

Comprehensive Fisheries Survey of Stella Lake, Oneida County Wisconsin during 2002.

Waterbody Identification Code 1575700



John Kubisiak
Senior Fisheries Biologist
Wisconsin Department of Natural Resources
107 Sutliff Avenue
Rhinelander, Wisconsin 54501

November, 2005

Comprehensive Fisheries Survey of Stella Lake, Oneida County Wisconsin during 2002.

John Kubisiak
Senior Fisheries Biologist
November, 2005

EXECUTIVE SUMMARY

A comprehensive fisheries survey of Stella Lake was conducted during spring, 2002. Northern pike (population estimate = 4.0 per acre) and largemouth bass were the dominant gamefish, with walleye (0.3 per acre), smallmouth bass and muskellunge also present. Black crappie, bluegill, pumpkinseed, bluegillxpumpkinseed hybrids, yellow perch, rock bass and yellow bullhead were abundant. Management recommendations include the termination of walleye stocking and management as a northern pike, largemouth bass and panfish lake.

Lake and location:

Stella Lake, Oneida County, T37N R10E Sec1

Located in eastern Oneida County, about 6 miles south of Three Lakes. It is part of the Upper Wisconsin River watershed and forms the headwaters of Gudegast Creek.

Physical/Chemical attributes (Andrews and Threinen 1966):

Morphometry: 425 acres, maximum depth 22 feet. Most of the lake basin is 5 to 15 feet in depth.

Lake type: Spring (groundwater-fed with an outlet stream).

Basic water chemistry: Soft – alkalinity 24 mg/l, conductance 62 µmhos.

Littoral substrate: 60% sand, 25% gravel, 10% muck, and some rock.

Aquatic vegetation: Abundant.

Winterkill: Occasional partial kills reported.

Other features: Moderately transparent water. 228 acres of shrub and bog wetlands drain to the lake and adjoin limited portions of the shore.

Purpose of Survey: Assess fishery status.

Dates of fieldwork: April 19 to May 29, 2002

BACKGROUND

During early 1950s, panfish were netted and removed from Stella Lake in an “attempt to remedy the stunted panfish situation which is present in the lake”. File notes indicate 397 pounds of panfish were removed during June 25-29 1951 and 2,696 panfish weighing 531 pounds were removed during August 1952. Panfish were declared to be “detrimental” in Stella in 1961 and commercial fishing of panfish was permitted during 1962, resulting in some user conflicts with anglers. Funding for panfish removal for one year was accepted by Wisconsin Department of Natural Resources (WDNR) in 1991, for transfer to the Three Lakes Chain.

A June 19 to 21, 1950 netting survey by Burdick (1951) found below normal growth of largemouth bass and panfish and normal growth of northern pike. He recommended that the lake be managed as largemouth bass and northern pike water, and that panfish removal be attempted. Similar results were reported after a June 10, 1963 electroshocking survey by Morehouse (1963). Poor success of musky stocking to control panfish was noted. He recommended continued musky stocking, spot-poisoning of panfish with rotenone and encouragement of weed control. Rotenone poisoning was abandoned due to opposition from local residents.

An October 3, 1994 electroshocking survey by a consultant (Goheen 1995) found large numbers of bluegills, black crappies and yellow perch. Lower numbers of largemouth and smallmouth bass, pumpkinseed, northern pike, yellow bullhead, black bullhead, white sucker, mud minnow, darter species, blunt nose minnow and one muskellunge were also observed. The panfish were characterized as slow growing and stunted. Few young-of-year (yoy) were observed.

An October 1, 2002 WDNR electroshocking survey targeting juvenile walleye found only one walleye, 19.0 inches. No walleyes were captured during a September 15, 2003 electroshocking survey, although one with an estimated length of 20 inches was observed. Bluegill and black crappie were described as abundant, northern pike, largemouth bass and pumpkinseed were common, while rock bass, yellow perch, yellow bullhead, white sucker, golden shiner, bluntnose minnow and johnny darter were also present.

A partial summer kill was reported during late June 1996. An estimated 1,000 to 1,500 dead fish were observed, mostly bluegills. The summer kill was attributed to spawning stress combined with warm littoral waters, and is a frequent occurrence in regional lakes at that time of year.

