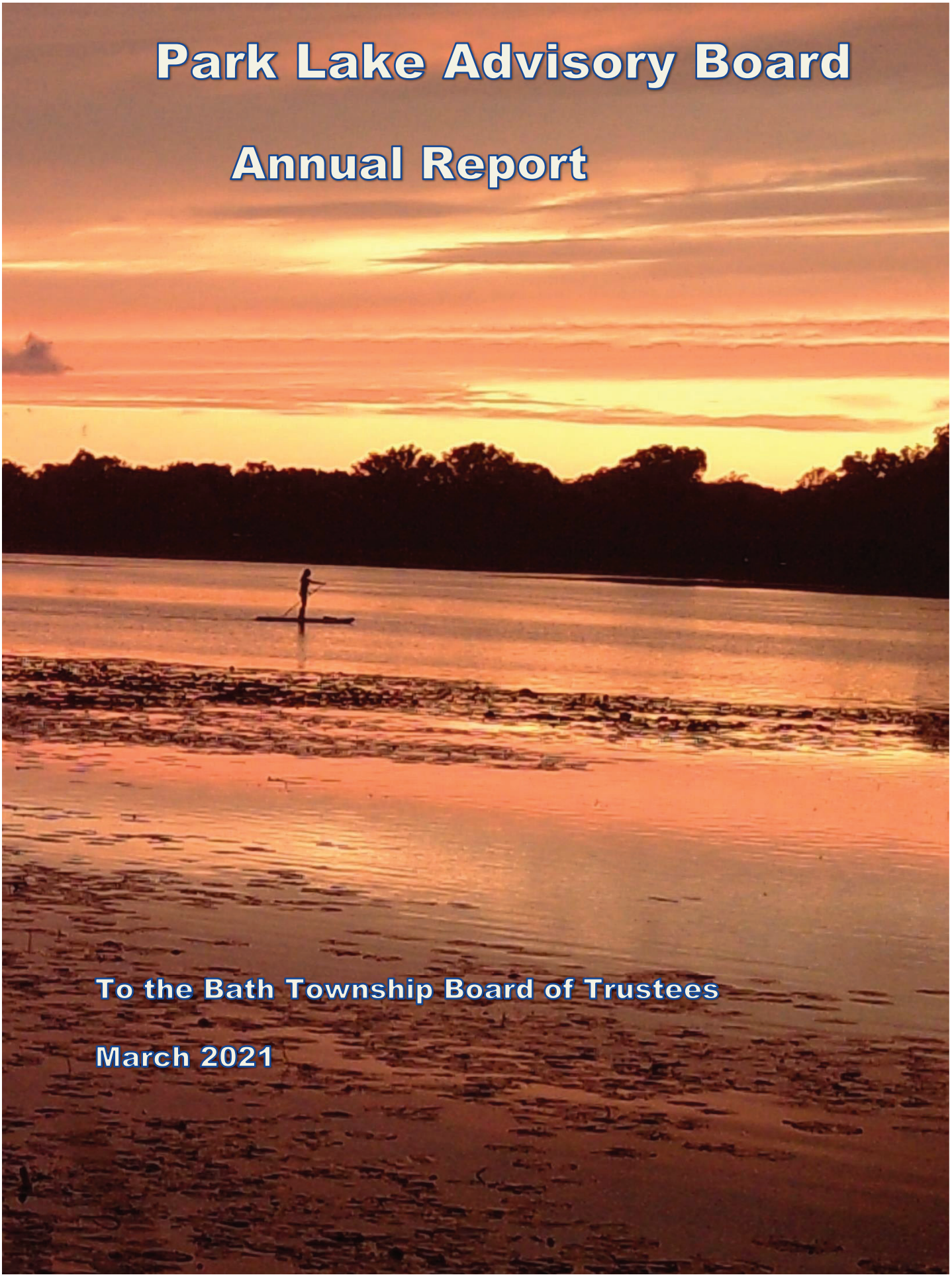


Park Lake Advisory Board

Annual Report

To the Bath Township Board of Trustees

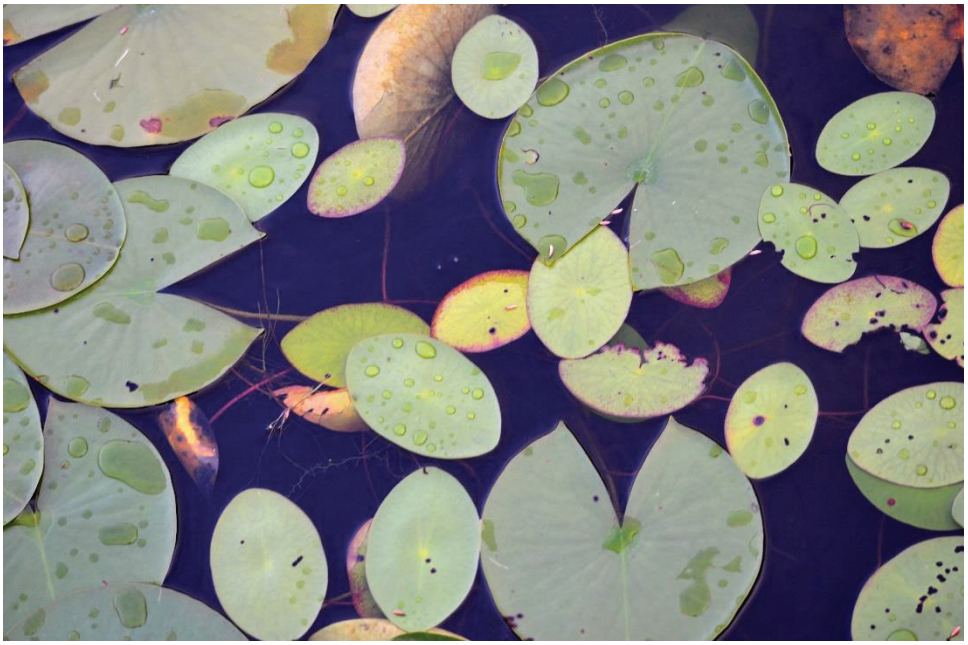
March 2021

Table of Contents

Introduction

The Park Lake Improvement League actively pursued the care of Park Lake during the 1940's, 1950's and 1960's, operating under the guidance of the Bath Township Board of Trustees. Many projects were successfully undertaken, the most important of which was the excavation of the canals around Oak Island, the construction of dikes and a water control device, occurring in 1947. The Clinton County Court first set the lake level at 846.25 feet above sea level on December 4, 1947; the level was later recommended to 845 feet above sea level by the Michigan Conservation Department. During 2012, the Clinton County Drain Commissioner petitioned the Clinton County Circuit court to reinstate the legal lake level at 845.2 feet above sea level (NAVD88 datum; note that previous lake levels were based on earlier surveying standards, so don't exactly match the reference points currently used), and the Court rendered a judgment in agreement. Subsequent to that judgment, a new lake level control structure was installed and became operational in July of 2014.

The Park Lake Advisory Board (PLAB) was formally established in December of 2003 with membership by appointment of the Township Supervisor. The Park Lake Advisory Board operates using a set procedure that includes regularly scheduled meetings, a standard agenda and published minutes. Regular meetings are scheduled for the third Wednesday of each month and are held in the Township Hall. The PLAB has established a mission statement with supporting goals, and a vision statement outlining the philosophy under which the PLAB operates. The board maintains an Action Item list to clearly identify upcoming tasks as well as the advisory board member(s) responsible for updates. This list is reviewed monthly to ensure that progress on important activities is completed in a timely fashion. The board has also developed a Future Item list to provide guidance on issues that are important, but that the Board cannot or feels should not be acted upon in the near term. An Annual Report is submitted to the Township Board of Trustees.



