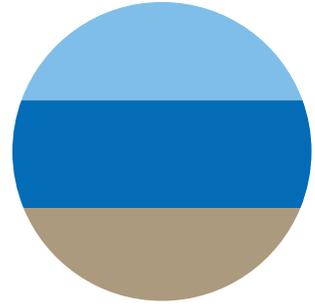


GEORGIAN BAY FOREVER



SPRING 2012
VOL 3, ISSUE 1

JOIN US AT VITAL SIGNS, APRIL 14, 2012. SEE THE BACK COVER FOR DETAILS

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



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SPRING 2012

Georgian Bay Forever is a 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 (#89531 1066 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.

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

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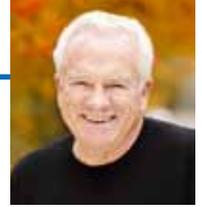
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This newsletter is just a snapshot of our work. For the most up-to-date information on our projects, longer versions of newsletter articles and on breaking news about Georgian Bay, please become a regular visitor to our website.

GeorgianBayForever.org

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By David Parkes

THE END OF A LONG FIGHT AND PROMISING BEGINNINGS



This year we expect to see a cap put on the decades-long struggle to get the IJC to deal with the water levels issue in Georgian Bay. The Upper Great Lakes Study Board will make its final recommendations regarding how water should be managed, followed by the IJC holding public meetings during the summer in preparation for its final decision. We're hoping that multi-lake regulation will come out on top. But we will keep you informed of the process, and keep up the pressure on the agency to introduce a system that will mitigate the impacts of future climate change on the Great Lakes. Our attention will then move to the U.S. and Canadian governments.

What Forever is doing on the Asian carp file

Our feature on Asian carp explains why our various governments find it so difficult to take the necessary steps to keep this nasty invasive out of the Great Lakes, despite the consensus that this would be a disaster. Closer to home, I thought you might like to know exactly what Forever has done to contribute to that crucial consensus.

We've made presentations and distributed educational materials to the Bruce Peninsula, Manitoulin Island, Go Home Bay and Pointe au Baril Associations; the GBA board, the Grey Bruce Stewardship Rangers, the O'Donnell Point Ecosystem Protection Group, the Township of Georgian Bay, and the Honey Harbour Association regatta. We engaged in discussions on the subject with the International Joint Commission; met with MPs and MPPs and the Ontario Minister of the Environment; we've written letters to Minister of Finance Jim Flaherty; participated in press interviews and discussions with Department of Fisheries and Oceans; researched extensively the myriad of documents on the subject; participated in a biodiversity conference, IJC conference, State of the Lakes Ecosystem Conference; and the Water Keeper Alliance Conference. We attended meetings with the Georgian Bay

Biosphere Reserve, the Eastern Georgian Bay Stewardship Council and that's probably not the end of the list.

I want to thank all our donors at every level for their help. Last year we struck up a fundraising strategy. Inspired by the success of our patron sponsorship program, we started two more, one for marinas and another for corporations and further developed a planned giving concept. All of these initiatives have shown success in their early stages, and we are grateful to the individuals, foundations, and companies, especially the marinas, large and small, who are participating.

I also want to thank our board of directors, and all the other volunteers who work so hard to keep Forever going. Among them, is the longest serving member of our board, Hugh McLelland, a member of the governance committee.

Hugh is the founder, chair and CEO of the Queensbury Group, a Canadian wealth management organization with approximately 100 advisors in securities, mutual funds and insurance. He is a past president and an honorary life member of the Georgian Bay Association and a former director and president of the Bay of Islands Community Association. He is a lay member of the Ontario Association of Chiefs of Police and a director and chair of the finance committee for S.H.A.R.E. Agricultural Foundation. Hugh is also a member and former membership chair of the Sous - Commanderie de Toronto in the Confrérie des Chevaliers du Tastevin.

Hugh ascribes his long years of service to the super salesmanship of all those who, when he suggests it might be time to go, have asked him to hang in there just one more year. To the question of why he's stayed on, he says simply, "Georgian Bay means something to me. Forever is doing good works and every little step takes us in the right direction."

