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Heritage Matters

A publication of the Ontario Heritage Trust Volume 8 Issue 3 October 2010

Celebrating the International Year of Biodiversity

In this issue:

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Reclaiming Fleetwood Creek
Enhancing urban biodiversity

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A message from the Chairman



An important part of the Trust's mandate is the protection of our natural heritage. To protect the province's immense, yet fragile, natural heritage, we must understand the links between a healthy environment and healthy communities. The word biodiversity brings together, in one framework, biology and diversity. It is generally used to describe the broad range of living things in a particular area.

We believe that protecting and restoring biodiversity is at the heart of the Trust's leadership role in land stewardship. In this issue of *Heritage Matters*, you'll learn about biodiversity in Ontario and the programs of the Trust that help to preserve and foster diversity in the rich biological life of the province, including the Natural Spaces Land Acquisition Stewardship Program (NSLASP). It also outlines the legislation that helps

protect Ontario's biodiversity and the threats to it, including loss of habitat and invasive species.

Through NSLASP, the Trust and its partners have secured significant natural lands. Another Trust program, Trails Open Ontario, celebrates our natural heritage by promoting hikes through some of our most picturesque countryside and natural environments.

The Trust works with the Ontario Ministry of Natural Resources, municipalities, conservation authorities, land trusts and property owners to protect hundreds of biodiverse properties across Ontario – including 116 properties along the Bruce Trail. These are important partnerships, but a still larger effort is needed. Sustaining biodiversity will involve all of us. As a grandfather, I would like to think that our efforts will make a difference for future generations.

Tom Symons

Thomas H.B. Symons, CC, O.Ont, FRSC, LLD

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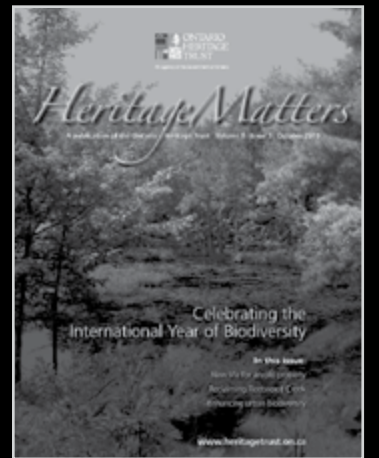
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Cover: The John Edward (Ted) Greenwood Sanctuary (donated to the Trust in 2005), part of the Frontenac Arch Biosphere Reserve and habitat for several species at risk.





La Vase Portages (Photo courtesy of Chris Mayne)

Trailblazing

By Mike Sawchuck

With the arrival of cool autumn weather, another season of Trails Open Ontario has come to a close. Trails Open – a provincewide natural heritage program aimed at promoting trail use, supporting education, conservation and stewardship and encouraging physical activity and healthy lifestyles – was launched by the Ontario Heritage Trust in 2007 and has continued to grow over its first four seasons. The 2010 edition of the program featured over 80 events and more than 225 separate hiking, cycling and paddling tours. Many organizers paired guided tours with Doors Open Ontario events, offering locals and visitors a chance to simultaneously explore important cultural and natural heritage landscapes.

The Trust also expanded its partnership with Conservation Ontario in 2010, resulting in Trails Open events in some of the province’s most remarkable conservation areas (CAs). Hershey Lake CA in Timmins, Warsaw Caves CA near Peterborough, Inglis Falls CA near Owen Sound and the Greenock Swamp Wetland Complex near Walkerton are just a few of the unique and fascinating sites brought to the program by Conservation Ontario.

Other notable participants in Trails Open Ontario 2010 included:

- the Radial Line Trail in Guelph, where more than 100 hikers viewed the fossilized coral reefs of the Niagara Escarpment’s Guelph Formation
- the St. Clair River Trail in Port Lambton, where participants hiked a combined total of 300 kilometres and local youth engaged in detective work as part of a scavenger hunt
- the Tiny Trail in the Township of Tiny where 80 participants viewed historic bridges and commented on the community’s trails master plan
- La Vase Portages in North Bay, where a record-high 38 paddlers battled through a “canoe jam” in the low waters on route to a pickerel lunch

Although this season’s Trails Open events have come to a close, most of Ontario’s 88,000 kilometres of trails are open year round. So what are you waiting for? Get out there and enjoy them!

Mike Sawchuck is a Community Programs Officer with the Ontario Heritage Trust.

Saving biodiversity, one property at a time

By Jeremy Collins and Barbara Heidenreich

What do wetlands and forest nesting sites for northern goshawks in eastern Ontario have in common with south-central Ontario cold-water streams harbouring brook trout and reidside dace? They are among the many sites rich in biodiversity that have been conserved under the Natural Spaces Land Acquisition and Stewardship Program (NSLASP), administered by the Ontario Heritage Trust.

Since the program’s launch in 2006, approximately 2,624 acres (1,062 hectares) have been acquired, and the securement of hundreds more acres is pending. To date, the Trust and its program partners have secured the protection of 31 natural heritage properties. Many of the protected properties form important components of provincially significant Areas of Natural and Scientific Interest (ANSI) or Environmentally Significant Areas (ESA), including: Carp Hills, the Uxbridge Glen Major Forest, Forks of the Credit, Spottiswood Lakes, the Newington Bog and the Beaverton River Wetlands. Some are located on the Niagara Escarpment, including portions of the Bruce Trail. Others, such as the Enniskillen Valleylands, are located on the Oak Ridges Moraine. These areas in Ontario are a refuge for rare flora and

fauna or species at risk. Some NSLASP properties connect remaining important natural areas and act as wildlife corridors and foraging areas, which enhances the long-term survival of the species.

