



Volunteer Lake Monitoring Through the Ages

After an exhaustive search of the floppy discs, punch cards, and engraved stone tablets in our vaults, we found that the earliest records from the Tip of the Mitt Volunteer Lake Monitoring (VLM) Program date back to 1986. Therefore, it is with great fanfare that we proudly announce this extraordinary milestone of 30 years of volunteer monitoring! To what do we owe this success? To membership contributions that support this important program of course, but more so to the incredibly kind, dedicated, and hard-working volunteer community in Northern Michigan. Volunteers play a critical role in monitoring lakes in the Northern Lower Peninsula, continually taking the pulse of our lakes to ensure they remain healthy.

Volunteer monitoring began on ten lakes in 1986 (Black, Burt, Charlevoix, Crooked, Douglas, Michigan, Mullett, Paradise, Pickerel, and Walloon,), but the program has grown considerably since then. Throughout the last three decades, volunteers in our program have monitored 40 different lakes, producing a collective 811 years of data! (See page 5, Table 1). This enormous stockpile of invaluable data has been used by Watershed Council staff and others over the years to characterize lakes, identify trends and problems, develop watershed management plans, and more!

Beyond geographic expansion, the program has also grown in terms of parameters monitored. During the 1980s, volunteer efforts were limited to water clarity monitoring using a Secchi disc. In 1990, volunteers began collecting water samples to measure chlorophyll-a (algae) concentrations. With growing concerns over climate change, surface water temperature was added to the program in 2003. A few years later, in 2006, a handful of donated

meters were deployed by volunteers to monitor dissolved oxygen. The latest addition, aquatic invasives species monitoring, was incorporated into our VLM Program in 2015.

Changes and tweaks to our VLM Program management have increased efficiency, reduced error, and improved quality. Over the course of several years, Watershed Council staff developed a Quality Assurance Protection Plan (QAPP) for the program, which was approved by the Michigan Clean Water Corps in 2015. The QAPP provides a framework for managing the program that assures that reliable, accurate, and precise data are collected by volunteers.

Over the life of the program, the number of lakes and volunteers involved has waxed and waned. The program peaked at 30 lakes around the turn of the century, but now stands at 20. Although the number of lakes decreased, the number of monitoring sites on some lakes, including Burt Lake, Lake Charlevoix, and Mullett Lake, have increased. Having devoted our resources in recent years to building a solid foundation, we now plan to turn our attention toward program promotion and expansion. Please consider helping by either volunteering or spreading the word to recruit others. The lakes that are shaded in yellow in Table 1 are in need of volunteer monitors.

This report continues on page 5 and includes summarized results specific to lakes in the tip of the mitt. Further information and the complete dataset collected by volunteers are available at www.watershedcouncil.org/monitoring-programs.

Volunteer Water Quality Monitoring Report continues on page 5.



www.watershedcouncil.org



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Reflections From Our Executive Director

Michigan's system of water rights is called riparianism. The riparian system allocates private rights to land that is contiguous to a waterbody. Riparian rights apply only to natural waterbodies. Riparian owners own the submerged land, or bottomlands, under the body of water to the middle of the inland lake or stream (different rights apply on the Great Lakes). The State of Michigan owns the water. Riparian rights include:

- The right to use the water for bathing, domestic use, and fishing
- The rights of wharfage or dockage
- Right of access to navigable water
- Right to accretions or land gained when a lake or stream recedes

I am asked frequently about the extent and limits of riparian rights. Since there isn't a statute that delineates what rights riparians have nor what circumstances infringe on those rights, riparian property owners are left to wonder what recourse they have when they feel their rights are being violated. The law of riparian rights is based in Michigan common law, or court decisions. Over many decades the courts have reviewed conflicts between riparian owners and non-riparian lake users.

Non-riparian users who gain access to a navigable waterway legally have a right to use the surface of the water in a reasonable manner for such activities as boating, fishing, and swimming. This includes the right to temporarily anchor boats on the bottomland. However, permanent or indefinite anchoring of a boat without permission of the owner of the bottomland is trespassing.

The question of when the anchoring of a boat ceases to be temporary has also been decided on a case-by-case basis. Use by the public must be in a reasonable manner and cannot infringe on the riparian owner's enjoyment of their waterfront and bottomlands.

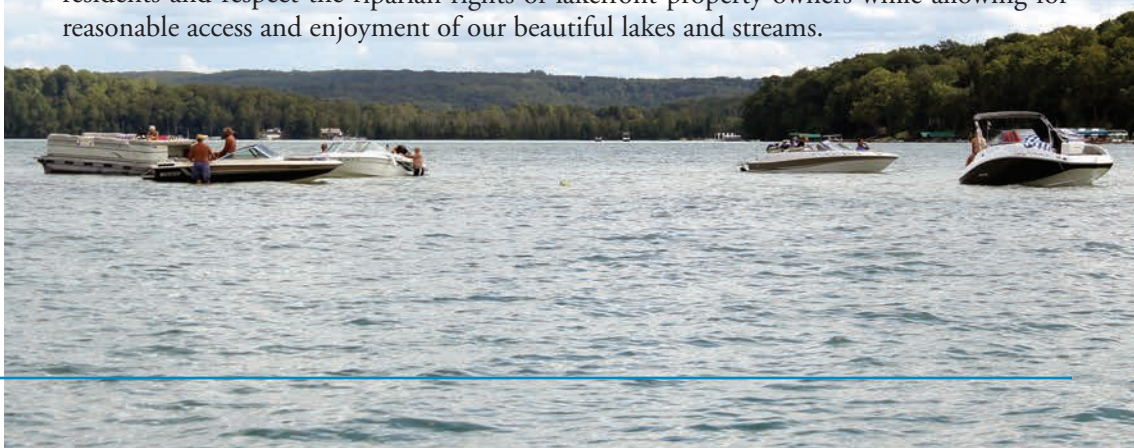
Unfortunately, law enforcement agencies will almost never prosecute bottomlands trespass cases, due to lack of knowledge of riparian law and the difficulty of ascertaining bottomlands boundaries. Only a county circuit court in a civil lawsuit can determine true bottomlands boundaries, which is an expensive and complicated process.

So, what is the solution for the riparian owner when faced with the "party barge" problems, most notably over the July 4th weekend on the Torch Lake sandbar? The attendees of that event are most certainly violating the common law right to temporarily anchor to engage in navigable conduct. And they are likely violating one or more existing state or local laws as well. Local police officials seem reticent to address that event to the extent requested by neighboring riparians.

The Watershed Council will continue to work with local governments, police authorities, and riparians to fashion solutions to these conflicts. In an ideal world, the Michigan legislature would adopt clear standards restricting "party barge" activities and define bottomlands trespass clearly. Until that time, police officials need to protect the safety and well-being of lake residents and respect the riparian rights of lakefront property owners while allowing for reasonable access and enjoyment of our beautiful lakes and streams.



Gail Gruenwald
Executive Director



AQUAVIST NETWORK

Aquavist ('ä-kw-vist) noun: A member of Tip of the Mitt Watershed Council's Local Activist Network; from Aqua - water, and Activist - one who seeks change through action.

AQUACULTURE – Survey says...

Across the state, Michigan residents overwhelmingly oppose the practice of commercial fish farming in the Great Lakes, which includes raising fish in underwater nets, or solid structure cages serving as pens. According to a poll conducted by survey research firm EPIC-MRA, 56 percent of participants said they were opposed to allowing fish farms in the Great Lakes, with 37 percent strongly opposed, based on their own understanding of net-pen aquaculture. After the pollster presented more information on proposed aquaculture projects in the Great Lakes, the level of opposition increased to 68 percent, with 47 percent strongly opposed. The strongest opposition came from respondents in Northern Michigan, where there are currently two proposals for commercial aquaculture in the Great Lakes. Backers of legislative bills supporting net-pen aquaculture say it would benefit the economy and create jobs. However, according to state reports, the proposed fish farms would only create 44 jobs. Recreational fishing in Michigan alone supports approximately 38,000 jobs, which would be at risk from commercial aquaculture. The Watershed Council opposes commercial net-pen aquaculture in the Great Lakes due to concerns with fish waste, disease, and the impact escaped fish can have on native fish populations. Bills are before the Michigan Legislature to both allow and ban this practice. For more information contact Jennifer McKay at jenniferm@watershedcouncil.org or call (231) 347-1181 ext. 114.

Waukesha Diversion Proposal

The Great Lakes governors and Canadian premiers of Ontario and Quebec are reviewing the first Great Lakes diversion proposal under the Great Lakes Compact, from Waukesha, Wisconsin. The Compact bans diverting Great Lakes water outside of the Great Lakes basin, with limited exceptions. The review process used and the decision itself on this application will establish an important precedent, setting the bar for future diversions. The Watershed Council recommends denial of the Waukesha application because it fails to meet legal and technical requirements of the Compact. To learn more, contact Jennifer McKay at jenniferm@watershedcouncil.org or call (231) 347-1181 ext. 114.

