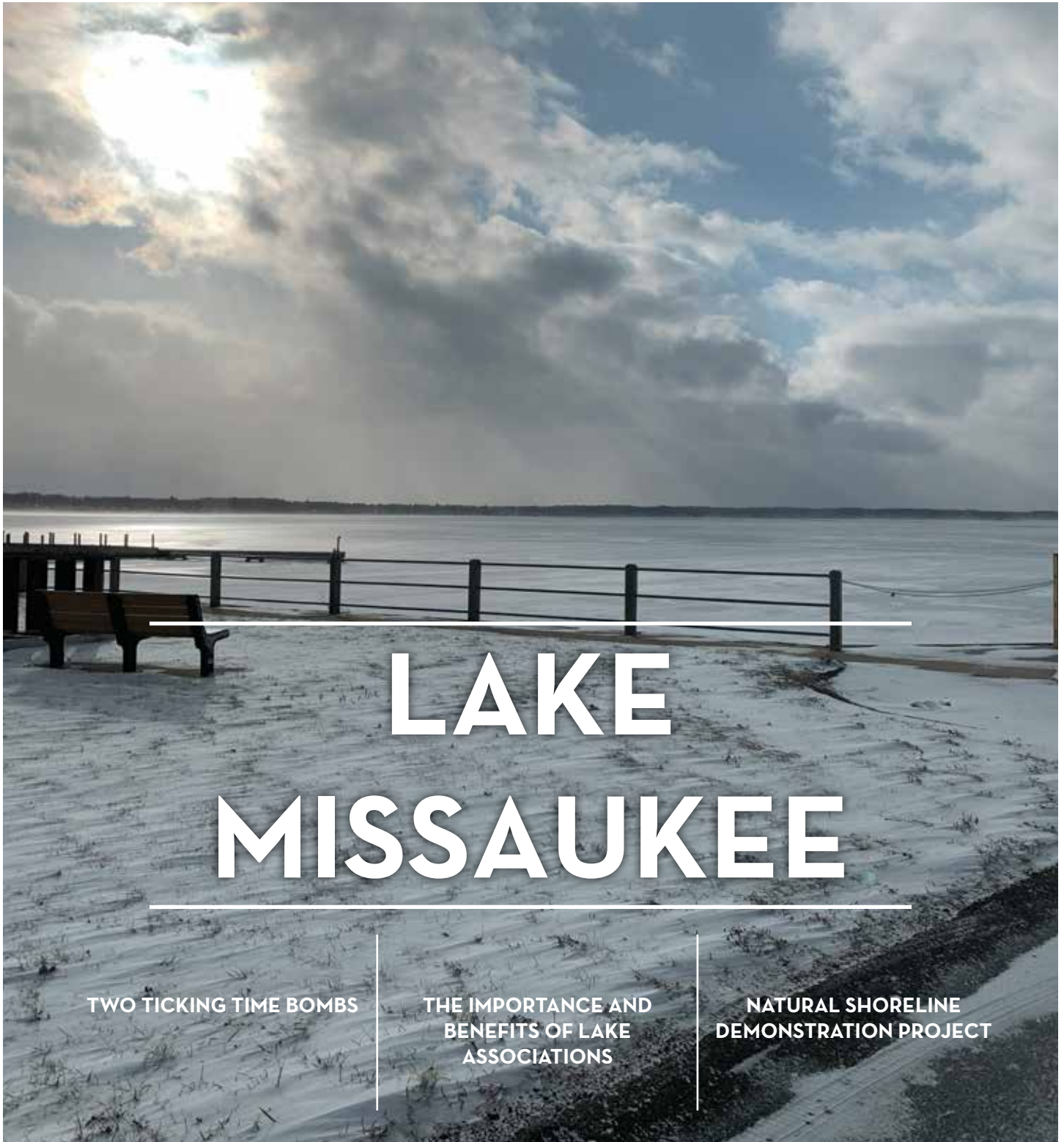


THE MICHIGAN RIPARIAN

WINTER 2021 | VOLUME 56 | NUMBER 1



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TWO TICKING TIME BOMBS

THE IMPORTANCE AND
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ASSOCIATIONS

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DEMONSTRATION PROJECT

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DIRECTOR'S NOTES



We have so much to look forward to this year. The first thing to be excited about and perhaps a reason for reflection, is the celebration of our 60th anniversary. The story of our origin is that in 1961, Dr. Clifford R. Humphrys, Professor of Resource Development at Michigan State University, invited representatives of about 40 lake associations and representatives of state and federal agencies to attend a discussion focused on the issues facing inland lakes. During the discussion it was brought to light that several associations had successfully solved their problems but many had failed. It appeared that the success stories, if publicized, would help other associations and that a state association of lake and stream associations could best meet this need. MLSA was born and here we are today, continuing to bring associations and individual riparians together and providing the support and education they need to protect their waters.

One of the historic programs that we have been involved with for decades is the Michigan Clean Water Corps (MiCorps). The program was not funded during 2020, but we are back with a 5-year contract so the three programs of the MiCorps family will be active again this year; the Cooperative Lakes Monitoring Program (CLMP), the Volunteer Stream Monitoring Program (VSMP), and the Volunteer Stream Clean-up Program (VSCP). We have already started work on our part of MiCorps. Jean Roth will again coordinate volunteers for CLMP and enrollment can be found at micorps.net. We have been so happy to begin work again with the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Michigan State University, and the Huron River Watershed Council on the program. Visit the MiCorps website: micorps.net, and subscribe to the MLSA email newsletter for updates on this program as they come.

Finally, I would like to invite you to join us for our 60th Annual Conference in our 60th year. Given the uncertainty of living during a global pandemic, we will hold our conference virtually for one day on Friday, April 30th. Registration and more information about the event can be found on our website: mymlsa.org. We are diligently planning a fun and engaging event that you won't want to miss. I can't wait to see you there! *R*

Enjoy the water,

MELISSA DESIMONE | MLSA EXECUTIVE DIRECTOR



MLSA is a 501(c)3 non-profit, state-wide organization dedicated to the preservation, protection and wise management of Michigan's vast treasure of inland lakes and streams.

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REINVENTED CLEAN BOATS, CLEAN WATERS PROGRAM ENHANCES BOATER EDUCATION

PAIGE FILICE | MICHIGAN STATE UNIVERSITY EXTENSION



PHOTO CREDIT: TODD MARSEE
MANY INVASIVE AQUATIC PLANTS
INVADE NEW BODIES OF WATER BY
ATTACHING TO BOATS AND TRAILERS.

Since 2006 the Clean Boats, Clean Waters program has been educating Michigan boaters about aquatic invasive species with trained volunteer boat inspectors. New funding from the Michigan Department of Environment, Great Lakes, and Energy, and the Great Lakes

Restoration Initiative has enabled Clean Boats, Clean Waters to grow into a comprehensive aquatic invasive species boater outreach program. While the program may be growing, the mission remains the same: to prevent new aquatic invasive species introductions and limit their dispersal from water recreation activities through outreach and engagement. The reinvented Clean Boats, Clean Waters program promotes understanding of boat cleaning practices and regulations through the distribution of educational materials, an online resource library, boat washing demonstrations, grants, and partnerships.

