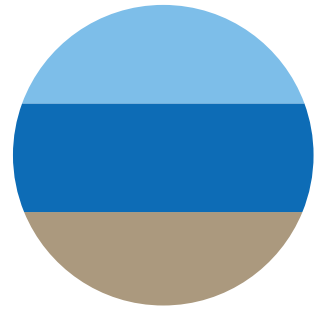


GEORGIAN BAY FOREVER



FALL 2010

THE LATEST AND GREATEST FROM GEORGIAN BAY FOREVER

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Georgian Bay Forever is a proud member of the Waterkeeper Alliance.



GEORGIAN BAY
BAYKEEPER

GEORGIAN BAY
FOREVER



Georgian Bay Forever is a voluntary community response to the growing need for major research and education projects to sustain the Georgian Bay aquatic ecosystem and the quality of life its communities and visitors enjoy.

We help monitor the Bay's well being, throughout the seasons, year after year.

We fund the research needed to protect the environmental health of Georgian Bay and the surrounding bodies of water. Using our research findings, we inform and educate the general public and governments about any threats to environmental health and propose possible solutions.

Through conferences, workshops and seminars we are educating the Georgian Bay community. By teaming up with reputable institutions we enhance the credibility of our research and we strengthen our ability to protect what's at stake.

Georgian Bay Forever, formerly the GBA Foundation, is a registered Canadian charity (#895311066 RR0001). We work with the Great Lakes Basin Conservancy in the United States, as well as other stakeholder groups all around the Great Lakes.

Deeply rooted and broadly drawn, Georgian Bay Forever is steered by lifelong devotees to the Bay. We are committed advocates, educators, environmentalists, realists, idealists, and of course, residents.

DIRECTORS

Brenda Drinkwalter
Peter Hatcher
Michael Hensel
Rod Jones
Hugh McLelland
David Parkes
Larry Ward
Scott White
Hugh Wilkins
Doug Wright
Ex Officio Members
David Sweetnam

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You can reach David Sweetnam, our Executive Director, at ExecutiveDirector@georgianbayforever.org or at (905) 880 4945 ext 1.

U.S. citizens wishing to make a donation to support our work can do so by giving to:

Great Lakes Basin Conservancy
PO Box 504, Gates Mills OH
44040-0504
USA

(Please add a note saying: "For Georgian Bay Forever")

This newsletter is just a snapshot of our work. For the most up-to-date information on our projects, longer versions of newsletter articles and the latest on breaking news about Georgian Bay, please become a regular visitor of our website.

www.GeorgianBayForever.org

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PRESIDENT'S MESSAGE

A Season Of Renewal



By David Parkes

I always get a bit sad when I leave Georgian Bay for the last time each year. The end of the season seems so distant from the warmth of summer and the fun with friends and family on the Bay. But the end of the season also means the beginning of the next season is not very far away. Before you know it, the grey of winter will turn into the green of spring and we'll all be back on the water enjoying the best place on earth.

As the seasons renew over the years, so does Georgian Bay Forever.

Our Board of Directors has undergone some turnover as we continue the transition of our charity from what was originally known as the GBA Foundation to the new Georgian Bay Forever.

The board consists of 12 positions, each with a three-year term. This means a normal turnover of four directors each year. Often terms are renewed resulting in an expected renewal rate of three directors per year.

This year, four directors who were instrumental in the creation of the GBA Foundation – former presidents Roy Schatz and John Seagram; Peter Kelk and Mary Muter – have left the board. Also leaving is my immediate predecessor, Lloyd Posno, the very first president of Georgian Bay Forever. (For an extended tribute to the founding directors, please see www.georgianbayforever.org)

My sincere thanks to all of them for their years of hard work. We would not be where we are today without these passionate Georgian Bayers.

When any charity says goodbye to volunteers with so much talent and years of experience, the remaining and new board members wonder if they'll be able to do as well as those who were there before them.

But I've learned in my professional life, and on other charity boards I've been involved with over the years, that renewal is necessary to ensure the viability of any organization. It can bring new ideas, innovation and it gives a chance for new talent to emerge.

That is certainly the case for Georgian Bay Forever.