Executive Summary

The mission of the Park Lake Advisory Board is to advise the township on how best to preserve the natural integrity of Park Lake and the surrounding area to benefit the people and wildlife using the lake. Our vision is that we will apply modern conservation techniques to the entire watershed/ecosystem in order to improve environmental conditions, wildlife habitat and recreational resources. Because of the COVID pandemic, our board met much less frequently than in previous years, but nonetheless met our primary goals for the year. We also want to note that we missed having a Board of Trustees member serve on our Board during the past year and hope to have one appointed to foster communication between our two entities, as well as to add their perspective to our work. Some of the major accomplishments during 2020 include:

- Continued to monitor the lake level with respect to the optimal operation of the water control structure. Snowmelt and precipitation during the spring of 2020 led to excessively high water levels in some of the wetlands connected to the lake. Because of this, the lake level was lowered by the removal of boards in the lake level control structure by the county drain commissioner who is responsible for maintaining the legal lake level. The Friends of Park Lake and our board were in contact with the drain commissioner and his inspection revealed issues with water control on the NW side of the lake by Park Lake Road. The drain commissioner's staff renovated the overflow drainage system in this area, which will hopefully prevent future problems with flooding in this area.

- The board continued to monitor the weed problem on Park Lake. The lake has been treated to varying degrees and with different herbicides for the past several years, leading to substantial variation in the amount of weed cover each year. The lake was treated with a new herbicide (ProcellaCOR ®) in 2019, and again in 2020. Plant survey of the lake each year showed near elimination of Eurasian water milfoil by August, and as such, we recommend continuing with this program of treatment.

- Collaborated with the Parks and Recreation Committee and Friends of Park Lake to develop a draft plan for a nature trail near Park Lake to enhance recreational opportunities around the lake. This proposal was submitted to the CIP process in fall of 2020 but was not recommended for funding in the initial budget submitted to the Board of Trustees in 2021.

- Our qualitative observations on boating use of the lake and use of the beach suggest a substantial increase over past years. We suspect much of this increase was a result of COVID restrictions that limited other alternative activities. We feel that this highlights the value Park Lake provides to the community as an important recreational outlet, particularly in these stressful times.

The minutes of our meetings are available on the township website. The board reviews action and future items monthly, and within this report, we provide a copy of the initial action/future item lists for January 2020 and the final lists for January 2021 to provide insight into activities that took place over the course of 2020 and plans for 2021.

Proposed Goals and Objectives for Park Lake Management

Primary goals

To maximize the recreational and quality of life benefits that Park Lake provides to lakeshore and township residents, as well as the general public, while maintaining the lake's ability to support a diversity of wildlife and plants. To work with Friends of Park Lake and other groups to inform, educate, and involve the public toward the betterment of the lake, and to instill a sense of community with Park Lake at its core.

Brief background relevant to goals

There are approximately 120 lakeshore properties in addition to township and county lands that make up about 50% of the lakeshore. The lake provides opportunities for swimming, boating, fishing, and hunting in addition to the aesthetic qualities of the lake. Use of the lake by various user groups contributes to the economy of the township in addition to the increased property values for lakeshore owners. The primary impairments to these benefits include (1) excessive weed growth; (2) accumulation of organic sediments; and (3) lack of a water control structure to maintain water depth. The lake hosts a wide variety of plants and wildlife, and the natural habitats provided on township property helps greatly to maintain this biodiversity.

Vision statement

The vision for Park Lake is to maximize the recreational and quality of life benefits that the lake provides to lakeshore and township residents, as well as the general public, while maintaining the lake's ability to support a diversity of wildlife and plants. To work with Friends of Park Lake and other groups to inform, educate, and involve the public toward the betterment of the lake, and to instill a sense of community with Park Lake at its core. The management of the lake will take an ecologically sound approach to rehabilitate the lake from the deleterious effects of human-caused eutrophication in order to enhance the use of the lake.

Impediments

Although all lakes naturally fill in over time, Park Lake has suffered from human impacts that have greatly accelerated these natural processes. Because of this, many of the beneficial uses of the lake (e.g., boating, swimming, fishing, hunting, scenic beauty) have been impaired by excessive plant growth and sedimentation of the lake. In addition to this, invasive plants such as Eurasian watermilfoil, starry stonewort, purple loosestrife, and Phragmites threaten both human uses as well as the ecological health of the lake and the surrounding riparian zone. The following objectives are intended to address these impediments and rehabilitate the lake.