METHODS

Eight standard fyke nets (3/4” stretch mesh) were fished from April 19 – 27 (targeting walleye). Six standard fyke nets were fished May 6 – 8 (targeting muskellunge) and June 17-21 (targeting panfish). A WDNR-standard alternating current electrofishing boat was used to collect fish on April 29, May 21, and May 29 2002. Length or length category (nearest half-inch) was recorded for all gamefish and on panfish during June. Adult game fish 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 five gamefish and ten panfish per species, per half-inch group. Age results are not available at this writing.

RESULTS AND DISCUSSION

Walleye

During walleye netting, 173 walleyes were captured (including 81 recaptures) in 8 nights, at a rate of 2.7 walleyes per net day (Table 1). Another 7 walleyes (5 were recaptures) were captured during muskellunge and panfish netting. The first electrofishing sample on April 29 yielded only 6 walleyes (5 recaptures; 3.1 fish per hour), while the second electrofishing run produced 2 walleyes (both recaptures), and no walleyes were netted during the third run. The mark-recapture population estimate is 118 walleyes (± 22.3 SD), or 0.3 adult walleyes per acre. Too few juvenile walleyes were marked to generate a total population estimate. By comparison, naturally reproducing populations across northern Wisconsin average 4.1 adults per acre, while the target of stocked populations is at least 2 walleyes per acre. Fish 20 inches and longer comprised 75% of the Stella Lake sample (Figure 1), indicating an older population, probably a result of four consecutive years of fingerling stocking during 1988 through 1991 (Table 2), with possibly some minor contribution of natural reproduction. Walleyes stocked during 1999 likely resulted in the smaller number of 13 to 15-inch fish. However, fall shocking during 2002 failed to turn up any yoy naturally reproduced during 2002, and age-1 walleyes from the 2001 stocking were completely absent from spring and fall, 2002 samples.

Figure 1. Length-frequency of adult walleyes during 2002 in Stella Lake, Oneida County Wisconsin.

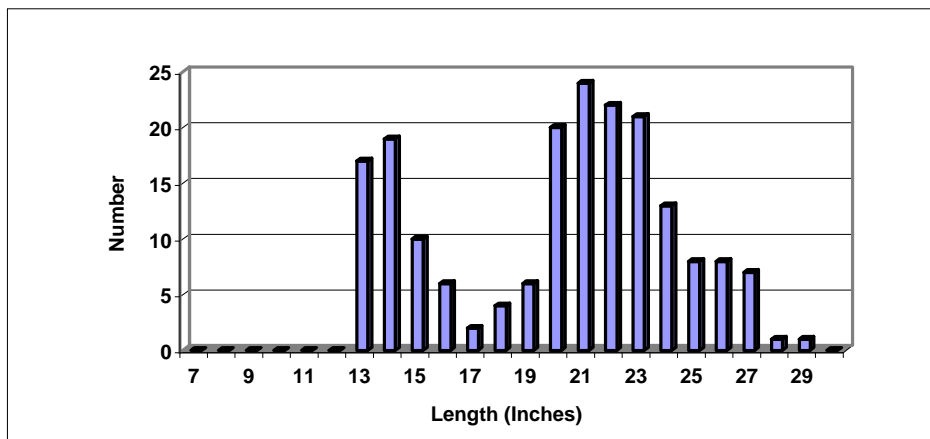


Table 1. Catch per unit effort of gamefish and panfish species during spring, 2002 comprehensive survey of Stella Lake, Oneida County Wisconsin. Netting catch rates are reported as number of fish per net night, while electrofishing catch rates are number of fish per mile of shoreline. Panfish data were not collected during all sampling events, and April 29 panfish data reflect the average of two half-mile index stations.

