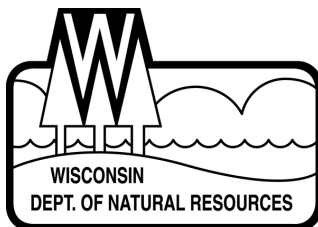


Comprehensive Fisheries Survey of Killarney Lake, Oneida County Wisconsin during 2003.

Waterbody Identification Code 1520900



John Kubisiak
Senior Fisheries Biologist
Wisconsin Department of Natural Resources
Rhinelanders
May, 2004



Your purchase of fishing equipment
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access and Sport Fish Restoration.

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EXECUTIVE SUMMARY

A comprehensive fisheries survey of Killarney Lake was conducted during spring, 2003. Largemouth bass (population estimate = 2.1 per acre), northern pike (0.8 per acre) and walleye (0.1 per acre) were the dominant gamefish. Black crappie, bluegill, pumpkinseed, bluegillxpumpkinseed hybrids, yellow perch, rock bass, yellow and black bullhead and white sucker were abundant. I recommend managing for largemouth bass, northern pike and panfish.

Lake and location:

Killarney Lake, Oneida County, T36N R5E Sec24

Located in southwestern Oneida County, it is an impoundment of Little Rice River and Brown Creek in the Upper Wisconsin River watershed.

Physical/Chemical attributes (Andrews and Threinen 1966):

Morphometry: 421 acres, maximum depth 8 feet.

Lake type: Impoundment (1959).

Watershed: 40 square miles, including 14 acres of adjoining wetlands.

Basic water chemistry: Soft – alkalinity 25 mg/l, conductance 59 µmhos.

Littoral substrate: 70% sand, 20% muck and some gravel.

Aquatic vegetation: Moderate in main basin. Extensive wild rice beds in backwaters.

Winterkill: Annual winterkills during the first few years of impoundment. A partial winterkill was reported in spring, 2004.

Other features: Brown-stained water of low transparency. Large areas of flooded trees and stumps.

Purpose of Survey: Assess fishery status.

Dates of fieldwork: Walleye and northern pike netting April 24-30, 2003.

Electroshocking April 30, May 13, May 28, June 11 and September 18, 2003.

Panfish netting June 16-20, 2003.

Mini-fyke juvenile fish netting August 27-28, 2003.

BACKGROUND

Killarney Lake experienced annual winterkills during the first few years of impoundment. Annual Department of Natural Resources (DNR) reports from 1963, 1964 and 1965 noted extremely low winter oxygen concentrations due to decomposing organic material. Winter drawdown to dewater shallow backwaters was recommended by DNR staff in 1965, and again in 1994. Drawdowns reduce oxygen depletion in shallow, oxygen-consuming areas and generally reduce the occurrence and severity of winterkill in lakes like Killarney. Conditions in Killarney stabilized, and a fishery became established.

Late-winter dissolved oxygen monitoring by DNR personnel during 1995, 1996 and 1997 found March mid-water oxygen levels ranging from 3.6 to 11.7 mg/l. A partial winterkill (mostly largemouth bass) was reported in spring of 2004, after a winter of deep snow and thick ice conditions. A May 14, 2004 post-winterkill evaluation found moderate numbers of walleye, northern pike, largemouth bass, yellow perch, bluegill, pumpkinseed, black crappie, yellow bullhead, white sucker and golden shiner. It is likely that winterkill conditions occurred in an isolated part of the lake.

The Killarney Lake Association stocked northern pike in 1994 and began stocking walleyes annually beginning in 1995. Tomahawk Fishing Unlimited stocked largemouth bass in 1996 and 1997, then began contributing funds to the walleye stocking (Table 1).

A 30-minute daytime electrofishing survey on August 21, 1969 indicated “Due to the fact that the water was very soft and dark brown very few fish turned up.” No other survey work was conducted prior to 2003.

Table 1. Fish stocking during 1963 through 2003 in Killarney Lake, Oneida County Wisconsin.