Background and Objectives

Boating

Park Lake has a public boat launch maintained by the township, providing free access to the lake for lakeshore residents, township residents, as well as the general public. The boat launch does not have a boat wash station, and it has been observed that boats arriving and departing Park Lake sometimes carry invasive weeds. Many private residences have boat docks, but variation in water level sometimes limits the size of boats that can be launched or docked on the lake. Excessive weed growth also limits areas of the lake accessible to motor boats, and in some areas, even limits accessibility to canoes and kayaks. The shallow nature and modest size of Park Lake make it generally unsuitable as an "all sports lake", and our qualitative observations suggest that canoe and kayak use of the lake have increased substantially without apparent conflicts with fishing boats.

a. Maintain boat launch for "small" watercraft by keeping suitable water depth via lake level control structure, dredging in the area (if necessary), and reducing weed abundance near the boat launch so as to not be an impediment.

b. Reduce weed abundance along the inhabited shoreline to provide lakeshore owners the ability to access the lake by boat.

c. Maintain overall weed levels to a point where boating is feasible (during normal water levels) for the majority (i.e., >50%) of the lake.

d. Advertise Park Lake as a desirable destination for canoeing and kayaking (e.g., at the Quiet Water Symposium).

e. Monitor boat usage, and if problems appear, draft an ordinance (as allowed by DNR) to limit boat speed or horsepower in order to promote safe use of the lake by all users. Work with the Township, Sheriff and DNR to encourage enforcement of existing regulations.

f. Collaborate with Friends of Park Lake to explore the feasibility of installing a boat wash station to minimize transfer of invasive species into and out of Park Lake

Fishing

Park Lake supports a diverse warm-water fishery, with anglers targeting bluegill, pumpkinseed, black crappie, largemouth bass, northern pike, yellow perch, and channel catfish. Discussions with anglers suggest that catch rates are modest, as is the size structure of the catch. Anecdotal information indicates that some competitive anglers use Park Lake for "practice fishing" for largemouth bass, and in recent years the township has hosted an ice-fishing derby. Fish populations in the lake are all self-sustaining, with the exception of channel catfish which are stocked every other year by the Michigan DNR. The most recent stocking was on June 26, 2019 when approximately 3,000 juvenile channel catfish averaging 4.57 inches in length were stocked. Common carp occur in the lake, but do not appear to be

causing any problems with water quality or with the fishery for other species, and in fact have recently supported a bow fishery. In 2010 the township installed a fishing dock near the public beach to provide access for anglers without boats. This dock is used extensively, providing a substantial benefit to anglers without boat access.

a. Direct fishery management actions are outside of the purview of the township, but we support the continued stocking of channel catfish to provide a fishery, as well as the benefits they provide in maintaining the size-structure of panfish.

b. Maintain spawning habitat quality; avoid potential impediments to fish reproduction such as applying weed treatments directly on spawning grounds or manipulating water levels during spawning periods.

c. Work with the Park and Recreation department to maximize the benefits accruing from the fishing dock maintained by the township.

Swimming

Park Lake has a public swimming beach maintained by the township. Access to the beach is free, but no lifeguards are present, and the public is allowed to swim at their own risk. The water by the beach is not regularly tested for coliform bacteria or other indicators of water quality impairment with regards to swimming. The beach is sand, but the shoreline sometimes has problems with excessive goose excrement. The swimming area is relatively narrow, and is being encroached by weed growth and organic sediment deposition. The remainder of the lake is generally too weedy and soft-bottomed to provide a high-quality swimming experience.

a. Minimize weed growth in the vicinity of the beach to maintain the quality of the swimming area. Continue to import sand as needed to maintain the beach.

b. Determine if it is possible and cost-effective to extend the depth of the sand bottomed beach area to reach a depth of at least 4.5 feet (under normal lake levels).

c. Deter waterfowl use of the beach area to the point where the beach quality is acceptable to most beach users.

d. Test water on an annual basis for coliform bacteria or other indicators of the suitability of lake water for swimming.