This was the first year that the program was able to offer \$20,000 worth of grants to organizations interested in protecting Michigan's lakes and streams from aquatic

invasive species using Clean Boats, Clean Waters messaging. The new grant initiative was designed for lake associations, nonprofit organizations, and local and tribal units of government. Grant requests could range from \$1,000 to \$3,000 and could be used for a variety of outreach and education supplies including interpretive signage, educational materials, and invasive species removal tools. The Clean Boats, Clean Waters grant opportunity was noncompetitive and complete applications were funded in the order that they were received until \$20,000 was allocated. Eight organizations received funding for the 2021 boating season through this new initiative.

In addition to providing grants, Clean Boats, Clean Waters is combining forces with the Michigan State University Mobile Boat Wash

outreach program. Since 2015 the Mobile Boat Wash has provided education to boaters about aquatic invasive species in partnership with communities and local organizations alongside the Michigan Department of Environment, Great Lakes, and Energy. The program uses high-pressure washing units with heated water to remove aquatic invasive species from boats and trailers. A containment mat is used to prevent wash water from entering waterways. The Mobile Boat Wash provides a trailer-mounted washing unit, educational materials on aquatic invasive species, and two staff who operate the unit and talk with boaters for free. Local organizations assist mobile boat washing events by coordinating local logistics, promoting the event and speaking with boaters at launch sites. Over

(CONTINUED ON PAGE 8)



THE POPULAR MOBILE BOAT WASH PROGRAM COORDINATED BY MICHIGAN STATE UNIVERSITY AND THE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY IS NOW UNDER THE UMBRELLA OF THE MICHIGAN CLEAN BOATS, CLEAN WATERS PROGRAM.





Join MiCorps to monitor the health of Michigan's lakes and streams

<p><u>Volunteer Stream Monitoring Program</u></p> <ul style="list-style-type: none"> ● Learn to identify aquatic insects in your local stream to determine water quality. Grants available! 	<p><u>Cooperative Lakes Monitoring Program</u></p> <ul style="list-style-type: none"> ● Sample lake water clarity, nutrient levels, temperature/oxygen profile, invasive plants, and assess your shoreline. 	<p><u>Volunteer Stream Clean-up Program</u></p> <ul style="list-style-type: none"> ● Local governments can apply for grants to clean-up tires, trash, and debris in your local stream. 
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ENVIRONMENT, GREAT LAKES, AND ENERGY




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REINVENTED CLEAN BOATS, CLEAN WATERS PROGRAM ENHANCES BOATER EDUCATION

(CONTINUED FROM PAGE 7)



PHOTO CREDIT: ERICK ELGIN

14,000 boaters have interacted with boat wash staff at 300 events across the state. Bringing the Mobile Boat Wash program under the umbrella of Clean Boats, Clean Waters increases the ability for both outreach initiatives to reach new audiences and provides a one-stop shop for resources and activities related to aquatic invasive species prevention for boaters. Due to COVID-19 there were no mobile boat washing events in 2020 and program activities are pending for the 2021 boating season.

Michigan State University Extension is leading the effort to refresh and implement the new Clean Boats, Clean Waters program in cooperation with the Michigan Department of Environment, Great Lakes, and Energy. The reinvented program builds upon existing partnerships with statewide and local partners including the Michigan Lakes and Streams Association, Cooperative Invasive Species Management Areas and lake associations and is actively seeking new opportunities and partnerships to share the clean, drain, dry message. To learn more about Clean Boats, Clean Waters visit micbcw.org. 

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TWO TICKING TIME BOMBS

These involve the potential obliteration of valuable deed restrictions and the “uncapping” of property tax assessments for waterfront properties, prompting large property tax increases for many landowners.

Currently, Michigan law has two matters of relatively recent vintage that are potentially “ticking time bombs” for riparian property owners. These involve the potential obliteration of valuable deed restrictions and the “uncapping” of property tax assessments for waterfront properties, prompting large property tax increases for many landowners.

What is a deed restriction or covenant? It is generally a restriction that runs with the land as to parcels and lots in Michigan. Common deed restrictions limit or prohibit potentially negative items or uses such as trailers, junk, small dwellings, commercial uses in residential areas, the further division of lots or parcels, and the prohibition of certain nuisance pets. There are many other types of deed restrictions as well. Good deed restrictions and covenants are valuable property rights and can protect the neighborhood against blight, nuisances, adverse uses, and certain structures and buildings that will hurt property values.

Now, all deed restrictions in Michigan are endangered due to legislation enacted by the lame-duck Michigan Legislature on December 31, 2018 (and effective on March 29, 2019). That legislation amended the long-standing Michigan Marketable Record Title Act, which is found at MCL 565.101 et seq (the “Act”). The Act attempts to extinguish recorded property rights that are no longer valuable, feasible, or desirable. They are “dead letter” matters. In many cases, the Act extinguishes long forgotten mineral rights, property reverter clauses, and other nominal property rights that people typically are unaware of or do not care about. In the past, the Act generally did not extinguish potentially valuable easements, deed restrictions, or covenants.

Alarming, the 2018 amendments to the Act will automatically extinguish many valuable and important deed restrictions and covenants, as well as certain easements.

Theoretically, it is possible under certain circumstances for interested parties to record affidavits (a “notice of claim”) with the local county register of deeds and records to preserve a threatened deed restriction, covenant, or easement. However, that “preservation process” is ambiguous and may not work in many situations. Furthermore, many valuable deed restrictions, covenants, and easement rights will automatically be extinguished without the benefitting property owners even knowing that the extinguishment will occur.

Many of the valuable deed restrictions, covenants, and easement rights benefit waterfront properties throughout Michigan. If this matter alarms you as a riparian property owner (as it should), please contact your local Michigan Senator or House of Representatives member and urge them to pursue a legislative “fix” for this disastrous 2018 amendatory language.

If your property, neighborhood, condominium association, lake association, or other area has long standing valuable deed restrictions / restrictive covenants and you desire to keep them, the appropriate person or entity should file a formal notice of claim pursuant to MCL 565.103 and 565.105 before the problematic aspect of the amendment to the Act takes effect on March 29, 2021. The content requirements for the written notice of claim are complicated enough that you or your group should use a real estate attorney to assist you.

The second “ticking time bomb” involves the potential uncapping of real property tax assessments for many waterfront properties throughout Michigan that are owned by limited liability companies (often referred to as an “LLC”). Property tax assessments in Michigan determine what the annual property tax bill will be for a particular piece of property. Beginning in 1995, “Proposal A” (approved by

(CONTINUED ON PAGE 10)

TWO TICKING TIME BOMBS

(CONTINUED FROM PAGE 9)

Michigan voters in 1994) limited the annual increase in real property tax assessments for Michigan properties to 5% or the annual rate of inflation, whichever is less. As long as the same landowner owns the land, there is no “uncapping.” However, most sales and transfers of title for real property cause the property to be “uncapped” and to go up to the then-fair market value (with the attendant property taxes increase). Waterfront property has appreciated greatly in value over the last 25 years and, therefore, an “uncapping” can cause the annual real property taxes for a waterfront property to automatically double, triple, or increase even further.


