Join us in welcoming the new WATERSHED ACADEMY

Tip of the Mitt Watershed Council is excited to announce the launch of our new youth education program – the Tip of the Mitt Watershed Academy! The Watershed Academy aims to foster greater awareness and understanding of water resources by engaging local students in meaningful explorations of their watersheds. Students are provided with the tools, techniques, and knowledge to translate small-scale research projects into a long-term regional stewardship ethic. As a project-based enrichment program, the Academy focuses on watershed conservation, protection, and restoration.

The structure of the Watershed Academy involves school-based teams. This semester, the Watershed Academy is comprised of 9th and 10th grade biology students from Boyne City, Alanson, East Jordan, Harbor Springs, and Pellston, with 9-10 representatives per school. Under the guidance of Maria Affhalter, an environmental education consultant, and Watershed Council AmeriCorps volunteer, Mackenzie Dix, students are encouraged to become experts of their "adopted stream," a stream located in their respective communities. The Academy consists of a series of monthly classroom visits, a field day, and the Watershed Academy Summit. Classroom sessions include setting the stage for science-based investigation and learning the skills necessary to conduct research on their adopted stream, including water quality monitoring methods, benthic macroinvertebrate sampling and identification, and habitat surveys. The field component includes a full day of data collection with assistance from Watershed Council staff and other natural resource professionals, such as the Little Traverse Conservancy and Little Traverse Bay Bands of Odawa Indians.

Members of the Boyne City Watershed Academy team learn about the impacts of polluted stormwater runoff during their first session.

Photo Credit: Maria Affhalter

Teams will work to analyze results, identify water quality impairments, and prepare a management plan that includes recommendations for protection and restoration of their stream. In early June, the Watershed Academy Summit will bring together all five teams for a community-wide presentation of their projects and to celebrate their achievements. In addition, students will communicate their progress and share ideas via an online Google Community created specifically for the Academy and moderated by the Watershed Council.

We will begin another semester session in the fall and continue this cycle of two Watershed Academies per year. We plan to expand the program to additional local high schools in the fall of 2015. Furthermore, one of the long-term goals is to conduct "foundation laying" activities aimed at 6th and 7th grades and some "graduate" activities for interested 11th and 12th grade students.

Look for more information about the Watershed Academy in future *Current Reflections* newsletters, at www.watershed council.org, or our Facebook page. Feel free to contact us with questions: Maria (maria@watershedcouncil.org) or Mackenzie (mackenzie@watershedcouncil.org) or call our office at (231) 347-1181.

Support for the Watershed Academy comes from: Charlevoix County Community Foundation, Petoskey-Harbor Springs Area Community Foundation, Little Traverse Conservancy, Tip of the Mitt Watershed Council, and the Great Lakes Fishery Trust.

Tip of the Mitt Watershed Council
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Petoskey, MI 49770
(231) 347-1181 • (231) 347-5928 fax
www.watershedcouncil.org

Gail Gruenwald
Executive Director

Reflections From Our Executive Director

The Solace of Water

The phrase and the book *The Solace of Open Spaces* by Gretel Ehrlich has become quite popular. Thousands of people find peace of mind in nature and an uncluttered landscape. Some are drawn to mountain peaks and a broad horizon. Others, the sounds and sights of a wooded landscape. Still others are drawn to water. I would guess for many of you it would be a lake or stream, or even the ocean, that washes your cares away.

As members of the Watershed Council, I know you care about the health of our waters but I also suspect you have a deeper connection to the water resources that you enjoy. Whether you have a life-long connection to Northern Michigan or have been here just a few years, water is surely one of the reasons you stay. From the Great Lakes shoreline to a small cranberry bog, our water resources provide happiness and are an important aspect of our community.

Clean water is required for our existence but it's also necessary for our life's enjoyment. Boating, fishing, bonfires, walks along the shore, swimming, picnicking, watching the sunset – there are so many things we do on or near the water. The quality of the water matters for most of these activities but for some of them, it's the beauty of the open water. Our lakes and streams deserve our protection so we can continue to find solace in them now and for future generations.

In Honor of Maura Brandi

Three months ago, the Watershed Council, the Charlevoix community, and my close friends and family lost a beautiful, vibrant, young person in a car accident. Maura Brandi passed away days after celebrating her 20th birthday. Her parents, Maureen Radke and Rick Brandi, and brother Nick Brandi, chose to honor Maura's legacy by suggesting donations in her name to the Tip of the Mitt Watershed Council's fund at the Charlevoix County Community Foundation. The outpouring of gifts has been remarkable, a tribute fitting to Maura's love of water and her energy and commitment to her community. We thank all of you who have given in Maura's name. You have helped us all grieve our loss and ensured that Maura will live on in the waters that she loved.

You may contact the Charlevoix County Community Foundation for more information on this tribute at (231) 536-2440.

Tip of the Mitt Watershed Council
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.

Welcome University of Michigan Team & Big Doings on Duncan and Grass Bays

We have two exciting developments to report for our Aquavist Corner this time. First, we are getting some help creating a new watershed management plan in the Elk River Chain of Lakes (ERCOL) in Antrim County. Next, we hosted the very first meeting of the new Duncan-Grass Bays Watershed Plan Committee.

University of Michigan School of Natural Resources and Environment goes to ERCOL

The Elk River Chain of Lakes Watershed Plan Implementation Team (ERCOL-WPIT) is happy to report that a team of five Master's Project students from the University of Michigan School of Natural Resources and Environment (SNRE) will be working with us for the next 18 months. Their Master's Project will produce a comprehensive first draft of a brand new Watershed Management Plan for the ERCOL. This means the students will be out in the field this summer, helping to collect new information or fill in missing data that are needed to create the new plan.

Five years ago, Tip of the Mitt Watershed Council partnered with The Watershed Center Grand Traverse Bay to convene the ERCOL-WPIT for the purpose of implementing steps of the Grand Traverse Bay Watershed Plan, specific to the ERCOL. Over the years, it has become evident that the ERCOL needs a stand-alone watershed plan. This is a big undertaking that will require years of work and quite a bit of funding to accomplish. Having an SNRE Master's Project Team help us by providing the important first draft will be a big asset as we move toward creating a brand new plan.

This is the second time the Watershed Council has successfully recruited an SNRE Team. The first team worked with us in 2012-13 and created an entire watershed plan for Tannery Creek, a major tributary of Little Traverse Bay in Petoskey. We are so grateful to the SNRE for their Master's Project program, which helps important community projects get completed using the talents and energy of creative graduate students.

First Meeting for Duncan-Grass Bays

We are also very excited to report that our first meeting for the brand new Duncan-Grass Bays Watershed Management Plan Committee was held at the Cheboygan Public Library on March 30. There was a great turn out. Attendees learned about the benefits of having a watershed plan, and what it takes to create one. They also heard about the field work being done in the area to help write the new plan. Finally, we solicited input and feedback from the participants in order to make the plan user-friendly. We will keep you posted on the progress of the Duncan-Grass Bays plan implementation.

Visit your Aquavist Website at www.watershedcouncil.org. For more information, contact Grenetta Thomassey, Program Director, at grenetta@watershedcouncil.org or (231) 347-1181 ext. 118.

UPDATE: Stover Creek

Over the course of the last two field seasons, Tip of the Mitt Watershed Council staff spent some quality time getting to know Stover Creek a little better. Stover Creek is an important cold water tributary that flows directly into Lake Charlevoix's western basin, near the City of Charlevoix. For decades, locals and resource agencies have been concerned with the stream's water quality. In 2012, the Lake Charlevoix Watershed Management Plan designated Stover Creek as one of 16 acute critical areas; i.e., those where attention is needed first and foremost to protect or improve water quality.

Thanks to the generous support of the Charlevoix County Community Foundation, the Watershed Council set out to more closely examine the stream and its watershed to determine the leading causes of water quality impairment. We conducted a comprehensive suite of resource inventories, including land use, in-stream habitat, streambank erosion, road/stream crossings, stormwater, and water quality monitoring.

