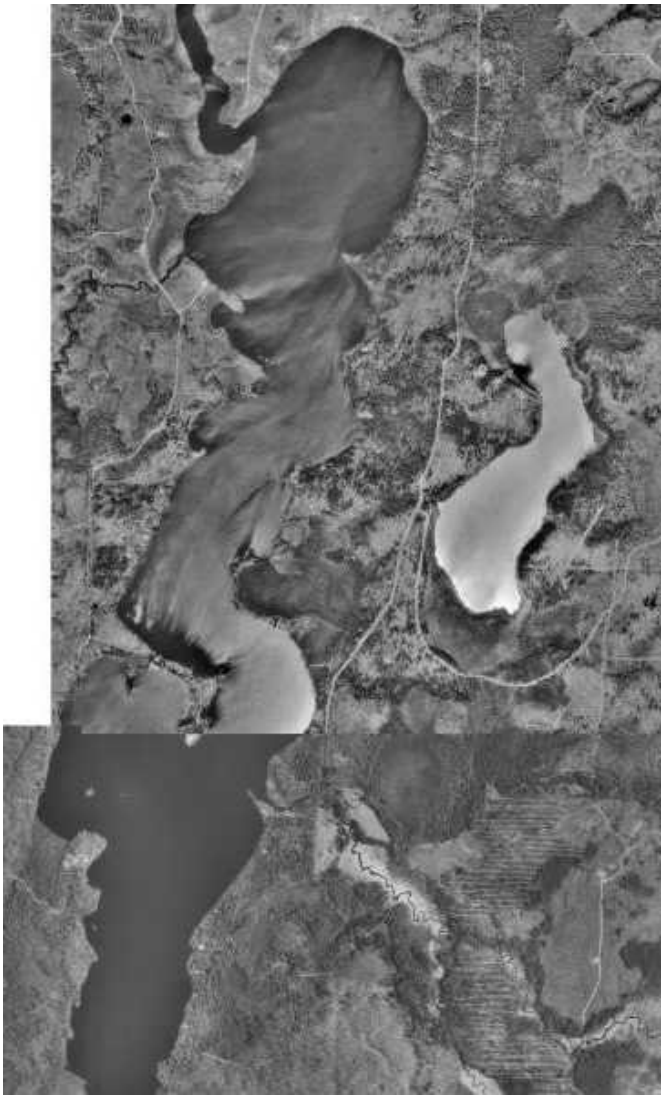
Comprehensive Fisheries Survey of Squaw Lake, Oneida & Vilas Counties, Wisconsin during 2003.

Waterbody Identification Code 2271600



John Kubisiak
Senior Fisheries Biologist
Rhinelander
July, 2004

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EXECUTIVE SUMMARY

A comprehensive fisheries survey of Squaw Lake was conducted during spring, 2003. Walleye (population estimate = 3.7 per acre), smallmouth bass (0.25 per acre), largemouth bass (0.064 per acre), muskellunge (0.31 per acre) and northern pike (0.55 per acre) were the dominant gamefish. Black crappie, bluegill, pumpkinseed, yellow perch and rock bass were common. Other species include yellow and black bullhead, white sucker and redhorse. I recommend managing for walleye, muskellunge, smallmouth bass and panfish. The current walleye regulation (no minimum size limit but only one fish may be longer than 14 inches) is consistent with our observations of strong recruitment and an abundance of fish less than 14 inches in length. Muskellunge are naturally reproducing and supplemental stocking may not be necessary.

Lake and location:
Squaw Lake, Oneida and Vilas Counties, T40N R4E Sec33
Located in northwestern Oneida and southwestern Vilas Counties. Squaw Creek, Stone Creek and two unnamed tributaries feed it. It is drained by Squaw Creek to the Pike Lake Chain (Chippewa River basin.)

Physical/Chemical attributes (Andrews and Threinen 1966):
Morphometry: 785 acres, maximum depth 21 feet.
Lake type: drainage.
Watershed: 25 square miles, including 928 acres of adjoining wetlands.
Basic water chemistry: Soft – alkalinity 25 mg/l, conductance 59 μmhos.
Littoral substrate: 90% sand, 5% rock and 5% muck.
Aquatic vegetation: moderate.
Winterkill: None reported.
Other features: Clear water of low transparency. Water level is maintained by a dam.

Purpose of Survey: Assess fishery status.

Dates of fieldwork: Walleye and northern pike netting April 21-27, 2003.
Electroshocking April 28, April 30, May 8, May 21, June 2 and September 18, 2003.
Muskellunge netting May 1-8, 2003
Panfish netting June 16-20, 2003.
Mini-fyke juvenile fish netting August 25-27, 2003.

BACKGROUND

An August 24, 1950 letter from Arthur A. Oehmcke to a Henry J. Heart indicated that a fishway on the Squaw Lake dam would be undesirable because rough fish would use it more than game fish, fishways provide potential for illegal harvest, and additional northern pike might immigrate. The letter set out the following management objectives for Squaw Lake: 1. Northern pike removals during the spawning run to improve muskellunge reproduction. 2. Stock walleye fingerlings instead of fry due to crappie predation. 3. Establish a stocking quota for muskellunge yearlings. 4. Conduct follow-up surveys on northern pike, walleye and muskellunge. On May 26, 1951, Mr. Heart sent copies of a petition and a news item submitted to the Lakeland Times (Minocqua), indicating "A majority of the property owners of the Squaw Lake area have re-approved the fish management program…"

Several pages of raw netting data from April, October, and November of 1954 and April, 1955 are most likely from northern pike removal. The April 1954 data include the number of nets (2-12 per night totaling 103 net-nights), and show average catch rates of 4.1 walleyes, 13.8 northern pike, and 0.06 muskies per net night. Other species include suckers, crappies, perch, burbot, redhorse, bullhead, rock bass, sunfish and brook trout.

A single night of electroshocking on July 5, 1961 indicated "an outstanding population of walleyes.", and "Quite a number of muskellunge were noted and three of them captured…" Northern pike were described as "heavy proportionately" (presumably robust) with abundant young fish. Panfish were present in low numbers, but showed good size. The report also described exceptionally abundant small crayfish, leeches and suckers. Management recommendations were "to encourage crayfish removal from Squaw Lake in an attempt to promote some future control of the leeches and bloodsuckers and to carry on the removal of at least 2000 suckers from this lake." Muskellunge stocking was recommended to help regulate the sucker population (Morehouse 1961).

