



Wisconsin Department of Natural Resources Lake Survey Information Sheet



Cedar Lake, St. Croix/ Polk County - 2016

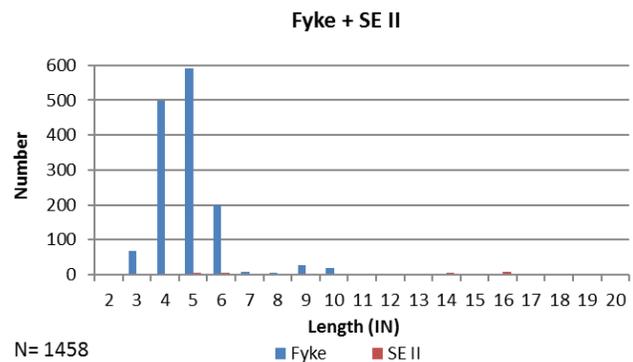
Lake Description:

Cedar Lake is a 1,107 acre eutrophic drainage lake located on the St. Croix and Polk county line approximately 7 miles north of New Richmond. It has a maximum depth of 38 feet and 6.4 miles of shoreline. Water levels are subject to artificial fluctuation by manipulation of a low head dam at the south end of the lake. Walleye are abundant. Muskie and northern pike are common. Largemouth bass, smallmouth bass, and panfish are also present. There are two public accesses located on the lake. The south access lane is open only in winter to drive-on traffic. The northeast public boat landing consists of a single ramp with overflow parking available across 10th Avenue in the old Cedar Lake Schoolhouse parking lot. Cedar Lake is stocked with approximately 1000 musky fingerlings on a biennial basis. It is a "Trend Lake" and is surveyed on a four year rotation. Cedar Lake lies within the Ceded Territory and is a popular destination for both hook-and-line and native American spear fishing. Aquatic invasive species include curly-leaf pondweed (*Potamogeton crispus*), Chinese mystery snail (*Cipangopaludina chinensis*) and rusty crayfish (*Orenetes rusticus*).

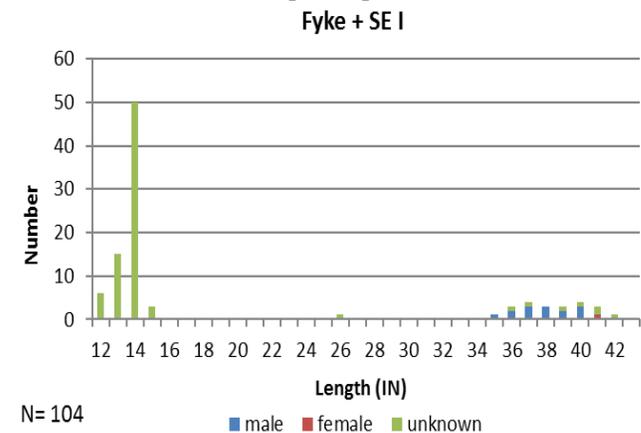
Survey Description:

Cedar Lake was surveyed in the spring of 2016 using fyke nets and electrofishing gear to assess the health and status of the fishery. Immediately after ice out, 12 fyke nets (3x6 ft and 4x6 ft, 0.5 inch nylon mesh) were set targeting adult game fish. Nets were lifted daily for 13 days for a total of 152 net nights. After netting, one night of electrofishing (SE I) was conducted to obtain a walleye population estimate and catch per effort (CPE) estimates for game fish species. When water temperature reached 55 to 70F, another night of electrofishing (SE II) was conducted to obtain catch per effort estimates for bass, pan fish and carp. The shoreline was divided into three 2 mile sections and one 0.4 mile section. Within each station a 0.5 mile substation was sampled for all game and pan fish. All carp that were considered "catchable" were counted in each substation. Only game fish were captured in the remaining portion of each station. In the fall when water temperatures fell to 50 to 60F, one night of electrofishing was conducted to sample the young of year walleye population. Electrofishing was conducted with a pulsed DC maxiboom shocker with two booms and two dip netters or a pulsed DC miniboom shocker with two booms and one dip netter. The most common game and pan fish sampled were counted and/or measured. A subsample of five fish per half inch group were weighed and had scales taken for growth and aging purposes. Additional aging material was collected if game fish were sexable. Dorsal spines were taken from walleye ≥ 18 inches. Walleye were given fin clips for recapture identification. This report at times combines data from netting and electro-fishing for general summary purposes. A creel survey was also conducted on Cedar Lake from February to March to determine angler harvest. Cedar Lake was speared during the spring netting survey and a quota of 272 walleye were harvested. Relative weight of gamefish was calculated as a measure of fish condition, where values well below 100 represent fish in poor condition and values above 100 represent fish in very good condition.