The Trust has partnered with many of Ontario’s conservation authorities, including: Grand River Conservation Authority, Toronto Region Conservation Authority, Lake Simcoe Region Conservation Authority, Central Lake Ontario Conservation Authority, South Nation Conservation, Raisin Region Conservation, and Credit Valley Conservation. As well, land trusts such as the Couchiching Conservancy and the Bruce Trail Conservancy have benefited from the Ontario Heritage Trust NSLASP program. Municipal partners to date include the City of Ottawa. The Trust hopes to expand on these partnerships to protect even more natural lands for an even brighter future in Ontario.

Jeremy Collins is the Coordinator for Acquisitions/Dispositions with the Ontario Heritage Trust. Barbara Heidenreich is a Natural Heritage Coordinator with the Trust.

The Alexander Hope Smith property was acquired by the Trust through a partnership with Couchiching Conservancy, the Township of Severn and a partial donation, partial sale by Stan Hope Smith of Washago under the NSLASP. Of exquisite beauty and high biodiversity, the property is stewarded by the Couchiching Conservancy.



The Alexander Hope Smith property

The People's park

By Beth Anne Mendes

Queen's Park, Toronto, was officially opened by the Prince of Wales (later King Edward VII) in September 1860, and was a forerunner of the late-19th-century public park movement in North America.

Parks created at this time were meant to provide people with respite from crowded urban conditions. Toronto's Committee on Public Walks and Gardens gave "health and enjoyment" as its chief reason for approving the Queen's Park proposal. Later, in 1884, historian C. Pelham Mulvany described Toronto's parks and public gardens as "The Lungs of the City" and Queen's Park as "... the people's park of Toronto. It is the favourite resort of our city."

The land now occupied by Queen's Park was purchased by King's College in 1829. The southern portion had been cleared for farming, but stands of white pine, maple, elm and oak trees populated the northern section. Taddle Creek ravine bisected the park from north to south, and the property was known as University or College Park.

In 1853, the Province of the United Canadas expropriated the eastern portion of University Park with a plan to construct new legislative buildings there, in anticipation of Toronto becoming the

provincial capital once again. Although the province was unable to afford the new construction, it continued to hold the land.

In 1856, the University of Toronto senate was authorized to construct buildings on the western section of University Park. Negotiations began in 1857 between the city and the senate for the creation of a public park on the eastern section, and the architectural firm Cumberland & Storm was authorized to prepare a park plan. The city and the university committed that the lands would be "guaranteed as [a] public park forever."

Queen's Park followed a "picturesque" design, popular in Upper Canada at the time because of its romantic, idealized depiction of the British countryside. In Queen's Park, the existing natural varieties of trees were left in clumps or placed along pathways. Beyond the construction of pathways and some garden beds, the parkland was left in a natural state. Visitors entered through two gated, tree-lined avenues, one leading west from what today is College Street and the other leading north from present-day University Avenue. At the opening ceremony in September 1860, the Prince of Wales laid the foundation stone for a statue of Queen

Victoria that was eventually installed in 1871. Five hundred trees were planted along College Street to mark the occasion.

Originally, Queen's Park was northwest of the city, but Toronto soon grew to the park's boundaries and beyond. Despite this, the park remained a natural refuge, due to the city's commitment to maintaining it and the university's control over development of most of the surrounding land. Today, Queen's Park remains a stately green space in Toronto's core, and provides a fitting backdrop for Ontario's legislative buildings and the monuments and statues located on the grounds.

During the Royal Tour of 2010, Queen Elizabeth II unveiled a provincial plaque commemorating the 150th anniversary of Queen's Park, Toronto.

Beth Anne Mendes is the Plaque Program Coordinator with the Ontario Heritage Trust.



On July 6, 2010, Queen Elizabeth II unveiled a provincial plaque to commemorate the 150th anniversary of Queen's Park (Photo: Rick Chard)

RECLAIMING Fleetwood Creek

By Andrew Sokolowski and Susie Cameron

It's hard to put a price on experience. Students enrolled in Sir Sandford Fleming College's Ecosystem Management Technology (EMT) program understand this.

During the program's third and final year, students can gain valuable work experience through Credit for Product, a placement course that allows them to work on a specific project submitted by an external organization, including some of Ontario's most prominent environmental agencies. These projects are worthwhile for all parties, and they offer EMT students an opportunity to apply and further develop their knowledge and skills.

In fall 2009, four Credit for Product students worked alongside Barbara Heidenreich, the Ontario Heritage Trust's Natural Heritage Coordinator, to conduct a study of invasive plant species found at Fleetwood Creek Natural Area. The natural features of this Oak Ridges Moraine property are under serious threat from several invasive plant species, particularly dog-strangling vine (DSV). The primary objectives of the study were to map the location of

DSV plots found along roads and trails and to develop a detailed understanding of the density and severity of DSV. The ultimate goal was to provide the Trust with information required to make sound decisions about how to manage DSV at Fleetwood Creek.