Year	Species	Size	Number
1963	largemouth bass	fingerling	2,500
1994	northern pike	yearling (15-18")	200 (privately funded)
1995	walleye	large fingerling (7-9")	720 (privately funded)
1996	walleye	large fingerling (7-9")	700 (privately funded)
	largemouth bass	large fingerling (6-8")	800 (privately funded)
1997	walleye	large fingerling (7-9")	700 (privately funded)
	largemouth bass	large fingerling (6-8")	1,000 (privately funded)
1998	walleye	large fingerling (7-9")	700 (privately funded)
1999	walleye	large fingerling (7-9")	700 (privately funded)
2000	walleye	large fingerling (6-8")	2,000 (privately funded)
2001	walleye	large fingerling	1,600 (privately funded)
2002	walleye	large fingerling (7")	1,600 (privately funded)
2003	walleye	large fingerling (7")	1,500 (privately funded)

METHODS

Seven standard fyke nets (3/4" stretch mesh) were lifted on April 25 and eight on April 26-30 (targeting walleye and northern pike) and June 17-20 2003 (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 28 2003. A WDNR-standard alternating current electrofishing boat was used to collect fish on April 30, May 13, May 28, June 11 and September 17 2003. Length or length category (nearest half-inch) was recorded for all gamefish and on panfish during June. Adult gamefish 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

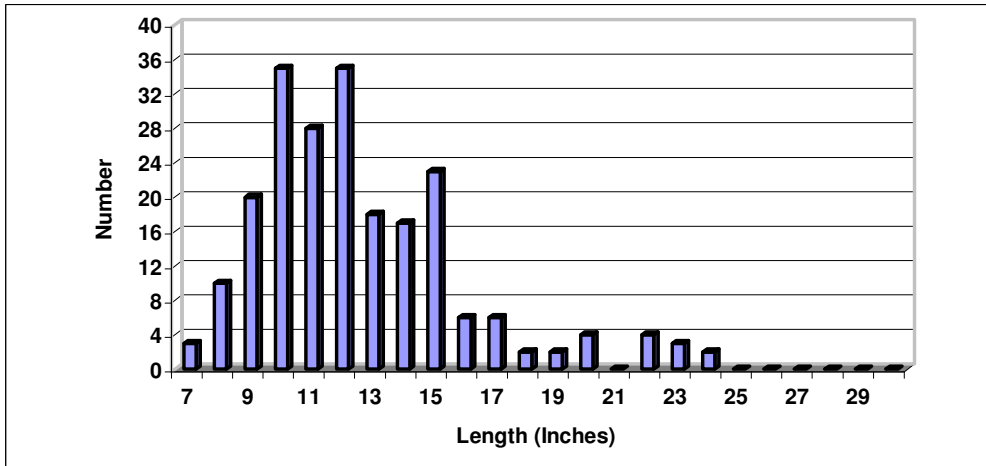
During walleye netting, 69 walleyes were captured (including 2 recaptures) in 6 nights, at a rate of 1.5 walleyes per net day (Table 2). Another 23 walleyes (3 were recaptures) were captured during panfish netting. Four electrofishing samples yielded 126 walleyes (11 were recaptures). Too few adult walleyes were recaptured during electrofishing to generate a reliable mark-recapture population estimate. The total population is estimated at 624 walleyes (± 204 SD), or 1.5 walleyes per acre.

Unknown-sex fish between 10 and 15 inches (Figure 1) contributed much of the walleye catch, indicating that recent stocking by the Killarney Lake Association is contributing. These fish are not included in adult population estimates, but are catchable-size for anglers and should be within a few years of recruiting to the adult population.

Table 2. Catch per unit effort of gamefish and panfish species during a spring, 2003 comprehensive survey of Killarney Lake, Oneida County 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, and September 18 panfish data reflect the average of two half-mile index stations.

species	April walleye netting	April 30 shocking	May 13 shocking	May 28 shocking	June 11 shocking	June panfish netting	Aug 28 mini-fyke	Sep 18 shocking
walleye	1.5	3.5	3.8	3.6	2.4	0.7	0	3.6
largemouth bass	0.4	5.6	3.8	6.5	4.4	0.09	3.5	4.4
northern pike	6.2	0.4	0.2	0.2	0.2	0.4	0	0
brook trout	0.02	0	0.1	0	0	0	0	0
bluegill	32.9					31.6	26.5	89
hybrid bluegill x pumpkinseed						0.3	0	2
pumpkinseed	4.9					2.7	0.5	3
yellow bullhead	8.5					1.7	0	0
black bullhead	0					0.2	0.1	0
black crappie	14.2					11.1	14.5	11
yellow perch	5.6					0.3	0	11
rock bass	0.04					0	0	0

