American Water-willow Stewardship Guide

A Landowner's Guide to Living with a Plant Species at Risk

Rob Tervo (1971 - 2008)

This stewardship guide is dedicated to the memory of Rob Tervo, who passed away suddenly leaving us with countless observations and stunning photographs of species at risk in the Niagara/Hamilton and Haldimand regions. The American Water-willow habitat stewardship project would not have been initiated without Rob's charismatic persuasion of our funding partners and yours truly.

Anne R. Yagi
Management Biologist
OMNR Niagara Area

A Growing Concern

More than 190 of Ontario's species are in danger of becoming extirpated in Ontario, and the American Water-willow is one of them.

Fortunately, there is also a growing concern amongst people to get involved and help species at risk such as the American Water-willow. This action is called stewardship. Stewardship actions will make a positive difference toward the recovery of species such as the American Water-willow.


R. Tervo

This booklet will tell the story of the American Water-willow and the importance of landowner stewardship to its survival in Canada.

Table of Contents

This stewardship guide would not have been possible without our partners. They are: Environment Canada-Habitat Stewardship Program, Ontario Power Generation, Ontario Ministry of Natural Resources, American Water-willow Recovery Team, Land Care Niagara, Niagara Peninsula Conservation Authority, and Niagara Falls Nature Club. Special thanks to Mike Oldham, Wayne Weller and Kim Frohlich for editing and review comments.

All photos including the cover were taken by Rob Tervo unless otherwise noted.

Creative design, layout and coordination by K. Wright and K. Yagi

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American Water-willow Fundamentals

Introduction

The American Water-willow (*Justicia americana*) is a species at risk in Canada. It is listed as a threatened aquatic plant species both provincially and federally. The American Water-willow is a perennial species, living longer than two growing seasons and averages 20 to 100 cm in height.

This native plant can be found along the immediate shoreline of river systems and lakes, often in large colonies. In fact, at times this plant has been found in clusters exceeding 100,000 stems. The American Water-willow can also grow as a floating mat in the water as well as on the bank of a waterway.

Objectives

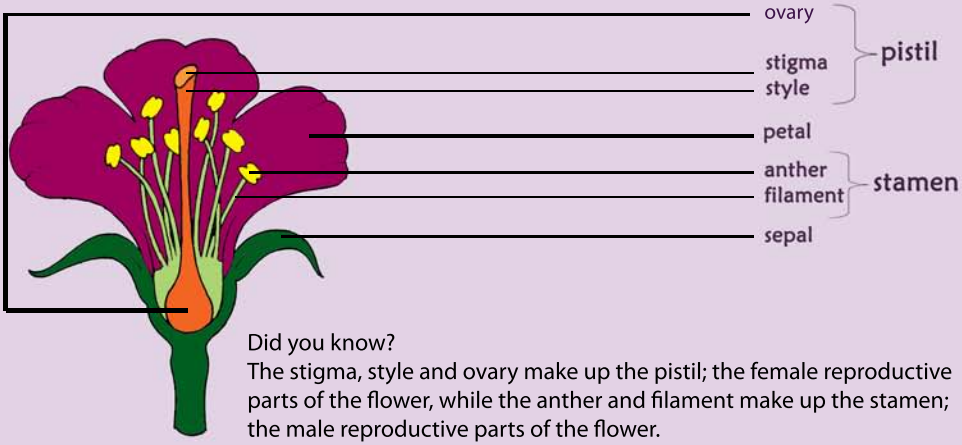
This stewardship guide was designed to provide information and promote awareness to landowners about the American Water-willow and how to live together with this species at risk.

This booklet contains information on habitat, identification, threats and stewardship actions that will help to protect this species for future generations to enjoy

American Water-willow

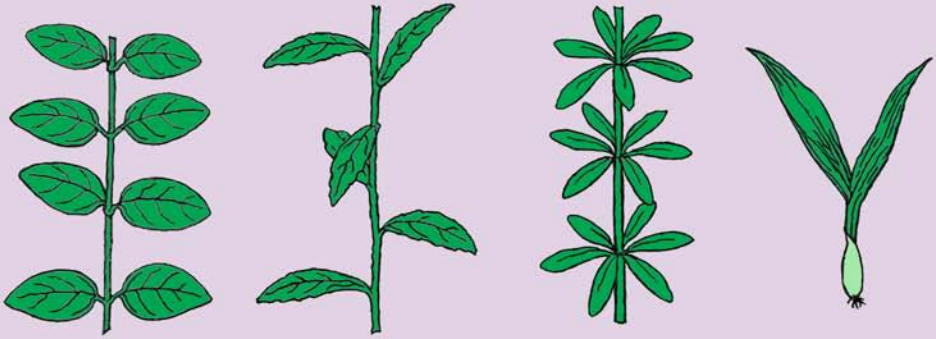
Helpful Terminology

Parts of a Flower



Did you know?
The stigma, style and ovary make up the pistil; the female reproductive parts of the flower, while the anther and filament make up the stamen; the male reproductive parts of the flower.