In *Klooster v City of Charlevoix*, 488 Mich 289 (2011), the Michigan Supreme Court held that transferring properties to members of the same family generally does not result in an “uncapping.” The holding in this case was then codified by the Michigan Legislature by putting into the state law this protection against uncapping for transfers within a family. See MCL 211.271 (6) and (7). Also, transferring real property in Michigan to a trust where the beneficiaries are essentially the same family generally does not result in an uncapping pursuant to MCL 211.27a (6) and (7). Accordingly, most estate planning attorneys, tax experts, and others assumed that if waterfront properties are transferred to a new LLC owned by the same family, no uncapping would occur. However, in the Michigan Court of Appeals case of *Scott v South Haven* decided on April 19, 2018, (Case No. 339007; 2018 WL 1881633), the Court held that transfer of real property to an LLC generally does result in an uncapping, even if all of the members of the LLC owned the property before the transfer of the land to the LLC.

Why is this a ticking time bomb? Because so many waterfront property owners have transferred their family lakefront lot or parcel to an LLC over the past few decades, under the assumption that it would not result in a property tax “uncapping.” In fact, many estate planning attorneys and experts, tax planners, and other professionals had recommended LLCs for waterfront property ownership.

A hypothetical example might help to explain the problem. Suppose that you have owned a waterfront property since 1995 (when Proposal A went into effect) and that it is currently assessed by the local municipal

tax assessor at \$100,000. That means that the tax assessor believes that your property is worth \$200,000 on the market because millages and taxes are applied only against ½ of the assessed valuation. And, assume a current millage rate of 30 mills for the municipality involved. A “mill” means that the property is taxed at the rate of \$1.00 per \$1,000 of assessed valuation. Therefore, the current property taxes are \$3,000 per year. However, since 1995, the property has increased dramatically in valuation and is now worth \$600,000. Without the Proposal A “cap,” the property tax assessment would be \$300,000 and the annual property taxes would be \$9,000. So, if you move the title of the property into an LLC, the Proposal A “cap” would come off of the property tax assessment and the annual assessment and taxes would triple from \$3,000 a year to \$9,000 per year! That is, of course, a huge difference.

Although these two issues may seem esoteric, they are very important for many of the owners of lakefront property throughout Michigan. Again, if a riparian property owner feels strongly about this matter, he or she should contact their local Michigan Senator or House member. Of course, municipalities would likely oppose a legislative fix, as local property tax revenues would not rise as quickly because uncappings would occur with less frequency.

You may have noticed that *The Michigan Riparian* magazine has a new and current photograph of me. After 25 years, it was time! 



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NATURAL SHORELINE DEMONSTRATION PROJECT

A Conservation District and Lake Association Partnership

BARRY CONSERVATION DISTRICT



The Barry Conservation District is pleased to announce a new lake monitoring and natural shoreline demonstration project in partnership with the Greater Wall Lake Association (GWLA). In May of 2020, the Midwest Glacial Lakes Partnership awarded a grant to Barry Conservation District to assess habitat availability for cool- and cold-water fishes and provide lake conservation education and outreach around Big Cedar, Little Cedar, and Wall Lakes in Barry County.

COOL- AND COLD-WATER FISH HABITAT ASSESSMENT

The habitat assessment portion of the project will focus on dissolved oxygen and temperature (collectively known as “oxythermal habitat”) throughout the year. The main species of interest on the Cedar Lakes is inland lakes Cisco, whereas on Wall Lake it is Walleye.

The DNR and Michigan Department of Environment, Great Lakes, and Energy (EGLE) are prioritizing the protection of high-quality cool- and cold-water habitats against warming water temperatures, eutrophication, and other threats. Often, these lakes support populations of Cisco, which are a threatened species in Michigan and a priority in the state’s Wildlife Action Plan. Cisco occupy lakes with some of the highest water

quality in the state and their decline can indicate water quality degradation and negative effects of climate change. Furthermore, Cisco support recreational fishing themselves in addition to serving as forage for trophy Northern Pike, Walleye, and other apex predatory fishes.

This assessment work complements work being done by the Pierce Cedar Creek Institute (PCCI) to assess the coldwater fishery and lake health in the Cedar Creek watershed. The Barry Conservation District has also recently received funding for best management practice implementation in the larger Thornapple River Watershed and this project will help to better inform what practices may be needed and where.

NATURAL SHORELINES

We are also very excited to be working with the GWLA to install a natural shoreline demonstration site on Wall Lake. What are natural shorelines and why are they important? Did you know that at least 50% of Michigan lakes are shown to have poor nearshore habitat? Healthy shoreline habitat includes native trees, shrubs, and smaller plants like forbs and grasses to provide habitat and protect shorelines from eroding. However, it is more common along populated lakes to see a row of manicured lawns and seawalls along the shore. Seawalls are generally hard structures such as concrete or steel that are used to stop erosion, but they lack natural vegetation. Some issues with seawalls include expedited erosion, barriers to wildlife, and habitat loss due to scouring of the lake bottom. A healthier alternative to turfgrass and seawalls is natural shorelines.



The native vegetation of natural shorelines provides many benefits such as absorbing and filtering runoff and holding soil in place to prevent erosion. Reducing erosion and runoff obviously protects the environment and water quality, but it also protects your shoreline and your property value. Keeping things natural along our shorelines helps protect the water quality in our lakes. Vegetated shorelines will help protect and enhance water quality by slowing and filtering runoff. This can result in lower turbidity (less sediment), less frequent algae blooms, and fewer issues with E. coli at your favorite swimming spots. Natural shorelines provide critical habitat for many of Michigan's native species. Over 200 species of amphibians, reptiles, fish, birds, and mammals as well as countless native plants depend on shoreline habitat along inland lakes.

(CONTINUED ON PAGE 14)





NATURAL SHORELINE DEMONSTRATION PROJECT

(CONTINUED FROM PAGE 13)

Natural shorelines can also help with geese that love to congregate on manicured lawns and tend to leave behind a big mess for the homeowner. Manicured lawns provide wonderful grazing grounds for geese and are inviting places to nest and raise young because there are no places for predators to hide. While natural shorelines with taller native plants may not completely stop geese from accessing your yard, they will tend to choose the easier path and congregate on lawns without natural shorelines.

Shorelines consist of four different zones and it is important to choose the right plants for each zone. A natural shoreline planting typically includes work in more than one of these zones. The first zone is below the water level. These plants will be rooted and growing within the lake. For this zone choose native plants deemed “floating,” “aquatic,” or “emergent,” depending on if they grow in the water or above the surface. The second zone is between the water level and the ordinary high-water mark (OHWM). These plants like to have wet roots, but they don’t like to grow in water year-round. They can generally handle seasonal flooding and will be able to stand up to some waves and ice. Zone three is above the OHWM. These plants can handle limited flooding but need to have very moist soils to thrive. This area occurs a little further up the shore from the lake

edge. Fourth is the upland zone. Plants in this area like mesic soils, which are drier than moist soils. Although not on the shoreline, native plants in the upland are important as a first line of defense against erosion and runoff headed for the lake. Upland habitat is also very beneficial for a wide array of wildlife.