“Everyone agrees that Asian carp must be kept out of the Great Lakes, but it is going to be very difficult. Still, the consensus on this issue is important and Forever has done much to build it.”



KEEPING THE CRITTERS OUT

Real world solutions for Asian carp and its fellow travellers

By David Sweetnam



Photo by Kate Gardiner

Silver carp: 27 kilograms, one metre in length; native to Russia, China and Vietnam; collected in several water bodies in or bordering Illinois, plus 14 other states. Department of Fisheries and Allied Aquacultures, Auburn University, Alabama

A sian carp are a recognized ecological threat to the Great Lakes. These voracious feeders strip the lower food web of phytoplankton and zooplankton, leaving all the other aquatic life to starve.

Carp were originally introduced into the lower Mississippi region with the intent to turn algae in sewage treatment ponds into a potential food source. But as often happens, man-made solutions to nature's problems created an unintended consequence: the carp escaped the sewage ponds and have been on a relentless march northward up the Mississippi River and connecting waterways towards the Great Lakes.

One species of Asian carp, the silver carp, can leap out of the water when startled. Some boaters in infested regions have taken to wearing protective gear and installing cages on their boats to protect themselves from broken bones and other injuries caused by the flying 27-kilogram missiles.

Government and non-governmental organizations are in agreement on what ultimately needs to be done: re-establishing the natural barrier that once existed between the Mississippi and Great Lakes basins. This is

known as "hydrological separation" and is the only way to ensure that Asian carp and other invasive species are kept out of the Great Lakes.

Silver carp can leap out of the water when startled, forcing boaters in infested regions to wear protective gear and put up cages to protect occupants from broken bones and other injuries caused by these 27 kilogram missiles.

Georgian Bay Forever – which has been working to help keep these fish out of our waters for years – strongly supports this solution. The sooner, the better.

But a number of economic and environmental issues that courts, politicians, policy makers and scientists are now dealing with means any solution to the Asian carp problem will be complicated. No one has a model for how to ensure that long-term ecological interests

are not sacrificed to short-term economic interests. There are conscientious scientists and politicians on both sides of the border working towards this outcome. But will they get it together in time?

Some Great Lakes states sought an injunction against Illinois to close the locks around Chicago to keep the carp out. The injunction was denied, but that decision is now under appeal. Any changes to the waterways around Chicago that link the Mississippi and Great Lakes basins are matters for U.S. jurisdiction. But under U.S. and international law, the United States can be held responsible for causing trans-boundary harm.

While Canadian governments so far have had little legal clout on this issue, both the Ontario and Canadian governments continue to consult with their U.S. counterparts to press their concerns. And some environmental groups have pressed the Canadian government to hold public hearings on this issue in the hope that this would encourage the federal government to make sure U.S. decision makers are protecting Canadian interests.

The current Canada-U.S. Risk Assessment Study on Asian carp is due to be released this spring. It is expected to conclude that these

fish will find suitable living conditions in the Great Lakes if no action is taken to prevent their arrival via the Chicago area waterway system and other potential routes – including people releasing live carp into the Great Lakes. Canada's Department of Fisheries and Oceans completed a previous risk assessment report in 2004, but the U.S. largely ignored its conclusions.

Carp and 38 other aquatic nuisance species of concern

There are officially 254 aquatic nuisance species in the Great Lakes and Mississippi systems, but a recent study by the U.S. Army Corps of Engineers identified a subset of 39 nuisance species of concern based on their "proximity to the Chicago canal, ecological tolerances and needs, and ability to disperse" that threaten to enter the Great Lakes from the Mississippi watershed or vice versa.

Those 39 nuisance species that must be controlled to avoid significant environmental damage include algae, annelid, bryozoan, crustacean, fish, mollusk, plants and protozoans such as red algae, grass kelp, tubificid worm, spiny water flea, bloody red shrimp, European fingernail clam, water chestnut, dotted duckweed, tubenose goby, sea lamprey and silver and bighead carp.

Last December, the U.S. Army Corps of Engineers study team reported on "options and technologies that could be applied to prevent aquatic nuisance species transfer through aquatic pathways within the United States and between the Great Lakes and Mississippi River basins."

