

## **An Aquatic Vegetation Plan for Lac La Belle** *(Board and Partner Review Draft)*

The Lac La Belle Management District (LLBMD) was awarded a Lake Planning Grant from the Wisconsin Department of Natural Resources (WDNR) to contract with Onterra, LLC to conduct a whole-lake Point Intercept Survey of rooted aquatic vegetation (Onterra 2020). *In summary, the 2020 survey found that aquatic plant abundance is sparse in Lac La Belle and much lower when compared to other lakes within the southeast region and lakes across Wisconsin. While previous surveys also documented relatively sparse aquatic plant growth in Lac La Belle, the 2020 data indicate that aquatic plant abundance may be even lower at present when compared to previous surveys.*

### **Survey Findings**

Onterra ecologists completed a whole-lake aquatic plant (Point Intercept) survey on Lac La Belle. A total of 21 aquatic plant species were in Lac La Belle; four of which are non-native, invasive species including Eurasian watermilfoil. Disturbingly, plants were only found rooted in less than 10 feet of water whereas in past surveys plants grew in 15 feet of water. Furthermore, aquatic plant abundance in Lac La Belle was reported as sparse, even lower than in prior surveys.

Being a hardwater marl lake (marl sediments are typically low in nutrients) with extensive sand and rock area, the low aquatic plant production is expected. However, the 2020 data showed that the two most frequently recorded species in 2001 declined by nearly 90% between these two surveys. This indicates that aquatic plant occurrence in Lac La Belle has declined significantly. The cause of this decline and scarcity of aquatic plant growth in Lac La Belle is most likely

water quality degradation, water level change, the carp population, and/or watercraft traffic may be playing a role.

Despite having a low abundance of aquatic plants and a lower number of species, Lac La Belle's species diversity is relatively high for lakes in the Southeast Wisconsin Till Plains (SWTP) ecoregion. Lac La Belle's species diversity falls near the 75th percentile for lakes within the SWTP ecoregion and near the median for lakes throughout Wisconsin. In areas where plants do grow, the non-native Eurasian watermilfoil and spiny naiad were often the dominant species. Despite sparse aquatic plant growth and a higher occurrence of non-native species, Lac La Belle still harbors a relatively diverse native plant community with 17 native species recorded in 2020, including the increased presence of beneficial wild celery growth and the rare yellow pond lily, *Nuphar advena*, a species of special conservation interest.

### **Conservation Management Plan**

Lac La Belle's water quality data indicate that there has been a significant decreasing trend from 2010-2020, with average summer water clarity declining by approximately 3.0 feet over this period. Onterra's report explains "*This decline in water clarity is reducing light penetration into the water column, likely reducing plant production and restricting plant growth to shallower areas where light availability is higher.*"

This trend is very concerning because as rooted aquatic vegetation declines in the lake bed the likelihood of planktonic algal biomass and nuisance-causing algal blooms increases. Should the trend of diminishing water clarity and shrinking vegetative abundance go unchecked, the lake's primary (photosynthetic) productivity is at risk of

shifting from rooted aquatic plants to dominance by planktonic algae. Further loss of plant productivity and increased dominance of algal productivity could seriously harm lake ecosystem health impairing the fishery value and threatening the recreational opportunities of Lac La Belle.

To reverse this trend of diminishing water quality and declining aquatic plant abundance, the Lac La Belle Management District will build on well-established partnerships with our three local municipalities (the City of Oconomowoc, Town of Oconomowoc and Village of Lac La Belle), Tall Pines Conservancy, Waukesha County and the WDNR.

Our conservation management goal will continue to focus on improving water quality and restoring the native plant community. More specifically, our 10-year objective is to return lake water clarity to greater than 7 feet and extending the lake's littoral zone to the 15-foot depth contour. *This should allow the lake's relatively diverse plant production to increase and spread into deeper areas where light availability is higher.* The **Littoral Zone** is the area of the lake where sunlight is able to penetrate to the sediment providing aquatic plants with sufficient light to carry out photosynthesis.

The LLBMD will choose environmentally sound and economically feasible approaches that support our mission, surrounding municipalities and visitors. While our plan contains methods to control nuisance-causing invasive plant species, we will direct our resources primarily to watershed pollution control projects and projects that will grow the relatively diverse plant community that remains in the lake. Overall, Lac La Belle's conservation management plan strives to bolster aquatic plant abundance and reclaim lost littoral zone areas by improving lake water quality and clarity and reducing future disturbance of soft sediment areas.

So what needs to be done?

**1. Watershed Pollution Control:** The District will support investments in watershed projects to reduce the loading of algal-stimulating nutrients and light-reducing suspended solids from entering the lake. Current projects include a commitment to stabilize eroding banks of Lac La Belle (Golf Course) Creek and expanded support for the City of Oconomowoc's Oconomowoc Watershed Protection Program (OWPP) projects and Tall Pines Conservation activities. OWPP and Tall Pines operate an accomplished, well respected program offering a wide variety of proven approaches and funding for pollution reduction projects with urban, agricultural and lake interests.

