# WETLAND CONSERVATION IN ONTARIO:

## A DISCUSSION PAPER

Ontario

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COVER PHOTO: **Water Lily, Rebecca Zeran**

# 1.0 INTRODUCTION

The Ontario government is committed to conserving wetlands. In 2012, *Biodiversity It's in Our Nature: Ontario Government Plan to Conserve Biodiversity* highlighted the need to review Ontario's wetland conservation policy framework. In 2014, to respond to continuing loss of wetlands (almost 70% of southern Ontario's original wetlands have been lost), the Ministry of Natural Resources and Forestry (MNRF) was given a mandate to work with other ministries, municipalities and partners to review Ontario's broad wetland conservation framework and identify opportunities to strengthen policies and stop the net loss of wetlands. To achieve this mandate, the MNRF is proposing to develop A Strategic Plan for Ontario Wetlands 2015–2030 that will identify a provincial vision, goals and objectives for wetlands in Ontario and set out a series of actions that the government will undertake over the next 15 years to improve wetland conservation and stop the net loss of wetlands across the province.

This discussion paper is meant to provide an overview of wetlands in Ontario and a summary of policies, programs and partnerships that form Ontario's current wetland conservation framework. The paper will also present information on what others are doing and suggest priority areas on which the government could focus, including consideration of policy to achieve no net loss of wetlands. The purpose of this paper is to provide information in order to stimulate ideas that will help inform the government on future actions that could be included within a strategic plan for wetlands in Ontario.

The conservation of wetlands is important to ensuring a healthy natural environment that can provide essential ecosystem services to the people of Ontario now and into the future–such as flood control, water quality improvement and recreation. Wetlands continue to be threatened by land conversion, alterations to natural water levels, invasive species, pollution and climate change. Climate change can threaten wetlands, but wetlands can also be valuable to help us adapt to climate change by absorbing carbon dioxide from the atmosphere. To ensure a stable and prosperous economy, the government acknowledges that wetland conservation must be balanced with the environmental, economic and social needs of Ontario communities.

Ontario understands the importance of working together with municipalities, private landowners, Aboriginal communities and other partners to conserve wetlands. The Government of Ontario is seeking feedback from Ontarians to help identify challenges and opportunities associated with wetland conservation in Ontario. This input will be used to inform development of a Strategic Plan for Ontario Wetlands that will guide the government's actions over the next 15 years. The deadline for providing comments is October 30, 2015.

PHOTO: Juvenile Mallard, Rebecca Zeran

# 2.0 ONTARIO'S WETLANDS

## 2.1 WHAT IS A WETLAND?

Wetlands are lands that are saturated with water long enough to cause the formation of waterlogged (hydric) soils and the growth of water-loving (hydrophytic) or water-tolerant plants. They are often transitional habitats, forming the connection between aquatic and terrestrial ecosystems and can occur where the water table is at or close to the surface, in low-lying locations, or along the edges of lakes and rivers. Many wetlands are permanently flooded, while others flood only periodically in the spring or fall. Wetlands range in size from very small (the size of an urban backyard) to exceptionally large, covering hundreds of square kilometres. There are four types of wetland in Ontario: marsh, swamp, bog, and fen. Bogs and fens contain peat (partially decomposed plant material) and are collectively known as 'peatlands'.

While marshes are typically the most recognizable type of wetland, they are actually the least common wetland type across Ontario. In southern Ontario swamps are most common and peatlands most rare, in central and northern Ontario, swamps and peatlands dominate, and in the Far North of Ontario, peatlands are the dominant wetland type.

### Marsh

Marshes are the most recognizable kind of wetland and often have areas of open water with floating plants like water-lilies and emergent plants (plants standing above water) like cattails. *Photo: Rebecca Zeran*

### Swamp

Swamps are wetlands that are dominated by trees and shrubs. Swamps are the most common type of wetland in southern Ontario and can often be confused with forested upland areas. *Photo: Sam Brinker*

### Bog

Bogs are usually peat-covered areas or peat-filled depressions with a surface carpet of Sphagnum moss that receive their water only from rainfall or surface runoff. They are typically low in nutrients and strongly acidic. *Photo: Sam Brinker*

### Fen

Fens, like bogs, often contain Sphagnum moss, however they are less acidic than bogs and have more nutrients and thus have a higher diversity of plant life than bogs. They are often dominated by sedges, although grasses and reeds may also occur. *Photo: Sam Brinker*

# Great Lakes Coastal Wetlands

Ontario is home to a unique kind of wetland known as a "Great Lake Coastal Wetland" (OWES 2014) or more often, simply as "coastal wetland" (PPS 2014). Coastal wetlands are those wetlands (marsh, swamp, bog, or fen) that are located in close proximity to the Great Lakes coastline and are connected by surface water to a Great Lakes system lake or river. Coastal wetlands provide recreational opportunities for people and critically important to the ecological health of the Great Lakes. For example, the coastal marshes in the lower Great Lakes provide internationally important habitat for migrating waterfowl–providing food, shelter and a place for birds to rest on their migratory journey. *Photo: Presqu'ile Provincial Park, Canadian Wildlife Service*

## 2.2 WETLAND FUNCTIONS AND BENEFITS

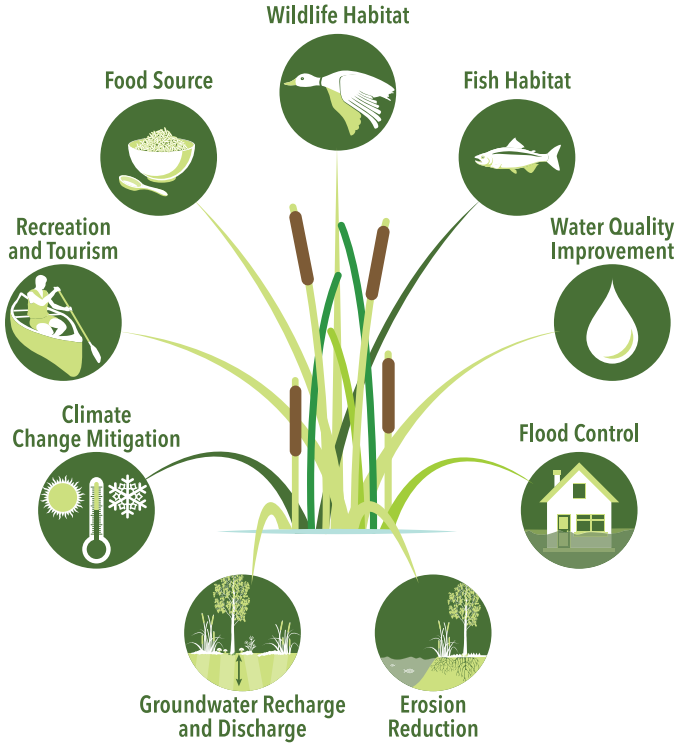
Wetlands are among the most productive and biologically diverse habitats on earth and are an essential component of Ontario's biodiversity. Wetlands have many functions and values that benefit the social and economic needs of Ontarians, including:

**Wildlife Habitat** wetlands provide food, shelter, breeding and resting places for many different species; for example, wetlands along large water bodies like the Great Lakes provide continentally important staging habitat for waterfowl.

**Fish Habitat** wetlands provide nursery, spawning, cover and feeding habitat for many commercially and recreationally harvested fish species.

**Water Quality Improvement** wetlands filter sediments, absorb nutrients and biologically convert many chemicals into less harmful forms.

**Flood Control** wetlands store or slow the flow rate of water from snowmelt and storms and gradually release it over a long period of time, a process known as flood attenuation.



**Erosion Reduction** wetland vegetation along shorelines provides stability, dampens wave action and slows water currents, also helping water quality.

**Groundwater Recharge & Discharge** wetlands slowly release water into the soil and rocks and replenish groundwater aquifers, ensuring an abundant and stable groundwater supply.

**Climate Change Mitigation & Resilience** some wetlands can absorb carbon dioxide from the atmosphere and store it as peat, acting as a carbon sink by preventing carbon's release into the air. Wetlands can also help increase resilience and reduce impacts from more frequent and intense weather events by absorbing heat and buffering against increased flooding, storm water and drought.

