

# Loon Lakes’ Role in the Ecosystem



This document was developed for the Steward of the Lakes Program with Loon Lakes Management Association.

Steward of the Lakes Program is designed to educate and inform on various topics relevant to Loon Lakes and the watersheds.

*“Funding for this project was provided in part by the Lake County Stormwater Management Commission through a Watershed Management Board Grant”*



# Loon Lakes

Loon Lakes are glacial lakes found in northern Lake County, Antioch, Illinois.

West Loon Lake is a 166-acre lake with 2.4 miles of shoreline. The maximum depth is 38' with an average depth of 14.9'. It is surrounded by residential areas except on the western shoreline where it is bordered by railroad tracks. The Lake County Forest Preserve District (LCFPD) owns 1,000 feet of waterfront. West Loon Lake is consistently ranked as one of the cleanest lakes in the state of Illinois (top 10 ranking Illinois Environmental Protection Agency IPEA). The transparency of the lake is 15 to 18 feet depending on the time of the year.

East Loon Lake is 178-acre lake with a maximum depth of 26' and an average depth of 6.8 feet. It is bordered by residential properties and property owned by Northern Illinois Conversation Club (NICC) and Lake County Forest Preserve District (LCFPD) on the northern shoreline. The clarity of East Loon is poorer than West, only 5 to 7 feet.

East and West Loon Lake was used as a source of ice during the late 19<sup>th</sup> and early 20<sup>th</sup> century. There was an ice house on the north shore of West Loon Lake and another ice house was located on the south side of Loon Lake Road. Ice was distributed to areas such as Chicago from the train depot that was located near the corner of Grass Lake Road and Route 83.

Both lakes are home to many different species of fish, birds, reptiles and amphibians.

## **Threatened and endangered fish species**

Illinois Department of Natural Resources 2020 Threatened and Endangered Species study indicated that East and West Loon Lakes are home to five (5) endangered fish species. Additionally, there was one (1) endangered native plant also identified. These species require abundant native vegetation.

### Threatened and Endangered Fish

- Banded Killifish
- Starhead Topinnow
- Blackchin Shiner
- Pugnose Shiner
- Iowa Darter

To maintain a health sunfish/bass fishery, the optimal plant coverage is 30% to 40% across the lake bottom.

## **Loon Lakes Management Association (LLMA)**

The mission of the Loon Lakes Management Association (LLMA) is to provide a coordinated and unified effort for the implementation of policies and programs for the long-term management, restoration and protection of East and West Loon Lakes. LLMA is an Illinois Not for profit corporation that also has IRS 501c3 status.

The LLMA Board consists of members from each of the HOA's that border the lakes. LLMA works together with the Illinois Department of Natural Resources (IDNR) and the Lake County Health Department Ecological Services (LCHD-ES) to implement strategies that meet specific goals. The Lake County Forest Preserve District (LCFPD) and the Northern Illinois Conservation Club (NICC) also own property within the LLMA area and work in conjunction with the LLMA Board on inter-jurisdictional issues.

Due to East and West Loon Lakes' important role as a critical link within the Fox River Watershed and the Sequoit Creek Sub Watershed, Special Service Area 8 (SSA8) was formed in 1989. LLMA receives funding from the SSA8 tax district for the management and protection of the lakes and the surrounding watersheds. There is a Memorandum of Agreement between LLMA and the Lake County Health Department – Environmental Services (LCHD-ES) that stipulates specific requirements of the LLMA and distributes the tax dollars as reimbursement of approved expenses.

Because the LLMA utilizes SSA8 tax money, it is required to consult with IDNR and LCHD-ES concerning any lake management actions or projects. In partnership with the LCHD-ES, LLMA conducts three-year surveys on the threatened and endangered fish and plants within the lakes. Additionally, the Lake County Health Department does aquatic plant surveys of both lakes and make recommendations to the LLMA Board.

Note –

- Total tax dollars LLMA receives was determined in 1989. There has been no increase nor will there be in the future.
- The yearly SSA8 tax monies LLMA receives (\$50,000) basically covers fixed expenses that include harvester loan payments, insurance, fuel costs, dumping fees and wages. There is not enough left over to develop projects needed to protect the lakes and surrounding watershed.
- For each homeowner in the SSA8 area approximately .0084% of the total taxes paid are for the SSA8 funding. Example – if your tax bill is \$5000 – SSA8 funding from your total \$5000 tax bill is \$42.00. (This is approximate data based on 2020 tax bill rate, exemptions and assessments)

LLMA develops a variety of fund raisers to help provided additional monies for various projects.