Joining our board are Brenda Drinkwalter, Michael Hensel and Rod Jones. They are bringing a fresh perspective to the many challenges facing Georgian Bay.

Brenda's cottage is on Nottawasaga Bay in Tiny Township; Michael is a full-time resident of Collingwood; Rod is CEO of Canada Steamship Lines, a business that depends on sustainable water levels in the Great Lakes.

These appointments demonstrate our commitment to our key objectives. It also expands the geographic "reach" of Georgian Bay Forever beyond the cottage community on the east and north coast to bring in the entire Bay area. We are also engaging the business and commercial members of the Bay community who support and believe in the environmental goals of our charity.

We will continue to diversify our board with talented, dedicated

directors while building the working committees of experts as well.

Doug Wright, head of our Science Committee, has also attracted some new scientific advisers who are eager to work with our water levels and water quality committees.

Our wetlands research project, undertaken in partnership with McMaster University, has just completed another summer of important research and we are already planning the activity for the next two years. Ultimately, this work will result in special provincial recognition of our extensive wetlands that will ensure their protection.

And of course, all of us are guided by our Executive Director David Sweetnam, who spent his first summer on the job visiting many of your communities. Please read David's Summer Report on our website.

While we've had some change in personnel, one thing has not



changed: our commitment to protecting the aquatic ecosystem of Georgian Bay. Our projects will continue to focus on four key areas: water levels; water quality; wetlands and invasive species. Georgian Bay Forever has raised and invested more than \$2 million over the years. The research we've funded has certainly made a difference in many ways.

Our mission is important, and while we have made a lot of progress, our work is just beginning. It is a critical time for Georgian Bay. We face the threat of the asian carp, the possibility of inaction on controlling the flow of water down the St. Clair River and the devastating impact of our wetlands drying up.

More than ever, we need your support. ●

David Parkes is president of Georgian Bay Forever. He is a cottager in Sans Souci and the owner and operator of David Parkes and Associates Inc.

An indefatigable love for the Bay

Georgian Bay is more than rocks and waters. It's a place of memories of family and friends, where generations come together to share a love for nature and a love for each other. In this article, Sue, Rick and Nancy Stamberger share memories of their late parents Betty and Dick. Georgian Bay Forever recently received donations in excess of \$5,000 in the memory of the Stambergers.

“Indefatigable.” That is a word that describes our parents’ relationship to Georgian Bay. For decades, they never missed a summer at our tiny island midway between Sans Souci and Moon River. In their last years they would do whatever was necessary to spend time on the Bay – and sometimes it took a small army of support to make a visit a reality. For them, the beauty of the place and the powerful sense of community made the Bay “true North” in their lives.

It started, though, 60 years earlier. Betty and Dick Stamberger, with their two young girls and a puppy in tow, drove for nearly



Friends and family have donated more than \$5,000 to Georgian Bay Forever in memory of Betty and Dick Stamberger.

two days from northern New Jersey to Parry Sound in July of 1952. When they arrived at the small island that Dick’s father had acquired that summer, it never entered Betty’s imagination that this little piece of land would become the most important place on earth to her for the rest of her life.

The rustic fishing cottage, built in 1919 on the island’s crest, was comprised of one room featuring a large stone fireplace, a sleeping area at one end with a partial wall for privacy and a lean-to kitchen that defined “rough.” The rest of the property had a 10-foot-by-10-foot sleeping cabin a few yards to the back, an outhouse down the hill, a T-shaped dock

on the channel side of the island near a boat-house that had been built in the ‘30s. There was – and is today – no electricity. Water was pumped by hand. Ice in 50-pound blocks kept food edible for several days at a time.

Over the years, their lives made a transition from near-total isolation in our tiny bay to the significantly more social existence we know today. In part they got to know others because they spent increasingly long periods of time – in some years nearly five months – on the island.

The community developed over the decades – first with the family on the nearest island, then with others who surrounded our small bay and finally with people “on the outside” made accessible by faster boats and better communications.

They also developed lasting friendships with year-round residents of Sans Souci and Parry Sound. In the ‘60s they would visit Parry Sound in February for a curling weekend with the Mclsacs. Their most important friends included Laval and Isabelle Martin and Wellington Welch, among others.

