Healthy Lake Huron

Clean Water, Clean Beaches

Newsletter
Summer 2012

This Issue:

Healthy Lake Huron Participants and Supporters

Federal Government - Environment Canada, Parks Canada, Fisheries and Ocean Canada

Ontario Provincial Government - Ministry of the Environment, Ministry of Natural Resources, Ministry of Agriculture, Food and Rural Affairs, Ministry of Municipal Affairs and Housing

Municipal/County Councils - Bruce County, Huron County, Lambton County

Health Units - Grey Bruce Health Unit, Huron County Health Unit, County of Lambton Community Health Services

Conservation Authorities - St. Clair Region, Ausable Bayfield, Maitland Valley, Saugeen Valley, Grey Sauble

Other Organizations - Environmental Defence, Lake Huron Centre for Coastal Conservation, Pine River Watershed Initiative, Western University

International Stakeholders - Lake Huron Binational Partnership

Working in Partnership to Improve Water Quality

A team of dedicated environmental professionals joined together in 2011 to coordinate actions aimed at improving overall water quality along the southeast shores of Lake Huron. This group is leading the *Healthy Lake Huron – Clean Water, Clean Beaches* campaign, a concerted effort to address nuisance algae concerns and to promote safe and clean beaches and shorelines from Sarnia to Tobermory.

The past 20 years has seen an increased focus on water quality issues, including nuisance algae and beaches posted as being unsafe for swimming. This situation is caused by a combination of nutrient and bacterial pollution from private septic systems, municipal wastewater, agriculture, and natural sources. Canada and Ontario, in partnership with local municipal governments, health units, conservation authorities and local organizations, are working to develop and implement recommendations for actions to deal with these concerns.

To address algae issues and beach safety concerns, all partners are focusing on and coordinating actions that are aimed at lowering the amount of phosphorus and reducing incidences of high levels of bacteria (such as *E. coli*) entering the water. Lowering phosphorus levels in the water will reduce algae growth. If we take actions to minimize bacteria entering the water, this will reduce risks to human health and result in fewer beach postings.

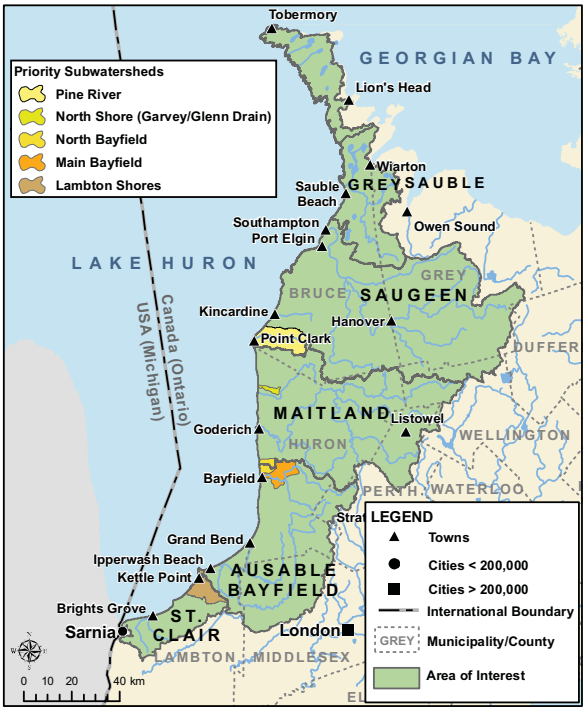
Five key watersheds have been identified as priorities for immediate action. The group works together with local partners to develop and support the implementation of watershed management plans, with targeted actions such as tree planting or other erosion control projects, as well as monitoring and research needs, for each priority area.

The five priority areas (also identified on the map) are:

- The Pine River sub-watershed
- The North Shore sub-watershed (Garvey Creek/ Glenn Drain)
- Bayfield North (including Gully Creek)
- Main Bayfield watershed
- The Lambton Shores tributaries in Lambton County

In addition to this newsletter, a website has been created to keep residents and communities informed, create a dialogue, and form more partnerships to support this effort. For more information, please visit www.HealthyLakeHuron.ca.

One of many summer paradises on the Lake Huron shoreline: Boiler Beach, south of Kincardine. Photo: Telfer Wegg.