Elk River Chain of Lakes (ERCOL) Cost-Share Greenbelt Opportunity

The Watershed Council has a new Michigan Department of Environmental Quality (MDEQ) grant to work on water protection in the ERCOL. If you live on any lake in the chain, you have

an excellent opportunity to install a protective natural vegetation strip, or greenbelt, using a cost-share arrangement. If you protect 75% or more of your shoreline, then 75% of the costs are covered using grant funds, and you would pay 25%. If you protect 50-75% of your shoreline, 50% of costs are covered. To learn more, contact Jennifer Gelb at jen@watershedcouncil.org or call (231) 347-1181 ext. 112.

UPDATE: Watershed Plans

Every week, the Watershed Council works to implement watershed plans across our four-county service area of Antrim, Charlevoix, Cheboygan, and Emmet. Here is information on recent work to update existing or write new plans.

The **Little Traverse Bay Watershed Protection Plan** is being updated right now, thanks to support from the Petoskey-Harbor Springs Area Community Foundation, the Baiardi Family Foundation, and the Walloon Lake Association. Working with numerous partners in the Watershed, we've completed water quality monitoring, stormwater mapping, shoreline surveys, and numerous assessments of tributaries and other watershed features. And of course, we are updating and writing the new plan. Watch this space for future news on this work!

We have a first draft completed of the brand new **watershed plan for Duncan and Grass Bays**, located east of the City of Cheboygan. This draft is now being reviewed by members of the newly formed Advisory Committee, which has met twice to get briefings on the new plan and to provide feedback and comments. We will meet again several times this year, with a goal of submitting the plan for approval by both the MDEQ and the U.S. Environmental Protection Agency (USEPA).

Finally, this spring we scheduled the first meeting of a **newly forming Advisory Committee for the Burt Lake Watershed**, which includes the Sturgeon, Crooked, and Maple Rivers. This upcoming meeting will feature briefings on completed fieldwork and teach new committee members what to look for in the plan. We will seek feedback and comments on the draft plan, including implementation recommendations.

Visit your Aquavist Webpage at: www.watershedcouncil.org/aquavists. For more information, contact Grenetta Thomassey, Policy Director, at grenetta@watershedcouncil.org or call (231) 347-1181 ext. 118.



(Left to Right) Watershed Council Policy Specialist, Jennifer McKay with U.S. Congressman Dave Trott (MI 11th District), Michele Arquette-Palermo, Cranbrook Institute of Science, and Emily Tyner, School of Freshwater Sciences.

Great Lakes Week in Washington D.C.

Once again, Watershed Council staff hit the halls of Congress during Great Lakes week. We joined hundreds of Great Lakes advocates in Washington, D.C. to urge members of Congress to support programs that protect and restore the Great Lakes. Priorities highlighted include funding for the Great Lakes Restoration Initiative and sewer and drinking water infrastructure, as well as addressing the threats posed by Asian carp and nutrient pollution. Our annual visit to D.C. helps solidify and strengthen bipartisan support for the protection and restoration of our most valuable resource among the Great Lakes congressional delegation.



Online communication, like email messages and social networks, are changing the way we communicate with you. Today, we are able to relay updates to you almost instantly. This instant communication through the use of email updates to our Aquavist Network and Facebook posts has played a critical role in policy issues like the proposed Waukesha Water Diversion and banning Great Lakes aquaculture. We are also utilizing YouTube to host recordings of our events to keep you informed when you're unable to attend.

Most recently, we started recording audio of our Ice Breaker Speaker series presentations and posting them on our Website. This winter we also started a regular, information video podcast series for the Petoskey News Review.

As you can see, social media is providing us an opportunity to share news quickly and in a very cost-effective way. We encourage you to **stay connected and share often**.



www.facebook.com/watershedcouncil
Offers a mix of news, updates, events, action alerts, and more.



[@TIPOFTHMITWATERSHED](https://www.instagram.com/tipofthemitwatershed)
Offers a pictorial view of our work, the scenic beauty of water, and more.



www.watershedcouncil.org/videos-presentations
Over 40 informational videos to help you protect our water resources and get acquainted with our programs and projects.



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www.watershedcouncil.org/aquavist-network
To receive policy updates and action alerts, sign up for the Aquavist Network. Contact Grenetta Thomassey at Grenetta@watershedcouncil.org or (231) 347-1181.

Momentous Win for the Great Lakes

Amid the hustle and bustle of the holiday season, a bill that will benefit the Great Lakes quietly became law. President Obama signed the Microbead-Free Waters Act of 2015 on December 28, 2015. As a result, the manufacturing of plastic microbeads will stop by July 1, 2017, and the sale of new cosmetic products containing microbeads will end by July 1, 2018.

The Microbead-Free Waters Act of 2015 enjoyed an unusual level of bipartisan support, sailing through Congress with little controversy in less than one month. This was truly a momentous win for the Great Lakes.

However, you don't need to wait for the ban to go into effect in mid-2017. Start avoiding the use of microbeads now. In particular, avoid products advertising microbeads and listing the plastics polyethylene and polypropylene as ingredients. Look for products that are using readily available alternatives, such as ground almonds, oatmeal, sea salt, and pumice. If you currently have products at home, don't add more microbeads to our waterways by using them. You can properly dispose of any unwanted personal care products, including those containing microbeads, at local Prescription and Over-the Counter Drug Drop-Off (POD) Program drop-off locations. Drop-off locations can be found at www.pillsinthepods.com.

Invasive Species Monitoring: ELK RIVER CHAIN OF LAKES

When contemplating the likelihood of encountering invasive species in a waterbody, it quickly becomes evident that geography plays a key role. Consider the following two lake scenarios: A small lake is tucked away in the remote hills of Northern Michigan. It sees limited boat traffic from its primitive launch and its only inlets are from springs or small streams. A second lake is part of a vast chain of lakes, connected by navigable rivers, and perched perilously close to the international traffic of a Great Lake. Boaters flock from all over the state to fish or boat recreationally at this second lake. In which lake would you expect to find invasive species? Although the first lake should be watched closely, it faces lower risks from the impacts of aquatic invasive species. The second lake, on the other hand, is at much higher risk for invasion.



The Elk River Chain of Lakes (ERCOL) falls within this high-risk category, which is why the Watershed Council recently undertook a comprehensive monitoring effort to document aquatic invasive species within its connecting waterways. Watershed Council staff and interns inspected aquatic plant communities of the ERCOL and documented infestations of the following: purple loosestrife, invasive *Phragmites*, curly-leaf pondweed, and Eurasian watermilfoil. In addition, an invasive mussel survey was conducted. Lastly, comprehensive aquatic vegetation surveys were completed for Elk, Skegemog, Intermediate, and Hanley Lakes.

The results? Curly-leaf pondweed was found in the Intermediate and Torch Rivers, with infestations extending into the Cedar and Rapid Rivers. Eurasian watermilfoil beds were found in the upper and lower ends of the Chain, mostly small and light-density, except for widespread infestations in St. Clair Lake. Invasive *Phragmites* was found at one location on Six Mile and two on Intermediate Lakes. Purple loosestrife was found in nine of 14 lakes, with the largest infestation areas on Hanley and Six Mile Lakes. No Quagga mussels were found, although 16,174 zebra mussels were identified in the process! This data will be used by multiple ERCOL stakeholders to take informed action towards controlling these invaders.



This project was funded by the Michigan Department of Environmental Quality.

Above: Kevin Cronk documenting invasive plants.

Left: Curly-leaf pondweed is documented in the survey.

Table 1. Volunteer Lake Monitoring Program history.

| LAKE NAME* | First Year Monitored | Last Year Monitored | Number of Years of Data |
|-----------------------------|----------------------|---------------------|-------------------------|
| Bass | 1992 | 2014 | 17 |
| Bellaire | 1990 | 2003 | 13 |
| Ben-way | 2003 | 2015 | 3 |
| Black | 1986 | 2015 | 27 |
| Burt, Central | 1989 | 2015 | 26 |
| Burt, North | 1986 | 2014 | 9 |
| Burt, South | 1986 | 2015 | 11 |
| Charlevoix, Central | 1987 | 2015 | 28 |
| Charlevoix, East | 2015 | 2015 | 1 |
| Charlevoix, South Arm | 1986 | 2015 | 28 |
| Charlevoix, West | 2013 | 2015 | 3 |
| Clam | 1990 | 2003 | 13 |
| Clear | 2005 | 2005 | 1 |
| Crooked | 1986 | 2015 | 27 |
| Deer | 1999 | 2008 | 9 |
| Douglas, Cheboygan Cty | 1986 | 2015 | 29 |
| Douglas, Otsego Cty | 1996 | 2015 | 23 |
| Elk | 1990 | 2015 | 26 |
| Ellsworth | 2003 | 2013 | 3 |
| Geneserath | 1999 | 2003 | 3 |
| Geneva | 1996 | 2007 | 7 |
| Hanley | 2005 | 2005 | 1 |
| Huffman | 1991 | 2015 | 19 |
| Huron, Duncan Bay | 1989 | 2004 | 4 |
| Intermediate | 1995 | 2015 | 9 |
| Lancaster | 2007 | 2007 | 1 |
| Larks | 1995 | 2015 | 14 |
| Long | 1993 | 2015 | 20 |
| Marion | 2006 | 2015 | 10 |
| Michigan, Bay Harbor | 2004 | 2012 | 9 |
| Michigan, E. Grand Traverse | 1995 | 1998 | 4 |
| Michigan, Little Traverse | 1986 | 2013 | 25 |
| Mullett, Central | 1987 | 2015 | 28 |
| Mullett, North | 1986 | 2015 | 7 |
| Mullett, South | 2003 | 2015 | 13 |
| Munro | 1995 | 2014 | 18 |
| Paradise | 1986 | 2015 | 26 |
| Pickerel | 1986 | 2015 | 30 |
| Round | 1995 | 2003 | 10 |
| Silver | 1991 | 2006 | 12 |
| Six Mile | 1992 | 2015 | 24 |
| Skegemog | 1990 | 2015 | 26 |
| Susan | 1993 | 2002 | 8 |
| Thayer | 2008 | 2015 | 8 |
| Thumb (Louise) | 1990 | 2015 | 26 |
| Torch, North | 1990 | 2003 | 11 |
| Torch, South | 1990 | 2003 | 14 |
| Twin | 1990 | 2015 | 22 |
| Walloon, Foot | 1986 | 2015 | 27 |
| Walloon, North Arm | 1990 | 2015 | 26 |
| Walloon, West Arm | 1991 | 2015 | 26 |
| Walloon, Wildwood Basin | 1991 | 2015 | 25 |
| Wilson | 2005 | 2005 | 1 |

= Lakes IN NEED of volunteer monitors.
 = Lakes monitored in Cooperative Lakes Monitoring Program. (A separate state program, not affiliated with our VLM program.)

