



Protecting What You Love for 40 Years

The Watershed Council's History from Inception to Present

This summer, the Watershed Council celebrates our 40th anniversary of effective work protecting Northern Michigan's precious waters. The Watershed Council was formed in 1979 by a group of lake associations from Cheboygan, Charlevoix, and Emmet Counties with assistance from the University of Michigan Biological Station (UMBS). The lake associations wanted to coordinate efforts in order to keep their lakes clean and protect the water resources of the region.

The series of events that led to the formation of the Watershed Council began in the early 1970's. At that time, UMBS provided enormous assistance to the lake associations through federally-funded programs. These programs, RANN (Research Applied to National Needs) and project CLEAR (Community and Lakes Environmental Awareness and Research) produced complete water quality evaluations and published a series of brochures called the "Lakeland Reports." The brochures covered topics such as greenbelts, zoning, water quality, and septic system maintenance. UMBS also hosted educational conferences. Burt, Walloon, Douglas, Crooked, and Pickerel Lakes received the most attention.

Additional assistance came from the Northeast Michigan Council of Governments and the Northwest Michigan Regional Planning and Development Commission. These commissions employed staff trained in water quality protection. They produced a lake management manual and additional educational literature, gave advice, and encouraged participation in the Michigan Department of Natural Resources Self-Help Water Quality Testing program. They also did water quality testing and produced "A Study of 48 Lakes" in 1978. These commissions also depended largely on federal grants to fund their programs.

At the end of the 1970's, federal grant funding for assistance to lake associations dried up. This is when the lake associations decided it was time to raise funds to support their own program and formed Tip of the Mitt Watershed Council to oversee it. In 1979, the Watershed Council was a volunteer organization with a budget of about \$1,500. Ruth O'Gawa was the volunteer Executive Director from 1979 to 1981.

Fortunately for the organization, H.M. Huffman, Jr. (Huffy) joined the Board of Directors in 1981 and became Vice President for Development. Through his fundraising work the organization grew. In 1982, the Little Traverse Conservancy gave a grant of \$5,000 to hire part-time Executive Director Nancy Jarvis. Thanks to a dedicated fundraising effort, \$17,000 was raised through private donations in 1982. Carol Magee was hired in

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Horace "Huffy" Huffman



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Protecting What You Love for 40 Years (cont.)

February of 1983 to serve as Executive Director on a $\frac{3}{4}$ time basis. The Watershed Council also hired four student interns the summer of 1983 to gather past research data on the lakes, give educational presentations, and assist lake associations with water quality monitoring.

In 1984, grants were secured allowing the addition of three staff: Jim Bricker as Science Advisor/Limnologist, Gail Gruenwald as Staff Attorney/Office Manager, and Tom Lagerstrom as half-time Membership/Communications Coordinator. The grants lasted three years, decreasing each year. Due to the increase in services and membership outreach, membership increased from 141 members to 421 and donations rose to \$46,000 in 1984.



Above (L to R): Linda Dunn, Jim Bricker, Gail Gruenwald, Tom Lagerstrom, and Bhavia Wagner (Carol Magee)



Above (L to R): Doug Fuller and Rob McClennan

In 1985, the Watershed Council received a grant of \$43,000 from the Charles Stewart Mott Foundation for a wetlands protection project. This enabled Gail's office manager duties to shift to Tom, who became full-time, and we were able to hire a half-time secretary. We also hired graduate students to work on the project under Gail's supervision.

The grant funds received in 1984 and 1985 allowed the Watershed Council to expand our programs, including fundraising, and increase our visibility tremendously. Our budget has grown steadily since those years (totaling \$1,887,030 in revenue in 2018!), supporting a professional staff and dozens of different programs.

And the rest, as they say, is history! The Watershed Council's current programming is much more diverse than in our early years and includes water quality monitoring, research, restoration, policy, advocacy, and school-aged education. We communicate our message and work in a variety of ways – in print, through the media, on social media, video, and in-person presentations. We have a wonderful team of 12 staff, hundreds of volunteers, our dedicated board of directors, and 2,200 member families, businesses, and organizations. Our work is critical to ensuring the quality of life and water resources in Northern Michigan. It is hard to imagine what this area would be like without our 40 years of effort made possible by the foresighted individuals at the University of Michigan Biological Station.

We are excited to celebrate this milestone with each of you! Please join us for our celebration on July 16, 2019. The event will take place from 6-8 pm at the Grand Unity Event Center in Petoskey. A more detailed invitation will be coming soon. We look forward to 40 more years of effective, results-oriented programming. Thank you to all our members for making this work possible!



In April 2001, we moved to our current location at 426 Bay Street in downtown Petoskey. Pictured are Scott McEwen (left) and Maureen Radke (right).

Mackinac Straits Corridor Authority UNCONSTITUTIONAL

On her first full day in office, Governor Gretchen Whitmer requested an opinion from Attorney General (AG) Dana Nessel regarding the constitutionality of Public Act (PA) 359, which created a new Mackinac Straits Corridor Authority (MSCA) – a board that would oversee construction and operation of a tunnel proposed to go under the Straits of Mackinac to house Enbridge Energy's Line 5. The Governor questioned whether the law, as well as the actions taken by the new board, violate the Michigan Constitution.



*Michigan Attorney General
Dana Nessel*

On March 29, Attorney General Nessel concluded that certain provisions of Act 359 are unconstitutional. These provisions include those transferring all authority related to a utility tunnel from the Mackinac Bridge Authority to the Straits Corridor Authority and requiring the Corridor Authority to enter into an agreement for the construction of a tunnel if a proposed agreement was presented by a specific date and met listed criteria. Therefore, the Mackinac Straits Corridor Authority, its Board, and any action taken by the Board are void.

As a result of the AG opinion, Governor Whitmer issued an executive directive instructing State departments and agencies to halt any actions in furtherance of the Mackinac Straits Corridor Authority law.

Moving forward, Enbridge has two choices. Enbridge could either accept the AG opinion and work collaboratively with the State to come up with a solution that protects the citizens of Michigan and all of Michigan's water resources, or Enbridge could choose to fight the AG opinion in a court of law. Hopefully, Enbridge will choose the former and we can all work together to identify the alternative that will provide greater protection of Michigan's natural resources while providing Michigan's citizens and businesses with necessary oil and natural gas liquids.

Great Lakes Commission New Appointment

We are pleased to announce that Governor Gretchen Whitmer has designated Policy Director Jennifer McKay to the Great Lakes Commission. Jennifer is designated as an alternate to represent a statewide environmental organization for a term expiring at the pleasure of the Governor.

Along with Jennifer, Gov. Whitmer appointed Marc E. Smith, director of Conservation Partnerships for the National Wildlife Federation and James P. Clift, senior Great Lakes advisor at the Department of Environment, Great Lakes and Energy, and Kara Cook, policy advisor for Governor Whitmer.

"Michigan's Great Lakes are among our most vital ecological and economic resources to our state," Whitmer said. "Marc, James, Kara, and Jennifer will ensure the prosperity of our Great Lakes while prioritizing Michigan's economic success and environmental quality."

The Great Lakes Commission works with its member states and provinces to address issues of common concern, develop shared solutions, and collectively advance an agenda to protect and enhance the region's economic prosperity and environmental health. The rest of the Michigan delegation to the Great Lakes Commission are the following members: Attorney General Dana Nessel, Former Senator Tom Casperson as the appointee of the Senate Majority Leader, and Commissioner Candice Miller as the appointee of the Speaker of the House.



*Abigail Hackman
Administrative and
Communications Assistant*

Welcome Aboard, Abigail!