Carlson (1976) conducted a comprehensive survey in 1975 with fyke nets (46 net nights), boom shocker (June 24 and October 14) and minnow seine (8 hauls on August 1). Predators were slow-growing: at age V, walleyes averaged 14.5 inches and northern pike averaged 19.8 inches, a full year behind average values reported by Snow (1969). Panfish growth was average, except that black crappies were growing very fast. Species not reported in previous reports include troutperch, bluntnose minnow, common shiner, golden shiner and creek chub. In addition, several species were given more exact names: pumpkinseed, white sucker and shorthead and silver redhorse. Carlson (1976) noted natural reproduction of muskellunge and walleye, but stocking confounded interpretation. He recommended continued stocking of muskellunge, and monitoring walleye yearclasses to determine the need for future walleye stocking.

Great Lakes Indian Fish and Wildlife Commission (GLIFWC) conducted mark-recapture adult walleye population estimates annually from 1990 through 2002. Fall young-of-year surveys were conducted in 1975, 80, 83, 87 and 2003 by Wisconsin Department of Natural Resources (DNR) and 1990 through 2002 by GLIFWC. These data are compared to the current study in the results section.

Creel surveys were conducted during 1990-91 and 2003-04 (reported separately).

Table 1. Fish stocking and muskellunge catches in fall surveys during 1970 through 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin. Stocking records in the file date to 1933.

Year	Species	Size at stocking	Number stocked	**Fall Surveys**: Muskellunge Less than 20"	**Fall Surveys**: Muskellunge Size (inches)
1970	muskellunge	fingerling	1,500		
1971	muskellunge	fingerling	3,200		
1973	muskellunge	fingerling	19,000		
1974	muskellunge	fingerling	10,200		
1975	muskellunge	fingerling	10,200	3	15.5-16.4
1976	muskellunge	fingerling (13")	900		
1979	muskellunge	fingerling (8")	1,509		
1980			0	1	9.0-9.4
1982	muskellunge	fingerling (10")	700		
1983			0	1	8.5-8.9
				4	14.0-19.4
1984	muskellunge	fingerling	1,290		
1985	muskellunge	fingerling (10")	1,408		
1986	muskellunge	fingerling (8")	1,623		
1988	muskellunge	fingerling (10")	1,600		
1990			0	2	9.5-10.9
				11	15.5-19.9
1991	muskellunge	fingerling (10.5")	700	2	9.3
1992	muskellunge	fingerling	700	Didn't pick up other species	
1993	muskellunge	fingerling	1,400	7	9.0-11.4
				4	14.0-15.4
1994			0	1	10.7
1995			0	0	
1996			0	0	
1997	muskellunge	fingerling	700	0	
1998			0	Didn't pick up other species	
1999	muskellunge	fingerling	785	1	13.8
2000			0	Didn't pick up other species	
2001	muskellunge	fingerling	700	Didn't pick up other species	
2002			0	Didn't pick up other species	
2003	muskellunge	fingerling (10.9")	792	3	8.0-11.9
				1	17.0-17.9

METHODS

Eight standard fyke nets (3/4" stretch mesh) were lifted on April 22, 10 on April 23 and 16 on April 24-27 (targeting walleye and northern pike). Ten nets were lifted on May 2-

8 (targeting muskellunge) and eight on June 17-20 2003 (10 nets on June 18), targeting panfish. Eight mini-fyke nets (1/4" stretch mesh with 2-inch exclusion netting across the mouth, targeting young-of-year) were lifted on August 26-27 2003. A WDNR-standard alternating current electrofishing boat was used to collect fish on April 28 (cut short after the crew was fired on with a 22-caliber rifle), April 30, May 8, May 21, June 2 and September 18 2003. Length or length category (nearest half-inch) was recorded for all gamefish and on panfish during June. Adult gamefish were given a right-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 five gamefish and ten panfish per species, per half-inch group.

RESULTS AND DISCUSSION

Walleye

During walleye netting, 1,054 walleyes were captured (including 30 recaptures) in 6 nights, at a rate of 13.3 walleyes per net day (Table 2). Another 105 and 27 walleyes were captured during muskellunge and panfish netting, respectively. Five spring electrofishing samples yielded 1,925 walleyes (including recaptures). The adult walleye population estimate of 2,878 walleyes (± 307 SD), or 3.7 walleyes per acre is similar to annual population estimates since 1991 (Figure 1) and to the predicted population of 2,745 (from a regression model of naturally reproducing northern Wisconsin walleye populations). The total population (all fish seven inches and larger) is estimated at 13,778 (± 2,834 SD).

Figure 1. Adult walleye population estimates in Squaw Lake, Oneida and Vilas Counties, Wisconsin compared to predicted population based on lake area (solid line). Error bars indicate ± one standard deviation. Surveys were performed by Great Lakes Indian Fish and Wildlife Commission except 2003 by Wisconsin Department of Natural Resources.

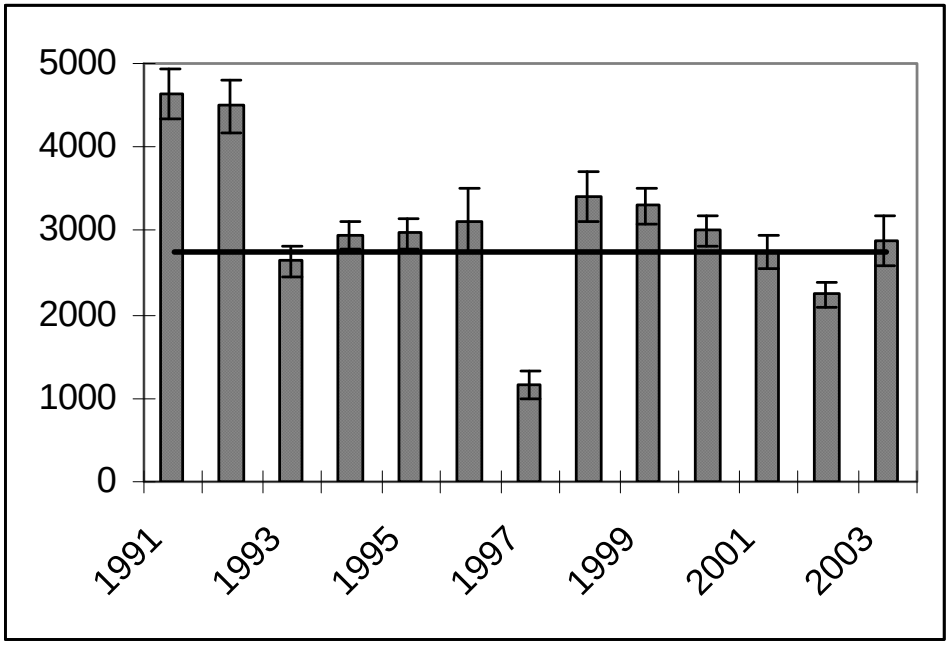


Table 2. Catch per unit effort of gamefish and panfish species during a spring, 2003 comprehensive survey of Squaw Lake, Oneida and Vilas Counties, Wisconsin. Netting catch rates are reported as number of fish per net night, while shocking catch rates are number of fish per mile of shoreline. Panfish data were not collected during all sampling events.

