

Great Lakes Under Siege: Invasives, Algae, Botulism

Throw a rock in the Great Lakes and the ripple spreads and gradually dissipates. Throw a zebra mussel in the Great Lakes and the ripple spreads, gains force with every rise, and becomes a virtual invasive species tsunami.



Nuisance algae blooms

The wave of aquatic invasive species has been growing, probably since European settlers first explored the region, but dramatically since the Erie Canal opened in 1825 and first allowed ocean-going vessels into the Great Lakes. Unfortunately, invasive species are not the only things plaguing the Great Lakes. The Great Lakes seem to be under siege from a variety of factors

including receding lake levels, nuisance algae blooms, diminishing fisheries, and even botulism.

While all the problems laying siege to the lakes are interconnected in context of the Great Lakes ecosystem, some appear to be more closely linked than others. Zebra mussels invaded in the late 1980s and were closely followed by their more competitive cousins, the quagga mussels. For years these mussels have multiplied and spread; gradually disrupting natural Great Lakes ecosystem processes as they filter-feed voraciously upon algae.

Paradoxically, the invasive mussels have caused both drastic reductions and dramatic increases in algae. How can this be you ask? The mussels filter-feed upon free-floating “phytoplanktonic” algae, which gives a competitive advantage to “periphytic” or bottom-dwelling algae. Because periphytic algae inhabit the lake bottom, they benefit greatly from the mussels’ feeding habits in that the removal of phytoplankton has led to clearer water, allowing sunlight to penetrate deeper and opening more habitat. In addition, mussels have led to greater nutrient availability for periphyton because they have eliminated the competition (phytoplankton) and excrete their nutrient-laden waste along the bottom.

So, what are the consequences of these ecosystem alterations? Among others, declining fisheries and nuisance algae blooms. Great Lakes fisheries are suffering due to losses at the base of the food chain. Algae is piling up and rotting on Great Lakes shorelines as periphyton bloom out of control, break off, and drift to shore.

Unfortunately, it does not stop there. The latest victims of the invasive species tsunami are waterfowl. In the last three years, both waterfowl and fish are being killed. Grebes, cormorants and gulls are among the most commonly affected, but our beloved loons, eagles and even endangered piping plovers have also fallen victim to botulism.

Botulism is a food poisoning caused by one of nature’s most powerful toxins. This toxin is produced by bacteria called *Clostridium botulinum*, whose spores are common in soils and sediments. Under the right conditions, an anoxic (no oxygen) environment, the botulism spores grow into vegetative cells that produce the toxin.

So why is it occurring now? Think of the masses of algae accumulating along the shorelines, consuming oxygen as it decomposes, and creating the anoxic environment that opens the door for botulism vegetative cells to grow. Also, consider the invasive mussels filter feeding on the lake bottom, near the botulism spores in the sediments, accumulating botulism toxins as the spores germinate.

(Continued on page 2)



Photo: Center for Great Lakes and Aquatic Sciences

Zebra Mussels



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Reflections From Our Director

People ask me often what they can do to help protect water resources. What personal steps can they take to make a difference? In reviewing this newsletter I was struck by the number of opportunities for personal action that you can take to participate with us in our efforts to protect resources.

This spring we are encouraging water conservation and storm water management for individual households and businesses through the use of a rain barrel. We are making this easy for each of you by selling the rain barrels ourselves. By collecting rain water and using it on your home or business site you will help solve the growing problem of water contamination from untreated storm water. Plus, you save water and electricity by using rain water in your gardens. See the article on page 7 for details on ordering your rain barrel.

For those interested in the laws and regulations that impact our waters, the Watershed Council can fit you into our advocacy program and add your voice to ours with the policy makers locally, in Lansing, and Washington DC. The topics are varied – invasive species, ship ballast water, shoreline management, and all the local issues that come our way. Through our Aquavists network, you can make a difference by commenting on proposed laws and regulations that impact us all.

Another way to get involved is by attending our events and then spreading the word about what you have learned. Summer is a busy time for us and we would love to see you at our Annual Membership Meeting, one of our lake summits, on one of our many field trips, or in attendance at an educational presentation.