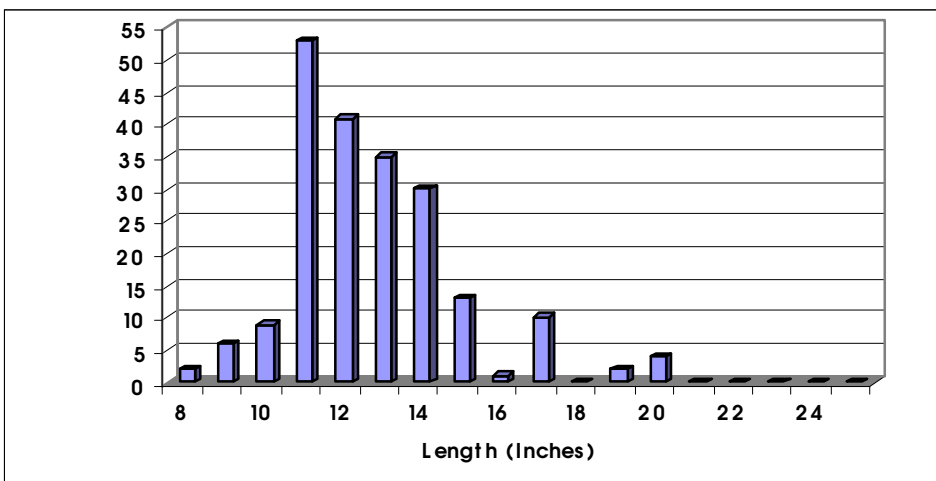
Figure 1. Length-frequency of walleyes during 2003 in Killarney Lake, Oneida County Wisconsin.



Bass

No smallmouth bass were encountered in Killarney Lake. Two hundred eighty largemouth bass (including 17 recaptures and 43 fish less than 8 inches) were captured during the survey, 48 netting and 232 shocking. The adult (greater than 8 inches) largemouth bass population is estimated at 900 (\pm 312 SD), or 2.1 fish per acre. Most of the population is represented by 11 to 15 inch fish (Figure 2), possibly due to harvest of legal-size bass.

Figure 2. Length-frequency of adult largemouth bass during 2003 in Killarney Lake, Oneida County Wisconsin.

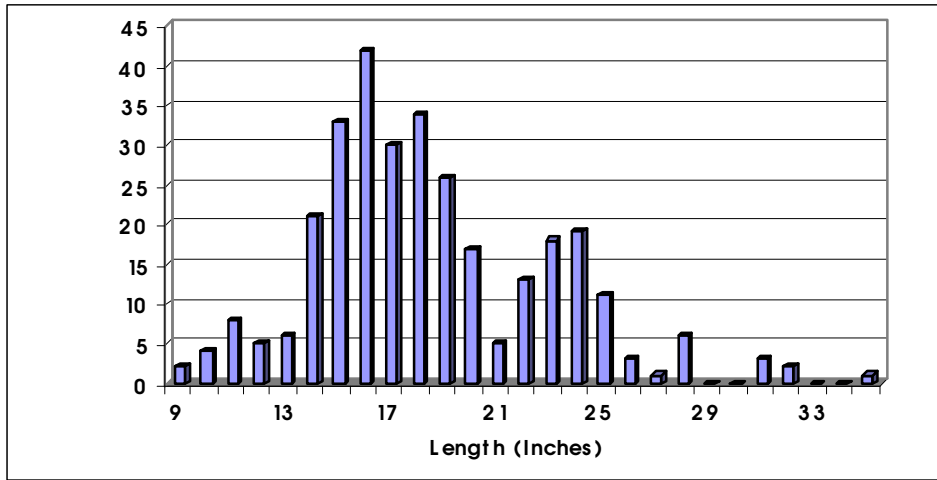


Northern Pike

Two hundred ninety-seven northern pike were captured (including 86 recaptures), all gears combined. The northern pike population was estimated at 342 (\pm 37 SD) using the

Schnabel multiple-capture method (Ricker 1975), or 0.8 per acre. Average size of adult northern pike was 18.9 inches, and good numbers of fish up to 26 inches in length were observed (Figure 3).

Figure 3. Length-frequency of adult northern pike during 2003 in Killarney Lake, Oneida County Wisconsin.