Abigail Hackman joined the Watershed Council team in February 2019 as our Administrative and Communications Assistant. Born and raised in Harbor Springs, Abigail went to college at Castleton University in Castleton, Vermont and majored in environmental studies with a concentration in economics. She also received a civic engagement certificate from Castleton by taking extra classes and starting a campus-wide composting operation. Abigail's love for water started when she was seven years old and went sailing for the first time at Camp Daggett on Walloon Lake. The next summer her parents enrolled her in Little Traverse Sailors (LTS). From the ages of eight to 21, Abigail spent every summer as a student/instructor at LTS and became totally immersed in the sailboat racing world, thanks to Dave Irish, founder of Irish Boat Shop. Aside from protecting the lakes, she is passionate about composting and was largely inspired by the book *The Upcycle* (everybody should read it!). When we asked Abigail what her favorite thing is about Northern Michigan, she replied, "no matter where I am in Northern Michigan I'm never more than a few minutes from water or a hiking trail." In her spare time Abigail loves hiking, skiing, going to concerts, traveling, and spending time with her family.

Welcome to the team!



Looking Back and Moving Forward: MICHIGAN'S ENVIRONMENTAL POLICY

The Lame Duck Race

2018 concluded with a legislative lame duck session that was one for the books. In total, 408 bills were sent to former Governor Snyder's desk, many of which were highly controversial. While some negative legislation passed, the Watershed Council, our partners, and Michigan's citizens were able to defeat or amend many other anti-environmental bills.

Here is a recap of a few of the bills that became law in former Governor Snyder's final days in office.

Senate Bill 1197 (Public Act 359) – Authorizing a Utility Tunnel in the Straits of Mackinac

Public Act 359 creates a new Mackinac Straits Corridor Authority. The Authority will oversee construction and operation of a tunnel proposed to go under the Straits of Mackinac to house Enbridge Energy's Line 5. Just one week after being signed into law, at the inaugural meeting of the Mackinac Straits Corridor Authority, the Authority approved agreements that will allow Enbridge Energy to pursue construction of the utility tunnel.

Senate Bill 1211 (Public Act 631) – Changes to Michigan's Wetlands, Inland Lakes, and Streams Programs

Public Act (PA) 631 ended up a significantly scaled-back version of the original bill. Under the original proposal, more than 550,000 acres of wetlands and 4,200 lakes would have lost protections. In the end, PA 631 adds the federal definition of Waters of the United States (WOTUS) to the current definition of Lakes and Streams and Wetlands. The federal definition is unclear and has been in legal flux since 2001. By including WOTUS in the definitions, it is tying Michigan's program to a nonstable and complicated federal standard that could lead to time delays and lack of clarity and predictability. In addition, PA 631 awards expert witness fees for violations and contested cases. Because the program has no funding source for this and there is no limit or criteria for amounts, it is likely that our State programs will suffer financially as a result.

House Bill 4205 (Public Act 602) – No Stricter than Federal

Public Act 602 prevents the State of Michigan from adopting environmental rules more stringent than federal standards, thereby, handcuffing the State in its effort to protect public health and the environment. The legislation is overly broad and would impede necessary regulatory flexibility that is vital for many programs including protection of the Great Lakes.

Federal regulations are only intended to be the lowest standard that states must meet. Tying regulations to federal standards would prevent the State from meeting the specific needs of Michigan citizens and businesses. In order to protect Michigan residents from PFAS (per- and poly fluoroalkyl substances) and other toxins, our environmental regulations should be shaped by state decision-makers, based on the best science available, and reflect the values of Michigan residents.

Senate Bill 1244 (Public Act 581) – Part 201 Cleanup for Contaminated Sites

Public Act 581 prevents the Michigan Department of Environmental Quality (MDEQ) from using the best science to develop cleanup standards for contaminated sites, including for chemicals like PFAS. Instead, the MDEQ is required to use federal toxicity values when setting cleanup criteria for hazardous substances. If the chemical is not in the federal database, the MDEQ will be required to undergo an enhanced review process, essentially jumping through additional hoops to verify other scientific data. This is why 80 MDEQ employees with extensive knowledge of the State's cleanup program and development of cleanup criteria sent a letter to the Governor requesting a veto, stating the legislation will "threaten health and safety of the people of Michigan."

Moving Forward

In 2019, Michigan transitioned to the new administration of Democratic Governor Gretchen Whitmer and Attorney General (AG) Dana Nessel. The incoming administration has a tremendous opportunity to reset the course in Lansing and restore Michigan's legacy as a national leader in public health and environmental protection.



Under the new administration, a number of the bills mentioned earlier have been called into question. On her first full day in office, Governor Whitmer requested an opinion from AG Nessel regarding the constitutionality of Public Act 359 forming the new Mackinac Straits Corridor Authority, as well as if the actions taken by the new board are legal. (See page 3.)

To help guide the new administration, the Tip of the Mitt Watershed Council joined forces with Michigan Environmental Council, Michigan League of Conservation Voters, and over 20 organizations across the State to develop an *Environmental Roadmap*. This roadmap provides a comprehensive policy agenda for the first 100 days and first term of the Whitmer administration. Here are four of our top policy priorities:

- Establish an enforceable PFAS drinking water standard so we can protect communities and ensure clean drinking water.
- Identify and secure new funding to replace all lead service lines and upgrade our State's crumbling water infrastructure.
- Replace the Clean Michigan Initiative, which expired and was a critical funding source responsible for the cleanup of hundreds of polluted waterways and brownfields.
- Support funding of construction projects like the Brandon Lock and Dam and work with other Great Lakes states to protect our State's greatest natural resource – our water.

With a presidential administration set on weakening environmental protections designed to safeguard our families and public health, it's time to put Michigan in the driver's seat and ensure our elected leaders initiate comprehensive solutions that will address our State's drinking water crises, protect our Great Lakes, and combat climate change. We look forward to working with the new administration and State Legislature to advance the policy recommendations outlined in the *Environmental Roadmap*. Together, with our partners and Watershed Council members, we will ensure that Michigan makes up the ground lost in recent years.

The *Environmental Roadmap* can be accessed at <https://michiganlcw.maps.arcgis.com/apps/Cascade/index.html?appid=547b6c211c91436c9453db35bd78bcfb>

AQUAVIST NETWORK

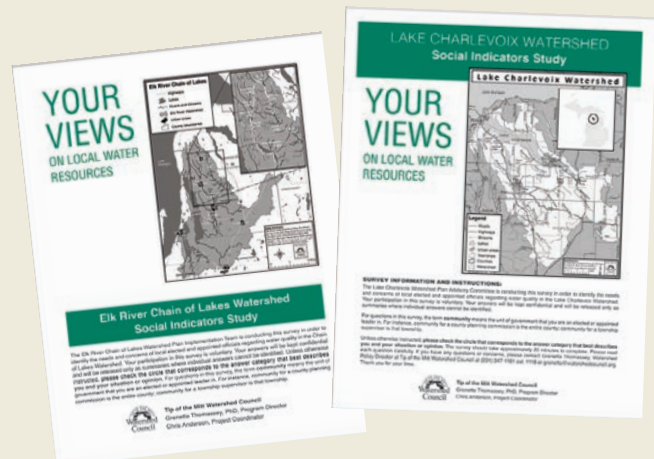
Social Indicator Surveys

Between 2010 and 2012, the Watershed Council partnered with Michigan State University Extension (MSUE) to conduct social indicator surveys throughout the Lake Charlevoix Watershed under a grant funded by the Michigan Department of Environmental Quality (MDEQ). We used a U.S. Environmental Protection Agency (EPA) system called the Social Indicator Data Management and Analysis tool. These surveys measure attitudes, beliefs, and behaviors regarding water resources. This was the first time the EPA authorized using the tool in a pristine watershed rather than in a location with impaired water resources.