*Continued from cover article...***Secchi Disc**

The Secchi disc was invented in 1865 by Pietro Angelo Secchi, an Italian Jesuit priest active in oceanography, meteorology, physics, and astronomy. The weighted black and white Secchi disc is used to measure water clarity by lowering it into the water and recording the depth at which it disappears. Water clarity is a simple and valuable way to determine a lake's biological productivity and assess water quality. Lakes that are very clear usually contain lower levels of nutrients and sediments and, in most cases, boast high quality waters. Secchi disc depths range from just a few feet in small inland lakes to over 80 feet in the Great Lakes!

Water transparency data for some lakes in our service area extend back to the 1980s, providing a long-term view of water quality conditions and trends. Seasonal averages are used for trend assessments because water clarity can vary greatly depending on the magnitude of algal blooms, weather events, and other factors. Data from Douglas Lake in Cheboygan County demonstrate the changes that have occurred over time in a number of the region's lakes. Averaged Secchi disc depths in Douglas Lake increased from approximately 10 feet in 1986 to over 14 feet 2015 (Figure 1). This trend of increasing water transparency is also fairly well pronounced in Black, Burt, Charlevoix, Elk, Michigan, Mullett, Pickerel, Skegemog, and Walloon Lakes. What do all these lakes have in common that might be causing such changes? Invasive zebra mussels.

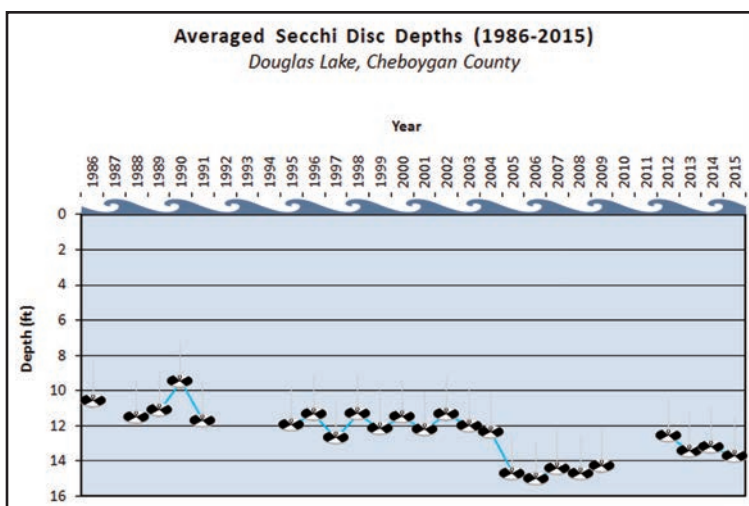


Figure 1. Water clarity trends in Douglas Lake, Cheboygan County.

Zebra mussels are now found in all of the region's largest lakes, as well as many smaller lakes. In addition, invasive quagga mussels, a close relative of zebras, are found in the Great Lakes and a few inland lakes including Crooked and Mullett. These invasive mussels have caused far-reaching changes in our lake ecosystems. Via filter feeding, zebra and quagga mussels remove enormous quantities of phytoplankton from the water column, which increases water transparency. Contrary to popular belief, these invasive mussels are not cleaning the water but filtering out the base of the food chain. This loss of primary productivity alters the entire food web, which ultimately leads to a reduction in top predator fish populations, such as trout or walleye. Fortunately, some lakes such as Thayer Lake in Antrim County have been spared the impacts of invasive mussels (Figure 2, page 6).

Tip of the Mitt Watershed Council Volunteer Water Quality Monitoring Programs

However, the steady decrease in Thayer Lake's water clarity signals that problems are afoot. Chlorophyll and nutrient data collected by volunteers show that high nutrient concentrations and consequent algal blooms are responsible for this decrease.

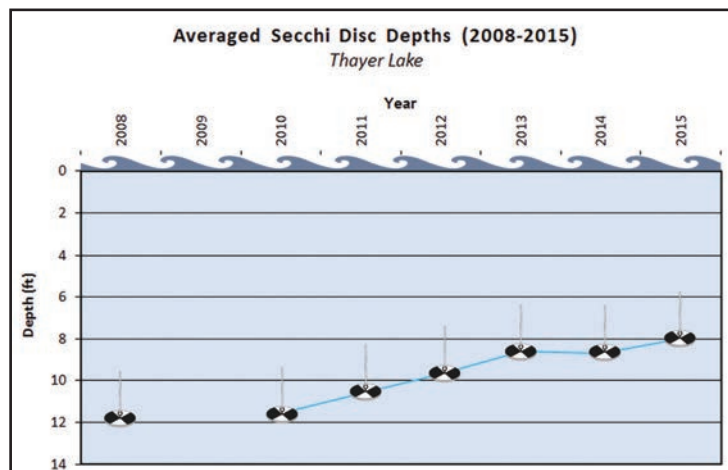


Figure 2. Water clarity trends in Thayer Lake, Antrim County.

Chlorophyll-a

Chlorophyll-a is a pigment used by plants, including algae, and cyanobacteria to photosynthesize. Volunteers collect water samples to measure chlorophyll-a concentrations, which provide an idea of algae (phytoplankton) abundance. Higher chlorophyll concentrations indicate greater phytoplankton densities and consequently reduced water clarity. Similar to water clarity, chlorophyll information can be used to determine a lake's biological productivity. Chlorophyll data helps determine whether water clarity changes are caused by algal blooms or by other factors, such as sediments or calcite.

The loss of primary productivity caused by invasive mussels should also be evident in the chlorophyll-a data. In the case of Twin Lakes in Cheboygan County, volunteer data show a rapid decline in chlorophyll-a concentrations after 2011 (Figure 3). Last year, residents informed us that zebra mussels had been found in the lake. Upon further inquiry with the Twin Lakes Home

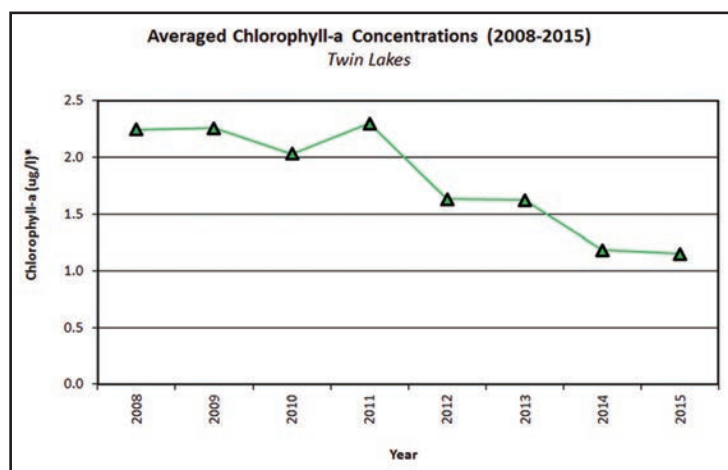


Figure 3. Chlorophyll trends in Twin Lakes, Cheboygan County.

Owner's Association, we learned that one resident started seeing them 3-4 years ago, which coincides perfectly with the trend in the volunteer data. Other lakes that clearly show this trend include: Black, Burt, Charlevoix, Michigan, Mullett, and Paradise.

In some lakes where invasive mussels have been present for many years, data show a reversal in the trend with water clarity decreasing and chlorophyll increasing. For example, volunteer monitoring data from Black Lake show that chlorophyll-a was lowest in 2008, after which concentrations rebounded (Figure 4). These data suggest that invasive mussel populations grew until food sources were depleted, then began to decline while phytoplankton rebounded. Recent data show chlorophyll concentrations decreasing yet again. With time, the lake ecosystem will likely adjust to the invaders and reach a new equilibrium.