When choosing plants for a natural shoreline, go native! Native plants are not only better for wildlife, they tend to have better root structures to anchor the shoreline soil and they will be more adapted to handling the conditions along shorelines such as fluctuating water levels. Be sure to research plants before you buy them. Many harmful aquatic and shoreline plants are still available for purchase. Please do not plant known invasive species- yellow floating heart, water lettuce, frogbit, phragmites, water hyacinth, and others. When in doubt, native plants are the safest and most beneficial choice.

In some cases, it may not be feasible to rip out a seawall and jump right into native plants. This is especially true with the waves caused by boats on many inland lakes. That’s where a cross between harder yet more natural structures come in. This is called bioengineering. Two of the more common methods of bioengineering on natural shorelines

are rock riprap and plant fiber rolls or bundles called coir logs. These materials are generally placed along the shoreline and coincide with native plantings to give the shoreline an added level of protection.

ABOUT BARRY CONSERVATION DISTRICT

Our roots may be in the soil, but we have grown to be much more over the years!

Formed in 1944, the Barry County Soil Conservation District helped farmers address their most pressing conservation issues following one of farming's toughest times - the Dust Bowl. The District's collaboration with the USDA's Natural Resources Conservation Service (NRCS) empowered local farmers to implement soil conservation practices through cost-share programs, working to reverse a century's worth of unsustainable farming practices.

Over the years our work has evolved along with our name. "Barry County Soil Conservation District" was shortened to "Barry Conservation District" in the late 1990s to reflect that the District now works on a greater diversity of conservation issues; a change which can be seen in our programs today.

We still work with NRCS on sustainable farm practices for soil and water quality, but we also have partnerships with a variety of other agencies and non-profit groups to provide resource conservation assistance to non-farm landowners.



Some additional areas we work in now include forest, grassland, and wetland management, species of greatest need conservation, invasive species mitigation, and outdoor recreation promotion. *R.*

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LAKE MISSAUKEE

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ANN GUIDARINI AND MIMI ZWOLAK | MISSAUKEE LAKE ASSOCIATION BOARD MEMBERS

No matter the season, visitors and residents flock to Lake Missaukee to enjoy its many splendors. As the year begins and the lake presents as a frozen tundra, it is soon dotted with ice fishermen whose on-the-spot fish cleaning invites bald eagles to a ready-made feast. Snowmobiles circle the lake enroute to trails and adventure. On sunny days, walkers, skaters, and cross-country skiers may take advantage of the vast expanse of solid ice. When spring arrives, no sooner does the lake thaw than docks and boats reappear. As the melting ice opens up, buffleheads and mallards and geese lead the way into the water. Summer is the glory season for Lake Missaukee. Warm

waters invite swimmers of all ages. Calm mornings beckon to fishermen and kayakers who are soon joined by pleasure boats and water sports enthusiasts. Evening sunsets paint the water and invite everyone to stop and appreciate the beauty. Visitors that come for events such as Lake City's Greatest Fourth in the North return again and again for the small town fun and all that Lake Missaukee has to offer. When fall arrives and the town prepares for the Festival of the Pines and the arrival of the hunters, the lake dresses up in a circle of red, orange, and yellow, bidding farewell to the boats and preparing for the cycle to begin again.

Lake Missaukee is approximately 1,880 acres in size. The southern and eastern shorelines are sandy and highly populated by both summer and year-round residents. The western shoreline is mostly undeveloped and is an ecologically sensitive area of the lake consisting of gravelly silts and clays and is largely populated by wildlife attracted to the wetlands and woodlands. The lake was formed from glacial outwash from the late Wisconsin Glacier nearly 14,000 years ago. Nearly half of Lake Missaukee has a depth of ten feet or less. The deepest portions of the lake occur in the eastern and southeastern portions, with a maximum depth of 27 feet. Lake Township surrounds



almost three quarters of the lake with Lake City making up the majority of the rest. Caldwell and Reeder Townships both touch the lake at the northeast and southeast corners.

WHO LOOKS OUT FOR THE LAKE?

While the natural beauty and charm of Lake Missaukee would appear to be self-sustaining, in reality there are many facets to its continued health. Numerous individuals and groups keep a vigilant eye on the lake – both above and below the surface. Lake Missaukee is fortunate to have three groups working in concert to protect this natural resource. Area lake residents come together to

support the health of the lake via the Missaukee Lake Association, a voluntary dues organization. Missaukee, like its neighboring lakes (Crooked Lake and Sapphire Lake), has a Lake Improvement Board. The three lakes combine forces for additional support by way of the Lake Enhancement Committee that was formed and is supported by Lake Township. Additionally, new focus on the growth of Lake City has generated a City Master Plan document that looks not only at the economics of city development, but also the need to protect the very thing that makes Lake City special – the lake!

MISSAUKEE LAKE ASSOCIATION (MLA)

The first of the three lake-focused groups to be formed was the Missaukee Lake Association (lakemissaukee.org). The MLA was formed in the fall of 1997. It is a nonprofit voluntary dues organization incorporated under the laws of the State of Michigan. Membership comes from property owners and other interested parties surrounding the lake. Membership hovers around 100. The purpose of the MLA is to promote and protect the environmental integrity of the lake through education, safety and quality initiatives, and public awareness.

(CONTINUED ON PAGE 18)



LAKE MISSAUKEE

(CONTINUED FROM PAGE 17)

The focus of the MLA is on the global issues impacting the lake: water quality, wetland protection, weed control, environmental protection, and safety. Included in the \$25 membership fee is a subscription to *The Michigan Riparian* magazine, an annual newsletter, several email updates through the year, and a very successful Garage Sale by Email program where members can buy and sell items. Members help staff the landing blitz at the two main boat launches on the lake and a member hosted two biologists last summer who were sampling area lakes for a

Swimmer's Itch study being done by the Raffel Parasitology Lab of Oakland University. The MLA coordinates the water quality testing done by PLM Lake & Land Management three times a year.

LAKE MISSAUKEE IMPROVEMENT BOARD

The Lake Missaukee Improvement Board (LMIB) was formed at the end of 2004 at the urging of the MLA, when the MLA was informed that the Eurasian watermilfoil that was being treated in the county boat launch had spread to the main body of the

lake. The MLA had been paying for the treatment in the boat launch area for several years but the scope of the problem was now beyond the authority and resources of the MLA. A Special Assessment District (SAD) was created. The SAD funding provides consecutive five-year treatment programs to continually combat invasive species in Lake Missaukee. In Lake Missaukee, this program is focused on all invasive species, but particularly the Eurasian watermilfoil. The Improvement Board contracts with Progressive AE to survey the lake three times a year,



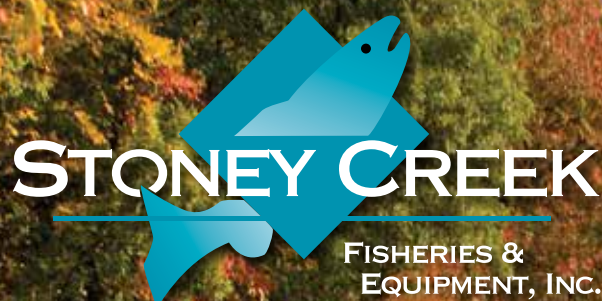
in early spring, July, and September. The results of the survey provide guidance for treatment by PLM Lake and Land Management. Lake Missaukee's neighboring lakes, Crooked and Sapphire, are also engaged in programs to combat invasive species.