Finally, your membership dollars help to make our programming possible. Each of you has already taken a vital step in protecting resources by contributing to the Watershed Council and other organizations hard at work protecting natural resources. Thanks once again for taking this action.

Enjoy your spring wherever it finds you and feel free to call our office to dive in to water resources protection. We would love to hear from you and help you take those personal steps.

Great Lakes Under Siege: Invasives, Algae, Botulism

(Continued)

Enter the invasive round goby, which came into the Great Lakes in the 1990's and applauded by some for preying upon zebra mussels. The problem is that mussels accumulate toxins, such as botulism, which doesn't affect the mussels due to their lack of nervous system, but it does affect gobies and those that eat gobies, such as waterfowl. Some birds may prey directly on the mussels while others prey upon fish, like gobies, that have consumed mussels. Either way, they ingest the toxin that ends up killing them.

This is not the first time that botulism has appeared in the Great Lakes. Outbreaks have been documented periodically since the 1960's. However, ongoing outbreaks

in Lake Erie since 1999 raise concerns that problems in Lake Michigan may persist for years to come.

What can we do to defend our besieged Great Lakes? Often little can be done about invasives already in the ecosystem, but we can work to keep others out by urging our government representatives to support legislation aimed at controlling the spread of invasives. We may not be able to put a sudden stop to algae blooms, but we can chip away at it by treating stormwater, maintaining septic systems, eliminating fertilizers, and properly disposing of animal waste to reduce phosphorus inputs. Collectively, we might even have some impact on lake levels by conserving water and reducing our carbon footprint, which heats the planet and increases evaporation rates in our lakes.

Shoreline Management

New Policy may require a General Permit

With spring almost upon us and water levels still low, many Great Lakes shoreline property owners will once again see vegetation growth on exposed bottomlands. This natural increase in vegetation growth during low water periods is vital to the overall health of the Great Lakes ecosystem. Coastal wetlands provide a range of important functions including critical habitat for fish and wildlife, erosion control, water quality protection, and a myriad of recreational opportunities such as hunting, fishing, and wildlife watching. Coastal wetland systems support diverse assemblages of invertebrates, fish, reptiles, amphibians, birds, and mammals. In particular, over 90% of the roughly 200 fish species that occur in the Great Lakes are dependent upon coastal wetlands for some part of their life cycle.

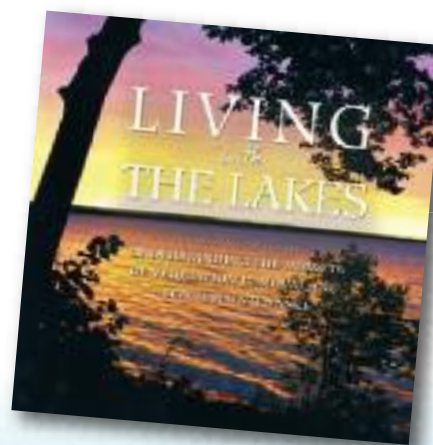
In an effort to protect coastal wetlands, a new shoreline management policy is in effect. Certain shoreline management activities now require a General Permit (GP) from the Michigan Department of Environmental Quality (DEQ) and U.S. Army Corps of Engineers (USACE). While small scale shoreline activities done by hand do not require a permit, mechanized activities or larger scale activities now require a permit. The new permit is based upon scientific research that proved “beach grooming” activities may have substantial, long-lasting impacts on the health of coastal wetlands and the Great Lakes. The following activities may qualify under the General Permit:

- Leveling and grooming of sand in areas free of vegetation;
- Construction and maintenance of a temporary path in areas free of vegetation using on-site materials;
- Limited mowing of vegetation for a pathway and certain recreation areas, and;
- Limited mowing for control of invasive or non-native species (such as *Phragmites australis*) in compliance with an invasive species control plan.

To protect the health of our coastal wetlands and Great Lakes, it is best to allow shoreline vegetation to remain untouched. Shoreline management and removal of vegetation significantly alters the chemical and physical conditions of nearshore waters, kills aquatic vegetation, increases the spread of invasive species, decreases the number of invertebrates (the source of food for fish), and reduces fish populations in the Great Lakes. Before engaging in shoreline management activities, recognize the substantial and long-lasting adverse impact these activities may have upon your property and the health of the Great Lakes.