Preliminary site visits and background research revealed DSV's extensive range within the area. A research methodology was developed based on site conditions, plant biology and global positioning system (GPS) mapping techniques. For each identified and mapped plot, the density of DSV was measured and categorized based on the number of stems per square metre. The final report, submitted in December 2009, outlined removal recommendations and suggested best management practices. The report provided information that will allow the Trust to attempt eradication of DSV, which would improve, and help the Trust maintain, the property's health and biodiversity.

In the spring of 2010, a second Fleetwood Creek student team submitted a report outlining

recommendations and procedures for a five-year plantation management strategy for the property (see sidebar). The strategy was designed to increase biodiversity at Fleetwood Creek by recommending different management practices for the gradual conversion of 30 hectares of plantations into a natural area.

Sir Sandford Fleming's EMT students benefit greatly from these projects. Conducting actual studies is an important introduction to their careers. It would not be possible without the support of organizations such as the Ontario Heritage Trust, as well as the dedication of EMT faculty members Sara Kelly and Mike Fraser.

Andrew Sokolowski and Susie Cameron were students in the fall 2009 Credit for Product course, Ecosystem Management Technology Program, School of Environmental and Natural Resources Sciences, Sir Sandford Fleming College. Lesley Smith was a student in the spring 2010 program.



Dog-strangling vine or *Cynanchum rossicum* (also known as pale swallowwort) at Fleetwood Creek

A plantation management strategy for Fleetwood Creek Natural Area

by Lesley Smith

Fleetwood Creek Natural Area, a 360-hectare (890-acre) property on the Oak Ridges Moraine, is valued for its unique post-glacial geographic features, diverse resident breeding bird population and importance as a location for significant cold-water headwater streams. The site has been recognized as a Provincially Significant Earth and Life Sciences Area of Natural and Scientific Interest.

A former family farm, Fleetwood Creek was acquired by the Ontario Heritage Trust in 1985 with the intention of preserving the property's provincially significant features. It encompasses 30 hectares (75 acres) of red pine, Scots pine and

white spruce plantations. The Trust partnered with Sir Sandford Fleming College's Ecosystem Management Technology (EMT) program in devising a plan to increase biodiversity by describing management strategies within each plantation. Three students in their final year of the EMT program, enrolled in the Credit for Product course, spent four months conducting research, including field work, and analyzing results to propose an overall plantation management strategy.

The students suggested a selective cutting schedule that would allow for the growth of natural vegetation, while diminishing the growth

potential of invasive species. They also recommended leaving the cut trees to improve the composition of the forest floor and understorey. The plan will increase biodiversity in Fleetwood Creek and provide habitat and feeding opportunities for native wildlife.

Through the Credit for Product course, EMT students spend four months with one organization designing and managing an ecology project. They conduct literature reviews, do field work and address other project requirements. In return, they receive valuable project management experience and build important professional relationships with environmental leaders.



Fleming College students with Kawartha Conservation Area Coordinator Jessie James, preparing to gather data on the Fleetwood Creek plantations, spring 2010

Biodiversity in Ontario



TAKING UP THE CHALLENGE

By Don Pearson, Barbara Heidenreich and Sean Fraser

Many are familiar with high-profile threatened species such as polar bears, whose habitat is in flux and whose numbers are dropping, or bald eagles, once in danger of disappearing completely from the Great Lakes region, now recovering slowly, but still a species of special concern in northern and southern Ontario. These are only two of the hundreds of species at risk in this province.

Maintaining a large number of species with a variety of genes in a diverse environment is at the heart of the concept of biodiversity. Although the concept may sound complex, it isn't. It simply refers to the full range of genes, species and ecosystems in a given area. Living systems depend on and thrive on each other's existence. Consequently, biodiversity is often used as an indicator for the health of a natural area. If you remove one element or introduce a new one, the effects are often impossible to predict.

Biodiversity in Ontario

Species extinction over the history of life on Earth has been seen as a natural phenomenon. But the current rate of species loss, occurring within our own lifespan, is outpacing the rate that previously occurred over a geological epoch. How many species can the world lose at this rate before the ability of the environment to support human life is affected irrevocably? Have we reached a tipping point that marks the beginning of an exponential increase in the rate of extinction? Will change be sudden – a series of catastrophic losses – or gradual – or both? What is clear is that invasive species and monocultures introduced by humans are on the rise, natural habitats are rapidly being replaced by a man-made environment and biodiversity is eroding dramatically.

The more biodiverse an ecosystem, the more resilient it is to drought, flood, disease and other natural catastrophes that occur in regular cycles. In light of more rapid climate change and the accelerating destruction of wildlife habitats, the loss of biodiversity threatens the ability of the natural environment to adapt. This loss affects humans as well. We rely on the various natural systems for our survival as a species. Our economies, food supplies, natural resources, clean air and water are drawn from these systems. Their health is our health. This is as true for Ontarians as for the rest of the world. Educating the public about the importance of biodiversity and the history and impact of invasive species are new priorities for the Ontario Heritage Trust.