Leaf Arrangements



Opposite | Alternate | Whorled | Basal

A Similar Species

The American Water-willow is often confused with the more common Swamp Loosestrife (*Decodon verticillatus*), a native plant that also shares the name Water-willow. The two overlap in range and habitat, but differ noticeably in their physical appearance. Neither plant is a true willow. The Swamp Loosestrife belongs to the Loosestrife family, while the American Water-willow belongs to the Acanthus family. The appearance of the flowers are the easiest way to tell the two apart, but they are not in bloom at the same time.

American Water-willow (mid July)

American Water-willow (late summer)

American Water-willow flower is small (about 1.2 cm long), tube shaped and white or light purple in colour. The flower is found on a thin stalk, and blooms in mid-July.

Swamp Loosestrife has a very small dark pink, bell-shaped flower. It blooms in late summer (July - Sept).

Swamp Loosestrife (late summer)

Can You Spot the Difference?

American Water-willow

Plant height: 20 - 100 cm tall.

Leaves: 7-20 cm long, opposite pairs, smooth edges, narrow and elongated in shape.

Stem: single or multiple stalks, not woody, grows vertically, forms colonies.

Flower: white and pink-purple - older flowers turn dark pink, 2 petals; upper petal 2-lobed, and lower petal 3-lobed, 2 stamen.

American Water-willow

Swamp Loosestrife

Swamp Loosestrife

Plant height: 90 - 270 cm tall.

Leaves: up to 15 cm long, opposite pairs or whorled in groups of 3 - 4, smooth edges, narrow and elongated in shape.

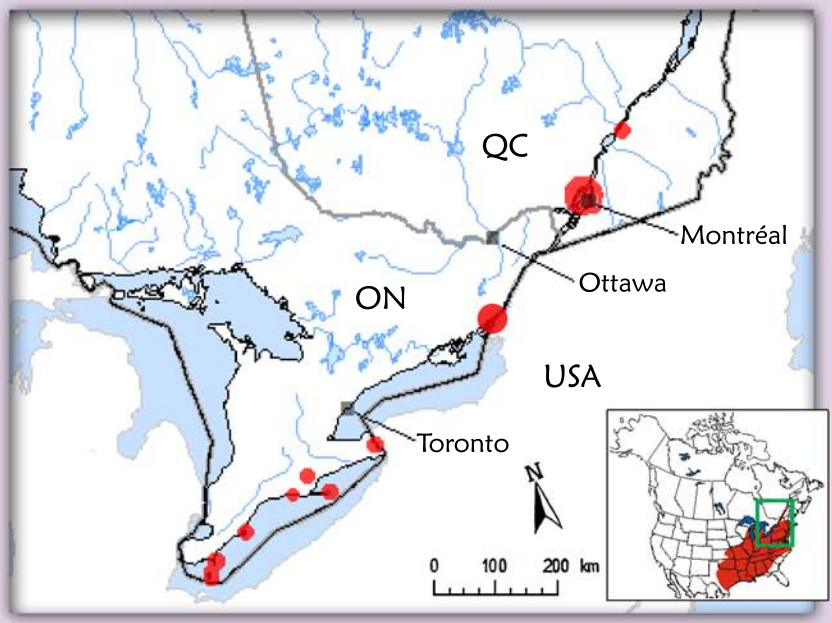
Stem: single stalk, woody, thick and ridged; 4-6 sided.

Flower: pink - red colour, 5 petals, 10 stamen; 5 long, 5 short and arranged in an alternating pattern.

The presence of a hard woody stem suggests that you have likely come across Swamp Loosestrife and not American Water-willow.

Where Is It Found?

The American Water-willow is found in east-central North America, south to Georgia and west to Texas. In Canada, it is at the northern limit of its range and is only found in southern Ontario and Québec.