species	April walleye netting	April 28 shock	April 30 shock	May musky netting	May 8 shock	May 21 shock	June 2 shock	June panfish netting
walleye	13.3	30.7	58.8	1.5	45.3	46.3	48.1	0.80
largemouth bass	0.15	0.22	0.22	0.13	0.22	1.3	0.11	0
smallmouth bass	0.02	0.44	2.4	0.16	0.67	2.7	2.0	0.15
muskellunge	1.0	1.8	3.4	0.47	2.0	2.0	0.67	0.12
northern pike	3.1	0.22	0.89	0.76	0.67	2.3	0.67	0.30
northern x musky hybrid	0	0	0	0	1.2	0	0	0
bluegill	0.85			8.0				21.1
pumpkinseed	0.61			2.3				1.7
black crappie	1.3			1.4				11.4
yellow perch	9.9			4.2				1.3
rock bass	0.47			1.5				0.55
yellow bullhead	0.14			0.4				0.11
black bullhead	0.02			0.06				0

Adult walleye size structure shows the bulk of the population is under 14 inches (Figure 2), indicating the current regulation is appropriate (no minimum size limit, but only one fish may be longer than 14 inches). However, growth rates remain slow (Appendix A). There may be some improvement in the abundance of walleyes over 14 inches, and especially 17-19 inch fish (although electroshocking data from the GLIFWC survey may have simply under-represented larger females), but small fish still dominate the population since the size limit was removed in 1997 (Figure 3). Thus, the regulation has likely promoted angler harvest of small walleyes, but there may not be enough of an impact on walleye population numbers to dramatically improve average size.

Figure 2. Length-frequency of adult walleyes during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.

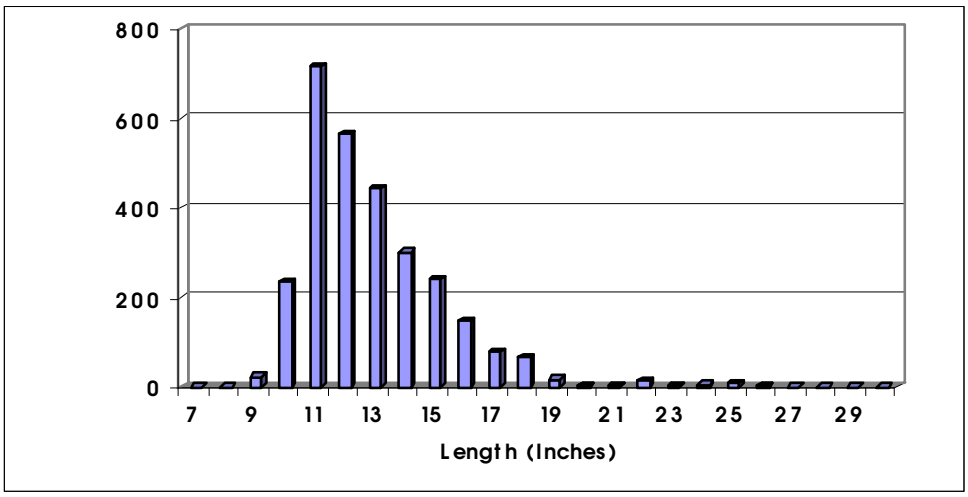
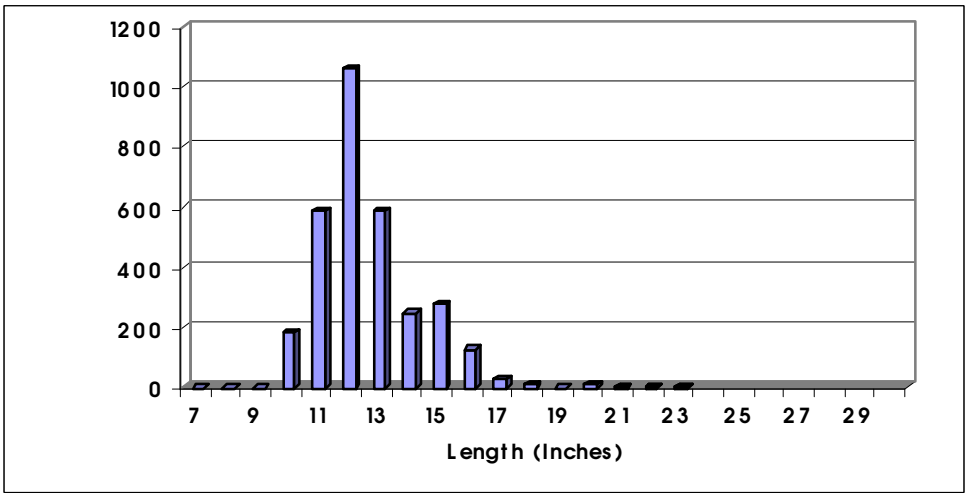