It was, as it is today, a community of mutual support. If someone needed to “address” a rattler, Dad would head over for assistance. If another friend wanted groceries, Dick and Betty would pick them up on their weekly trip to town.

In later years, Dick and Betty benefited greatly from that community. More than once a group of men would pick Betty up in her wheelchair to get her into friends’ cottages for a party.

It was their intrepid nature that captured many people’s affection.

Dick last visited the Bay when he was 88 years old. One of the dock hands at the marina watched in stunned silence and admiration as Dick piloted his boat and docked it.

Dick missed coming to the Bay a couple of times in over 50 years due to work, but Betty never missed a summer at the island. At the age of 90, she made her last trip to the Bay in July 2009.

Dick and Betty’s love for Georgian Bay has been passed on to their three children. Now, the third generation is there to relish the revitalizing powers of the Bay’s air, water – and an extraordinary community. •

Planned Giving

By Hugh McLelland

You can leave a legacy without having a large bank account.

Listed below are a number of ways, other than making a cash donation, to make a gift to a registered charity like Georgian Bay Forever.

Strategies outlined here accommodate donors who wish to build charitable donations into their plans for leaving a legacy. Find the method that works for you and support the cause of your choice:

1. Designate a charity as a named beneficiary for a portion of your RRSP or your RRIF.
2. Take out a life insurance policy (premiums tax deductible) on yourself with the charity of your choice as beneficiary.
3. Donate items of value (such as vintage wines) to a charity-sponsored auction.
4. Make a cash bequest in your will to a charity of your choice.
5. Donate a listed security (major tax benefits here).
6. Donate your time or your expertise.
7. Establish a Charitable Remainder Trust.
8. Form a charitable Foundation

Go to our website for more!

At GeorgianBayForever.org, Hugh McLelland gives the straight goods on the eight strategies mentioned above. It is important that each of us value the significance of even a modest donation. Choose the method of giving that works best for you and help protect Georgian Bay. Forever.

Go to GeorgianBayForever.org/leave-a-legacy

Georgian Bay Forever director Hugh McLelland is Chairman of the Queensbury Group, a Canadian wealth management organization with 100 senior financial advisers.

Georgian Bay Forever – Proud to be RBC Blue Water Project® 31

A couple of years ago, Georgian Bay Forever began putting together a major project focusing on coastal wetlands research and protection. These wetlands are an important part of the aquatic ecosystem providing habitat to threatened species, fish and numerous other land- and water-based plants and animals. They also provide important environmental services like water filtering, sediment trapping, purification and shoreline protection.

We needed a partner to help fund this project for several years, and—fortuitously—RBC had just launched the RBC Blue Water Project, a 10-year, \$50-million grant program supporting not-for-profit organizations that protect watersheds and provide or ensure

access to clean drinking water.

We approached Michael Carter, Vice President, RBC Dominion Securities Inc. in the Mid-



land Office - with the idea of partnering with the RBC Blue Water Project. Mike was incredibly helpful and worked with us to formulate

our application. RBC has awarded Georgian Bay Forever Project 31 with \$100,000 for our Wetlands Conservation project. Since 2007, RBC has committed more than \$25 million to more than 290 organizations worldwide.

“RBC Blue Water Project is pleased to support this important work by Georgian Bay Forever in our wetlands, to help to obtain the knowledge that will allow us to protect our most valuable resource – our water,” said Mike.

Georgian Bay Forever is pleased to partner with RBC because of our shared belief that the preservation of the environment is fundamental to the sustainability of our communities. •

Michael Carter can be reached at 1-888-208-9711.



Steve Nixon, Regional VP of RBC, presents a \$100,000 RBC Bluewater cheque to David Sweetnam, Executive Director of GBF, on the town docks in Midland to celebrate the first RBC Bluewater Day.