Controls identified for further study include chemical, biological and mechanical tools such as: the fish poison Rotenone; bacteria that infect clams and mussels; introducing genetic defects such as those now used to produce sterilized male sea lamprey and the daughterless gene in carp; cages that trap jumping fish; strobe lights and underwater acoustic or bubble curtains that scare away fish; gases such as carbon dioxide, ozone, nitrogen or oxygen-depleting chemicals that kill everything but plants; raising the water temperature to lethal levels and even the possible introduction of predatory insects or fish species.

Of the over 90 controls identified, only five are likely to be "selective", i.e. kill only the target species, and four of these are still in research and development. The report does not attempt to thoroughly evaluate a particular control's constraints for application, compliance with applicable laws and policies, technological feasibility or impacts due to application. This work is scheduled to be

undertaken later in the study, as part of the formation of a plan.

Other techniques under consideration include vertical drop barriers like waterfalls and accelerated water velocity to prevent upstream transfers and hydrologic separation to prevent the flow of water within a channel or enclose it.

A 1,500 mile divide between two watersheds and lots of opportunities for carp

In addition to the canal system, the U.S. Army Corps of Engineers is conducting a detailed characterization of other potential aquatic pathways along the almost 1,500-mile divide between the two basins. It isn't enough to block one possible point of entry and ignore the rest. The carp certainly won't.

The final report won't be finished until 2015 and it will be some time after that before implementation of any of these measures is completed. This timeline is a concern for many groups who want faster government action.

The Impact of Immediate Closure

Even if it were technically possible to close the system overnight, doing so would cause significant disruption to regional economies. Indiana maintains it may take as long as 20 years to safely and securely transition the system to achieve an ecological separation between the basins.

Illinois supports the study of separation as a long-term, sustainable solution. But it is concerned that immediate closure of the Chicago River would cause severe problems for the city's 480 combined sewer overflows. These sewers work fine in dry weather, but sewage discharges frequently occur when storm waters fill the pipe.

The Mississippi and Lake Michigan watersheds were connected by a man-made canal system in the late 19th century. Three waste-water treatment plants now discharge two billion gallons per day into the canal system and down the Mississippi, allowing Lake Michigan drinking water to remain uncontaminated.

To separate the watersheds, Chicago will have to redesign its septic and storm water systems. In October 2011, Chicago Mayor Rahm Emanuel announced a \$4-billion infrastructure renewal program to replace 900 miles of century-old water pipes, fix 750 miles of sewer lines and 140,000 sewer catch basins, as well as upgrade the city's four aging, steam-powered water pumping stations.

Also affected would be the 20-mile, \$250-million dollar levee system being currently constructed on the Little Calumet River in Indiana to protect homes there from



Chicago area waterway system and select tributaries: closing these waterways to prevent carp from entering the Great Lakes represents a daunting challenge.

flooding. The levee project was designed by the U.S. Army Corps of Engineers with the current flow directions of the Chicago and Calumet Rivers in mind; it does not take into account changes to the flow that might be needed to separate the Mississippi and Lake Michigan waterways.

While there is general agreement by the states on the eventual separation of the two watersheds, there are also concerns about the potential impacts of what happens when the hydrological link is broken.

For example: the Indiana port of Burns Harbor says it derives \$1.9 billion from two-way barge traffic up and down the waterway system. That would take a financial hit, but there are also environmental factors to consider. One barge load is equal to the weight load of 70 trucks. Multiply that by the 30 to 40 barges that travel through Indiana each day, and the resulting 210 to 280 additional trucks needed to do the job would lead to significantly increased carbon emissions in the atmosphere.

But there are also enormous economic consequences if the carp make it into the Great Lakes. (The Great Lakes Commission estimates that the current invasive species in the Great Lakes costs \$5.7 billion annually.) Everyone is concerned about the impact the Asian carp would have on the \$7-billion-a-year Great Lakes fishery and the communities that rely on that fishery for commercial and recreational use. Ontario alone estimates its recreational and commercial benefit is \$650 million annually.

In the meantime, the use of electrical barriers, ongoing electro-fishing, chemical poisons and netting are all underway. These activities are being co-ordinated by U.S. state and federal authorities, as well as Canada's Department of Fisheries and Oceans.

