



# RESTORING AND PRESERVING GREAT LAKES WETLANDS:

RECLAIMING A NATURAL LEGACY

CANADA-ONTARIO AGREEMENT RESPECTING  
THE GREAT LAKES BASIN ECOSYSTEM

Canada  Ontario



10. water lilies

## Overview

HEALTHY WETLANDS ARE CRITICAL TO THE ENVIRONMENTAL, SOCIAL AND ECONOMIC HEALTH OF THE GREAT LAKES BASIN. A wetland is a natural water filtration system, removing suspended particles, nutrients, even toxic chemicals from our water supply. A wetland is also a natural reservoir holding back flood waters in the spring and slowly releasing them during the dry summer months. A wetland is a crucial breeding ground, nursery and haven for birds, fish and other wildlife. It is a key component in the cycling of water, carbon and oxygen through the environment. And a wetland is a favourite recreational destination for hikers, canoeists, birdwatchers, hunters and anglers.

For too long, wetlands have been treated as second-class property, under appreciated assets that would be better drained for agricultural use or filled in and developed. Over the past 100 years, approximately two-thirds of the wetlands in southern Ontario have been lost. And those that remain continue to be degraded or destroyed by toxic run-off, non-native invasive species, sedimentation, fluctuating water levels, and development.

## What is a wetland?

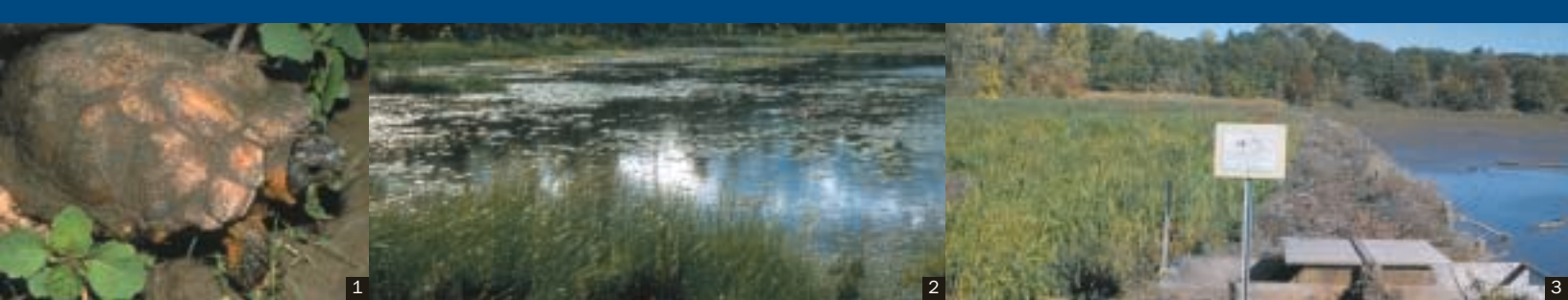
A wetland represents the transition between dry land and deeper, open water. Usually covered by shallow water for part or all of the year, the term wetland also applies to any damp area where the water table is near or at the surface. There are marshes, swamps, ponds, bogs and fens; the classification depends on where the wetland is located, what grows in it, and how it gets its water. All this water creates a unique and particularly rich environment: wet soils are colonized by water tolerant plants that attract, shelter and feed a wide variety of amphibians, fish, birds and animals.

Under the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA), the governments of Canada and Ontario have recognized both the intrinsic environmental necessity and economic value of wetlands. Together with private and public sector partners, Canada and Ontario have undertaken field studies that show the value of wetlands, as well as projects that protect threatened sites and rehabilitate damaged ones.



11. planting in Wainfleet Bog





*Through COA supported, partnered or initiated projects, some 5,100 hectares of wetlands and associated uplands have been protected through acquisitions. In addition, more than 12,750 hectares of wetlands have been rehabilitated. Projects to restore another 1,400 hectares are underway. Two of these wetland rehabilitation and protection projects are outlined below.*

## **Battling carp in Grindstone Creek**

Hemmed in by highways, most of its watershed transformed by farming and housing developments, the marsh at the mouth of Grindstone Creek is a threatened oasis of green at the extreme western end of Hamilton Harbour. Much of the aquatic vegetation in the river's mouth, as well as the native gamefish that spawned there and the waterbirds that nested and fed there, have disappeared over the past 50 years. While a number of environmental stresses have played a role in the site's decline, the primary culprit has been the bottom-feeding carp, introduced into the Great Lakes in the 1800s.

"You have to control sediment and nutrient inputs throughout the watershed. You have to allow more natural fluctuations in water levels in order to reestablish the natural vegetation," says Len Simser, Restoration Project Manager with the Royal Botanical Gardens (RBG) in Burlington. These factors are being addressed by long-term and complex Hamilton Harbour Remedial Action Plan (RAP) projects, he says. "But if you don't control the carp, none of the rest of it matters. This is an area where the RBG has a great deal of experience."