Information on the Great Lakes Shoreline Management or the new General Permit can be accessed at www.michigan.gov/deqwetlands or contact our Policy Specialist, Jennifer McKay at (231) 347-1181 or via e-mail at jenniferm@watershedcouncil.org.

For information on about shoreline management, call for our “Living with the Lakes” brochure.



Volunteer Stream Monitoring Update

Just three short years ago, the Tip of the Mitt Watershed Council Volunteer Stream Monitoring program began with five volunteers on one small creek. Since that time, the program has burgeoned to over 100 volunteers that have sampled at a total of 25 sites on ten streams spread throughout the tip of the mitt! The invaluable work performed by volunteers has now generated enough data to begin assessing stream water quality.



Nearly every site sampled by volunteers in our program has produced a healthy diversity of total macroinvertebrate families and often a high number of sensitive families. Among the most diverse sites were Kimberly Creek at Montgomery Road with 31 families and Eastport Creek at Farrell Road with 29. Narrowing it down to the most sensitive aquatic macroinvertebrate families, Horton Creek at Boyne City Road scored the highest with nine families and was closely followed by the Jordan River at Webster Road with eight.

Volunteers selflessly commit a few days every spring and fall to collect, sort, and identify aquatic macroinvertebrates. Aquatic macroinvertebrates, such as mayflies, caddisflies, crayfish, and snails, are useful biological indicators of water quality. Low diversity and in particular, a lack of pollution-sensitive species could be a sign of water quality impairment. For example, if volunteers consistently find no mayflies in what is typically a high quality trout stream, we would question why and dig deeper for causes. We look at data over the long-term to rule out human error and natural variability.

We intend to coordinate the program over the long-term to accurately assess water quality and protect the streams. Considering our long-range plans, we can always use more help. If you want to join in the fun, contact the program coordinator, Kevin Cronk at (231) 347-1181 or by e-mail at kevin@watershedcouncil.org.

See photos from our latest winter outing on the back cover.

The Aquavist Corner

Aquavists help pass zoning amendment in Emmet County

In February, members of the Aquavist Local Activist Network saw some hard work bring good results. Spearheaded by members of the Pickerel-Crooked Lakes Association, new language was adopted by the Emmet County Board of Commissioners to amend Section 2210, Minimum Waterfront Setback of the Emmet County Zoning Code. This new language was proposed to close a loophole in the existing ordinance which allowed shorelines to be altered in ways that violated the spirit of the setback provision. We worked closely with the County planning staff to craft this language and after feedback from numerous citizens, lake associations, and local governments, the language was refined and adopted. As a result, our shorelines and water resources in the County have a stronger ordinance on the books to protect them. Congratulations to all who worked so hard on this project.

{ **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. }

Aquavists web pages under construction

The website for Tip of the Mitt Watershed Council hosts The Aquavist network web pages. These pages are currently undergoing a thorough revision so we ask that you bear with us while we work. The website includes a gold mine of not only state and federal resource links but also a page each devoted to Antrim, Charlevoix, Emmet, and Cheboygan counties. These local pages highlight the most recent issues our members are working on and links to helpful county connections. While this work is being done, some of the information may be outdated and we apologize. However, we are confident that the improvements will be worth the wait!

Want to join the Aquavists or add a resource to our site?

Contact Grenetta Thomassey at (231) 347-1181 or by email at grenetta@watershedcouncil.org.

Bay Harbor Update

The dust hasn't settled yet

The ongoing cleanup efforts at Bay Harbor Properties and East Park are an ongoing concern for residents and visitors to Northern Michigan.

CMS provided a feasibility study to regulators outlining possible long-term solutions to the cement kiln dust contamination at the property known today as East Park. The option preferred by CMS, although not approved by regulators to date, includes construction of a deep injection well and treatment of collected leachate at a treatment plant and discharge to the surface waters of Lake Michigan.