## **What is a Watershed? Why is it important?**

The land that water flows over and through on its way to a stream, river or lake.

**East and West Loon Lakes are a critical part of the Fox River Watershed and the Sequoit Creek sub Watershed.**

### **Fox River Watershed**

The Fox River originates in Waukesha County, Wisconsin and flows through Illinois into the Illinois River at Ottawa, Illinois. The entire Fox River watershed encompasses 938 square miles in Wisconsin and 1720 square miles in Illinois. The Fox River Watershed has five sub watersheds with Sequoit being one of them. Among the many natural lakes that are found along the Fox River there are 14 glacial lakes designated as biologically significant. East and West Loon Lake being two of them.

### **Sequoit Creek Watershed**

The Sequoit Creek watershed is part of the Fox River watershed, one of the four main watersheds in Lake County. The Sequoit Creek watershed covers about 14 square miles and is home to a population of about 18,000 residents. The Sequoit Creek watershed is unique compared to the other watersheds in the county because of its high-quality lakes and natural resources.

East Loon Lake is near the bottom of the Sequoit Creek Watershed and receives inputs from the Sun Lake Drain and from a channel that connects West Loon Lake. The Sun Lake Drain includes Cedar Lake, Deep Lake, and Sun Lake. East Loon Lake drains north by Sequoit Creek into Lake Marie and eventually the Fox River.

### **East and West Lake Watershed**

East and West Loon Lakes are listed as ADID (advanced identification) wetlands by various government agencies. ADID designation indicates that the lakes and surrounding natural environments have potential to have high quality aquatic resources based on water quality and hydrology values.

Watershed area

- East Loon Lake – 5258.9 acres
- West Loon Lake – 1135.8 acres

## Why is Watershed Management Important?

What happens on a watershed affects not only the area but those in its flow.

The Fox River is a multi-purpose resource that contributes critical habitat for wildlife, serves as a valuable resource for recreation, receives and assimilates pollutants from point and non-point sources and provides source water for public water supplies.

The Sequoit Watershed is uniquely endowed with ecologically significant areas such as high-quality wetlands, the Cedar Lake Bog Nature Preserve, lakes, and forest preserves that provide habitat for several threatened and endangered species. Sequoit Creek watershed contains about five percent of the state's listed threatened and endangered species. Of the listed species present, five are fish and six are birds. These species are found in both East and West Loon Lake. Issues of concern in the watershed include invasive species, loss of existing habitat, and the potential for continuing water quality degradation.

Action Plans have been prepared and implemented to preserve watersheds include:

- Reducing existing pollutant loads to Sequoit Creek from runoff and point sources
- Reduce nutrient, sediment, and fecal coliform loads to Sequoit Creek and lakes in the watershed
- Reduce existing erosion problems throughout the watershed
- Minimize pollutant loads and erosion problems in future developments
- Monitoring and eliminating invasive aquatic plants that threaten the quality of streams, lakes and habitat.

Flooding is an important concern and the Sequoit Watershed Management plan that was developed in 2004 addressed the issues. The watershed topography is basically flat and a disproportionate amount of the watershed lies in high flood hazard areas. Flooding was prevalent along the main stem of Sequoit Creek and in depressional areas throughout the watershed. Flood damage was also caused by inundation of land adjacent to isolated depressional areas. Actions needed to be taken to mitigate the effects of urbanization or flood-related damage would increase.

The objectives associated with minimizing flood damages:

- Preserve floodplains
- Reduce flood peaks and runoff volumes
- Improve and maintain drainage systems
- Protect property and critical facilities in flood hazard areas
- Implementing measures for wetland, stream and shoreline restoration
- Identifying specific opportunities for floodplain buyouts and flood proofing

The following agencies work together to protect the valuable watershed:

- Illinois Department of Natural Resources
- Lake County Public Health Ecological Services
- Stormwater Management Commission
- Watershed Management Board
- Lake County Forest Preserve District
- Fox River Watershed Management Agency.

More information can be found online at each of the above agency's websites

## **Native and Invasive Aquatic Plants**

Aquatic plants are a natural part of every lake ecosystem and serve many purposes in a lake.