A map of the Southeast Shore Area of Interest. Credit: Ontario Ministry of the Environment.

The Pine River Watershed Initiative Network Update

The Pine River Watershed Initiative Network (PRWIN) has been very busy getting organized for the 2012 funding and planting year. It takes many hours of filling in applications and financial reporting to keep the group going but more importantly the PRWIN is looking forward to a very busy field season in 2012. The following is a summary of projects for 2012 that are both on-the-ground stewardship as well as educational outreach;

- The PRWIN is developing a 7-hectare demonstration reforestation plot that will be a site for landowners interested in forest management and for demonstration tours.
- Completion and implementation of the Integrated Watershed Management Plan.
- Two videos are currently being created to summarize this Integrated Watershed Management Plan and will be uploaded to PRWIN's website.
- The completion and implementation of the Stewardship and Maintenance Plan will assist PRWIN and private landowners in managing their plantations towards a biodiverse forest with potential for habitat and niche market crops.
- Development of an Experiential Outdoor Education Centre, which will be a hub for education and outreach programs.
- 2012 will also see the first excavated wetland project created by the Pine River Watershed Initiative Network as part of the Experiential Outdoor Education Centre
- The continuation of the Township of Huron-Kinloss/PRWIN partnership will help to establish a forested trail walk to a historic cemetery to promote the idea of ecobuffers and shelterbelts and exhibit some niche crop species of flora along the trail.
- Nitrate filters will continue to be monitored in 2012. Pending results, additional filters may be planned for 2013.
- Drain naturalization is also being investigated to help reduce the effects of bank slumping and sloughing, and general top-soil loss into the lake while improving fish habitat.
- Roughly 40,000 additional seedlings have been ordered to be planted in the Pine River Watershed.

A group of keen restoration volunteers.
Credit: Pine River Watershed Initiative Network.

Pine River Landowners Lead Watershed Restoration Efforts

The relationship that Pine River Watershed Initiative Network (PRWIN) has with the landowners of the watershed is absolutely central to our mandate of restoring clean water and a healthy ecosystem to the Pine River watershed. As of 2012, PRWIN has completed over 68 environmental restoration projects on over 30 separate landowner's properties throughout the watershed. This has been accomplished through cooperation and the generosity and enthusiasm of the local community. Many landowners in the Pine River area are long term residents of this watershed and have grown up with a passion and knowledge of their landscape. Those who live "on top of the hill" (the glacial Lake Algonquin shoreline bluff) depend on the soil and weather for their livelihood: this gently sloping table land provides rich agricultural opportunities. In contrast, "below the hill" the sand and sun of the Huron Fringe area bring people from near and far to enjoy the splendour of Lake Huron.

Over the last few decades, however, there has been a decline in water quality within the Pine River and this has brought many landowners to the environmental table and drawing board. Eleven landowners sit on the Board of Directors of PRWIN and from here they steer this charitable organization towards their goal of returning the watershed to what it was like when they were children. Old folks fondly remember a place where you could catch enough fish for supper each night and where, no matter how hot the summer, there would always be a deep swimming hole to cool off in after the farm chores were done.

Times have changed, though, and it is unlikely that we or anyone can turn back the hands of time. In recent decades, the population of the Pine River watershed has increased and agricultural practices have become more intensive, leading to the loss of forests and wetlands. As in many locations across southwestern Ontario, our ancestors came to a land rich in natural resources. Today our local environment is vastly different. That's why the PRWIN is working closely with local landowners to enhance, restore and foster appreciation of this unique watershed.

Garvey/Glenn Drain Watershed

Located in the Township of Ashfield-Colborne-Wawanosh, the Garvey-Glenn Drain watershed has been identified as a priority action area by the Healthy Lake Huron initiative. A detailed assessment of the watershed was conducted by the Maitland Valley Conservation Authority (MVCA) in 2011. MVCA staff walked over 50 kilometres of waterways and mapped existing conditions. This assessment indicated that soil erosion is a problem throughout much of the watershed. Erosion contributes to high concentrations of sediment and nutrients flowing into Lake Huron from the watershed.

In consultation with landowners, MVCA staff recently completed a comprehensive Soil and Water Environmental Enhancement Plan (SWEEP) for the watershed. This plan focuses on improving water quality by addressing the impacts of soil erosion and nutrient runoff. Rural stormwater management is a key component of the plan.