On February 7, 2008, the Michigan Department of Environmental Quality (DEQ) and U.S. Environmental Protection Agency approved the permit for a deep injection well for disposal of collected leachate from the cleanup efforts at Bay Harbor properties and East Park. The permit allows collected leachate to be injected into a well that extends down 2,150 - 2,450 feet below the surface in Star Township in Antrim County. The closest available source of drinking water is located at approximately 900 feet. According to governmental reports on existing deep injection wells, IF properly operated and maintained, they pose minimal threat to our surface and groundwater resources.

...the Watershed Council believes the solution will have to be a multifaceted approach incorporating a combination of activities to achieve the best outcome for the water resources and citizens of Northern Michigan.

The Watershed Council researched this issue carefully and provided comments and testimony at a public hearing. We are pleased that the permit for the deep injection well was modified based upon our recommendation to include additional monitoring and reporting of the fluids to be injected. However, the EPA and DEQ did not include other recommendations made by the Watershed Council that would have further minimized the potential adverse impacts associated with the deep injection well.



Aerial photo of Bay Harbor's East Park taken April 2007.

The second component of the long-term solution preferred by CMS, discharge of treated leachate into the surface waters of Little Traverse Bay, has yet to be approved by regulators. At this point in time, the application submitted by CMS has been deemed administratively incomplete and additional information has been requested. Once we have a complete permit application, the Watershed Council will be thoroughly reviewing and commenting on the proposal to discharge treated leachate to our surface waters. As currently proposed, while the treatment method would significantly reduce the quantities of chemicals of concern and heavy metals such as mercury, concentrations would remain above current water quality standards. Therefore, the quantities of pollutants that would be directly entering Little Traverse Bay from the discharge may continue to pose adverse impacts to the health of the aquatic ecosystem.

As for the long-term, the Watershed Council believes the solution will have to be a multifaceted approach incorporating a combination of activities to achieve the best outcome for the water resources and citizens of Northern Michigan. This entails a full evaluation of all possible alternatives and treatment technology options. Tip of the Mitt Watershed Council will continue to monitor the situation closely, working with the involved parties to ensure that the cleanup is done properly and thoroughly to protect public health and environmental quality. For more information about the cleanup contact Jennifer McKay at (231) 347-1181 or by e-mail at jenniferm@watershedcouncil.org

Water Quality Protection Starts in Your Backyard: Water Friendly Gardening Tips

We all make choices for our garden and lawn care that can make a tremendous difference in protecting the quality of our favorite nearby lake, stream, or wetland. Pesticides, herbicides, and synthetic fertilizers used on gardens and lawns runoff into storm drains or waterways where they can pollute the water and kill aquatic life. Following some or all of these tips are easy to do and will protect the resources you love.

Test your soil. Soil testing will let you know what nutrients are lacking in the soil and, therefore, what soil amendments are needed. Soil test kits are available at local home and garden centers, or from Michigan State University Extension. For more information, visit <http://web1.msue.msu.edu/monroe/soilweb2/index.htm>.

Cut down on chemicals. Eliminate or reduce the use of pesticides and herbicides. Upgrade your soils with composted organic matter rather than synthetic chemical fertilizers. Chemicals can pollute water and also damage the natural microbial communities in the soil and promote pest problems.

Match the plants to your location. Choose varieties of vegetables, fruits, and other native plants for landscaping that are adapted to your area requiring fewer resources to keep plants healthy.

Mulch. Mulching will keep weeds at bay, the soil moist, and plants happy. Organic mulches such as straw or grass clippings will provide some nutrients as they decompose, reducing the need to use synthetic fertilizers or amend the soil.

Avoid wasting water. Water consumption can be reduced by collecting rainwater in a cistern or rain barrel. Rain barrels are easy to install and easy to use. Rain barrels can be purchased online from garden suppliers or contact the Watershed Council to join in on our rain barrel sale! (See page 7 for more details.)

Future gardeners are counting on YOU to make a difference.



Simple Things

you can do to protect our waters.

Wash your car on the grass or at the car wash.

Wash your car on the grass or at the car wash, instead of in the driveway where the water drains directly to our lakes and rivers through storm drains.

Attach doggie bags to your dog's leash.