**Recreation & Tourism** wetlands are popular places for outdoor recreation activities like photography, bird watching, canoeing, fishing and hunting.

**Food Source** wetlands can provide opportunities to sustainably harvest food such as wild rice, cranberries, waterfowl and fish.

# Wetland Ecosystem Services

Ecosystem services are the benefits people obtain either directly or indirectly from nature. Natural systems, such as wetlands, provide services to humans such as water filtration, flood control, carbon sequestration and recreational and spiritual opportunities. Information on the value of Ontario's wetlands is growing and can be used to communicate the benefits of wetland conservation and to help assess the costs associated with the loss of these important ecosystems. For example, a recent study found that southern Ontario's urban and sub-urban wetlands act as "natural factories" to filter water and produce at least $40 billion in economic benefits each year (Troy and Bagstad 2009). Similarly, the total annual non-market value of the wetlands in Ontario's Greenbelt has been estimated at $1.3 billion based on services including climate regulation; flood control; water filtration; waste treatment; provision of habitat; recreation and aesthetics (David Suzuki Foundation 2008).

PHOTO: Terese McIntosh

## 2.3 THREATS TO WETLANDS

There are a number of threats to wetlands in Ontario. Some lead to the outright loss of wetlands, while others can change the way a wetland functions. The most important threats to wetlands in Ontario can be classified into five main categories including land conversion, alteration to natural water levels, invasive species, pollution and climate change.

### Land Conversion

The primary threat to wetlands in Ontario is land conversion. Many wetlands in the southern portion of the province have been drained and converted to farmland or filled in to provide more opportunities for residential and industrial development. Economic growth and human population density are commonly identified as the underlying cause of wetland conversion in Ontario.

### Alterations to Natural Water Levels

Wetlands are defined by their hydrology. Hydrology controls wetland form and function. The construction of dams and weirs and the regulation of water levels on lake and river systems can change the water table depth or the surface water flow, which in turn, can change the way a wetland functions or cause loss of the wetland itself. In Lake Ontario, for example, water level management has been shown to restrict water inputs to wetlands causing changes in vegetation, resulting in the loss of wetland characteristics and decreasing the habitat value for many wetland species.

### Invasive Species

Invasive species are a growing threat to many wetland ecosystems in Ontario. Invasive plant species can crowd out native wetland plants reducing the diversity and utility of the habitat for fish and wildlife species. For example, the Common Reed (*Phragmites australis*) grows and spreads easily, quickly out-competing native species for water and nutrients. Invasive fish and wildlife species can invade wetland areas and drastically change the habitat. Wetlands that are degraded are often more susceptible to invasive species and invasive species may contribute to more rapid and severe degradation.

### Pollution

While wetlands are natural filters that can remove, retain, or transform a variety of pollutants, they are also threatened when pollutant loads are excessive. Pollutants such as pesticides, heavy metals, sediments, domestic sewage, and fertilizers discharged from a variety of point sources (e.g., direct discharges from industrial complexes) or nonpoint sources (e.g., runoff from agricultural lands and salt from roads) degrade wetland functions and can impact the fish and wildlife that live in them.

## Wetlands and Climate Change

Temperature and water levels are key in determining the distribution and function of wetlands on the landscape. A future with warmer and drier climate may impact the size, hydrology, or type of wetland. For example, bogs which depend on precipitation and surface runoff rather than groundwater are particularly sensitive to drying. Peatlands are also likely to dry which will increase the establishment of woody plant species and increase the rate of peat decomposition and carbon loss into the atmosphere. While climate change poses a serious threat to wetlands, the conservation of wetlands can play an important role in mitigating effects of climate change. For example, some wetlands can absorb carbon dioxide from the atmosphere and store it as peat, acting as a carbon sink and preventing the release of carbon into the air. Furthermore, wetlands can help Ontario adapt to the impacts of climate change by regulating temperature, reducing the urban heat island effect, slowing impacts of droughts, and reducing flood risks and negative impacts on water quality from more frequent and intense weather events.

PHOTO: Common Reed, Wasyl Bakowsky

### Climate Change

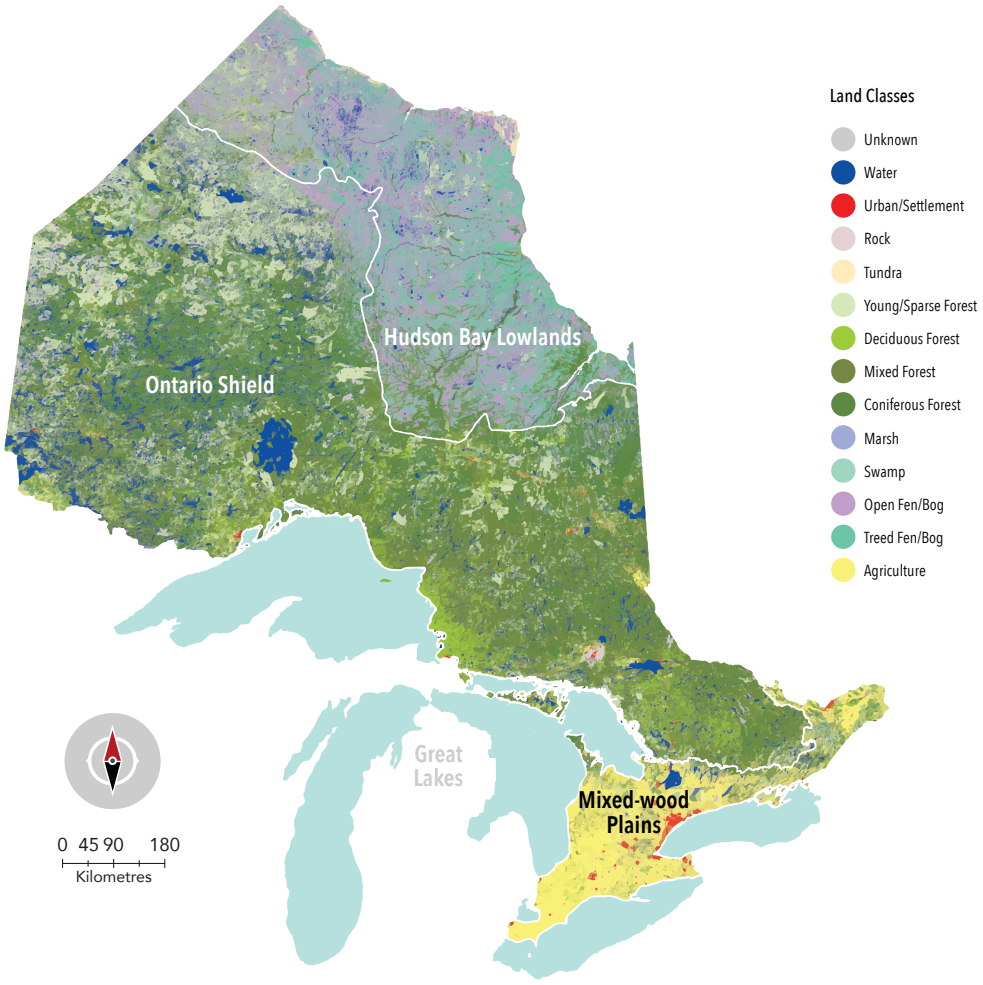
Wetlands are highly vulnerable to the changing climate and to the projected increase in frequency or intensity of extreme weather events (heat waves, droughts, storms and floods). Studies indicate that the most pronounced effects on wetlands will be altered hydrological regimes which may reduce the size of wetlands, alter the plants or animals living within them, convert some wetlands to dry land, or shift one wetland type to another, resulting in a loss of wetland diversity.

### Cumulative Effects

The threats to Ontario's wetlands are often treated as if they act alone. Wetlands often face several threats at the same time, and in many cases these threats are closely linked. Cumulative effects can involve the same type of threat happening many different times (e.g., different invasive species impacting the same wetland) or different threats happening together on the same area (e.g., fragmented habitat in areas of invasive species infestation). When combined, these threats can have a far greater negative effect, and lead to greater wetland loss or degradation, than any threat on its own.