Results from our on-the-ground efforts suggest that Stover Creek is impacted by a combination of sources including: 1) concentrated development and impervious surfaces within groundwater recharge areas, 2) poorly designed road/stream crossings, often

with undersized culverts, 3) poor riparian management along various stream segments, and 4) natural features such as erodible soils and steep topography. Due to the diverse nature of Stover Creek's problems, a multi-faceted approach is necessary in order to restore and improve the Creek's health. As part of the Stover Creek Watershed Restoration and Management Plan, the Watershed Council has outlined 25 resource management recommendations. These recommendations, if implemented, would improve the overall health of Stover Creek, as well as improve the water quality of its receiving water body, Lake Charlevoix.

The Watershed Council will continue to work with stakeholders to secure funding to implement these important recommendations in hopes that the health of Stover Creek steadily improves over the coming years. Contact our office at (231) 347-1181 for a copy of the Stover Creek Watershed Restoration and Management Plan.

Low Impact Development (LID) Seminar

Friday, May 1, 2015
8:30 am - 3:30 pm
Stafford's Perry Hotel

Attention all engineers, architects, landscape architects, planners, and allied professions! The Watershed Council is hosting a Low Impact Development (LID) seminar on May 1st from 8:30 am to 3:30 pm at the Stafford's Perry Hotel in Petoskey and you're invited. As part of our Little Traverse Bay Watershed: Stormwater Matters project, the seminar will feature presentations from Don D. Carpenter, PhD, PE, LEED® AP, a professor of Civil Engineering and Director of the Great Lakes Stormwater Management Institute at Lawrence Technological University, and Ralph Reznick, P.E., Nonpoint Source Unit, Michigan Department of Environmental Quality. Not only will you learn about the principles of LID and how to incorporate these water quality-friendly techniques into your work, you'll receive continuing education credits and a free lunch!

Space is limited. To reserve your spot, please RSVP to the Watershed Council at (231) 347-1181 or contact Jen Buchanan Gelb with any questions at jen@watershedcouncil.org.

Featured Speaker
Don D. Carpenter, PhD, PE, LEED® AP, a professor of Civil Engineering and Director of the Great Lakes Stormwater Management Institute at Lawrence Technological University

Do you or someone you know have a stormwater problem? Do you live in Petoskey or Harbor Springs? Do you want to beautify your property AND protect the water quality of Little Traverse Bay? If so, you might be interested and eligible for a rain garden! Thanks to a grant from the Michigan Coastal Zone Management Program, Office of the Great Lakes, Department of Environmental Quality and the National Oceanic and Atmospheric Administration, we will be installing two rain gardens this summer in conjunction with two rain garden workshops. Rain gardens are depressed landscaped areas that capture runoff from nearby impervious surfaces, such as driveways and rooftops. They are planted with deep-rooting native plants that both encourage infiltration of water into the soil and absorb nutrients. Those functions protect nearby surface waters from nonpoint source pollutants. It is important to note: rain gardens are not mosquito-breeding grounds as they do NOT hold water for more than a day or so! Still interested? Read on to learn how you could "win" a rain garden.

Some of the criteria that will apply in the selection process include:

- The need to address stormwater at that particular location
- The potential for effectively controlling stormwater via a rain garden
- Good visibility from the street (we want others to notice your rain garden so they get inspired to install their own!)
- Property owner willingness to:
  - Host rain garden workshop and allow attendees to assist in installation
  - Maintain the rain garden as needed
  - Share in the cost of the rain garden. The grant will subsidize $1,500 toward each rain garden; property owners are required, per the grant, to contribute an additional $1,500.

The Watershed Council will be conducting site visits to properties throughout May and early June. Sites will be selected by mid-June and workshops will be held during the last two weeks of July. The workshops will be open to the public and will provide instruction on how to build your own rain garden. Be sure to check back with us for dates as more details are determined. In the meantime, interested property owners should contact Jen Buchanan Gelb at (231) 347-1181 or jen@watershedcouncil.org to learn more.

Local Volunteers

Monitor and Protect Our Lakes and Streams

During the last 30 years, the Watershed Council has worked with local residents to keep a watchful eye on Northern Michigan's waters. Hundreds of volunteers have graciously devoted time and energy to our volunteer lake and stream monitoring programs, gathering data at 94 sites on 45 different lakes and streams. This priceless information is used by the Watershed Council and others to evaluate the health of our lakes and streams, identify trends, develop watershed management plans, and much, much more. We are continually impressed and thankful for the outpouring of community support and interest in our water quality monitoring programs.

The Tip of the Mitt Volunteer Lake Monitoring Program is our longest standing water quality monitoring program, with data on some lakes spanning nearly three decades. The Watershed Council provides training, equipment, and technical support to volunteers. In return, volunteers provide a wealth of data to the Watershed Council, which we use to assess the water quality and biological productivity of our lakes. Trainings are held each spring prior to sending volunteers into the field. Data are collected from early June through late August. Each week, volunteers venture onto the lake in their personal watercraft to record water transparency and surface temperature. Every other week, they collect water samples for chlorophyll-a analysis. In addition, volunteers on a handful of lakes monitor dissolved oxygen.

The Tip of the Mitt Volunteer Stream Monitoring Program was started in 2004 with just a handful of volunteers, but has grown considerably with nearly 150 people now involved. Volunteers are trained and equipped by Watershed Council staff each spring and fall. A week later, teams of three to six volunteers monitor two stream sites where they collect aquatic insects and other macroinvertebrates. Volunteers gather together a few weeks later to sort and identify the specimens that they collected in the field. Our program identifies most invertebrates to the family level, which provides a fairly clear picture of water quality and stream ecosystem health.

Together, these volunteer water quality monitoring programs generate more data on an annual basis than all other Watershed Council programs and projects. These programs also serve an even greater purpose: they connect people with water. Through a combination of aquatic ecosystem education and immersion, i.e., simply getting their feet and hands wet in these ecosystems on a regular basis, these programs build a connection that instills a strong sense of stewardship. As they become better informed and in touch with our lakes and streams, volunteer monitors often transform into ambassadors, devoted to and sharing their passion for protecting Northern Michigan's waters.

Volunteer Lake Monitoring: Quality Changes Afoot!

The 64 volunteers that helped monitor water quality at 32 stations on 23 lakes during the summer of 2014 shows that the Tip of the Mitt Volunteer Lake Monitoring program (VLM) continues to thrive. Although the number of lakes monitored has hovered around 25 for several years, the program is growing, regardless, as we add additional monitoring sites to some of the large lakes, such as Burt, Mullett, and Charlevoix. Beyond new sites, we are adding monitoring parameters to the program. Although the program started with a singular focus on water transparency, it has gradually expanded to include chlorophyll-a, water temperature, air temperature, phosphorus, and dissolved oxygen monitoring. What is the latest and greatest parameter? Invasive species monitoring.

With support from the Joyce Foundation, we are gearing up to re-introduce the Aquatic Invasive Species Patrol (AIS Patrol). The AIS Patrol was an education and monitoring effort in 2006 to raise awareness and document AIS in Northern Michigan. This year, we plan to utilize existing monitoring programs to bring the AIS Patrol back to life. Volunteers in our lake, stream, and avian botulism monitoring programs will receive additional training to learn to identify, document, and report AIS they encounter while monitoring and recreating on our lakes and streams.

Adapting the VLM program to emerging issues and adding parameters is important, but equally important is collecting quality data. Our staff and others who use volunteer data to assess lake water quality want to

be assured that data are accurate and reliable. To this end, we have spent the last three years developing a Quality Assurance and Protection Plan (QAPP) for the VLM program. For guidance, we looked to the only other volunteer lake monitoring program in Michigan: the Cooperative Lakes Monitoring Program (CLMP). Using their QAPP as a template, we created a version tailored to our program. We are happy to report that the QAPP was approved by the Michigan Clean Water Corps in February 2015.

Other exciting news is AmeriCorps volunteer involvement with our VLM program. In 2014, AmeriCorps volunteer Matt Claucherty joined our ranks, assisting with a large variety of programs and projects, including the VLM program. Matt was so effective in his position and appreciated by staff (AND apparently satisfied with his volunteer experience) that we were able to convince him to sign on for another year. In addition to the other VLM program tasks assigned to Matt, he took the initiative to bring several other AmeriCorps volunteers into the program and assist us with monitoring Huffman Lake in Charlevoix County.