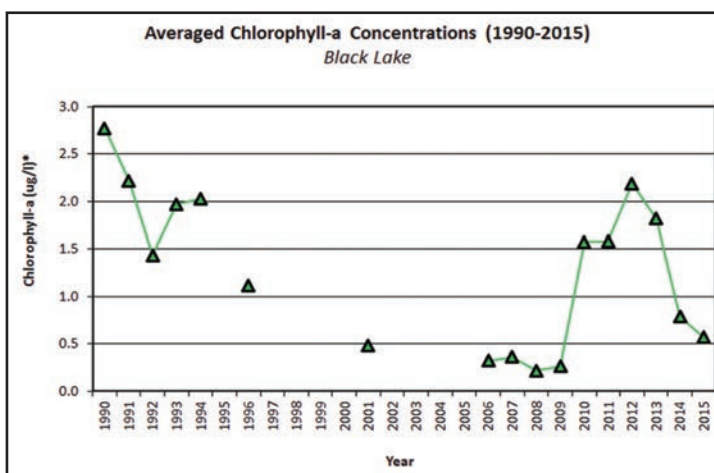


Figure 4. Chlorophyll trends in Black Lake, Cheboygan County.

Trophic Status Index

Trophic status is a way to classify the biological productivity of a lake in terms of both plant and animal life. It is determined by a variety of factors including nutrient availability, water volume, and residence time of water in a lake. The Trophic Status Index (TSI) is a tool developed to rank the biological productivity of a lake with values ranging from 0 to 100. Lower values (0-38) indicate an oligotrophic or low productivity system, medium values (39-49) indicate a mesotrophic or moderately productive system, and higher values (50+) indicate a eutrophic or highly productive system. Lakes with greater water clarity and lower phytoplankton densities score on the low end of the scale, while lakes with greater turbidity and more phytoplankton score on the high end.

Oligotrophic lakes are characteristically clear and nutrient poor. They typically have high water quality, with abundant stores of dissolved oxygen throughout the water column. Lake Charlevoix is an example of an oligotrophic lake in Northern Michigan. However, prior to the invasive mussels, TSI scores for Lake Charlevoix

showed it to be mesotrophic (Figure 5). Zebra and quagga mussels have decreased the lake's biological productivity, seemingly for the long term.

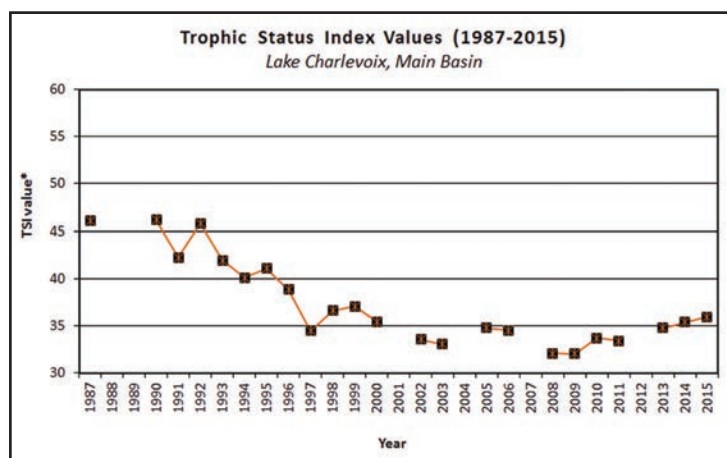


Figure 5. Trophic status trends in Lake Charlevoix, Charlevoix County.

On the other end of the spectrum, the shallow and nutrient-rich Huffman Lake currently falls into the eutrophic category (Figure 6). Depending on variables such as age, depth, and soils, some lakes are naturally eutrophic. However, nutrient and sediment pollution caused by humans can lead to the premature eutrophication of a lake, referred to as “cultural eutrophication.” Cultural eutrophication can lead to nuisance plant growth, problematic algal blooms, water quality degradation, and fish and invertebrate fatalities. Data show that Huffman Lake ranked in the mesotrophic category throughout much of the 1990s. Even though we have a data gap of almost 10 years, it would appear that TSI scores increased and remain near or above 50, which point to cultural eutrophication.

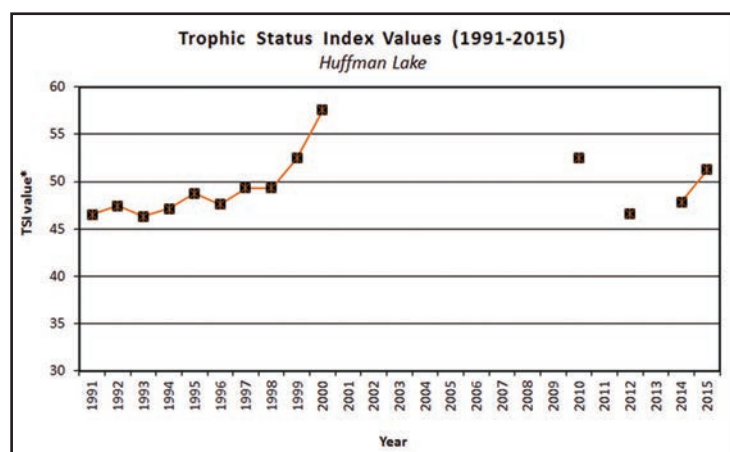


Figure 6. Trophic status trends in Huffman Lake, Charlevoix County.

Volunteer Lake Monitoring - Training Day

May 27, 2016 • 10:00am - 12:00 Noon
Inland Waterway Museum ~ Downtown Alanson

Pre-register for this event by calling 231-347-1181 or
email Matt Claucherty, matt@watershedcouncil.org

2015 Results for all Lakes

In 2015, a total of 30 sites were monitored on 20 lakes by 52 volunteers. In the table below, you will find the fruits of their labor. TSI scores, averaged Secchi disc depths, and chlorophyll-a concentrations are all included so that you can see where your favorite lakes stand and compare with others. Please note that information for a few lakes monitored by our volunteers are not included in the table due to insufficient data.

Table 2. 2015 Volunteer Lake Monitoring Data.

| Lake/Station | TSI Score 2015* | Secchi Depth 2015 (feet)* | Chlorophyll-a 2015 (ug/L)* |
|-------------------------|-----------------|---------------------------|----------------------------|
| Ben-Way Lake | <i>i</i> | <i>i</i> | 2.60 |
| Black Lake | 39 | 14.5 | 0.57 |
| Burt Lake, Central | 35 | 18.5 | 0.03 |
| Burt Lake, South | 35 | 19.0 | 1.03 |
| Crooked Lake | 41 | 12.0 | 1.14 |
| Douglas Lake, Cheboygan | 40 | 14.0 | <i>i</i> |
| Douglas Lake, Otsego | 37 | 16.0 | 1.55 |
| Huffman Lake | 51 | 6.0 | 0.78 |
| Intermediate Lake | 37 | 18.0 | 1.14 |
| Lake Charlevoix, Main | 36 | 18.0 | 0.51 |
| Lake Charlevoix, S. Arm | 38 | 15.0 | 0.82 |
| Lake Charlevoix, West | 34 | 20.0 | 0.38 |
| Lake Charlevoix, East | 34 | 20.0 | 0.14 |
| Lake Marion | 38 | 15.5 | 1.66 |
| Lake Skegemog | 38 | 16.0 | 0.84 |
| Larks Lake | 31 | 7.0 | 0.37 |
| Long Lake, Cheboygan | 33 | 22.0 | 0.77 |
| Mullett Lake, Central | <i>i</i> | <i>i</i> | 0.36 |
| Mullett Lake, North | 34 | 20.0 | 0.11 |
| Mullett Lake, South | 36 | 17.0 | 0.48 |
| Paradise Lake | 44 | 10.0 | 0.57 |
| Pickerel Lake | 40 | 13.5 | 0.93 |
| Six Mile Lake | 43 | 11.0 | 1.53 |
| Thayer Lake | 47 | 8.0 | 6.12 |
| Thumb Lake | 31 | 25.0 | 1.03 |
| Twin Lakes | 40 | 14.0 | 1.15 |
| Walloon Lake, Foot | 36 | 17.5 | 0.81 |
| Walloon Lake, North | 40 | 14.0 | 0.99 |
| Walloon Lake, West | 37 | 16.5 | 0.21 |
| Walloon Lake, Wildwood | 40 | 14.0 | 0.47 |

*all scores are seasonal averages, *i*=insufficient data, ug/L=micrograms per liter.

