



Park Lake Advisory Board Annual Report

To the Bath Township Board of Trustees

March 2024

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Executive Summary and Accomplishments 2023

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 to improve environmental conditions, wildlife habitat and recreational resources. Some of the major accomplishments and issues identified during 2023 include:

- The Mid-Michigan District Health Department continued monitoring the beach for E. coli, and no beach closures occurred during 2023. E. coli levels were below the daily action limit throughout the summer, but modestly high levels were observed in late August, which bears watching in 2024. We recommend continuing contracting for goose control as this appears to be helpful in minimizing the number of geese on the beach for most of the swimming season.
- The board continued to monitor the weed problem on Park Lake. The lake has been treated to varying degrees with different herbicides for the past several years, leading to substantial variation in the amount of weed cover each year. The amount of Eurasian water milfoil continued to be relatively low in 2023, and as such, we recommend continuing treatment. Starry stonewort was very prevalent in the lake, however the growth form that this species currently exhibits poses little problem for boating and swimming, and as such, we do not recommend treating the lake with the copper-based chemicals needed for this species.
- In cooperation with Friends of Park Lake, we participated in the Michigan Cooperative Lake Monitoring Program to sample water quality parameters and to map aquatic vegetation in the lake. Detailed results of this sampling are provided in the appendices to this report. Water clarity was generally lower in 2023 than in previous years, and phosphorus levels appeared to be elevated relative to previous years. The water level in 2023 was generally quite high, with several large rainfall events potentially contributing additional phosphorus to the lake via runoff. Monitoring during 2024 will be valuable to determine if there is a trend in these water quality parameters, or if conditions the past two years were due to weather-related factors.
- Continued to collaborate with the Parks and Recreation Committee and Friends of Park Lake to develop a plan for a nature trail near Park Lake to enhance recreational opportunities around the lake. Funds for this project were approved to start in 2022, however easement issues need to be addressed before work can be initiated.
- Continued to monitor the lake level with respect to the optimal operation of the water control structure.
- The Board lost an important member of our group with the passing of Joe Benzie. He played an important role on the Board over the past couple of years, as well in the earlier history of the Board.

The minutes of our meetings are available on the township website. Within this report, we provide a copy of the action item lists for January 2023 and January 2024 to provide insight into activities that took place over the course of 2023 and plans for 2024.

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.
- 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.
- Friends of Park Lake continued in 2023 to work cooperatively with the Bath Township Recreation Committee, the Department of Public Works, the Clinton County Drain Commissioner, the Clinton County Road Commission, and the Park Lake Advisory Board to open the Park Lake Nature Trail. In March of 2023, after a public meeting held by the BOT on opening the Nature Trail the Township asked the Drain Commissioner for an easement that would allow trail users to cross county property to access the Nature Trail. The Drain Commissioner agreed and sent the easement request to the County legal team. As of January 2024, no action has been taken by the Township to move this forward as they are waiting to review the legal language related to the easement.
- Park Lake Road is the second busiest road in Bath Township and the traffic continues to ignore the speed limit and drive safely. After 4 serious traffic related incidents in 3 months during the winter, the Friends of Park Lake organized a traffic calming campaign. Their conversation and awareness raising has led the Clinton County Road Commission to do engineering work to install 2 crosswalks across the road, one by the beach and one between the boat launch and Wiswasser Park. Friends of Park Lake designed and printed 35 yard signs and placed them in neighbors yards along Park Lake Road. These signs say, 'SLOW DOWN ENJOY THE VIEW.' The signs are felt to be very effective.
- The Friends of Park Lake celebrated the beginning of summer with a Summer Solstice Festival at Wiswasser Park and the boat launch. Hundreds of folks from all age groups came down to the lake for this annual free family friendly event. They also continued to partner with the Tri-County Bike Association and the DALMAC to host their second Family Bike Ride celebrating the wonderful rural roads in the Township. They had a 10-mile ride, a 2-mile ride and a 30-mile ride. All were destinations rides and enjoyed by bikers at every skill level.