Some plant functions include:

- The production of leaves and stems that fuel the food web - they are a valuable food source
- The production of oxygen through photosynthesis – they oxygenate the water via plant processes
- Providing underwater cover for fish, amphibians, birds, insects and many other organisms
- Providing a surface for algae and bacteria to adhere to. These organisms break down polluting nutrients and chemicals and are an important source of food for organisms higher in the food chain
- Emergent plants break wave energy, reducing erosion of the shoreline, while rooted, submersed plants stabilize bottom sediment, reducing turbidity and nutrient cycling that can lead to algae blooms.

### **Necessary Amounts**

It is not desirable to have invasive plants such as Eurasian Milfoil (EWM) as they choke out the desirable plants. Nuisance level of plants prevent the use of the lake by boaters and fisherman and damage the ecosystem. The Lake Management Unit of the Lake County Health Department recommends that aquatic plants be maintained along 30-40% of the surface of the lake. This means that 30-40% of the lake bottom and water column contain rooted aquatic plants, not that 30-40% of the water surface be covered with plants. Over-treatment of plants with aquatic herbicides is a quick way to create a very murky lake, dominated by algae blooms. Herbicide treatments should be carried out with an understanding of the role plants play in the ecosystem.

When working with issues regarding invasive aquatic plants, several agencies normally work together developing lake studies to determine the best goal to protect the entire ecosystem of the lake, lakeshores and watershed. While harvesting works well for the control of some invasive and native aquatic plants specialized herbicides may be required when an invasive plant such as the Eurasian Watermilfoil becomes detrimental.



## Invasive Aquatic Plants

One of the most concerning invasive aquatic plants is the Eurasian Watermilfoil (EWM). It is negatively affecting the health of lakes, streams and rivers throughout the US.



### Eurasian Watermilfoil Facts

Deceptively delicate and fragile in appearance Eurasian Watermilfoil forms thick mats in shallow areas of a lake, quickly growing and spreading to block sunlight, killing off native aquatic plants that fish and other underwater species rely on for food and shelter. Its leaves are feather-like with 12 or more thin segments.

- Eurasian Watermilfoil is commonly found in water 3 to 10 feet deep.
- The Eurasian Water Milfoil plants are rooted at the bottom of the lake and grow rapidly creating dense beds and thick canopies.
- EWM grows both vertically and horizontally creating dense mats that affect the water flow, water absorption and quality.
- The aggressive plant can grow nearly 10 feet.
- “An EWM population could grow at a rate of an inch per day per tip. So, if you integrate all of that growth across an entire population, that is a tremendous amount of plant material assimilating each day” - Ryan Thum, University of Montana, U.S. leading expert on Milfoil
- The density of the EWM chokes out the native plants and changes the ecosystem.
- The decaying EWM plants produce phosphorus and create a muck base which in turn is the ideal environment for continued EWM infestation.



## **Eurasian Watermilfoil Growth**

The predominant means of EWM spread is through fragmentation. Pieces break off from the main plant easily with minimal disturbance. These pieces are then moved to other locations by waterfowl or boats. They will then easily root and grow quickly, forming dense stands.

Despite the use of the best management practices: aquatic herbicide treatments, harvesting and manual removal strategies, invasive EWM continues to expand its coverage area of the lakes.

Rake Studies (Data from Lake County Health Department – Ecological Services)

### **West Loon Lake**

- 2012 Survey – EWM present in 12% of surveyed sites
- 2022 Survey – EWM present in 33% of surveyed sites

### **East Loon Lake**

- 2013 Survey – EWM present in 2% of the surveyed sites
- 2022 Survey – EWM present in 52.7% of surveyed sites

## **Eurasian Watermilfoil Impacts**

IDNR has also raised concern about EWM's negative impact on the lake's ecosystem. The 2020 Threatened and Endangered IDNR report "identified aquatic plant management of the invasive plant, Eurasian Watermilfoil, as the lake management activity that is most likely to directly impact listed threatened and endangered species found in our lakes"

The increasing proliferation of EWM matting areas has also contributed to beach closings. The matting creates a ring around the lake, limiting water flow. Inside the ring waterfowl congregate and feces become trapped. Villa Rica HOA reported significant E-Coli readings at their LCHD-ES licensed beach with a huge increase in beach closings due to extremely high E-Coli readings.