(CONTINUED PAGE 10)

FEDERAL SCIENTISTS:

Threatened, Endangered and of Special Concern on both sides of the border

By Penny Pepperell

Yes, yes, yes, there are layoffs everywhere, but some of the more insidious are the cutbacks to science, *especially* climate science and especially *now* as both the U.S. and Canadian governments will need all the data and analysis they can get their hands on to make responsible decisions around multi-lake regulation.

But the trend is against science. Last summer, the federal government announced layoffs of 700 positions in Environment Canada including those for meteorologists, chemists and biologists among others. These cutbacks resulted, not from operating reviews to balance the budget by 2014, but from an earlier restraint exercise. So Environment Canada got a haircut in preparation for another haircut.

But it gets worse. Environment Canada could also lose 46 percent of its research scientists and 27 percent of its engineering and scientific support staff to retirement by 2015/16.

"It is critically important for the government now to have a game plan for Environment Canada on what they think it is going to look like 10 years from now," says Scott Vaughan, Commissioner of the Environment and Sustainable Development. "Because if you pull back on a science capacity now, you can't turn it back on with a switch. It will take years to build up the capacity for those things that may be shut down in the next couple of years."

He also noted major gaps in the 45 regulations that Environment Canada enforces—vague wording, jurisdictional confusion, unclear definitions. "These need to be closed efficiently before budget cuts impose great strains on its enforcement capacity."

Scientists running scared

Cutbacks can have a devastating effect on those left standing as they watch hard-won projects chucked in the garbage bin. As a result many scientists are running scared. On the one hand, they have to disseminate their reports to the larger scientific community to maintain their professional integrity and that of their reports; on the other hand, they could

run afoul of the government if what they say is thought to trespass on their political masters' prerogatives to set policy.

"There is considerable uncertainty in the federal ranks around when scientists can disclose the results of their research, and when they cannot. We did not audit this but we did receive numerous brown envelopes. There may be a clash of cultures about how they disclose the results of their research."

South of the border, climate change scientists, caught in the cross hairs of the culture wars, face additional pressures. Cutbacks generated by an ever-escalating ideological war, have targeted the National Oceanic and Atmospheric Administration. This is an agency that's provided monitoring and analysis crucial to understanding what's happening in the Great Lakes.

Axing the National Climate Service

NOAA had the support of the previous Congress and former President Bush, to set up a National Climate Service akin to the National Weather Service, to deal with the flood of requests it receives from governments, urban planners, farmers, ground water engineers and the insurance industry among others about the source and the meaning of extreme weather events. Between 2009 and 2010, climate data downloaded from NOAA's web sites shot up 86 percent. Climate-related phone calls and e-mails jumped from 26,000 to 30,000.

But now the service is a goner, and it wasn't going to cost a cent! Representative Ralph M. Hall, chair of the House Committee on Science, Space and Technology feared this one-stop climate agency would generate "little propaganda sources instead of a science source." In September, his committee launched an investigation of NOAA, claiming the agency was operating "a shadow climate service operation" without congressional approval.

What happens south of the border is crucial for two reasons. For one, the U.S. has been quietly picking up most of the bills for



The Huron Explorer 1: may be grounded this summer because it lacks the appropriately trained staff, according to Transport Canada standards.

cleaning up the Great Lakes and providing most of the background science. At bi-national conferences such as the State of the Lakes Ecosystem Conference, this is an embarrassment for Canadian scientists. If the Americans back away, Canadians are not likely to pick up the pieces.

Secondly, climate change is why multi-lake regulation is being considered at all.

The real nightmare would be the governments deciding to do nothing because they lacked the appropriate information—having fired the scientists who might have provided it.

On the bright side, the layoffs could open up opportunities for private/public partnerships, Georgian Bay Forever and government bodies. We're pursuing that now although one foundation will never be able to replace what is lost if our governments continue to gut science.

This article is based on files from: the CBC website, August 5th; "The Washington Post", November 20th; "The New York Times", December 24th; CBC radio's "The Current", December 20th; and 2011 December Report of the Commissioner of the Environment and Sustainable Development, available through the Office of the Auditor General of Canada, oag-bvg.gc.ca.