Pioneering American ecologist Raymond Dasmann (1921-2002) is credited by some for coining the term “biological diversity” in the late 1960s, but American Robert E. Jenkins of The Nature Conservancy may have been the first to use the contraction biodiversity and to bring the issue, in the 1980s, to the attention of the emerging conservation community. Jenkins and his peers postulated that a large number of species were in decline due to human alteration of the environment and the rapid spread of invasive species. In the years that followed, the international scientific community focused on measuring the scale and rate of loss and the significance of the problem. International attention grew to the point that, in 1992, 159 nations ratified the United Nations-initiated Convention on Biological Diversity. Canada,

An invasive species is a plant or animal not native to a region that has been introduced by intentional or accidental human actions. It is so successful in its new range that it dominates the naturally occurring species to such a degree that it establishes a monoculture, thus greatly reducing the region’s biodiversity. For more information about invasive species, visit the International Union for Conservation of Nature Global Invasive Species Database at www.issg.org/database/welcome and the Ontario Invasive Plant Council’s website at www.ontarioinvasiveplants.ca.

an original signatory to the convention, together with the provinces, identified the most crucial invasive alien species in this country and, in 2004, developed a strategy to combat the spread of these species. In 2005, Ontario, through its Ministry of Natural Resources and the Ontario Biodiversity Council, adopted a biodiversity strategy.

Notwithstanding these efforts, scientists today believe that biodiversity is in crisis around the world. Conservation experts – including Gord Miller, the Environmental Commissioner of Ontario – have pointed out that Ontario has its share of problems. There are 28 species of reptiles (nine turtles, 18 snakes and one lizard) that call Ontario home – 19 of which are now at risk. The loss of a few turtles and snakes may not register on the minds of most Ontarians as a significant problem but, to quote from the 1995 Canadian Biodiversity Strategy, “business-as-usual is not an acceptable option.”

This year, in conjunction with the International Year of Biodiversity, the Ontario Biodiversity Council released two reports on the state of biodiversity in the province. These reports paint a good-news/bad-news scenario.

On the negative side, the pressures on biodiversity in Ontario continue to increase, largely due to the growth of our population. We are consuming more resources and generating more waste. According to The State of Ontario’s Biodiversity 2010 (released in

May), Ontario’s ecological footprint is one of the largest in the world. In other words, the report says, if everyone in the world lived as we do in Ontario, four planets would be needed to sustain humanity.

Of particular concern is the southern part of the province, where we are exceeding nature’s ability to replenish itself. This region boasts the greatest diversity of species in Ontario, but it includes most of Ontario’s human population and the infrastructure necessary to support that population. Not surprisingly, it also has the greatest number of species at risk, many of which are incompatible with human activity. Even more alarming are the indications that our efforts to protect biodiversity are producing inconsistent results – there is improvement or stability in some areas, but deterioration in most of the other species at risk.

As noted, the report offers good news too. Activities related to conservation and the sustainable use of renewable resources are resulting in meaningful improvements. Overall, Ontarians care about conservation and sustainable-use initiatives. The government is doing its part with efforts such as the Provincial Policy Statement (2005), Greenbelt Act (2005), the Places to Grow Act (2005), the Endangered Species Act (2007), the 50 Million Tree Program in partnership with Trees Ontario (2008) and promises to protect more than 225,000 square kilometres of the northern boreal region (2008).

Ontario also has strong environmental organizations, an engaged and caring rural community and a growing desire by business and industry to reduce adverse effects of their activities on the environment and engage in



proactive conservation and sustainable land management.

Clearly, more needs to be done. We must understand that the biodiversity crisis is entirely the result of human action. Humans have introduced some exotic plants and animals into Ontario intentionally, for esthetic, economic and sometimes scientific reasons. Garlic mustard, one of the most widespread invasive plants in southern Ontario, was introduced to the province in the late 19th century as an edible green. Bighead carp, a potential threat to the Great Lakes because of their large size, rapid rate of reproduction and hearty appetite, were brought from Asia for use in the aquaculture industry. The introduction of some invasive species has been accidental. Zebra mussels filter out nearly all the phytoplankton and can effectively starve native larva and small fish populations in lakes and rivers. These invasive mollusks were released into the Great Lakes by foreign freighters dumping their bilge water. Additionally, Asian long-horned beetles, which pose a serious threat to Ontario’s trees, were imported in

the infested wood of packing crates entering North America from Asia.

The Trust works with its partners both to plant native species on the Trust’s heritage properties and conservation easement sites as well as educate the stewards, owners and other partners – as well as the general public – on this stewardship practice. It’s important that all Ontario residents learn how to identify and control invasive non-native plant and animal species.

All of us – government, environmental groups, business, industry and citizens – must work to reduce the pressures on our natural heritage and protect what we have today so that it will be with us tomorrow. Awareness and education are the first steps. Ontario has identified the issue, developed a biodiversity strategy and has issued its first report card (Ontario’s Biodiversity Strategy Progress Report 2005-2010, www.ontariobiodiversitycouncil.ca). Whether or not we can improve our grade – while there is still time to act – is the challenge.