Aquatic Plant Management

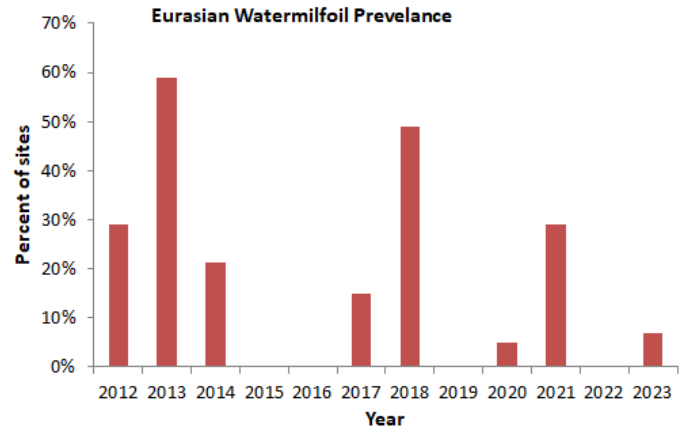
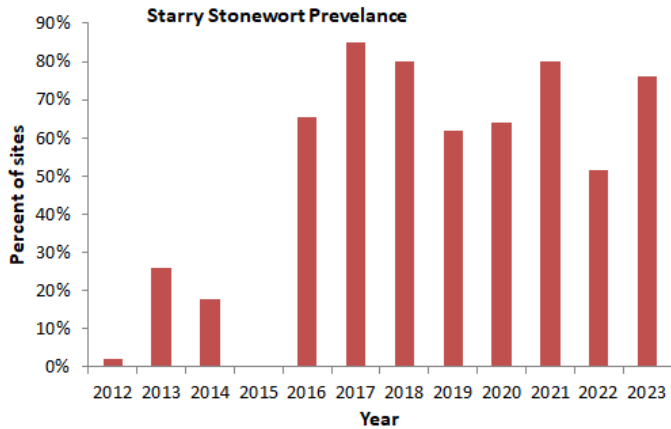
As in past years, the reduction in the abundance of aquatic plants remains a major concern for the management of Park Lake. In addition to exotic species such as Eurasian watermilfoil (*Myriophyllum spicatum*), curly-leaf pondweed (*Potamogeton crispus*) and starry stonewort (*Nitellopsis obtusa*), excessive growth of native species such as eelgrass or wild celery (*Vallisneria spiralis*), water lilies (*Nymphaea* sp. and *Nuphar* sp.) and most recently *Elodea* is problematic. Steve Hanson with PLM Lake & Land Management Corp. provided lake and aquatic plant management services in 2023, 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 2019-2021 with 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. A resurgence was observed in 2021, and the supplier of ProcellaCOR provided for warrantee work on 6 acres in the lake.

Results of plant sampling for 2023 are presented in Appendix D. We note that a new sampling protocol was used starting in 2022 where only two rake tosses were used at each site, instead of the previously used four tosses. This may have slightly lowered the percent occurrence but allowed for a more rapid survey. Among the non-native species, Eurasian water milfoil remained low, occurring in only 7% of sites, indicating that the current treatment program is achieving its goals. We note that the occurrence of hybrids between native milfoil and Eurasian water milfoil can lead to challenges in identification, however. For more information on hybrid milfoil Info on hybrid milfoil see this web site:
<https://www.canr.msu.edu/news/identifying-and-managing-invasive-eurasian-and-hybrid-watermilfoils-in-michigan-lakes>

Prevalence of starry stonewort remained high, with just over 75% of sites containing this species. The prevalence of native plants such as pond weeds (*Potamogeton* and *Najas*) and native milfoil generally remained at similar levels as seen in 2022, albeit a bit lower. This slight reduction in native plant prevalence is potentially related to lower water clarity seen in Secchi disk monitoring.



Background to the Park Lake Advisory Board

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 or virtually during the recent COVID pandemic. 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. An annual history of the roster of the Park Lake Advisory Board is provided in Appendix H.

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 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.

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. Discussions with the local fishery biologist (Addie Dutton) have led to an increase in the stocking rate of channel catfish to improve the size composition of panfish by decreasing their numbers and competition for food by increasing the predation rate on them. Approximately 5,500 juvenile

channel catfish were stocked in 2023, compared to 3,700 that had been stocked previously. 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. Until 2021, the water by the beach was 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.

In 2021, the Mid-Michigan District Health Department began monitoring the beach for E. coli, and unfortunately levels were high enough to trigger a closure of the beach for much of the summer. The likely source of the E. coli is the geese using the beach. The Park Lake Advisory Board recommended pursuing goose control starting in 2022. This strategy was successful as E. coli levels in 2022 and 2023 were much lower than in 2021, and no beach closures were issued.

