Natural Heritage Information Centre Newsletter

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Science and Research Branch
Natural Resources Information Section

The NHIC has been on the road!

The Natural Heritage Information Centre (NHIC) has been getting "out and about" in the biodiversity conservation community of late. We have helped various meetings, conferences and initiatives by leading discussion groups, pulling together regional partners, participating on information panels, and by sharing our insights and innovations. Most importantly, we have learned a lot about the very important work our conservation partners are doing on the frontlines.

Figure 1: NHIC coordinator, Jim Mackenzie at the Natural Heritage Information Centre booth at this year's Latornell Conservation Symposium. Photo: Sandy Gemmiti.

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The amazing, diverse, prolific, energetic, and engaged individuals and organizations that consume our science and information products are the true heroes of biodiversity and the true guardians of nature. It has been a pleasure reconnecting with such a vibrant and dynamic group of professionals this year and I for one feel the future of our planet is in very capable hands.

To the organizers and sponsors of:

- Biodiversity Without Boundaries 2015 – Traverse City Michigan
- Biodiversity Summit 2015 – Niagara Falls, Ontario
- Latornell Conservation Symposium 2015 – Alliston, Ontario

Thank you for creating space for the most important discussions of our era.

Jim Mackenzie
Coordinator, Natural Heritage Information Centre

Forest re-inventory on the Niagara Escarpment

The Niagara Escarpment Plan Area, with its 48 per cent forest cover stands out as one of the largest contiguously forested stretches in southern Ontario. The Escarpment, a provincially significant landform, is protected under Ontario's Niagara Escarpment Planning and Development Act, 1973, and the Niagara Escarpment Plan. The Escarpment is known for its unique geological, natural heritage, and cultural qualities, it was also designated a UNESCO World Biosphere Reserve in 1990, and has been one of the Greenbelt Plan pillars since 2005. The Escarpment is home to numerous urban and rural communities and due to its natural features and network of trails, attracts many visitors and recreational users. All of these land uses, human pressures, conservation actions along with natural processes impact forest composition and structure over time. In order to detect and possibly understand how this important ecological system is changing, we need to collect empirical evidence: terrestrial monitoring plots can provide standard and rigorous measurements to evaluate the health and conditions of these systems and, by extension, evaluate the effectiveness of land conservation policies and their application. The Niagara Escarpment re-inventory project began in 2011 to demonstrate the importance and value of inventory and monitoring information as a baseline for conservation and land use planning actions. Two specific, but associated objectives of forest sampling on the Niagara Escarpment were set: 1) re-inventory forest

Figure 2: This map depicts the sampling sites (red dots) within forest stands along the Niagara Escarpment.

stands originally sampled in 1979 – 1981 by Steve Varga to see whether we could detect changes in forest structure and compositions, and demonstrate the value and importance of long term monitoring; 2) establish modern Vegetation Sampling Protocol (VSP) plots to link Niagara Escarpment forest monitoring to landscape scale monitoring of natural heritage and land use planning including the Green Belt, Growth Plan, National Forest Inventory, Southern Ontario Land Resources Information System, and other comparable natural resources monitoring efforts in southern Ontario.

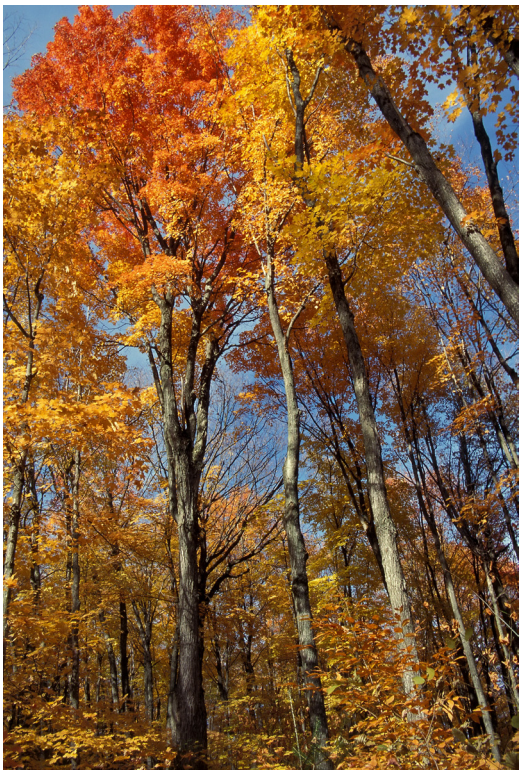


Figure 3: Photo of sugar maple trees.