Due to the increase in volunteer numbers and number of monitoring sites, as well as approval of the QAPP, we now present to you vast quantities of quality data from 2014! The following section summarizes monitoring parameters and program results. The complete data collected by volunteers are available at www.watershedcouncil.org.

Secchi Disc

The Secchi disc is a weighted black and white disc used to measure water clarity by lowering it into the water and recording the depth at which it disappears. Water clarity, which is principally determined by the concentration of algae and/or sediment in the water, is a simple and valuable way to assess water quality. Lakes and rivers that are very clear usually contain lower levels of nutrients and sediments and, in most cases, boast high quality waters. Throughout the summer, different algae types bloom at different times, causing clarity to vary greatly. Secchi disc depths range from just a few feet in small inland lakes to over 80 feet in the Great Lakes!

Chlorophyll-a

Chlorophyll-a is a pigment found in all green plants, including algae. Water samples collected by volunteers are analyzed for chlorophyll-a to estimate the amount of phytoplankton (minute free-floating algae) in the water column. Higher chlorophyll concentrations indicate greater phytoplankton densities, which reduce water clarity. The chlorophyll-a data provide support for Secchi disc depth data used to determine a lake's biological productivity, but it also helps differentiate between turbidity caused by algal blooms versus other factors, such as sediments or calcite.

Trophic Status Index

Trophic Status Index (TSI) is a tool developed to rank the biological productivity of a lake. TSI values range from 0 to 100. Lower values (0-38) indicate an oligotrophic or low productive 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 deep, clear, nutrient poor, and have abundant oxygen. Eutrophic lakes are generally shallow and nutrient rich, which, depending upon variables, such as age, depth, and soils, can be a natural state of a lake. 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.

Results from 2014 and Historical Trends

Water transparency data for some lakes stretches back to 1986, providing a long-term view of water quality conditions and trends. Data from Lake Skegemog illustrate the changes that have occurred over time in a number of the region's lakes. The averaged Secchi disc depths in Lake Skegemog have increased from approximately 10 feet in 1992 to over 16 feet 2014 (Figure 2). This trend of increasing water transparency is also well pronounced in Black, Burt, Charlevoix, Douglas, Elk, Michigan, Mullett, Pickerel, and Walloon Lakes. What do all these lakes have in common that might be causing such changes? Invasive zebra mussels.

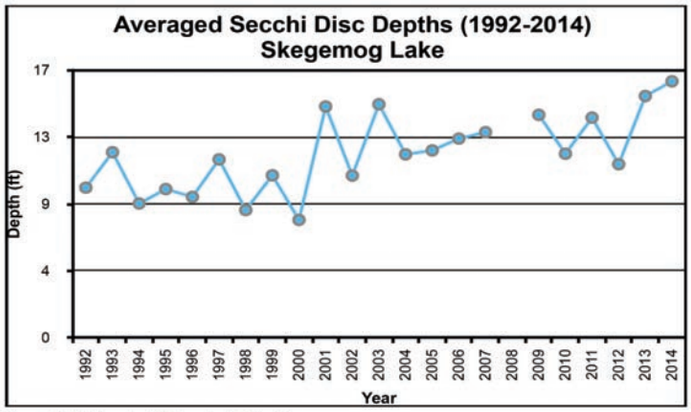


Figure 2. Water clarity trends in Lake Skegemog.

Zebra mussels have turned up in all of the region's largest lakes during the last twenty years, as well as many of the smaller lakes, and caused far-reaching changes in their ecosystems. These invasive mussels are filter-feeders that consume algae and, essentially, clear the water column, which increases water transparency. Unfortunately, zebra mussels are not cleaning the water, but rather filtering out the base of the food chain. This loss of primary productivity (i.e., algae) alters the entire food web, ultimately leading to a reduction in top predator fish populations, such as trout or walleye. Invasive quagga mussels cause the same problems, but are currently limited in distribution to the Great Lakes and Lake Charlevoix.

The loss of primary productivity caused by invasive mussels should also be evident in the chlorophyll-a data, since the data essentially provide a measure of planktonic algae in the water column. In the case of Paradise Lake, volunteer data show a steep decline in chlorophyll-a concentrations after 2002 (Figure 3). It was around this time period that residents noticed an increase in zebra mussel abundance. Other lakes displaying this trend include: Black, Burt, Charlevoix, Michigan, and Mullett. In some lakes where invasive mussels have been present for over 10 years, trends

appear to be reversing with water clarity decreasing and chlorophyll increasing. Anecdotal evidence from residents on these lakes suggests that invasive mussel populations are decreasing, which would explain this trend reversal. It should be noted that data from some lakes with invasive mussels do not show clear trends.

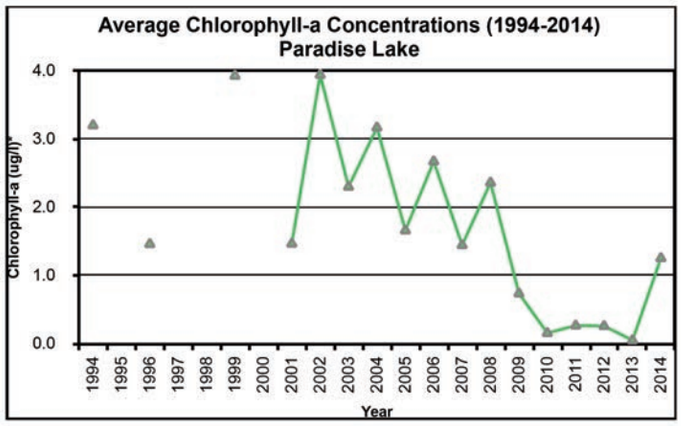


Figure 3. Chlorophyll trends in Paradise Lake.

Trends in some lakes monitored by volunteers are inexplicable or absent altogether. Thumb Lake (AKA Lake Louise) in western Charlevoix County is a case in point. Secchi disc depths gradually decreased from over 25 feet in 1990 to 15 feet in 1999, and have stayed in the range of 15′ to 20′ since then (Figure 4). However, averaged chlorophyll-a data are erratic, rising and falling throughout the last 25 years with no clear pattern (Figure 5). It would appear something changed in the lake that increased turbidity in the 1990s independent of algae blooms. Are there more sediments in the water? Is calcite precipitating out of the water column at higher rates? We are still uncertain as to what caused the change.

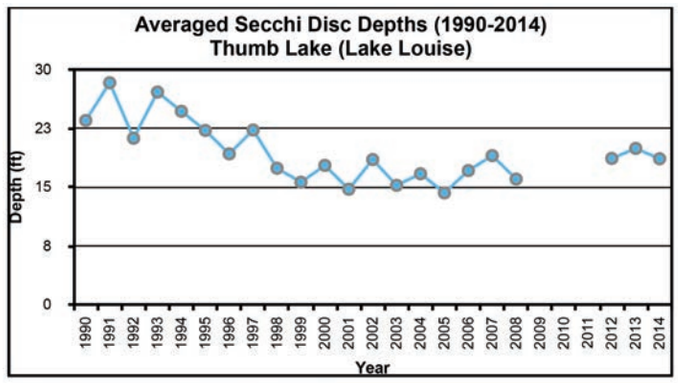


Figure 4. Water clarity trends in Thumb Lake.

Both chlorophyll and transparency data are useful in assessing the trophic status (biological productivity) of a lake. Since we do not have chlorophyll data for the early years of the program, we calculate trophic status index scores based on Secchi disc depths and, therefore, see the same trends: lakes with invasive mussels have experienced declining TSI scores becoming less biologically productive over time. We present TSI score, as well as averaged Secchi depths and chlorophyll-a concentration, to the right so that you can see the biological productivity of your favorite lake(s) and make comparisons with others (Table 2).