MSUE mailed surveys to Lake Charlevoix Watershed residents, shoreline property owners, and local officials. Analysis was done for each of these surveys to establish a baseline of information. The Watershed Council took the responses to heart and implemented several suggestions provided in the surveys, such as hosting an annual Planner's Forum, holding regular Zoning Administrator meetings, and conducting educational efforts related to best practices for shoreline management.

In order to measure change, MDEQ recently provided funding to repeat the surveys over the next two years. We are preparing to send one to local officials this spring and shoreline property owners will receive surveys this summer. In the fall, we will re-survey Watershed residents. Once complete, we will be able to quantify if there have been changes in survey results over the past seven years.

Based on the success of the Lake Charlevoix Watershed social indicator survey, we received additional MDEQ funding that allowed us to conduct similar surveys in the Elk River Chain of Lakes Watershed in Antrim County. For more information, contact Grenetta Thomassey at (231) 347-1181 ext. 1118.



More Lakes Join the Fight Against Swimmer's Itch, New Questions Emerge

While most people have their own idea of how to avoid getting swimmer's itch, a team of researchers and a group of lake associations have been collecting data on the subject for many years. Collectively known as the Michigan Swimmer's Itch Partnership (MISIP), the Partnership provides technical and financial assistance to lake associations looking to reduce the occurrences of swimmer's itch in their lakes.

Swimmer's itch is caused by a group of parasites, called avian schistosomes, which are normally hosted by birds and snails. All avian schistosomes live as adult worms in a specific (vertebrate) host, and pass their eggs in the feces of their host. If the eggs land in water they hatch within an hour and the resulting free-living larvae, called miracidia, must penetrate the correct intermediate host (always a snail) in order for the parasite to survive. Once inside a snail, the flatworms reproduce asexually and after 3-4 weeks develop into a second free-living larval stage called cercariae. These cercariae leave their snail host to find a new specific, vertebrate host. If cercariae accidentally penetrate a human's skin, the cercariae will die, leaving behind the rash known as swimmer's itch.

The first step in swimmer's itch control is understanding the problem. Seven lakes (Larks, Elk, Skegemog, Platte, Long, Charlevoix, and Walloon) used a MISIP cost-share program to conduct swimmer's itch assessments in 2018. An assessment consists of snail analysis, bird surveys, and water samples. These lakes now have the information necessary to determine if they need a control program.

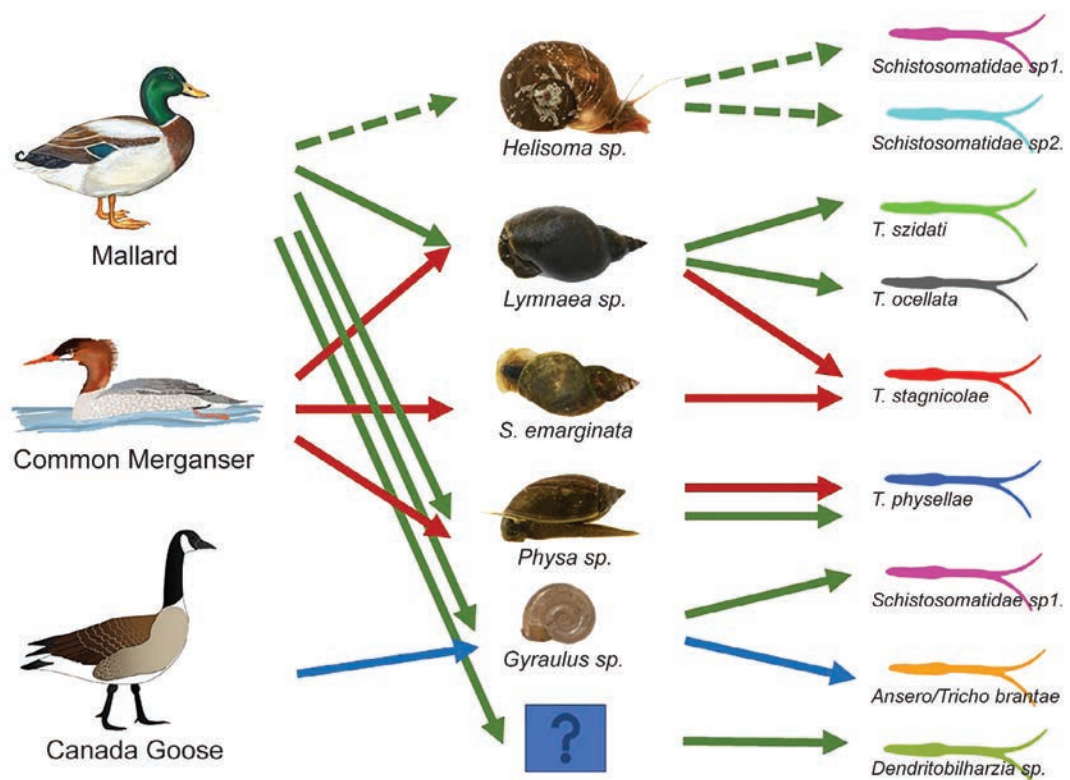
Because the common merganser life cycle is still the most well understood and researched life cycle for the swimmer's itch schistosomes, MISIP worked with the Michigan Department of Natural Resources (MDNR) to develop a Merganser Control Permit program, which was approved by the Michigan Natural Resources Commission in February 2018. The program allows lakes to hire contractors to remove mergansers to reduce swimmer's itch. Larks, Elk-Skegemog, and Walloon Lakes are applying for permits this year. Additionally, local government approval is required. As of press time, Larks Lake already had their permit for the 2019 season. Last year, five lakes obtained a merganser control permit, resulting in 35 broods (a hen and her offspring make up a brood) removed from lakes.

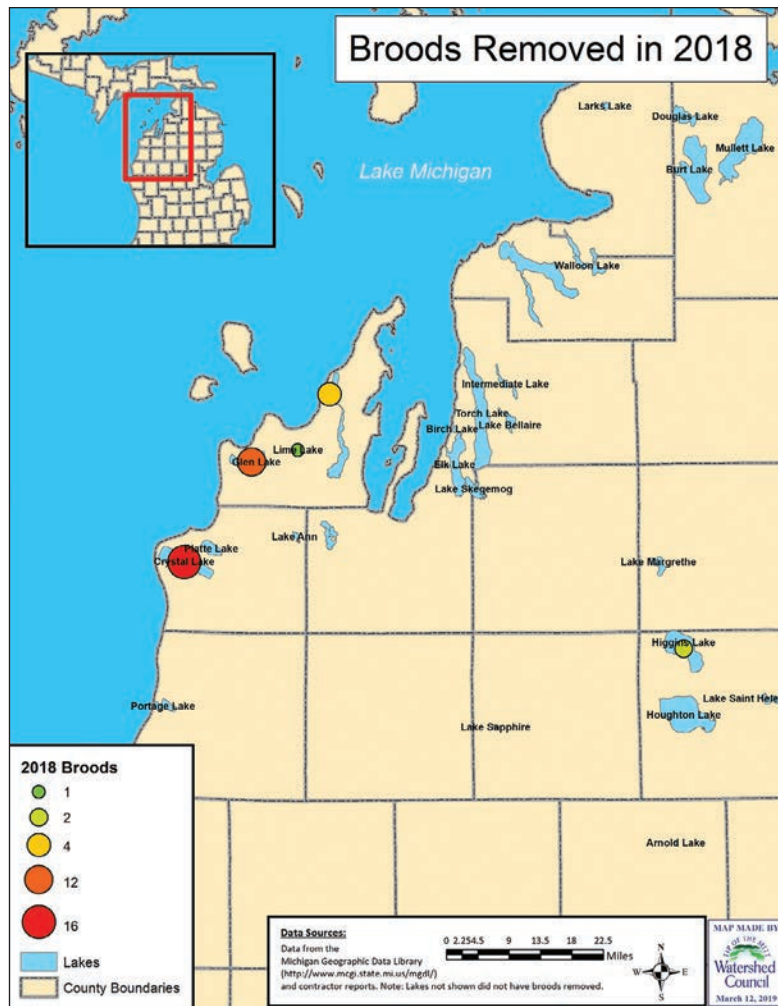
The broods are taken to pre-selected relocation sites. The sites are considered based on their proximity to the original lake, presence of other mergansers, and the absence of the snail that hosts the swimmer's itch parasite. Most of the time, mergansers are relocated from inland lakes to Great Lakes beaches. Relocation works because removing mergansers from a lake with swimmer's itch breaks the swimmer's itch life cycle and the new locations don't support the life cycle.