After watering or rain, dog waste runs directly into the storm drain system. Having baggies available makes clean-up easy.

Roll out the Barrels: Watershed Council Hosts Rain Barrel Sale

Do you want to conserve water, reduce water pollution, and help reduce stormwater runoff? Then you need a rain barrel! A rain barrel collects and stores rainwater from your rooftop which can be used for a variety of non-potable uses including watering your indoor plants and outdoor landscaping. Using collected rainwater for this purpose also allows the water to infiltrate slower into the ground to replenish ground water rather than flowing quickly as surface runoff into storm drains. Using a rain barrel is a great first step to healthier lakes and streams in Northern Michigan!

In 2008, the Watershed Council is hosting our first rain barrel sale. The plastic rain barrels are made from imported food grade barrels which were originally brought into this country filled with delicious olives and pickles. The rain barrels are 39" tall with a 23" diameter and hold approximately 60 gallons. All plastic rain barrels are coated with a UV polish to protect the barrel and prevent fading. The rain barrels have a screw on top with one inch holes, screen mesh to keep out debris,

three top overflow male hose connections with caps, a brass spigot and a bottom drain plug. The overflow fittings allow excess water to be diverted into a second barrel (or third, or fourth etc.), or by attaching hoses, excess water can be diverted to remote areas such as a garden or flower beds.

Rain barrels will be available for purchase from the Watershed Council until Friday, May 9, and will be available for pick-up at the Emmet County Fairgrounds on Saturday, June 14 from 9:00am-4:00pm. Please see the order form enclosed in this issue of *Current Reflections* for more details and pricing. Please note that a discounted price is available for Watershed Council members. For additional information on rain barrels and the rain barrel sale, call (231) 347-1181 or visit www.watershedcouncil.org. You

can also visit our office to see a sample rain barrel. Specific questions can be directed to Valerie at (231) 347-1181 or valerie@watershedcouncil.org.

Photo: The Tip of the Mitt Watershed Council Water Protection Team (left to right) Valerie Olinik-Damstra, Jennifer Gelb, and Kevin Cronk.



Have you ever wondered how much water runs off your roof?

During a typical moderate storm of 1" of rain during a 24 hour period, over 700 gallons of water will run off the average roof, an impervious area of about 1,200 square feet. **In one rainy day, your roof runoff could fill up 14 bathtubs!** Add up the many roofs in your city and we're talking a lot of water.

Rain Barrels on sale until May 9.
Order your rain barrel today!



Where did that come from?

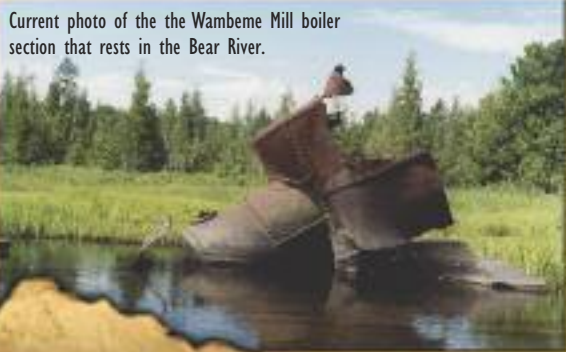


The Boiler in the Bear

If you have ever kayaked or canoed down the Bear River, you have probably seen the huge mass of corroding metal rising out of the water. For over 100 years the Bear River has been the final resting place for a large section of the Wabmeme Mill boiler.

The Wabmeme Mill, located south of Petoskey, supplied Northern Michigan with cedar shingles and railroad ties. During the winter months, the mill supported several lumber camps. In the spring, the local river systems including Gimlet Creek, Spring Brook and the Bear River were used to float logs to the mill for processing over the summer months.

On the morning of July 4, 1904, as workers were preparing to go to work, the mill's boiler exploded sending a large chunk of it into the Bear River. Accounts of this event state that three men lost their lives and a few others were injured. Had the explosion happened a half hour later the fatalities would have been much higher because more workers would have been arriving. The explosion was heard for up to three miles away.



Current photo of the the Wabmeme Mill boiler section that rests in the Bear River.