LAKE TOWNSHIP'S LAKE ENHANCEMENT COMMITTEE (LEC)

Missaukee, Crooked, and Sapphire Lakes joined forces via the Lake Enhancement Committee (LEC) to protect fish and wildlife, keep lake water clean, protect the rural "up-north" environment, ensure that opportunities for fishing, boating, and swimming exist for current and future generations, and to use science and education to assist the local government in making sound decisions related to the lakes and their use. This committee was established by Lake Township in 2016 and funded with a budget of \$50,000, signifying the township's commitment to area waters and making significant contributions to the health of the lake environment. The MLA had been paying for water quality testing since 1997, but in 2016 the LEC started reimbursing them for the testing. The group also provided maps and signage at boat launch areas and "Clean, Drain, Dry" stencils at the most-used boat launches on all three lakes. Local residents were mobilized to provide an Aquatic Invasive Species landing blitz to educate boaters on a yearly basis. The LEC has also placed fish habitat structures beneath the surface and works with the DNR on fish planting programs. The LEC is conducting a drone survey of the shorelines on all three lakes which will help provide consultation on best practices for possible lake-friendly local ordinances.

(CONTINUED ON PAGE 20)

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LAKE MISSAUKEE

(CONTINUED FROM PAGE 19)



Each of these groups – the Missaukee Lake Association, the Lake Missaukee Improvement Board, and the Lake Enhancement Committee – has a role to play in maintaining the waters that fuel the local economy and delight residents and visitors alike.

AREAS OF CONCERN

With coordinated efforts, Lake Missaukee has advocates looking out for threats and hazards to its wellness. The most recent water quality results show that conditions remain good for fish growth. Testing revealed minimum dissolved oxygen allowing for adequate fish production, pH levels within acceptable limits, and total phosphorus levels on the watch list for future testing. Phosphorus is a nutrient of concern because even small amounts can cause excessive plant and algae growth. Additionally, bacteria testing for E-coli revealed safe levels for swimming in each of the three areas sampled. Water quality maintenance is an education touch point for all lake residents who are encouraged to minimize the damaging effects of fertilizers, storm runoff, yard waste, shoreline erosion, ash from campfires, animal waste, pesticides, oil and gas from motorized watercraft, and salt.

Another threat to Lake Missaukee comes in the form of wake surf or ballast boats. Educating boaters and residents



about the damaging effects of deep wakes and the resulting waves is a growing priority for lake stewards. Concern about danger to people on small watercraft, damage to natural vegetation in a shallow lake such as Missaukee, as well as damage to natural shorelines and seawalls drives the need to continue to inform recreational boaters about appropriate boating choices on inland lakes the size and depth of Lake Missaukee. This issue has captured the attention of state legislators and lake communities across the state. The LEC has added depth signage in an effort to protect the shallows of the lake and is considering the additional step of offering boaters small depth maps to have onboard when enjoying a day of lake recreation.

(CONTINUED ON PAGE 22)

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LAKE MISSAUKEE


(CONTINUED FROM PAGE 20)

THE FUTURE OF LAKE MISSAUKEE

While it may seem that threats to the pristine waters of Lake Missaukee abound, it continues to thrive. With the oversight of three local groups that mesh their efforts for effective and efficient stewardship, as well as support from farther afield by way of the Michigan Lakes & Streams Association and concerned legislators, Lake Missaukee is well positioned to provide beauty and enjoyment for years to come. *R*




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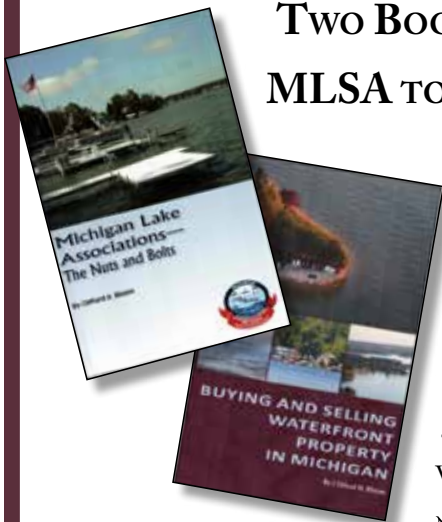
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Outside of our MLSA family, there are quite a few local resources you can develop relationships with to foster collaboration. I encourage you to attend monthly township meetings to keep your association up to speed on local development or zoning changes. Another great resource is your conservation district. Each county has one and as you will read in this issue, they can be a great partner. Don't forget your Cooperative Invasive Species Management Area (CISMA), as these groups often have a budget and strike team to help control invasive species in your area. I would also recommend reaching out to your local DNR fisheries biologist. They are a wealth of information and truly interested in the health of your lake. Finally, don't forget that your water is part of a greater watershed. Check out what your local watershed council is doing and read the watershed management plan. Speaking of watersheds, you can also reach out to the local drain commissioner with questions or concerns about the flow of water in your area.

Need help connecting with any of these groups? Let me know and I will be happy to point you in the right direction. *R.*


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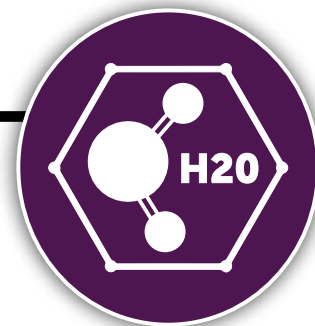
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WHAT TYPE OF FISH CAN YOUR LAKE SUPPORT?

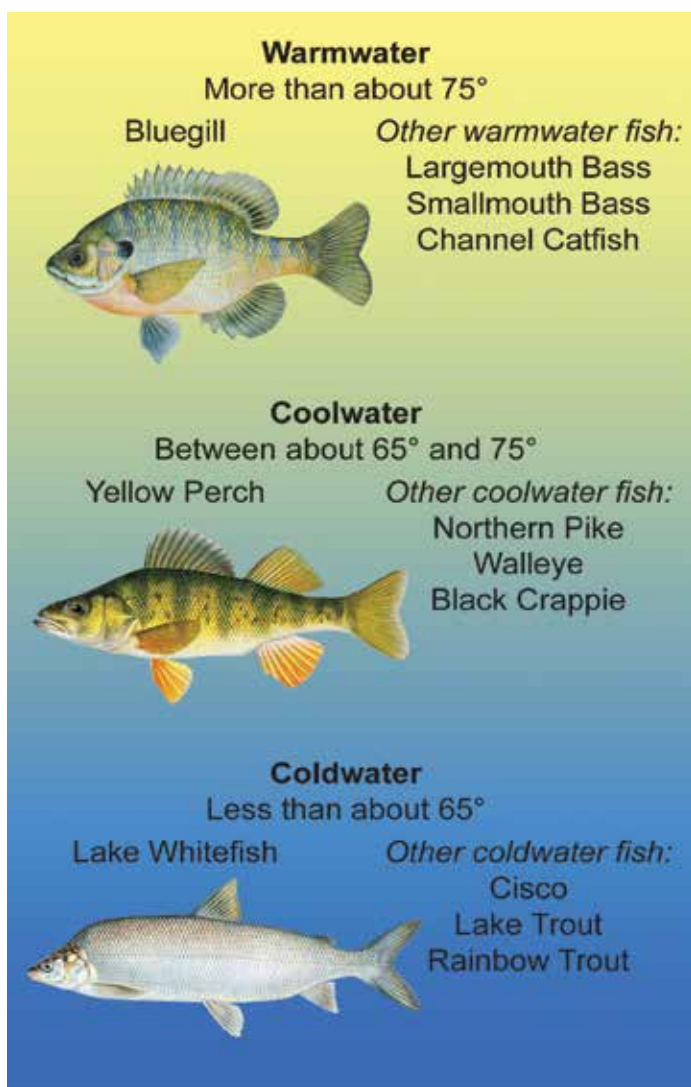
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The type of fish your lake can support depends on several factors. Temperature, dissolved oxygen, depth, and lake productivity (the ability to support plant and animal life) can all influence whether certain fish species can thrive in a lake. This article examines some of these factors.