Because of MISIP-funding research conducted last year, swimmer's itch is better understood on a larger scale. In particular, researchers were able to identify other life cycles likely responsible for the nuisance itch. Identifying specific life cycles required researchers to isolate DNA from organisms with roles in the swimmer's

Identifying the Swimmer's Itch Life Cycle

Graphic from
Dr. Patrick Hannington,
Freshwater Solutions.





itch life cycle. Two new state-of-the-art techniques known as Quantitative Polymerase Chain Reaction (qPCR) and Loop Mediated Isothermal Amplification (LAMP) were utilized. Both techniques were used to test for the presence of specific parasites in water samples from numerous lakes in 2018. The “quantitative” in qPCR provides a relative count of the number of parasites for certain species in a water sample. The LAMP technique offers a rapid presence and absence test of parasites in as little as 10 minutes. Both techniques revealed mallard ducks and Canada geese can harbor swimmer’s itch-related parasites. The parasites identified are different species but are closely related to parasites found in the common merganser. Researchers still need to determine how common the parasites from mallards and geese are in the swimmer’s itch life cycle.

MISIP finished its second year of funding from the State of Michigan late in 2018. At that point, Watershed Council staff took on an additional role of facilitating a strong relationship between the Partnership and MDNR and building a foundation for sound research. To date, the merganser control program has been very effective, with many lakes seeing reductions in snail infection rates. This year, research will focus on the effect migratory ducks have on swimmer’s itch, merganser behavior using GPS-tracking, and snail hosts in southern Michigan lakes. To learn more, visit misip.org.

PFAS Monitoring

Recently, an industrial class of chemicals were detected in Michigan waters. Known as per- and poly fluoroalkyl substances (PFAS), they represent thousands of manufactured chemicals that were first used in the early 1940s. Many PFAS allow for the manufacturing of waterproof, stain resistant, nonstick products, and are heavily used in manufacturing of firefighting foam for airports, military bases, and fire stations. Everyday consumer products, such as pizza boxes, nonstick cookware, and stain and water repellent clothing, including popular outdoor gear, have all been identified as containing PFAS. Exposure to PFAS has been linked to some adverse health effects, such as decreased fertility, increased cancer risk, developmental issues, and changes to the immune system. Exposure occurs through drinking water or consumption of fish with PFAS, while dermal contact is not deemed a risk at this time. To date, all communal drinking water sources across the State of Michigan have been tested. However, minimal data is available from lakes and rivers.

Since little information is known about the presence of PFAS in surface waters of our region, the Watershed Council will be monitoring for PFAS during the spring and summer of 2019. Water samples will be collected from water bodies in Emmet and Charlevoix Counties near locations with the potential to contain PFAS (i.e., landfills, airports, etc.). Each sample will be analyzed for 14 of the common PFAS chemicals at the University of Michigan Biological Station. Monitoring efforts are supported by the Petoskey-Harbor Springs Area Community Foundation and the Charlevoix County Community Foundation.



Petoskey-Harbor Springs Area
community foundation

CHARLEVOIX COUNTY COMMUNITY
FOUNDATION

Giving Back. Moving Forward.

Volunteers Find Few Cases of Avian Botulism Last Fall



If you happen to see a dead bird on a Great Lakes beach, it is likely to have died of botulism. According to the Michigan Department of Natural Resources (MDNR), botulism is a paralytic condition brought on by the consumption of a naturally occurring toxin produced by the bacterium *Clostridium botulinum*. The small bacterium is first eaten by mussels and larval macroinvertebrates, like midges, who are then eaten by fish. Once the bacterium accumulates in fish, they can experience harmful effects, such as a loss of equilibrium, erratic swimming, or uncontrollable floating near the surface. These fish become easy targets for birds, who are in turn affected. Avian botulism was first documented in the Great Lakes in the 1960s, and since then occasional waves of bird die-offs are common during periods of warmer water and lower water levels. Recent outbreaks occurred in 2012 and 2016 throughout the Great Lakes, signifying lake ecosystem disruptions, likely due to pollution and invasive species.

From September to November, Tip of the Mitt Watershed Council volunteers walked nearly 100 miles of Lake Michigan shoreline in their search for bird carcasses. Only 31 birds were found, which is the third lowest count since the Watershed Council began the volunteer program in 2011. Common loons made up the majority of dead birds, followed by herring gulls.

Of the 31 birds found, three birds were sent to the MDNR for avian botulism testing. Test results showed they all likely died of botulism poisoning. The Watershed Council's data is used to estimate total Lake Michigan mortalities and predictions for next year. Botulism outbreaks throughout the Great Lakes are mapped using the Wildlife Health Information Sharing Partnership (WHISPer), which can be viewed at www.nwhc.usgs.gov/whispers/.

For more information or to participate as a volunteer, please contact Caroline Keson at (231) 347-1181 ext. 1111.

Preliminary Zequanox Treatment Results Update

As you may recall from the summer of 2017, a new biological control for nuisance invasive zebra and quagga mussels, called *Zequanox*, was put to the test in Emmet County's Round Lake. The research project was a scientific investigation led by the Watershed Council, in partnership with the U.S. Environmental Protection Agency (EPA), United States Geological Survey (USGS), Michigan Natural Features Inventory (MNFI), and the University of Michigan Biological Station. The goal of the project was to measure the effectiveness of *Zequanox* in an open water, natural lake environment. The project was funded through the Great Lakes Restoration Initiative.

In July of 2018 (one year after the application of *Zequanox*) researchers returned to the Round Lake study area to complete data collection and to evaluate the lasting effect of the molluscicide biocontrol. Preliminary project data reveal little to no chemical and environmental change before and after *Zequanox* application. These data include dissolved oxygen, pH, and conductivity of the water. No environmental change is great preliminary news. Zebra mussel densities declined slightly in treatment plots, however no significant change was observed in the number of invasive mussels attached to native mussels. We are still reviewing all the project data that have been collected and will offer a broader, more conclusive answer on the effectiveness of using *Zequanox* as a management tool for natural environments. A comprehensive final report will be available later this spring.



What's Your Stormwater Footprint?

If you have spent any time in Northern Michigan this winter, you may have noticed we got some snow. Not just a little, a lot. While there are undoubtedly a few who wouldn't mind if it stayed all year, most of us are ready for it to melt by the end of April or sooner. When those warmer days finally arrive, the streets, yards, rooftops, driveways, and many other surfaces that have accumulated snow will begin to flow with rivers of runoff. That runoff, however, contains more than just pure, white snow. Contaminants of all varieties, some visible and some not, are in the mix.