Approximate distribution of American Water-willow in Canada (Canadian Wildlife Service, 2004)

Ontario has confirmed 7 sites along the north shores of Lake Erie, from Point Pelee to Niagara, within the last 25 years.

Québec populations exist at 3 sites along the St. Lawrence River and Lake Saint Pierre area.

Historically, there were 24 Canadian sites where the American Water-willow was found. The remaining 10 sites indicate a sharp decline in species range in Canada.

It is possible that other colonies still exist within southern Ontario and Québec. When you are visiting these areas... you might discover one of Canada's threatened plant species!

Where Does it Grow?

The American Water-willow is a 'pioneer species'. This means that, like the early settlers, it is the first to move into an area. This species requires open wetland areas with plenty of sunlight to grow and reproduce.

Ideal Water-willow habitat includes shallow lakes, rivers, and lowland marsh communities with a soft sand, gravel, or organic bottom.

A strong root system allows this plant to grow where exposure to wave or ice erosion occurs. However, calm water is more suitable for the development of colonies.

The strong root system helps to anchor the American Water-willow in place and stabilize the immediate shore banks.

The American Water-willow tends to flourish in open areas where there is abundant sunlight.

The American Water-willow can be found in water up to 1.2 m deep or along the bank, and will survive as long as its roots remain submerged in the water. This plant is known to grow on floating mats, where other competitive species may struggle to survive.

Why is it Important?

In addition to the broad scale benefits plants provide through photosynthesis, aquatic plants also absorb pollutants from watershed run off and use it to grow.

They also help add oxygen to the water along the shoreline for other aquatic life. Their roots provide habitat for other aquatic plants, insects, amphibians and fish.

If you look closely, you can see a bee; one of several species attracted by the colourful flowers of the American Water-willow.

Viceroy Butterfly (*Limenitis archippus*)

Since the Water-willow is one of the first plant species to occupy an area, it helps stabilize the shoreline, reducing bank erosion.

The showy white and purple flowers attract an assortment of bees and butterfly species. This is important for pollination.

Why is it Threatened?

The American Water-willow is currently listed as a threatened species in Canada. This is because of its limited distribution and small number of populations or colonies located in fragmented patches in southern and eastern Ontario, and Québec.

The latest survey indicated a decline in the distribution and abundance of this species in Canada. Therefore, two panels of scientific experts (COSEWIC and COSSARO) determined the species to be at risk.

All species at risk are given a status and grouped into one of five categories:

Special Concern: Particularly vulnerable to human or natural events and at risk of becoming threatened or endangered.

Threatened: Likely to become endangered if direct threats are not immediately addressed.

Endangered: At very high risk of becoming extirpated or extinct.

Extirpated: No longer present in the wild within Canada, but can be found elsewhere in the world.

Extinct: No longer exists anywhere on the planet.

Interesting Fact: The American Water-willow is one of over 500 species that are recognized as being at risk in Canada.

How is it Protected?

American Water-willow populations are scattered throughout southern Ontario and Québec. At times, sites can be found up to 1000 km apart!

This broad distribution, along with its high vulnerability to human activities, has allowed the species and its habitat to receive full protection under a wide range of provincial and federal legislations.

American Water-willow growing along a wetland shoreline in Niagara

Canada:

The Species at Risk Act (SARA) and the [Canadian] National Parks Act.

Ontario:

The Endangered Species Act (ESA, 2007), Ontario's Planning Act, the Provincial Park and Conservation Reserves Act and the Conservation Authorities Act.

Québec:

Loi sur les Espèces Menacées ou Vulnérables (LRQ)
"An Act concerning threatened or vulnerable species of Québec"

Challenges to Recovery

For most species at risk, human activities are the greatest threat to their long term survival. The warm climate and rich organic soils are required conditions for the American Water-willow to grow and are also ideal areas to be used for housing and agricultural development.

American Water-willow growing along a wetland shoreline in Niagara.

A shoreline breakwall now in place which was once a wetland shoreline in Niagara.

Wetlands and shorelines are some of the most productive habitat on earth. They are the natural link between land and water.

Unlike some animals that are able to easily move to new locations when their home is destroyed, plants tend to be especially vulnerable to human development. In other words, plants are unable to move out of the way of a bulldozer. Unfortunately this is what happened to historic Water-willow sites along the St. Lawrence River in Montreal.