The SWEEP divides the watershed into 12 sub-basins. Work is expected to begin this spring on conservation projects in the first sub-basin, located in the headwaters. Phase one of the project involves the construction of berms and a wetland. Surface water will be collected behind the berms and then tile-drained to the wetland. This will reduce sediment and nutrient runoff while filtering surface water. The berms will be constructed with material excavated during the wetland construction process. The project is designed so that surface water collected behind the berms is filtered through the wetland over a 24-hour period. This ensures the field crop is not negatively impacted by the water.

This year, water sampling will be done at several sites to collect baseline information on water quality. This will be compared to sampling results in future years to evaluate the impact of the berms and wetland on water quality.

Design work for projects in two more sub-basins will also be undertaken in 2012. These projects include tree planting, construction of additional berms, and planting grassed waterways. These projects will get underway in 2013 as funding is available.

Over the past year, consultation with landowners has been a significant part of work in the Garvey-Glenn watershed. This will continue as the projects progress. A landowner committee has been formed to guide efforts, and landowners will be involved in planning and evaluating each phase of SWEEP implementation. The SWEEP document is not a static plan, but instead will be updated and evaluated on a regular basis. Landowners will be an important part of this process as the community works towards building a healthy watershed and a cleaner Lake Huron.

Bayfield North Watersheds

Landowners, the Huron County Federation of Agriculture, and the Ontario Ministry of Agriculture, Food and Rural Affairs are working with the Ausable Bayfield Conservation Authority on Crops & Creeks, Huron, a project to determine the environmental and economic effectiveness of different stewardship projects.

Farmers participating in the project have introduced additional Best Management Practices (BMPs) such as erosion control, and have provided data on inputs and outputs of crop and livestock production and changes in costs and revenues. The study will show costs and benefits to different projects and show how decisions are made by the farm-business owner to adopt practices or not.

Crops & Creeks, Huron has established test plots to see how well projects like cover crops, erosion control structures, and reduced nitrogen application reduce overall sediment in water. Monitoring water quality and quantity will assess how well these BMPs reduce nitrogen and phosphorous in water run-off.

The study's findings will provide helpful knowledge about environmental and economic costs and benefits so land and watershed managers can make the most informed decisions possible. Additionally, data collected will help project partners at the University of Guelph's Watersheds Evaluation Group (WEG) explain what water quality might be if landowners did not undertake these BMPs, or what the result would be if landowners tried BMPs on different parts of the landscape.

Crops & Creeks, Huron builds on past actions the Bayfield North, Zurich Drain and Ridgeway Drain watershed communities have taken to recommend and implement BMPs to protect and improve water quality. The Crops and Creeks, Huron project complements the Bayfield North Watersheds Management Plan, which is posted on www.HealthyLakeHuron.ca.

The Lambton Shores Watershed

Last summer, St. Clair Region Conservation Authority (SCRCA) gathered information about the Lambton Shores watershed by studying local issues, talking with residents and other partners, and working with communities and agencies. The results of a beach survey suggest that an overwhelming majority feel that Lambton Shores beaches are vital to our quality of life and survival and a legacy for future generations.

This watershed is home to provincially significant wetlands and woodlands and features rare kettle stones along the shoreline at Kettle Point. The sandy beaches of Lambton Shores and the Chippewas of Kettle and Stony Point First Nation attract many visitors and are a natural heritage treasure.

Concerns, however, included litter on the beaches, motor vehicles in the water and on the beach, and water quality. In discussion with the municipality and other agencies, there was a consensus that collaborative efforts were needed to address these issues and to raise awareness within the local watershed.

The Conservation Authority summarized these concerns and ideas in a Watershed Report, which also details the physical, social, and biological components of the Lambton Shores Watershed and water quality results from monitoring completed by SCRCA, the Lambton Health Unit, and a local consulting firm.

Currently, the Conservation Authority is facilitating discussion on techniques to improve water quality, including the creation of a landowner directed steering committee to assess proposed Best Management Practice (BMP) environmental projects, water quality education, connecting with landowners interested in BMPs, securing funding to offset costs associated with implementing BMPs, and collaborating with regional partners and individuals.

