

### INVASIVE SPECIES: ZEBRA MUSSELS

Zebra mussels have recently been discovered in Round Lake. Zebra mussels are an aquatic invasive species that are native to eastern Europe and Western Russia and were unintentionally introduced into the United State’s Great Lakes through the ballast water from ships. They have a striped D-shaped shell and typically are 1/4” to 1.5” long, depending on age with alternating yellow and brownish colored stripes. Adults are typically fingernail size and they attach to hard surfaces. A single zebra mussel can filter one quart of water per day while feeding primarily on algae. The filter-feeding is why Round Lake water clarity has improved over the years.

Zebra mussels can be a threat to waterbodies because they can attach to lake equipment such as boat motors and hulls damaging equipment. They are also sharp and can be a hazard to people swimming. As mentioned above, zebra mussels are filter feeders which means they are filtering out planktonic food source for other native larval fish and other macroinvertebrates. Zebra mussels can be a direct threat to native mussels as they can outcompete for the same habitat and they can attach to and kill native mussels

The most common means of spreading zebra mussels is through the movement of water-related equipment. Mussels attach to boats, docks, swim rafts, boat lifts, and aquatic plants. Adult mussels can survive out of water in dry conditions less than 5 days, however, in very wet conditions it can be up to 21 days. The larvae stage of zebra mussels is called a veliger, and these are microscopic and cannot be seen with the naked eye. These veligers can survive in water contained in bait buckets, live wells, bilge areas, ballast tanks, and motors. Every time you exit a lake, its important to clean, drain, dispose, and dry all parts of the boat and boat equipment to prevent the spread of these invasive species. Installing signs at public boat launches and beaches on how to minimize the spread is also useful. Table 5 lists the lakes in Lake County with known zebra mussels.



*Table 5: Lake County Lakes with Zebra Mussels*

Year	Lakes with discovered Zebra Mussels in Lake County, IL
2000	Independence Grove Lake
2001	Sterling Lake, Fox Chain’O’Lakes, Gages Lake, West Loon Lake, Tower Lake, Third Lake
2002	Lake Minear, Lake Zurich
2003	Bangs Lake, Cedar Lake, East Loon Lake
2004	Druce Lake, East Loon Lake
2007	Slocum Lake
2008	Diamond Lake
2010	Acorn Pond
2012	Cedar Lake, Deep Lake, Long Lake, Round Lake.
2013	Forest Lake
2015	Island Lake, St. Mary’s Lake,
2016	Miltmore
2018	Highland, Butler Lake



## IDNR FISH SURVEY RESULTS

Illinois Department of Natural Resources (IDNR) conducted a fish survey on Round Lake in 2019. This consisted of 60 minutes of electrofishing where a total of 163 fish from 15 species were collected (Table 6).

Below are recommendations from the IDNR 2019 Supplemental Survey:

1. Establish a “Catch and Release” ordinance for largemouth bass during May to reduce fishing pressure directed toward nesting male bass.
2. Establish a 15 inch minimum length limit and 3 per day catch limit on largemouth bass. Sample data indicates that this size fish has shifted from 24% of the catch in 2009 to 11% in 2019. It appears proportion of fish in this size group has decreased since 2005 but the proportion is still acceptable. City Ordinance Regulations can be established to keep honest people honest and should be conspicuously posted at public access points.
3. Establish a 24 inch minimum length limit and 1 fish per day creel limit for northern pike. This is more restrictive than the statewide regulation of 3 fish per day, 24 inches.
4. Promote the removal of carp and yellow bass (stripers).
5. There is plenty of forage in the lake in the form of young of the year panfish, so there is no need to stock forage. Put your stocking money into stocking predators.

## AQUATIC PLANTS AND FISH

Fish depend on aquatic plants to provide habitat, forage for food and most fish rely on aquatic plants at some point during their lifecycle stage. The plant composition and density can play an important role in the nesting, growth, and foraging success of these fish (Table 4). While many fish require some aquatic vegetation for growth, excessive amounts of aquatic vegetation can negatively impact growth by reducing foraging success. The parameters of an ideal fish habitat change base on the size and species of fish, the type of lake, structures present in the lake and many other factors.