By Penny Pepperell

HOW THE WATER LEVELS ISSUE MORPHED INTO MULTI-LAKE REGULATION

Last summer, the Upper Great Lakes Study Board, the scientific arm of the IJC, shelved the issue of restoring water levels in Michigan-Huron-Georgian Bay and took up a study of multi-lake regulation instead. (Restoring levels would mean raising water to a new higher mean; multi-lake regulation would entail sharing the water around the lakes to address climate change contingencies.) Thus ended, the long campaign to get the IJC to restore the water that had been lost to dredging and erosion in the St. Clair River. It was a huge disappointment to all of us who had hoped something could be done to reverse the severe damage to Georgian Bay wetlands.

This article explains the key issues that led the Study Board to segue from water levels to a study of multi-lake regulation.

1) The Study Board found that dredging and erosion in the St. Clair River didn't warrant remediation.

Although the Study Board found that water levels between Lake Michigan-Huron and Lake Erie had dropped about 23 centimetres between 1963 and 2006, it recommended against the IJC taking any remedial action.

The biggest drop occurred from 1963 to 1970, after the last major channel dredging in the St. Clair River. Between 1971 and 2000 it had enlarged somewhat, but since 2000, the river has changed hardly at all.*

The timing would seem to lay the blame squarely on navigational dredging in 1963, but the Study Board didn't think that the manmade changes were either solely responsible for the water level drop or the most significant factor. Instead it found that dredging accounted for an estimated 7 to 14 cm of the decline, and that glacial isostatic adjustment—the uneven shifting of the earth's crust since the last period of continental glaciations—accounted for about 4 to 5 cm.

But the biggest and the most troubling cause of lower water levels was climate change. From 1963 to 2006, climate change accounted for 9 to 17 cm. but most importantly, this factor accounted for an estimated 58 to 76 percent of the decline from 1996 to 2005. This was the game changer.



Sarah Couchie at work on a lake sturgeon assessment project on the Mississagi River and Mississagi Chutes for the Anishinabek/Ontario Fisheries Resource Centre and Mississauga #8 First Nation: one of hundreds of attempts to revive the sturgeon population around the Great Lakes.

2) Raising the water an arbitrary amount could have a negative impact elsewhere.

Being a scientific body, the Study Board can't help but review every depressing scenario, treat every positive skeptically and consider every possible reason why an engineering challenge shouldn't be undertaken.

Meanwhile in another thought galaxy, the IJC has to consider its bi-national treaty obligations to its Great Lakes stakeholders. From its point of view, the Study Board had simply minimized the impact of dredging by comparing it to other causes of the water level change. The fact remained: altering the river had caused environmental damage and no mitigation had been provided.

So where the Study Board had closed a door, the IJC opened a window. It asked the Study Board to take a look at raising water levels in Michigan-Huron in increments of 5, 10, 15, 20 and 25 cm, each amount coinciding with a previous dredging episode. This new mandate was a way of keeping the focus on the dredging (the IJC's responsibility) while

at the same time saying, forget what the cause is, what would be the economic and environmental impact of raising water levels.

After months of study, The Study Board reported that, "the resulting assessment revealed a mixture of benefits and costs, and both positive and negative environmental impacts." Navigation would benefit, shoreline

damage would increase and hydropower would go down. Georgian Bay wetlands would improve and the St. Clair and Detroit River system, specifically the spawning habitat of the

lake sturgeon would be negatively impacted by the proposed restoration structures. There are presumably workarounds for at least some of these challenges, but the Study Board lacked the mandate to explore them.

What is so special about the Great Lakes sturgeon? It's an iconic fish that has assumed a particular environmental, political and cultural importance. It's an alpha, mega-fauna that is 130 million years old that at one time grew to 396 lbs. and three metres in length.

(CONTINUED PAGE 10)

What is so special about the Great Lakes sturgeon?

*When the "head" or water level difference between two bodies of water is balanced off, the water flow slows down.



GEORGIAN BAYKEEPER

THESE MARINAS STEPPED UP TO HELP PROTECT THE BAY. IS YOURS ONE OF THEM?