Collaboration is the best approach to address coastal and inland water quality concerns. Some of the suggestions received included: supporting water-related festivals, continued water quality monitoring, limiting vehicle access on beaches, addressing concerns with shoreline washroom facilities, controlling pets and litter, and encouraging BMPs by landowners. More discussion is needed to determine the support of the community for these suggestions.

You can help too, by continuing your efforts to undergo regular septic maintenance and limiting sediment and nutrient inputs to Lambton Shores watercourses.

A healthy beach ecosystem. Credit: St. Clair Region Conservation Authority.

The Main Bayfield River Watershed

Residents of the Main Bayfield watershed began a community planning project in 2011 with funding support from the U.S.-based Fred A. and Barbara M. Erb Family Foundation as well as support from Ontario Ministry of Agriculture, Food and Rural Affairs; Environment Canada; the Bayfield Ratepayers Association; and the Municipality of Bluewater.

An advisory committee of community members, stakeholders, and ministry staff, has been meeting to develop and complete the Watershed Plan in 2012. The plan will research current conditions and incorporate community recommendations for local actions to protect and enhance water quality and quantity and forest conditions. It will also identify priority areas for actions or projects that protect and improve water and forest conditions and increase natural areas or habitat. ABCA staff are meeting with individual landowners to determine land management and stewardship practices within the watershed.

Enhancing stewardship in the Bayfield River Watershed has meant focusing efforts within a smaller watershed (Trick's Creek) to involve local people in ongoing resource management. The Trick's Creek tributary of the Bayfield River provides groundwater discharge that can support a cold-water fishery. Improvements to the Trick's Creek Watershed will help to enhance water quality in the Bayfield River, which also enhances the overall water quality of Lake Huron. Wetland enhancement within the broader Bayfield River Watershed is also being promoted.

Watershed Contacts

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Being Septic Smart! - The Inside Story

If you live in a rural area or a small community or if you have a cottage in Ontario, chances are you have a septic system. Septic systems treat household waste in rural areas where municipal sewers are not available. Anything that goes down the drain, every shower drip and every toilet flush flows to the septic system. Rural residents and cottage owners need to be 'septic smart' when it comes to maintaining and managing their septic system.

Under the Ontario Building Code, all rural residents are responsible for their system's maintenance and performance. Taking good care of your septic system will save time, money and worries involved in replacing a septic system that does not operate properly or has failed. Failed septic systems that are not operating optimally can be hazardous to your health, the environment, and your wallet. In addition, they can degrade water supplies and reduce your property value.

Want to be Septic Smart?

Check out the SepticSmart! DVD and Rural Septic System Checklist.

Spring and early summer are good times to check to make sure your septic system is working properly. The Ontario Ministry of Agriculture, Food and Rural Affairs produced the SepticSmart! DVD and Rural Septic System Checklist to help you maintain your septic system, save money and protect your water quality!

The DVD features four short videos and information about how septic systems work and how to take care of them. Included are descriptions of newer types of septic systems for challenging locations.

The *Rural Septic System Checklist* includes practices to keep septic systems properly functioning as well as a maintenance schedule that you can customize for your own property. Attach the checklist to a basement or workroom wall for convenience and visibility.

The SepticSmart! DVD and Rural Septic System Checklist has everything you need to help you manage your septic system properly. Credit: Ontario Ministry of Agriculture, Food and Rural Affairs.

Another useful source of information is the *Water Wells Best Management Practices Booklet*.

To order these free resources or view them on-line, go to: www.ontario.ca/septic or contact the Ontario Ministry of Agriculture, Food and Rural Affairs, toll free at: 1-877-424-1300.

Septic Basics

- Know where your septic bed is located.
- Keep a system diagram in a safe place for reference.
- Keep accurate records of septic system maintenance and service calls.
- Test your well water at least three times per year.
- Divert surface water away from your leaching bed.
- Have your tank inspected and cleaned out regularly (every three to five years).
- Repair leaky plumbing fixtures.
- Conserve water to reduce the amount of waste water that must be treated.
- Don't put cooking oils or food waste down the drain.
- Don't flush hazardous chemicals or pharmaceuticals down the drain.
- Don't use special additives that claim to enhance septic performance. You don't need them!
- Don't drain hot tub and spa water to the septic system.
- Don't dig without knowing the location of your leaching bed.