Don Pearson is the Executive Director of Conservation Ontario, a member of the Ontario Biodiversity Council and a member of the Board of the Ontario Heritage Trust. Barbara Heidenreich is a Natural Heritage Coordinator at the Trust and Sean Fraser is the Manager of Acquisitions and Conservation Services at the Trust.

To learn about species at risk in Ontario, see the inventory of species at risk on the Ontario Ministry of Natural Resources website at www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/276722.html. Ontario Nature (the Federation of Ontario Naturalists) also has an information sheet on this subject at www.ontarionature.org/discover/resources/PDFs/id_guides/SAR_brochure.pdf.

For more information on biodiversity in Ontario, visit the Ontario Biodiversity Council's website at www.ontariobiodiversitycouncil.ca.



This fragile wetland at the Lone Pine Marsh Sanctuary in Northumberland County is rich in biodiversity

New life for an old property

By John Stille



Planted area of lowland species expanding existing cover adjacent to the former pasture on the Blair property (Photo: John Stille)

Heritage restoration is not limited to old buildings. Natural heritage properties, too, can be restored or adapted to new uses for future generations to enjoy. Such is the case with the Blair property, a parcel of land owned by the Ontario Heritage Trust since 1976, farmed for over 100 years and now stewarded by the Toronto and Region Conservation Authority.

In 2008, the Authority and the Trust entered into an agreement to restore a portion of the Blair property for upland terrestrial habitat. Historically, the site was cleared for agricultural use; most recently, it was used as a pasture. The Authority and the Trust, however, deemed it inhospitable for agriculture because of its hilly topography, sandy soils and erosion problems. In 2008, it was slated for restoration, which began in subsequent years.

The existing cover on and around the site was open meadow, upland deciduous and lowland swamp. A tributary of the Humber River runs adjacent to the southern portion of the site, and the habitat

adjacent to the Blair property is excellent. Species that have been identified on the site include ruffed grouse, grey tree frog, pine warbler, mourning warbler and bobolink. Restoration efforts focused on increasing the size and connections of the existing habitat.

The majority of the restoration work involved planting the area with a mixture of native trees and shrubs in both the sloped and the low-lying areas. Species planted included: silver maple, sugar maple, eastern white cedar, red osier dogwood, cherry, trembling aspen, eastern cottonwood, nannyberry and serviceberry. Seedlings were planted within the tableland (plateau) areas. Large woody debris was brought in and strategically placed in the tree and shrub areas to surcharge the site with the organic structure that had been stripped away when the property was used for agriculture. Further work on the site will include installing nest boxes for songbirds in the open areas and for owls in the property's existing forest habitat.

The site has been monitored in the past two years for planting success. So far, the plantings are doing well, with about a 70 per cent to 80 per cent rate of success. Monitoring will continue in the years to come.

John Stille is the Project Manager, Restoration and Environmental Monitoring Projects, Restoration Services Section, Toronto and Region Conservation Authority.

Enhancing urban biodiversity



Ruby-throated hummingbird at a cardinal flower in the Native Plants Garden (Photo: Jon Brierley)



American painted lady caterpillar feeding on pearly everlasting in the Butterfly, Moth and Hummingbird Garden (Photo: Chris Earley)

Inside the Gosling Wildlife Gardens

By Chris Earley

Most gardeners are biodiversity geeks. “What little plant can I cram in there? Which spring bloomer can I fit in here?” At the Gosling Wildlife Gardens at the University of Guelph Arboretum, we are even geekier. We also ask, “What butterflies will this flower attract?” and “Will the hummingbirds like this?” And, different from most gardeners, we actually hope the birds will eat the berries and the caterpillars will eat the leaves. That’s because we are trying to attract as many species to our gardens as we can to inspire visitors to create their own biodiverse backyards, providing food, water, space and shelter for wildlife.

Started in 1987, the Gosling Wildlife Gardens feature five backyard gardens:

- The Butterfly, Moth and Hummingbird Garden provides nectar for hummingbirds, moths, butterflies, bees, wasps, beetles, flies and other pollinators. It has a large pond for the aquatic stages of many insects, as well as frogs and toads, and a larval bed to encourage butterflies to lay their eggs. These two features make the garden an important site for all stages of a creature’s life cycle.

- The Lawn contrasts with the other gardens, displaying what most people have in their backyards – a large lawn. But this one is eco-friendly, because other plant species grow throughout it, and its borders of berry-producing serviceberries and dogwoods provide important foods for birds and small mammals.
- The more formal Native Plants Garden shows visitors how to use native species – which tend to be more wildlife friendly – in backyards, with gorgeous results. It also features a re-circulating stream that is a favourite bathing and drinking spot for orioles, indigo buntings, cedar waxwings, bluebirds and at least 15 other bird species.
- The Suburban Garden shows gardeners how to grow and harvest vegetables and still attract wildlife.

- The Small City Garden combines features of the other four gardens in a small space, demonstrating that all sizes of backyards can be wildlife friendly.

At this extraordinarily biodiverse site, over 70 bird, six frog, five reptile, 22 mammal and 35 butterfly species have been recorded to date. For more information on the wildlife we see here and how to attract it to your backyard, visit www.goslingwildlifegarden.org. Better yet, come for a visit!

Chris Earley is the Interpretive Biologist and Education Coordinator at the University of Guelph Arboretum.