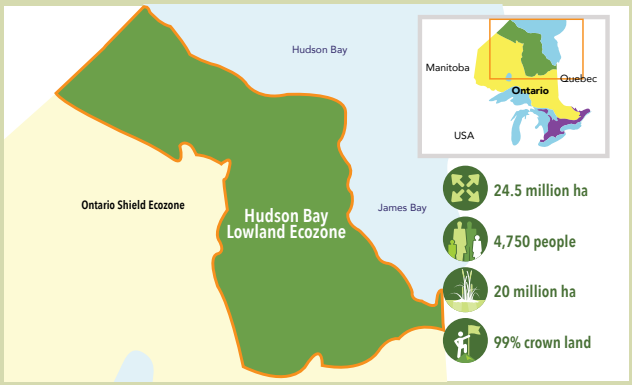
## 2.4 WETLANDS IN ONTARIO'S ECOZONES

Ontario is a large province that covers more than 107 million hectares of the Earth's surface (one hectare is about the size of two football fields). Approximately one-third of Ontario (over 35 million hectares) is made up of wetlands. Recognizing that climate, geology, and ecology differ throughout the province, Ontario is divided into four ecozones based on Canada's National Ecological Framework. The size, number and type of wetlands that are found in each ecozone vary. It is important to examine wetlands in context of the different ecozones of Ontario. For more information about each ecozone, see the State of Ontario's Biodiversity 2010 and 2015 reports.



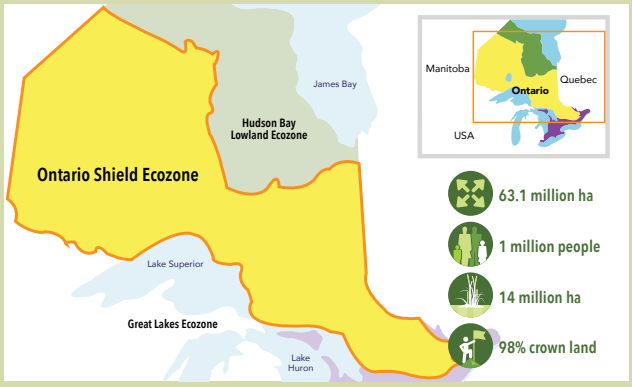
## Hudson Bay Lowlands Ecozone

The Hudson Bay Lowlands is the northernmost ecozone in Ontario. It covers almost 25% of the province, and is considered to contain the third largest wetland in the world. The ecozone is dominated by wetlands and also supports salt-marshes, tundra, boreal and subarctic forests, and numerous rivers, streams and lakes. Peatlands (bogs and fens) are the dominate wetland type, comprising 69% of the entire ecozone. The James Bay and Hudson Bay coastlines stretch across 1,290 km of Ontario and are considered internationally important habitat for migratory shorebirds and waterfowl.



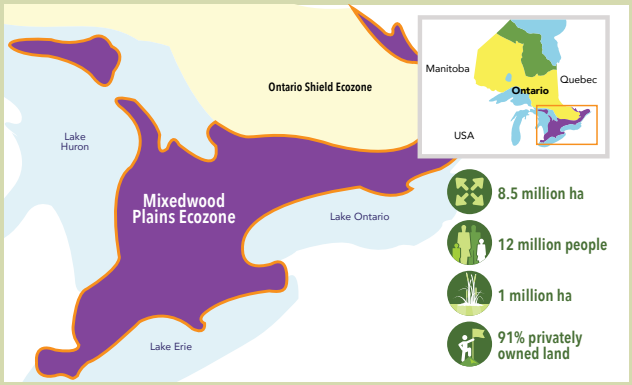

## Ontario Shield Ecozone

The Ontario Shield, Ontario's largest ecozone, covers about 61% of the province. It includes both the Boreal Forest Region in the northern part of the ecozone and the Great Lakes – St. Lawrence Region in southern parts of the ecozone. Because of the variations in geology and climate across this ecozone, some parts of the ecozone are very different from other parts. The majority of the ecozone is comprised of forests and treed wetlands (swamps, bogs and fens). Lake and river systems cover about one fifth of the ecozone.



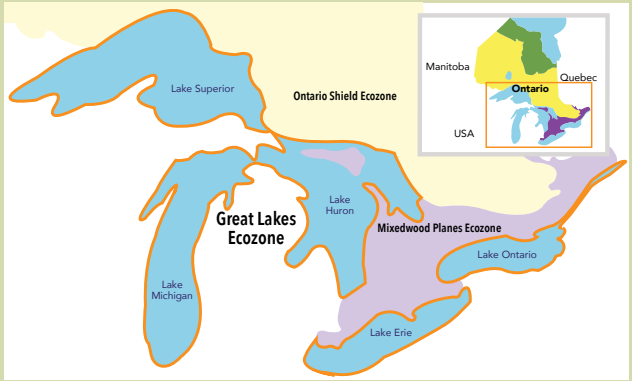

## Mixedwood Plains Ecozone

The Mixedwood Plains makes up 8% of the province. The ecozone supports unique geologic features like the Niagara Escarpment, two different forest regions (Great Lakes – St. Lawrence Forest and Carolinian Forest), prairie, savannah and alvar habitats, wetlands, and coastal areas adjacent to the Great Lakes. In this ecozone, swamps are the most common wetland type and peatlands (bogs and fens) are the rarest. An estimated 87% of wetlands in the ecozone are swamps, 11% are marshes, and less than 1% are peatlands.




## The Great Lakes Ecozone

The Great Lakes are the largest system of surface freshwater on Earth and hold 18% of the world's supply of freshwater. The system is composed of five large lakes and their connecting waterways–four of the lakes are shared between Ontario and the United States, while one (Lake Michigan) is entirely within the U.S.

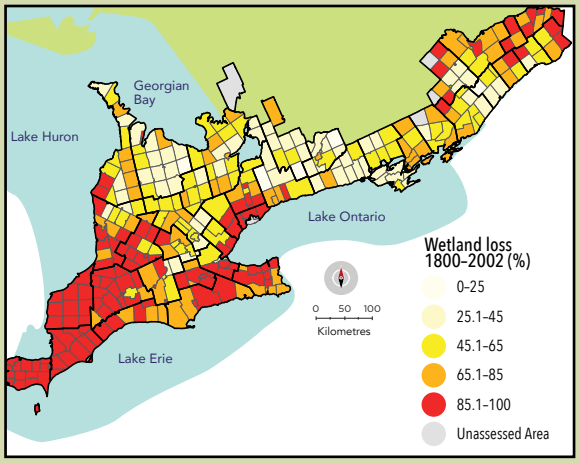


# The Importance of Peatlands

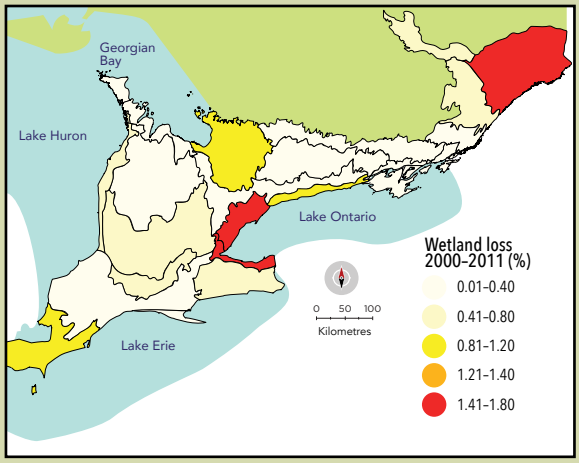
Peat is formed as dead plant and animal material decomposes slowly over thousands of years in areas with permanent water saturation, low oxygen levels and low temperatures. Northern peatlands cover only about 3 to 5% of the earth, but store about 25% of all terrestrial carbon (Far North Science Advisory Panel 2010). High water levels in peatlands limit oxidation and thereby prevent the release of carbon dioxide into the atmosphere. It's estimated that peatlands in the Far North of Ontario annually sequester an amount of carbon equal to about one third of Ontario's total carbon emissions (Far North Science Advisory Panel 2010). In addition to carbon storage, peatlands also store large quantities of water, making them important for regulating water flows. Increases or decreases in water levels as a result of climate change may alter a peatland's ability to store and sequester carbon.