Parks Canada Protects Lake Huron Beach from Invasive Phragmites

Parks Canada is a world leader in protecting natural heritage and in hosting real and inspiring visitor experiences. This is especially true at Singing Sands, a small but popular beach on Lake Huron that is part of Bruce Peninsula National Park.

The Singing Sands area is renowned for its pristine mosaic of coastal meadow and sand dune habitats that support an incredible diversity of plant species, some of them provincially rare or endangered. However, concern over a recently established colony of phragmites (*Phragmites australis subsp. australis*) at Singing Sands has prompted Parks Canada staff to take action against this invader.

This species of phragmites, also known as common reed, is an invasive perennial grass from Europe that aggressively takes over wetlands and beaches. It grows rapidly, forming dense colonies that outcompete native species for sunlight, soil nutrients and water.

Phragmites is able to spread rapidly in our area because it is free from the insects and plants found in its native European habitat that act as biological controls on the population. Without intervention, the native plant communities at Singing Sands will be negatively impacted and so will the experience of thousands of park visitors.

As the Singing Sands phragmites colony was discovered early, Parks Canada staff are confident it can be controlled and the habitat returned to its native state using small scale methods and the help of volunteers. However, this case points to the need for vigilance against invasive species to protect some of best remaining examples of coastal meadow and sand dune habitat along Lake Huron for all of us to enjoy.

If you would like to be involved in this restoration project, or are interested in volunteering with Parks Canada, contact staff at Bruce Peninsula National Park by phone at 519-596-2233 or by email at bruce-fathomfive@pc.gc.ca.

Work is underway to eliminate invasive Phragmites plants that have appeared at Singing Sands, Bruce Peninsula National Park. Credit: Parks Canada.

Friends of Sauble Beach

The Friends of Sauble Beach (FSB) is a grassroots group of over 100 families who volunteer their time and raise funds to make Sauble Beach a more environmentally and user-friendly beach. The group has been in existence since 2000, is non-political and devotes itself to educating beach users about the benefits and attributes of our beach and dunes - including the plants and animals that make the beach a unique functional coastal ecosystem. The vegetation on the dunes protects them from various types of erosion, such as high winter winds, fluctuating water levels and constant wave action.

Since its inception, the group has raised almost $300,000 that has been spent on management plans for the beach, improving access to the beach while discouraging the use of informal paths that damage the dunes, developing two major access points at the centre and north end of the beach, and installing beachfront benches, educational signage and providing brochures. The FSB Lookout, which is also the centre access point, has seating, educational signage and provides a panoramic view of the beach. Both major access points are fully accessible. In 2011 the group ran a seminar for Councillors and staff of the Town of South Bruce Peninsula, the community and local Grade 7 and 8 students. The three expert speakers dealt with "Beach Processes" and were well received by over 100 residents as well as the students.

FSB works in concert with the Town of South Bruce Peninsula, which owns and manages the beach. FSB receives project approvals from the Town of South Bruce Peninsula prior to starting work, and at times, additional meetings and consultations are completed with the Saugeen Ojibway Nation.

FSB believes that our success lies in focusing on the beach and dunes, having a "can do" attitude and cooperating with the municipality.

Visiting a beach restoration site at Sauble Beach.
Credit: Friends of Sauble Beach.

E. coli Bacteria and Beaches: What's In Your Sand?

Safe Swimming Checklist

Three Ws of Safe Beach Use
You are often the best judge of water quality for swimming or other recreational uses. By checking weather, water and websites, you can quickly and easily gauge water quality and decide if it is safe to swim.

☑ Weather:
Be aware of recent local weather conditions. Storms or heavy rains typically result in high bacterial counts and unsafe water quality for the next 24-48 hours. It is wise to wait a couple of days after a storm before visiting the beach again.

☑ Water:
After arriving at the beach, a quick visual inspection of the water is one of the best ways to judge if it's safe to go in. Visual indicators of unsafe water quality include water that is murky with suspended mud or sediment (usually caused by wavy conditions) and the presence of large numbers of birds and bird droppings. If you do venture in but can't see your feet when standing waist deep, you should get out. Rip currents, undertows and heavy wave action increase risk to swimmers.

☑ Websites:
Before you go to the beach, check with the local public health unit to see if local beaches have been posted.