The restoration of Grindstone Creek and nearby Cootes Paradise are both initiatives of Hamilton Harbour's RAP. In keeping with their commitments under COA, the governments of Canada and Ontario have played a significant role in the Grindstone Creek rehabilitation project, along with the RBG (which owns the property), local municipalities, private foundations and a host of area businesses and individuals.

The harbour's huge carp population physically uproots aquatic plants and stirs up the mud while digging around the bottom looking for food. The muddy water prevents sunlight from reaching submerged plants, turning the estuary into a dirty barren bowl. The carp also compete with native species for resources, and raid the nests of spawning gamefish. "They're a very hardy fish," says Simser, "and they tend to keep the environment in the kind of degraded condition that's favourable to them."

Conservationists have been trying to control the carp sporadically since the 1950s, usually through netting and fishing programs. In 1996, a carp barrier, equipped with a fishway, was installed in the narrow channel separating the

## **Great Lakes acronyms**

The purpose of the Canada-U.S. Great Lakes Water Quality Agreement (GLWQA), is to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem.

The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) promotes cooperative action between the governments of Canada and Ontario and enlists partners to restore and sustain the environmental quality of the Great Lakes. COA helps Canada meet its obligations under the GLWQA.

Under the GLWQA, Canada and the United States have presently designated 42 Areas of Concern (AOCs), 16 of which are in Canada. In AOCs, environmental degradation is particularly pronounced causing impaired beneficial uses such as restrictions on swimming, fishing and drinking water consumption, and/or contributing to the overall degradation of the Great Lakes.

For each of the AOCs individually tailored Remedial Action Plans (RAPs) have been developed and are being implemented. Restoring the beneficial uses in the AOCs through the RAPs is a key priority for the governments of Canada and Ontario under COA.



**Cover:** bullhead lilies

**Cover inset:** bull frog

1. wood turtle
2. Great Lakes wetland
3. berm in Grindstone Creek
4. Great Lakes wetland

## Dollars and sense

Wetlands are valuable pieces of real estate. They are natural water filtration plants and flood control reservoirs. They double as fish hatcheries, wildlife sanctuaries, and tourist sites.

*To learn more get a copy of "Putting Economic Value on Wetlands", from Environment Canada (416) 739-5829.*

harbour from Cootes Paradise. This has been very successful at keeping marauding carp out of this important fish and plant nursery area.

To protect the marshland in Grindstone Creek, a series of berms were built along the sides of the old creek channel. The carp are confined to the deeper water, while in the shallower floodplain the natural marshland vegetation – cattails, bulrushes, arrowhead and pondweed – have started to recover.

The berms also trap much of the sediment that is carried down from the watershed and protect the eroded creek banks. More than 100,000 discarded Christmas trees collected by the municipality have been compressed to make some 1,000 metres of berm. Spawning pike and bass have access to the enclosed areas through an adjustable opening which is then closed to the later spawning carp.

"We approached the undertaking based on the RAP philosophy," says Simser. "You remove the stresses at source, where practically possible, and let the natural regeneration processes take their course." The restoration team has also established a small nursery to supply aquatic plants, built weirs to control water levels on floodplain ponds, protected fish spawning and nursery habitat, and constructed a series of boardwalks and interpretive trails for visitors.

"You can see a visible difference," says Simser, "the water's clearer, plants are growing, there are people fishing and bird-watching again." But there is still work to do. Many of the other RAP initiatives are unfinished and periodic high water levels are causing problems. A marsh needs a natural cycle of high and low water levels to thrive; only a few plant species can survive the kind of artificially managed lake levels imposed on the area. "It's a work in progress," he says. "We haven't reached the endpoint yet."

## Restoring the Wainfleet Bog

The Wainfleet Bog once covered more than 20,000 hectares, stretching inland along the north shore of Lake Erie from Port Colborne west to the Grand River. However, extensive drainage projects and 80 years of peat extraction have shrunk the bog to a 1,200 hectare island in a sea of urban development and intensive agriculture. Despite these depredations, this remnant is still the largest remaining bog in southern Ontario, and provides a home to many rare species, including 350 different bog plants. The biggest slice is owned by the Niagara Peninsula Conservation Authority, with smaller pieces held by the Ontario Ministry of Natural Resources, the Nature Conservancy of Canada, and several private landowners.

The conservation authority's Kim Frohlich explains that it "wants to bring the bog back to a more natural condition, something close to its original state." The authority has prepared a management plan for the part of the bog it controls, and is working closely with the other owners to coordinate restoration efforts "in a way that encompasses the whole ecosystem," says Frohlich. "You can't protect anything in isolation."