species	walleye netting	April 29 electrofishing	muskellunge netting	May 21 electrofishing	May 29 electrofishing	panfish netting
walleye	2.7	1.4	0.2	0.5	0	0.2
largemouth bass	0.3	0	1.1	9.8	9.8	3.0
northern pike	2.0	3.9	1.1	3.4	0	1.1
muskellunge	0.3	1.4	0.1	0.2	0	0
bluegill	5.9	3.0				250.7
hybrid bluegill	0.2	0				30.0
pumpkinseed	0.3	1.0				6.9
yellow bullhead	0	0				4.4
black crappie	11.0	59				4.2
yellow perch	7.5	10.0				1.6
rock bass	0.2	0				1.5

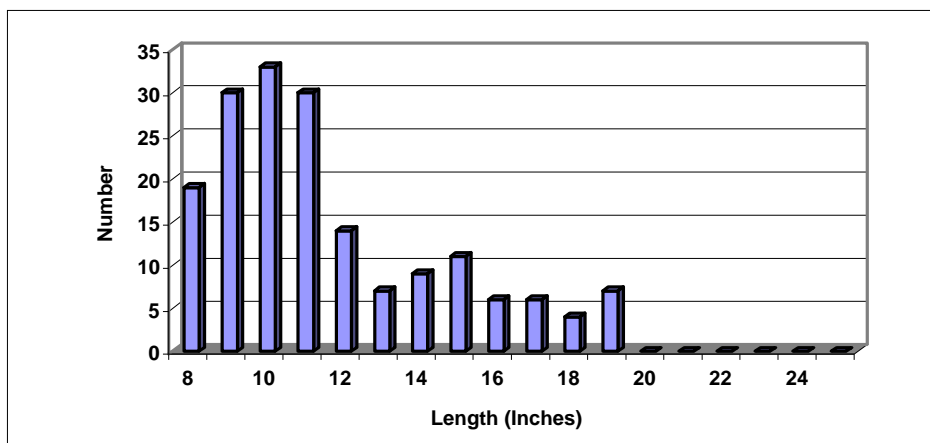
Table 2. Fish stocking during 1982 through 2003 in Stella Lake, Oneida County Wisconsin. Walleyes stocked in 2003 were marked with Oxytetracycline (OTC), an antibiotic that leaves a ring of dye on bony structures.

Year	Species	Size	Number
1983	muskellunge	large fingerling	800
1988	walleye	small fingerling	21,000
1989	walleye	small fingerling	28,826
1990	walleye	small fingerling	19,995
1991	walleye	small fingerling	10,100
1993	muskellunge	large fingerling	800
1996	muskellunge	fry (1.4")	4,000
1997	muskellunge	large fingerling	400
1998	largemouth bass	adult (10.6")	465 (privately funded)
1999	walleye	small fingerling	40,685
1999	muskellunge	large fingerling	460
2000	smallmouth bass	large fingerling (5-7")	300 (privately funded)
2001	walleye	small fingerling	40,500
2003	walleye	small fingerling	40,500 (OTC marked)

Bass

Only seven smallmouth bass were encountered in all netting and shocking periods combined. Smallmouth tend to be small components of the fish community in heavily-vegetated waters like Stella Lake. One hundred ninety-eight largemouth bass (including 6 recaptures) were captured during the survey, 112 netting and 86 shocking. Recaptures were insufficient to generate a population estimate, but the low proportion of recaptured fish indicates a sizable population. The adult (greater than 8 inches) largemouth bass population is well represented by all sizes (Figure 2), indicating consistent recruitment.

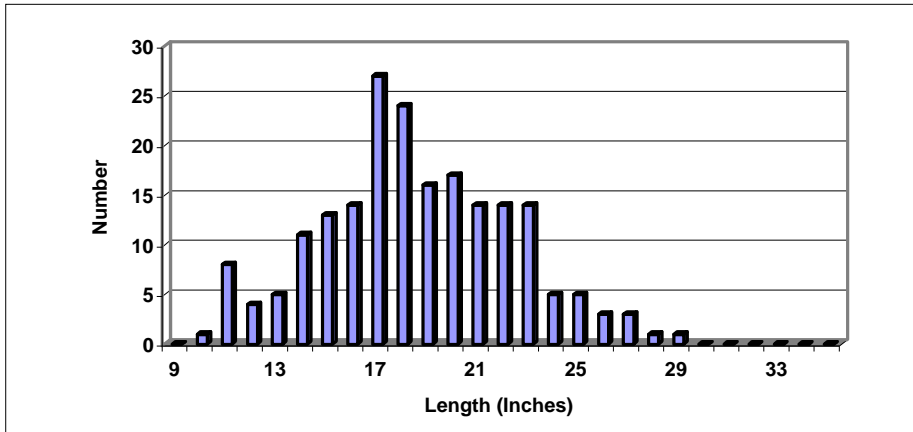
Figure 2. Length-frequency of adult largemouth bass during 2002 in Stella Lake, Oneida County Wisconsin.