Weather and Water Information
Grey Bruce County:
- Online: www.publichealthgreybruce.on.ca
- By Phone: 519-376-9420 ext. 2501 or Toll Free 1-800-263-3456

Huron County:
- Online: www.huroncounty.ca/health
- On Twitter: www.twitter.com/huronbeachinfo
- By Phone: 519-482-5119 ext. 2501 or Toll Free 1-877-837-6143

Lambton County:
- Online: www.lambtonhealth.on.ca
- By Phone: 519-383-8331 or Toll Free 1-800-667-1839

The lake water is not the only place where *E. coli* exists at a beach. *E. coli* is also found in the sand and groundwater along the shoreline. Scientists in Canada and the United States have been investigating *E. coli* in the beach sand during the past few years, and are starting to get a picture of just how much of it is in the sand.

To start off with, don't let this send you running away from the beach! Although high levels of *E. coli* are present in the sand along the shore where children typically play and build sand castles, these typically do not present a major health risk. However, you should make sure to wash your hands and face with soap and clean water after you or your children play in the sand.

So how does it get there you ask? We know that *E. coli* is always found in the beach sand and groundwater along the shoreline at all beaches of the Great Lakes, including Lake Huron. And we know that *E. coli* concentrations here are much, much higher than *E. coli* levels in the lake water – up to 1000 times higher that the provincial Recreational Water Quality Guidelines for a beach posting!

Most of the *E. coli* in the beach sand along the shoreline comes from the lake. During storms, lake water will infiltrate into the sand as waves run up the shore. Because lake water typically contains *E. coli*, the infiltrating lake water will also carry *E. coli* into the sand. Most of the infiltrated lake water will quickly head back into the lake but the sand will act to filter the *E. coli* and retain it in the sand. Each subsequent storm will add more *E. coli* to the sand. The high levels of *E. coli* in the sand are limited to the swash zone, which includes all of the area that waves extend to before receding back into the lake.

We know that the *E. coli* in the swash zone can return to the lake, and return in two ways. First, groundwater below a beach always flows towards and discharges into the lake at the shoreline. *E. coli* will be transported with the groundwater and discharged right at the shoreline (i.e., less than 2 metres from the shoreline). This process could be partly responsible for why *E. coli* levels in ankle-depth water are higher than knee-depth water and much higher than chest-depth water. Secondly, *E. coli* can also re-enter the lake as the sand along the shoreline erodes. Beaches are very dynamic environments with waves and currents continually eroding and depositing sand along the shoreline. Any sand that is eroded into the lake will also deposit *E. coli* that was in the swash zone into the lake. It is suspected that this process is the major reason why beach postings sometimes occur even though there does not appear to be any reason for high levels of *E. coli*.

So remember, after you or your children play in the sand, wash everyone's hands and face with soap and clean water!

E. coli bacteria are commonly found at the beach, mostly in the "swash zone" where waves meet the shore.
Credit: Grey Bruce Health Unit.

Ontario Supports Rural Stormwater Management Project

Healthy Lake Huron's goal of Clean Water, Clean Beaches got a boost late last year when the Ontario Ministry of the Environment awarded the Ausable Bayfield Conservation Authority (ABCA) $700,000 in funding through the *Showcasing Water Innovation* program.

This program funds leading-edge, innovative and cost-effective solutions for managing drinking water, wastewater and stormwater systems in Ontario communities.

The two-year project will improve knowledge about agricultural and rural drainage by developing a rural stormwater management model and implementing it in Healthy Lake Huron's five priority watersheds, along with installing new monitoring stations.

The project will provide new and detailed data on rural stormwater during spring-time and heavy rainfall events. This information will be used to guide new stewardship projects aimed at effectively managing run-off and reducing soil and stream erosion. This will help landowners and agencies ensure that stewardship dollars are spent on projects that have the greatest benefit to the environment.

ABCA is leading the project, working closely with the Maitland Valley, St. Clair Region, Saugeen Valley, and Grey-Sauble conservation authorities and others involved in the Healthy Lake Huron initiative. Partners will also provide additional funding support and in-kind contributions. The support and participation of farmers and other landowners are also important parts of this project.

For more on Ontario's *Showcasing Water Innovation* program, visit www.ene.gov.on.ca/environment/en/funding/showcasing_water_innovation.