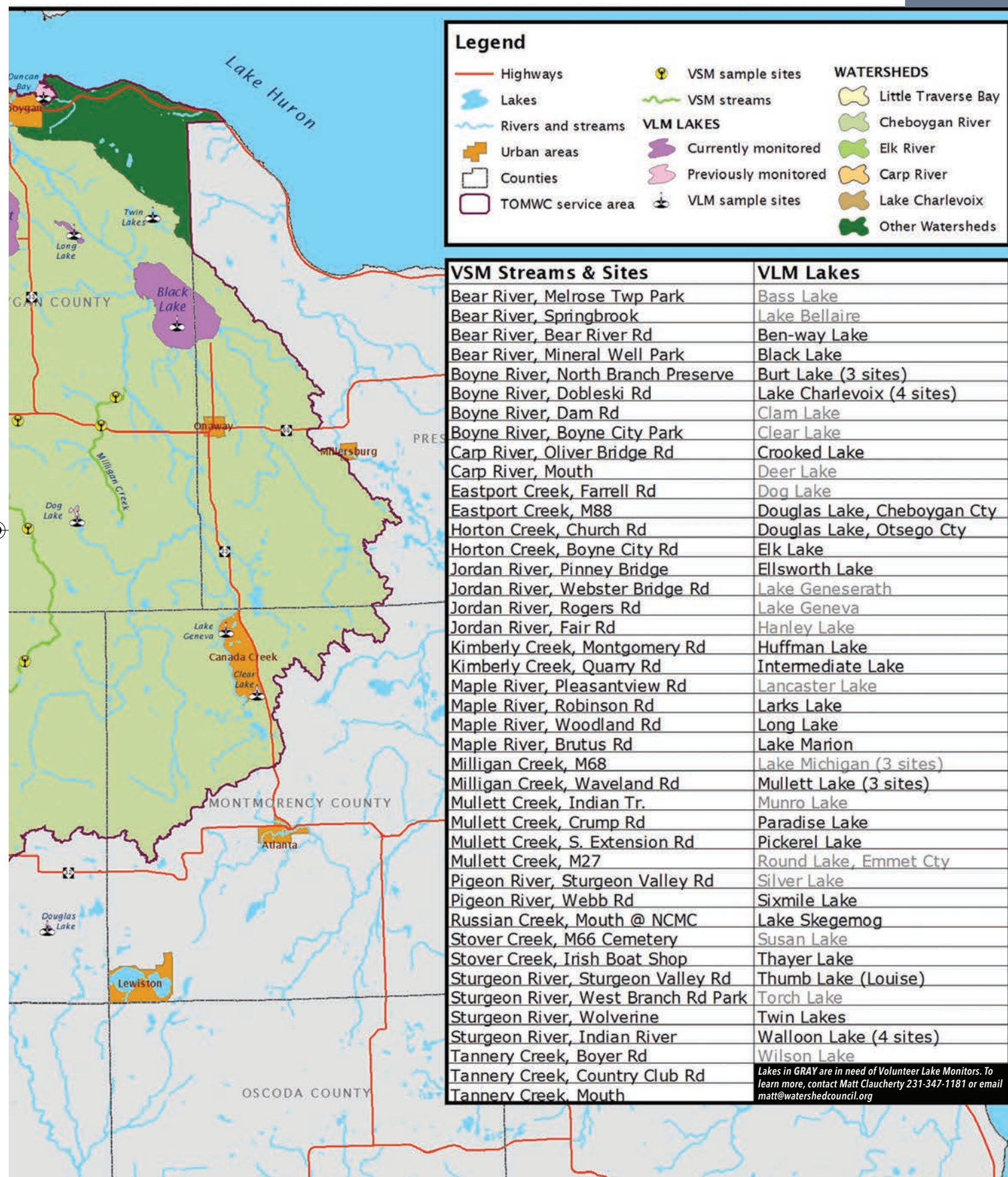


Volunteer Lake Monitoring and



Volunteer Stream Monitoring

2016 REPORT



Tip of the Mitt Watershed Council Volunteer Water Quality Monitoring Programs

Volunteer Stream Monitoring Program Flowing Smoothly

Rivers and streams are intrinsic elements of Northern Michigan's natural landscape and vital for sustaining local economies and our very way of life. They contain an incredible assortment of life ranging from microscopic algae and tiny aquatic mites to trophy-size trout and playful river otters. Streams are fundamental components of the hydrologic cycle. They are fed by precipitation, runoff from the landscape, and groundwater discharge. In turn, they deliver their water to our majestic lakes. As an endless source of enjoyment, our rivers and creeks provide recreational opportunities to residents and visitors alike, including fishing, paddling, and wildlife viewing. For these reasons and more, Watershed Council staff and volunteers consider our phenomenal streams to be resources worth protecting.

Since 2004, hundreds of passionate and dedicated community members have helped take the pulse of Northern Michigan streams by volunteering with the Watershed Council's Volunteer Stream Monitoring Program. These volunteers wade into streams every spring and fall to collect aquatic macroinvertebrates and other data, which help Watershed Council staff assess stream health. Volunteers sample 300' stream sections, collecting macroinvertebrates from all habitat types and preserving up to 100 specimens representative of site diversity. Specimens are later identified to the family level to determine community diversity. The greater the biological diversity found at a site, the healthier the stream ecosystem.

At the end of 2015, the total number of aquatic macroinvertebrates collected by our volunteers surpassed 48,000! Three families of caddisflies and mayflies were most commonly collected, accounting for 27% of the total. This information indicates high water quality in that caddisflies and mayflies are considered "canaries in the coalmine." When a stream becomes impaired, these are among the first insects to disappear.

Mayflies, caddisflies, and a third pollution-sensitive insect order called stoneflies are generally found in abundance in Northern Michigan streams. However, these sensitive insect orders are not so common in Southern Michigan. Case in point is the Huron River Watershed Council's (HRWC) Adopt-A-Stream Program in Southeastern Michigan. On average, over the last five years, HRWC volunteers found 4.4 families per sample site that belong to the caddisfly, mayfly, and stonefly insect orders, whereas our volunteers found over 8.4. This illustrates the typically pristine state of our streams versus the oftentimes more degraded streams of Southern Michigan. This geographical disparity in stream water quality in Michigan is related to land use – in general, the greater the percentage of urban and agricultural land cover in a watershed, the more degraded the streams.

In 2015, over 160 volunteers monitored 37 sites on 15 rivers and creeks. Results of their monitoring efforts and stream health assessments are provided in the following section.

Table 3. Averaged diversity scores for rivers and creeks.

| Stream Name | Total Taxa Average | EPT Taxa Average | Sensitive Taxa Average |
|--------------------------|--------------------|------------------|------------------------|
| Bear River | 17.1 | 6.7 | 2.9 |
| Boyne River | 16.1 | 8.9 | 4.9 |
| Carp River | 18.3 | 7.2 | 4.1 |
| Eastport Creek | 19.8 | 7.2 | 2.9 |
| Horton Creek | 16.9 | 7.7 | 3.5 |
| Jordan River | 21.5 | 11.9 | 7.0 |
| Kimberley Creek | 21.2 | 7.8 | 3.9 |
| Maple River | 22.3 | 9.6 | 3.8 |
| Milligan Creek | 20.3 | 10.1 | 6.5 |
| Mullet Creek | 20.0 | 8.2 | 3.8 |
| Pigeon River | 21.1 | 10.4 | 6.1 |
| Stover Creek | 15.4 | 4.7 | 1.7 |
| Sturgeon River | 21.1 | 10.9 | 6.9 |
| Tanner Creek | 14.5 | 5.8 | 2.2 |
| All Streams/Sites | 18.5 | 8.2 | 4.1 |

STREAM REPORTS

Stream ecosystem health is assessed using three measurements of diversity: 1) Total Taxa = total number of macroinvertebrate families found at a site; 2) EPT taxa = number of families in the three pollution-sensitive insect orders (mayflies, stoneflies, and caddisflies); and 3) Sensitive Taxa = number of the highly sensitive macroinvertebrate families. Scores for each sample site are averaged using data from all monitoring events and are presented in Table 3. Each river or creek is graded based on a system developed by Watershed Council staff that utilizes all three index scores.

Water Quality Grading System*

A = Excellent D = Poor
B = Good E = Very Poor
C = Moderate

*Grades based on system that utilizes all three index scores.

Bear River: Grade = B

The Bear River flows north from headwaters in Walloon Lake and Chandler Hills to Little Traverse Bay in Petoskey. Data collected by North Central Michigan College (NCMC) biology students show that Springbrook, which drains the largely undeveloped southeastern watershed including Chandler Hills,

has the greatest diversity among Bear River sites. Student volunteers from Petoskey High School find moderate to high diversity at Bear River Road, which is located at about mid-watershed. The remaining sites show less diversity. Habitat degradation combined with relatively warm water from Walloon Lake likely contribute to lower diversity at Melrose Township Park. Polluted stormwater runoff from adjacent agricultural and urban areas probably contribute to lower diversity scores at Mineral Well Park in Petoskey and in Russian Creek at the NCMC Natural Area.

Boyne River: Grade = A

The Boyne River flows from headwaters that stretch from Thumb Lake to Elmira, west into Lake Charlevoix. The aptly-named Friends of the Boyne River have taken it upon themselves to monitor four sites, including the South Branch at Dobleski Road, the North Branch on Thumb Lake Road, mid-river at Dam Road, and near the mouth in Boyne City. Although total diversity rarely surpass 20 taxa, EPT and sensitive family diversity scores are consistently high. Volunteer data show why the Boyne is considered one of the best trout streams in Michigan and designated as “Blue Ribbon” by the Michigan Department of Natural Resources (MDNR). However, the Boyne River is not without issues. Hydroelectric dams elevate water temperatures and are barriers to fish passage. Stormwater runoff from agricultural areas in the upper watershed and urban areas in the lower watershed also pollute the river.

Carp River: Grade = A

The Carp River flows northwest from Paradise Lake, passing through Wilderness State Park, and emptying into Lake Michigan at Cecil Bay. Although a very small river, volunteer data show that the Carp rivals our other larger, more prestigious rivers like the Boyne and Maple. Volunteers consistently find moderate to high diversity at two monitoring sites: upstream at Oliver Bridge Road and downstream near the mouth. The health of the Carp River seems related to land cover – agricultural lands are limited to 8% of the watershed while urban comes in at even less (3%).