Largemouth Bass Length Distribution



Muskellunge Length Distribution



Gamefish:

Largemouth bass (1507) were the most common game fish sampled in Cedar Lake. Maximum length was 20.2 inches (Figure 1). The average length was 5.6 inches because 94% of largemouth bass sampled were under 8 inches long. The average length of adults was 11.8 inches. Catch per Unit Effort (CPE) was 9.7 per net night during the netting survey and 5.3 per mile during the SE II survey. Average condition was very good at 110 and growth rates of bass were above the state average for all ages.

Walleye (946) were the next most abundant gamefish. The average length of walleye was 17 inches, with lengths ranging from 7 to 26 inches. Seventy five percent of walleye were within the 14-18" protected slot. Twenty two percent were ≥ 18 ". The adult population is estimated at 3485 walleye or 3.2 per acre. The population is heavily skewed towards males, which made up 85% of the population.

Walleye growth rates were similar to the state average for fish up to seven years of age. After that, growth rates slowed to below the state average. However, growth rates of male walleye were slower than the state average after fish reached 5 years of age, while female walleye exhibited growth rates higher than the state average for all ages. Walleye recruitment was poor during 2016 & 2017 with CPE's of 4.4 and 6.5 young-of-year per mile.

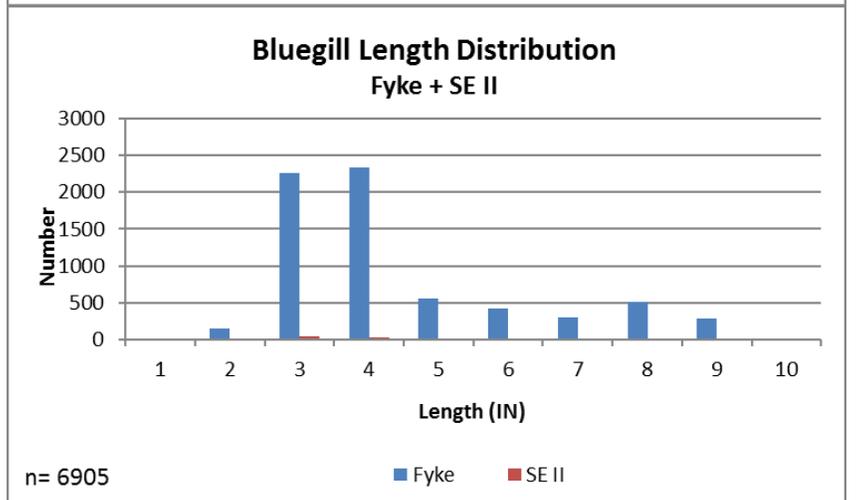
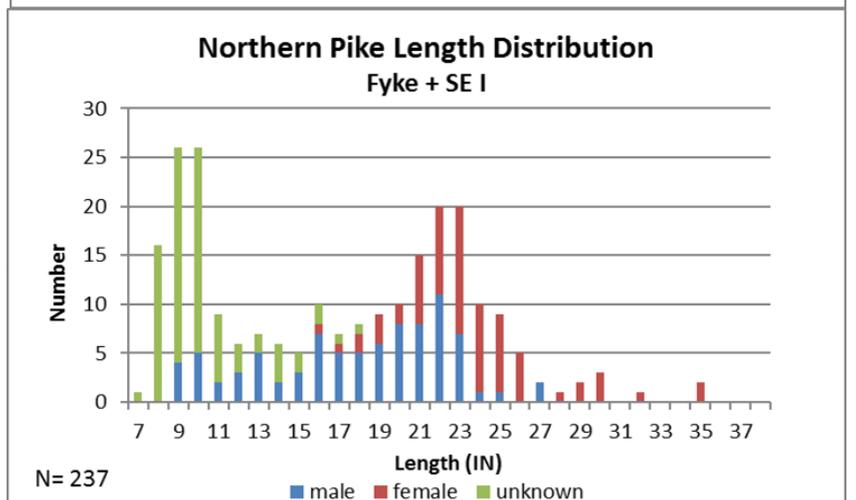
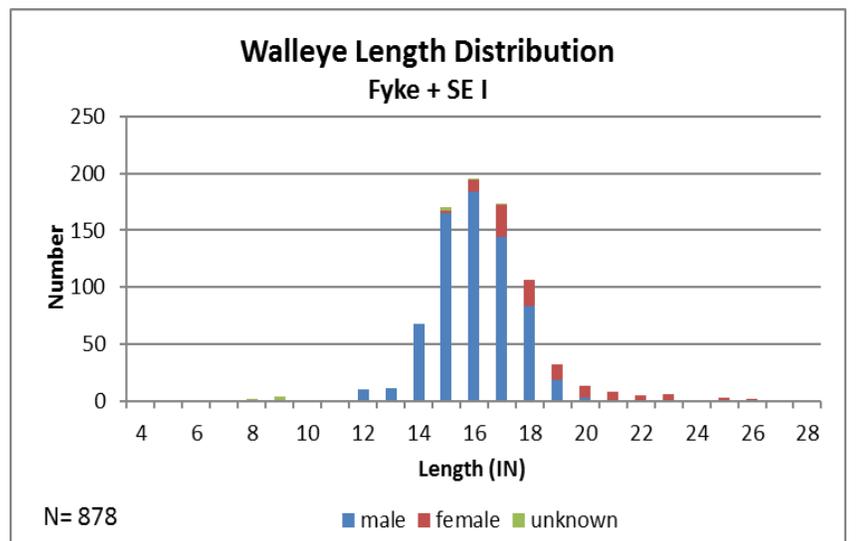
Northern pike (263) average length was 20 inches and ranged from 6 to 35 inches. CPE was 1.6 per net night and 2.0 per mile of electrofishing. Northern pike ≥ 26 inches made up 7% of the catch with only 1% being ≥ 32 inches. The average condition of pike was good at 99.