GEORGIAN BAY FOREVER THANKS THE ABOVE MARINAS FOR THEIR STEADFAST SUPPORT OF OUR WATERKEEPERS' BOAT FOR SCIENTIFIC RESEARCH. WITHOUT THEIR HELP, WE WOULDN'T STAY AFLOAT!

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THE OVERENDS AND THEIR CRAGANMOR POINT RESORT

By Iryna Revutsky



Matt, Andrew and Natalie Overend and the view of the docks at Craganmor Point Resort

Let us introduce you to Matt, Natalie and Andrew Overend, since 1999, the owners of Craganmor Point Resort. Their story of how they came to purchase and operate this Georgian Bay landmark begins in 1998, in Australia of all places!

Matt, a “Kiwi”, was working as an onboard diving instructor in Australia. Natalie, a Canadian, was the cook on the same boat. Together they had a dream of operating a resort in the tropics. But then Natalie invited him to Georgian Bay where they stayed in an old fisherman’s cabin (no hydro and no motor boat!) on Swimming Snake Island near Three Finger Bay. They canoed to Sans Souci Marina for provisions—Natalie remembers treating themselves to ice cream and Bailey’s—and fished for their supper. Their one-week stay turned into four weeks, then six. After they were married they purchased Van’s resort at Craganmor Point. Their plans included demolishing the main building, but instead they opted to make repairs to the structure so it could operate as a restaurant, a work still in progress. Permanent and seasonal residents encouraged the couple to preserve its homey charm and not change a thing. So they are still renting out cottages to families

who wish to experience a Georgian Bay summer, while the restaurant is a destination for boaters and summer residents. A true Bay boy, their son Andrew loves water activities, the Sans Souci day camp, family campfires and exploring the Bay with summer friends.

Craganmor is Matt and Natalie’s primary residence, although, they have spent most of their winters in New Zealand. “Before Andrew was born in 2003, we had spent only five weeks out on the island, iced in, before the first boats came by,” says Natalie. “A friend scooted us out with all the supplies we could fit. We had no water but we did have heat. It was the most magical time. We went snowshoeing all over the Bay, and it was so quiet and beautiful. We watched a small highway of wildlife out the window that used Kineras Bay as a crossing point. Fantastic!”

“The decision to stay for a winter was definitely focused on Andrew and his desire to see winter,” says Natalie. “We have a house in town now and it’s very nice but doesn’t replace being on the Bay. We are fortunate to be near the water so we can always gaze away.” These days they are constantly checking the thickness of the ice, to see when they can safely visit their island retreat.

“The Great Lakes and especially Georgian Bay are an amazing part of the world,” says Matt. “People ask me why I live here instead of beautiful New Zealand, and I tell them that Canada has everything New Zealand has, just on a much larger scale. It’s difficult to see on a short holiday.

“To see the immense beauty of Georgian Bay up close and then to imagine the Bay is 180 by 80 kilometres, and it’s the sixth of the Great Lakes that together hold 18 per cent of the world’s fresh water! And to look at the relatively pristine water quality of the Bay, just a two-hour drive from the Toronto area with its four million population, is amazing as well.

“A lot of Canadians don’t realize how lucky they are. When you have travelled to third world countries and even first world countries, you quickly realize how lucky we all are to have the wide open spaces and pristine environment we have here.”

The Overends support Georgian Bay Forever because it protects and preserves the water, the native species and plants for us and for generations to come.



Young Lake sturgeon from the Kaministiquia River. Ontario Ministry of Natural Resources.

Acipenser fulvescens, is listed as either threatened, endangered or of special concern in 19 of the 20 states within its range and the Great Lakes. Collaborative efforts involving many organizations and governments are underway to reestablish them a hundred years or so after they were cleared out of the Great Lakes in much the same way as the buffalo were wiped off the prairies.

3) Water level restoration wouldn't provide flexible levers to address climate change

Climate change has already impacted the Great Lakes, and is expected to create more trouble in the future: more storm events; more precipitation in the fall winter; less in the spring summer; and hotter summers and less ice in the winter. Lower water levels are predicted but the scientists haven't ruled out periods of higher levels. Given these uncertainties, the Study Board prefers a flexible system for addressing water level fluctuations.