# Wetland Loss in Ontario's Mixedwood Plains

By the 1830s, as populations grew in this ecozone, a third of the land along the Great Lakes had been cleared and by 1850 almost half of the land had been converted from its natural state to other uses, largely agriculture. By the turn of the 20th century, the Mixedwood Plains had a thriving economy and a fast-growing human population. Conversion of land, including extensive wetlands, to agriculture, manufacturing and residential areas facilitated this development and helped Ontario's economy and population to grow into what it is today. This land conversion has taken a severe toll on the ecozone's biodiversity. Wetland loss has been most severe in southwestern Ontario, parts of eastern Ontario and the Niagara and Toronto areas, where over 85% of the original pre-settlement wetlands have been converted to other uses. It's estimated that up to 70% of the wetlands originally present in the ecozone had been lost by 1982 (OBC 2010). These losses have continued, with an additional 70,854 ha of wetlands (3.5%) being lost between 1982 and 2002 (SOBR 2010) and another 6,152 ha of wetlands (0.6%) lost between 2002 and 2011 (OBC 2015). While land conversion is the key threat to wetland biodiversity in the ecozone, pollution, invasive alien species and climate change also pose serious threats.




State of Ontario's Biodiversity Report 2010:
Loss of original wetland area by township, from 1800 to 2002 (1.4 million ha)




State of Ontario's Biodiversity Report 2015:
Loss of wetlands by ecodistrict, between 2000 and 2011

# 3.0 ONTARIO'S WETLAND CONSERVATION FRAMEWORK

The Ontario government's wetland conservation framework is made up of legislation, regulations, policies, guidelines and agreements and also includes grant and incentive programs and strategic partnerships. All aspects of the framework are important to enable and support wetland conservation (protection, restoration, management, stewardship) across the province. It is important to recognize that wetland conservation is also achieved and facilitated by individuals, agencies and communities working independent of government. This section will outline some of the key elements of the government's current wetland conservation framework. Web-links are provided in section 7.0 that lead to more detailed information on each of the elements discussed below.

## 3.1 ONTARIO'S WETLAND POLICY CONTEXT

Ontario's first public discussions regarding wetland policy occurred 30 years ago when the government released a discussion paper titled 'Towards a Wetland Policy for Ontario'. The result of that effort was a wetland policy issued by the Ontario government in 1984 titled 'Guidelines for Wetlands Management in Ontario' and later on, the 1992 Wetland Policy Statement (the precursor to what we now know as the wetland-related natural heritage policies under the Provincial Policy Statement). While wetland policy in Ontario continues to evolve and improve, there is currently no over-arching government framework that guides wetland conservation and management across the province.

Today, wetland policy in Ontario is comprised of over 20 different pieces of legislation administered and/or implemented by five provincial Ministries, two federal Ministries, a provincial agency (Niagara Escarpment Commission), 36 conservation authorities and 444 municipalities. Some of these statutes enable aspects of natural resource or natural heritage conservation and management which can include wetlands, while others make specific reference to wetlands and explicitly prohibit or permit certain land use activities within them.

Table 1 outlines legislation and policy instruments currently in place that influence and guide wetland conservation in Ontario. In addition to the Acts described in Table 1, several other provincial statutes require consideration of wetlands when making decisions (e.g., *Aggregate Resources Act*, *Public Lands Act*) or influence wetlands in some way (e.g., *Drainage Act*, *Lakes and Rivers Improvement Act*). Others recognize that wetlands are important to protecting sources of drinking water (local source protection plans prepared under the *Clean Water Act*). Several federal policies and statutes also contribute to wetland conservation in Ontario (e.g., *Fisheries Act*, Federal Policy on Wetlands).

### Ontario Invasive Species Strategic Plan

The Ontario Invasive Species Strategic Plan was developed by the Government of Ontario and its partners to reduce the impact of invasive species, prevent new invaders from arriving and surviving and to halt the spread of existing invasive species. Invasive species are one of the key threats to wetland ecosystems and the strategic plan provides a key actions that aim to prevent, detect, respond to and manage their impacts. Examples of actions include the development of Best Management Practices for invasive plants through partnership with the Invasive Plant Council; and the Invasive Species Awareness Program funded jointly with the Ontario Federation of Anglers and Hunters which is designed to educate Ontarians on how to prevent the spread of invasive species.

**TABLE 1A Policy instruments that influence and guide wetland conservation and management in Ontario. Provincial Instruments that Prohibit Certain Activities in Wetlands**

| Policy Instrument | Link to Wetland Conservation and Management |
|---|---|
| *Planning Act*; Provincial Policy Statement 2014 | Protects provincially significant wetlands (see page 13) and Great Lakes coastal wetlands from development depending on where they are located within the province. |
| *Niagara Escarpment Planning and Development Act* & Plan | Protects wetlands located within the Niagara Escarpment planning area from development. |
| *Oak Ridges Moraine Conservation Act, 2001 & Plan* | Protects wetlands located within the Oak Ridges Moraine planning area from development. |
| *Greenbelt Act, 2005 & Plan* | Protects wetlands in the area designated as Protected Countryside within the Greenbelt Plan in the Greater Golden Horseshoe. |
| *Lake Simcoe Protection Act, 2008* & Plan | Protects wetlands located in the Lake Simcoe watershed (as defined) from development. |
| *Conservation Authorities Act* Regulations | Regulates development in and around wetlands for effects on the control of natural hazards (e.g., flooding), as well as activities that may interfere with a wetland such as natural storage capacity. |
| Renewable Energy Approvals Regulation (under the *Environmental Protection Act*) | Prohibits most activities associated with renewable energy projects from locating directly within provincially significant wetlands in southern Ontario and significant coastal wetlands, while enabling a risk-based approach to minor encroachments from infrastructure. |
| *Crown Forest Sustainability Act, 1994*; Forest Management Guides | Forest management guides used during the planning and implementation of operations and construction of roads contain mandatory direction designed to protect the integrity of aquatic habitats including permanent and seasonal wetlands (including those recognized as provincially significant). |

**TABLE 1B Policy instruments that influence and guide wetland conservation and management in Ontario. Provincial Instruments that Facilitate Wetland Conservation**

| Policy Instrument | Link to Wetland Conservation and Management |
|---|---|
| *Far North Act, 2010* | Includes objectives for community-based land use planning, the protection of 225,000 square kilometres of land in the Far North of Ontario, and the maintenance of biological diversity, ecological processes and functions including the storage and sequestration of carbon in the Far North of Ontario. |
| *Endangered Species Act, 2007* | Prohibits the damage and destruction of the habitat of an endangered or threatened species, some of which carry out life processes in wetlands. |
| *Provincial Parks and Conservation Reserves Act, 2006* | Permanently protects a system of provincial parks and conservation reserves that includes ecosystems representative of all of Ontario's natural regions and significant natural heritage features, including wetlands. |
| *Municipal Act, 2001* | Enables a municipality to pass by-laws to restrict tree cutting (e.g., in swamps), placing or dumping of fill, and removing topsoil (e.g., defined to include peat). |
| *Assessment Act* | Sets out eligibility criteria for lands that can receive property tax exemptions under the Conservation Land Tax Incentive Program and the Managed Forest Tax Incentive Program (many of these lands contain wetland). |
| *Conservation Land Act* | Enables the protection of natural areas, including wetlands by establishing conservation easements on private land. |
| *Environmental Assessment Act* | Requires an assessment of any major public sector undertaking that may have a significant environmental impact. The process requires ministries like MTO to make design decisions to avoid impacts and mitigate or compensate where avoidance is not possible. |

# Provincially Significant Wetlands & the Ontario Wetland Evaluation System

The Ontario Wetland Evaluation System (OWES) was developed as a science-based system that outlined a process and a set of criteria to define, identify and assess the functions and values of wetlands in order to rank them relative to one another. OWES is currently used to determine whether a wetland is 'provincially significant' and thus subject to protection under various policies.

There are two OWES manuals, one for evaluating wetlands in southern Ontario, and one for use in northern Ontario. There are relatively minor differences between the manuals–the northern manual has a slightly different process for assessing hydrological function and has a few additional assessments for species that are present in the north and less common in the south (e.g., black ducks and moose).