Muskellunge (153) lengths ranged from 10 to 45 inches. The average length was 19 inches. Catch per Unit Effort (CPE) was 0.7 per net night. Musky over 40 inches made up 1% of the catch. Condition of musky was good at 91.

Smallmouth bass (25) lengths ranged from 8 to 18 inches and averaged at 12.8 inches. CPE for smallmouth bass was 3.9 per mile (SEII).

Panfish:

Large crappie and bluegill were somewhat common in Cedar Lake. Netting was a much more effective method of capturing panfish than electrofishing. Bluegill (6828) were the most abundant panfish sampled by netting and ranged in length from 2 to 9 inches with an average length of 4.5 inches. Black crappie (2279) were the next most numerous panfish sampled by netting. Lengths ranged from 2 to 11 inches in length. The average length



was 5.2 inches (netting). Yellow perch (16), pumpkinseed sunfish (32), rock bass (6) and white bass (13) were also found in Cedar Lake in low abundances.

Carp:

Cedar Lake carp populations are low. No natural reproduction was noted during this survey and only 3 individuals were captured by netting. Spring electrofishing (SEII) failed to capture any carp.

Past and Future Management:

Historically, Cedar Lake contained better water quality, aquatic habitat, and fish populations. Poor water quality and severe algal blooms have severely reduced the quality and quantity of aquatic plant beds. This, in addition to the disruptive nature of artificial water level fluctuations has destroyed once abundant bulrush stands. Extensive, shallow, near shore flats are subject to ice damage; and the removal of nearshore woody debris and vegetation associated with intensive residential development has only compounded habitat loss and fish population declines. The introduction of carp and white bass also displaced more desirable species. Fish species such as carp, walleye and white bass, which are better adapted to algal dominated systems, prevailed through 2004. Outbreaks of fish disease caused the collapse of carp and white bass populations. This, in combination with improving water quality, a new walleye size limit and the addition of fish crib habitat has resulted in a resurgence of walleye, panfish and bass populations. Severe algal blooms remain, even with greatly reduced carp populations. The Cedar Lake Association will be attempting to reduce phosphorus levels in the lake with alum treatments starting in 2017. It remains to be seen what the results of this will be.

Previously, walleye were self sustaining in Cedar Lake and stocking has not occurred since the original stocking in the 1980s. While walleye numbers are generally subject to annual variation from natural reproduction and recruitment, recruitment has been consistently low since 2012. Adult walleye populations appeared to be suppressed during 1994 and 2004 when adult populations were 0.6 and 2.1 per acre, respectively. A 14 –18 inch protected slot limit was instituted in 2008. Anglers have been allowed to keep up to 3 walleye with no minimum length limit, only one of which can be 18 inches or greater. No walleye can be kept in the protected slot. The protected slot limit along with strong reproduction at the time, allowed adult populations to rebound to 5.3 per acre during 2009 and 3.4 per acre in 2013. However, the overall trend in the walleye population has been decreasing since the 2009 estimate along with the trend in recruitment. The current population estimate in 2016 is 3.2 walleye per acre. The majority of the population (75% in 2016, 52% in 2013) is now in the protected slot limit and is mainly composed of slow growing males. These males are likely experiencing increased competition with each other which is leading to the reduction in growth rates. Very few fish are outside of the protected slot limit and any fish that come into the population from natural recruitment are immediately vulnerable to harvest once they reach a desirable size. Additionally, large female walleye that are important for spawning and increasing natural recruitment, are vulnerable to harvest as well. The majority of fish in the protected slot were four to eight years old in 2016. In 2013 they were four to five years old in the slot size which shows a decrease in growth rates. Because strong natural reproduction is needed to support the slot size limit, a change in regulations is needed to improve the walleye population size structure and growth rates, and to protect young walleye until they can fully recruit to the population.