Interesting Fact: In parts of southwestern Ontario, over 90% of the area's original wetlands are gone. This rate of loss is among the highest recorded anywhere on Earth.

The Root of Our Concerns

Native shoreline and wetland aquatic plants such as the American Water-willow have evolved over millions of years, in the presence of natural ecological dynamics such as flooding, erosion and drought. During periods of low water levels, Water-willow colonies grow in size. When water levels are high, colonies decrease in size.

For example, a storm event may erode away an entire colony, and leave in its place an open area that is free of competitors. This open area would be an ideal location for the nearest remaining colony to expand into during the next low water level period. This natural dynamic is not a threat to the American Water-willow.

Our concerns arise when natural processes have been altered and shorelines and wetlands have been lost to the point that the natural expansion and retreat of colonies can no longer occur within the space and time needed for the American Water-willow to re-colonize.

Controlled Water Levels

In some areas of the Great Lakes, water levels are controlled to meet many human needs such as shipping, boating, recreation, aesthetics, water consumption and electricity production. This control moderates natural water level fluctuations which would otherwise happen during storm events. Water levels are usually maintained in such a way that naturally low water levels no longer occur. These controlled conditions are ideal for exotic aquatic plants such as the exotic Narrow-leaved cattail (*Typha angustifolia*), Common reed (*Phragmites australis*) and Purple loosestrife (*Lythrum salicarla*).

Purple loosestrife, *Lythrum salicaria*

The Root of Our Concerns

Habitat Fragmentation

Alteration of the shoreline by adding hard structures disrupts the spatial arrangement of colonies and their connectivity. This means that when a colony is lost through either natural storms or human development, the distance between the remaining colonies increases, and re-colonization processes are impacted and lost over time.

Example of a hardened shoreline

Habitat Loss

Dredging, filling and draining of wetlands and development of shoreline are examples of human activities causing a loss of habitat for the American water-willow.

NOTE: A small patch of American Water-willow in front of wall

Example of an altered wetland shoreline.

Watershed Linkages

A watershed is an area of land where all precipitation (rain and snow) eventually flows into a common waterbody (i.e. creek, river, wetland, lake or pond). Water flows from the highest point of land to the lowest and includes water above (overland surface water) and below the ground (groundwater). When water flows across the land it picks up loose materials including soil, debris and pollutants and carries them to a receiving waterbody. Human activities on the land anywhere in the watershed can affect the waterbody and the species living there.

Everyone and everything that lives in the watershed are linked together through the mechanisms of rainfall, overland flow, surface flow, groundwater infiltration and seepage.