Northern Pike

One hundred ninety-nine northern pike were captured (including 10 recaptures), all gears combined. The northern pike population was estimated at 1,621 (± 512 SD) using the Schnabel multiple-capture method (Ricker 1975), or 4.0 per acre. Average size of adult northern pike was 18.5 inches, and good numbers of fish less than 30 inches in length were observed (Figure 3).

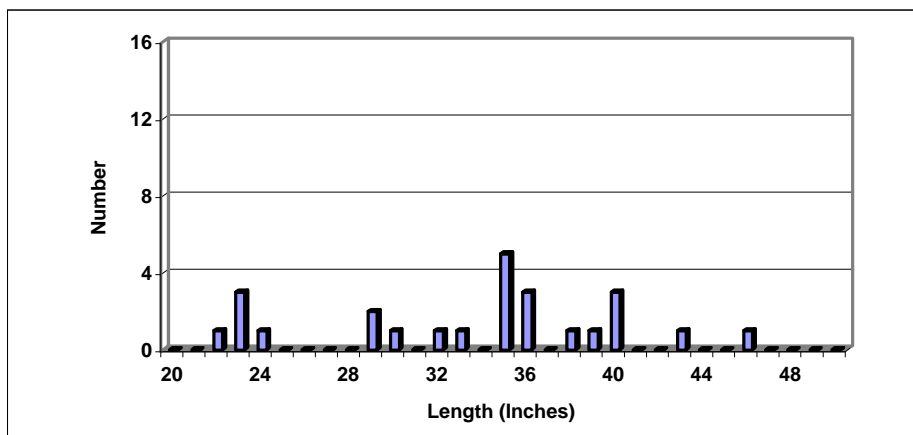
Figure 3. Length-frequency of adult northern pike during 2002 in Stella Lake, Oneida County Wisconsin.



Muskellunge

A total of 27 muskellunge were captured (with no recaptures) during all netting and shocking periods, at a catch rate of 0.23 per net night during the walleye and musky netting periods (Table 1). Sizes were scattered between low-20 and mid-40 inch ranges (Figure 4).

Figure 4. Length-frequency of adult muskellunge during 2002 in Stella Lake, Oneida County Wisconsin.



Panfish

Early netting and electrofishing showed good catches of black crappies (which tend to disappear from the samples once the water warms), while bluegills and bluegillx pumpkinseed hybrids dominated June panfish netting (Table 1). Small panfish size structure (Figures 5 through 9) is typical of heavily-fished lakes in the region, or it may be a result of stunting. Stunting was reported by previous investigators (Burdick 1951, Morehouse 1964, Goheen 1995), but can not be determined for this survey without age data. The narrow length range of pumpkinseed (Figure 7) and yellow perch (Figure 8) is caused by small maximum size of captured fish and escape of smaller individuals from the fyke nets.

Figure 5. Length-frequency of black crappie during 2002 in Stella Lake, Oneida County Wisconsin.