Pictured are (from left) Michelle DesRochers, Investment Advisor, RBC DS; David Fonseca, Vice President & Branch Manager, RBC DS; Roy Schatz, GBF; Heather Eland, GBF; Adam Scott, GBF; Mary Muter, GBF; Brenda Drinkwalter, GBF; Larry Ward, GBF; Peter Hatcher, GBF; Roger Denize, Vice President Commercial Banking (hidden); Michael Carter, Vice President/Investment Advisor, RBC DS; Andy Ott, Branch Manager, RBC Midland; Steve Nixon, Regional Vice President, RBC; David Sweetnam, GBF.



Water levels: some promising news

By David Sweetnam

For almost a decade, Georgian Bay Forever has been the leading voice on the issue of water levels in Georgian Bay. It has been a long, difficult and even controversial campaign – but one that is vitally important to the aquatic ecology of our beloved body of water.

A new development this fall is an encouraging sign that progress is being made.

In early October, the International Joint Commission – the body that deals with transboundary water issues between Canada and the United States – announced it wants a special Study Board to recommend options for raising lake levels.

It's good news, but it's also clear we're still years away from any potential solutions.

Investigating remediation (for past problems) and mitigation (to prevent further problems) in the connecting waters between Lakes Michigan/Huron and Erie is something Georgian Bay Forever has recommended for many years. Our mission is to protect the aquatic ecosystems of Georgian Bay. We can't do that without the right levels of water.

Late last year, the IJC's Upper Great Lakes Study Board released a report on levels in the single body of water that makes up Lakes Huron, Michigan and Georgian Bay. It acknowledged that climate change and man-made actions like the 1963 dredging of the St. Clair River resulted in further erosion in the river bed that lead to lower water levels on the middle Great Lakes. But the report also said the unexpected loss of water (23 centimetres or 9 inches more than approved) wasn't enough to warrant action at this time.

Georgian Bay Forever was disappointed by this "do nothing" recommendation. And we weren't the only ones who felt that way. The IJC Commissioners held a series of public meetings last March in Midland, Sarnia and Toronto – in conjunction with meetings in Wisconsin, Michigan and Ohio.

The recent IJC announcement means our voices were heard.

The IJC is now asking the Study Board to examine the consequences of raising the average levels of the lakes under four different scenarios: 10 centimetres (4 inches); 25 centimetres (10 inches); 40 centimetres (16 inches);

and 50 centimetres (20 inches). The IJC also wants the Study Board to start looking at what type of structure would be needed to recapture the lost water.

All of this will be part of a second phase of the Study Board's work that is looking at the outflow of Lake Superior and the impact of climate change on lake levels. That report isn't due until early 2012.

Georgian Bay Forever believes that a Control Board should be established to monitor and regulate the outflow of the middle Great Lakes, which would establish reliable data needed to devise sensible solutions, and that governments should consider the installation of flexible control measures at the outflow of Lake Huron that also take into consideration downstream management requirements.

These types of structures could slow down the outflow during periods of low water when appropriate, but could be adjusted when water levels are within normal or high cycles. Within those two extremes there should be a natural variation in the lake levels to ensure that the wetlands and ecosystems can function properly.

While most of us recognize a healthy ecosystem is dependent on adequate water levels, we also have to realize there are other Great Lakes stakeholders – especially those on the sandy shores of Huron and Michigan – who are worried about the impact that higher water levels would have on their properties.

We need to work to build an understanding with these groups, not only on the positive impacts of a healthy ecosystem, but how avoiding extreme highs and lows is in the best interest of everyone.

There is still a lot of work to do to build this lake-wide consensus on water levels, but we are optimistic that it can be achieved through open dialogue. Georgian Bay Forever is committed to working to provide the IJC and governments on both sides of the border with the necessary scientific support needed to come up with sound, environmentally sensible solutions. •

Executive Director David Sweetnam is also the Georgian Baykeeper. Georgian Bay Forever is part of the Waterkeeper Alliance.

Water Levels Background

Some people say just leave Mother Nature alone: no action is needed to control water levels on Georgian Bay and the middle Great Lakes. But in fact, there hasn't been a natural flow in the St. Clair and Detroit Rivers – or in the levels of Lakes Michigan/Huron – for more than 150 years.