TEMPERATURE AND STRATIFICATION

Fish can be categorized by their summer temperature preferences, including warmwater, coolwater, and coldwater species (Figure 1).



Within a lake, especially in deep lakes, temperature can vary greatly from top to bottom, and different fish species inhabit different temperature zones.

Deeper lakes form temperature layers. As the ice cover breaks up in the spring, the water temperature becomes uniform from the surface to the bottom. This period is referred to as spring turnover because water mixes throughout the entire water column. As the surface waters warm, they are underlain by a colder, denser layer of water. This process is called temperature or thermal stratification. During summer there are three distinct layers. This is referred to as summer stratification. Once thermal stratification occurs, there is little mixing of the warm surface waters with the cold bottom waters. The transition layer that separates these layers is referred to as the thermocline. The thermocline is characterized as the zone where temperature drops rapidly with depth. As shown in Figure 2, warmwater fish tend to be found in the warm upper layer; cool- and coldwater fish prefer deeper waters where temperatures are cooler. As fall approaches, the warm surface waters begin to cool and become denser. Eventually, the surface temperature drops to a point that allows the lake to undergo complete mixing. This period is referred to as fall turnover. As the season progresses and ice begins to form on the lake, the lake stratifies again. However, during winter stratification, the surface waters (at or near 32°F) are underlain by slightly warmer water (about 39°F). This is sometimes referred to as inverse stratification and occurs because water is most dense at a temperature of about 39°F. As the lake ice melts in the spring, these stratification cycles are repeated. Stratification cycles do not occur in shallow lakes or may occur intermittently.

DISSOLVED OXYGEN

An important factor influencing fish is the quantity of dissolved oxygen in the water column. An oxygen level of about 5 parts per million is required to support warmwater

Figure 1. Cold-, cool-, and warmwater temperature ranges, and examples of fish species that prefer each range. Fish illustrations © Joseph R. Tomelleri (9537).

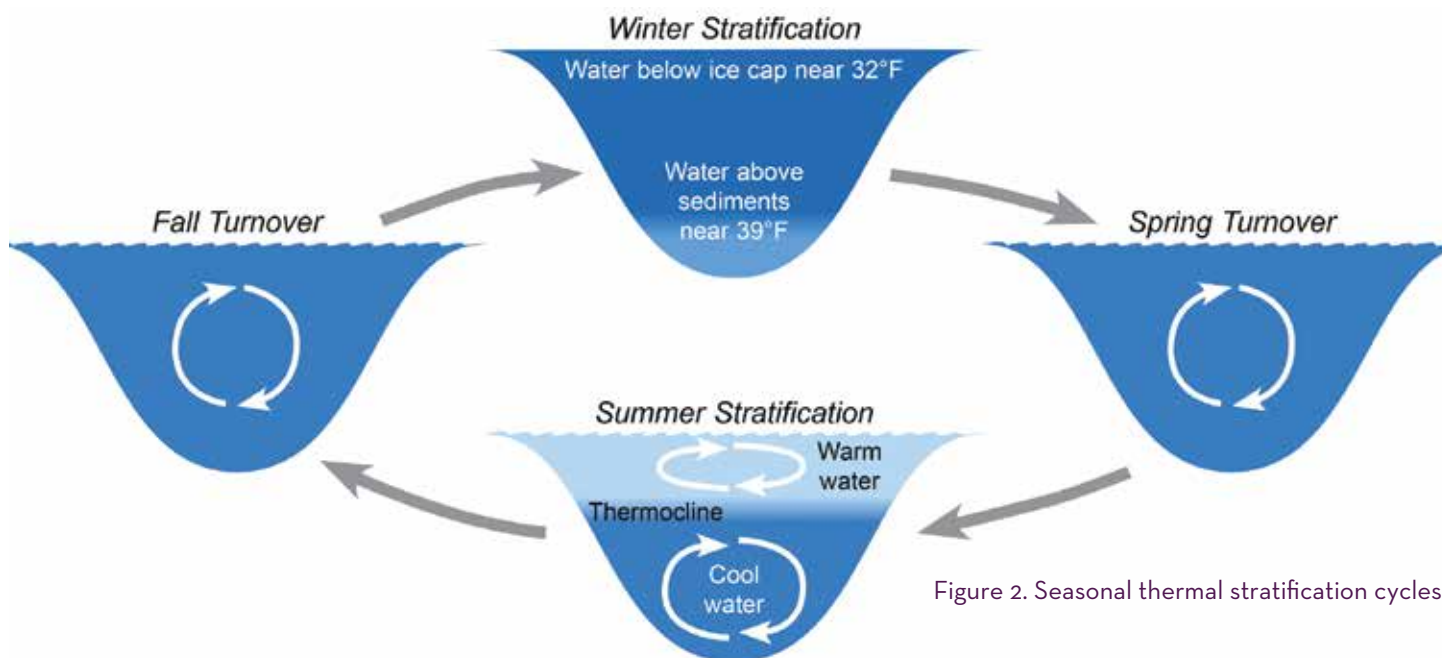


Figure 2. Seasonal thermal stratification cycles.

fish while coldwater fish require 6 to 7 parts per million. In general, cold water can hold more dissolved oxygen than warm water. The major inputs of dissolved oxygen to lakes are the atmosphere and photosynthetic activity by aquatic plants. In lakes deep enough to thermally stratify, oxygen levels are often reduced or depleted below the thermocline once the lake has stratified. This is because deep water is cut off from plant photosynthesis and the atmosphere, and oxygen is consumed by bacteria that use oxygen as they decompose organic matter (plant and animal remains) at the bottom of the lake. In nutrient-poor (oligotrophic) lakes, the cool, deep waters below the thermocline contain ample dissolved oxygen to support coldwater fish. However, in mesotrophic (moderately-enriched) lakes and eutrophic (highly nutrient-enriched) lakes, bottom-water oxygen depletion during summer is a common occurrence. These lakes lack a cold-water refuge for fish in summer. Thus, while warmwater fish can thrive in mesotrophic and eutrophic lakes, these lakes are not suitable for coldwater fish.