ABOVE: Photo of boiler taken in 1958.

RIGHT: Photo of the mill shortly after the explosion.

Photos from the August 1958 issue of "The Northern Michigan Skipper". Provided by Wayne Blomberg.

If you have some historical insight into a local water related mystery, like the boiler in the Bear River, send it to kristy@watershedcouncil.org. Your story may be published in an upcoming issue.



Protecting Northern Michigan Waters simply takes...

Will Power

Tip of the Mitt Watershed Council's Planned Giving is an excellent way to protect Northern Michigan's water for future generations. Call today for a free consultation and discover how easy planned giving can be.

Contact: Gail Gruenwald at (231) 347-1181 or by e-mail gail@watershedcouncil.org

Welcome New Members

The future of our waters and our quality of life ultimately depend on what we do today to protect them. In order to continue to protect and enhance water quality in our region, the Watershed Council depends upon individual members, like you, for strength and financial support. We would like to thank all of our members for your continued support and extend a special welcome to our new members.

Mr. Ronald C. Bales

Mr. and Mrs. Robert Bean

Mr. Dale M. Berry

Mr. and Mrs. John C. Biliti

Mr. and Mrs. John R. Bodt

Christine Bommarito

Mr. and Mrs. Donald Breed

Mr. and Mrs. Norton L. Bretz

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Mrs. Kathryn Thompson

Mr. and Mrs. James G. Truchan

Mr. and Mrs. David Turowski

Mr. and Mrs. James C. Wilson

Mr. and Mrs. Floyd A. Wright

If you are reading this issue

of "Current Reflections", it's probably because you want to leave the world a better place, to give something back to our local community, and to protect Northern Michigan waters for generations to come. Your membership helps shape the future. Become a member today. Visit www.watershedcouncil.org or call (231) 347-1181.

Special Gifts

Tip of the Mitt Watershed Council accepts memorial contributions as well as honorariums for birthdays, anniversaries, or other special occasions. All special gifts are placed in the Watershed Council's Endowment Fund unless other instructions are specified. Thank you to the following donors for their recent gifts.

Gifts in Memory of..

Jean Armstrong

Heidi Hill and Bruce Davis

Martha Cameron

Lynn and Bob Crink
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Mr. and Mrs. Robert D. Warner

Catherine Curran

Heidi Hill and Bruce Davis

Lillian Gold

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and Jake O'Neil

Lewis "Hoppie" Hopkins

Martha Lancaster
and Doug Fuller

Joe, Flo and Ed Hotchkiss

James and Jane Hotchkiss

Theodore Munn

James and Jane Hotchkiss

Mary Lou Weatherhead

Ms. Anne C. Waldorf

Gifts in Honor of..

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Cherie Spaulding
Scott and Christine Steensma
and family
Ed and Diane Strelinski
Roy Tassava
Dennis and Barbara Travis
Breanne Wiklanski
Mike Winnell

VOLUNTEERING

is a rewarding way
to give something back
to your community and
work with others who,
like you, love our local
lakes and streams!

See our *Calendar of Events*
on the next page for future
VOLUNTEER OPPORTUNITIES.

Special Acknowledgements

The Watershed Council mourns the loss of **Lewis "Hoppie" Hopkins**. His long-time participation and enthusiasm for Crooked Lake and the work of the Watershed Council will be missed.



The Watershed Council also mourns the loss of **Mary Idema Pew**. We will miss her participation and dedication to protecting our valuable water resources.



We also mourn the recent loss of **Thomas A. Reynold, Jr.** Mr. Reynold was a long-time supporter of the Watershed Council's efforts and a member since 1985.



Chain of Lakes Naturopoly

First Edition Board Game - Limited Offer

The first edition of the Chain of Lakes Naturopoly board game will be available June 14, 2008, featuring a watercolor drawing of the watershed by local artist, Mary Guntzville. Property deeds include drawings by other local artists. Sponsored by members of the Conservation Network: Tip of the Mitt Watershed Council, Grass River Natural Area, Three Lakes Association, The Watershed Center, Torch Lake Protection Alliance, Six Mile Lake Association, and Elk/Skegemog Lake Association.