The re-inventory of forest stands sampled over 30 years ago was conducted during the summers of 2011 and 2012. Field sampling was delivered through partnerships with the Ontario Ministry of Natural Resources and Forestry (OMNRF), Niagara Escarpment Commission, Niagara Escarpment Biosphere, Faculty of Forestry at the University of Toronto, and the support of local landowners.

Since the original sampling was done using the Point-Quarter method (Cottam and Curtis 1956), re-sampling involved the re-location of original sampling sites and re-measurement using the same Point-Quarter method. Eighty-eight of the original 111 sampling sites within forest stands were re-located and re-measured (Figure 2). The historical (1979-1981) and recent (2011-2012) Point-Quarter data from the 88 re-sampled locations within forest stands was used to measure the changes in forest composition and structure. In 2013 the NHIC took over the OMNRF scientific lead responsibility for the process – they began analysis of Point-Quarter data and directed research towards Point-Quarter and VSP methodology integration and comparison, in partnership with the University of Toronto's Faculty of Forestry.

The results related to the re-inventory and forest change since 1980 involved the analysis of the following indicators: tree importance value, and floristic quality of native plants, non-native plants and invasive species. While the detailed analysis and results are available in the report, a number of the most important findings are presented here.

The importance of sugar maple increased across the majority of sampled stands, and in particular, across the Niagara section of the escarpment (Figure 3). Importance Values (IV) of sugar maple increased from an average of 117 to 167. Presently, over 60 per cent of stands re-inventoried have sugar maple as the predominant species with IV of more than over 150. In 1979-1981 sugar maple was the predominant species in only 37 per cent of the stands sampled. This increase in sugar maple IV and corresponding decrease in IV for other species indicates a movement towards forest homogenization in some parts of the Niagara Escarpment. Another frequently occurring species that exhibited some of the greatest increase in average IV is balsam fir. The average IV of balsam fir tripled (from 24 to 60) in the past 35 years. These data indicate that for all of the stands re-inventoried, across different sections of the escarpment, more balsam fir is present now than what was recorded 35 years ago.

The comparative analysis between the historical and recent data indicates a decline in abundance of American beech in more than 50 per cent of resampled stands. In the past 35 years, this species has declined in dominance across the escarpment, which is reflected in average IV dropping from 28 to 23. However, in some stands American beech has declined considerably from being a co-dominant tree species (IV of 180) to an associated species (IV of 61).

The impact of Dutch elm disease and the decline of elm trees was measured in the 1980's, and declines in the abundance and distribution of elms has continued as evidenced in this re-inventory. Our recent sampling indicates that slippery elm was observed in only three of the original 13 stands where it was reported; and its importance value has dropped from an IV of 54 to an IV of 7. It seems that American ash took advantage of the gap created by declining elms over the past 35 years to increase dominance within 67 per cent of the stands and to maintain or slightly increase average abundance within the canopy. With the threat of emerald ash borer and the potential and catastrophic loss of ash trees within southern Ontario forests, another shift in tree species dominance can be expected in future Niagara Escarpment forests. Ash currently on average has IV of 30 and in some stands makes up about one third of the canopy. Red oak has declined in its abundance and frequency across the escarpment. While historically it was sampled in 64 stands, the recent survey found it in only 42 stands and its IV is slightly lower than it was 35 years ago.

The most apparent change in forest vegetation is an increase of invasive plant species. The number of native and non-native species recorded historically and in recent surveys indicates a twofold increase of non-native species. Non-native species totalled six per cent of all species in 1979-1981 and 15 per cent in 2011-2012. The historic survey recorded four invasive plants, Norway maple (*Acer platanoides*), garlic mustard (*Alliaria petiolata*), Dame's rocket (*Hesperis matronalis*), and bittersweet nightshade (*Solanum dulcamara*); the recent sampling in 2011-12, found 18 species considered to be invasive across different parts of the escarpment. Of the total 88 stands re-sampled in 2001-2012, 56 of them have aggressive invaders such as garlic mustard, Dame's rocket, common buckthorn (*Rhamnus cathartica*), tartarian honeysuckle (*Lonicera tatarica*), and white mulberry (*Morus alba*).