The LLBMD sponsors a Shoreland Restoration Program annually for lakefront property owners. We will explore expansion of this program to include providing technical assistance and funding for small-scale streambank stabilization and rain garden runoff pollution reduction projects for all LLBMD property owners.

**2. Water Quality Monitoring:** To track water quality trends, the LLBMD will continue to support Citizen Lake Monitoring of the lake in partnership with the DNR and revitalize the monitoring station in the southern basin of Lac La Belle. The LLBMD will request WDNR to reinstate Lac La Belle in its statewide Long-Term Trend Monitoring efforts for the next 10 years. We will explore using state grant and/or OWPP volunteer stream monitors to measure nutrient and suspended solid loading to the lake from tributary streams and the Oconomowoc River. Data will be entered into DNR's Surface Water Information Management System (SWIMS) database for interpretation. Once these data are collected, the Southeast Wisconsin Regional Planning Commission may develop a model to target pollution control opportunities.

**3. Soft Sediment Bay Area Protection:** Lac La Belle contains large shallow areas that are susceptible to disturbance from watercraft operating at wake-producing speeds (Add maps of bottom sediments, depth contours and vegetation). We will explore protecting soft sediment bays especially those with the highest abundance of aquatic plants with revised “Slow-No-Wake” boating ordinances and strategic placement of marker buoys. Furthermore, we will continue to monitor and seek out research on disturbance produced by wakeboarding/wake-surfing activities and educate/inform those involved in these activities.

**4. Carp Removal and Control:** Studies have documented declines in submersed aquatic vegetation and increases in total phosphorus and suspended solids from carp feeding and spawning behavior. The LLBMD will continue to work cooperatively with DNR Fisheries Management to reduce and maintain small populations of carp and the native bigmouth buffalo through commercial fish harvesting. Onterra’s 2020 Vegetative Survey of Lac La Belle will guide and support future LLBMD and DNR rough fish removal decision-making. It is critically important that failed downstream carp barriers be fixed or replaced to prevent migrations of carp from the Rock River. The LLBMD is exploring replacement of failed downstream barriers with the City of Oconomowoc and WDNR.

**5. Aquatic Invasive Species (AIS) Prevention:** The large areas currently devoid of vegetation in Lac La Belle may be susceptible to invasion by more disturbance-tolerant aquatic invasive plants such as Starry Stonewort, which has been found in upstream waterbodies. Ongoing vigilance including watercraft inspections and early detection will help to decrease the likelihood of new invasive species introductions to Lac La Belle. The District’s plan is to actively support and participate in statewide, regional and county AIS prevention and control efforts

including Clean Boats Clean Waters (CBCW) and AIS grants. We look forward to signing annual intergovernmental agreements with Waukesha County to hire CBCW interns for watercraft inspection and boater education at City Beach and Fowler Lake boat launching sites.

**6. Aquatic Plant Management:** As appropriately stated in Onterra's Survey of Lac La Belle, conservation management goals should always include the control of invasive species and restoration of native communities through environmentally sensitive and economically feasible methods. No aquatic plant management plan should only contain methods to control plants. Instead, they should contain methods on how to protect and possibly enhance the important plant communities within the lake in addition to plant control methods.

The DNR's Sensitive Area findings correctly designate all plants (native and non-native) and littoral zone areas as sensitive and in need of protection. Therefore, in-lake management should be limited to hand-removal of nuisance-causing invasive plant species in public swimming areas and boating channels. Should early detection surveillance find Starry Stonewort or other non-native, invasive species, the LLBMD, in cooperation with state and county managers, will develop and execute an "Early Response Plan."

Onterra's survey discovered stands of tall manna grass in Rosenow Creek wetland area. Tall manna grass is a non-native, invasive wetland species. The LLBMD will discuss the need for and, if necessary, control of tall manna grass in with WDNR, who owns and manages adjacent land.

Past efforts to re-establish submergent aquatic plant beds were largely unsuccessful. Currently, the LLBMD is not planning to enhance submerged aquatic vegetation through in-lake plantings. However, LLBMD will continue to provide technical assistance and funds to

support shoreland restoration projects which may include near-shore floating and/or emergent vegetative plantings.

**7. Vegetative Surveys:** The LLBMD recognizes the need for future lake vegetation surveys. Whole-lake point intercept surveys should be conducted at least every 10 years. In addition, annual surveys of vegetative growth patterns and depths should be examined throughout the growing season to better understand littoral zone growth dynamics. Citizen Lake Monitors and/or CBCW interns could be trained by UW-Stevens Point in how and where to properly collect, identify and document aquatic plants. Data will be entered into DNR's Surface Water Information Management System (SWIMS) database for interpretation. Early detection and reporting of new AIS will be an important objective of annual surveys.

The DNR will collect lotus samples to confirm occurrence and identification in 2021. Based on their findings, the WDNR will discuss and present potential management options with the District.