Panfish

Bluegills and black crappies were abundant in Killarney. Crappies generally net and shock poorly except in early spring, but good numbers were found in Killarney during all samples (Table 2). Panfish length-frequencies (Figures 4 – 7) 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). Length-frequency of crappie (Figure 4) and yellow perch (Figure 5) both indicate the presence of multiple yearclasses, including good numbers of young-of-year crappies. Bluegill length-frequency (Figure 6) was fairly narrow with few fish over 7 inches. Pumpkinseed were in low abundance, but showed good size structure for that species (Figure 7). Only one rock bass was captured (Table 2).

Figure 4. Length-frequency of black crappie during 2003 in Killarney Lake, Oneida County Wisconsin.

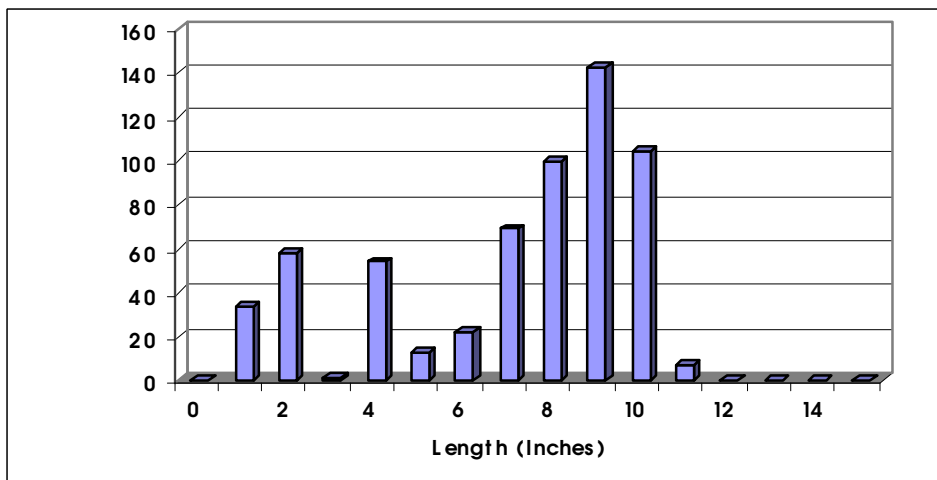


Figure 5. Length-frequency of yellow perch during 2003 in Killarney Lake, Oneida County Wisconsin.

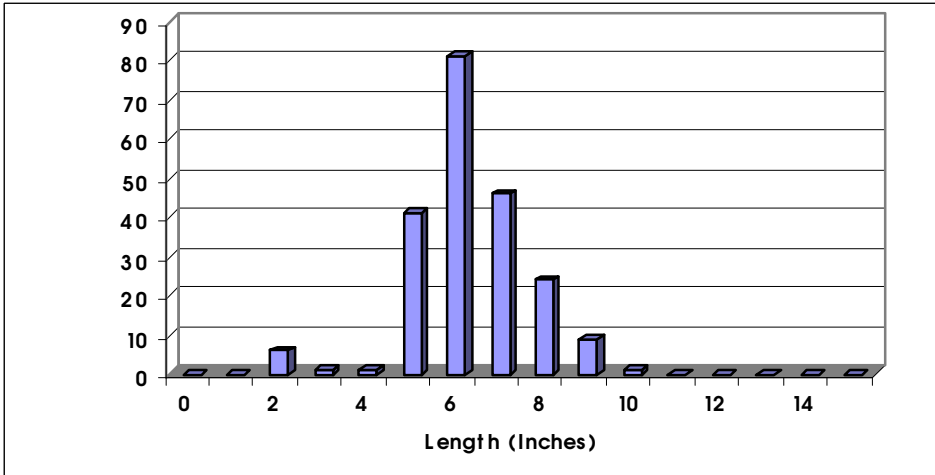


Figure 6. Length-frequency of bluegill during 2003 in Killarney Lake, Oneida County Wisconsin.