Lake aesthetic quality

The natural habitats present along the south and much of the western shoreline provides a highly desirable lake experience for many lakeshore owners. However, excessive plant growth in some areas limits the visual appeal and accessibility of the lake for some owners. Water clarity in the lake currently averages approximately 10 feet as measured by a Secchi disk. This level of water clarity is generally viewed as being of high quality for lakes in this

region. The soft-textured organic sediments that are prevalent along much of the shoreline diminish the aesthetic quality of the lake. In 2018, Jennifer Jermalowicz-Jones of Restorative Lake Sciences conducted a study to determine the feasibility of using aeration to combat this problem. Their findings indicated that aeration was not a good fit for the specific conditions in Park Lake.

a. Continue to monitor water levels in the lake to determine if the lake water control structure is holding water levels as desired.

b. Maintain natural shoreline along township and county-owned property.

c. Cooperate with the Parks and Recreation Committee to develop plans for Park Lake Preserve.

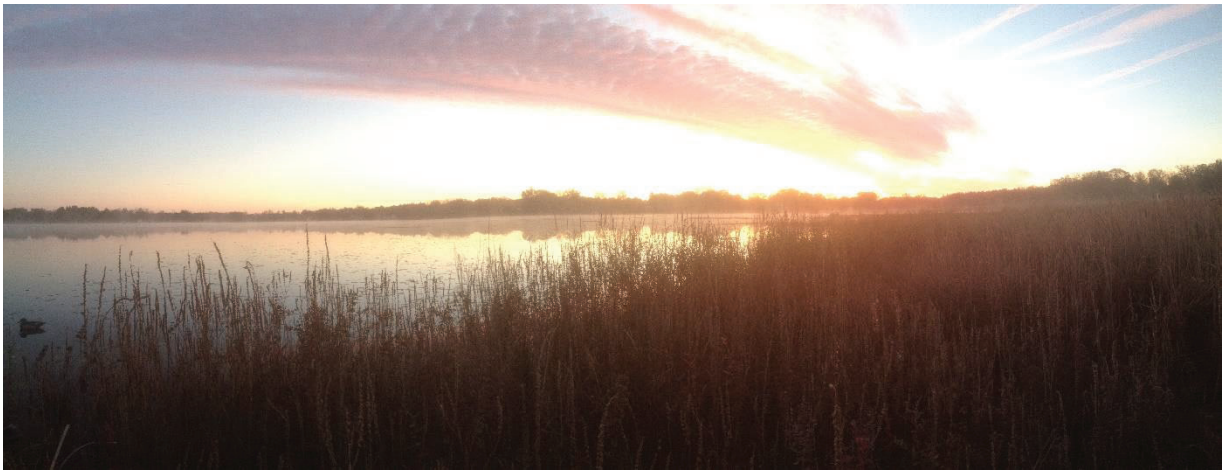
d. Management of weed abundance to allow for boating will likely maintain aesthetic quality; explore alternative weed control methods.

e. Maintain water clarity to average between 6 and 12 feet Secchi disk measurement. Monitoring of water clarity via Secchi disk, and monitoring water phosphorus (which is the major nutrient driving algae growth) is encouraged.

f. Sample lake sediments to determine if contaminants in the sediment are at levels that would impair the biological functioning of Park Lake, or if the sediments are contaminated at a level that would forestall dredging options.

g. Explore methods for conversion or removal of excessive organic near-shore organic sediments to a more sand or gravel texture.

h. Reduce cattail density along township land to improve “viewscape” provided by the lake.



Plant diversity

The shoreline of Park Lake is currently dominated by native plant species, such as cattails, swamp loosestrife, and arrow arum among others. There are also riparian wetlands that contain species such as sundew, pitcher plant, ferns and mosses. Mixed in with these native species are a number of non-native plants, with purple loosestrife and common reed (Phragmites) having a high potential for being invasive. Within the lake itself, sampling over time indicates that over 90% of the lake is less than 10 feet deep and sustains heavy aquatic plant growth. Although many of the dominant species are native plants (e.g., *Chara*, pondweeds, water lilies), there is also a preponderance of non-native plants (e.g., Eurasian watermilfoil, starry stonewort). The prevalence of these species varies greatly from year to year, depending on treatment as well as responding to natural variation in lake conditions.