Eastport Creek: Grade = B

Eastport Creek flows south into the north end of Torch Lake, draining a thin slice of land from Atwood down to the Village of Eastport. It has been monitored intermittently at two sites since 2005. Volunteer data from the upstream site at Farrell Road show a diverse and healthy macroinvertebrate community. Data from the M88 site, however, show lower diversity that is similar to degraded streams. Residential development in the Eastport area, which often contributes to habitat degradation and stormwater pollution, is a likely culprit.

Horton Creek: Grade = B

Horton Creek flows south from its headwaters near Little Traverse Bay into Horton Bay in Lake Charlevoix. Habitat provides at least a partial explanation for the large differences in macroinvertebrate diversity that volunteers find between upstream and downstream sites. Fast, erosive, stream flow at the downstream Boyne City Road site exposes a variety of substrate types including gravel and rock, which increase habitat variability. The low gradient and consequent low flow velocity upstream at Church Road lead to

deposition and accumulation of sediments and organic materials. The sluggish and depositional nature of the creek at this site results in a largely mucky stream bottom, limited habitat diversity, warmer water temperatures, and, therefore, lower diversity scores. Recent data from the Watershed Council's Lake Charlevoix Tributary Monitoring Project suggest that nutrient and sediment pollution from the Upper Horton Creek Watershed may be degrading the creek.

Jordan River: Grade = A

In 1972, the Jordan River was designated a wild-scenic river in Michigan's Natural Rivers Program. This treasured river is borne out of the high hills northwest of the Mancelona Plains near Alba and flows northwest until emptying into the South Arm of Lake Charlevoix. The Friends of the Jordan River coordinates volunteer monitoring on the Jordan River. Volunteers alternate between four sample sites including Pinney Bridge, Webster Bridge Road, Rogers Road, and Fair Road. Not surprisingly, the Jordan River boasts some of the best diversity numbers in our program. Volunteers have found as many as 11 sensitive families at a site, rivaled only by the Sturgeon River. Pristine conditions throughout most of the Jordan River Watershed and limited development along the river's edge contribute to its exceptional water quality.

Kimberly Creek: Grade = B

Paralleling the Pigeon River, Kimberly Creek flows north from the Afton area, crossing M68 and ultimately reaching Mullett Lake. In spite of residential, agricultural, and extractive (mining) land use in the upper watershed, the creek supports a diverse assemblage of aquatic macroinvertebrates, particularly at the lower site on Quarry Road. Habitat degradation from streambank vegetation removal upstream at Montgomery Road likely contributes to lower diversity numbers at that site.

Maple River: Grade = A

From headwaters in the Pleasantview Swamp, Larks Lake, Douglas Lake, and Munro Lake, the Maple River flows southeast into Burt Lake at Maple Bay. Volunteers monitor four sites, two on the main branch and two on the west branch. The east branch is not monitored because of potential impacts that insect collection could have on known populations of the federally-listed threatened and endangered Hungerford's crawling water beetle. Volunteer data from Brutus Road near the mouth, Woodland Road downstream of the Lake Kathleen Dam, and Robinson Road on the west branch in Pellston all show spectacular diversity. Low diversity at the Pleasantview Road site is at least partly attributed to naturally slow flow and warmer water temperatures, but could also be the result of agricultural activity in that part of the Watershed.

Milligan Creek: Grade = A

Milligan Creek, an important tributary of the Black River near the village of Tower on M68, was added to our program based on recommendations by MDNR fisheries biologists. EPT and sensitive families are generally found in abundance by volunteers, indicating a healthy stream ecosystem at both the M68 and Waveland Road sites. The Waveland Road site is unique among sites monitored in the program in that the stream bottom is lined with exposed bedrock.

Tip of the Mitt Watershed Council Volunteer Water Quality Monitoring Programs

Mullett Creek: Grade = **B**

The Mullett Creek Watershed lies in an area between Douglas, Burt, and Mullett Lakes. The creek flows southeast from headwaters near the University of Michigan Biological Station, and passes under I-75 and M27 before emptying into Mullett Lake. Volunteer monitors alternate between four sites on the Creek. Volunteer data show that macroinvertebrate diversity is highest at the mid-stream sites on Crump Road and South Extension Road, while moderately high diversity is found at the most upstream site on Indian Trail. Total diversity at the creek mouth is similar to other sites, but sensitive taxa diversity is markedly lower. Sluggish flow, warmer water temperatures, and lower dissolved oxygen levels in this low-gradient section provide an explanation for the low sensitive species diversity. However, the high percentage of agricultural land use in the Mullett Creek Watershed may also be a factor.

Pigeon River: Grade = **A**

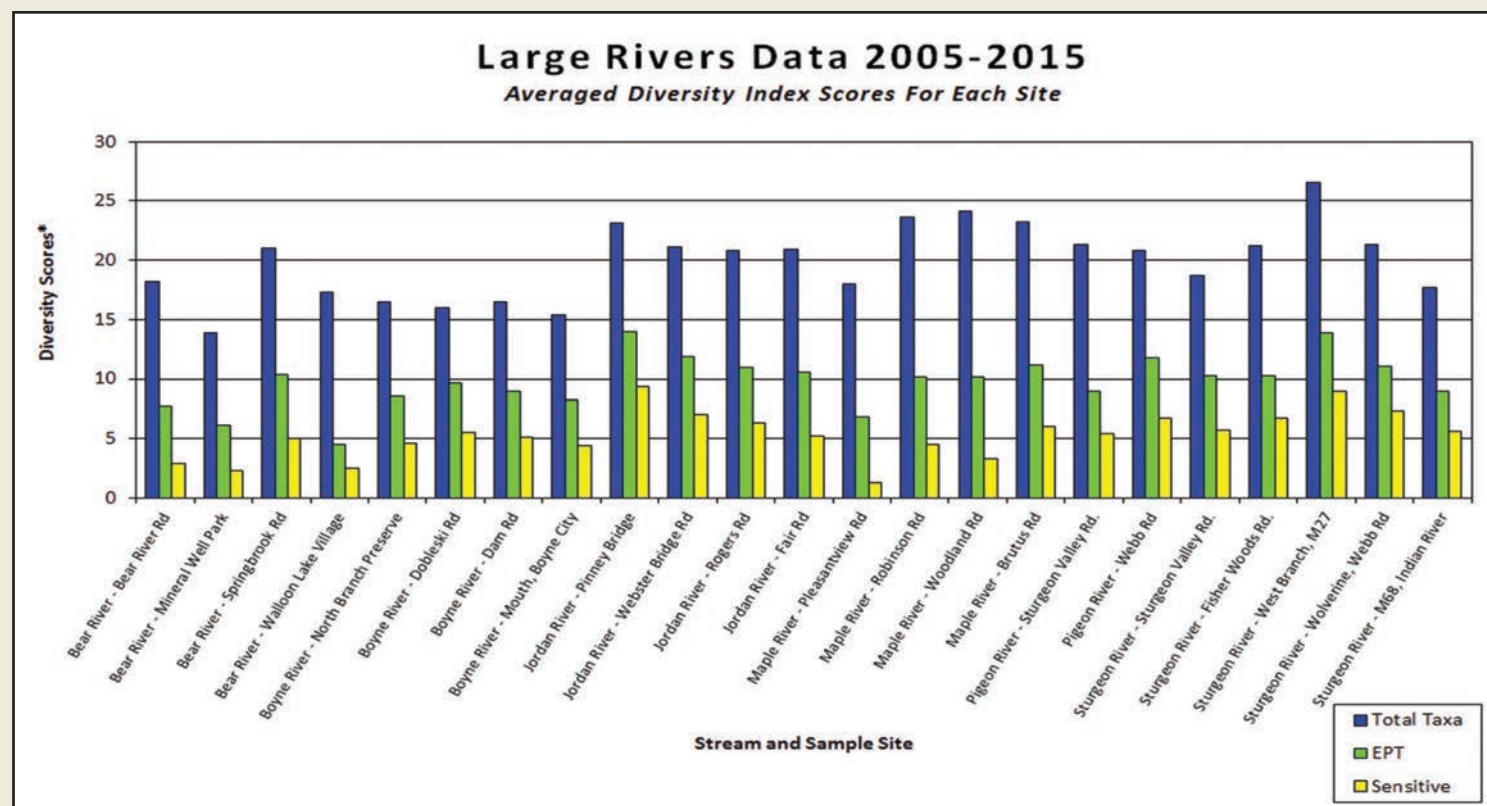
Pigeon River headwaters are located just northeast of Gaylord. It flows north through the heart of the Pigeon River Country State Forest, crossing M68 to the west of Afton, and flows into Pigeon Bay in southern Mullett Lake. Volunteers monitor two sites, upstream at Sturgeon Valley Road and mid-river at Webb Road. The exceptional diversity found at both sites is attributed to the pristine nature of the Watershed, which has little urban, residential, or agricultural land cover. Furthermore, 2015 volunteer data show that macroinvertebrate diversity remained high after the recent dam removal at Song of the Morning Ranch.