**8. Aquatic Plant Awareness and Appreciation:** If our plan is to be successful, it must be embraced by informed lake residents, surrounding municipalities and visitors. The LLBMD will seek to inform lake users and residents of the vital role that aquatic plants play and their importance in sustaining healthy lake ecosystems. Awareness of the yellow waterlily, *Nuphar advena* population that was located in the lake will be important. It is a rare plant here in Wisconsin! Informing people of what it looks like and where it and other aquatic plants occur in the lake may help raise awareness and lead to better understanding of our need to protect them.

The LLBMD will feature articles (and maps) on location and importance of aquatic vegetation in annual newsletters and on our newly remodeled website. We will present survey findings, plans and

accomplishments at LLBMD meetings. CBCW interns will engage boaters at the City Beach and can provide survey information (and possibly maps of sensitive areas for boaters). Additionally, the District and Waukesha County may host AIS and CBCW trainings for volunteers. To make learning fun, the LLBMD will seek to overlap our message with community-based lake front events, such as Historic Boat Tours of Lac La Belle and Kids Fest at City Beach

## Summary

The LLBLMD was awarded a Lake Planning Grant from the Wisconsin Department of Natural Resources (WDNR) to conduct a whole-lake Point Intercept Survey of rooted aquatic vegetation and develop an aquatic vegetation plan for Lac La Belle. Onterra, LLC conducted an aquatic vegetative survey in August of 2020. In summary, the survey found that aquatic plant abundance is sparse in Lac La Belle and much lower when compared to other lakes within the southeast region and lakes across Wisconsin. While previous surveys also documented relatively sparse aquatic plant growth in Lac La Belle, the 2020 data indicate that aquatic plant abundance may be even lower at present when compared to previous surveys.

Lac La Belle's water quality data indicate that there has been a significant decreasing trend from 2010-2020, with average summer water clarity declining by approximately 3.0 feet over this period. Onterra's report explains "*This decline in water clarity is reducing light penetration into the water column, likely reducing plant production and restricting plant growth to shallower areas where light availability is higher.*" Should the trend of diminishing water clarity and shrinking vegetative abundance go unchecked, the lake's primary productivity is

at risk of shifting from rooted aquatic plants to dominance by planktonic algae.

To reverse this trend, the LLBLMD will build on well-established partnerships with local municipalities, conservation organizations and the WDNR. Our conservation management goal will focus on improving water quality and creating a lake environment where the native plant community can reestablish and flourish. More specifically, our 10-year objective is to return lake water clarity to greater than 7 feet extending the lake's littoral zone back to the 15-foot water depth contour. The LLBLMD will direct our resources primarily to watershed pollution control projects and projects that will grow the relatively diverse plant community that remain in the lake. Overall, LLBLMD's vegetative plan strives to bolster native aquatic plant abundance and reclaim lost littoral zone areas by improving lake water quality and clarity and reducing future disturbance of soft sediment areas in the lake.

Our plan of action:

- 1. Watershed Pollution Control:** The LLBMD will support investments in watershed projects to reduce the loading of algal-stimulating nutrients and light-reducing suspended solids from entering the lake.
- 2. Water Quality Monitoring:** The LLBMD will support Citizen Lake Monitoring to track water quality trends and seek grants to measure nutrient and suspended solid loading to the lake from tributary streams and the Oconomowoc River to target pollution control opportunities.
- 3. Soft Sediment Bay Area Protection:** The LLBMD will explore protecting soft sediment bays especially those with the highest abundance of aquatic plants with revised "Slow-No-Wake" boating ordinances and strategic placement of marker buoys.

**4. Carp Removal and Control:** The LLBMD will continue to work cooperatively with DNR Fisheries Management to reduce and maintain small populations of carp and the native bigmouth buffalo through commercial fish harvesting and is exploring replacement of failed downstream barriers with the City of Oconomowoc and WDNR.

**5. Aquatic Invasive Species (AIS) Prevention:** The LLBMD will actively support and participate in statewide, regional and county AIS prevention and control efforts including Clean Boats Clean Waters (CBCW) and AIS grants.

**6. Aquatic Plant Management:** The LLBMD will seek to limit the control of plants only when and where necessary in public swimming areas and boating channels or to remove new invasive species threats. LLBMD will continue to provide technical assistance and funds to support shoreland restoration projects which may include near-shore floating and emergent vegetative plantings.

**7. Vegetative Surveys:** The LLBMD will conduct whole-lake point intercept surveys every 10 years and annual surveys of vegetative growth patterns and depths to better understand littoral zone growth dynamics.

**8. Aquatic Plant Awareness and Appreciation:** The LLBMD will seek to raise awareness and inform lake users and residents of the vital role that aquatic plants play, and how to better protect them. We will share survey reports, plans and updates in annual newsletters, on our newly remodeled website, and at LLBMD meetings. CBCW interns will engage lake visitors at the City Beach. To make learning fun, the LLBMD will seek to overlap our message with community-based lake front events, such as Historic Boat Tours of Lac La Belle and Oconomowoc Kids Fest at City Beach.