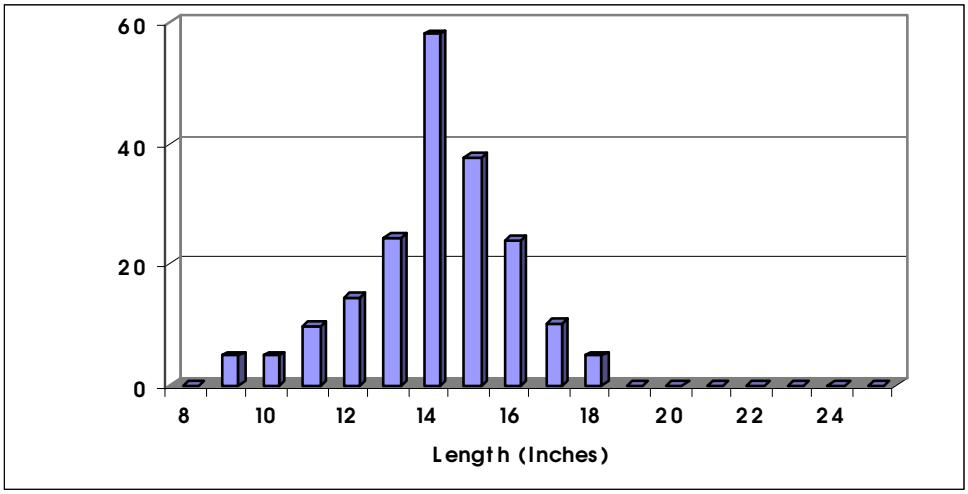
Figure 3. Length-frequency of adult walleyes during a 1996 survey of Squaw Lake, Oneida and Vilas Counties, Wisconsin (data from GLIFWC 1996).



Bass

Only 42 largemouth bass were encountered in Squaw Lake. The largest was 17.0 inches. The population (fish 8 inches and longer) was estimated at 50 fish (± 14 SD). Ninety-seven smallmouth bass (including 15 recaptures and 8 fish less than 8 inches) were captured during the survey, 24 netting and 73 shocking. The smallmouth bass population (fish 8 inches and longer) is estimated at 194 (± 62 SD), or 0.2 fish per acre. However, large standard deviations make both population estimates suspect. Smallmouth lengths centered around 14 inches, with good numbers of fish up to 19 inches (Figure 3).

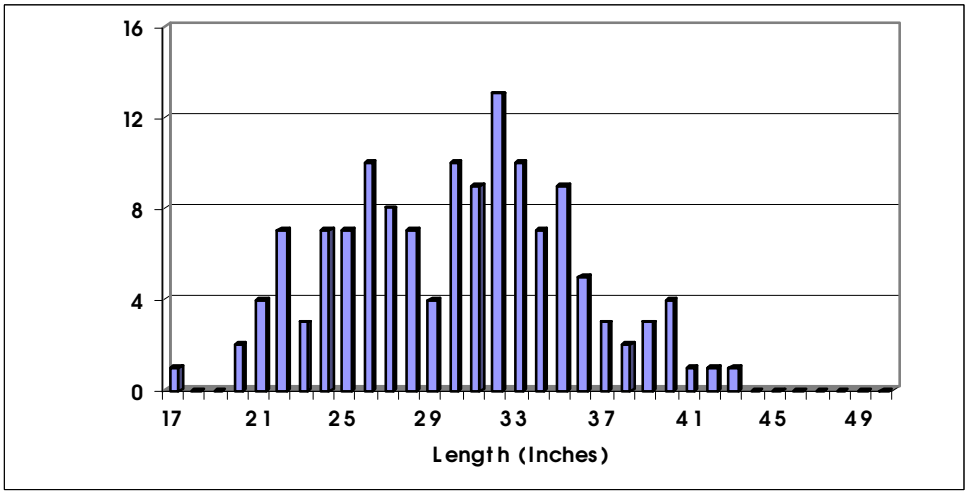
Figure 4. Length-frequency of adult smallmouth bass during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.



Muskellunge

A total of 210 muskellunge were captured during all 2003 netting and shocking periods (including recaptures) at a rate of 0.5 per night during the musky netting period (Table 2). The adult (30 inches and larger) population is estimated at 247 muskellunge (± 83 SD), or 0.31 per acre, well within the normal range for muskellunge. Additionally, if the estimate is extended to include abundant 20 to 30-inch fish, it more than doubles to 607 fish. Muskellunge lengths were scattered between low-20 and mid-40 inch size ranges (Figure 4). Squaw Lake is currently stocked at a rate of 1 muskellunge per acre in odd-numbered years. However, stocking may not be necessary. When they were targeted, juvenile muskellunge were consistently collected during fall shocking surveys during both stocked and non-stocked years (Table 1). This and the wide range of sizes encountered during 2003 indicate that natural reproduction is occurring. Five tiger muskies (northern pike X muskellunge hybrids) were encountered during the June 2 electroshocking run (Table 2), showing that a small amount of hybridization is occurring with northern pike.

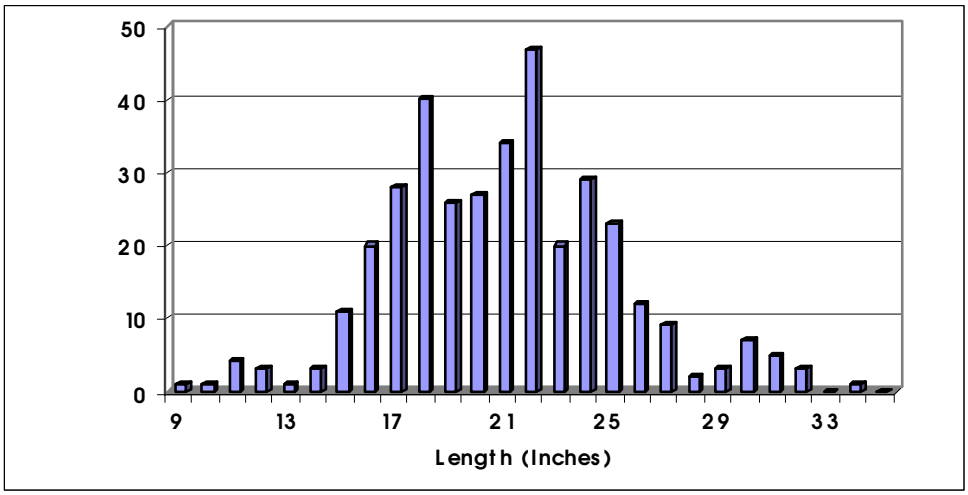
Figure 5. Length-frequency of adult muskellunge during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.



Northern Pike

Three hundred sixty-seven northern pike were captured (including 107 recaptures), all gears combined. The northern pike population was estimated at 428 (± 41 SD) using the Schnabel multiple-capture method (Ricker 1975), or 0.55 per acre. Average length of adult northern pike was 20.9 inches, and good numbers of fish up to 32 inches in length were observed (Figure 6). The northern pike population were less abundant than in the past. The northern pike netting catch rate (3.1 per net night) was much lower than in 1954 (13.8 per net night) and the population estimate indicates low density.