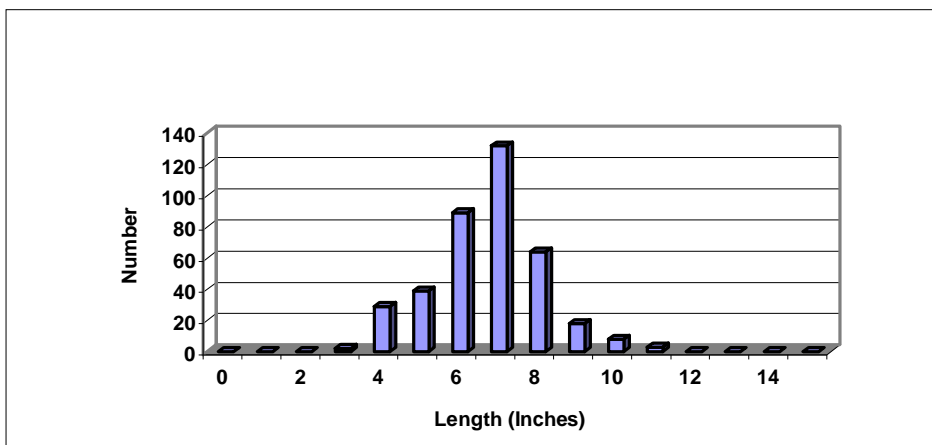


Figure 6. Length-frequency of bluegill during 2002 in Stella Lake, Oneida County Wisconsin.

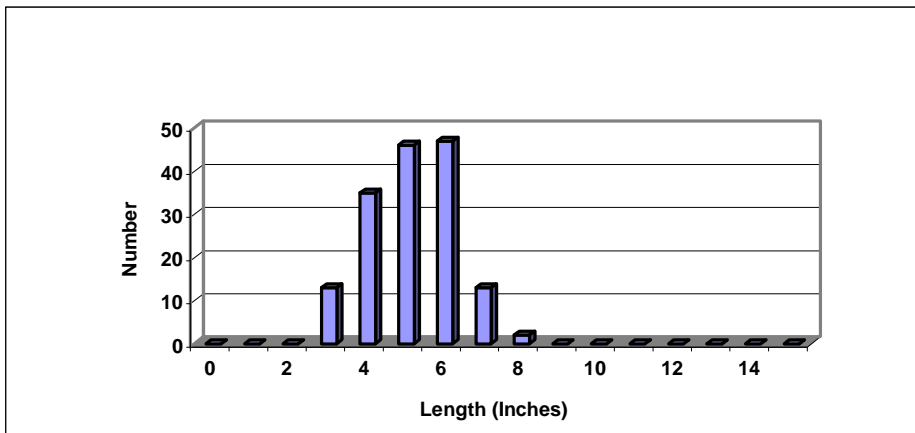


Figure 7. Length-frequency of pumpkinseed during 2002 in Stella Lake, Oneida County Wisconsin.

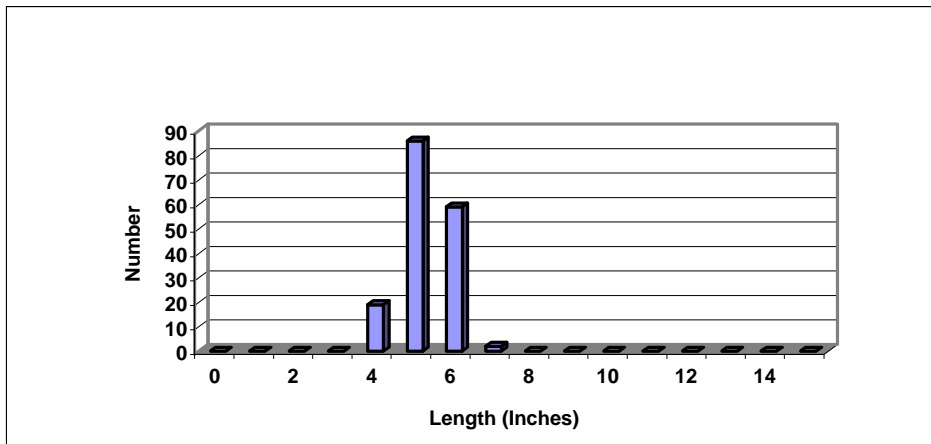


Figure 8. Length-frequency of yellow perch during 2002 in Stella Lake, Oneida County Wisconsin.