All of the dredging and mining that took place in the riverbeds has resulted in a drop of Lake Huron and Michigan by over 30 inches since the late 1800s. Our position is that we need to do repair work to reverse the damage this human activity has caused.

While the levels of Lakes Superior, Erie and Ontario can all be regulated, the levels of Michigan/Huron cannot – and they have been hit hardest over the last decade by sustained low water levels.

Our Georgian Bay wetlands are feeling significant pressure as water declines. Some have already converted into meadows with trees growing where wetlands used to be.

Georgian Bay Forever has invested in several scientific studies over the last decade exploring the impact of low water levels. But there is so much more to do before we have all of the data we need to establish baseline conditions in the Bay.

What contributes to the lake level declines?

- Climate changes that result in lower precipitation and increased evaporation due to lack of winter ice cover.
- Increased outflows in the St. Clair River due to dredging, erosion and shoreline changes.
- Increased water taking by communities and businesses.
- Glacial isostatic rebound – the shores of the Great Lakes rise each year due to the removal of the weight of the glaciers.



Georgian Bay's new voice on the IJC's Public Interest Advisory Group

By Chris Baines

I am pleased to have been appointed as the Georgian Bay Association's representative to the International Joint Commission's Public Interest Advisory Group (PIAG). I see my role as representing all stakeholders on the Bay, not just cottagers, so I will work not only with GBA but other organizations such as Georgian Bay Forever.

I will regularly update everyone on the work of the Study Board as it moves towards completion of its tasks. Most particularly is the Study Board's report on the Upper Great Lakes – a review of the orders of operation for structures in the St. Mary's River that control outflows from Lake Superior "and to determine if improvements might

It is quite a bureaucratic challenge to understand the exact reporting system of this bi-national process and what exactly my role is within it, but I will try to explain it as simply as possible – as I learn it myself.

PIAG member's role with this report, the Study Board and the IJC itself is "to advise the Study Board based upon their experience, expertise and interests on issues related to the Great Lakes and to serve as a channel for the Study to reach out to key constituencies concerned about Great Lakes water levels."

So as part of my duties expect me not only to listen and speak

up for Georgian Bay, but also to lead various public meetings next spring and summer on the Study Board's report and findings to that point. Two-way communication is essential and I can tell you from my limited time involved, it works. Georgian Bay, in my opinion, has been "punching above its weight" (thanks in no small part to Mary and the work of Georgian Bay Forever).

The good news is that the IJC (separate and above the Study Board) has directed the Study Board to "explore the feasibility and implications of various levels of water restoration" on Michigan-Huron from 10 to 50 centimetres.

There is much more to say, but as someone who has spent some time in politics and had some Great Lakes experience (as a sailor and on a bi-national environmental group), I am keenly aware of my responsibility to represent

the best interests of Georgian Bay in all of its aspects (environmentally and economically).

Stayed tuned for regular updates and feel free to contact me with questions. I intend to reach out to various resources on the Bay as we work towards a lake(s) -wide response to the threats we face. •

Chris Baines can be reached at christopher.a.baines@gmail.com



be made to provide additional benefits and to take into consideration climate change".

I am taking over from the most knowledgeable Mary Muter, who wrote the book on our understanding of water levels and their impact on Georgian Bay and Lakes Huron and Michigan. Mary continues to offer great advice and background material on the workings and output of the various reports as they work their way up the system.

Developing a Report Card on the Health of Georgian Bay

By Judi Brouse

Water defines Georgian Bay's geography, biology and cultural heritage. Our connection to the natural beauty of the land and waterways is very strong. It not only enhances our quality of life, but is the primary element driving our local economy. A strong and healthy environment and watershed are fundamental to sustaining our lake-based communities.

We know from studies undertaken by Georgian Bay Forever and The District Municipality of Muskoka that water quality is changing in Georgian Bay and the near-shore inland lakes. But is it getting better, worse, or just changing? In a lot of cases we don't know.

The report card provides detail on the Moon River, Gibson River and Severn River subwatersheds. The indicators of water quality included:

- nutrient levels;
- natural shoreline; and
- mercury contamination in fish.

The Moon and Gibson River subwatersheds received a grade of good, which indicates there is room for some improvement. The Severn River subwatershed scored a grade of excellent. The Severn River subwatershed scored a grade of excellent.