Figure 6. Length-frequency of northern pike during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.



Panfish

Bluegill, black crappie and yellow perch were the most abundant panfish in Squaw Lake (Table 2). Panfish length-frequencies (Figures 5 – 9) include both spring netting (captures fish over 4 inches in length) and summer mini-fyke netting (captures young fish less than 3 inches in length).

Bluegill length-frequency (Figure 7) was dominated by large catches of fish 6 to 8 inches in length. Length-frequency of black crappie (Figure 8) and yellow perch (Figure 9) both indicate the presence of multiple yearclasses. Pumpkinseed were in moderate abundance, but showed good size structure for that species (Figure 10). Most rock bass were less than 7 inches (Figure 11).

Figure 7. Length-frequency of bluegill during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.

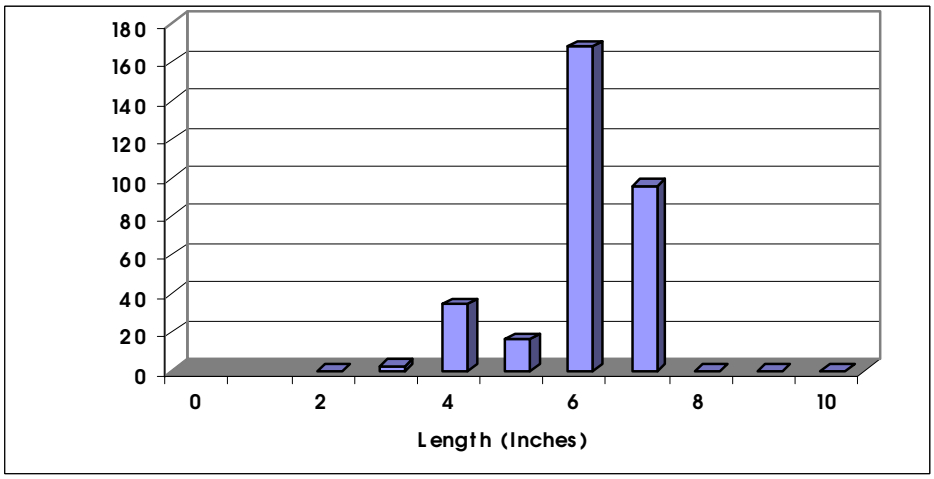


Figure 8. Length-frequency of black crappie during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.

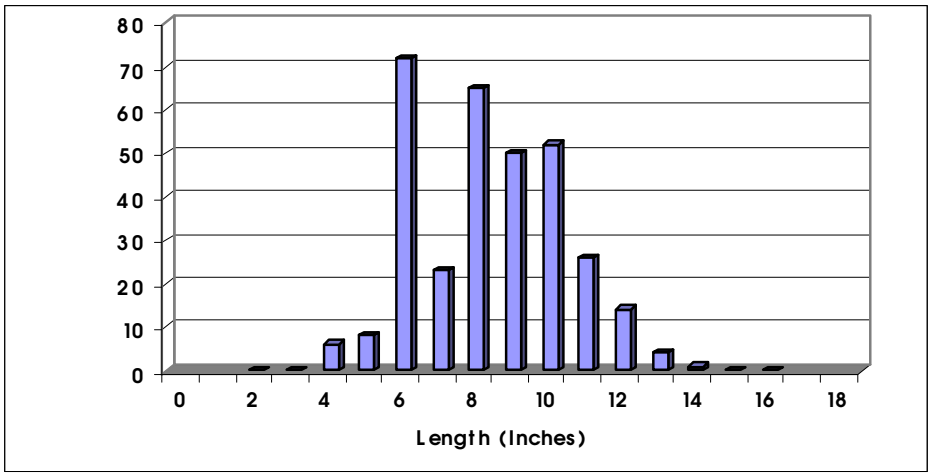


Figure 9. Length-frequency of yellow perch during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.

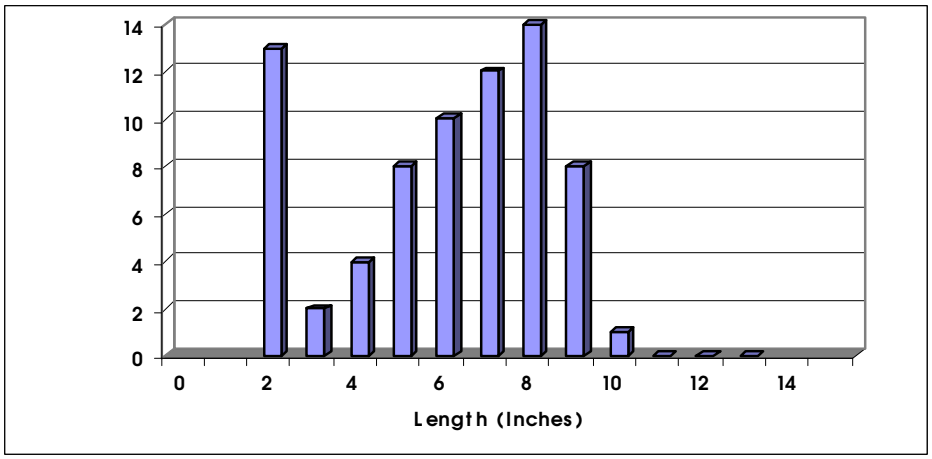


Figure 10. Length-frequency of pumpkinseed during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.