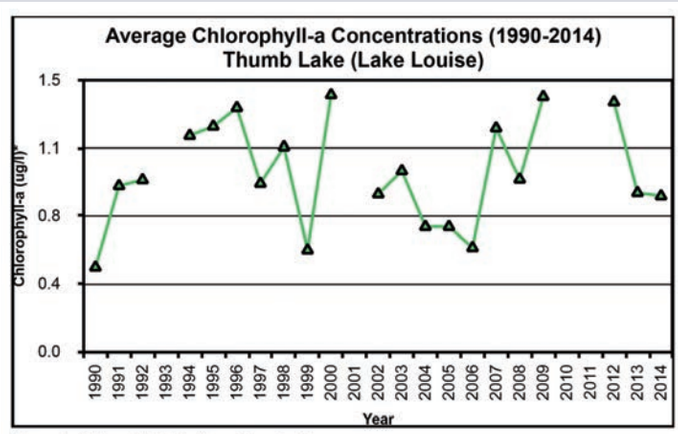
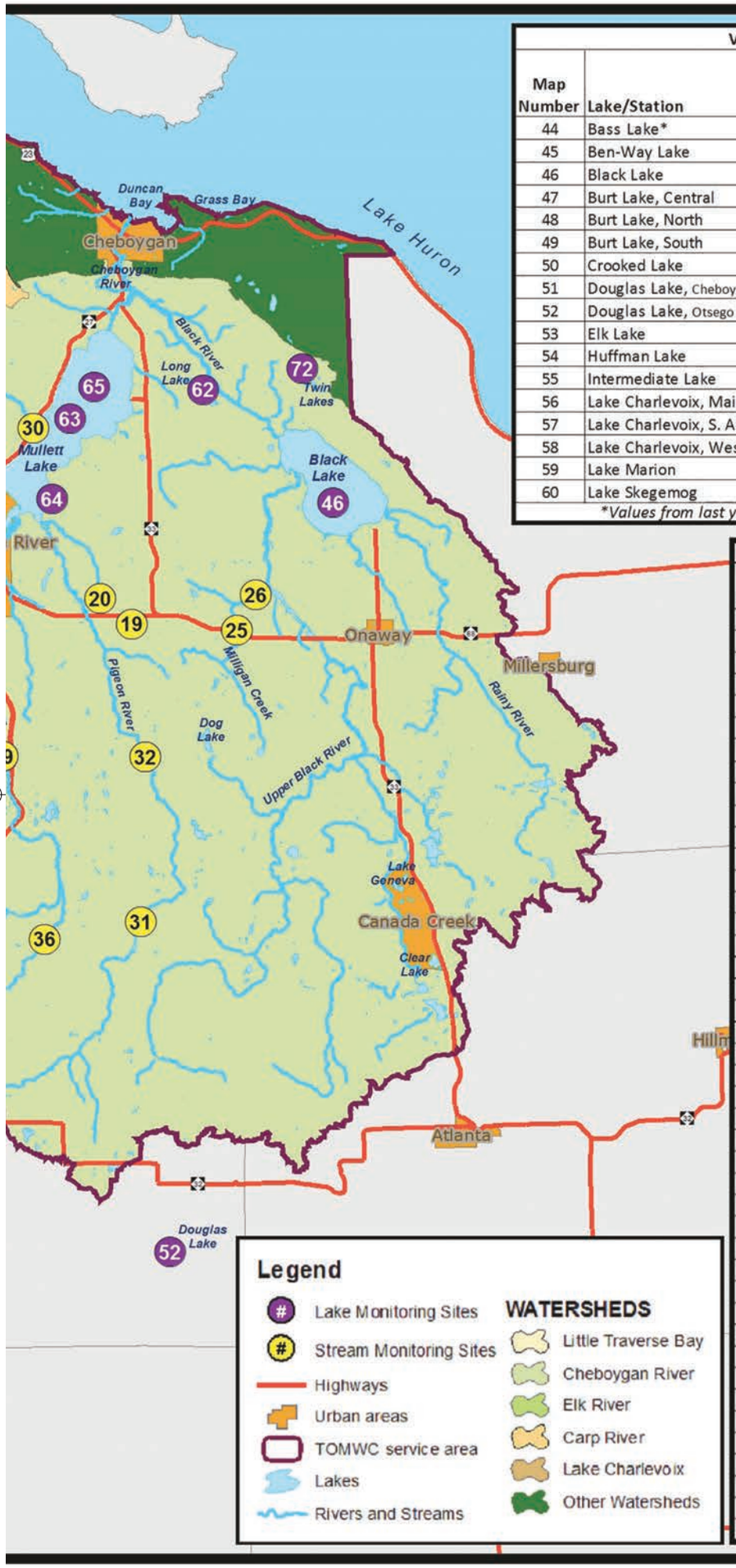


Figure 5. Chlorophyll data from Thumb Lake.

Table 2. 2014 Volunteer Lake Monitoring Data

Lake/Station	TSI Score 2014*	Secchi Depth 2014 (feet)*	Chlorophyll-a 2014 (ug/l)*
Ben-Way Lake	43	11	2.65
Black Lake	39	15	0.79
Burt Lake, Central	38	15	*i*
Burt Lake, North	40	14	0.64
Burt Lake, South	37	17	0.69
Crooked Lake	46	9	1.03
Douglas Lake, Cheboygan	40	13	1.50
Douglas Lake, Otsego	39	14	2.13
Elk Lake	36	17	0.44
Huffman Lake	48	8	*i*
Intermediate Lake	38	15	1.94
Lake Charlevoix, Main	35	18	0.53
Lake Charlevoix, S. Arm	35	19	0.77
Lake Marion	40	16	1.08
Lake Skegemog	37	16	0.87
Larks Lake	23	*i*	0.75
Long Lake, Cheboygan	33	22	0.46
Mullett Lake, Central	37	16	0.34
Mullett Lake, North	37	16	*i*
Mullett Lake, South	38	16	0.69
Munro Lake	38	15	1.30
Paradise Lake	50	7	1.25
Pickerel Lake	42	12	1.36
Six Mile Lake	43	11	2.32
Thayer Lake	46	9	2.44
Thumb Lake	35	19	0.86
Twin Lakes	41	13	1.18
Walloon Lake, Foot	36	18	0.83
Walloon Lake, North	42	12	1.28
Walloon Lake, West	40	14	0.14
Walloon Lake, Wildwood	41	13	0.55

**all scores are seasonal averages, i=insufficient data, ug/l=micrograms per liter or parts per billion.*



Volunteer Lake Monitoring 2014 Results

Map Number	Lake/Station	Average Secchi Depth 2014 (feet)	Map Number	Lake/Station	Average Secchi Depth 2014 (feet)
44	Bass Lake*	8.9	61	Larks Lake	*9.0***
45	Ben-Way Lake	10.5	62	Long Lake, Cheboygan	21.8
46	Black Lake	14.7	63	Mullett Lake, Central*	22.8
47	Burt Lake, Central	14.7	64	Mullett Lake, South*	16.7
48	Burt Lake, North	13.8	65	Mullett Lake, North*	17.0
49	Burt Lake, South	16.9	66	Munro Lake	14.7
50	Crooked Lake	8.8	67	Paradise Lake	6.8
51	Douglas Lake, Cheboygan	13.2	68	Pickerel Lake	11.9
52	Douglas Lake, Otsego	13.8	69	Six Mile Lake*	9.5
53	Elk Lake	17.4	70	Thayer Lake	8.7
54	Huffman Lake	7.9	71	Thumb Lake	18.6
55	Intermediate Lake	15.3	72	Twin Lakes	12.7
56	Lake Charlevoix, Main	18.4	73	Walloon Lake, Foot	17.6
57	Lake Charlevoix, S. Arm	18.5	74	Walloon Lake, North	12.3
58	Lake Charlevoix, West	22.6	75	Walloon Lake, West	13.7
59	Lake Marion	15.7	76	Walloon Lake, Wildwood	12.5
60	Lake Skegemog	16.3		Average (All Sites)	14.5