Stover Creek: Grade = **C**

Stover Creek drains an area to the south of the City of Charlevoix, flowing north and then east until emptying into the west end of Lake Charlevoix. The percentage of agricultural and urban land cover in its watershed are among the highest in the region, which helps explain the low macroinvertebrate diversity that volunteers have documented in the Creek. The Creek's mouth has the lowest diversity in our program with an average of 0.4 sensitive taxa. Although diversity numbers are higher at the upstream Brookside Cemetery site, our long-term dataset shows a trend toward decreasing diversity. In response to these problems, the Watershed Council completed the Stover Creek Restoration and Management Plan in 2015. We are currently working to implement recommendations spelled out in the plan that will ultimately restore the Creek and increase biological diversity.

Sturgeon River: Grade = **A**

The Sturgeon River main branch begins just outside Gaylord city limits, following a route north alongside I-75 past Vanderbilt and Wolverine, and finally to Indian River where it flows into Burt Lake. The west branch originates in the hills of southeast Charlevoix County near Huffman and Thumb Lakes. Similar to the Jordan, the Sturgeon River supports very diverse, healthy macroinvertebrate communities at all sites monitored by volunteers. Sites currently monitored include a roadside township park on the west branch and three sites on the main branch: upstream at Vanderbilt Road, Webb Road in Wolverine, and Fisher Woods Road near Indian River. Sites at Sturgeon Valley Road in the upper watershed and M68 in Indian River are no longer monitored because of sampling difficulties and volunteer safety issues.



*Total taxa: total number of macroinvertebrate taxa; EPT taxa: taxa from pollution-sensitive insect orders (mayflies, stoneflies, and caddisflies); sensitive taxa: taxa most intolerant of pollution.

Tannery Creek: Grade = C

The Tannery Creek Watershed is located in northwest Bear Creek Township to the east of Petoskey. It flows north through agricultural and residential areas in its upper watershed, skirts the Bay View Country Club, and then passes through a heavily urbanized area near its mouth before flowing into Little Traverse Bay. Volunteer data show moderately high macroinvertebrate diversity at the upper sites on Boyer and Country Club Roads, but very low diversity at the mouth. Stormwater runoff from the conglomeration of buildings, roads, and parking lots flows into the Creek, degrading water quality and warming water temperatures. Additionally, streambank vegetation removal and channelization have degraded the stream's habitat. Similar to Stover Creek, data from the volunteer monitoring program raised a red flag, which has resulted in development of a watershed plan specific to Tannery Creek, as well as restoration actions. We continue to work with partners to improve conditions in the lower stream sections, as well as throughout the Watershed.

Thank You Volunteers

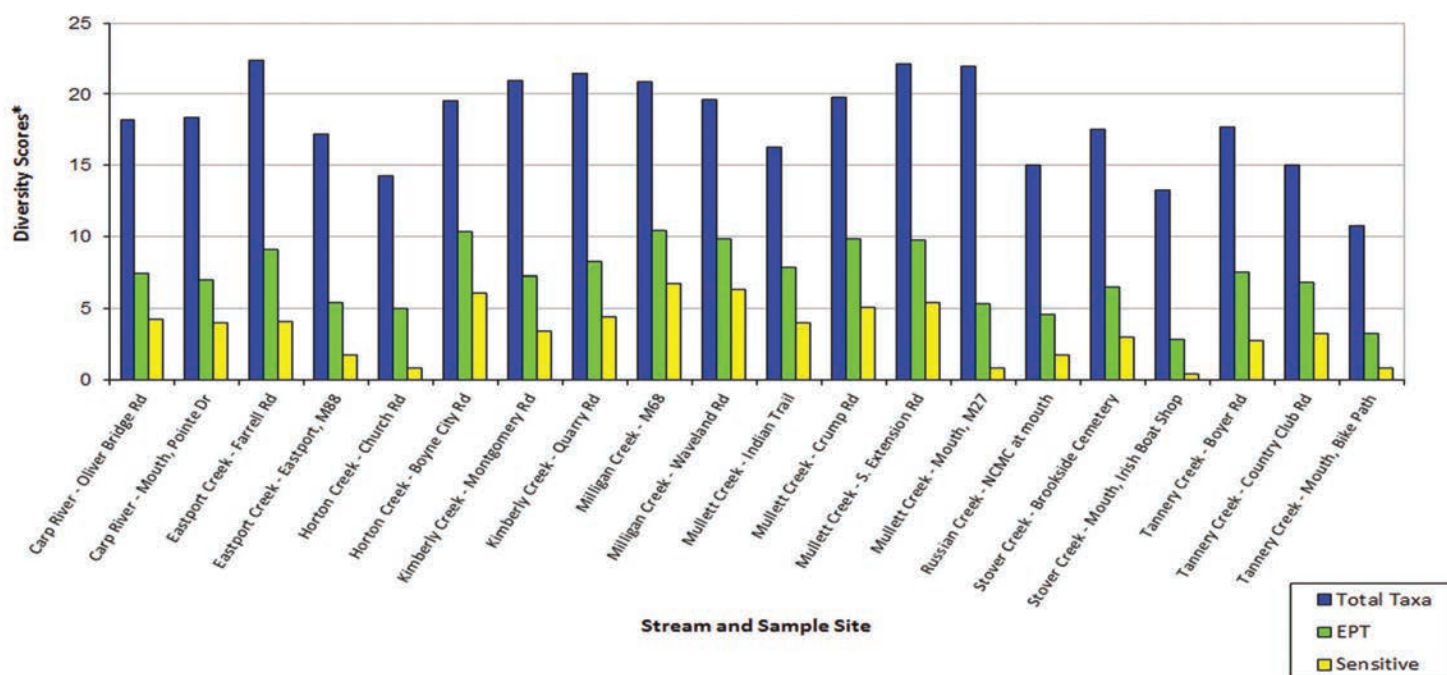
Monitoring even a small percentage of the thousands of lake acres and stream miles that define our landscape would not be possible without the help of so many dedicated volunteers. The Watershed Council and the aquatic life in all of these surface waters are deeply indebted to our active and enthusiastic volunteer monitoring community. We extend a heartfelt thank you to each and every one of our volunteer monitors. If you would like to get involved or would like additional information, please contact program coordinators Kevin Cronk at kevin@watershedcouncil.org and Matt Claucherty at matt@watershedcouncil.org today!

Look for us on the water this spring!

This year is a Comprehensive Water Quality Monitoring Program field year. That means as soon as ice is out of the inland lakes, our field staff will be on the water collecting water quality data from over 50 lakes and rivers throughout the region. Keep an eye out for us on lakes and rivers in your area in April and May.



Small Streams Data 2005-2015
Averaged Diversity Index Scores For Each Site



Welcome New Members

10/19/15-3/15/16

Alumni Association of University
of Michigan

Roger and Carole Baer

Mr. and Mrs. Daryl Barbe

Mr. and Mrs. Jerry R. Beehler

Mr. Ed Bezilla

Mr. Brendan Billingsley

Kyle Billingsley

Mr. and Mrs. Roland J. Brandt

Tom and Polly Bredt

Thomas and Deborah Chapman

Mr. and Mrs. Richard W. Clark

Jim and Patricia Clarke

Mr. Matthew Claucherty

Mr. and Mrs. Richard K. Cohen

Mr. Gordon Converse

Cottage Company of Harbor Springs

Mr. and Mrs. William Crawford

David Skornia Contracting

Mr. and Mrs. Richard Duke

Mr. and Mrs. Eugene Ferries

Mr. and Mrs. Marc A. Files

Mr. and Mrs. William H. Frey

Scott and Tina Gleason

Kathleen Glynn

Mr. and Mrs. John A. Griswold

Marcia Haddox

Mr. and Mrs. James Haugh

Terri L. Hemmelgarn

Perry Irish and Rich Hodgson

Mr. and Mrs. Andrew W. Hogarth

Mr. and Mrs. Bruce Hubble

Mr. and Mrs. John Iaconi

Sylvia Johnson

Mrs. Nancy Koehler

Ms. Sandra Schoene Krahulik

Kramer and Company PLC

Mr. and Mrs. Richard S. McCaghy

Mr. and Mrs. John R. McNaughton III

Michigan Scientific Corporation

Mr. and Mrs. Jay Nowell

Larry and Sarah Peck

Thomas and Kathryn Petz

Mr. and Mrs. Mark Prendeville

Mr. John P. Rogers

Mr. and Mrs. Robert Smith

Mr. and Mrs. Neil A. Starkey

Mr. David H. Templin

Mr. and Mrs. J.R. Tobin

Christine Tremper

Ms. Dana Vannoy

Norman Veliquette

Memorial Gifts

Marilyn Coll

Mr. Elwin Coll

Robert Collie

Randel E. Richner and Eric W. Russell

Agnes Cressy

Corri Sandwick

Betty Finley

Mr. Christopher Finley

Joseph Lyons

Mrs. Joseph Lyons

Irene Phelps

Mr. and Mrs. Bill Larsen

Robin Shanley

Paula Vaughan

Brenda Turk

Mr. and Mrs. Mark Nichols

Buzz Jenks

Ms. Laura Blaszak

Bay Street Orthopaedics

Ruth Hoppe

Mike and Jen Aenis

Mr. and Mrs. David Irish

Dr. and Mrs. Allen D. Damschroder

Richard C. Stavoe, Jr. and

Laurene Horiszny

Mr. and Mrs. Floyd A. Wright

Mr. and Mrs. Richard Baker

Dr. and Mrs. James Ehrnst

Dr. and Mrs. Gilbert M. O'Gawa

Mr. and Mrs. Douglas Peters

Honorariums

Linda Badalucco

Linda Heller

Ashlo Crain

Mr. and Mrs. Tim Craine

Gail Gruenwald

Mr. and Mrs. Michael McElroy

Mr. and Mrs. A.W. Hallett

Mr. and Mrs. Charles Forsberg

Mrs. Ronald Kauper

Mr. and Mrs. Charles Forsberg

Milhizer Family

Kate and Jen Andrews van Horne

Nancy and Brian Nowitzke

Linda Heller

Joellen and Rod Rodgers

Maureen Owens

Grenetta Thomassey

Andrea Arends

Sally Wilson

Linda Heller

Besides becoming a member, there are many other ways you can support the financial stability of our organization and protect our vital water resources. Visit our website for details, www.watershedcouncil.org/gifts-and-donations.

