age	Number of fish	avg. length
3	1	5.2
4	3	5.5
5	10	6.5
6	14	6.7
7	12	7.3
8	1	6.7

WISCONSIN CONSERVATION DEPARTMENT
 BIOLOGY DIVISION
 LAKE AND STREAM IMPROVEMENT SECTION

LAKE SURVEY MAP

LAKE Big Lake, East
 SECTION 3-26, 27, 28, 29
 TOWNSHIP 32-38 N
 RANGE 4 E
 TOWN OF JANESVILLE & LYONS
 COUNTY OSHAU



DATE January 29, 1960
 COMPILED BY W. J. B. C. C.
 TRACED BY W. J. B. C. C.
 SOURCE OF INFORMATION
U.S. Lake Survey, Bogard
U.S. Topographic
 SOUNDINGS 200, 100, 50

DATES OF MAP REVISION _____

WORK AGENCY W. J. B. C. C.

TYPE	DATE	LAKE IMPROVEMENT RECORD
BRUSH REFUGES	<u>4/2</u>	_____
SAMPLING TANGLES	<u>2/22</u>	_____
SPAWNING BOXES	_____	_____
MINNOW SPAWNERS	<u>4/2</u>	_____
TOTAL	<u>4/2</u>	_____

AREA: 281/2 Acres
 TOTAL SHORELINE: 5 1/4 Miles
 MAX. DEPTH: 15 Feet

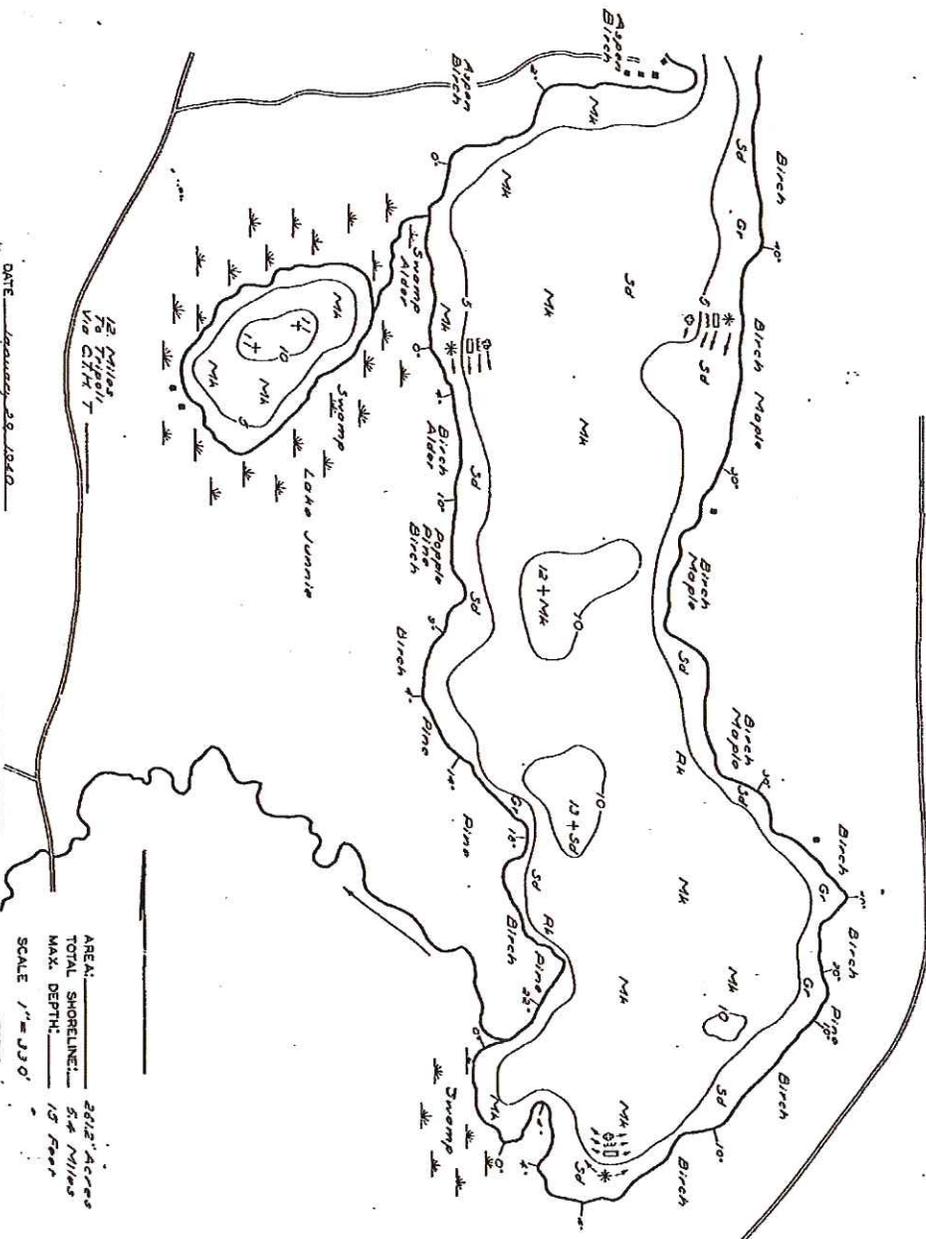
SCALE: 1" = 330'

LEGEND
 WEED BEDS
 ROCKY SHOALS
 SAND
 CLAY
 GRAVEL
 MUCK
 DWELLING
 DWELLING

WISCONSIN CONSERVATION DEPARTMENT
 BIOLOGY DIVISION
 LAKE AND STREAM IMPROVEMENT SECTION

LAKE SURVEY MAP

LAKE: Dier, South End
 SECTION: 3-26, 27, 34, 35
 TOWNSHIP: 37-38 N
 RANGE: 4 E
 TOWN OF JANICOLA, LINCOLN
 COUNTY: OSHOTA



DATE: January, 29, 1962
 COMPILED BY: T.L.B. C.C.
 TRACED BY: T.L.B. C.C.
 SOURCE OF INFORMATION:
C.C. Lake Survey Bogged
Cooper, Wisconsin
 SOUNDINGS: 100' intervals
 DATES OF MAP REVISION:

TYPE	DATE	RECORD
BRUSH REFUGES	6/2	
SAPLING TANGLES	2/2	
SPAWNING BOXES		
SPAWNERS	5/22	
TOTAL	6/2	

AREA: 2612 Acres
 TOTAL SHORELINE: 5 1/4 Miles
 MAX. DEPTH: 15 Feet
 SCALE: 1" = 330'

- LEGEND
- WEEP BEDS
 - ROCKY SHOALS
 - SAND
 - CLAY
 - GRAVEL
 - MUCK
 - DWELLING
 - ABANDONED DWELLING
 - RESORT