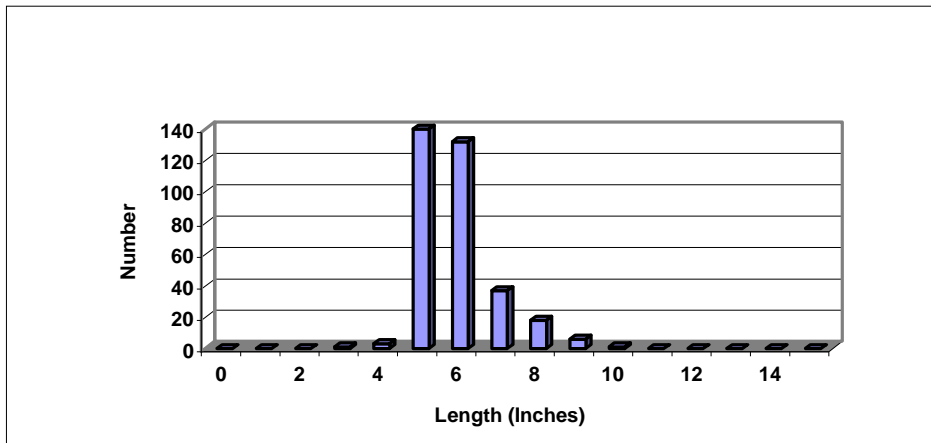
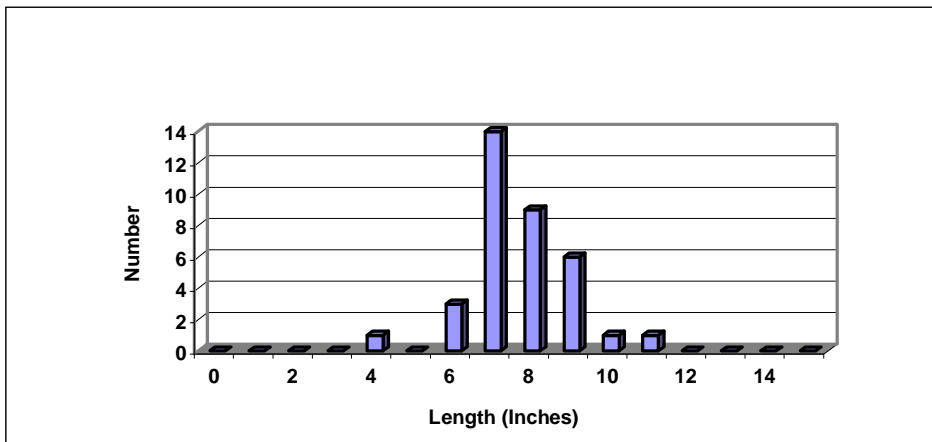


Figure 9. Length-frequency of rock bass during 2002 in Stella Lake, Oneida County Wisconsin.



CONCLUSIONS AND RECOMMENDATIONS

Based on survey results and the low amount of available spawning gravel, it appears that Stella Lake does not support any appreciable natural reproduction of walleyes. Furthermore, walleye stocking has had mixed results, with apparent failure of the 2001 and 2003 yearclasses. Muskellunge appear to reproduce poorly and are likely suppressed by the abundant northern pike population. Based on these results, walleye stocking should be abandoned and the lake managed for largemouth bass, northern pike and panfish.

ACKNOWLEDGEMENTS

I thank Mike Vogelsang and Steve Timler for overseeing the fieldwork for this survey. Matt Andre, Kevin Gauthier, Jason Halverson, Wesley Jahns, Dennis Scholl, Patrick Schmalz, Joelle Underwood, and Keith Worrall assisted in the field. Jordan Weeks entered and summarized data. Mike Coshun calculated the walleye population estimate. The Stella Lake Association was very interested and supportive in survey and management efforts on the lake.

LITERATURE CITED

Andrews, L. M. and C. W. Threinen. 1966. Surface water resources of Oneida County. Wisconsin Conservation Department, Madison, Wisconsin. 284 pages.

Burdick, M. 1951. A biological survey of Stella Lake Oneida County. Wisconsin Conservation Department. Madison, Wisconsin. 6 pages.

Goheen, J. A. 1995. Stella Lake fish survey. Aquatic Biologists, Inc., Fond Du Lac, Wisconsin. 9 pages.

Morehouse, L. E. 1963. Report on investigation of Stella Lake, Oneida County. Intra-department memorandum. Wisconsin Conservation Department, Woodruff, Wisconsin. 1 page.