- 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. Cooperate with the Mid-Michigan Health Department to test water on a regular 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 provide 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 will conduct a study to determine the feasibility of using aeration to combat this problem.

The lake level control structure that was installed in 2014 has increased the average lake level by 1 to 2 feet for much of the year and has expanded the area of the lake. Some lakefront property owners are temporarily experiencing problems with erosion due to the water level returning to a height that it has not been at for many years but was historically. We anticipate that this erosion will diminish as the lakeshore plants adjust to the higher water level and develop new root systems.

Since 2016 the Bath Township Parks and Recreation Committee and the Park Lake Advisory Board has worked on evaluating potential opportunities to provide public access and recreational opportunities on existing township owned properties on the south side of Park Lake. This discussion resulted in the development of a prospectus for creating a non-motorized trail. Public support and input were gathered through a public meeting in May of 2019, and CIP proposals for funding trail development were submitted following this meeting. The goal of trail development is to create a quality recreation experience that also provide an opportunity to educate the residents of the township of the value of the wetlands to Park Lake and on the diverse communities of plants, fish and wildlife occupy this relatively undeveloped area adjacent to the lake.

Objectives for Lake aesthetic quality:

- 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 a nature trail along the south side of the lake.
- 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 near-shore organic sediments to a more sand or gravel texture.
- h. Reduce cattail and purple loosestrife 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.

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 2023 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 is 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 nests readily visible from a kayak tour of the lake edge was conducted in April of 2019-2022. The length of the kayak track was approximately 2 ¾ miles each year. Interestingly, 9 active goose nests or broods have been observed each year (Appendix O).

Objectives for wildlife include:

- 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.

The excessive E. coli levels observed along the beach in 2021 triggered a beach closure for much of the summer. The Park Lake Advisory Board recommended control of geese via egg oiling and dog hazing for 2022. This action proved to be effective, and no beach closures were warranted for 2022 or 2023. Some web sites containing additional information about goose control and management are listed below. It is important to note that goose control outside of the legal hunting season requires special permits.

https://www.michigan.gov/dnr/0,4570,7-350-79136_79608_83071-137162--,00.html

https://www.michigan.gov/dnr/0,8817,7-350-79136_79608_83071_83072_83445_84979-232661--,00.html

https://www.michigan.gov/dnr/0,4570,7-350-79136_79608_97892---,00.html

https://www.michigan.gov/dnr/0,4570,7-350-79136_79608_83071_83072_83445---,00.html

https://www.michigan.gov/documents/dnr/canada_goose_info_circular_646731_7.pdf

DNR Nuisance Wildlife (click on Canada geese): https://www.michigan.gov/dnr/0,4570,7-350-79136_79608_97892---,00.html

Control techniques: https://www.michigan.gov/dnr/0,8817,7-350-79136_79608_83071_83072_83445---,00.html



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 Action Item List Jan 2023

Action Item	Status
Phragmites problem	Evaluate location of problem areas in early summer
Coliform bacteria testing	Rely on Mid-Michigan Health Dept for testing in 2023
Boat ramp parking area renovations	Waiting on start of discussions by BOT
Lake monitoring	Planning on starting in May
Purple Loosestrife control	We will evaluate their effects starting in spring. Do we want to order more
Goose Management	Double check that things are in place for 2023. Consider other provider than Goose Busters (no problem with the company, just hoping to be fiscally responsible)
Nature Trail	

Park Lake Advisory Board Action Item List Jan 2024

Action Item	Status
Phragmites problem	Problem areas identified along berm near Oak Island entrance. Dan noted that the CISMA has new staff, so unlikely they will be up to speed to do anything until fall 2024.
Coliform bacteria testing	Rely on Mid-Michigan Health Dept for testing in 2024.
Lake monitoring	Plan to continue in 2024.
Purple Loosestrife control	Observation by John and Don suggest that the beetles had little to no effect on the loosestrife. We should consider whether it would be prudent to try them again or not.
Goose Management	Karen H. indicated that the township will continue with goose management in 2024.
Nature Trail	Our last report was Karen Hildebrant was awaiting the transfer of property from Clinton County, working with Phil Hanses. Dan will check with her to see if any updates.
Budget Recommendation	Dan sent an e-mail to Karen Hildebrant (with cc to our Board) requesting a total of \$31,500 (as approved at August meeting) for weed and goose management for 2024.
Boat ramp parking area renovations	Waiting on start of discussions by BOT