To encourage visitors to learn about the wildlife in their own neighbourhoods, the University of Guelph Arboretum has published small guides full of photos and information. At \$5 (plus tax), they’re affordable. To see sample pages and order, visit www.uoguelph.ca/arboretum/journal.htm.

Expanding urban biodiversity

By Brad Bass

Eminent biologist Edward O. Wilson refers to biodiversity as the complex myriad of living things on earth, from the smallest molecular organizations in soils to entire ecosystems. Biodiversity contributes to the hydrologic and biogeochemical life cycles that recycle the planet’s air, water, living and dead elements and nutrients.

Biodiversity is imperilled by three ongoing processes: deforestation, desertification and urbanization. Combined, these processes account for the global loss of almost 800 square kilometres of biodiverse sites per day. Yet, despite these losses, cities offer some of the best opportunities for expanding biodiversity, though not necessarily in the usual places.

Toronto’s natural heritage areas – those richest in native biodiversity – occupy only 14 per cent of the

city; in Mississauga, the figure is less than 7 per cent. Municipal governments’ current method of expanding their biodiverse holdings is to acquire scarce additional land, typically existing woodlots or farms. Green-roof pioneers in Switzerland and the United Kingdom, however, have found that other urban areas yield unexpectedly high levels of biodiversity. They have discovered rare spiders and beetles on green roofs, rare spiders in brownfields and biodiverse ecosystems thriving in hostile or unusual urban spaces.

Some of these unusual, unused ecosystems – roofs and walls, both outdoors and indoors – have to be designed for engineered spaces, much in the same way as rain gardens. A few well-known modifications can be made to a green-roof design that will allow it to become a biodiverse habitat. A vertical ecosystem requires a design that can support a diversity of plants,

allowing them to work together. Robert Cameron, a PhD student at Penn State University, has designed a vertical wastewater treatment system for a wall. He has also integrated this design into a shower, allowing its grey water to be used by plants living on the walls. Some of the living-wall designs used for outdoor sound barriers contain a sufficient amount of soil to provide opportunities for diversification. An indoor wall can also be transformed into a vertical rainforest, complete with a river and satellite ecosystems in other rooms, providing building-wide air purification and carbon dioxide uptake.

Expanding biodiversity in cities requires a cross-disciplinary endeavour between engineering and ecology, inspired by a new vision of urban infrastructure. But it can be achieved!

Brad Bass is a Senior Adaptations Researcher with Environment Canada’s Adaptation and Impacts Research Division in the Centre for Environment at the University of Toronto.



Breathing wall built by Genetron Systems of Toronto at the Bodystream spa in Barrie

Working with stewards and partners

By Rebecca Margel

The Ontario Heritage Trust owns over 160 natural heritage properties and protects over 40 natural heritage sites with easements. Because the Trust cannot manage and steward all of its holdings by itself, we rely on partnerships we have established throughout Ontario. To maintain its properties, the Trust has formal stewardship agreements with local organizations, including land trusts, conservation authorities, the Bruce Trail Conservancy and the Ontario Ministry of Natural Resources. Volunteers and staff of these organizations post signs, maintain trails, manage invasive species, encourage authorized activities and deal with unauthorized uses.

The Trust's Natural Heritage team visits individual sites once every couple of years. Some sites are accessible only in the winter, often only by cross-country skis. Other sites need to be visited in the spring and summer, especially if invasive species are a concern, as many of these species would be

impossible to identify when buried under several inches of snow. On other occasions – for example, when visiting islands or properties associated with large bodies of water – canoes are needed to properly carry out fieldwork.

The fieldwork associated with site visits is important, interesting and often challenging and fun. Site visits involve documenting changes to the property and the presence and location of both invasive and rare native species. Unfortunately, garbage cleanup is also part of fieldwork, as well as the documentation of prohibited uses, such as motorized vehicles, tree cutting and bonfires.

For the remainder of the time, the Trust relies on and works with partners and stewards to maintain and manage its properties. Maintaining our biodiversity, too, has enhanced our relationships with these partners. For instance, a southern Ontario land trust

recently discovered an invasive and fast-spreading grass on a property adjacent to one of the Trust's parcels. The land trust met with the local conservation authority and the Trust to share information and discuss possible steps for managing the grass and preventing its spread onto the Trust's property. Clearly, the Trust could not maintain its properties without the help of these partner organizations.

The Trust's work to protect natural heritage properties has never been more important. As habitat destruction, climate change, invasive species and disease continue to threaten Ontario's biodiversity, it is crucial that the Trust and its partners continue to acquire and steward properties that can serve to safeguard the province's spectacular ecosystems.

Rebecca Margel is the Summer Experience Program Natural Heritage Stewardship Assistant with the Ontario Heritage Trust.



Fieldworker on ice ridges overlooking Lake Nipissing at Great Manitou Island, 2010



Hooker's orchid at the Trust's Harvais property (Photo: Michael Bryan)

Hooker's orchid

Hooker's orchid (*Platanthera hookeri*), a regionally rare species, was discovered on the Trust's Harvais property near Thunder Bay in 2010. The property, established as an orchid reserve in 1985, is also home to showy lady's slipper orchids, among others. Hooker's orchid is named for Sir William Jackson Hooker, a 19th-century director of London's Kew Gardens. The species, listed as endangered in the United States, appears to have a low tolerance for acid rain, which may explain why its populations have declined drastically over the past 100 years. In the 1800s, when the flower was more abundant, its leaves were applied as a plaster on people suffering from weak lungs.