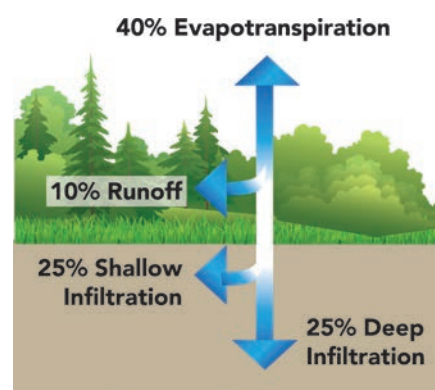
In developed areas, paved streets and parking lots are designed to flush runoff into storm sewers. Some storm drains have integrated catchment basins and other infrastructure intended to separate runoff (water) from sediment, trash, oils, and grease. But not all storm drains include these features. In fact, most don't. As a result, untreated stormwater is flushed through the storm sewer and empties into a nearby lake or stream. Beyond the pollutants carried with the runoff, stormwater can be problematic because more water is flowing faster across the landscape. This can result in flooding, erosion, and sedimentation in receiving waterways.

It stands to reason that more developed areas are prone to greater stormwater impacts given that more land is covered with buildings, roadways, and other impervious surfaces. While this paradigm has been taken for granted for decades, a shift in stormwater management is slowly, but surely, emerging. Green infrastructure techniques, low-impact development, and other conservation design practices strive to use or mimic natural processes, by soaking up (infiltrating), filtering, and storing runoff. Instead of conveying runoff as quickly, efficiently, and out-of-the-way as possible, these practices allow runoff to remain as close to its origin in the landscape. Rather than pool on the ground's surface, runoff is encouraged to soak into the ground, which helps to remove pollutants and recharges groundwater below ground. Techniques such as rain gardens provide additional treatment of stormwater due to the nutrient-absorbing deep-rooting plants they contain.

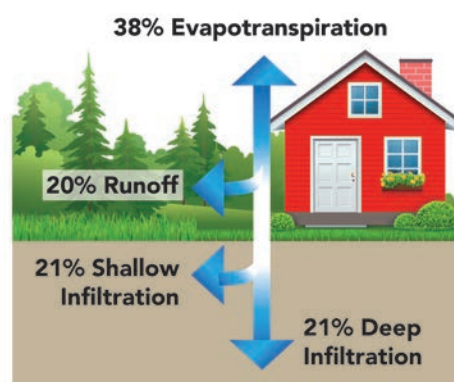
So as the last piles of snow melt and the rivers of runoff flow across our driveways, walkways, and streets, practice the following tips and encourage your neighbors to do the same.

1. Never dispose of anything in a storm drain!
2. Pick up your pet's waste and dispose of it in the trash.
Pet waste can be a major source of bacteria in stormwater.
3. Sweep up and dispose of any leftover piles of salt and deicers, gravel, sand, and other remnants from your winter-long effort to keep ice under control.
4. Fix any engine leaks to keep toxic fluids from collecting on the ground and washing away in stormwater.

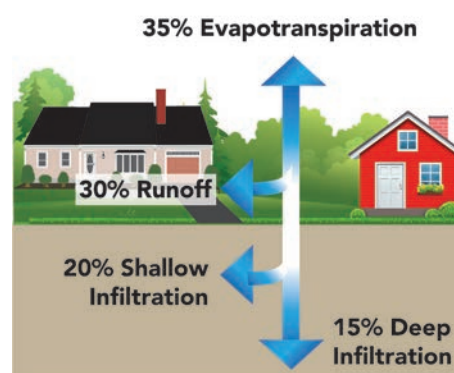
Northern Michigan's waterways need our continual vigilance to keep them healthy and high quality. This spring, please consider your "stormwater footprint" and strive to limit its impact by taking simple steps around your home and yard.



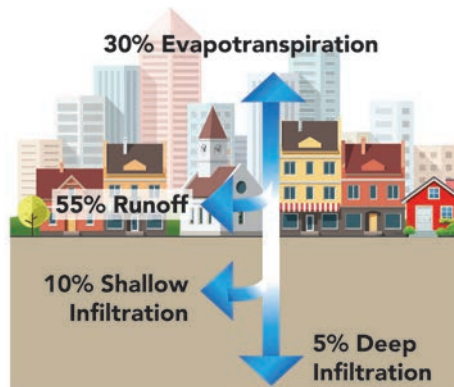
Natural Ground Cover



10-20 % Impervious Surface



35-50% Impervious Surface



75-100% Impervious Surface

Volunteer Stream and Lake Monitoring Programs

Ice still covers our lakes and insects are still in their over-winter stage, but waters will deice and insects will awaken soon. That means the time is quickly approaching for Tip of the Mitt Watershed Council's dedicated volunteers to begin monitoring Northern Michigan's lakes and streams! See below for our current volunteer lake and stream monitoring plans.

Stream Monitoring

- **Training for new volunteers - Saturday, May 11th, Watershed Council office, 426 Bay Street in Petoskey.**
- All returning volunteers can pick up equipment any time after May 5th.
- Field days are scheduled to occur between May 11th - 25th. Of course, this will require weather and stream flow cooperation!

Volunteer stream monitors perform 2-3 hours of monitoring duties, once in the spring and fall. Each season, volunteers venture to a stream/river location to collect a representative sample of aquatic macroinvertebrates and document general stream conditions. Macroinvertebrates serve as the "canary in the coal mine" because certain macroinvertebrates can only survive in particular water conditions. The mere presence (or absence) of a type of macroinvertebrate indicates current water quality conditions.



Lake Monitoring

- **Training for new volunteers - Monday, May 20th, Watershed Council office, 426 Bay Street in Petoskey.**
- All returning volunteers will be able to pick up equipment any time after May 14th.
- We are currently in need of volunteers for several lakes. If you live on one of these lakes, we would be grateful for your participation and data collection.

- Huffman Lake	- Little Traverse Bay
- Scott Lake	- Hanley Lake
- Ellsworth Lake	- Duncan Bay
- Lancaster Lake	- Silver Lake
- Wilson Lake	

Volunteer lake monitors perform 1-2 hours of monitoring duties on a weekly basis from early June to late August. Each week, volunteers venture onto their lake in their personal watercraft to record water transparency and surface water temperature. Every other week they collect water samples for chlorophyll-a analysis. Volunteers also keep an eye out for invasive species and report any they find to the Watershed Council.

Both monitoring programs generate important data and information used by the Watershed Council and other organizations throughout the State to help evaluate the health of our waters. This information helps identify trends, develop management plans, and address water quality problems. If you are a returning volunteer, please share your comments with us about either program. We would be interested in hearing feedback to enhance our collective efforts. We are eagerly looking forward to this year's adventure! Thank you for your time and please contact our office at (231) 347-1181 with any questions or to participate.

Asian Carp Update

Asian carp continue to get closer to Lake Michigan and the rest of the Great Lakes. Bighead and silver carp have been found above the electric barrier system. Silver carp were found just nine miles from Lake Michigan in 2017. Asian carp eggs, larval fish, and juvenile fish are being detected progressively further upstream. The establishment of Asian carp in the Great Lakes will devastate a \$7 billion fishery, a \$16 billion boating industry, and a \$20 billion tourism industry in Michigan. Action is urgently needed at Brandon Road to keep Asian carp from entering the Great Lakes. The US Army Corps of Engineers (USACE) has developed a plan to bolster defenses at Brandon Road Lock and Dam. Congress must ensure the USACE has the funding to advance the plan as quickly as possible to protect the Great Lakes from Asian carp.