Values from last year of sufficent data, Larks Lake bottom depth = 9.0 feet*

Volunteer Stream Monitoring 2014 Results

Map Number	Stream Name	Site / Location	Total Taxa (Average)	Sensitive Taxa (Average)
1	Bear River	Bear River Rd	18.5	3.0
2	Bear River	Mineral Well	13.8	2.2
3	Bear River	Springbrook	21.1	4.9
4	Bear River	Walloon Lake	17.1	2.5
5	Boyne River	North Branch	16.6	4.6
6	Boyne River	Dobleski Rd	16.0	5.6
7	Boyne River	Dam Rd	16.8	5.2
8	Boyne River	City Park	15.5	4.7
9	Carp River	Oliver Bridge	19.0	4.3
10	Carp River	Mouth	16.7	3.0
11	Eastport Creek	Farrell Rd	22.9	4.1
12	Eastport Creek	Eastport, M88	17.0	1.5
13	Horton Creek	Church Rd	14.7	0.8
14	Horton Creek	Boyne City Rd	19.9	6.2
15	Jordan River	Pinney Bridge	23.3	9.0
16	Jordan River	Webster Bridge Rd	21.1	7.1
17	Jordan River	Rogers Rd	23.0	6.8
18	Jordan River	Fair Rd	20.9	5.3
19	Kimberly Creek	Montgomery Rd	20.9	3.4
20	Kimberly Creek	Quarry Rd	21.4	4.4
21	Maple River	Pleasantview Rd	17.8	1.4
22	Maple River	Robinson Rd	25.3	5.0
23	Maple River	Woodland Rd	25.6	3.4
24	Maple River	Brutus Rd	23.0	6.0
25	Milligan Creek	M68	21.0	6.5
26	Milligan Creek	Waveland Rd	19.6	6.0
27	Mullett Creek	Indian Trail	16.0	4.0
28	Mullett Creek	Crump Rd	19.8	5.1
29	Mullett Creek	South Extension	21.0	5.2
30	Mullett Creek	M27	21.9	0.8
31	Pigeon River	Sturgeon Valley Rd	21.0	5.0
32	Pigeon River	Webb Rd	20.4	6.9
33	Russian Creek	NCMC at mouth	15.0	1.6
34	Stover Creek	Cemetery	17.9	3.1
35	Stover Creek	Mouth	13.4	0.3
36	Sturgeon River	Sturgeon Valley Rd	18.8	5.8
37	Sturgeon River	Fisher Woods Rd	21.0	6.5
38	Sturgeon River	West Branch, M27	25.6	9.3
39	Sturgeon River	Webb Rd	20.6	7.0
40	Sturgeon River	Indian River, M68	17.7	5.7
41	Tannery Creek	Boyer Rd	18.1	3.0
42	Tannery Creek	Country Club	15.5	3.3
43	Tannery Creek	Mouth	10.8	0.7

10-YEAR ANNIVERSARY

of the Tip of the Mitt Watershed Council

Volunteer Stream Monitoring Program!!

What began as a one-creek program in 2004 has transformed into one of the largest volunteer stream monitoring programs in Michigan! With nearly 150 volunteers on our list and 43 monitoring sites, we are the third largest program in the State. Only the Huron River Watershed Council and the Clinton River Watershed Council in southeastern Michigan have larger programs. To what do we owe this success? To our volunteers, of course, and their passion for monitoring and protecting our streams, learning ecosystem dynamics of the aquatic world, and joining ranks with others who have similar interests.

There are a handful of dedicated volunteers that have been with us since the beginning. Time and again, they wade into the streams to sample or pick through invertebrate-laden petri dishes in the lab. They are the foundation upon which we have built this highly successful program, diligently monitoring year after year, teaching the skills they have acquired to others, and sharing their enthusiasm for our streams and the critters that reside within. What keeps these energized volunteers ticking… and picking (bugs)? Let's ask them…

Roy Tassava, a property owner on Mullett Creek where he has led monitoring teams since 2005, shares his enthusiasm for the program: "Finding all the different varieties and especially the sensitive aquatic invertebrates in a small clear-water stream is a thrill." Roy adds, "I've had many different folks helping with the collecting, from kids to retirees, male and female, and all get excited and work hard. You name it and we have probably caught it!"

The volunteer monitoring experience of Brian Kozminski, an avid trout angler that currently monitors the Boyne River, includes "over the years, getting out, meeting new people in our community, from Petoskey's Tannery Creek, getting poison ivy behind Glen's, finding a little brook trout off Boyer Road, crawling back to some beaver dam locale off Camp Ten Road, and going places less travelled all in the name of finding bugs… Are you kidding? It's the most rewarding and fun thing I do!"

It's the most rewarding and fun thing I do!"

Long-term volunteer and former Watershed Council staff, Doug Fuller, notes that our program has "helped bring the importance of streams, both large and small, and the perils facing them into focus. I've been glad to play a small role in the success of your program." Especially rewarding is knowing that volunteers enjoy long-term benefits from the program as exemplified by Doug's reflection that "whenever I canoe or kayak on Northern Michigan's streams, I enjoy imagining the hidden pageant of life taking place below."

Volunteer stream monitors collect aquatic insects and other macroinvertebrates that are used to assess stream ecosystem health. Community diversity and species sensitivity are key factors in determining water quality. A variety of pollution-sensitive stoneflies, mayflies, and caddisflies portrays a healthy ecosystem and high water quality while a sample with only pollution-tolerant aquatic worms and midges reveals a stream ecosystem that is likely suffering. Results of the biological monitoring performed by volunteers usually show healthy stream ecosystems and excellent water quality. Fortunately, healthy streams are the norm in Northern Michigan, primarily because agricultural and urban land cover is quite limited. However, there are stream sections in or near urban areas where low aquatic macroinvertebrate diversity has been documented.

STREAM REPORTS

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

Water Quality Grading System*

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

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

Bear River: Grade = B

Currently, five sites are monitored in the Bear River Watershed. Springbrook, which drains the southeastern watershed and is fed by springs from Chandler Hills, has the greatest diversity among Bear River sites. Volunteers from Petoskey High School have found moderate to high diversity at Bear River Road, which is located on the county line at about mid-watershed. In contrast, the sites at Melrose Township Park by Walloon Lake, the mouth of Russian Creek near North Central Michigan College, and Mineral Well Park in Petoskey show much less diversity. Lower diversity at Melrose Township Park may be due to warmer waters draining from Walloon Lake and a lack of streambank vegetation, whereas Russian Creek and Mineral Well Park sites are probably affected by polluted stormwater runoff from adjacent agricultural and urban areas.

Boyne River: Grade = A

Four sites are monitored on the Boyne with help from the Friends of the Boyne River, 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. Elevated water temperatures from impoundments created by dams and stormwater runoff from urban and agricultural areas are the primary stressors to the Boyne River ecosystem. Total diversity scores rarely surpass 20, but consistently high EPT and sensitive family diversity at all sites show why the Department of Natural Resources includes the Boyne on its list of "Blue Ribbon" trout streams.

Carp River: Grade = TBD
Due to water quality concerns by Emmet County, the Carp River to the southwest of Mackinaw City was added to the program in 2013. Volunteers, including a few county employees, monitor two sites: upstream at Oliver Road and downstream at Wilderness Park Drive. Although more data are needed to rate river ecosystem health (at least three years of data are required), preliminary results indicate that the Carp River is doing well.

Eastport Creek: Grade = B
Eastport Creek drains into the north end of Torch Lake near the intersection of US-31 and M-88. It has been monitored at two sites since 2005. Biological data from the upper reaches at Farrell Road show a diverse and healthy macroinvertebrate community. Conversely, data from the M-88 site reveal potential problems in lower section of the creek. Low diversity at M-88 is probably related to residential development, which tends to increase the levels of stormwater pollution and habitat degradation in streams.

Horton Creek: Grade = B
Horton Creek flows south from its headwaters near Little Traverse Bay into Lake Charlevoix at Horton Bay. Low diversity scores from the upstream site at Church Road are, at least in part, due to sluggish flow as the creek winds through wetland areas. However, nutrient and sediment pollution from agriculture could also be impacting the creek's macroinvertebrate communities. Macroinvertebrate diversity is much greater downstream at the Boyne City Road site, where stream flow is much faster and the stream bottom contains a wider variety of materials including gravel, rock, and wood.