Under OWES, wetlands are assessed based on the value of the wetland in maintaining ecosystem processes and on the benefits that the wetland provides to society. Wetlands are evaluated against scored criteria under four main components:

- Biological (e.g., biological productivity and diversity);
- Social (e.g., economic, recreational and educational uses);
- Hydrological (e.g., flood attenuation, water quality improvement and erosion control); and
- Special Features (e.g., provision of habitat for rare and provincially important species groups).

A provincially significant wetland is one that scores 600 or more points overall or at least 200 points in either the Biological or Special Features components. Only individuals trained in an MNRF-approved course can evaluate wetlands using the OWES methodology and all wetland evaluations must be submitted to MNRF for review and approval.

There are almost 2,500 evaluated wetlands in Ontario covering over 600,000 ha of land. The majority of evaluated wetlands (88%) occur in the Mixedwood Plains ecozone. It is estimated that over 460,000 hectares (or 43%) of wetlands in the Mixedwood Plains ecozone have not yet been evaluated. Almost 60% of the wetlands evaluated in Ontario are provincially significant.

PHOTO: Wetland Evaluation in Parry Sound, COA

## 3.2 LINKING TO OTHER POLICY INITIATIVES

There are several policy exercises underway to deliver on government mandates that may offer opportunities to examine and/or strengthen wetland conservation. For example:

- Four provincial land use plans that manage growth, protect the environment and support economic development are now under review (Growth Plan for the Greater Golden Horseshoe, Niagara Escarpment Plan, Oak Ridges Moraine Conservation Plan, and the Greenbelt Plan). Wetlands are key natural heritage and hydrologic features under these plans.
- The Ontario government has introduced to the legislature the proposed Great Lakes Protection Act, which, if passed, will provide new tools to protect and restore Great Lakes watersheds, wetlands, beaches, shorelines and coastal areas of the Great Lakes – St. Lawrence Basin. This includes providing the Minister of Natural Resources and Forestry with the authority to establish one or more targets to prevent the net loss of wetlands in all or part of the Great Lakes- St. Lawrence River Basin.
- In February, the Ministry of the Environment and Climate Change released a discussion paper that will be used to inform an Ontario government climate change strategy and action plan. The paper recognizes the role that natural features such as wetlands play in mitigating the effects of climate change and increasing resilience to the impacts of a changing climate.
- The Ministry of Natural Resources and Forestry is releasing a discussion paper to identify opportunities to improve the Conservation Authorities Act and policy framework that govern conservation authorities and the programs and services they deliver. Conservation authorities have regulatory authority to permit development in and around wetlands and as landowners and resource management agencies may administer projects in wetlands conservation independently or with others.

PHOTO: Great Blue Heron, Rebecca Zeran

## 3.3 WETLANDS IN THE GREAT LAKES BASIN

It has long been recognized that wetlands play an important role in maintaining water quality and ecosystem integrity of the Great Lakes Basin. They are also very important to human recreation and tourism. Several initiatives have developed over the last 40 years that recognize the important role of wetlands in the Great Lakes; express concern about the threats that wetlands in this region face; and seek to implement actions to protect and restore wetlands across the Basin. Many of these initiatives involve close inter-jurisdictional cooperation and a commitment to work together. These include:

- Canada-US Great Lakes Water Quality Agreement (GLWQA), amended in 2012 A bi-national agreement to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes. The amended agreement includes an objective to support healthy and productive wetlands and other habitats to sustain resilient populations of native species.
- Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, 2014 (COA) An agreement that outlines how the governments of Canada and Ontario will work together to restore, protect and conserve Great Lakes water quality and ecosystem health. The 2014 COA includes a focus on restoring, protecting and conserving wetlands, beaches and other coastal areas.
- Lakewide Action and Management Plans (LAMPs) Bi-national plans created to help manage each Great Lake. They outline how federal, provincial and state agencies will work together to improve understanding and address lakewide environmental issues, including wetland conservation.
- Ontario's Great Lakes Strategy, 2012 Provides a roadmap for how Ontario will focus on a variety of tools to take action to protect the Great Lakes – St. Lawrence River Basin. The Strategy is designed to focus provincial resources across ministries, and to enhance collaboration and engagement with other governments and the broader Great Lakes community. One of the goals of the Strategy is to improve wetlands, beaches and coastal areas.
- Great Lakes Wetland Conservation Action Plan (GLWCAP) Prepared by government and non-government organizations in 1994. The Action Plan outlines a framework for wetland conservation in the Great Lakes Basin through eight implementation strategies. The Plan is coordinated by a team of federal, provincial and non-governmental organizations, including the Ministry of Natural Resources and Forestry.
- Great Lakes Water Level Management Established under the Boundary Waters Treaty in 1909, the International Joint Commission (IJC) is an advisor to the governments of Canada and US on implementation of the GLWQA and helps to manage Great Lakes waters by regulating boundary water uses, investigating trans-boundary issues and recommending solutions. The Ontario government participates in the IJC's initiatives, including investigating the impacts of water level regulation on Great Lakes coastal wetlands.

## 3.4 INTERNATIONAL COOPERATION FOR WETLAND CONSERVATION

Wetlands have been recognized globally as a resource of great ecological, economic, cultural and recreational value. Numerous conventions, agreements and collaborative partnerships have been developed to help ensure that wetlands and the important functions they provide are conserved and sustained for future generations. These initiatives operate at various scales, involve both government and non-government organizations, and often seek to coordinate conservation action across provincial, national and continental boundaries.

### Ramsar Convention

In 1971, a multi-national global treaty, called the 'Ramsar Convention', was adopted in the Iranian city of Ramsar to provide a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The treaty was negotiated in the 1960s by countries and non-governmental organizations concerned about increasing loss and degradation of wetland habitat for migratory birds. A key commitment of the Ramsar Convention is to identify globally important wetlands on a List of Wetlands of International Importance. To date, there are eight Ramsar Wetlands of International Importance designated in Ontario.

### Eastern Habitat Joint Venture

The Eastern Habitat Joint Venture (EHJV) is a collaborative partnership of government and non-government organizations working together across eastern Canada to conserve wetlands and other habitats that are important to waterfowl and other migratory birds. Since 1986, the EHJV has helped to implement habitat conservation programs–such as wetland securement, restoration and management–that support continental waterfowl objectives identified under the North American Waterfowl Management Plan (NAWMP).

The EHJV, one of more than 20 Joint Ventures in North America, spans the six easternmost Canadian provinces. Each province has established its own provincial partnership to implement activities that support the Joints Ventures as a whole. In Ontario, this partnership is known as the Ontario EHJV. Ontario EHJV partners include: the Government of Canada; the Government of Ontario; Ducks Unlimited Canada; the Nature Conservancy of Canada; Bird Studies Canada and Long Point Waterfowl. Partners work all across Ontario, however, the focus is often in areas of southern Ontario where loss of wetland habitat has been highest.

Between 2006 and 2014, Ontario EHJV partners invested $58,325,853 to conserve wetlands and associated habitat across Ontario; this resulted in the securement of 37,379 hectares, the restoration of 12,217 hectares and the management of 46,023 hectares of wetland habitat.


## A Shared Responsibility

Strong partnerships are an important part of successful wetland conservation and many successful partnership initiatives are highlighted in the *Great Lakes Wetlands Conservation Action Plan, 2005–2010 Highlights Report*. For example,

- Between 2005 and 2010, an estimated 14,182 hectares of wetlands across the Great Lakes Basin was permanently protected through land acquisition by the joint efforts of conservation authorities, private landowners, Ducks Unlimited Canada, the Nature Conservancy of Canada, local land trusts, municipalities and the federal and provincial governments.
- The Durham Region Coastal Wetland Monitoring Program, led by Environment Canada and the Central Lake Ontario Conservation Authority, has been undertaking long-term monitoring of the physical and biological conditions of wetlands along the north shore of Lake Ontario.
- In 2008, the Ausable Bayfield Conservation Authority and other partners established a Healthy Headwaters Wetlands Initiative in farmed areas along the eastern shore of Lake Huron aimed at promoting and implementing restoration.