Add this game to your cottage collection and provide your family and friends with lots of fun for many years to come. Learn about your watershed: the names of the lakes, rivers, and natural areas, as well as the plants and animals.

Only 500 games will be produced, so take advantage of this limited offer.

Order one (or more) for your family today. Cost will be \$32 per game (includes tax).

To order, call Nancy Ludwa, 231-377-7034 or Peg Comfort, 231-377-7512.



THANK YOU for your Gifts

Irish Boat Shop of Harbor Springs Ed Wargin	Winterization Service of our Whaler Photography for Great Lakes Restoration Video
Pierpont Productions, Ric Pierpont	DVD's for Great Lakes Restoration Video



Great Fish. Great Cause.
Thanks Scalawags White Fish & Chips for hosting a Proceeds Day in December 2007.

Mark Your Calendar...

Volunteer Opportunities

May 20 & 21 Experience Lake Charlevoix
Volunteers needed to assist with all day educational event for sixth graders while aboard the Beaver Islander Ferry. Contact: Valerie (231) 347-1181 or by e-mail at valerie@watershedcouncil.org

June 7 Stover Creek Restoration and Clean Up
Volunteers needed to assist with the restoration and cleanup. For complete details, times and specific assistance needed contact Jennifer Gelb at (231) 347-1181 or e-mail her at jen@watershedcouncil.org

Upcoming Events

A complete list of upcoming events will be mailed in May.

May 2 Lake Sturgeon Walking Tour
Learn about lake sturgeon biology, ecology, and current lake sturgeon efforts. **Tour is limited to the first 30 participants.** Tour fee is \$10.00. Pre-register by calling (231) 347-1181.

June 2 Lake Association Summit
Invitation will be mailed in May.

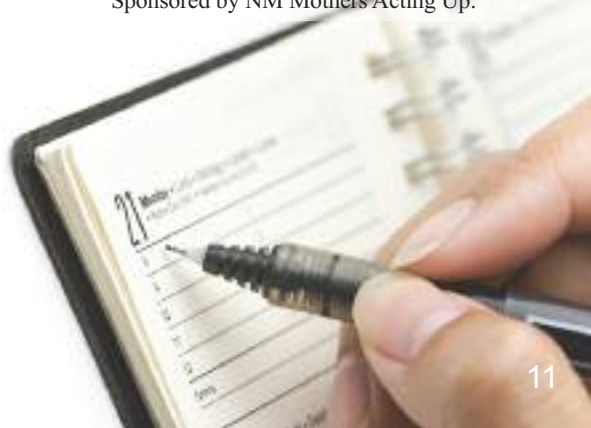
June 14 Rain Barrel Pick Up at Emmet County Fairgrounds

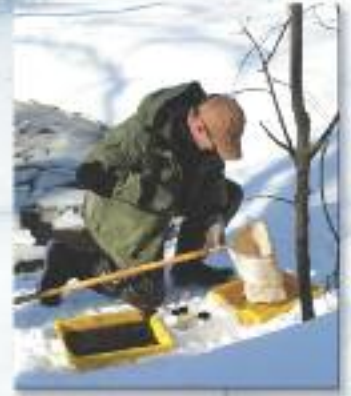
July 7 Tip of the Mitt Watershed Council - Annual Meeting
Invitation will be mailed early June.

Other Events of Interest

April 23 2nd Annual Community Pride Day in Indian River
Call (231) 238-9325 to be involved with the clean up.

May 3 Just Add Water
Giving the gift of water from our community to a community in South Africa. Event held at First Presbyterian Church in Harbor Springs from 2:00 - 4:00pm. For complete details contact Copland Rudolph at (231) 526-5505. Sponsored by NM Mothers Acting Up.





Volunteers in Motion

Volunteer Stream Monitoring - Winter Outing 2008

Bear River and Tannery Creek - Petoskey, Michigan



www.watershedcouncil.org

Rain Barrel Sale and more!

Water Friendly Gardening Tips

Shoreline Management

The dust hasn't settled yet

Bay Harbor Update

Great Lakes Under Siege:
Invasives, Algae, Botulism

Current Reflections...
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