Results of plant sampling for 2020 are presented in Appendix D. Among the non-native species, Eurasian water milfoil continued at a low level of presence, being found at only 5% of sites sampled. We attribute this low level of abundance to be due to the success of the herbicide treatment. Prevalence of starry stonewort was similar to 2019, with approximately 60-65% of sites being occupied. Spiny naiad was not found in the 2020 survey, but has never been abundant in the lake and is unlikely to become problematic. Curly-leaf pondweed was found during our 2019 survey but was not seen in the 2020 survey. Observations during the spring indicated substantial growth of this species in localized patches and warrants closer observation in upcoming years. The prevalence of native plants such as pond weeds (*Potamogeton* and *Najas*) and native milfoil generally remained at similar levels as seen in 2019. An exception was the native plant *Elodea* which showed a tremendous increase in prevalence – from 4% in 2018 to 19% in 2019 and finally showing up at 57% of sites in 2020. The cause of this rapid increase is unknown, but is potentially due to the opening of space caused by the diminished abundance of Eurasian watermilfoil.

Objectives for the aquatic plant community include:

a. Maintain a balance of areas where plant growth is suppressed to allow for human uses with areas where native plant growth is unimpeded. Initial targets for this balance are to have a minimum of 50% of the lake where boating can be conducted unimpeded during normal water levels.

b. Continue monitoring plant distribution, focusing on potentially problematic species, particularly *Phragmites*, Eurasian watermilfoil, starry stonewort, curly-leaf pondweed and purple loosestrife.

c. Work with Friends of Park Lake to raise public awareness of invasive plant species, and benefits of native plant species.

Wildlife diversity
Park Lake supports a diverse fish community, with at least 19 species of fish caught in sampling conducted from 2011 through 2019 by students from MSU (Appendix H). No fishery survey was conducted in 2020 due to COVID restrictions. Bird usage of the lake, particularly by waterfowl, is also high; seeing hundreds to thousands of ducks and geese is common during spring and autumn migrations. There has also been documentation of successful nesting by Least Bittern, a state-listed threatened bird species, along the lake. In the wetland habitats adjacent to the lake, there is a variety of reptiles and amphibians. The increase in lake level due to the water control structure installed in 2014 was anticipated to increase the productivity of the lake riparian area. Observations by members of the Park Lake Advisory Board suggest that usage of the lake by waterfowl has increased. A visual survey of goose and swan nesting in April of 2019 indicated that there was a minimum of 9 goose nests, 1 swan nest, and 1 sandhill crane nest readily visible from a kayak tour of the lake (Appendix O). The survey of nests in April 2020 also revealed 9 goose nests, but no swan or sandhill crane nests were observed.

a. Maintain the quality of the lake and surrounding habitats to support the current levels of biodiversity seen on and near the lake.

b. Minimize negative impacts (e.g., nutrient input, coliform bacteria) of excessive goose population on the lake.

Outreach/education
Park Lake provides a wonderful opportunity to engage the community in learning about its natural resources and how to protect them. It has the potential to be a natural laboratory and can engage students and adult learners in the community. Opportunities exist to educate the general public about water quality, invasive species, natural history, and fish and wildlife species. With more community engagement it is likely that stewardship of the lake will become a community endeavor and initiatives for lake improvements will be easier to accomplish with more people invested in its natural history. We have not formalized our outreach and education plans as of yet, but we would like to start to build this component into our mission over time. Friends of Park Lake already perform some outreach and education activities, and we can partner with them to reach a broader audience. Other ideas include classroom visits to the lake, learning labs and tours on the lake, and public seminars in the community. Outreach and education activities would complement the development of the Park Lake Preserve.

Grant opportunities
The current funding climate is such that grants to support management on individual lakes are becoming less common, and collaborative efforts are being supported.

a. Initiate discussions with nearby lakes facing similar problems to better position the township for grant applications, as well as general sharing of lake management information.

b. Collaborate with other Township entities to pool resources and explore opportunities that benefit multiple stakeholders within the Township.

Park Lake Advisory Board Accomplishments 2020

- Members of the Board have continued to monitor lake levels in response to the dike and water control structure that was installed in early 2014. Overly high water levels in spring lead to the removal of a couple of boards by the country drain commissioner. The board worked with that office to identify and address problems with the drainage structure at the NW corner of the lake by Park Lake Road. Water levels entering the summer were somewhat lower than the past several years but tended to rebound throughout the summer (Appendix B).