Jordan River: Grade = A+
The Friends of the Jordan River help coordinate volunteer monitoring at four sample sites. Upstream to downstream, sites include Pinney Bridge, Webster Bridge Road, Rogers Road, and Fair Road. Pristine conditions throughout most of the Jordan River Watershed, and limited development along the river's edge, explain the high macroinvertebrate diversity that regularly turns up in the volunteer's biological assessments. The Jordan is currently tied with the Sturgeon River as record holder for the greatest number of sensitive families, with 11 found at both Pinney Bridge and Webster Bridge Road!

Kimberly Creek: Grade = A
Kimberly Creek flows through Afton, on M-68 to the east of Indian River, before converging with the Pigeon River just upstream of Mullett Lake. Upstream at Montgomery Road, the creek has little riparian vegetation due to residential development, but volunteer monitoring shows that healthy macroinvertebrate diversity persists. From Montgomery Road, the stream flows through agricultural lands and a mining quarry, but data from the downstream site at Quarry Road show that the stream ecosystem continues to flourish.

Maple River: Grade = A−
The Maple River drains a large area that includes Pleasantview Swamp, Larks Lake, Douglas Lake, Munro Lake, and the Village of Pellston. The East and West Branches of the river converge at Lake Kathleen and the river then flows southeast until emptying into Burt Lake. High diversity at three of four sites monitored by volunteers (Robinson Road, Woodland Road, and Brutus Road), testify to the exceptional water quality in the Maple River. The low macroinvertebrate diversity at Pleasantview Road could be natural due to slow flow and warmer water temperatures, but could also indicate impairment.

Milligan Creek: Grade = A
Milligan Creek, an important tributary of the Black River near the village of Tower on M-68, was added to our program based on recommendations by DNR fisheries biologists. EPT and sensitive families are generally found in abundance, indicating a healthy stream ecosystem at both the M-68 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.

Mullett Creek: Grade = A−
Mullett Creek flows from its headwaters near Riggsville Road and the University of Michigan Biological Station into the northwest side of Mullett Lake. From upstream to downstream, volunteers monitor sites at Indian Trail, Crump Road, South Extension Road, and the mouth at M-27. Fast flow, cool water temperatures, high dissolved oxygen levels, and complex in-stream habitat contribute to the high sensitive species diversity at the upper sites. In the lower reaches of Mullett Creek, slopes decrease considerably and the channel widens. This results in sluggish flow, warmer water temperatures, and lower dissolved oxygen levels, which is reflected in the low sensitive species diversity found near the creek mouth.

Pigeon River: Grade = A
The Pigeon River begins just northeast of Gaylord, flows through the heart of Pigeon River Country, and eventually makes its way to Mullett Lake. Three dam failures during the last 60 years at Song of the Morning Ranch have had severe negative impacts on fish and other aquatic life throughout much of the Pigeon River. Following the last incident in 2008, the courts ordered a drawdown of the impoundment, which was carried out in 2014. We added two sites in the Pigeon River to our program in 2011 to assess impacts and recovery related to releases from the dam. Monitoring sites are located to the east of Vanderbilt at Sturgeon Valley Road and to the east of Wolverine on Webb Road. Although initial diversity scores were low in 2011, strong EPT and sensitive family diversity since then indicate that the Pigeon has recovered from the 2008 release and weathered last year's drawdown.

Stover Creek: Grade = C−
Monitored since 2004, Stover Creek holds the distinction of being the first stream to be included in our program. However, it also holds the distinction of having the lowest sensitive taxa diversity in our program with an average of 0.3 sensitive taxa found at the creek mouth. A half mile upstream, at the Brookside Cemetery site, there is much higher macroinvertebrate diversity. In part due to the problems exposed by volunteer monitoring, the Watershed Council recently completed the Stover Creek Restoration and Management Plan. A variety of surveys and assessments performed during development of this plan identified specific problems ranging from streambank erosion to polluted runoff from commercial, residential, and recreational (golf course) areas. The plan provides 25 recommendations for restoring and protecting the creek, such as streambank stabilization and stormwater Best Management Practice (BMP) installation. Following implementation of these recommendations, we hope to see macroinvertebrate diversity increase in Stover Creek. Read more about the plan on page 3.

Sturgeon River: Grade = A+
The Sturgeon River is known for its fast flows, dropping rapidly from headwaters in Gaylord and Huffman Lake (West Branch), converging in Wolverine, and flowing through Indian River where it empties into Burt Lake. Volunteers monitor four sites on the Sturgeon: upstream at Sturgeon Valley Road, on the West Branch on M-27, in Wolverine, and at Fisher

Woods Road near Indian River. In terms of diversity index scores, the Sturgeon and Jordan Rivers are remarkably similar, which we attribute to the pristine status of their upper watersheds. However, the Sturgeon River is experiencing greater residential development in its lower section, which threatens to degrade the river ecosystem. Threats such as riparian development and streambank erosion are currently being documented and assessed by the Watershed Council as part of the Burt Lake-Sturgeon River Watershed Management Plan development. Last summer, we documented approximately 150 streambank erosion sites in the lower Sturgeon River!

Tannery Creek: Grade = B-

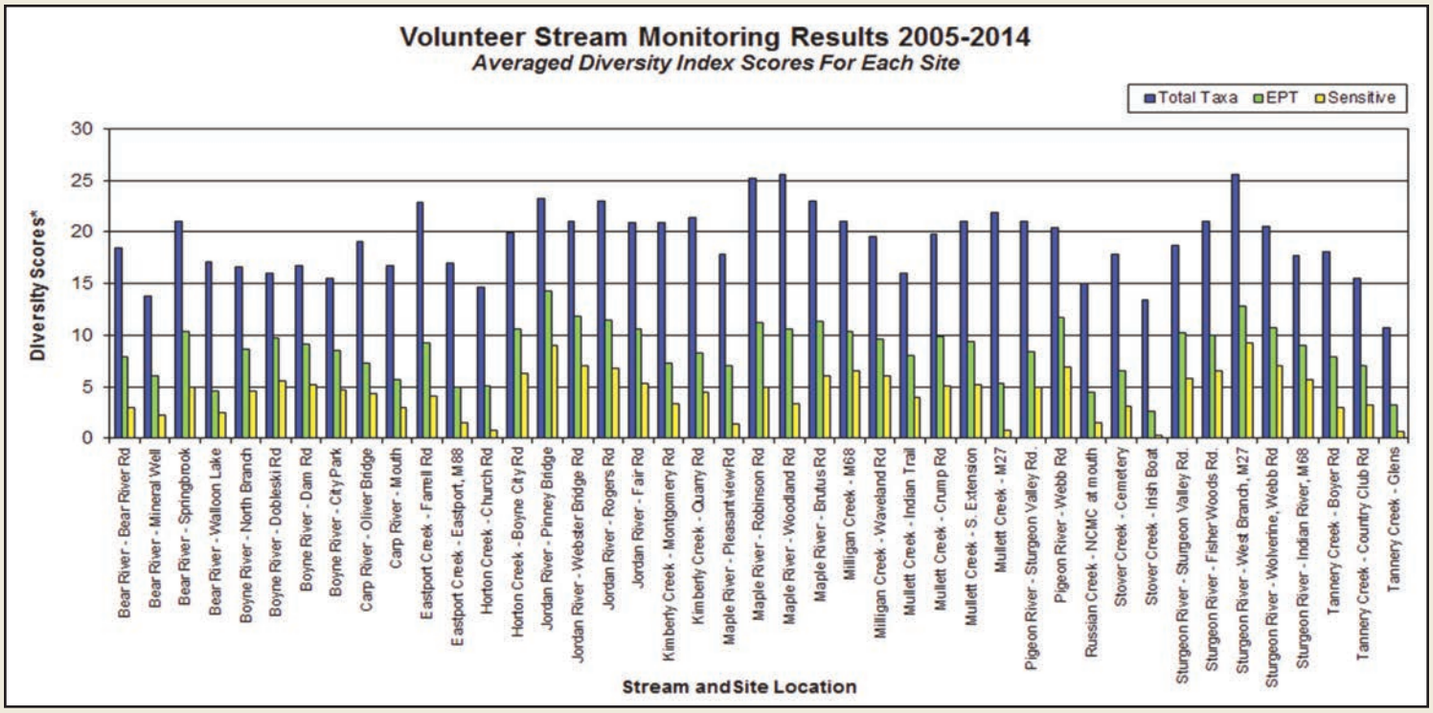
Tannery Creek flows into Little Traverse Bay from a deep valley just east of Petoskey. Volunteers monitor the creek at three sites: upstream at Boyer Road, mid-stream at Country Club Road, and downstream near the mouth. Macroinvertebrate diversity is quite low at the mouth, likely a result of polluted runoff from the adjacent urban area. Similar to Stover Creek, volunteer data fomented the development of a watershed management plan for Tannery Creek, which was completed by University of Michigan Master's project students two years ago. Recommendations from this plan will be incorporated into the updated Little Traverse Bay Watershed Protection Plan in the next few years. Thereafter, the Watershed Council and partner organizations will have more leverage for acquiring funding to implement plan recommendations and bring Tannery Creek back to health.