Native plants and stand composition were assessed using the Coefficient of Conservatism (CC) (Oldham et al. 1995, Francis et al. 2000) as a proxy for natural cover quality. The CC was used as an indicator of disturbance to distinguish less disturbed sites from more disturbed sites. Of the 88 re-sampled stands, 60 per cent experienced decline in average CC over the past 35 years. While this decline was gradual for most stands, a few sites experienced a significant drop in CC, and there are some stands for which improvements in CC were observed. In summary, the re-sampling of the Niagara Escarpment, though biased towards late seral communities and not representative of the range of forests types and conditions, demonstrated that besides natural shifts and successional changes, there are some changes such as an increase in distribution and abundance, as well stand homogenization that might benefit from management attention. While the Point-Quarter data and re-sampling method allowed for a general overview of stand and forest level change on the escarpment, its limited measurements, difficult plot layout, and biased design could be replaced with VSP as a monitoring method. VSP can capture more biodiversity and forest health measures, it is easier to layout, and it can be designed to be non-biased and integrated with large-scale landscape analysis.

By Danijela Puric-Mladenovic and Jim Mackenzie

City of Kawartha Lakes flora update

The Kawartha Field Naturalists based in Fenelon Falls, Ontario have sponsored the City of Kawartha Lakes (CKL) Flora Project for the past eight years. Dale Leadbeater and Anne Barbour coordinate the project and have formed a committee of experts to help. The goals of this project include:

- Generating a list of vascular plant species found in CKL and their distribution, vouchered by specimens to be housed at the Royal Ontario Museum in Toronto, making them available for future study by the scientific community;
- Improving understanding of natural heritage systems in the CKL;
- Providing insight into changes in the local plant communities as a result of pressures from introduced species, climate change, and population growth; and,
- Publishing the findings of the project.

Over the past eight years, more than 200 volunteers and landowners have collected almost 2,000 voucher specimens, with permission of landowners. Over 10,000 observations and literature records have been added to a database. To date the project has documented 150 new plant species for CKL of which 60 are introduced and 90 are native. In 2014 the project received the Ontario Nature W.E. Saunders Natural History Award for what was described as, “citizen science at its best.”

Several NHIC biologists have assisted with the CKL Flora Project by providing plant records from CKL, advice on taxonomy and nomenclature, assistance with specimen identification and verification, and by participating in field surveys. In June 2015, while conducting fieldwork in support of the project, NHIC botanist Mike Oldham discovered a new plant species for Ontario, Smooth Black Sedge (*Carex nigra*), growing in a roadside ditch near Manvers Station.

In 2016 the CKL Flora Project produced a checklist of the flora of the former Carden Township (including the Carden Alvar), the first product of the project. The checklist includes 768 plants in 107 families that have been documented from Carden Township. For additional information on the CKL Flora Project or to download a copy of the Carden Township plant checklist visit Kawartha Field Naturalists.

By Michael J. Oldham

Accessing Natural Heritage Information Centre data

The NHIC maintains information on two streams of data: 1) provincially tracked elements, and 2) natural heritage areas. Data from the elements stream include species of provincial conservation concern, provincially rare and exemplary plant communities, and wildlife concentration areas. Natural heritage areas data includes tabular information on areas, across the province, that are recognized for their natural heritage features and functions as well as field sampling data gathered using the Vegetation Sampling Protocol (VSP) in southern Ontario. VSP plot data can be used for inventory and monitoring to inform a range of practical and research applications.

How to access provincially tracked element data

The Ontario government's Get Natural Heritage Information web page contains information on how to access data for provincially tracked elements, and links to publicly available element occurrence data, and downloadable species lists. To protect tracked species and elements of biodiversity, location information is generalized to one kilometre areas. Species that are vulnerable to collection or inadvertent damage are not identified by name, instead they are labelled as "restricted species." These data are useful for many purposes, including landscape level planning and site screening.

Clients can apply to access more detailed element occurrence and observation data. The OMNRF will grant clients access to detailed data if they:

1. Complete Data Sensitivity Training,
2. Demonstrate a legitimate "need to know" for detailed data, and
3. Sign a Ministry of Natural Resources and Forestry Sensitive Data Use Licence Agreement.

Municipalities, conservation authorities, and other organizations responsible for managing specific ecosystems over time, can contact the NHIC to apply for ongoing access to detailed data.