*Table 6: Fish Species in Round Lake, 2019 Survey*

Species	Relative Abundance (%)
Bluegill	36.2%
Largemouth Bass	31.9%
Yellow Perch	9.8%
Golden Shiner	5.5%
Black Crappie	4.3%
Pumpkinseed Sunfish	3.7%
Common Carp*	1.8%
Brown Bullhead	1.2%
Yellow Bullhead	1.2%
Buntnose Minnow	1.2%
Warmouth	0.6%
Muskellunge	0.6%
Northern Pike	0.6%
Grass Pickerel	0.6%
White Sucker	0.6%

Fish	Plant Affinity	Life Stage				Relationship	
		Larvae	Juvenile	Adult	Spawn	Forage	Predator avoidance
Bluegill sunfish	High	X	X	X	X	X	X
Common carp	High	X	X	X	X	X	X
Largemouth bass	High	X	X	X	X	X	X
Musky	High	X	X	X	X	X	X
Northern Pike	High	X	X	X	X	X	X
Black crappie	Moderate		X	X	X	X	X
Smallmouth bass	Moderate		X	X		X	X
Yellow perch	Moderate	X	X			X	X
White crappie	Low		X			X	
Salmon, trout	Low		X				X
Shad	Low	X					
Walleye	Low			X		X	

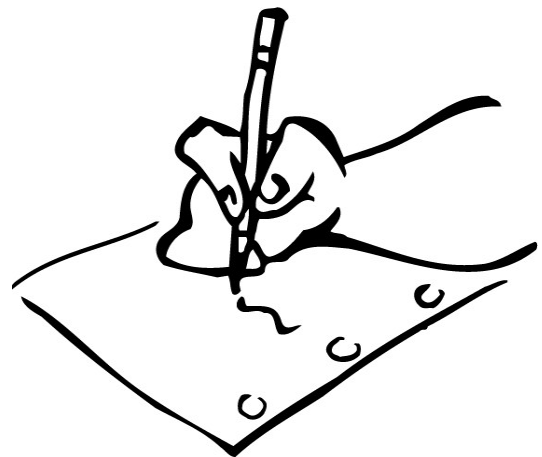
## LAKE MANAGEMENT PLANS

It is recommended that long term Lake Management Plans be developed to effectively manage lake issues. All stakeholders should participate in the development of the plan and include homeowners, recreational users, lake management associations, park districts, townships or any other entity involved in managing Round Lake. Lake Management plans should educate the public about specific lake issues, provide a concise assessment of the problem, outline methods and techniques that will be employed to control the problems and clearly define the goals of the program. Mechanisms for monitoring and evaluation should be developed as well and information gathered during these efforts should be used to implement management efforts ( Biology and Control of Aquatic Plants, Gettys et al., 2009). The Lake County Health Department has created tools for homeowners to develop these plans. All materials can be found on the website at: <https://www.lakecountyil.gov/4084/Lake-Management-Planning-Guide>.

### What are the steps in creating a Lake Management Plan?

1. **Getting Started:** Identify lake stakeholders and communication pathways
2. **Setting Goals:** Getting the effort organized, identifying problems to be addressed, and agreeing on the goals
3. **Problem Assessment & Analysis:** collecting baseline information to define the past and existing conditions. Synthesize the information, quantifying and comparing the current conditions to desired conditions, researching opportunities and constraints and setting direction to achieve goals.
4. **Alternatives:** List all possible management alternatives and evaluate their strengths, weakness, and general feasibility.
5. **Recommendations:** Prioritize management options, setting objectives and drafting the plan
6. **Project Management:** Management of assets, detailed records of expenses and time
7. **Implementation:** adopting the plan, lining up funding, and scheduling activities for taking action to achieve goals.
8. **Monitor & Modify:** Develop a mechanism for tracking activities and adjusting the plan as it evolves.

**Follow these steps when getting started with writing Lake Management Plans. While each step is necessary, the level of effort and detail for each step will vary depending on the project's goals, size of the lake, and number of stakeholders.**



## LAKE RECOMMENDATIONS

Round Lake water quality is good and a combination of managing aquatic plant diversity and watershed improvements can help improve and maintain it's water quality. To improve overall quality of Round Lake, the LCHD-ES has the following recommendations:



- ◆ Develop a Lake Management Plan for Round Lake. A key component to this plan should focus on maintaining aquatic plant diversity while reducing aquatic invasive species (Eurasian Watermilfoil). For more information on lake management plans, check out the tools and worksheets available on the website: <http://lakecountyiil.gov/4084/Lake-Management-Planning-Guide>
- ◆ Eurasian Watermilfoil is the most dominant plant on Round Lake. Management activities should be taken to address boater and safety concerns. Treatments that are taking place should attempt to be a coordinated effort among the different bottom owners to maximize efficiency, minimize cost, and reduce duplicate treatments.
- ◆ Encourage homeowners to incorporate native plants in their landscaping through rain gardens or shoreline buffers. Impacts from homeowner landuse management plays a role in the nutrient loads to the lake.
- ◆ Continue to participate in citizen science monitoring for Round Lake. It is encouraged to continue to collect secchi disk readings through the volunteer lake monitoring program and encourage lake users to submit lake level readings through the LOCSS lake level gauge.