Houghton and Higgins Lakes provide a good illustration of how temperature and dissolved oxygen can impact fish. Located side-by-side in the north-central Lower Peninsula, these lakes are dramatically different. With a surface area over 20,000 acres, Houghton Lake is Michigan's largest inland lake by surface area, but has a maximum depth of only about 20 feet and an average depth of about 8 feet. By contrast, Higgins Lake has a surface area of nearly 10,000 acres, a maximum depth of 135 feet and a mean depth of about 44 feet. But the differences don't stop there.

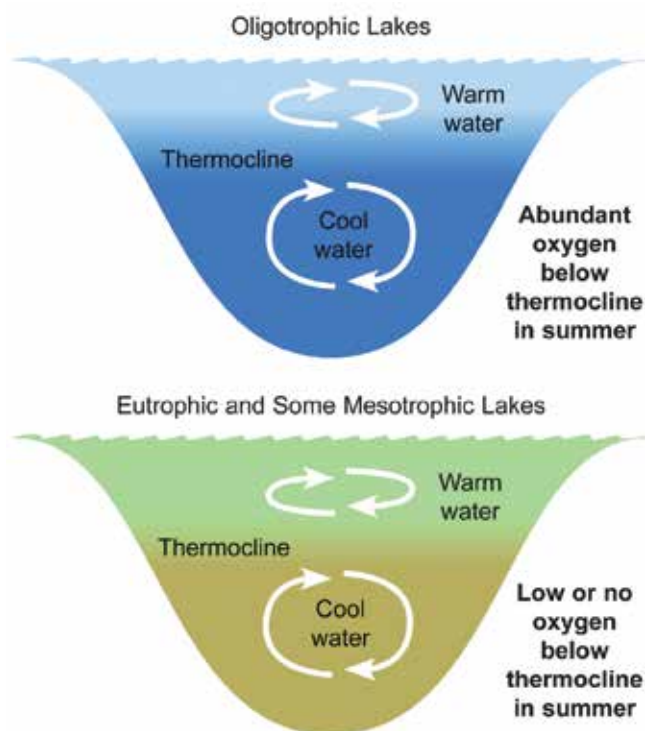


Figure 3. The relationship between trophic state and dissolved oxygen concentration.

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WHAT TYPE OF FISH CAN YOUR LAKE SUPPORT?

(CONTINUED FROM PAGE 25)

Houghton Lake is eutrophic with abundant aquatic plant growth. Because of its shallow depth, the lake rarely stratifies. During the summer months, it is generally warm and well-oxygenated from the surface to the bottom. Higgins Lake is oligotrophic with sparse aquatic plant growth. The lake is well-oxygenated from the surface to the deep waters during summer stratification. The cold, deep bottom waters in Higgins Lake provide excellent habitat for coldwater fish, and the lake supports both whitefish and trout. On the other hand, Houghton Lake is too warm during the summer to sustain trout, but the lake has good habitat for warm- and coolwater fish. Sunfish, bass, perch, crappie, northern pike and walleye are all found in the lake. If you are fishing for

trout, Higgins Lake would be your choice. But if you are after warmwater and coolwater fish, you may have better luck fishing Houghton Lake.

THE THERMOCLINE

The impacts of temperature and dissolved oxygen are often evident at the thermocline. In mesotrophic and eutrophic lakes during summer, coolwater fish such as pike and walleye will often suspend at or near the thermocline, where the water is cool and oxygenated. During prolonged periods of extremely hot, calm weather, dissolved oxygen decreases as lake waters warm. Coolwater fish can become stressed as shallow waters become too warm and deeper cooler waters lack oxygen. In extreme cases, a “summer kill” can occur. Pike and perch in particular are susceptible to these occurrences.

A highly prized coolwater fish, walleye are often chosen for stocking, but there are a couple things to consider. First, lakes that do not have natural populations of walleye often lack suitable spawning substrate—walleye need cool water and a rocky bottom to spawn successfully. In lakes lacking good spawning areas, walleye will not reproduce and will need to be constantly restocked to sustain the population. Another consideration is that walleye need a cool water refuge during the summer and, like pike, often suspend near the thermocline during the warm summer months. Stocking walleye could stress existing fish populations and disrupt the natural balance in the lake. In addition, walleye are considered a top predator; stocking the fish may disrupt normal predator-prey interactions to the detriment of native predator fish such as bass. A fisheries biologist should be consulted before arbitrarily stocking walleye.

CLIMATE CHANGE

The potential impacts of climate change on fish populations are beginning to emerge. These impacts are both subtle and profound. In some lakes, cool- and coldwater fish may well be extirpated. In the Great Lakes, climate scientists anticipate changes in both fish species abundance and distribution.

In a recent study of Wisconsin Lakes (Hansen et al. 2017), researchers noted that climate change may result in an increase in the range of warmwater fish such as largemouth bass and a concurrent decrease in coolwater species such as

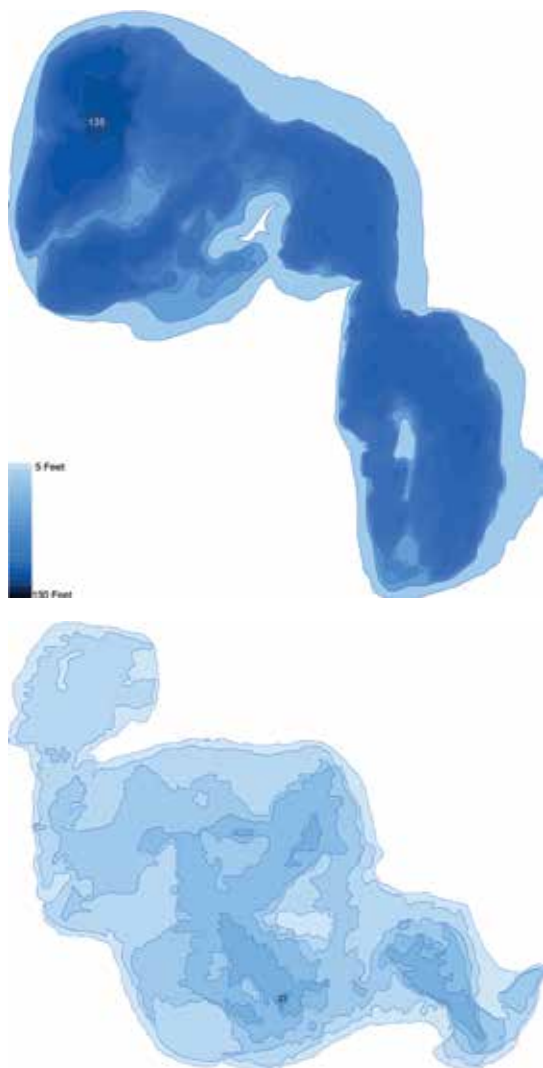


Figure 4. Depth contour maps of Higgins Lake (top) and Houghton Lake (bottom).

walleye. Given the variability in lake types, the impacts of climate change will likely vary with some lakes being more resistant to climate-influenced changes than others. The authors concluded that “Climate change undoubtedly will influence the species composition of temperate lakes, with many lakes becoming more suitable for warmwater species and less suitable for cool- and coldwater species.”