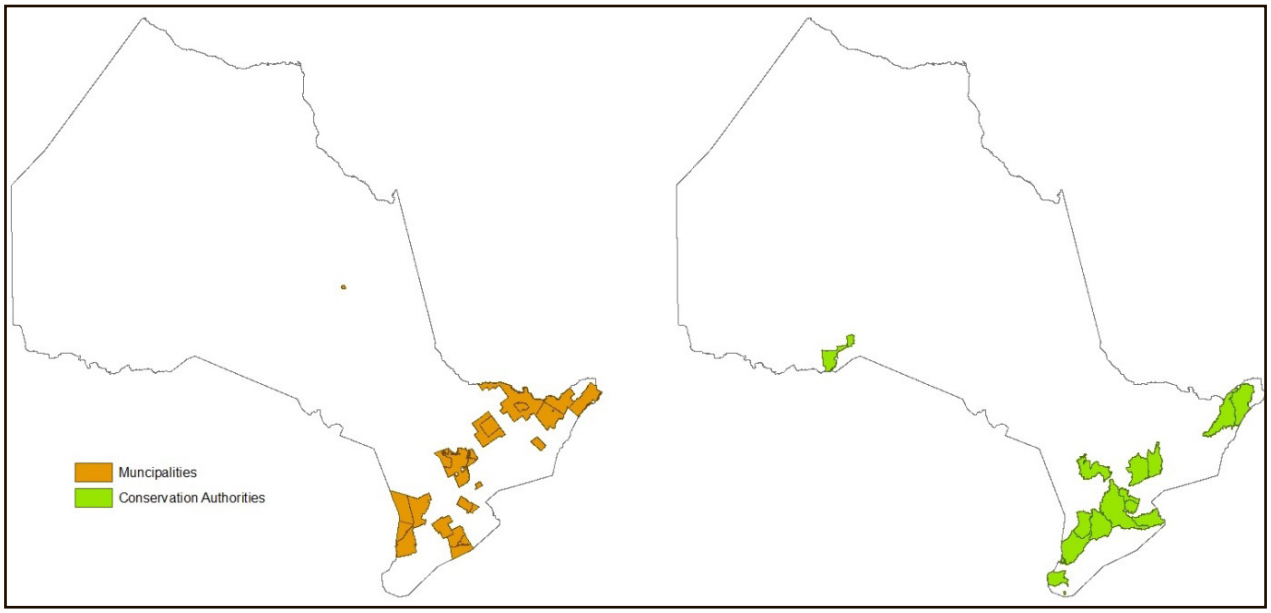


Figure 4: Municipalities and conservation authorities licensed for ongoing access to detailed NHIC element data.

Figure 4 shows which Ontario municipalities and conservation authorities currently have ongoing access to detailed provincially tracked element data.

Agencies undertaking environmental impact assessments or conservation, stewardship, resource management, or research projects can apply for access to detailed data on a project by project basis. If your project area is within the jurisdiction of a single OMNRF district office, contact the appropriate district office to apply. If your project area covers two or more OMNRF districts, contact the NHIC to apply. Environmental consultants should ask the agencies they are working for to contact OMNRF and request access to the data.

How to access natural heritage areas data

The Get Natural Heritage Information web page contains information on how to access natural areas data and links to publicly available data. This data contains information for any natural area identified in the NIHC's natural areas database. These areas include provincially managed sites, internationally designated sites, and areas identified by non-government organizations and agencies.

The public can contact the NHIC to request general summary reports for each natural area. Licensed users can contact the NHIC to request detailed summary reports that include additional biodiversity information and species lists. All clients can order boundary data for some designated natural areas from Land Information Ontario, which distributes the authoritative polygon data for several natural area types, such as Provincial Parks, ANSIs and evaluated wetlands.

VSP data are collected in collaboration with partners and private landowners to inform research; there are restrictions to accessing these data. Both types of natural heritage data may include information on provincially tracked elements that could inform observation and element occurrence data.

For more information, to apply for access to detailed data for provincially tracked elements, or to request summary reports for natural areas, contact the NHIC at NHICrequests@ontario.ca or 705.755.2159.

By Martina Furrer, Bonnie Henson, and Peter Sorrill

Farewell to Mike McMurtry

On June 30, 2015, the NHIC celebrated Mike McMurtry's retirement from the OMNRF and the past 13 years as the NHIC's Natural Areas Ecologist. Mike studied zoology at the University of Manitoba and the University of Toronto and started his long career with the OMNRF in the 1980s working with the Fisheries Branch in Toronto and then served as biologist with the Lake Simcoe and Muskoka Lakes fisheries assessment units. He moved to the Aurora OMNRF District at an exciting time when the Oak Ridges Moraine Conservation Plan was being developed and then moved to Peterborough in 2002 to work at the NHIC where he was involved in many endeavors such as the Big Picture, Great Lakes Conservation Blueprint for Biodiversity, the Great Lakes biodiversity strategies for Lake Ontario, Lake Huron and Lake Erie, and life science reconnaissance of sites in The Land Between and the Far North.