Good water quality depends on good

The recent report card did not provide specific detail on the Georgian Bay coast because this area is very complex and different from the inland lakes. The more than thirty

“Georgian Bay is under a lot of stress..”

thousand islands found along the coastline form the largest freshwater archipelago in the world; an archipelago designated as a World Biosphere Reserve by UNESCO. The area is also home to the highest diversity of reptile and amphibian species in Canada, many of which are threatened or endangered.

“We’ve compiled a decade of water quality data in the coastal archipelago and will be working on how to integrate the information to best represent the pressures on this complex coastal portion of the watershed.” said Dr. Karl Schiefer, scientific adviser to Georgian Bay Forever.

Georgian Bay Forever, in conjunction with the Muskoka Watershed Council, is working with other Bay organizations to develop a report card specific to Georgian Bay that will bring together much of the current research.

Over the next 18 months specific indicators of watershed health will be developed for the Bay and data will be analyzed. The report card will provide an overview of the health of eastern Georgian Bay based on wetland, water quality, and land-based indicators.

Once completed, you will be able to review the indicators of watershed health for your part of Georgian Bay and compare it to other areas along the coastline. Understanding the stresses on your Bay will help you develop specific stewardship programs and take an active role in protecting your water quality. •

Judi Brouse is the Director of Watershed programs for the Muskoka Watershed Council, whose goal is to sustain and enhance the air, water and terrestrial ecosystems of the watersheds of Muskoka for the environmental, health, economic, spiritual and intrinsic values they provide. Georgian Bay Forever is pleased to be working with the Muskoka Watershed Council on a variety of initiatives to protect our watershed.

land management and the quality of the runoff. The indicators of the health of the land used in the report card included:

- natural cover;
- interior forests;
- large natural areas;
- riparian areas; and
- managed and protected areas.

The Moon and Gibson River subwatersheds received a grade of excellent, reflecting the amount of Crown land in those subwatersheds and the limited number of roads that bisect the area. The more developed Severn River subwatershed scored a grade of good.



Georgian Bay is under a lot of stress from climate change, invasive species, lower water levels, development pressures and transient boating, amongst others. How we manage human activity in the Bay will have a long-term impact on the overall health of the water we all enjoy.

In June, the Muskoka Watershed Council released its third watershed report card. The report card provides information on the health of the land and the water within the 20 subwatersheds in Muskoka. To view the full report card visit the Muskoka Watershed Council website at www.muskokaheritage.org/watershed.

In the Township of Georgian Bay, the re-



AND YOU THOUGHT ZEBRA MUSSELS WERE BAD.

HELP US STOP THE ASIAN CARP INVASION

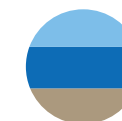
The Asian carp has marched all the way up the Mississippi to Lake Michigan, and is now threatening to invade the Great Lakes. For Georgian Bayers, the potential invasion of the Asian carp provides a whole new level of threat to the health of our ecosystem.

Given the chance, this invasive species will wipe out most of our native fish species, rip apart our wetlands and turn them into mud flats.

Georgian Bay Forever is on the case. We are working hard behind the scenes with agencies all around the Great Lakes and in Washington, Ottawa and Toronto, making sure our governments know everything they need to know, and what precautions they must take. For the latest news about this devastating invasive species, please visit us at GeorgianBayForever.org.

We need your continued support. We need to do everything we can to stop this new threat to Georgian Bay. Please send us a cheque today. Help us protect Georgian Bay. Forever.

GEORGIAN BAY
FOREVER



905.880.4945 | GeorgianBayForever.org

Low Water A Continued Concern For Wetlands

By Pat Chow-Fraser



Low water levels are a major threat to a large number of Georgian Bay wetlands. Our preliminary report of this summer's wetlands work shows that a further water-level decline in Georgian Bay beyond what's known as "chart datum" level would have a direct and measurable impact on the total number and total area of wetlands that could be stranded.