### ECOLOGICAL SERVICES

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Protecting the quality of our lakes is an increasing concern of Lake County residents. Each lake is a valuable resource that must be properly managed if it is to be enjoyed by future generations. To assist with this endeavor, Population Health Environmental Services provides technical expertise essential to the management and protection of Lake County surface waters.

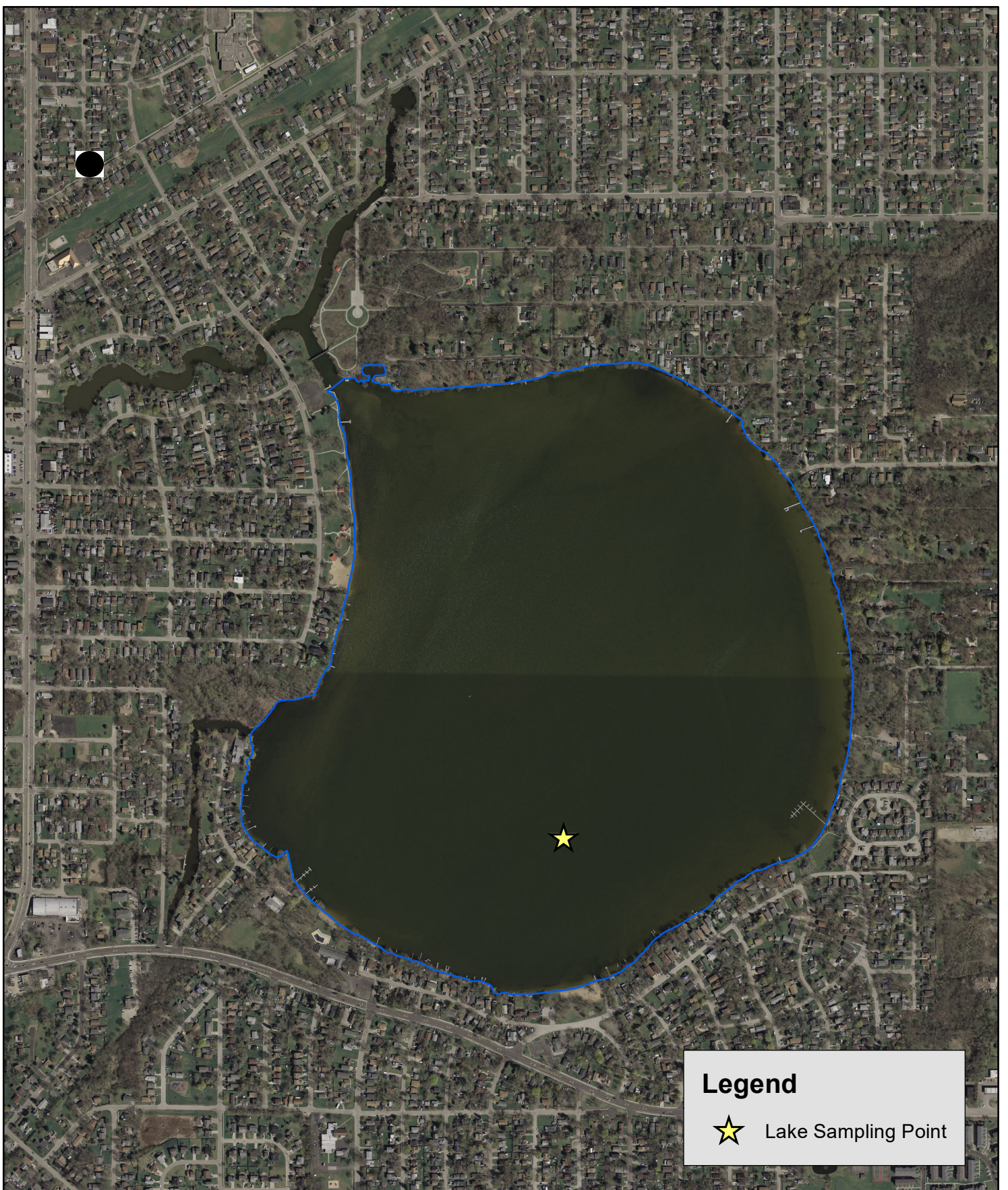
Environmental Service's goal is to monitor the quality of the county's surface water in order to:

- Maintain or improve water quality and alleviate nuisance conditions
- Promote healthy and safe lake conditions
- Protect and improve ecological diversity

Services provided are either of a technical or educational nature and are provided by a professional staff of scientists to government agencies (county, township and municipal), lake property owners' associations and private individuals on all bodies of water within Lake County.

Appendix A:  
Figures

# Round Lake Sampling Point 2019



## Legend

 Lake Sampling Point