### **Villa Rica Beach Closings due to E-Coli**

2011- 2017 beach closed an average of one day per year

2022 beach closed 37 days for just 1 year

## **Eurasian Watermilfoil and Flooding**

Eurasian Milfoil grows horizontally and vertically. This growth pattern creates dense mats which restricts absorption of heavy rains. The water column fills with sediment as the plant dies. This plant material then forms muck on the floor bottom further decreasing water flow. In addition, drainage pipes become clogged. If left to grow unabated, current flooding issues would only get worse as the matting areas of EWM continue to expand and decrease water flow and absorption.

## **Eurasian Watermilfoil and ProcellaCOR-EC**

The Loon Lake Management Association (LLMA) has and will continue to work with many county and state government officials on the issue of the invasive Eurasian Watermilfoil (EWM). Studies and reports were completed to determine the importance of the eradication of EWM in our lakes.

After extensive research and studying multiple alternatives LLMA announced an RFP to use ProcellaCOR-EC, a systemic herbicide that eradicates EWM before it grows to maturity. This particular herbicide will target EWM found in both East and West Loon Lakes.

LLMA partnered with Lake County Health Department Ecological Services (LCHD-ES) conducting rake studies to determine the herbicide dosage and specific location of treatment areas. Rake studies measure the density and type of weeds within the lake. Post treatment rake studies will be used to determine the success of the treatment. The studies will also identify areas that need reapplication approximately four to six weeks after the initial application.

LLMA Project Objectives with listed ProcellaCOR-EC Benefits

- Improved Safety: Provides an EPA reduced risk classification IV
- Reduced Chemical Usage: Provides longer control (3 years) Requires less product for usage. Reduces need for individual homeowners' chemical usage
- Improved Water Flow and Watershed Protection: Proven Elimination of EWM beds will protect our key function as a watershed
- Improved Water Quality: Decreased aquatic floor muck is attained because of the unique application process. Decreased decaying weeds improves flotsam in the water column
- Protection of Native and T&E Species: Specifically targets only invasive species: EWM and Hydrilla
- Restoration of Natural Ecosystem: Allows return of native plants by providing increased sunlight penetration. Provides improved habitat for fish, birds and insects.
- Protection of threatened and endangered species: Ensures Protection of natural habitat for these important species

Eurasian Watermilfoil is NOT unique to our area, but a serious problem nationwide in lakes, streams and rivers. Many government agencies, municipalities, associations and experts have been studying the use and outcome of ProcellaCOR-EC with eradicating Eurasian Watermilfoil

## ProcellaCOR-EC Results in Lakes

Glen Lake, New York – Posted April 21, 2022

Glen Lake introduced ProcellaCOR EC in 2020. Per Paul Derby –

*“The water quality is improved. The recreational value has improved, the property values have improved significantly. We haven’t seen any interference with our fish population.” We actually had an increase in the number of desired vegetation” . Mr. Derby said a positive of ProcellaCOR is that it doesn’t need to be applied year after year; its milfoil reduction effects linger.*

*Previous to ProcellaCOR EC treatment Eurasian Watermilfoil was often removed manually through “diver-assisted suction harvesting.”*

Vermont Department of Environmental Conservation Approved the use of ProcellaCor in various lakes.

Lake Iroquois, Vermont

What a Difference – Posted October 12, 2021

*“The ProcellaCOR treatment, carried out on June 28, has made a huge difference this summer on Lake Iroquois. Where once we would see matted stands of milfoil by the middle of summer, especially at the north end of the lake, by mid-July this year we enjoyed clear water. Better yet, the removal of the milfoil, also meant that boaters entering the lake at the public access were not churning through stands of the weed, breaking up pieces, and aiding it to spread through the lake. This will make a real difference in controlling this invasive. Pieces of milfoil root very easily, so each piece you see floating in the water is another potential plant, and once rooted, as we know from our experience here at Lake Iroquois, it will spread very, very quickly. In further good news, the preliminary report from the September plant survey shows that the treatment had no apparent effect on native aquatic plant species and, if the number of fishing boats spotted around the lake are any indication, the fishing this year has been pretty good too. The success of this project was made possible by the generous support of LIA members and donors and the many hundreds of hours of work by our intrepid volunteers.”*

Good News from Latest Lake Iroquois Plant Survey – Post October 20, 2022

*“The results of the Lake Iroquois Association’s fall aquatic plant survey are in and it’s good news. Larry Eichler, who has conducted plant surveys on Lake Iroquois since 2017, completed the survey on September 18th. The results show almost no milfoil in the lake, except for a small, manageable clump in the south cove. Even better, the results show that native plant species are back and growing vigorously. Now, instead of invasive milfoil being the most common plant in the lake, we have native species such as waterweed (Elodea), muskgrass (Chara/Nitella), and wild celery (Vallisneria*

*americana*). Similar to previous years, Larry did find a small amount of the invasive curly-leaf pondweed (*Pontamogeton crispus*) in the spring survey, but none in the fall survey. We will be watchful for this invasive during the spring survey planned for early June 2023.”