Butternut tree

The butternut tree (*Juglans cinerea*) is a nationally and provincially recognized endangered species.

Historically, it declined in numbers as a result of deforestation, but as of 1991, has faced a different

kind of threat in Ontario. A fungal disease known as butternut canker has been killing the trees. The fungus infects cracks in a tree's bark and grows to create a sunken canker that girdles the tree. In wet conditions, the spores can be transported for kilometres. Surveys in Ontario show that most butternut trees are infected with the canker, and about one third of them have died. There is no cure for this disease, nor are there any known methods for preventing its spread. Yet the tree's nut is an important food source for several birds and small mammals, and its soft wood is a favourite for carving and furniture making.

The Trust's Homewood property, near Maitland in eastern Ontario, is home to several healthy butternut trees. These trees are used by the Rideau Valley Conservation Authority's Butternut Recovery Program, and include a tree that appears to be resistant to the canker. This tree may be cloned in the future, as the program works to produce healthy seedlings for planting across eastern Ontario. As part of the program, healthy trees are being mapped for nut collection.



Butternut tree at the Trust's Anne Bartley Smith property in Aurora

WHAT'S ON . . .

. . . the shelf

Ontario's Old-Growth Forests: A guidebook complete with history, ecology and maps,
by Michael Henry and Peter Quinby

Fitzhenry and Whiteside Limited, 2010. The year is 1615. Samuel de Champlain, Étienne Brûlé, and 10 Huron are travelling up the Ottawa River by canoe, into a territory largely unknown to Europeans. Not far to the north, at the headwaters of the Ottawa, a seed germinates in a forest gap and grows into a tiny white pine seedling. Champlain and his party soon turn west and head to Georgian Bay ... the seedling soaks up the sun and begins to grow. Over the next 375 years it will survive forest fires, windstorms, drought and flood years, and finally in 1989 it will be spared from the chainsaw by mass demonstrations and the arrest of 344 peaceful protestors on Red Squirrel Road, in Temagami.

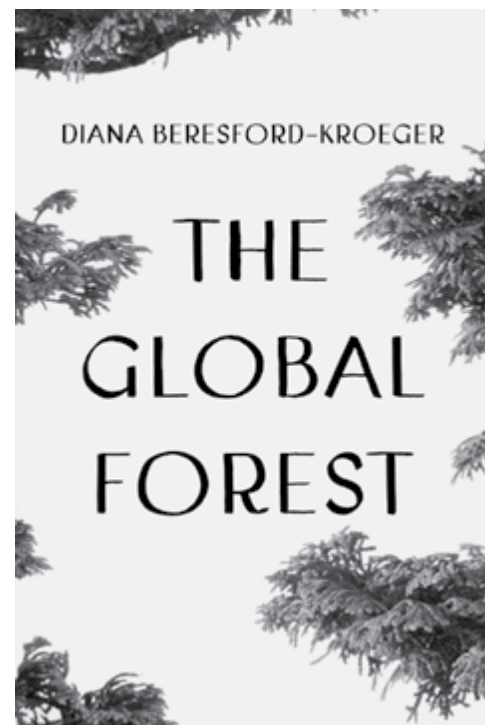
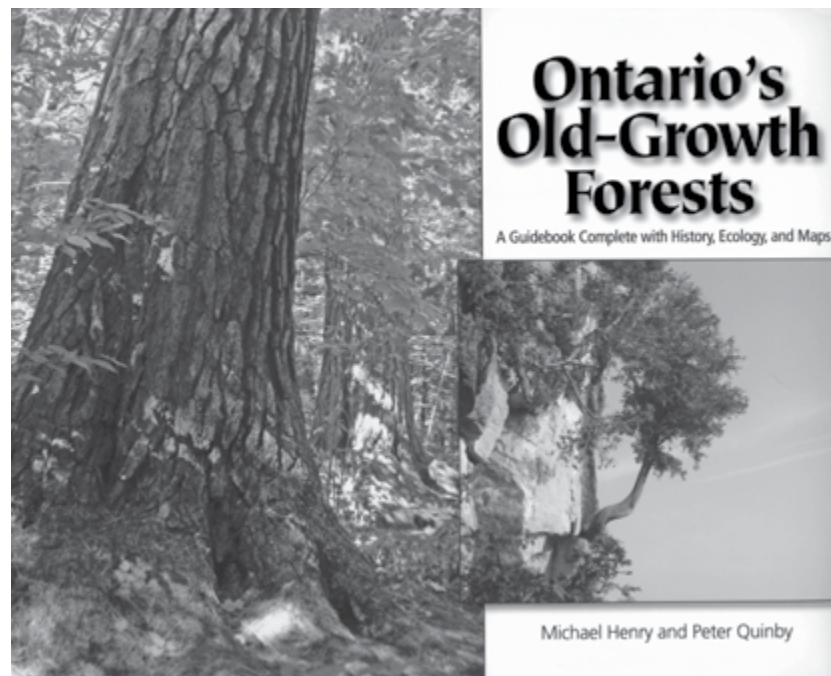
This tree is now protected within the Obabika Lake old-growth forest. But this story has never been fully told, or those of the countless other old-growth forests scattered throughout Ontario. Who'd have thought that dwarf cedar trees growing on the Niagara Escarpment could live to be nearly 2,000 years old? Or when you paddle your canoe by small bonsai cedars that line the rocky shorelines of the Canadian Shield, they frequently measure their age in centuries. Not all of our old-growth forests are small, of course. Old-growth pine trees in Temagami can be over 10 storeys tall and a metre in diameter. But even they would have appeared small beside the trees of yesteryear, which were as much as 20 storeys high, rivalling California's giant sequoias in height.