The total number of musky in Cedar Lake have remained relatively stable since 2009. The average length of adult size (≥ 20 inch) musky was 36.5 inches in 2013 and 38.2 inches in 2016. The average length of all musky was 18.8 inches in 2016. This average includes a number of recently stocked musky in the 12 to 16 inch range. The number of musky over 40 inches decreased from the 2013 survey, from 27 in 2013 to 10 in 2016. This reduction in mean length and fewer larger individuals may indicate an increase in mortality for larger fish. Large fingerling musky are stocked biennially in Cedar Lake to support populations.

Northern pike relative abundance (CPE) was similar to the 2013 survey. Maximum length and average length were also similar to the 2013 survey with average lengths in 2013 and 2016 of 18.4 and 20 inches, respectively. Fewer large individuals were documented in 2016 (7% ≥ 26 inches) relative to 2013 (19% ≥ 26 inches). This may be due to the strong year class of 7 to 12 inch fish documented during the 2013 survey which is likely representing a larger proportion of the population in 2013.

The largemouth bass population experienced a dramatic increase in size from the 2013 survey when 90 individuals sampled, to the 1507 individuals sampled in 2016. Largemouth bass are now the most abundant gamefish present. Largemouth bass numbers have been increasing in Cedar Lake since 2009. Average length decreased

from 10.9 inches in 2013 to 5.6 inches in 2016. Approximately 94% of largemouth bass were less than 8 inches. While the size structure is heavily skewed towards small individuals, growth rates were above the state average for all ages and condition was very good. Good growth and condition of largemouth bass is likely the result of increasingly abundant bluegills.

Panfish populations, especially bluegill and black crappies, have increased over the last several years. Overall, the total number of black crappie captured during 2013 was 918 and 2335 in 2016. Maximum size of black crappie increased in 2016 (11 inches) compared to 2013 (4.7 inches). Bluegill numbers also increased from a total of 282 captured in 2013 to 6906 in 2016. The bluegill sample was composed mostly of small individuals. Yellow perch were in very low abundance compared to previous surveys and the population size experienced a sharp decline after the 2009 survey.

Loss of emergent and submergent aquatic plant beds has been a serious limiting factor in Cedar Lake. A fish crib project was begun in 2004 to address deep water habitat problems. Over 400 cribs in 12 colonies spread around the lake on the 13 to 23 foot contour of the lake bed serve as fish attractors and create new habitat, similar to the function of weed beds.

Management Recommendations:

1. Begin stocking extended growth walleye fingerlings to compensate for the lack of natural reproduction/recruitment at 15 fish per acre.
2. Change walleye regulations to a 15 inch minimum length limit, 3 fish bag to protect stocked fish and any naturally reproduced recruits. This regulation will also allow harvest of slow growing males and protect large spawning females.
3. Continue managing Cedar Lake as a Class B musky water. Stock 1000 large fingerling musky biennially.
4. Continue to work with the lake district, county and state government and local sports groups to promote best management practices in the watershed to decrease nutrient loading and associated algal blooms in Cedar Lake.
5. Evaluate the results of 2019 walleye stocking and change in regulations in 2021.

Table 1. Summary of Fish Species Collected in Cedar Lake, 2016 (All visits).

Gamefish	No. Caught	Max. Size	No. ≥ 34 in	No. ≥ 40 in
Muskellunge	153	45.1	24	10
	No. Caught	Max. Size	No. ≥ 26 in	No. ≥ 32in
Northern Pike	263	35.8	20	4
	No. Caught	Max. Size	No. ≥ 15 in	No. ≥ 18 in
Walleye	946	26.4	736	186
	No. Caught	Max. Size	No. ≥ 14 in	No. ≥ 18 in
Largemouth Bass	1507	20.2	25	7
Smallmouth Bass	25	18.0	8	2
Panfish	No. Caught	Max. Size	No. ≥ 8 in	No. ≥ 10 in
Black Crappie	2335	11.2	33	29
Rock Bass	6	9.2	1	0
Yellow Perch	16	9.4	3	0
White Bass	13	15.7	13	13
	No. Caught	Max. Size	No. ≥ 6 in	No. ≥ 8 in
Bluegill	6906	9.8	1421	740
Green Sunfish	14	8.9	2	2
Pumpkinseed	32	8.8	12	3
Other Species	No. Caught			
Bluntnose Minnow	9			
Central Mudminnow	3			
Common Carp	5			
Golden Shiner	2			
Slender Madtom	1			
Spottail Shiner	20			
Tadpole Madtom	3			
White Sucker	27			
Yellow Bullhead	2			

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