- The PLAB assisted the Parks and Recreation Committee and Friends of Park Lake in the submission of a CIP proposal for a nature trail along the SW side of the lake. This was presented not recommended for funding at the time of this report.

- Maintain the strong relationship between the Friends of Park Lake and the PLAB, with many of the members of each group attending both meetings.

- In cooperation with Friends of Park Lake, participated in the Michigan Cooperative Lake Monitoring Program to sample water quality parameters and to map aquatic vegetation in the lake. Chlorophyll and phosphorus sampling was not conducted in 2020 due to limitations imposed by the COVID pandemic. Detailed results of the sampling we were able to conduct are provided in appendices to this report.

Aquatic Plant Management

As in past years, the reduction in the abundance of aquatic plants remains a major concern for the management of Park Lake. In addition to exotic species such as Eurasian watermilfoil (*Myriophyllum spicatum*), curly-leaf pondweed (*Potamogeton crispus*) and starry stonewort (Nitellopsis obtuse), excessive growth of native species such as eelgrass or wild celery (*Vallisneria americana*) and water lilies (*Nymphaea sp.* and *Nuphar sp.*) is problematic. Steve Hanson with PLM Lake & Land Management Corp. provided lake and aquatic plant management services in 2020, and their activities are summarized below. Lake residents often have questions about permit requirements for managing aquatic and emergent plants on their property. The Michigan DEQ oversees such permits, and provides the following web resources to help answer questions for residents:

http://www.michigan.gov/deq/0,4561,7-135-3313_3681_28734-161112--,00.html
https://www.michigan.gov/documents/deq/wrd-anc-faq_565051_7.pdf

Due to the increase of Eurasian watermilfoil over the past few years, a whole lake treatment for milfoil was implemented using Fluridone in 2016, and no Eurasian watermilfoil was found during the August 2016 survey. Eurasian watermilfoil distribution was limited in 2017, allowing for a reduction in the amount of herbicide application. Although Eurasian watermilfoil rebounded greatly in 2018 (see appendix D), treatments were limited due to the timing of its resurgence. Select portions of the lake were treated in 2019 to test the effectiveness of a new herbicide (ProcellaCOR®) that has proven to be selective for treating Eurasian watermilfoil, and importantly, has a 3-year guarantee for areas treated (with some limiting conditions). Results of the plant surveys in 2019 and 2020 indicate that the ProcellaCOR treatment was more effective than anticipated, with Eurasian watermilfoil being found at less than 5% of sites examined. Although starry stonewort has been widespread in Park Lake since 2018, it did not appear to grow high enough in the water column to impact boating or swimming and as such has not recently been a target for treatment.

Management activities conducted during the 2020 season by PLM included water quality monitoring (sampled on May 7th and August 24th), vegetation surveys (conducted in May and August) and herbicide treatments. Results of the water quality and vegetation surveys are provided in Appendix S. The first treatment was conducted on June 29th. This treatment encompassed 22 acres of general areas of the lake using ProcellaCOR and shoreline residential areas for residents who requested individual treatments using a more broad spectrum herbicide. Results of the ProcellaCOR treatment were good as there has been a significant decline in Eurasian watermilfoil lake-wide over the past two seasons. As a result, native plant species have increased, most notably Elodea. A second treatment took place only in the requested residential areas on August 4th. These treatments have been reasonably successful at maintaining an open waterfront for lake access. PLM plans to continue with this additional treatment service during the 2021 season.

The management plan for 2021 include a ProcellaCOR treatment for remaining Eurasian watermilfoil as determined by an early summer vegetation survey. Water quality monitoring and vegetation surveys will continue to monitor the success of the management program. treatment.

Recognition of Township, County and Community Activities in the Park Lake Area

- The Bath Public Works Department (as well as dedicated citizens!) continued the clean-up and removal of vegetation from public areas and continued maintenance of the beach area.

- Parks and Recreation Department sponsored a tagged fish contest in 2020.