The term "chart datum" is also known as the low water point of reference used on navigational maps. For the middle Great Lakes of Huron, Michigan and Georgian Bay, "chart datum" is 176 metres above sea level. Our findings indicate that 50 per cent of wetlands would become stranded (i.e. hydrologically disconnected from Georgian Bay) if water levels were to drop to 174.1 metres (see Figure 1) and that 50 per cent of total wetland area would no longer be accessible to fish if water levels dropped to 174.0 metres.

Another way to interpret this relationship is that wetlands and wetland area are extremely sensitive to water-level fluctuations between 173 and 176 metres. Therefore, a drop or increase of 30-40 centimetres has significant impact within this range. The U.S. Army Corps of Engineers currently pre-

dicts that levels will fall below "chart datum" sometime in December 2010. (Go to <http://www.georgianbayforever.org/> for monthly updates on water levels)

Because of concerns about the potential impacts of climate change on the Great Lakes watershed, McMaster and Georgian Bay Forever were contracted by the Ecosystem Technical Working Group (ETWG). The ETWG was developed as part of the Upper Great Lakes Study to research the relationship between hydrological stranding of wetlands (i.e. hydrologically disconnected from the open water) and water level in Georgian Bay.

We randomly selected 100 wetland/wetland complexes from the MCWI between Matchedash and Henvey Inlet/Key River (see Figure 2) to ensure that results of this study would be directly applicable to the more than 5,300 hectares of wetlands along the eastern and northern coasts of Georgian Bay. These 100 wetlands were then surveyed using three different methods to collect raw depth and elevation data, including a differential GPS base and roving unit (1 centimetre accuracy), a graduated pole and mobile GPS (.5 centimetre accuracy) and a boat-mounted GPS and sonar depth sound-

er (1 centimetre accuracy) to determine the elevation of their sill depths (i.e. entrances) and to create a "Performance Indicator" for use in the ecological response model under development by ETWG.

The Upper Great Lakes Study Board is in the fourth year of a five-year study for the International Joint Commission. The Study Board will make recommendations that could affect the Upper Great Lakes for decades, based on its estimate of the impacts from various lake-level regulation alternatives. Those estimates will be based on assumptions about various impact areas including; the environment, commercial navigation, hydropower, shoreline development, recreational boating and domestic, municipal and industrial water use.

The ETWG is tasked with informing the Study Board's discussions and estimates on the ecological impacts from alternative water-level regulation scenarios. The ETWG will do this by estimating the impacts that changes to water levels/flows may have on environmental performance indicators within specific sites in the Upper Great Lakes (which is consistent with the Study Board's approved method of study).

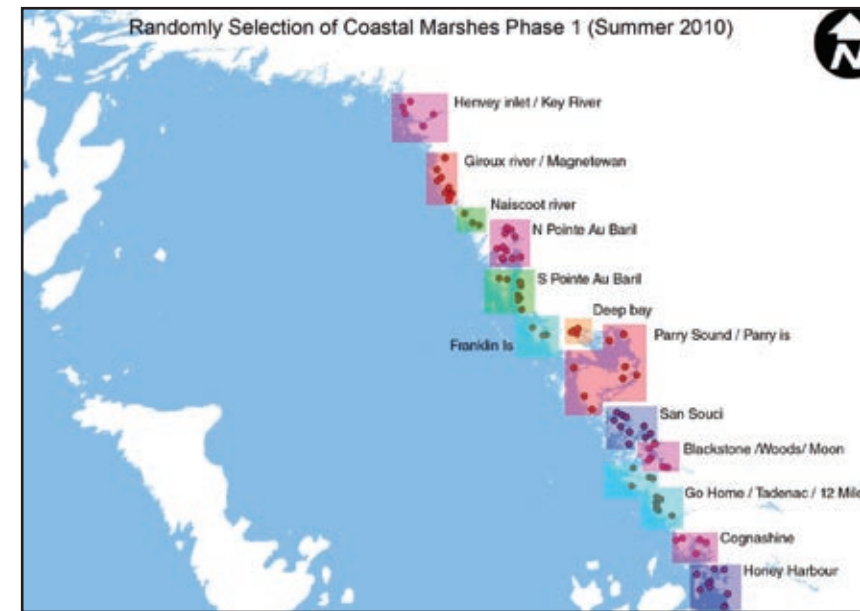


Fig 2. Location of study sites in Georgian Bay included in this study.