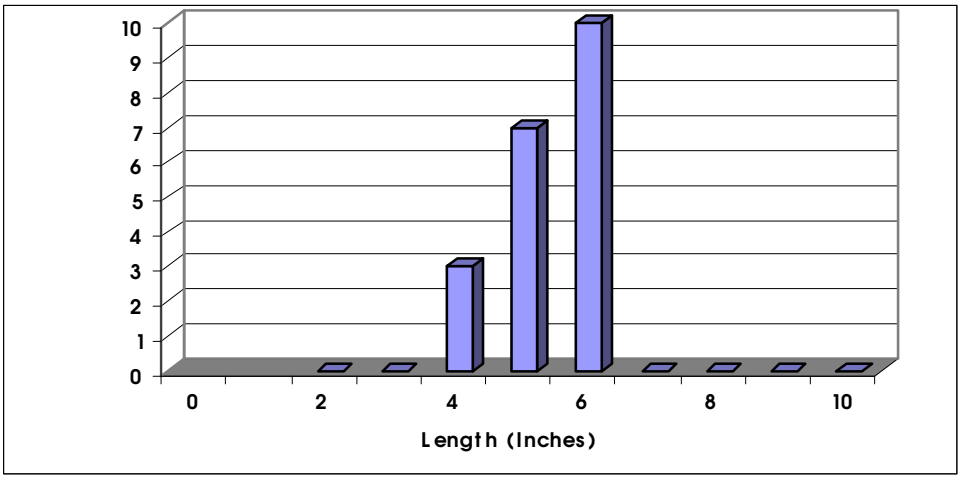
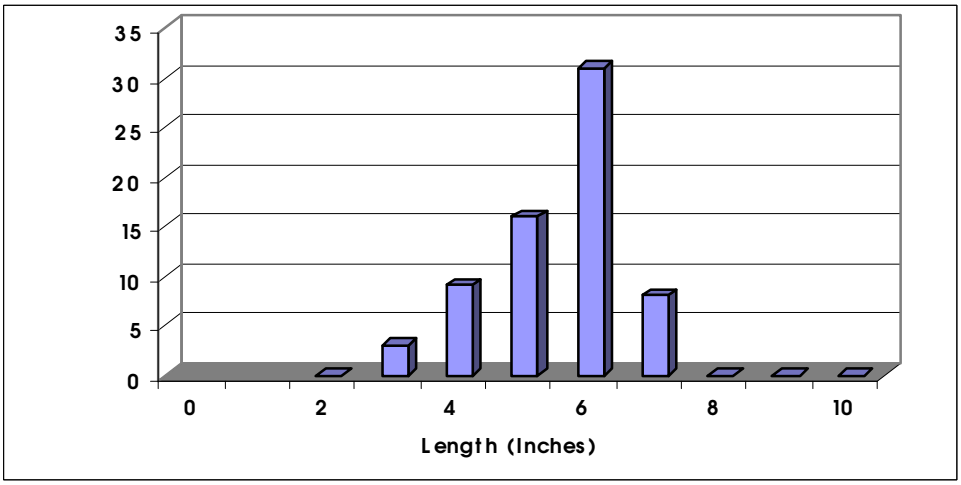


Figure 11. Length-frequency of rock bass during 2003 in Squaw Lake, Oneida and Vilas Counties, Wisconsin.



CONCLUSIONS AND RECOMMENDATIONS

Walleye reproduction in Squaw Lake is strong and adult populations have been remarkably stable since 1991 (Figure 1). The current regulation "No minimum size limit but only one walleye over 14 inches may be kept" has been in place since 1997. Walleyes are slow-growing, reaching 15 inches at age seven for females and age eight for males, more than two years behind regional averages (Tables A.1 and A.2), a condition that was also documented in the 1976 survey (under no minimum length limit). It is difficult to separate effects of the regulation from sampling variability and normal population changes. While average size of walleyes has been stable, there has been a slight improvement in the abundance of walleyes over 14 inches and especially 17-19 inch fish compared to a 1996 survey (Figures 2 and 3).

Smallmouth bass were much more abundant than largemouth and showed good size structure. Bass population estimates were low, but should be interpreted with caution, because both estimates were highly variable (± about 30%).

Presence of a variety of muskellunge sizes and multiple small muskies collected during fall shocking surveys (Table 1) show that natural reproduction of muskellunge is occurring. The northern pike population was estimated at only 0.55 fish per acre, and the catch per net-day was less than a quarter the catch rate of a spring, 1954 survey. Northern pike hatch earlier than muskellunge and their young-of-year are known to suppress muskellunge recruitment by preying on fry. However, the current low population level of northern pike should reduce their impact on muskellunge and other game species. I recommend discontinuing stocking of muskellunge, with continued monitoring of natural reproduction during fall young-of-year surveys.

Panfish populations were dominated by bluegill, black crappie and yellow perch. Growth rates were about average for perch and black crappie and were only slightly depressed for bluegill, pumpkinseed and rock bass (Appendix A), indicating adequate numbers of predators. It is likely that competition is more of a limiting factor for growth rates (especially for game species) than lake productivity.

ACKNOWLEDGEMENTS

Steve Kramer oversaw most of the fieldwork and provided fish-age results. Matt Andre, Mike Coshun, Kevin Gauthier, Steve Gilbert, Steve Timler, Joelle Underwood, Mike Vogelsang and Jordan Weeks assisted in the field. Matt Andre entered and summarized data. Mike Coshun calculated population estimates.

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APPENDIX A
FISH AGE RESULTS

Table A.1. Female walleye length-at-age in Squaw Lake, Oneida and Vilas Counties, Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
2			
3			13.0
4			14.7
5	3	16.4	16.1
6	11	13.1	17.6
7	8	15.5	19.5
8	8	15.4	21.2
9	15	17.0	22.6
10	8	19.9	23.8
11	7	21.7	24.9
12	6	24.6	25.8
13			26.9
14	1	24.6	27.5
15	1	22.7	28.0
16			27.7

Table A.2. Male walleye length-at-age in Squaw Lake, Oneida and Vilas Counties, Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
2			10.6
3	6	10.0	11.6
4	13	11.6	13.0
5	10	12.1	14.5
6	10	13.6	15.8
7	3	13.6	16.9
8	11	15.0	18.1
9	8	15.6	18.9
10			19.7
11			20.4
12			20.6
13			21.3
14			22.0

Table A.3. Largemouth bass length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
2			
3			9.7
4			11.5
5	6	13.3	13.0
6	5	14.8	14.4
7	3	14.8	15.5
8	3	15.4	17.1
9	1	15.5	17.5
10			18.9

Table A.4. Smallmouth bass length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
2			7.2
3			9.5
4	1	13.8	11.4
5	3	14.7	13.8
6	4	15.1	15.4
7	4	15.4	16.5
8	1	17.7	17.5
9	1	17.7	18.3
10	2	18.4	18.4
11	1	18.8	17.8
12			18.8

Table A.5. Female northern pike length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1			13.1
2	1	16.0	14.4
3	9	16.4	16.9
4	8	18.1	20.4
5	10	20.5	23.1
6	11	22.3	24.4
7	10	22.7	27.3
8	6	24.5	28.8
9	1	31.3	32.1
10	2	29.6	33.8
11	4	30.9	