Thank You Volunteers!

We cannot thank our volunteers enough for the critical role they play in helping protect the lakes and streams of Northern Michigan, but we try: thank you, thank you, THANK YOU! If you would like to get involved or would like additional information, please contact program coordinators, Kevin Cronk and Dan Myers, at (231) 347-1181.

Table 1. Averaged diversity scores for rivers and creeks.

Stream Name	Total Taxa Average	EPT Taxa Average	Sensitive Taxa Average
Bear River	17.1	6.7	2.8
Boyne River	16.2	9.0	5.0
Carp River	17.8	6.5	3.7
Eastport Creek	20.0	7.1	2.8
Horton Creek	17.3	7.9	3.5
Jordan River	22.1	12.0	7.0
Kimberly Creek	21.2	7.8	3.9
Maple River	22.9	10.0	4.0
Milligan Creek	20.3	10.0	6.3
Mullett Creek	19.7	8.1	3.8
Pigeon River	20.7	10.1	5.9
Stover Creek	15.6	4.6	1.7
Sturgeon River	20.7	10.5	6.8
Tannery Creek	14.8	6.0	2.3
ALL STREAMS	19.0	8.3	4.3



Look for Avian Botulism Monitoring results in our upcoming summer newsletter.

POLICY UPDATE

Tip of the Mitt Watershed Council staff are always working at the State and Federal levels on a variety of policy issues. Here are updates on a few of the many priorities we are working on.

Asian carp

Recently, the U.S. Fish & Wildlife Service released eDNA results, which showed multiple positive hits for silver carp upstream of the electric barrier near Chicago, designed to prevent Asian carp from entering the Great Lakes. This finding underscores the urgent need for immediate action. A bill was introduced, Defending Our Great Lakes, which directs the U.S. Army Corps of Engineers (USACE) to implement interim technologies to control the upstream movement of aquatic invasive species from the Mississippi River. Until we can get hydrologic separation in place, it is imperative that we take these interim measures to shore up our defenses.

GLEEPA

The Great Lakes Ecological and Economic Protection Act (GLEEPA) was introduced by U.S. Senators Tammy Baldwin (D-Wis.), Mark Kirk (R-Ill.), and Debbie Stabenow (D-Mich.). This bill will strengthen Great Lakes restoration efforts that are benefiting the environment and economy in communities across the region. The bill puts in place a permanent Great Lakes restoration framework to guarantee continued restoration success. By authorizing Great Lakes Restoration Initiative (GLRI) resources and targeting them efficiently, we can continue to improve water quality, protect the health of our citizens and wildlife, create jobs, and maintain our Great Lakes quality of life.

Clean Water Act

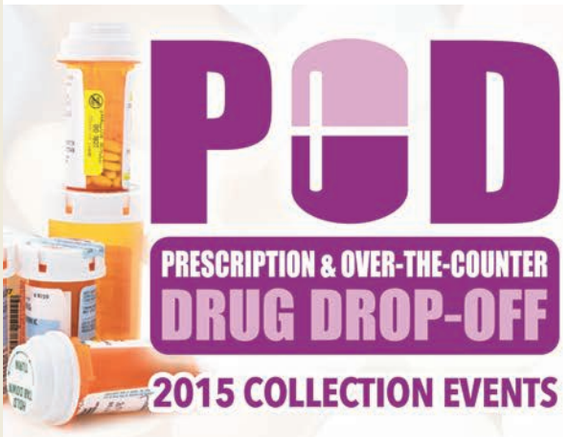
The Environmental Protection Agency and the USACE are poised to finalize a landmark rule clarifying longstanding Clean Water Act protections. The rule provides clear and predictable protections for many streams, wetlands, and other waters, while streamlining the permitting process. It gives greater certainty to individuals, developers, farmers, companies, and facilities — industrial or municipal — that discharge into what are known as "waters of the U.S.," or that affect the health of those waters. However, a wide range of industries are lobbying furiously to have Congress stop the rule. Congress should support the Clean Water rulemaking and oppose all efforts to intervene legislatively, to ensure the protection and restoration of our nation's waters.

Fracking

Last year, the Michigan Department of Environmental Quality (MDEQ) proposed new rules for oil and gas operations using high volume hydraulic fracturing in order to fill gaps in the existing regulation requirements. However, the MDEQ's final rules still contain significant deficiencies and do not adequately protect Michigan's rivers, lakes, and streams. In particular, the proposed rules do not require companies to publicly disclose the chemicals that are used during the fracking process, before a well is in use. Furthermore, they do not provide sufficient standards to protect our freshwater resources from the negative impacts of large water withdrawals.

Great Lakes Restoration Initiative (GLRI)

For the second year in a row, the Obama administration is recommending cutting federal efforts to restore and protect the Great Lakes – a resource that more than 30 million people depend on for drinking water. The Obama Administration's budget slashes the GLRI from $300 million in fiscal year 2015 to $250 million. GLRI supports efforts to clean up toxic pollution, restore fish and wildlife habitat, combat invasive species, and reduce runoff from farms and cities. Congress ultimately holds the purse strings, so we need Congress to restore funding to Great Lakes protection efforts.



A free, safe, and environmentally sound way to dispose of your unwanted or unused medications. For additional information visit ***www.PillsInThePod.com***

APRIL 21, 2015
10:00 a.m. – 2:00 p.m.
McLaren Northern Michigan, Cheboygan Campus
Entrance North of the Emergency Department

APRIL 22, 2015
7:00 a.m. – 4:00 p.m.
McLaren Northern Michigan, Petoskey Campus
Hospital Circle Driveway - Entrance off Mitchell Street

APRIL 25, 2015
10:00 a.m. – 2:00 p.m.
In front of Antrim County Courthouse
205 E. Cayuga Street, Bellaire

JULY 25, 2015
9:00 a.m. – 12:00 Noon
Emmet County Drop-off Center
7363 Pleasantview Road, Harbor Springs

SEPT. 12, 2015
9:00 a.m. – 1:00 p.m.
Boyne City Road Commission Garage
Just east of Boyne City Public School football field

OCT. 14, 2015
7:00 a.m. – 4:00 p.m.
McLaren Northern Michigan, Petoskey Campus
Hospital Circle Driveway - Entrance off Mitchell Street

OCT. 31, 2015
10:00 a.m. – 2:00 p.m.
In front of Antrim County Courthouse
205 E. Cayuga Street, Bellaire

Welcome New Members

9/30/14 - 3/5/15

Ms. Darcy J. Ashman
Burt House, LLC
Mr. Robert D Cecil
Mr. and Mrs. Mark Eustis
Jerome and Mary Flynn
Mr. and Mrs. H. Richard Fruehauf Jr.
Virginia Page Goodrich
Cynthia L. Griffin
Mr. Tom Gschwind
Mr. Mark L Haddox
Mr. and Mrs. Charles K. Hooper
Mr. and Mrs. Michael Jablonski
Patrick J. Kenney
Mr. and Mrs. Joseph F Ketchum
Aaron Keys
Kenneth Knowles
Mr. Jerry Londal
Mr. and Mrs. Frank Musick
Mr. and Mrs. Peter Neithercut
Ms. Irma K. Noel
Mr. and Mrs. Dick Nordine
Mrs. Suzi Pankey
Larry and Marnie Parrott
William R. Pierce
Susan E Pyke
Mr. and Mrs. Joseph Sinacola
Mr. and Mrs. Stephen W. Smith
Softerware
Mr. and Mrs. Cliff Sorrell
Mrs. Patricia Stanton
Mr. and Mrs. Marvin D. Studinger
The Edward and Elyse Rogers Family Foundation
Carolyn Workman and Kurt Wacker
Mr. and Mrs. Larry Wolski

Memorials and Honorariums are a meaningful way to celebrate the memory of a loved one or pay tribute to someone who cares about the preservation of our beautiful water resources.