The ETWG has chosen several regional sites including Georgian Bay where ecological impacts will be assessed. Regional site selection was based on: ecological representation and/or significance; data availability and certainty; sensitivity to water-level regulations; and geographic coverage. Georgian Bay was chosen for its importance as a wetlands ecosystem, high level of susceptibility to changes in water levels/flows, significance as one of the Basin's most ecologically diverse areas and availability of existing information and datasets.

Coastal wetlands of Georgian Bay are known to support critical spawning and nursery habitat for the fish community of Lake Huron. Research this summer by Jon Midwood, Ph.D candidate in the Chow-Fraser lab, has shown that the majority of the fish stay within their home wetland and do not migrate to adjacent wetlands even when they are close by (less than 100 to 500 metres away). Therefore, wetlands that are hydrologically disconnected from Georgian Bay are "lost" fish habitat and this should have serious implications for recruitment of the Lake Huron fishery.

The Performance Indicator developed here is therefore the number of wetlands and the total area of wetlands that would be stranded as a function of water levels of Lake Huron.

All of the digital information was merged and overlain onto IKONOS imagery made available from Georgian Bay Forever for this project. Elevation data were visually in-

spected to determine the sill depth at the entrance to the wetland. In a few instances, water levels had dropped sufficiently that portions of wetlands had already become hydrologically disconnected. In those cases, we subdivided the wetlands and carried out measurements on the remaining area.

In total, 109 wetlands were selected and sampled. Of these, four were already stranded (i.e. hydrologically disconnected), three were heavily impacted by human activities, and of these, only one was sufficiently intact to be included in subsequent analyses.

The percentage of wetlands that would be stranded was plotted against the water level that corresponds to the elevation of the sill depth of maximum depth of wetland entrance (see Figure 1).

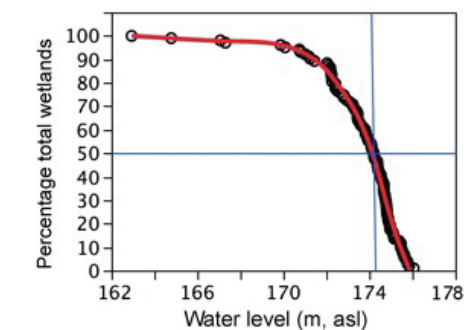


Fig 1. Percentage of wetlands that would be stranded as a function of water level. The red line is a spline fit ($\lambda=1$). The water level that corresponds to a stranding of 50% of wetlands in this study is approximately 174.15 m above sea level, and is highlighted in blue (preliminary data only).

This study has confirmed that further water-level decline in Georgian Bay (beyond 176 metres) will have a direct and measurable impact on the total number and total area of wetlands that could be stranded. Wetlands are most sensitive to changes in water levels between 173 and 176 metres. Unfortunately,



we do not have sufficient data currently to speculate on how wetland area and number would change in response to higher water level.

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Dr. Pat Chow-Fraser is Chair of Biology at McMaster University. She has been Georgian Bay Forever's adviser and research partner in our coastal wetland research for the past six years. Through this partnership, the McMaster Coastal Wetland Inventory (MCWI) was completed in April 2010 with the support of Georgian Bay Forever. This is an inventory of more than 5,300 hectares of coastal wetlands (those within two kilometres of the shore) along the eastern and northern shores of Georgian Bay. This study used state-of-the-art techniques, including IKONOS satellite imagery provided by Georgian Bay Forever, and involved hundreds of hours of fieldwork by the McMaster and Georgian Bay Forever teams and volunteers. Dr. Chow-Fraser also sits on the Ecosystem Technical Working Group of the IJC's Upper Great Lakes Study Board.

“Simply Amazing”

“We need to do everything we can to protect our water. That’s why I’m stepping up to the plate and supporting Georgian Bay Forever. Its efforts to protect the waters of the Bay are simply amazing.”

—John Honderich,
Sans Souci cottager and
Chairman of Torstar Corp.