Table A.6. Male northern pike length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1	1	11.1	10.7
2	3	13.0	13.4
3	7	16.7	16.2
4	16	17.9	18.9
5	7	20.0	20.6
6	9	20.5	22.3
7	18	22.8	23.4
8	4	23.8	24.8
9	5	25.4	23.9
10	5	25.5	21.5

Table A.7. Female muskellunge length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1			
2			24.2
3			24.0
4			27.7
5			31.9
6	2	32.4	33.7
7	2	34.5	35.8
8	6	35.0	38.1
9	6	36.4	39.5
10	6	38.3	41.0
11	1	42.0	43.2
12			43.7
13			44.3
14			47.5
15	2	40.5	43.5

Table A.8. Male muskellunge length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1			13.2
2			
3			23.5
4	1	24.2	27.3
5	7	24.6	29.2
6	9	28.0	31.5
7	7	29.4	33.3
8	16	31.0	34.4
9	9	31.8	35.8
10	7	33.8	37.3
11	5	36.2	37.9
12			39.0
13			38.9
14			43.5
15			39.0

Table A.9. Bluegill length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1			3.0
2	10	4.4	3.9
3	4	4.6	5.0
4	11	6.0	6.3
5	25	6.5	7.0
6	19	6.9	7.7
7	6	7.4	8.1
8	1	7.1	8.5

Table A.10. Black crappie length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1	4	4.5	5.6
2	47	6.6	5.1
3	40	8.7	7.4
4	28	10.1	9.2
5	11	10.8	10.0
6	8	11.2	11.5
7	11	12.0	11.7
8	3	12.4	10.5
9	4	13.1	11.6

Table A.11. Yellow perch length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1			3.8
2	2	5.9	5.1
3	6	6.1	6.2
4	10	6.8	7.2
5	14	8.1	8.2
6	7	8.7	9.2
7			10.3

Table A.12. Pumpkinseed length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1			3.7
2	4	4.0	4.4
3	4	5.2	5.2
4	9	5.3	5.9
5	7	6.0	6.9
6	7	6.5	7.4
7	1	7.7	7.6

Table A.13. Rock bass length-at-age in Squaw Lake, Oneida and Vilas Counties Wisconsin during 2003.

Age	Number of fish	Squaw avg length	Northern WI avg
1			
2			3.8
3	4	4.9	5.2
4	8	5.6	6.4
5	2	6.3	7.1
6	1	6.6	7.9

WISCONSIN CONSERVATION DEPARTMENT

LAKE SURVEY MAP

LAKE SQUAW
SECTIONS 33, 4, 9, 16
TOWNSHIP T-39, 40-N
RANGE R-4-E
TOWN MINOCQUA
COUNTY ONEIDA VILAS
(Sheet 1 of 2)

LEGEND

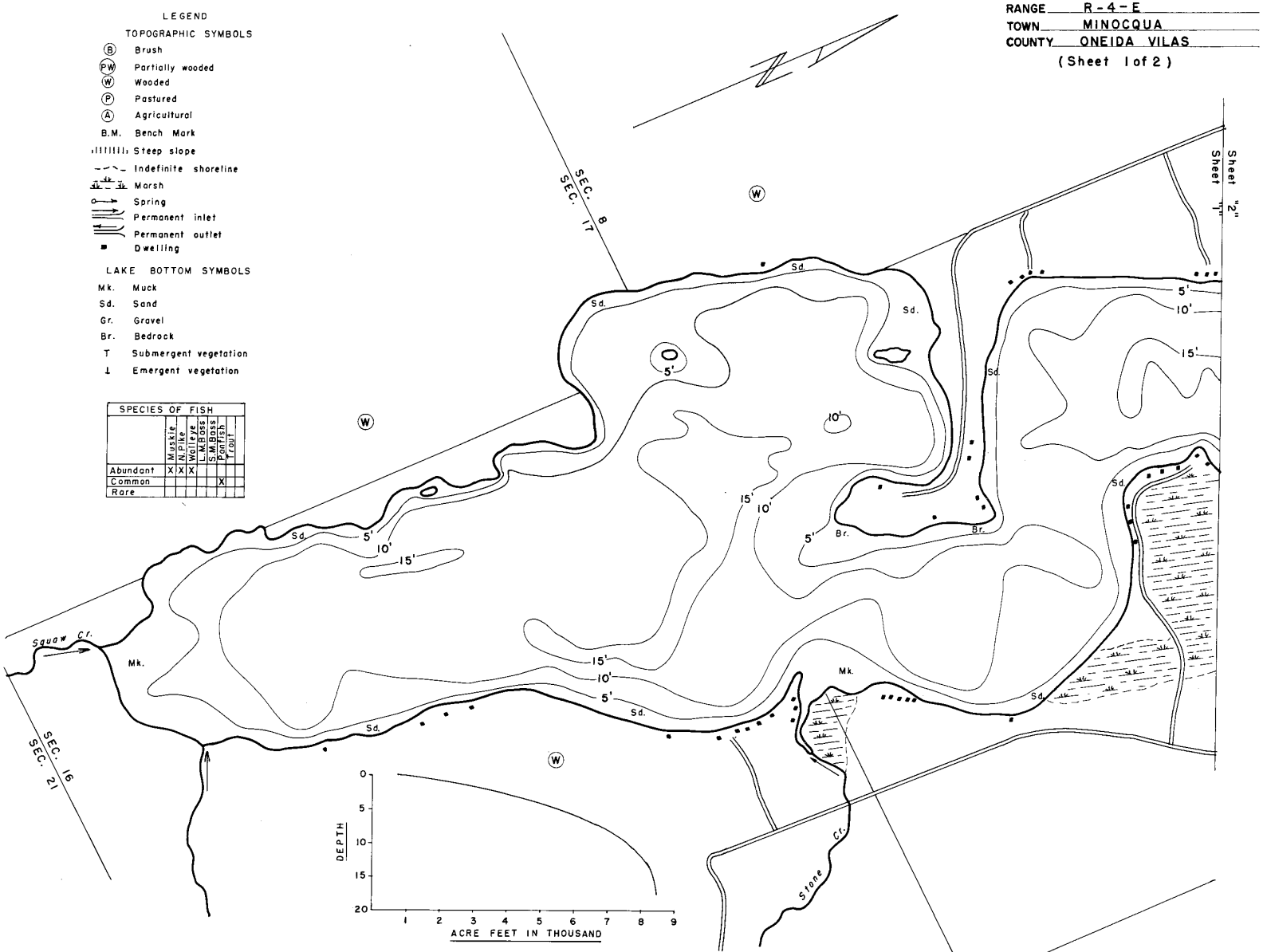
TOPOGRAPHIC SYMBOLS

- (B) Brush
- (PW) Partially wooded
- (W) Wooded
- (P) Pastured
- (A) Agricultural
- B.M. Bench Mark
- Steep slope
- Indefinite shoreline
- Marsh
- Spring
- Permanent inlet
- Permanent outlet
- Dwelling