- The Friends of Park Lake had a challenging year in 2020 due to COVID restrictions, with usual events such as the Summer Solstice Celebration being canceled. Friends of Park Lake worked collaboratively with Bath Township and Michigan Department of Transportation to extend our MDOT Right of Way permit to plant trees on MDOT land parcels between I-69 and Park Lake Rd. The Friends of Park Lake alerted the Clinton County Drain Commissioner to flooding on the northside of Park Lake Road between the neighborhood and I-69. As a result, a stop log was removed from the water control device to lower the lake level to allow the Drain Commissioner to reconstruct the culvert under Park Lake Road to ease flooding.

- The Parks and Recreation Committee and Friends of Park Lake took a lead in submitting a CIP proposal for the Park Lake nature trail.

- The Friends of Park Lake is a member of the MiCorps Cooperative Lakes Monitoring Program (CLMP), and in conjunction with the Park Lake Advisory Board, monitored the lake for water clarity, and aquatic plant coverage. This program provides a mechanism for educating and training people in scientific methods for lake sampling and assessment. A few new individuals have become involved, and the Friends of Park Lake and the Park Lake Advisory Board are hoping to increase this number over time.

- The Friends of Park Lake and the Ingham Conservation District worked together as part of the Mid-Michigan Cooperative Invasive Species Management Area (CISMA) across Ingham, Clinton, Eaton and Ionia Counties. The CISMA has focused on strategic management through education, prevention, early detection, rapid response, and control of terrestrial and aquatic species across jurisdictional lines.

Park Lake Advisory Board Action Item List Jan 2020

Action Item	Status
5-year plan for Lake Improvement	Ongoing review and revision. Further refine budget, rotation of treatment, benefits to township, etc.
Phragmites problem	Check in spring
Test lake sediments for contaminants	Cheryl has touched base with Susan Jones, and is waiting for more information.
Coliform bacteria testing	Plan on sampling in July 2020
Waterless boat cleaning station	No action needed at this time.
Lake monitoring	Phosphorus, chlorophyll, Secchi clarity, and aquatic plant mapping completed for 2019. Lead by Friends of Park Lake, but includes several members of this board.

Park Lake Advisory Board Action Item List Jan 2021

Action Item	Status
5-year plan for Lake Improvement	Ongoing review and revision.
Phragmites problem	Check in spring – Dan checked in 2020, and it appears that the Phragmites along the lake is under control. There were patches near the dike and Webster Road that will likely need treatment in 2021. Dan will contact the local CISMA.
Coliform bacteria testing	Will plan for July 2021.
Waterless boat cleaning station	Discuss this as an option.
Lake monitoring	Plans for 2021
Purple Loosestrife control	Purchase beetles for control, or work with Friends of Park Lake for purchase. Web site for order is: https://integratedweedcontrol.com/pricing/ Insects available in May, but not sure when need to order

Park Lake Advisory Board Future Item List Jan 2020

Future Item	Status
Work with Friends of Park Lake to develop informational brochures on fish and aquatic plants	Initiate when the appropriate board members have time available.
Research means to restore canals leading to water control systems	Restoration of canals would be good for recreational kayaking. Eric Muska – potenial options with oxygen and enzyme system
Explore grant possibilities for Park Lake	Ongoing.
Monitor use of lake by motorized vehicles during winter for potential conflicts	Ongoing.
Explore methods to achieve lake restoration and sediment removal	
Considering developing an amphibian (frog, toad, salamander) monitoring program	

Park Lake Advisory Board Future Item List Jan 2021

Future Item	Status
Work with Friends of Park Lake to develop informational brochures on fish and aquatic plants	Initiate when the appropriate board members have time available.
Research means to restore canals leading to water control systems	
Explore grant possibilities for Park Lake	Ongoing.
Monitor use of lake by motorized vehicles during winter for potential conflicts	Ongoing.
Explore methods to achieve lake restoration and sediment removal	Cheryl has touched base with Susan Jones about testing sediments for contaminants, but our need for testing is currently a low priority
Considering developing an amphibian (frog, toad, salamander) monitoring program	1) Michigan Frog and Toad 2) Great Lakes Marsh Monitoring Program (https://www.birdscanada.org/volunteer/glmmp/)