## Minnesota DNR Invasive Species Annual Report 2021

*“The DNR published a study on the efficacy of the first florypyrauxifen-benzyl (ProcellaCOR®) treatment on a public water body in Minnesota (Lake Jane, Washington County). The treatment successfully reduced hybrid Eurasian watermilfoil coverage in target areas with little to no observed effects on native aquatic plants. Reductions to hybrid watermilfoil persisted through at least one year following treatment.”*

## Tuxedo Lake, CT – Preliminary ProcellaCOR Report from Aquatic Ecologist to Village of Tuxedo Lake – July 25, 2022

*“On Friday, July 22nd, NEAR staff performed a visual inspection of the shoreline of Tuxedo Lake to preliminarily assess the effectiveness of the ProcellaCOR treatment. . NEAR staff did not find any live Eurasian watermilfoil plants during the inspection, meaning that at this stage the treatment has been highly effective. Many traditional Eurasian watermilfoil stands such as the south end of the lake, north by the Dam, Turtle Point Rd. and the shallows by Patterson Brook all had no visual Eurasian watermilfoil. Native plant populations preliminarily looked unaffected by the treatment, which is to be expected based on past ProcellaCOR applications. One of the reasons ProcellaCOR was chosen as the herbicide was that it had a track record of not impacting native plants, which is important for fish and wildlife habitat.”*

## Twin Lake, Phelps, Wisconsin

Joseph Fritzsche – President of the Lake District Association in Vilas County

Twin Lake was the first lake in Wisconsin to use ProcellaCOR in 2019.

Twin Lake consists of both North and South Twin Lakes with a combined body of water of 3500 acres. They treated two patch sites of 20 to 30 acres in 2019. They have since used ProcellaCOR on another site with plans to use again in 2023 pending financing

- *No Negatives except the cost.*
- *Positives were that normal weed growth with the Eurasian Watermilfoil gone.*
- *Notes on original sites – this year they will use divers to hand pluck vs. harvester. Stated the harvester was least effective*

## What LLMA does for you:

Protects and preserves the watershed and the ecosystem of East and West Loon Lakes

Monitors water clarity and report findings to Lake County Health Department-Environmental Services

In coordination with LCHD conducts rake studies on both lakes to determine amount and make-up of aquatic plant population

Fish Stocking of both lakes with various species

Provides a coordinated effort on the harvesting and herbicidal treatment of weeds

Instrumental in various major projects: Channel dredging, Channel seawall construction, new harvester purchase, Eurasian Water Milfoil whole lake treatment

Every three years in conjunction with LCHD-ES conducts a survey of threatened and endangered species to continually monitor any impact on these species

Provides no wake notifications during high water situations

Informs members on relevant information via our web page: <https://loonlakesmgmt.com> and Friends of Loon Lakes Facebook page

Represents your HOA through monthly meetings with each HOA representative

Provides educational information through our Steward of the Lakes program

## What you can do to help:

**Get involved in the organization:** Attend meetings, usually held the third Tuesday at 7:00 at the Antioch township center or via zoom. Check the LLMA website for information. <https://loonlakesmanagement.com>

**Volunteer:** Do you have a certain passion or skill? Volunteer for any of the following: Steward of the Lakes Educational program, Monthly Newsletter, Educational Speakers, Grant Writers, Volunteer Lake Monitoring Program, Fundraising Activities and ideas.

**Donate:** Our fixed (since 1989) SSA8 funding greatly limits our ability to do projects. LLMA is a 501C3 organization and is always in need of additional funding sources.

**Provide Ideas & Contacts:** Do you have ideas to better communicate and spread our mission? Do you have contacts that would be helpful in furthering the LLMA mission?

Contact us at [stewardsofthelakes@gmail.com](mailto:stewardsofthelakes@gmail.com) or [loonlakesmanagement@gmail.com](mailto:loonlakesmanagement@gmail.com)