For more information on Michigan's invasive species watch list go to: <https://www.michigan.gov/invasives/>

Report this species to:

DEQ Aquatic Invasive Species Program
DEQ-WRD-ANC@michigan.gov 517-284-5593

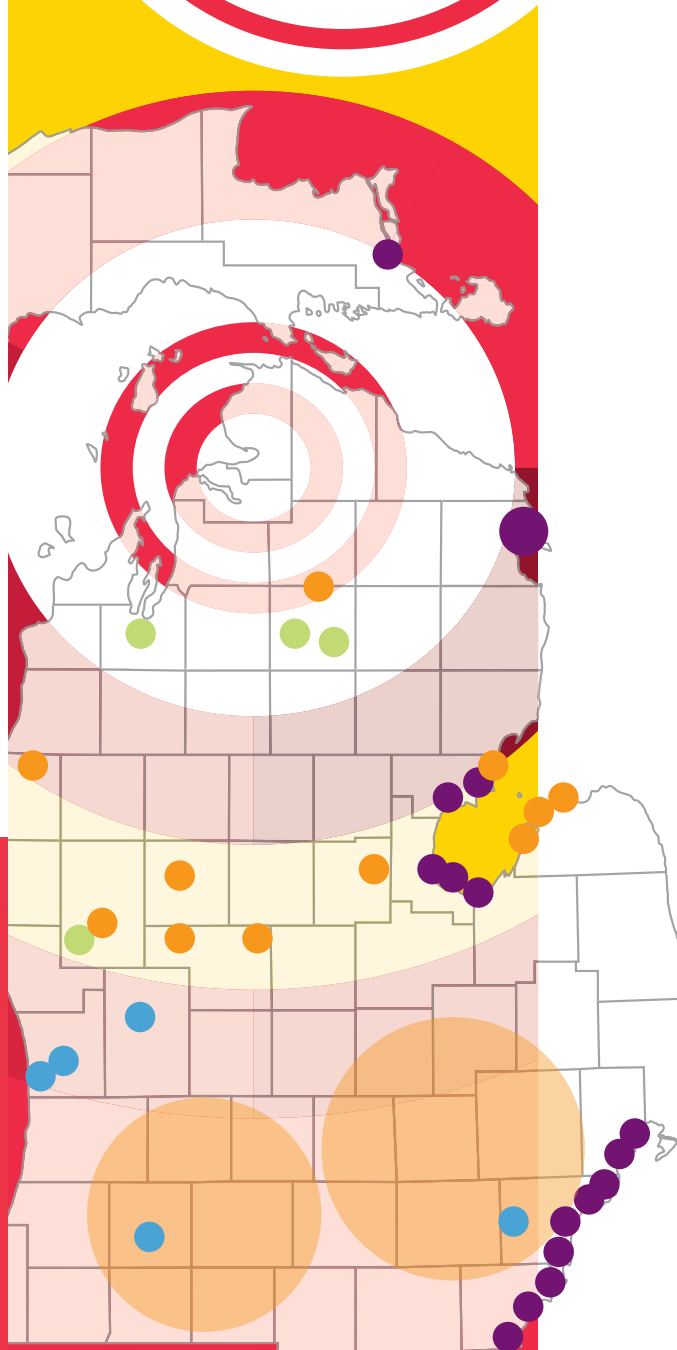
If possible, please take one or more photos of the invasive species you are reporting. Also make note of the location, date and time of the observation. This will aid in verification of your report. You may be asked to provide your name and contact information if follow-up is needed.

- Or - use the Midwest Invasive Species Information Network (MISIN) online reporting tool
- Or - download the MISIN smartphone app and report from your phone - <http://www.misin.msu.edu/tools/apps/#home>



INCOMING!

New aquatic invasive species are moving closer to our service area. You can help prevent their spread by becoming familiar with what to watch for and practicing responsible boating and angling.



Map for sightings reference only.



Credit: Michigan.gov

● Starry Stonewort (*Nitellopsis obtuse*)

Habitat: This submerged annual macroalga (large algae) invades lakes, ponds, reservoirs, and slow-moving rivers.

Native Range: Europe and Western Asia

Michigan Distribution: Southern and mid-Michigan in 2018 (Gladwin, Bay, Lenawee, Kalamazoo, Clinton, Oakland, and Branch Counties)

Local Concern: Starry stonewort forms dense mats in lakes and can significantly reduce the diversity of other aquatic plants, impede movement of fish, spawning activity, water flow, and recreational activities.

Identification:

- Whorls of 4-6 branchlets/leaves with blunt tips
- Star-shaped bulblike structures are produced at the nodes (joints), generally 3-6 mm wide
- Can reach up to 33 inches



Credit: Center for Lakes and Research

● New Zealand Mud Snail (*Potamopyrgus antipodarum*)

Habitat: New Zealand mud snails can tolerate a wide variety of habitats, including reservoirs, estuaries, rivers, and lakes.

Native Range: New Zealand

Michigan Distribution: Southern and mid-Michigan in 2018 (AuSable, Boardman, and Pere Marquette Rivers)

Local Concern: Populations in the U.S. are made up almost entirely of self-cloning females. In a matter of one year, a single female could result in a colony of 40 million snails. They hold no nutritional value for native fishes, so populations in the U.S. are not subject to predation.

Identification:

- Average of 1/8 inch long
- 5-6 whorls on shell
- Shells vary from light brown to black



Credit: Chris Lukhaup

● Red Swamp Crayfish (*Procambarus clarkii*)

Habitat: Red swamp crayfish live in a variety of permanent freshwater habitats.

Michigan Distribution: Southwest Michigan in 2017 (Kalamazoo and Oakland Counties)

Local Concern: Red swamp crayfish compete aggressively with native crayfish species for food and habitat. Feeding behavior reduces the amount of available habitat for amphibians, invertebrates, and juvenile fish. Burrowing and foraging behavior can also lead to summer cyanobacteria blooms and eutrophic conditions.

Identification:

- Dark red color with bright red raised spots, look like small lobsters
- Elongated head, claws, and bony exoskeleton
- 2.2 inches – 4.7 inches in length



Credit: Meghan Johnstone, AP/PR

● European Frog-Bit (*Hydrocharis morsus-ranae*)

Habitat: Habitat includes slow-moving rivers, sheltered inlets, ponds, and ditches.

Native Range: Europe, Asia, Africa

Michigan Distribution: Southern Michigan, Northeast Michigan, and Eastern Upper Peninsula in 2018 (Oakland, Monroe, Chippewa, Wayne, Alpena, and Algoma counties)

Local Concern: Mats of European frog-bit can grow so thick that they impede navigation, movement of large fish and diving ducks. They also prevent nutrients and light from reaching submerged native vegetation. When the mats die off in the fall, the resulting decrease in oxygen can cause fish and other organisms to die.

Identification:

- Single white flower with 3 round petals and a yellow center
- Free-floating or sometimes rooted in shallow water
- Leaves are kidney-shaped to heart-shaped with a purple-red underside
- Leaves form a rosette

Early detection is key to preventing the spread of invasive species!

Learn more about invasive species and report all sightings to the Midwest Invasive Species Information Network at www.misin.msu.edu

SCIENCE

HEALTH

ART

TIP OF THE MITT WATERSHED COUNCIL PRESENTS

THE THREE TENORS OF CLIMATE CHANGE



Photo courtesy of Chip Duncan

May 2, 2019

7:30 p.m.

Great Lakes Center for the Arts

Community Engagement Room
800 Bay Harbor Drive, Bay Harbor



TICKETS

\$25.00

All tickets are general seating.

BOX OFFICE

231.439.2610

greatlakescfa.org

Exclusive Luncheon

Join us for an exclusive luncheon with the **Three Tenors of Climate Change**

with special guest host, David Crouse

Thursday, May 2, 2019

12:00 – 1:30 p.m.