The Wainfleet Bog was a Great Lakes Wetlands Conservation Action Plan securement project under COA. The work is supported by the governments of Canada and Ontario, as well as

## Saving wetlands is a joint effort

The governments of Canada and Ontario are working with partners in the United States through the Great Lakes Wetlands Consortium to develop indicators of coastal wetland health. Canada and Ontario are also actively involved with the United States, Mexico and many non-government partners in habitat protection and restoration under the North American Waterfowl Management Plan. In the Great Lakes Basin, Canada and Ontario, along with non-government partners, are reclaiming, rehabilitating and protecting wetlands through the Great Lakes Wetlands Conservation Action Plan.

The Government of Canada's Great Lakes Sustainability Fund is supporting many of these projects in Areas of Concern through direct funding, technology demonstration and the promotion of integrated approaches to ecosystem rehabilitation. Through the new COA the governments of Canada and Ontario will continue to support many of these projects throughout the Great Lakes Basin.

# “You can’t protect anything in isolation.”

## Keeping your ears wide open

Across Ontario, naturalists are being asked to help monitor the health of wetlands and their inhabitants by listening for marsh birds, frogs and toads. Under the binational Marsh Monitoring Program, a project of Bird Studies Canada (BSC) and Environment Canada, nearly 500 volunteers are patrolling some 600 marsh routes around the Great Lakes. Each spring and summer volunteers collect valuable data on bird and amphibian populations and their habitats and help scientists track changes in our environment.

For more information, visit the BSC website at [www.bsc-eoc.org/mmpwho.html](http://www.bsc-eoc.org/mmpwho.html).

the township, local conservation groups, universities, the Toronto Zoo, and a number of private sponsors.

The biggest problem is that the bog is drying out. To counter the trend, the conservation authority has begun blocking some of the old ditches and peat canals that were draining water off the site. The authority has scooped out a series of shallow indentations, no more than a half-metre deep, to collect water and help improve the micro-climate. The authority has also cut down the invading European birch, on carefully measured experimental plots. Research has shown that large amounts of water were being drawn up from the bog and lost through the leaves of the trees.

Monitoring is being done to determine the effect on water levels and ensure that neighbouring properties are protected from any changes on the site. “We are doing a comparative study to see the effect of all these projects on water levels,” says Frohlich. “That way, we can make modifications should anything start to go awry.”



5. Wetland degradation through in-filling

This fall (2001), volunteers will begin planting native bog species, including Labrador tea and cotton grass, at selected sites. It is hoped that natural seeding will slowly reestablish the species back across the whole property. This is not a short-term project, cautions Frohlich. “It took thousands of years to create the bog,” she says. “We will begin seeing positive results over the next five or ten years, but recreating a more natural bog is going to take decades.”

Throughout the Great Lakes Basin, fish and wildlife habitat will continue to be restored and protected through targeted actions such as those described above. Aquatic, wetland and upland habitat in Areas of Concern will continue to be rehabilitated in order to re-establish native plant and wildlife populations. And under the new COA, the governments of Canada and Ontario will continue to monitor and study wetlands to better understand the valuable role they play in maintaining the environmental health of the basin.

6. Prothonotary Warbler 7. Great Lakes wetland 8. spotted turtle







### Eastern Massasauga Rattlesnake

Wainfleet Bog is home to the threatened Eastern Massasauga Rattlesnake, one of just four populations that have survived. Each spring, enthusiastic local volunteers join the annual rattlesnake census. “The more eyes the better; spotting the elusive snakes is like looking for a needle in a haystack,” says Kim Frohlich, a biologist with the Niagara Peninsula Conservation Authority. If found, some specimens may be fitted with radio-tracking devices so that the authority and its partners can work to re-establish the ideal habitat conditions for the threatened snake.

9. Eastern Massasauga Rattlesnake

### Choosing the perfect gift

Do you own a piece of Canada’s remaining wilderness – perhaps a wetland or another special ecosystem rich in wildlife – that you would like to see protected for future generations? The Government of Canada’s Ecological Gifts Program is a new, tax-based tool for protecting habitat.

*For more information, visit the Environment Canada website at [www.on.ec.gc.ca/ecogifts](http://www.on.ec.gc.ca/ecogifts).*

The Government of Ontario’s Conservation Land Tax Incentive Program offers a 100% tax exemption to eligible property owners who agree to protect the natural heritage values of their property.

*For more information, visit the Ministry of Natural Resources website at [www.mnr.gov.on.ca/mnr/cltip/index.html](http://www.mnr.gov.on.ca/mnr/cltip/index.html).*

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Canada-Ontario Agreement  
Respecting the Great Lakes Basin Ecosystem

*To learn more about COA and protecting wetlands in the Great Lakes Basin, contact:*

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(416) 739-4809

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[www.ene.gov.on.ca](http://www.ene.gov.on.ca)  
(416) 325-4000  
or 1-800-565-4923

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(416) 314-2000