PHOTO: **Wetland Conservation in Prince Edward County, Rebecca Zeran**

## 3.5 ENCOURAGING WETLAND CONSERVATION

The Ontario government recognizes that wetland conservation involves private landowners, governments, industry, conservation organizations, Aboriginal communities and many others.

Private landowners are important partners in the conservation of wetlands, particularly in southern Ontario where the majority of wetlands are privately owned. Private landowners can conduct stewardship projects in conjunction with municipalities, conservation authorities and/or environmental organizations such as Ducks Unlimited Canada. One example of a successful initiative conducted in partnership with private landowners is the Wetland Drain Restoration Project which uses the *Drainage Act* to modify existing drains to restore wetlands and their associated functions and benefits. One of the benefits of this program is the reduced cost in drain maintenance along with gains in the quantity and quality of associated wetlands.

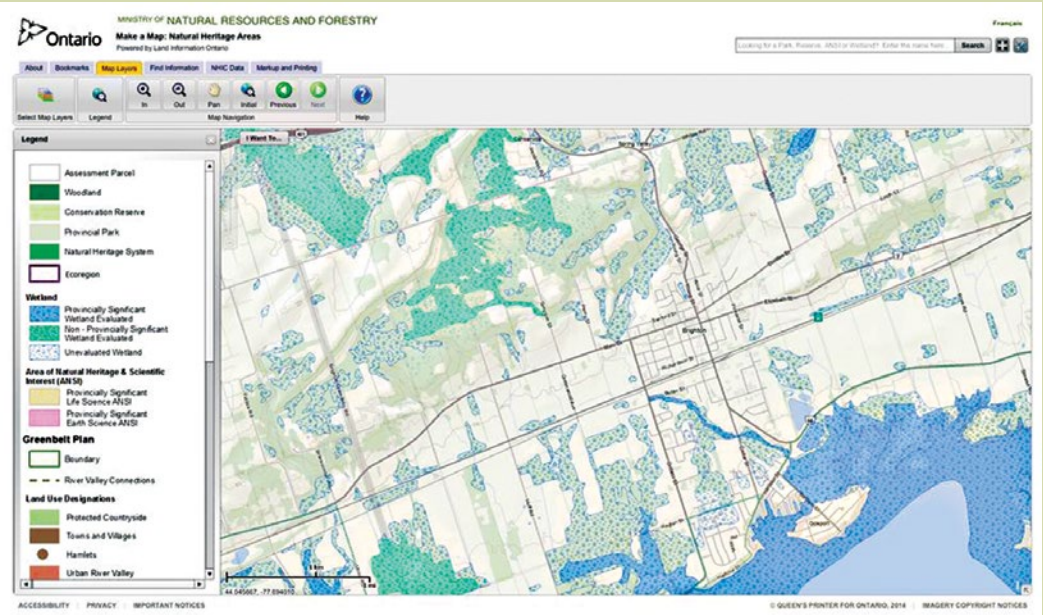
First Nation and Métis peoples and communities are important partners in wetland management. Ontario recognizes that Aboriginal communities are involved in managing and using wetlands sustainably and that local and traditional knowledge can substantially contribute to effective wetland management practices. The livelihoods, food security and cultural heritage of Aboriginal peoples are often connected to access to natural resources within wetlands. This unique relationship with the land and its resources pre-dates the existence of the province and continues to be of central importance in Aboriginal communities across Ontario today.

The Ontario government administers several granting and incentive programs to encourage conservation and stewardship of wetlands and other important habitats. Examples of these programs include:

- Conservation Land Tax Incentive Program Administered by Ministry of Natural Resources and Forestry, this program provides for 100% property tax exemption on eligible conservation lands in return for landowner agreement not to undertake activities that will have a negative impact on the natural value of those lands. Provincially Significant Wetlands are eligible under this program.
- Land Stewardship and Habitat Restoration Program Administered by Ministry of Natural Resources and Forestry, this program provides up to $20,000 in financial support to organizations and groups to undertake projects that support biodiversity conservation and fish and wildlife habitat restoration in Ontario, including wetland restoration.
- Great Lakes Guardian Community Fund Administered by the Ministry of Environment and Climate Change, this fund offers up to $25,000 in grant funds for projects in the Great Lakes – St Lawrence River basin that support at least one of three goals: (1) protect water quality, (2) improve wetlands, beaches and coastal areas, (3) protect habitat and species.

# Make a Custom Wetland Map

The Ministry of Natural Resources and Forestry has a web application that anyone can use to make a custom map of wetlands and evaluated wetlands in Ontario. Visit *http://www.ontario.ca/environment-and-energy/make-natural-heritage-area-map* for more information.



# 4.0 LEARNING FROM OTHERS

## 4.1 WETLAND POLICY IN OTHER JURISDICTIONS

Understanding the policies and tools used in other jurisdictions can help us understand the latest issues, can highlight key lessons learned and can give us ideas to consider as Ontario works to enhance and strengthen its wetland policy framework. Below is an overview of what some other jurisdictions are doing for wetlands.

### Nova Scotia

In September 2011, the Government of Nova Scotia released the *Nova Scotia Wetland Conservation Policy*. The policy applies to all freshwater and certain tidal wetlands (salt marshes and coastal saline ponds) that are greater than 100 $m^2$ with some listed exceptions (e.g., wetlands on federal lands, within agricultural drainage ditches, constructed for wastewater or stormwater treatment, etc.).

Wetlands that are designated as Wetlands of Special Significance (WSS) are protected and can only be altered through an authorized Order of Executive Council if they are deemed as a necessary public function. Alterations in any other wetlands require a 2:1 ratio of compensation which includes restoration, enhancement or creation of wetlands. Partial credit for activities such as research or public awareness education can also be part of compensation but only in addition to projects that provide 1:1 ratio of restoration. The government also provides resources for professionals to map wetland boundaries and assess the function of wetlands.

### Alberta

The Government of Alberta released a new *Alberta Wetland Policy* in 2013 which applies to all natural wetlands, all restored natural wetlands and all wetlands constructed for the purpose of wetland replacement (regardless of size) with the exception of ephemeral wetlands. Approval is required for activities that impact water in wetlands. Alberta's policy uses a mitigation framework to avoid, minimize or replace negative impacts or losses of wetlands.

PHOTO: Urban Wetland, David Hintz

Determining the relative wetland value is the first step in wetland management in the Alberta Wetland Policy. This is an evaluation based on five key criteria including biodiversity, water quality improvement, flood reduction, human value and abundance to rate the wetland. Qualified Wetland Science Practitioners can assess the wetland using tools such as the Alberta Wetland Rapid Evaluation Tool developed by the government.

The policy also promotes existing programs and incentives for increasing public awareness and voluntary stewardship for wetland restoration and protection. Some of these initiatives include partnerships with the federal government as well as environmental organizations.

### Manitoba

The government of Manitoba released its *Peatlands Stewardship Strategy* in 2014. The strategy seeks to balance peatland use with the need to conserve peatlands. This follows a moratorium in 2013 on the issuance of peat quarry licenses for a two-year period. Part of the strategy includes the introduction of a new *Peatlands Stewardship Law* which will remove peat from the *Mines and Minerals Act*. The new legislation proposed to govern commercial peat harvesting, includes a peatland recovery requirement on proposals and allows for the protection of provincially significant peatlands. Peat harvesting in wildlife management areas and provincial parks will also be prohibited.

### United States

The *Clean Water Act*, created in 1977, is the primary piece of legislation that is used to conserve wetlands in the United States. More specifically, there are two regulations, section 401 and section 404 that are relevant to wetlands. Section 404 is the requirement of a permit for the discharge of any dredged or fill material in US waters, including wetlands except for agricultural activities. Under Section 401, state governments can review, approve, condition or deny any federal permits that might impact state water quality standards which includes wetlands. Every state regulates, to some degree, activities that affect wetlands. The majority of US states (72%) have adopted state legislation, policies and/or guidelines to guide mitigation for impacts to wetlands; while others rely solely on the federal 401 regulation. Since its inception the wetlands regulatory framework has sparked hundreds of lawsuits therefore, on May 27, 2015, the US government finalized a new Clean Water Rule. This rule clarifies protection under the Clean Water Act for streams and wetlands that form the foundation of the nation's water resources.