In Honor of...

Linda Badalucco
Linda Heller
Ellen W. Craine
Mr. Tim Craine
Arthur W. Curtis, III
Mr. and Mrs. Owen Curtis
Kris and Terry Finn
Kenneth Knowles
David G. Frey
Mr. and Mrs. David M. Culver
Mr. and Mrs. AW Hallett
Mr. and Mrs. Charles Forsberg
Mr. and Mrs. Ronald Kauper
Mr. and Mrs. Charles Forsberg
Nancy and Brian Nowitzke
Linda Heller
Grenetta Thomassey
Shore Drive Study Club
Sally Wilson
Linda Heller

In Memory of...

John C. Erickson
Mrs. John Erickson
Walter Geist
Ms. Nancy Ann Swift
Valerie Granstra
Mr. and Mrs. Gerald Rosevear
Mr. and Mrs. Michael Eaton
Ned Keys
Aaron Keys
Irene Phelps
Mrs. Evelyn Bare
Kim M. Cumberland
Mr. and Mrs. Larry Gunderson
Mr. and Mrs. John H. Parker
Mr. and Mrs. James Baird
Mr. and Mrs. Ronald Provo
Suzanne FitzSimons Reynolds
Bruce Davis and Heidi Hill
Judy Rossman
Pat Rutowski
Mr. and Mrs. Roger B. Miller
Mr. and Mrs. James A. Kight
Mrs. Betty J. Wright
Karyl Preston
Alexander Taggart IV
Bruce Davis and Heidi Hill
Spencer Tibbits
Julie Boelter
Mary Jo Truog
Elaine and Bowden Brown
Brenda Turk
Mr. and Mrs. Mark Nichols

Got some free time? A week? A month? A summer?

Come volunteer at the Watershed Council! We have plenty of opportunities to jump in and take part in protecting our water resources. If interested, call (231) 347-1181.

Or if you're busy now, cheer us on and encourage others to do the same.

We could not accomplish the many tasks and projects that need to be done without the help of our volunteers. **We are truly grateful** for everyone that pitches in to support our organization.

RSVP Volunteers Sharon Brown and **Gretchen Peck** for assisting with our mailings.

Roast & Toast for supplying coffee for our meetings and workshops. We can always count on you for our fresh brew.

Sarah Wolf for data entry and other office tasks.

Sophia Cinnamon for data entry and other office tasks.

Brittni Rohrer for working on various GIS projects.

Irish Boat Shop for winterizing, storing, and repairing our Boston Whaler.

David Spieser for doing a wonderful job pruning, trimming, and cleaning up the landscape at the Freshwater Center/Watershed Council office.

Stephen Wolf for data entry.

Roger Drinkall for assisting the Policy Team with various projects.

Stafford's Perry Hotel and **Bank of Northern Michigan** for helping us when our water line broke this winter.

Welcome Our AmeriCorps Volunteers

If you attend an event or stop in the office this year, you may see a new face or two. The Watershed Council welcomes AmeriCorps Volunteers Matt Claucherty and Mackenzie Dix. Both began their terms of service in January and have already hit the ground running.

Matt Claucherty (below) joined Tip of the Mitt Watershed Council in January of 2014 as the Watershed Protection Technician through the Huron Pines AmeriCorps Program. Now in his second year with the AmeriCorps Program, Matt will continue to contribute to watershed protection efforts through data collection, GIS analysis, and volunteer/community outreach. Matt attended Northern Michigan University in Marquette to pursue a degree in Environmental Science and GIS. While in school, he interned with the Marquette City Zoning Office. Upon graduation, Claucherty was hired by the U.S. Forest Service as a seasonal fisheries technician for the Ottawa and Hiawatha National Forests. He enjoys exploring his natural surroundings through paddling, mountain biking, and snow sporting.

Mackenzie Dix (right, standing) joined the Watershed Council in 2015 as the AmeriCorps Outreach and Education Specialist. Mackenzie's primary focus will be assisting with the Watershed Academy program and developing a natural shoreline recognition program with Michigan Natural Shoreline Partnership.

Mackenzie grew up in Old Lyme, Connecticut, and attended Franklin and Marshall College (F&M) in Pennsylvania. She graduated in 2014 with a bachelor's degree in biology with departmental honors. While at F&M, she traveled abroad to Australia and Costa Rica. Since graduating, she worked as a paraprofessional in a special education classroom. She spends her free time on cooking, hiking, and photography.

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.americorps.gov to learn more or simply ask one of our AmeriCorps Volunteers about their experiences.

SAVE THESE DATES

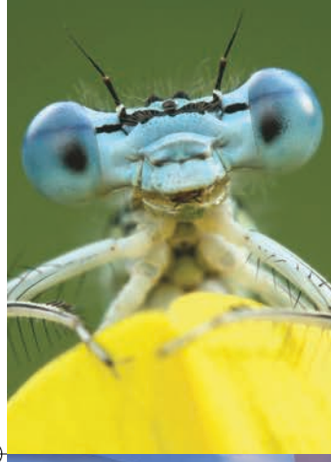
June 11 Watershed Council Alumni Luncheon

June 28 Waganakising Bay Day

July 14 36th Annual Membership Meeting

July 18 Whale of a Sale - *A huge rummage sale for water recreation lovers!*

August 22 "Healing the Bear"Bear River Cleanup



Join us for our Spring
Volunteer Stream Monitoring
No experience necessary

May 9 Training Day
May 16 Field Day
May 31 Indoor Lab Day

May 22
Volunteer Lake Monitor Training

Contact Dan Myers for details
(231) 347-1181 or email
dan@watershedcouncil.org

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Clean Water and Our Local Economy
MAKING THE CONNECTION

Clean water is central to our way of life in Northern Michigan. It is why people visit, live and work here. Clean water attracts people to our region, which in turn puts additional pressure on local water resources. The more we grow, the more we have to take care to ensure our water remains clean and protected. Our continued economic growth depends on it!

Tip of the Mitt Watershed Council recently set out to research the impact of clean water on local economic development. Over the past five years, the Watershed Council has used surveys and focus groups to talk with tourists, residents, business owners, shoreline property owners, and local government officials about the economic importance of clean water.

In 2010-12, with funding by the Michigan Department of Environmental Quality, we partnered with Michigan State University Extension to do a series of surveys in the Lake Charlevoix Watershed. Three sets of extensive surveys were completed with Watershed residents, shoreline property owners, and local government officials. To build upon that work, in 2013, we did a series of focus groups with local government officials. In 2014, with support from the Charlevoix County Community Foundation, we surveyed beachgoers in four counties within the Watershed Council's service area, and conducted a peer-reviewed literature review to find existing studies related to the connection between clean water and the local economy. Finally, in 2014-15, we carried out another survey targeting business owners.

The results of this work have been used to produce new fact sheets that will be distributed broadly, and also used with area business leaders, developers, and elected officials. Contact our office for our new fact sheets, share them broadly, and help us make the connection! For more information, please contact Grenetta Thomassey, Program Director, at (231) 347-1181 ext. 118.