Georgian Bay Forever's position

Once the opportunity to mitigate for the navigational dredging in the St. Clair River slipped away at the time of construction, rectifying the loss of water in Georgian Bay has been a slice in a gigantic engineering puzzle with many players. Multi-lake regulation now has the support of multiple stakeholders around Lake Michigan-Huron and Lake St. Clair; these are stakeholders who have until recently been

completely alienated by Georgian Bay interests.

Multi-lake regulation would eliminate high-highs and low-lows and allow natural water level fluctuations between these extremes to build resilience into the Great Lakes system in the face of climate change and other factors.

The Study Board's final report and recommendations will be submitted to the IJC by March 2012. Subsequently, the Commission will conduct public hearings and present a new regulation plan to the governments of Canada and the United States.

This article is based on readings from the following reports: *Impacts on Upper Great Lakes Water Levels: St Clair River Summary Report, December 2009*; *Options for restoring Lake Michigan-Huron Water Levels: An Exploratory Analysis, May 26, 2011*; and *Addressing Future Water Levels in the Upper Great Lakes: Toward a New Regulation Plan, Summer 2011*.

More information on the Upper Great Lakes Study Board and its scientific/technical reports is available at: <http://www.iugls.org>.

ASIAN CARP (CONTINUED FROM PAGE 5)

Currently, an electrical barrier is in place about 40 kilometres south of Chicago at the Lockport locks. It delivers an electrical field through cables drilled into the riverbed. The shorter the fish, the less it feels the electrical field. For this reason, the voltage was increased last November to prevent younger fish from crossing the barrier.

While no fish have been found upstream of the barrier through electro-fishing and netting techniques, previous environmental DNA (eDNA) testing has shown positive results indicating that there may be Asian carp present at a variety of locations in the waterway system closer to Lake Michigan. This technique is currently being peer reviewed to determine its effectiveness.

The finding of Asian carp eDNA in 2010 prompted a flurry of alarmed activity, which included a low-profile, mass fish-kill operation in the Chicago waterway and north of the barrier last winter and again the following spring. No recent eDNA has been reported in the system. While accepted as a necessary short-term emergency response, sustaining such a toxic program is not desirable in the long term and there is a concern that it might eventually fail.

Not repeating mistakes

Human ecological blunders have destroyed the homes of our native aquatic species. Sea lamprey wiped out most of the lake trout and alewives destroyed the cisco populations and malnourished the remaining population. Quagga mussels have taken over from zebra mussels and eradicated the lower food web leaving behind what is being described as a biological desert in the open waters.

Round and tubenose goby, which multiply up to three times per year, eat these mussels thereby concentrating their toxins. This contributed to the mass fish and bird deaths from botulism we saw this past fall in the Wasaga beach region of southern Georgian Bay.

History has shown that every human fix can cause another problem. The result is that governments now spend millions of dollars each year on controls – money that could be better spent on repairing and protecting the ecosystem.

The ongoing invasive species crises are living proof of a statement made by the Brookings Institute and the Mowat Centre for Policy Innovation: "The region will be strongest once we acknowledge that economic/environmental trade-off no longer exists."

Done correctly, separation will deliver improvements that will be positive for both the ecosystem and the economy, bringing out-of-date infrastructure into state-of-the-art condition. By framing ecological investments as economic investments we may finally be able to muster the political support needed to solve these problems and provide a clean and healthy Georgian Bay for our kids' kids' kids. The aquatic ecosystem will be grateful.

Documents consulted in preparing this article: *Non-Native Species of Concern and Dispersal Risk for the Great Lakes and Mississippi River Interbasin Study*, and the *An Inventory of Available Controls for Aquatic Nuisance Species of Concern Chicago Area Waterway System* reports by the Great Lakes and Mississippi River Interbasin Study Team, a regional effort led by the U.S. Army Corps of Engineers; *Envisioning a Chicago Waterway System for the 21st Century*, a report by the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative; Michigan et. al. v. U.S. Army Corps, No. 10-3891, U.S. Court of Appeals; *Dispersal Barrier Efficacy Study INTERIM IIIA – Fish Dispersal Deterrents, Illinois & Chicago Area Waterways Risk Reduction Study and Integrated Environmental Assessment*, April 2010, USACE Chicago District.

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