Climate change appears to be impacting the freeze and thaw cycles in lakes by causing later dates of ice freeze-up and earlier dates of ice break-up (Vincent 2009). For nearly 100 years, freeze and thaw cycles on Gull Lake in Barry and Kalamazoo Counties have been monitored. During that timeframe, the duration of ice cover has decreased on average by about 20 days (Gull Lake Quality Organization). The data for Gull Lake are consistent with other mid-western lakes where long-term ice cover records are available. It is not clear how reduced ice cover will impact fisheries, but in some lakes reduced ice cover may reduce the occurrence of “winter kill” caused by dissolved oxygen depletion during periods of prolonged ice cover (Vincent 2009).

Scientists anticipate climate change will impact natural precipitation and evaporation rates, temperature and

stratification cycles, dissolved oxygen levels, and increase watershed runoff which, in turn, may accelerate lake eutrophication (Vincent 2009, Stoddard et al. 2016). Various government agencies and the scientific community are working to develop long-term management strategies to address these threats.

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THE IMPORTANCE AND BENEFITS OF LAKE ASSOCIATIONS

DR. JENNIFER L. JERMALOWICZ-JONES | SCIENCE ADVISOR, MLSA

IMPORTANCE OF LAKE ASSOCIATIONS

In 2006, a large problem was forming in Round Lake, Mason County, Michigan. The 571-acre lake with a mean depth of less than 5.0 feet and a maximum depth of 11.0 feet was showing signs of distress. A large, 385-acre patch of topped-out invasive Eurasian watermilfoil was covering much of the lake and residents could not use the lake for usual recreational activities. Since no lake association was created and there was no structure in place to address this issue, the problem continued to worsen and eventually a lake association and lake board was formed to heal the lake. If there had been a lake association in place, the problem would have been noted much sooner and the associated scope and costs would have been substantially reduced. This example highlights the need for coherent, functional groups that we refer to as lake associations in an effort to diagnose lake problems and connect with pertinent parties for immediate and long-term solutions. The Merriam-Webster dictionary defines an “association” as: “an organization of persons having a common interest”. In the case of lake associations, the interest is quite defined as riparians coming together for the betterment of their lakes. Given that all lakes are vulnerable to invasive species and other issues, it is critical that some structure be in place

for most of them to prevent wide-spread infestations or continued degradation of water quality.

BENEFITS OF LAKE ASSOCIATIONS

As the preface illustrates, the importance of a lake association relative to lake protection is quite clear. A lake association has numerous benefits for lake protection:

1 Provides structure to the local riparian community. A lake association will usually have a defined membership of people and some of them will execute association leadership duties such as president, vice-president, secretary, treasurer, etc. Lake associations provide a coherent boundary for the riparian community where all are welcome to join in efforts to protect the lake. Most lake associations require some funding sources to operate and funds typically originate from annual member dues and fundraisers. In most areas, membership in a lake association is not mandatory, but it does provide “seed resources” to begin caring for a lake. In doing so, relationships are formed between riparians who share a common interest. Without the lake resource present, such bonds among riparians may not be as readily formed and a common interest would likely be more elusive. Thus, a lake association may serve

as a boundary for the riparian community as it provides definition to the immediate area of lake owners and their purpose relative to lake interest and protection.

2 Increases social capital of the riparian community. Social capital refers to the interactions between riparians around the lake and also between different riparian groups. Examples of activities that enhance social capital include boat parades, fundraisers, poker runs, firework festivals, golf outings, and other social events. There are two key types of social capital: bridging and bonding social capital. Bonding social capital is the form that bonds a network of people. Bridging social capital is the form of social capital that brings people from different groups together to enhance the variety of backgrounds and experiences. Both forms of capital have been shown to predict community action (Agnitsch et al., 2006). In this context, a lake association may have a defined membership that interacts well with one another but also with other local or even distant lake associations or other relevant groups. Such capital is often noted at annual MLSA conferences where a multitude of lake associations meet to share lake issues and enhance the learning experiences.

3 Increases human and cultural capital of the riparian community. Human capital refers to the knowledge, education, training, intelligence, energy, work habits, trustworthiness, and experience garnered by individuals (Frank and Bemanke, 2007). This often includes a broad diversity of backgrounds that can provide many different views relative to lake issues and helps produce a factual and economic value to a community (Sheffrin, 2003). Cultural capital refers to the behaviors and attitudes of individuals and plays a strong role in the progression of lake improvements. Both forms of these capitals are complementary and important for driving positive changes such as the implementation of best management practices (BMPs) which are critical for improving the water quality and health of our inland lakes. This area of research is ongoing and may hopefully provide some insight into riparian communities for optimum function relative to lake protection.

4 Develops collaboration between the association and local municipalities. This can involve creation of a special assessment district (SAD) to fund lake improvement projects. Many municipalities have numerous responsibilities in protecting their areas through providing amenities and resources to the local population. This may include cities, villages, townships, etc. Their

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THE IMPORTANCE AND BENEFITS OF LAKE ASSOCIATIONS

(CONTINUED FROM PAGE 29)

primary function is to fund improvements in the area while learning about unique resources which would include many forms of capital resources and inland lakes and waterways. The knowledge needed for this understanding can come from outside experts and through lake associations that may work with experts and use their own human capital to build community resources. A lake association is most concerned about the lake and its health and utilization, and thus communication between the association and the municipality is important for financial support and long-term planning. Most often, municipalities alone do not have the time or resources to adequately care for our inland lakes. They rely heavily on coherent organizations such as lake associations for direction, information, and actions so that their efforts lead to successful outcomes.

5 Enhances natural capital through participation in lake management. Natural capital consists of parks and natural resources such as waterways and lakes. Most of these areas are commons that are utilized by a diverse populace. When the quality of natural capital declines, parties dependent upon those resources have a lower degree of use and enjoyment from those resources. The protection of lakes is critical for current riparians and also future generations as well as the life that thrives in these ecosystems. Ecosystem services are those products that are provided by natural capital such as lakes. Lakes may provide riparian communities and outsiders with potable water, fish, recreational capacities, property values, and vistas to name a few assets. Since these “services” are provided by nature, it is crucial for humans to protect the resource to assure that the lake continues to provide benefits to the community. Natural capital will not have the same level of meaning if it does not have satisfactory or better characteristics that provide tangible benefits. Management of lake resources often requires scientific expertise, teamwork, and financial resources—all of which are often needed for long periods of time.

CONCLUSIONS


Due to their structure and functions they provide, lake associations are a necessary component for community action and lake protection. Although there are hundreds of lake associations in Michigan alone, and likely several thousand in the U.S., there is a pressing need for advisement

of loosely organized riparian groups towards the development of a formal lake association. The importance of lake associations cannot be overstated as they are critical structure for necessary lake protection and improvement decision-making. Many lakes have suffered from invasive species infestations or pollution before lake associations were formed, often leading to increased costs of mitigation once a funding program is in place.

The benefits of lake associations are numerous and include enhancing the natural capital through the use and enrichment of human and cultural capital resources. These resources enrich not only the management outcomes for lake issues but also the connections among and between riparians around each lake. Thus, lake associations may be viewed as vehicles for community enhancement as well as groups of lake stewards with similar interests and views.

MLSA provides numerous educational and informational resources for the development of lake associations, and offers guidance for their optimum functions and longevity.

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