Your contribution helps support programs like... The Watershed Academy!

The Tip of the Mitt Watershed Academy engages high school biology students in citizen science efforts and place-based education. Academy members learn stream water quality monitoring techniques and collect data that contributes to Tip of the Mitt Watershed Council's water quality monitoring efforts. The Watershed Academy provides an opportunity for members to connect with both their communities and local water resources. Academy members participate in meaningful environmental stewardship, gain insight into relevant conservation issues and new career opportunities, as well as share their experience with the greater community. THANK YOU for supporting this program!



Boyne and Jordan River Road Stream Crossing Inventory Project

The Watershed Council took advantage of some not-too-wintery weather in mid-December to inventory a few more road/stream crossings (RSXs) on the Boyne and Jordan Rivers and their tributaries. In total, staff and interns inventoried 116 sites during the 2015 field season.

RSX inventories serve as a useful watershed management tool. They help identify sediment pollution entering surface waters from poorly designed, maintained, or aging stream crossing infrastructure. Inventories also reveal fish passage barriers due to perched culverts, as well as altered stream hydrology from inadequately designed or installed crossings. Performing regular RSX inventories allows road commissions and resource managers to note changes in stream and structure conditions over time, as well as rank RSXs as minor, moderate, or severe, as a means of prioritizing them for improvements or replacement.

Following the Great Lakes Road/Stream Crossing Inventory protocol, each site was assessed for erosion, fish passage, structure type, size, and condition. Stream characteristics, such as water depth, channel width, flow, and other factors were assessed as well.

Inventory results revealed that the RSXs in the Jordan and Boyne River Watersheds are in need of attention! Nearly all (114) are limiting passage to some aquatic organism species, with only two RSXs categorized as not barriers! Of the 116 RSXs, 102 were ranked as either moderate or severe.

How is this data useful? The Watershed Council is currently preparing a summary of the inventory results that will highlight the priority sites where attention is needed most due to their current conditions and subsequent threat to water quality. This report will allow us to look for funding to help road commissions offset the cost of RSX improvements.

Thank you to the Charlevoix County Community Foundation for making the project possible!



AmeriCorps Volunteer, Eli Baker, assists with a road/stream crossing inventory.

POD Survey Results

In 2013, Tip of the Mitt Watershed Council was awarded grant funds from the Michigan Department of Environmental Quality Pollution Prevention Program to enhance Northern Michigan's Prescription and Over-the Counter Drug Drop-Off (POD) Program. As part of the project, we surveyed local residents from the four counties of Antrim, Charlevoix, Cheboygan, and Emmet to gather information on medication disposal in Northern Michigan and determine if activities undertaken during the two year grant period were successful.

Overall, our efforts proved to be extremely effective in raising awareness of the POD Program. Based upon survey results, almost 90% of survey respondents are aware of the POD Program and 84% of individuals believe the POD Program has raised their awareness about how and where to properly dispose of unwanted, unused, and expired medications. As a result of our education and outreach, community awareness of the POD Program increased from 66% to 88%. In addition, use of permanent POD boxes substantially increased during the last two years. Sixty-seven percent of respondents used the permanent drop boxes located at law enforcement offices for disposal in 2015, as opposed to only 21% previously.

In the end, our education and outreach efforts were highly successful in enhancing the POD Program, which prevents contamination of Michigan's water resources and protects the health and safety of residents in Northern Michigan.



Thank You

We are truly grateful for everyone that pitches in to support our organization. With special thanks we would like to recognize:

RSVP Volunteer **Sharon Brown** for assisting with our mailings.

Roast & Toast for supplying coffee for our meetings and workshops.

Roger Drinkall for continually volunteering to assist our Policy Team.

Alan Beyer for assisting with research, organizing, shoveling, and small maintenance projects around the office.

Our Ice Breaker Series guest speakers: **Ashley Baldridge, PhD., Joe Rathbun, Dave Clapp, Paul Drevnick, PhD., and Kevin Donner.**

Harken, Inc. for donating gear to our Watershed Protection team.

Aquapac, Inc. for their drybag gear sponsorship.

Mackenzie Dix, Lex Scheffka, and Libby Ives for assisting with data entry.

Jean Hammond for doing our herbarium aquatic plant specimen mounting.

Walloon Lake Association for lending us their Hydrolab cable and the **University of Michigan Biological Station** for lending us their Kemmerer bottle for Comprehensive Water Quality Monitoring.

Is My Drinking Water Safe?

This past winter, the fallout from the lead-contaminated drinking water in Flint left many of our local residents calling the Watershed Council to have their water tested. While we would love to be of service, the Watershed Council does not analyze the safety of drinking water.

In our service area, the Health Department of Northwest Michigan and District Health Department #4 provide water testing kits to ensure that private and public drinking water sources are safe for consumption. These kits are available at the addresses below.

District Health Department #4

Serves Cheboygan, Presque Isle, and Montmorency Counties.

(989) 356-4507

www.dhd4.org

Health Department of Northwest Michigan

Serves Antrim, Charlevoix, Emmet and Otsego Counties.

(231) 547-6523

www.nwhealth.org

SAVE THESE DATES!

For more information about these events, visit www.watershedcouncil.org/attend-an-event.

UPCOMING EVENTS

- 6/26/16 Waganakising Bay Day
- 7/16/16 Whale of a Sale - **NEW LOCATION!**
- 7/19/16 37th Annual Membership Meeting
- 8/13/16 Bear River Cleanup

VOLUNTEER STREAM MONITORING

- 5/14/16 Training Day
- 5/21/16 Field Day
- 6/5/16 Indoor Identification Day

VOLUNTEER LAKE MONITORING

- 5/27/16 Lake Monitor Training Day

POD COLLECTION EVENTS

- 4/21/16 McLaren Northern Michigan, Petoskey Campus
- 4/28/16 McLaren Northern Michigan, Cheboygan Campus
- 5/21/16 Emmet County Drop-off Center
- 5/21/16 Antrim County Courthouse
- 7/23/16 Emmet County Drop-off Center



**JUNE
10 & 11
2016**

BIO BLITZ at Susan Creek Nature Preserve

Come help document as many living creatures on the preserve in 24 hours as possible. The event will run from noon to midnight on Friday and 6am to 6pm on Saturday. Keep an eye out for more details from Little Traverse Conservancy. You may also contact Cacia@landtrust.org with questions regarding this event.



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AmeriCorps is a national service program designed to strengthen citizenship and the ethic of service by engaging thousands of Americans on a full-time or part-time basis to help communities to address their toughest challenges. Michigan's AmeriCorps is similar to a domestic Peace Corps, that involves individuals (members) "getting things done" in their communities. Visit www.ameriacorps.gov to learn more or simply ask Eli about his AmeriCorps Volunteer experience.



We are excited to have Eli Baker serving as our new Outreach and Education Specialist this year! Eli comes to us through the Huron Pines AmeriCorps program. Eli began in January and it didn't take long for him to make great progress on his two focus areas: the Tip of the Mitt Watershed Academy and the Michigan Shoreland Stewards (MISS) program. Eli received his bachelor's degree in Elementary Education from Calvin College and, following his spring 2015 graduation, served as an Environmental Education Intern with the Au Sable Institute of Environmental Studies. As a life-long Michigan resident, Eli has a passion for conservation and a heart for environmental education. Eli's skills fit perfectly with the needs of the Watershed Academy and the Michigan Shoreland Stewards programs. He is assisting with the coordination of the second year of the Watershed Academy, our environmental education program for local high school students. For the MISS program, Eli is working with the Michigan Natural Shoreline Partnership to develop and implement a state-wide recognition program for shoreland property owners who are demonstrating lakefront best management practices. In his spare time, Eli is an avid fly fisherman, stone carver, and ukulele player!



Welcome Eli!

Learn more at:
www.mishorelandstewards.org



The MI Shoreland Stewards program is a statewide recognition program developed to recognize lakeshore property owners who protect their lake through good shoreland management practices.

- 1 Take the online questionnaire** to determine if your lakefront property qualifies as a gold, silver or bronze stewardship level.
- 2 Learn important tips** on how you can protect your lake and improve your shoreland.
- 3 Once you complete the questionnaire**, you can print a stewardship certificate. If you want to let everyone else know you're a MI Shoreland Steward, purchase a sign to display in your shoreland.

Become a MI Shoreland Steward!