LAKE BOTTOM SYMBOLS

- Mk. Muck
- Sd. Sand
- Gr. Gravel
- Br. Bedrock
- T Submergent vegetation
- ⊥ Emergent vegetation

SPECIES OF FISH	Muskie	N. Pike	Walleye	L.M.Bass	S.M.Bass	Panfish	Trout
Abundant	X	X	X				
Common						X	
Rare							



500' 0' 500' 1,000' 1,500' 2,000' 2,500'
SCALE

◇ ACCESS ◆ ACCESS WITH PARKING ◆ BOAT LIVERY

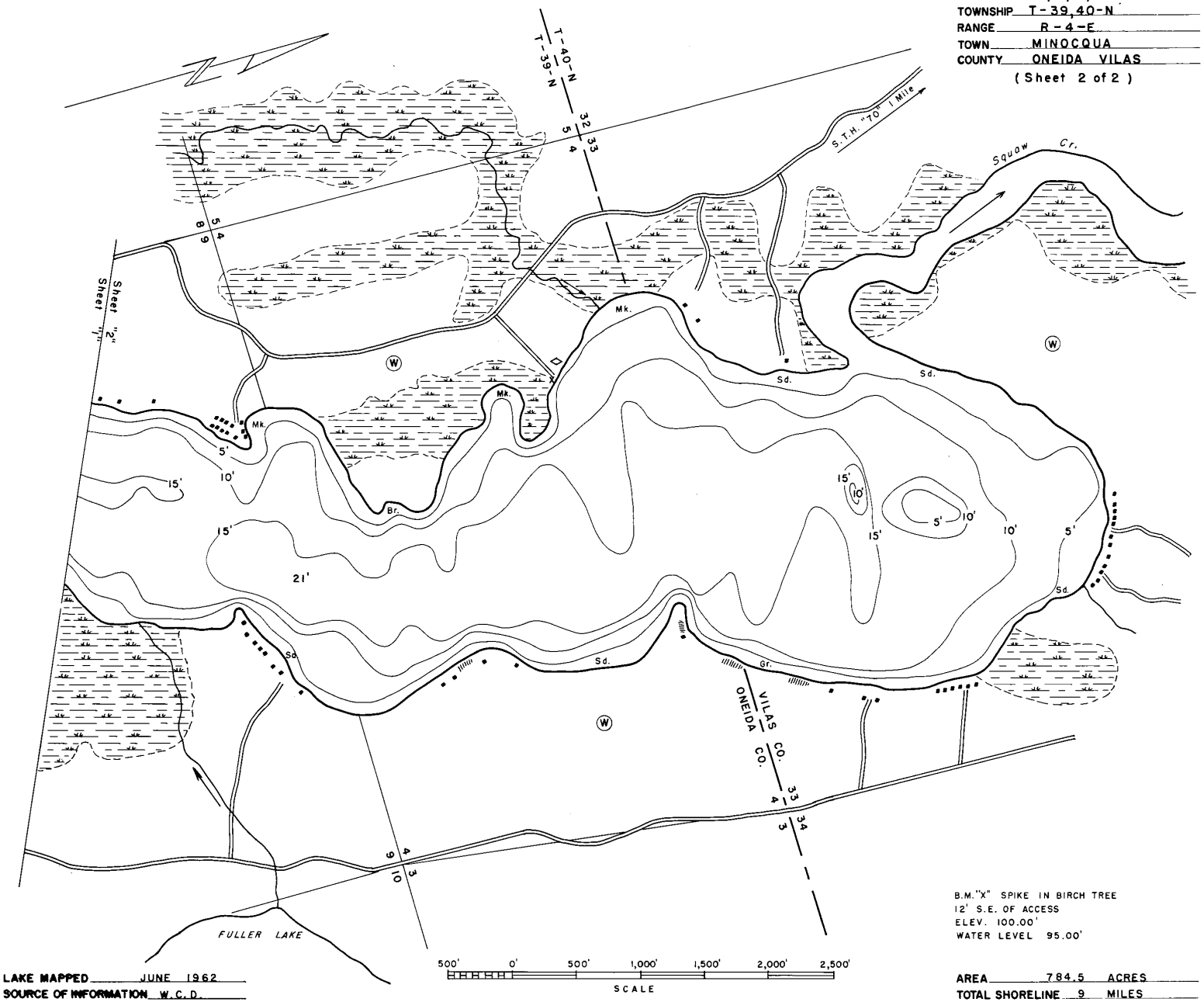
FIELD WORK BY: J. JOSWIAK B. KRUEGER
DRAWN BY: E. EATON
LAKE MAPPED JUNE 1962
SOURCE OF INFORMATION W.C.D.
SOUNDINGS RECORDING SONAR

AREA 784.5 ACRES
TOTAL SHORELINE 9 MILES
MAX. DEPTH 21 FEET
SCALE: AS SHOWN

WISCONSIN CONSERVATION DEPARTMENT

LAKE SURVEY MAP

LAKE SQUAW
SECTIONS 33,4,9,16
TOWNSHIP T-39,40-N
RANGE R-4-E
TOWN MINOCQUA
COUNTY ONEIDA VILAS
(Sheet 2 of 2)



500' 0' 500' 1,000' 1,500' 2,000' 2,500'
SCALE

◇ ACCESS ◆ ACCESS WITH PARKING ◆ BOAT LIVERY

B.M. "X" SPIKE IN BIRCH TREE
12' S.E. OF ACCESS
ELEV. 100.00'
WATER LEVEL 95.00'

LAKE MAPPED JUNE 1962
SOURCE OF INFORMATION W.C.D.
SOUNDINGS RECORDING SONAR

AREA 784.5 ACRES
TOTAL SHORELINE 9 MILES
MAX. DEPTH 21 FEET
SCALE: AS SHOWN