The story of Ontario's old-growth forests is now being told in a new book. Author and naturalist Michael Henry has teamed up with old-growth ecologist Peter Quinby to produce the book *Ontario's Old-Growth Forests*. On sale now at a bookstore near you.

The Global Forest,
by Diana Beresford-Kroeger

Penguin Group (Canada), 2010. A gorgeously written exploration of the natural world and the peril of ignoring our disappearing forests.

One of the world's experts on how trees chemically affect the environment, Canadian scientist Diana Beresford-Kroeger is on a mission to save the planet – one newly planted tree at a time. In this new book, she skilfully weaves together ecology, ethnobotany, horticulture, spirituality, science and alternative medicine to capture the magic spell that trees cast over us, from their untapped ecological and pharmaceutical potential to the roles they have played in our cultural heritage. Trees not only breathe and communicate; they also reproduce, provide shelter, medicine and food, and connect disparate elements of the natural world. In celebrating forests' function and beauty, Beresford-Kroeger warns what a deforested world would look like. Her revolutionary bioplan proposes how trees can be planted in urban and rural areas to promote health and counteract pollution and global warming, maintaining biodiversity in the face of climate change.



Presented in short interconnected essays, *The Global Forest* draws from ancient storytelling traditions to present an unforgettable work of natural history. Beresford-Kroeger is an imaginative thinker who writes with the precision of a scientist and the lyricism of a poet. Her indisputable passion for her subject matter will inspire readers to look at trees with newfound awe.

In the coming months . . .

The Ontario Heritage Trust regularly hosts or attends events that impact our rich and unique heritage. From provincial plaque unveilings to conferences, we are busy year-round with activities that promote heritage conservation in Ontario.

Here are some of the events and activities occurring over the next few months. Visit our website at www.heritagetrust.on.ca for more details!

October 28-30, 2010 – Ontario Land Trust Alliance (OLTA) Gathering, Holiday Inn, Peterborough. This year's theme is "Expanding Horizons," providing participants with information on potential new OLTA partners, while focusing on Canadian Land Trust Standards and Practices. (www.olta.ca)

October 30 to November 7, 2010 – Opera Atelier presents *Acis and Galatea*, Elgin and Winter Garden Theatre Centre, Toronto. Tickets are available through the Elgin Theatre box office or through Ticketmaster. Visit www.heritagetrust.on.ca/ewg for details.

November 16, 2010 – Premiers' Gravesites Program marker unveiling commemorating The Honourable Gordon Daniel Conant (Premier 1942-1943), Oshawa. Born in



Oshawa, Gordon Conant was Ontario's twelfth premier. Conant was elected in 1937 representing Ontario County, and was appointed attorney general. He resigned as premier in 1943, and served as master of the Supreme Court of Ontario until 1950.

November 17-19, 2010 – A.D. Latornell Conservation Symposium, Nottawasaga Inn, Alliston. The theme of this year's symposium is "Biodiversity: Connecting People, Land and Water," focusing on how Ontarians can take actions that protect and promote biodiversity. (www.latornell.ca)

November 26, 2010 to January 2, 2011 – Ross Petty presents *Beauty and the Beast, The Savagely Silly Family Musical!* at the Elgin and Winter Garden Theatre Centre, Toronto. With this production, Ross Petty celebrates 15 years of pantomimes at the historic Elgin Theatre. Tickets are available through the Elgin Theatre box office or through Ticketmaster. Visit www.heritagetrust.on.ca/ewg for details.



Melissa O'Neil as Beauty, surrounded by (from left to right) Jake Simons, Eddie Glen, Ross Petty and Jake Epstein. Photo: Bruce Zinger

Join us as we celebrate the holidays with an elegant afternoon tea, a self-guided tour of the mansion and musical entertainment.

16th Annual Edwardian Tea at Fulford Place

Saturday, November 20, 2010
Fulford Place, Brockville
For more information
or to purchase tickets,
call 613-498-3003
or email
fulford@heritagetrust.on.ca.

*Let our
heritage venues
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www.heritagetrust.on.ca

Celebrate
Christmas at
Uncle Tom's
Cabin Historic Site

Group tours include a singalong, a turkey dinner, Christmas pudding, a sermon inside Dresden's oldest church and a tour of Uncle Tom's Cabin Historic Site.

November 22 to December 18, 2010
Visit www.uncletomscabin.org
for complete details.

*Explore
the heritage
of faith*

Ontario's Places of Worship inventory

www.heritagetrust.on.ca/placesofworship