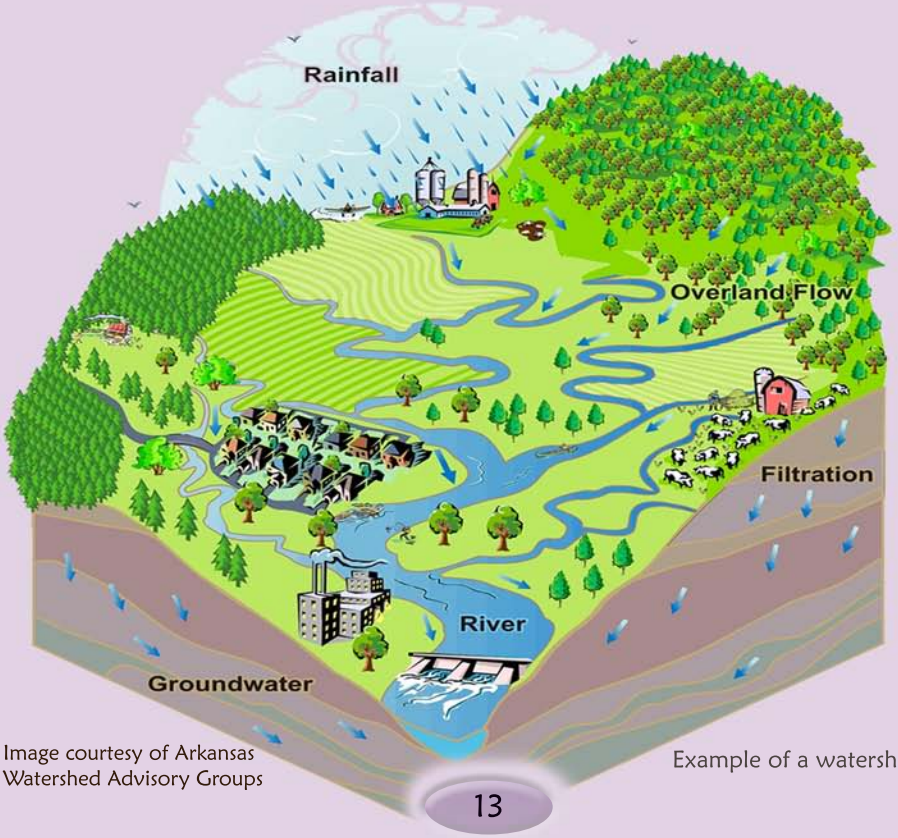


Image courtesy of Arkansas Watershed Advisory Groups

Example of a watershed

The Root of Our Concerns

Overbrowsing and Trampling of Plants

It is hard to believe that an animal, as harmless as a White-tailed deer can be of any real threat to this species. However, deer populations have increased in some protected areas to the point where deer are now harming other native species.

Browse damage was observed on American Water-willow colonies within some provincial and federal parks. The full impact of over browsing is unknown, but an observed reduction in seed production suggests reproductive success of the American Water-willow has been reduced.

White-tailed deer fawn

Recreational trails and pathways along shorelines can cause excessive trampling of sensitive plants like the American Water-willow. Many of the remaining colonies are located within provincial or federal parks which experience heavy traffic by outdoor enthusiasts.

Canoeists enjoying wetlands can unknowingly trample shoreline vegetation and habitat for the American Water-willow.

While the public might not be aware of their impact, trampling does affect Water-willow survival. This is especially true during the fall season because the seedlings have begun to germinate and are very delicate. Warning signs are now being installed within some parks to improve public awareness about their impact.

Is Recovery Possible?

What is the long term outlook for the recovery of this species?

The outlook for American Water-willow recovery in Canada is promising!

- The collective effort of government and non-government agencies, concerned landowners, and the general public, are helping to increase awareness and protect important habitat.

- Suitable habitat along the Lake Erie shoreline may provide opportunity for expansion of the current Ontario distribution.

- The American Water-willow is a highly resilient plant which has a legacy that includes rebounding even after intense, damaging storm events.

Actions already underway

To help ensure the full recovery of the American Water-willow in Canada, a recovery team was created to help prepare a Recovery Strategy for this species to guide recovery actions.

The Recovery goal is to maintain the current distribution and restore historic colonies, where feasible. This will be done by improving our knowledge and understanding of habitat factors, surveying known and potential sites, public education, landowner contact and land

Interesting Fact: Landowner involvement will play a leading role in ensuring that suitable wetland habitat continues to be available for the survival of this species in the future.

Landowner Involvement: Doing Your Part

Stewardship of the land begins with the realization that what we do today can affect the ability of our future generations to enjoy what we have today.

"When we begin to see land as a community to which we belong, we may begin to see it with love and respect"
(Aldo Leopold, 1948).

What does it mean to be a good landowner steward?

Environmental stewardship can be as simple, or as complicated, as one wishes. A good environmental steward doesn't necessarily need to go out of their way to put good stewardship practices to use. In fact, by simply reading this booklet you have already taken the first steps towards contributing towards American Water-willow recovery efforts.

Importance of landowner stewardship to recovery success

Many of Canada's species at risk, like the American Water-willow, occur on private lands. It is ultimately up to the landowner to decide whether or not they would like to conserve and protect habitat on their property.

Full recovery of the American Water-willow within Canada would not be possible without the cooperation and support from dedicated landowners.

What You Can Do!

Familiarize yourself with identifying native plant and animal species

You'll be surprised by the overall diversity that can be found living in your own backyard!

Find out where sensitive areas are and avoid them

Use the contact information at the back of this booklet to contact knowledgeable people about species at risk in your area.

Plant only native species in your gardens

Some exotic species expand from your garden and out compete native plants like the American Water-willow.

Stop cutting lawns to the water's edge

Instead, leave a buffer region, enabling the shoreline community to regenerate naturally. Native plants are better suited to the shoreline dynamic environment than your lawn. This will save you time and money and protect your shoreline from excessive erosion.

Stick to designated trails and obey all posted signs

When participating in outdoor activities, reduce your impacts by hiking along designated trails or boardwalks and stay away from the water's edge as much as possible.

Reduce boat wake

Decrease boating speeds while in close proximity of the shoreline, or take a canoe instead.