Lake Huron Binational Partnership

Lakewide environmental management, restoration and protection activities in the Lake Huron basin are coordinated through the Lake Huron Binational Partnership.

The United States Environmental Protection Agency, Environment Canada, Michigan Department of Environmental Quality, and Ontario's ministries of the Environment and Natural Resources form the core of the Partnership by providing leadership and coordination.

A flexible membership on an issue-by-issue basis is inclusive of: other agencies and levels of government; First Nations, Métis and Tribes; non government organizations; and the public. To learn more, visit www.binational.net.

Canadian efforts in support of the Binational Partnership to encourage and support community action to protect and restore the lake and its watershed are ongoing through the Lake Huron – Georgian Bay Framework for Community Action. Please visit www.lakehuroncommunityaction.ca for information, contacts and to sign the Lake Huron Charter – a commitment to work together for a healthy and sustainable Lake Huron watershed.

Lake Huron's Unique Algae Problem

Beach fouling by algae is an unwanted occurrence on the Great Lakes even though algae are an important element of the lake ecosystem. Algae convert sunlight into energy, providing a source of food for many other microscopic organisms that, in turn, are eaten by other fish and wildlife species.

Algal blooms that grow to nuisance proportions and foul beaches are responding to favourable growing conditions that vary by area and species of algae. To make sense of algae fouling problems and the ways that human activity contributes to favorable growth conditions (such as phosphorus pollution), it is important to understand the types of algae that have become unacceptably abundant and why.

The green algae *Cladophora* is the major cause of beach-fouling problems in the Great Lakes, with Lake Huron being the exception. Algal fouling on the Lake Huron shoreline appears to be caused by several distinct types of algae that combine in different proportions, depending on location and time of year. Three distinct types of algae that commonly end up on Lake Huron beaches are: *Cladophora*, *Chara* and diatoms.

Cladophora plants attach to the lakebed, forming lush lawns of filaments that are periodically detached by waves and wash ashore. *Cladophora*'s history as a nuisance dates back decades to when phosphorus discharges to the Great Lakes were less stringently managed. The Great Lakes Water Quality Agreement between Canada and the US prompted stricter control of phosphorus levels in detergents and domestic wastewater discharges. Phosphorus levels declined in Lake Ontario and Lake Erie as a result and the *Cladophora* problem waned through the 1980s.

Since the mid-1990s, however, *Cladophora* is again a widespread concern in these lakes but this time the cause is less obvious. In large part it appears to be related to ecosystem changes resulting from invasive zebra and quagga mussels. In more nutrient poor Lake Huron, *Cladophora* was not historically abundant and was found largely near areas of phosphorus inputs from the shoreline. The same holds true today with the added complication that, like elsewhere, *Cladophora* shows signs of being positively affected by zebra and quagga mussels.

Chara resembles a small aquatic plant. Freshly beached *Chara* has a forest-green colour that bleaches to yellow and white as it dries out. Beach fouling by *Chara* occurs erratically from spring to fall. It is suspected that periods of heavy *Chara* fouling are caused by strong winds and waves that uproot the plant and carry it to the beach. While the underlying reason *Chara* has become a problem remains unclear, its ecology suggests a preference for nutrient-poor conditions associated with good water quality.

Scientific studies so far in Lake Huron have not identified a link between nutrient enrichment and the abundance of *Chara*.

A third type of shore-fouling algae accumulates at the waterline over the summer. Known as 'muck', it is a mix of microscopic species dominated by diatoms – a group of algae noted for their brownish colour.

Significant scientific research on the growth of nuisance algae is underway and increasing across the Great Lakes. Along the Lake Huron shoreline, the Ontario Ministry of the Environment is continuing its research through watershed and nearshore water sampling to quantify the problem and identify sources. This work will help local communities and organizations focus their on-the-ground activities on projects that will minimize the growth of nuisance algae along Lake Huron's shoreline.

Beach fouling by algae is an unpleasant but common occurrence on Lake Huron shores. Credit: Ontario Ministry of the Environment.

Check Out Our Website!

In late fall 2011, the Healthy Lake Huron partnership launched its new website: www.HealthyLakeHuron.ca. Be sure to check it out and add it to your bookmarks!