Stafford's Perry Hotel
100 Lewis St, Petoskey, MI 49770

LUNCHEON TICKETS:
\$35 per person

RESERVATIONS:
Call the Watershed Council office at (231) 347-1181
Advance reservations required.

Using personal stories, long-term study, and decades of documentation and participation, Santer, Duncan, and Garzon, *The Three Tenors*, have teamed up to bring their climate story of science, art, and global health activism to audiences across the nation. Join us for a fascinating evening about receding glaciers, global climate modeling, and the long-term health consequences facing a warming world.

FEATURED PRESENTERS



Chip Duncan, Filmmaker, Writer, Photographer

Chip Duncan is an American filmmaker, author, and photographer, known principally for documentaries on history, current affairs, travel, and natural history. Since 1991, he has been annually documenting North America's glaciers. His artistic eye brings you closer to the Juneau Icefield and the work of the Juneau Icefield Research Program (JIRP), one of the longest field studies of ice and glaciers on earth. Duncan brilliantly captures this through photographs and stories that bring this barren land to life.



Dr. Hernando Garzon, California's Kaiser Permanente, Global Health Expert

Considered one of the world's leading experts on global disaster response, Dr. Garzon weaves a personal story that begins with his work navigating crises like 9/11, the Haitian earthquake, and West Africa's Ebola crisis while addressing a noticeable shift to climate-related disasters in places such as Puerto Rico, New Orleans, sub-Saharan Africa, and the Ayeyarwady Delta region of Myanmar.



Dr. Ben Santer, Research Scientist at Lawrence Livermore National Laboratory

Dr. Santer tells the story of a warming climate through computer modeling and satellite imagery accented by personal stories that begin with his participation in the 1995 report of the Intergovernmental Panel on Climate Change (IPCC). This report reached the historic conclusion that "the balance of evidence suggests a discernible human influence on global climate."

WAVE Teams in Action

Our new volunteer program, Watershed Action Volunteer Experience (WAVE), provides technical and financial support for water resource projects to groups of volunteers. In addition to our existing seven teams in Charlevoix and Emmet Counties, we have three teams in Antrim County and one in Cheboygan County. If you have a project you'd like to work on, let us know! We are actively seeking funding and donations for future teams and to continue to support established teams in future years. Current teams are funded by the Charlevoix County Community Foundation, Petoskey-Harbor Springs Area Community Foundation, Dole Family Foundation, Frey Family Foundation, and Wireless Zone for Giving. Below are the new projects for Antrim and Cheboygan Counties.

ANTRIM COUNTY

Torch Lake Beer Company

Heidi Shaffer of the Antrim County Conservation District will mobilize volunteers to enhance a rain garden at the Torch Lake Beer Company in Alden. Directing more water towards the existing rain garden will protect nearby Torch Lake.

Birch Lake Association

Led by Jim Muth, president of the Birch Lake Association, Association members will install a demonstration greenbelt at Birch Lake Roadside Park, north of Elk Rapids on US-31. This project will be part of the Michigan Department of Transportation's Adopt-a-Landscape program. The Association is working on their "Restore the Shore" initiative which includes the WAVE greenbelt and planting birch trees along Birch Lake.

Paddle Antrim

Deana Jerdee from Paddle Antrim will train volunteers in invasive species identification as part of the Michigan Paddle Stewards program from Michigan Sea Grant. WAVE will provide funding for invasive species identification cards that paddlers can use along the Chain of Lakes water trail. This program will enhance invasive species prevention and eradication along the Chain of Lakes. To learn more about Michigan Paddle Stewards, visit <http://www.mipaddlestewards.org/>. Visit Paddle Antrim at www.paddleantrim.com

CHEBOYGAN COUNTY WATERSHEDS

Black Lake Preservation Society

Linda Sandvik from the Black Lake Preservation Society (BLPS) has been monitoring purple loosestrife around Black Lake. To add to her efforts, BLPS will receive WAVE funding for volunteers to release *Galerucella* beetles, a non-invasive biocontrol beetle that eats purple loosestrife, and BLPS will produce an educational brochure about invasive species.



WATERSHED ACTION
Volunteer Experience



Torch Lake Beer Company



Birch Lake Association



Paddle Antrim



Black Lake
Preservation
Society

Charlevoix County Water Resource Education Program

"WREP has been an awesome experience for my 8th grade students! They have been able to see and use models to help them understand how different types of pollution impact the water they're dependent on. I love how I'm learning right alongside my students as well! I appreciate all Eli has done to educate my students and I will definitely be integrating the program into my curriculum for years to come!"

– Kelsey Bricker, Boyne City Middle School

Thanks to a grant from the Charlevoix County Community Foundation, middle school students in Charlevoix County are learning about water resources and taking steps to improve the health of their local watershed.

After successfully piloting the Water Resource Education Program (WREP) during the 2017-18 school year at Petoskey, Wolverine, and Ellsworth Middle Schools, the Watershed Council applied to the Charlevoix County Community Foundation Youth Advisory Committee to bring the program to Boyne City, Boyne Falls, and East Jordan Middle Schools for the 2018-19 school year.

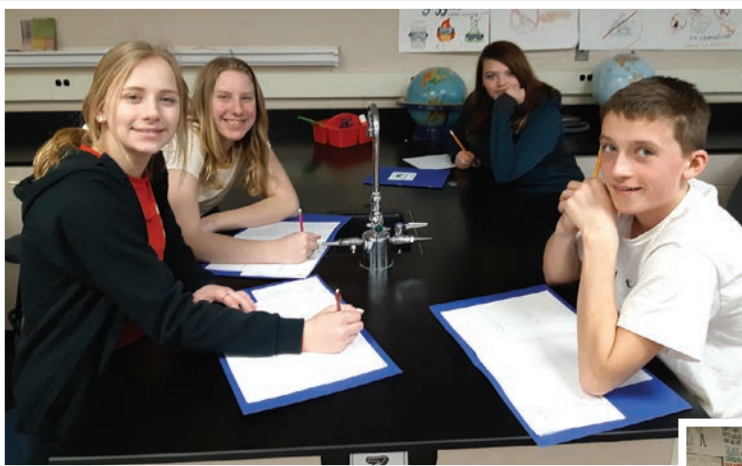
Over the course of the school year, students have been participating in this foundation-laying water resources education program that focuses on place-based education. Students learn about

various aspects of water resources in their community, including watershed science, groundwater, point source and nonpoint source pollution, and invasive species. Students then use this information to identify a problem in their watershed and implement a plan to improve the health of their watershed. Teachers also receive support, resources, and access to materials to enhance their water resources curriculum.

The student teams are in the process of identifying potential projects to implement in their communities. Teams have identified multiple issues in their watersheds, such as erosion, flooding, trash, and plastic pollution. Students will work with Watershed Council staff and community partners to develop and implement their plans. Be sure to look for updates on the Charlevoix County WREP teams and their projects in future newsletters or follow us on social media!

We are excited to announce that the Watershed Council has also received a grant from the Great Lakes Fisheries Trust to offer the Water Resources Education Program to several more schools during the 2019-20 school year along with the six schools that are currently participating. We look forward to continuing this important education program throughout the Watershed Council's service area.

For more information on the WREP program or to support other Watershed Council education activities, please contact Eli Baker at (231) 347-1181 ext. 1116.



Students hard at work planning their stewardship project.



Students sharing what they learned about Eurasian Watermilfoil, an aquatic invasive species.



Students learning about different types of pollution using the watershed model.

Thank you for your support!