Remove break-walls

Consider removing break-wall structures along the waterfront of your property where possible. Use the contact information at the back of this booklet for more information about 'Protecting your Shoreline Naturally'.

What All of Us Can Do!

When Gardening Use Compost Instead of Peat

Peat comes from wetlands. By using composted manure or compost from municipal sources you reduce the threat to wetlands.

Stop Using Commercial Pesticides and Fertilizers

Use alternative ways to reduce pests in your garden and keep your lawn green with natural mulch recycling techniques.

Reduce, Reuse, Recycle and Recognize Hazardous Waste

Learn how to reduce household waste and identify what items are hazardous and dispose into proper facilities.

Reduce consumption of Bottled Water

Reduce Reuse Recycle

Household Hazardous Waste

Compost

Get Involved with Local Nature or Conservation Clubs

Local clubs put together information meetings and field trips to learn about the wildlife in their area. This is the best way to learn how to identify wildlife first hand, from some very experienced observers. Send your observations into the Ministry of Natural Resources Natural Heritage Information Centre. Details are in the back of this booklet.

Spread the Word

The best way to bring about conservation and protection of species at risk in your area is through word of mouth. Start by talking to your family, neighbours and friends. Before you know it, you'll have the support of the community behind you.

Local Nature Club Volunteers

Many organizations offer wildlife programs and need volunteers for assistance. Most agencies rely on volunteers to assist with field surveys, tree planting, building bird houses and helping with habitat enhancement projects. This group of volunteers assisted the Ministry of Natural Resources staff with American Water-willow surveys.

Local volunteers from Nature Club

Other Watershed Activities

Tree planting

Habitat Stewardship Opportunities

No matter what level of involvement you want to have, there are resources available to you. For example, recovery teams and local agencies have educational materials available for workshops or school visits. Fact sheets are also available for many projects such as fencing, boardwalks, pest-free gardening, composting and recycling.

For the more adventurous types, expertise, funding and help are available for tree planting, wetland creation, invasive species removal and shoreline naturalization projects.

Example of Natural Shoreline with minimal impacts to wetland

Stewardship Support

MNR: Community Fish and Wildlife Involvement Program (CFWIP)
MNR: Species at Risk Stewardship Fund
MNR: Species at Risk Tax Incentive Program
MNR: Conservation Land Tax Incentive Program (wetlands)
Environment Canada: Habitat Stewardship Program

See the back of this booklet for more information.

Glossary

Anther: pollen-producing part of the stamen.

Colonization: occurs when and one or more species populates an area.

Erosion: the weathering of soils via wind, water and ice.

Filament: structure holding up the anther.

Invasive species: a non-native plant or animal that takes over the natural habitat of the native species.

Ovary: the lower part of the pistil, typically develops into a fruit.

Ovules: found inside the ovary, and develop into seeds.

Perennial: a plant that blooms every year.

Pistil: the female reproductive organ; includes the stigma, style and ovary.

Pollination: transfer of pollen in plants.

Pollinators: organisms that carry pollen from the anther to the pistil.

Stamen: the male reproductive organ; includes the anther and filament.

Stigma: receives pollen, found at the top of the pistil.

Style: a part of the pistil connecting the stigma to the ovary.

Watershed: all surface water and ground water in a geographic area that is drained to a common point (i.e., wetland, pond, lake or ocean).

Water table: the body of underground water where the soil or rocks are permanently saturated with water.

Wetland: an area of land where the soil is saturated with moisture either permanently or seasonally.

Contacts

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Ontario Ministry of Natural Resources
P.O. Box 5000
4890 Victoria Avenue North
Vineland, ON L0R 2E0
Phone: 905-562-4147

Find your local Conservation Authority at
www.conservation-ontario.on.ca

Find your local stewardship council at
www.ontariostewardship.org

Useful Websites

www.cosewic.gc.ca
www.mnr.gov.on.ca
www.speciesatrisk.gc.ca
www.ontarioparks.com
www.ec.gc.ca
www.e-laws.gov.on..ca
www.landcareniagara.com
www.ontarionature.org
www.sararegistry.gc.ca
www.pc.gc.ca

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FIELD NOTES

Ontario Québec Nature Conservancy Canada

Niagara Peninsula Conservation Authority

LCN Land Care Niagara

Niagara Parks.com
An agency of the Government of Ontario since 1885

Ontario Power Generation