State Wetland Conservation Plans have been developed by 26 states to improve the effectiveness and efficiency of state wetland program activities. Some states have also articulated a state-wide restoration goal in state law, policy and/or wetland conservation plans including 'no net loss' goals or specific numeric acreage targets for protection or restoration.

### Minnesota

In addition to the *Minnesota Wetlands Conservation Plan*, the state has also developed a *Wetlands Restoration Strategy* which was released in 2009. This strategy is used to prioritize restoration based on desired outcomes (e.g., water quality improvement, habitat gain, etc.) and coordinate efforts to achieve a greater net gain in wetland functional benefits. Defining the desired outcomes and mapping restorable sites are identified as key actions in order to prioritize restoration efforts.

## 4.2 THE CONCEPT OF NO NET LOSS

There are many definitions of the concept of no net loss, sometimes also known as 'biodiversity offsetting'. For wetlands, the term no net loss usually refers to the goal of balancing unavoidable wetland losses from development with wetland restoration so that there is no overall loss of wetland function on the landscape. Net gain is a similar concept however this approach ensures that the replacement ratio for wetlands lost and gained are greater than 1:1. Mitigation sequences are a common mechanism used to achieve a goal of no net loss. Mitigation sequences are usually comprised of three or four hierarchical steps which could include:

1. **Avoid** Measures taken to prevent impacts from occurring in the first place, for instance by changing or adjusting the development project's location and/or the scope, nature and timing of its activities.
2. **Minimize** Measures taken to reduce the duration, intensity and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible.
3. **Mitigate** Measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimized.
4. **Compensate (offset)** Measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimized and/or rehabilitated or restored.

Several jurisdictions have adopted the goal of no net loss while some have adopted goals that go beyond. Examples include:

- Canada's 1991 Federal Policy on Wetland Conservation also identifies a goal of "no net loss of wetland functions on all federal lands and waters."
- Canada's *Fisheries Act* is an example of a policy that includes a mitigation sequence for no net loss of the productive capacity of fish habitats. This sequence includes avoidance, mitigation and offsets.
- Ontario's *Endangered Species Act, 2007* speaks to ensuring that an overall benefit will be achieved through conditions in a permit or regulation, meaning that the outcome of the overall benefit action is meant to improve the relative standing of a species after taking into account the residual adverse effects to the species or its habitat that are authorized.

The United States has had a no net loss policy as the cornerstone of its federal wetland conservation policy since 1989, mandating that wetland losses must be offset by wetland gains in terms of actual acreage, and to the extent possible, ecosystem function. There are several lessons learned from the development and implementation of this policy including the importance of considering overall wetland function in the policy, as well as the development and consistent application of monitoring and compliance standards.

## 4.3 CONSERVATION TARGETS

A target can be defined as a result toward which efforts are directed. Conservation targets can help frame planning actions and can provide clear direction to drive future action. Targets can be quantitative, referring to a commitment to achieve a specific amount of something, such as conserving hectares of the land-base, or they can be more qualitative in nature, committing to achieving a generalized future state. In either case, targets are usually time-bound.

Conservation targets can support policy by helping to focus effort and ensuring that a responsible agency is accountable for making progress and reporting on achievement. There are several examples of the use of targets to direct wetland conservation in Ontario and Canada. One of the more recent examples is from the 2020 Biodiversity Goals and Targets for Canada, which states: "By 2020, Canada's wetlands are conserved or enhanced to sustain their ecosystem services through retention, restoration and management activities."

# 5.0 TOWARDS DEVELOPING A STRATEGIC PLAN FOR ONTARIO WETLANDS

Ontario has a complex array of policies, agreements, partnerships and programs that influence wetland conservation. These programs and instruments have evolved over time, often to respond to specific needs–for example, renewable energy development, waterfowl conservation, Great Lakes water quality, etc. To be able to holistically address issues associated with a growing Ontario population (e.g., land conversion, climate change and invasive species) it is important that the government clearly identifies it's priorities for wetland conservation and determines an appropriate plan of action.

To achieve MNRF's mandate to review Ontario's broad wetland conservation framework and identify opportunities to strengthen policies and stop the net loss of wetlands, it is proposed that a Strategic Plan for Ontario Wetlands be developed. It is anticipated that the Strategic Plan will outline a vision, goals and objectives for wetlands in Ontario and set out a series of actions that the government will incrementally undertake over the next 15 years to improve wetland conservation across the province.

Over the next several months, the Ministry of Natural Resources and Forestry will be engaging the public, partners, municipalities, and other Ministries, in developing the Strategic Plan. The successful development and implementation of an Ontario Wetlands Strategic Plan will also require the support, involvement, knowledge, innovations and practices of Aboriginal peoples and communities. The Strategic Plan will be consistent with the constitutional protections provided to existing Aboriginal and treaty rights and will support increased involvement of Aboriginal peoples in wetland management in Ontario.

It is expected that a Strategic Plan will help Ontario to coordinate and implement a comprehensive wetland conservation framework that can inform further policy and program development, encourage enhanced cooperation at all levels of government and support strategic partnerships. The Plan will be informed by existing policy instruments guiding wetland conservation in Ontario, by existing programs and partnerships that support wetland conservation and may identify new opportunities to strengthen wetland conservation across the province.

PHOTO: **American Bullfrog, Rebecca Zeran**

It is proposed that the Strategic Plan focus on three priority areas:

## 1 Strengthen Policy

Wetland policy in Ontario includes over 20 different pieces of legislation, and various associated technical guides and manuals. Clearly understanding how each wetland policy is applied, how various policies interact and where policy gaps exist is important to developing a response that could strengthen policy as opportunities arise.

PHOTO: Rebecca Zeran

Actions developed under this priority area could involve, but are not limited to:

- **Exploring and/or prioritizing opportunities to strengthen wetland policy**
  Identifying where gaps and efficiencies in wetland policy exist, what needs should be addressed and which policy tool should be explored are necessary steps to strengthening policy.
- **Improving guidance to aid in making land use decisions**
  Knowing how to address competing land use interests and conservation priorities while also considering the broader ecosystem as a whole is important to support good decision-making.
- **Reviewing the Ontario Wetland Evaluation System**
  Taking advantage of new tools and seeking ways to improve efficiency in determining wetland significance is important to enable informed land use decisions.

## 2 Encourage Partnership

The Ontario government recognizes that wetland conservation is a shared responsibility, involving private landowners, governments, industry, conservation organizations, Aboriginal peoples and communities and many others. It is important to continue to participate in partnerships that work to conserve wetlands and it is equally important to explore establishing new partnerships.

PHOTO: Rebecca Zeran

Actions developed under this priority area could involve, but are not limited to:

- **Continuing to participate in wetland partnerships**
  The Ontario government is committed to continuing to participate in partnerships that support wetland conservation in Ontario (such as the Eastern Ontario Joint Venture).
- **Supporting the identification of wetland conservation priorities**
  Working together to identify priority natural heritage systems including wetlands will help to focus resources and conservation efforts.
- **Exploring new opportunities for collaboration**
  Enhancing participation by all Ontarians in wetland conservation is an important step in helping stop a net loss of wetlands across the province.

3

# Improve Knowledge

Knowledge and information is critical to inform the development of policies and programs. It is also needed in order to measure policy and program effectiveness and adapt management strategies accordingly. Improving understanding and awareness of wetland ecosystem services will also be important.

PHOTO: Sam Brinker

Actions developed under this priority area could involve, but are not limited to:

- **Research into climate change mitigation and resilience**
  Using best available science, as well as local and traditional Aboriginal knowledge, we will need to take steps to further our understanding about how threats like climate change will impact wetlands and how these threats can be mitigated.
- **Build understanding and promote awareness of wetland ecosystem services**
  It will also be important to better understand and communicate the importance of wetlands in providing ecosystem services. In particular, the effectiveness and feasibility of restoring natural and creating man-made wetlands as green infrastructure to support the needs of municipalities and other local communities should be investigated.
- **Use of remote sensing to map wetlands**
  Remote sensing techniques have successfully been used to identify and map wetland habitat and assess wetland conversion in some parts of Ontario (e.g., southern Ontario). But work still needs to be done to improve wetland mapping and inventory practices to better capture smaller wetlands and to better distinguish forested wetlands from upland forests.