New Members

Lori Arnold
 Peter Ljutich and Carolyn Bottum
 Kevin and Judy Boyle
 Stanley and Jennifer Carroll
 Mary Watson and Mike Chavez
 James and Laurie Cross
 Peter Cullman
 Jim Dearing
 William E. Dvorak
 Rochelle and Randy Forester
 Charles Frenzel
 Drs. Bob and Sheridan Haack
 Mrs. Charlene Haapapuro
 Abigail Hackman
 Terry and Michele Harmala
 Stephen Hatt
 Gale Kepford
 Caroline M. Keson
 Janet Kjoller
 Debra Soverinsky and David Kraus
 Mary Krausse
 Bill and Mary Kunst
 Michael and Mary Lajiness

Kathryn A. Laughlin
 T. Scott and Debra Law
 Robert J. and Cherie B. Levy
 Walter and Norean Martin
 Mrs. Carol McLachlan
 Duane and Jill Meyer
 Michigan Overboard
 Mr. and Mrs. Jim Muth
 Mr. and Mrs. Ed O'Dwyer
 Chelsea Olivarez
 Paul and Angel Price
 Daniel Royal
 Bruce and Kathryn Sanderson
 Mr. and Mrs. Antony M. Sasso
 Chuck and Marcy Schafer
 Kevin and Jean Scroggin
 Diane and Jim Slagle
 Julie Smith
 Monica Stokes
 Tip of the Mitt Orthodontics
 Mr. and Mrs. Joel Van Roekel
 Mr. Douglas A. Warner III
 Mary Ann Whipple
 G. Casey Wiggins



Jac Talcott, Richard Jenkins, Doug Fuller, Janie Guiliani, and Melvin Czechowski for macroinvertebrate identification.

Simon Gelb for taking inventory of chemistry kits and distributing to Petoskey Middle School science teachers.

Damon McCormick, Heather Smith, Dave Clapp, Darrell Lawson, Richard Couse, and Ed Pike for sharing their knowledge at the Avian Botulism Summit.

Sue Bissell, Tec Cummings, Sue Stewart, Jenna Sherman, Sue Kurtz, Ron and Linda Moore, Brian Bury, Lindsey Dotson, Mary Richardson, and Nancy Barnhart for monitoring nearly 100 miles of shoreline for avian botulism.

Erica Plesha, Cacia Lesh, Samantha Baker, and Melissa Hansen for insights into their volunteer programs.

Deana Jerdee, Heidi Schaffer, Jim Muth, and Linda Sandvik for forming new WAVE teams.

Alan Beyer for assisting with data entry.



Have you recently moved?

If the post office is forwarding your mail to you, then chances are you have a forwarding sticker on your newsletter. While this service is offered by the post office, it won't last forever. Mail forwarding only lasts up to 12 months. Avoid missing future issues of our newsletter by calling (231) 347-1181 with your new information or email debbiee@watershedcouncil.org.

Tribute Gifts

10/13/2018 – 3/15/2019

In Honor of...

Tom Stringer
Mr. and Mrs. Ron French
 Mr. and Mrs. Robert Hall
 Mr. and Mrs. Mark Bissell
 Mr. and Mrs. John McNaughton
 Mr. and Mrs. James Haugh
 Mr. and Mrs. Greg Renker
 Mr. and Mrs. Erik Borgen
 Martha and Andrew Bowman
 Mr. and Mrs. Bill Crawford
 Jessica Moore

Doug Schaudt
 Deb Dorn
Evening Star Joinery
 Nolan Little
Bethany France
 Marilyn Morehead
Amelia Wieske
 Tim and Kristin Weaver
 David and Pam Johnson
Nicholas White Architects
 Alex Green
Betsy Green

John and Sandy Baker
David M. Culver
 Art W. Curtis III
Owen and Lela Curtis

In Memory of...

Jerry Tippet
Mr. and Mrs. Quinton L. Kuebler
 Laurie Manor
Steven and Patricia Manor
 Asho and Lyle Craine
Tim and Leslie Craine
 Evening Star Joinery

Jane and Jim Haugh
 Stephen D. Jeffrey
Marilyn Carter Hogan
Anne Jeffrey Wright
Anne and Bayard Paschall
 Marge May
Mr. and Mrs. William Takalo
 Vesi
Mike and Susie Nuorala

**Now Accepting
Donations**
See website for details.

2019

WHALE of a SALE

**A HUGE RUMMAGE SALE
FOR WATER RECREATION LOVERS**

≈ SATURDAY ≈
JULY 20, 2019

8:00AM - 2:00PM

IRISH BOAT SHOP STORAGE UNIT
7580 S. STATE ROAD  HARBOR SPRINGS



  
LIKE. WATCH. SHARE.

Non-Profit Org.
USPS Mktg.
Mail
Petoskey, MI
Permit No. 108

ADDRESS SERVICE REQUESTED



This newsletter
contains information
worth sharing.

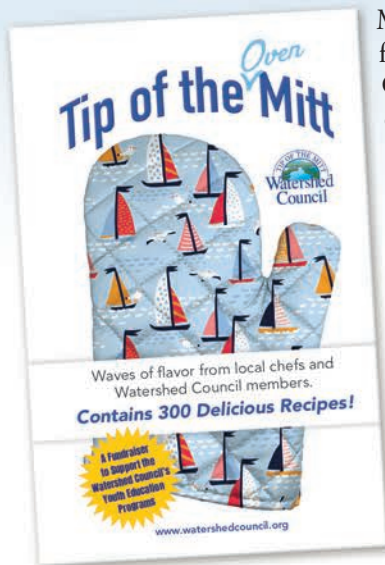
When you're done
reading it, don't
throw it out.

Pass it on!

Tip of the Oven Mitt

Waves of flavor from local chefs and
Watershed Council staff members

The tastes of the Tip of the Mitt are now within grasp of your oven mitt, with waves of flavor from local chefs and Watershed Council staff members! As part of our 40th anniversary year-long celebration, the Watershed Council has designed a cookbook featuring recipes from many of the area's favorite restaurants and venues. The Tip of the Oven Mitt cookbooks will be on sale for \$25 each in the Watershed Council's downtown Petoskey office and online at www.watershedcouncil.org. Be sure to snag one of these exclusive cookbooks while they're hot from the oven and help us celebrate 40 years of protecting what you love! Proceeds will be used to support the Watershed Council's middle school and high school education programs. Because all good food and drink starts with good, clean, fresh water!



**Call (231)347-1181
to order yours today!**



**PRESCRIPTION & OVER-THE-COUNTER
DRUG DROP-OFF**

POD COLLECTION EVENTS

EMMET COUNTY

April 25, 2019

July 24, 2019

October 17, 2019

7:00 a.m. – 4:00 p.m.

McLaren Northern Michigan
416 Connable Avenue
Petoskey, MI 49770

Hospital circle drive off Mitchell Street

CHEBOYGAN COUNTY

April, 18, 2019

July 31, 2019

October 24, 2019

9:00 a.m. – 1:00 p.m.

McLaren Northern Michigan
748 South Main Street,
Cheboygan, MI 49721

Circle drive by the Emergency Room

Accepting all forms of unwanted and expired:

- Prescription medications including controlled substances
- Over-the-counter medicines
- Nutritional supplements
- Pet medications

*These locations will also be accepting sharps,
cell phones, shoes, eyeglasses, and hearing
aids for proper disposal/recycling.*

These events are hosted by: McLaren Northern Michigan, Tip of the Mitt Watershed Council, Little Traverse Bay Bands of Odawa Indians Police Department, and Cheboygan County Sheriff Department.

Supported by a collaboration of funders: Blue Cross Blue Shield of Michigan, BCBSM Foundation, the Michigan Health Endowment Fund, the Community Foundation of Southeast Michigan, and the Superior Health Foundation.