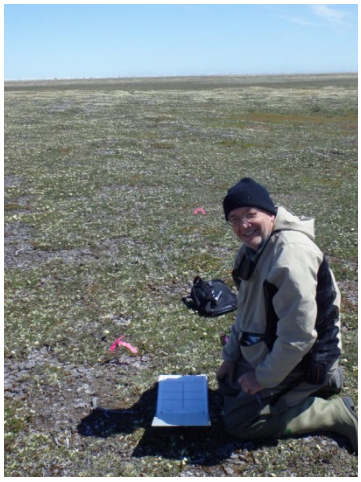


Figure 5: NHIC staff Mike McMurtry recording data on a vegetation plot during Far North Biodiversity Project fieldwork.

"I've had many highlights in my career," says Mike, "helping to figure out some of the factors affecting mercury concentrations in fish, working with the close-knit team at the Lake Simcoe Fisheries Assessment Unit, seeing the completion of biodiversity conservation strategies for the Great Lakes, and helping with life science inventories in the Hudson Bay Lowlands. I've been fortunate to work in an environment where continuous learning was supported and with colleagues who were committed to conservation."

Mike looks forward to spending some time with family at the cottage, and hopes to attend a Toronto FC game or two. He also hopes to continue working with local organizations on biodiversity conservation. We wish you all the best in your retirement, Mike!

Natural areas program review

The NHIC maintains information on both species and areas of conservation concern in the province. As with information about species, over the last 22 years there have been changes in the type of information we provide about natural areas and how we deliver that information to the conservation community. NHIC staff associated with natural areas, plant communities, and survey plot and monitoring have reviewed the current state of NHIC programs related to areas of conservation concern. Discussions with the client groups associated with the programs, the collective vision of staff, how the data are managed and made accessible, and how other natural heritage programs in the NatureServe network are managing similar information, were included in the review. There were several common themes that emerged that were identified as important to making progress and achieving success in the Natural Areas Program. NHIC will outline the plan for the Natural Areas Program after senior management further discusses information from the program review.

By Bonnie Henson

New species lists posted by NHIC

One of NHIC's core functions is to maintain species lists, provincial conservation status ranks, and other information on Ontario's biodiversity. This information is maintained in the NHIC's database and is regularly updated both in Land Information Ontario (LIO) Warehouse and on the NHIC web page.

Updated Ontario species lists (including plant communities and wildlife concentration areas) have recently been posted to NHIC's "Get Information" page www.ontario.ca/page/get-natural-heritage-information. The lists can be downloaded as spreadsheets for all species [13,401], species of conservation concern (i.e. provincially tracked species) [1,844], and for various taxonomic groups (see Table 1). For each species, the lists contain information on scientific name, synonyms, English common name, French common name, global conservation status rank (g-rank), national conservation status rank (n-rank), provincial conservation status rank (s-rank), COSEWIC status, SARO status, exotic status, taxonomic classification (kingdom, family, class, order, family), taxonomic comments, ranking comments and other information. The inclusion of synonyms (alternate scientific, English common, and French common names) is a new feature in this year's lists and should help users find information on species of interest even when names have changed since previous lists.

Table 1: Ontario species lists

Group	# Elements	# Ranked	# Tracked
Amphibians	30	30	10
Beetles	3,816	303	14
Birds	479	479	59
Bryophytes	725	706	317
Butterflies & Moths	2,526	587	121
Crustaceans	13	13	2
Dragonflies & Damselflies	175	175	65
Fish	172	171	45
Lichens	768	40	284
Mammals	86	86	15
Molluscs	257	15	115
Other invertebrates	811	113	52
Reptiles & Turtles	34	34	25
Spiders	10	6	1
Vascular Plants	3,499	3,499	719
TOTAL	13,401	6,257	1,844

Most provincial conservation status ranks (s-ranks) were reviewed and in many cases revised last year as part of the 2015 National General Status of Wild Species project. Updated information on the conservation status of Ontario's biodiversity will be useful for those involved in environmental planning, natural areas assessment, species at risk assessment and recovery, and a variety of other conservation applications.