PHOTO: Learning about Wetlands, David Hintz

# Exploring a No Net Loss Policy for Ontario

## The Mitigation/Compensation Hierarchy

### 1. Avoid

Prevent impacts from occuring by changing project location, scope, nature of timing of activities

### 2. Minimize

Reduce the duration, intensity and/or extent of impacts that cannot be avoided

### 3. Mitigate

Rehabilitate or restore features or functions that have been exposed to impacts that could not be avoided or minimized

### 4. Compensate

Create or restore new habitat to compensate for loss that could not avoided, minimized or mitigated

As Ontario's population grows and demands for resources increase, natural areas like wetlands will continue to be threatened where human infrastructure and economic growth interests intersect with conservation interests. One option to prevent the net loss of wetlands in Ontario is the establishment of a mitigation/compensation hierarchy.

A mitigation/compensation hierarchy involves the application of a hierarchical progression of alternatives, which typically include: avoidance of impacts, minimization of unavoidable impacts and compensation for impacts that cannot be minimized. Applied in a wetland conservation context, this would mean that a development or alteration proposal would first need to explore all options to avoid impacts on a wetland. If impacts cannot be avoided, minimization (for example, by developing and implementing a detailed mitigation plan) would be expected. If, after attempting to avoid and minimize impacts, the wetland is negatively impacted, proponents would be responsible for replacing the wetland that has been lost in a nearby suitable location.

Adopting a no net loss approach in Ontario could help stop wetland loss and could also provide more tools to allow for better decisions when considering land use proposals where economic and ecological needs intersect. There are several aspects that will need to be assessed to determine how such an approach would work in Ontario. For example:

- Ontario is a large diverse province and no net loss policy in southern Ontario where wetland loss has been severe and the human population is large may not be the same no net loss policy that might be applied to northern Ontario where wetlands are more numerous and people more scarce.
- Consideration of which types of land or resource use may be subject to a no net loss policy and what cost such a policy may have to these sectors.
- The importance of engaging with partners and industry to consider delivery approaches for a mitigation hierarchy that requires wetland restoration action.
- Research to identify which wetland features and functions could be replaced and which cannot.
- Identification of an appropriate policy mechanism to enable implementation of a no net loss policy. This could involve creating new legislation, amending existing sector-based legislation and policy or creating an over-arching policy that must be applied when making any land or resource decision.

# 6.0 HOW TO RESPOND

This discussion paper is intended to seek input on challenges and opportunities, ideas and actions related to wetland conservation in Ontario. This input will be used to inform development of a Strategic Plan for Ontario Wetlands that will guide the government's actions related to wetland conservation over the next 15 years.

Your feedback is important. Please provide your comments and suggestions via the Environmental Bill of Rights Environmental Registry posting by visiting *www.ebr.gov.on.ca* and entering posting number 012-4464. Comments will be received through to October 30, 2015.

Comments can also be submitted to *ConservingWetlands@ontario.ca* or by completing a survey at *www.surveymonkey.com/s/Conserving_Wetlands*.

All comments are welcome and we ask that you consider the following questions as you respond:

1. Do you think there are current challenges related to wetland conservation in Ontario? If so, what are the challenges?
2. Three priority areas of focus for wetland conservation in Ontario are proposed: strengthen policy, encourage partnership and improve knowledge. What do you think of these three focus areas? Do you have other ideas for additional focus areas?
3. Considering the three priority areas of focus, what are some actions and activities that government, organizations, and individuals could take to improve wetland conservation in Ontario? What partnerships should the Ontario government explore to stop wetland loss?
4. What do you think about Ontario's current wetland policy framework? Can it be improved? Can it be made more effective? If so, how?
5. Should targets be considered to help achieve wetland conservation in Ontario? If so, what form should these targets take?
6. The Ontario government is considering approaches to achieve no net loss of wetlands.
   a. What do you think of the establishment of a mitigation/compensation hierarchy to achieve no net loss? Are there other approaches?
   b. What tools (e.g., policy) could be used to implement approaches to achieve no net loss?
   c. What might the role of government, partners, private landowners and others be if no net loss approaches are implemented?
   d. Should no net loss approaches be applied uniformly across Ontario? Or, only where the risk of wetland loss is greatest?
7. Do you have any additional suggestions for improving wetland conservation?

# 7.0 REFERENCES AND USEFUL LINKS

## REFERENCES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Great Lakes Wetlands Conservation Action Plan. 2012. Great Lakes Wetlands Conservation Action Plan Highlights Report 2005–2010 accessed from *http://glwcap.ca/files/2012/05/GLWCAP_Highlights_2005-2010_EN.pdf*. Peterborough, Ontario. 36 pp.

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Troy, A., and K. Bagstad. 2009. Estimating ecosystem services in southern Ontario. Report for Ontario Ministry of Natural Resources. Peterborough, ON.


PHOTO: Restored Wetland at Atocas Bay, Rebecca Zeran

## USEFUL LINKS

### Wetland Evaluation

Southern OWES Manual: *http://files.ontario.ca/environment-and-energy/parks-and-protected-areas/ontario-wetland-evaluation-system-southen-manual-2014.pdf*

Northern OWES Manual: *http://files.ontario.ca/environment-and-energy/parks-and-protected-areas/ontario-wetland-evaluation-system-northern-manual-2014.pdf*

Land Information Ontario (LIO): *http://www.ontario.ca/environment-and-energy/land-information-ontario*

Make a Natural Heritage Area Map:
*http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html*

### The Great Lakes

Great Lakes Wetland Conservation Action Plan: *http://glwcap.ca/*

Ontario's Great Lakes Strategy: *https://dr6j45jk9xcmk.cloudfront.net/documents/896/5-1-5-great-lakes-strategy-en.pdf*

Canada-US Great Lakes Water Quality Agreement, 2013:
*http://www.ontario.ca/environment-and-energy/canada-ontario-great-lakes-agreement*

Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health:
*https://www.ontario.ca/environment-and-energy/canada-ontario-great-lakes-agreement*

### Wetland Policy

Provincial Policy Statement 2014: *http://www.mah.gov.on.ca/Page10679.aspx*

Natural Heritage Reference Manual 2010: *http://www.ontario.ca/document/natural-heritage-reference-manual*

E-laws: *http://www.ontario.ca/laws*

Forest Management Guides: *http://www.ontario.ca/environment-and-energy/forest-management-guides*

Natural Heritage Assessment Guides for Renewable Energy Projects:
*http://www.ontario.ca/document/natural-heritage-assessment-renewable-energy-projects*

Niagara Escarpment Plan: *http://escarpment.org/_files/file.php?fileid=fileYgIpwqjbAT&filename=file_NEP_Office_Consolidation_November_13_2014_FINAL_s.pdf*

Oak Ridges Moraine Conservation Plan: *http://www.mah.gov.on.ca/Page1707.aspx*

Greenbelt Plan: *http://www.mah.gov.on.ca/Page189.aspx*

Lake Simcoe Protection Plan: *http://www.ontario.ca/environment-and-energy/lake-simcoe-protection-plan*

Biodiversity It's in Our Nature: Ontario Government Plan to Conserve Biodiversity:
*http://viewer.zmags.com/publication/c8f28fef#/c8f28fef/1*

**Stewardship and Partnership Programs**

Conservation Land Tax Incentive Program:
*http://www.ontario.ca/environment-and-energy/conservation-land-tax-incentive-program*

Land Stewardship and Habitat Restoration Program:
*http://www.ontario.ca/environment-and-energy/land-stewardship-and-habitat-restoration-program*

Great Lakes Guardian Community Fund:
*http://www.ontario.ca/environment-and-energy/great-lakes-guardian-community-fund*

The Eastern Habitat Joint Venture (EHJV): *http://www.ehjv.ca/*

Ramsar: *http://www.ramsar.org/*