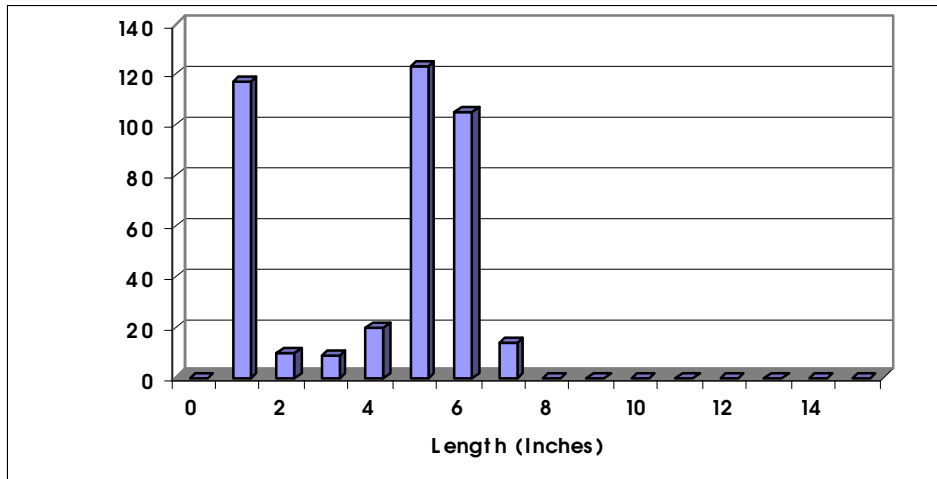
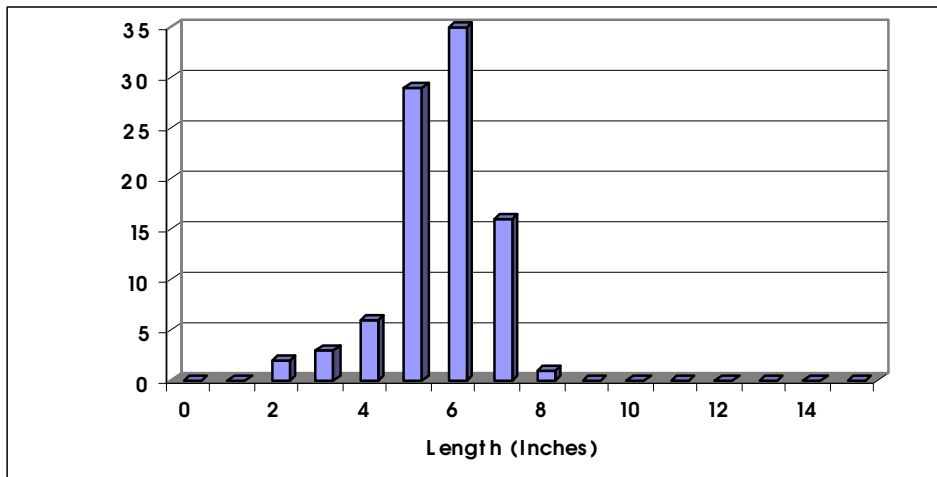


Figure 7. Length-frequency of pumpkinseed during 2003 in Killarney Lake, Oneida County Wisconsin.



CONCLUSIONS AND RECOMMENDATIONS

Based on survey results and the low amount of available spawning gravel, it appears that Killarney Lake does not support natural reproduction of walleyes, although it is possible that spawning runs enter one or both tributary streams. Walleye stocking has succeeded in establishing a low-density population, but it is currently below the 1 adult per acre threshold to be considered a fishable population. Adult numbers should increase in the near future as the more abundant 10 to 14 inch fish recruit to the adult population.

Northern pike were at relatively low abundance (0.8 per acre), while largemouth bass abundance was only moderate (2.1 per acre). It may be that the useable area for these species is much less than the published lake area of 421 acres. The panfish population appeared to be balanced with adequate size structure, an indication of adequate numbers of predators.

Winter drawdowns reduce oxygen depletion by dewatering shallow, oxygen-consuming areas and generally reduce the occurrence and severity of winterkill in lakes like Killarney. They work as long as the loss of water volume in the main basin is more than offset by decreased oxygen consumption in dewatered backwaters. Winter drawdown of Killarney Lake appears to have reduced the frequency and severity of winterkill and should be continued.

Killarney Lake is best managed for largemouth bass, northern pike and panfish. If the Killarney Lake Association wishes to continue stocking walleyes, it should provide a low-density fishery. Abundant largemouth bass and crappies would likely suppress any stocking of small fingerling walleyes.

ACKNOWLEDGEMENTS

Steve Timler participated in all fieldwork during the survey. Matt Andre, Kevin Gauthier, Joel Underwood, Mike Vogelsang and Jordan Weeks assisted in the field. Matt Andre entered and summarized data. Mike Coshun calculated population estimates. Jack Lewis (Killarney Lake Association) provided stocking data that were incomplete in my files, and the Association was very interested and supportive in survey and management efforts on the lake.

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