By Michael J. Oldham & Pete Sorrill

NHIC assists with updated Thunder Bay District plant checklist

NHIC biologists Wasyl Bakowsky and Mike Oldham assisted Erika North, Robert Foster, Susan Bryan, and Allan Harris of the Thunder Bay Field Naturalists in producing an updated checklist of the vascular plants of Thunder Bay District, Ontario. This is the sixth edition of the checklist which was first compiled in 1968 and last updated in 2003. This compilation includes the 1,281 taxa of vascular plants known from the district and indicates which are provincially rare (122 species, tracked by NHIC), regionally rare (305 species), arctic-alpine (86 species), or introduced (294 species). The checklist is 55 pages in length and coil-bound, and it can be ordered through the Thunder Bay Field Naturalists.

By Michael J. Oldham

NHIC field work on Ontario Nature reserves

Figure 6: Ontario Nature's Altberg Wildlife Sanctuary: a) the sign at the entrance to the sancuary, b) a vernal pool (amphibian breeding site), and C) a spotted salamander egg mass. Photos: M.J. Oldham.

NHIC partner organization, Ontario Nature , owns 24 nature reserve properties scattered across southern Ontario, totalling 2,788 hectares of significant natural habitat . In 2015, NHIC biologists visited five Ontario Nature properties to assist with compiling plant and animal species lists and locating and georeferencing rare and invasive species populations. Properties visited were Stone Road Alvar (Pelee Island, Essex County), Sauble Dunes (Bruce County), George G. Newton (Huron County), Altberg Wildlife Sanctuary (City of Kawartha Lakes), and Hay Marsh (Algoma District).

Over 400 plant and animal observations were made on five different Ontario Nature properties on six different dates, resulting in 151 additions to existing flora and fauna species lists for these sites. These new observations included 13 records of 12 different provincially tracked species including six observations of five different species at risk. The information gathered by the NHIC can be used to assist with future monitoring and management actions on these significant nature reserve properties.

By Michael J. Oldham

NHIC participates in the first Ontario Master Naturalist Program

The Ontario Master Naturalist Program (OMNP) is a new initiative (modeled after similar successful programs in several U.S. states) and a joint program between Lakehead University and Ontario Nature. Participants attend six modules on Saturdays in May and June (see Ontario Master Naturalist Program). The course is held at Lakehead University's Orillia campus and there are modules on six topics to provide an overview of natural heritage in Ontario: Ontario landscapes, botany and local plants, amphibians and reptiles, birds, water and wetlands, invertebrates, and in the final module students participate in the Tiny Marsh BioBlitz to apply what they have learned. Each module consists of morning lectures and lab work followed by an afternoon field trip. The OMNP is not a credit university course, although participants receive a certificate upon successful completion of the course and 30 hours of volunteer service for a not-for-profit organization involved in local environmental or naturalist work. NHIC Botanist Mike Oldham is a scientific advisor to the OMNP and he presented a lecture and led a field trip associated with the botany module in May 2015.

By Michael J. Oldham

Leveraging SOLRIS to map, monitor, and assess pollinator habitat in southern Ontario

In 2015 the Ontario government committed to developing and implementing a Pollinator Health Action Plan (PHAP), the vision of which is for Ontario to be home to healthy pollinator populations that contribute to a sustainable food supply and support resilient ecosystems and a strong economy. In order to make progress towards achieving this vision, action is being taken to address each of four stressors identified as impacting pollinator health: reduced habitat and nutrition; diseases, pests and genetics; exposure to pesticides; and climate change and weather. The final PHAP is planned to be released soon.

As an action in the PHAP, the OMNRF has been working in collaboration with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and the University of Guelph on a project aimed at using data from the Southern Ontario Land Resource Information System (SOLRIS) to map, monitor and assess pollinator habitat in southern Ontario. SOLRIS was designed and implemented in a way that makes it relevant to core OMNRF business yet flexible enough to address new and emerging business needs such as identifying pollinator habitat. Staff from the Natural Resources Information Section, including the NHIC, have been leading this project.

The project first established a pollinator habitat baseline by aggregating SOLRIS land cover classes that likely provide good quality habitat for a diversity of pollinator species (e.g. forest, savanna, wetlands, hedgerows, etc.). OMAFRA staff also identified the Canadian Crop Land Inventory, produced by Agriculture and Agri-Food Canada (AAFC), as an additional supporting source to aid in the refinement of SOLRIS agricultural mapping. A baseline map, including both natural and agricultural pollinator habitat, was produced (Figure 7). These data were also used to measure habitat loss in the 10-year period from 2002 to 2012 and, through subsequent updates to land cover imagery, provide a measure of all changes in habitat. The results of this analysis will be used to inform the implementation of habitat actions under the PHAP.

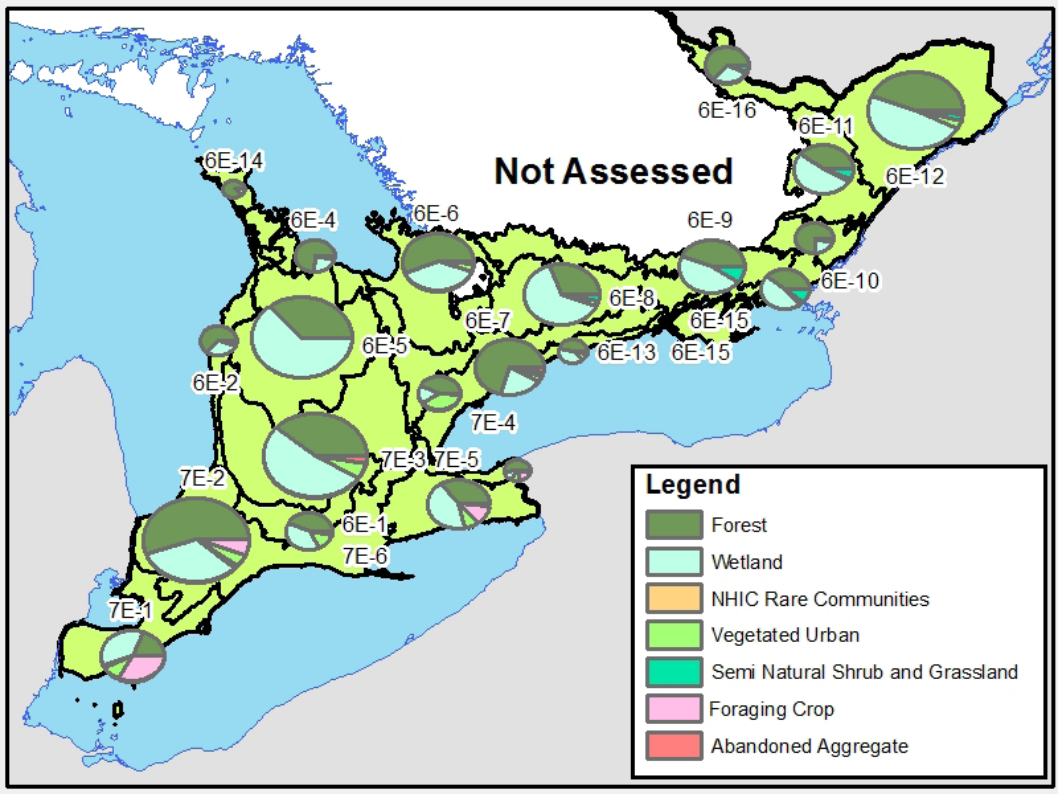


Figure 7: Baseline pollinator habitat mapping including SOLRIS natural areas and AAFC cropland inventory.

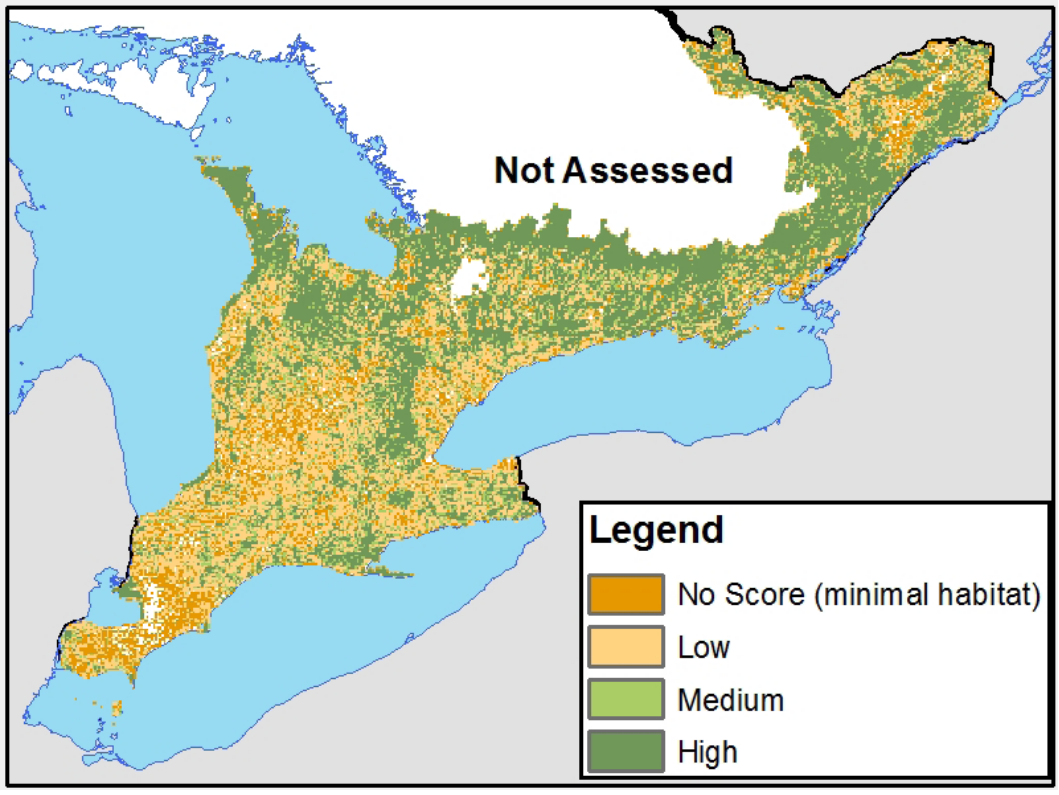


Figure 8: Landscape scale pollinator habitat quality ranking based on criteria published by the Xerces Society.

Taking the analysis one step further, by using part of a scoring matrix developed by the Xerces Society for Invertebrate Conservation (Xerces 2014, 2015), each 15 meter grid cell in southern Ontario was scored from 0 to 10 (with 10 being the highest score) based upon the extent of natural habitat within a radius of 1.5km. While no scientific literature exists for Southern Ontario specifically, average foraging distances for pollinator species typically found in Southern Ontario

were available (Beil, Horn, & Schwabe, 2008; Greenleaf, Williams, Winfree, & Kremen, 2007; Steffan-Dewenter & Kuhn, 2003). The results of this analysis (Figure 8) are intended to inform where the creation/restoration of pollinator habitat is most needed in Southern Ontario.

Lastly, the analysis also provides a spatial foundation for identifying potential pollinator habitat including areas within urban centres, along road and utility rights-of-way, and within agricultural areas (e.g. hedgerows, pasture-land, etc.).

To date the information produced through this work has been used to help inform science and policy aspects of the proposed Pollinator Health Action Plan. For example, baseline pollinator habitat areas and loss numbers have provided context for exploring realistic habitat protection and restoration opportunities. Similarly, this habitat quality ranking scheme will help to inform scientists and policy makers alike of the relative health of pollinator habitat from a landscape perspective; and will help to direct future research and monitoring to those areas of the province most in need of attention.

By Colin Jones and Adam Hogg

Putting wildlife concentration areas on the map

Many readers are already familiar with the NHIC's work tracking natural areas, plant communities, and species, but most people are likely unfamiliar with one of the province's most neglected natural entities – wildlife concentration areas.

Wildlife concentration areas (WCAs) are defined as locations which regularly support assemblages of species during critical periods in species' life cycles (such as breeding, migrating or hibernating). These concentrations may occur seasonally, semi-annually or annually, and they are recurring and take place in distinct, definable areas. Currently, the NHIC tracks seven different WCAs:

- Mixed Wader Nesting Colony
- Colonial Waterbird Nesting Area
- Waterfowl Concentration Area
- Shorebird Migratory Concentration Area
- Raptor Winter Concentration Area
- Bat Hibernaculum/Nursery
- Freshwater Mussel Concentration Area

Figure 9: Rough-legged Hawk in flight near Strathroy, Middlesex County. Photo: S. Dodsworth.

WCAs are vital places for many wildlife species in Ontario. In fact, many of Ontario's WCAs are not only important provincially, but at the global scale. Some overlap with other conservation designations, such as Important Bird Areas and Biodiversity Areas, and Ramsar Sites (wetlands of international importance).

Figure 10: Dunlin, semipalmated and white-rumped sandpipers in flight near Chickney Point, James Bay, Kenora District. Photo: M. Burrell.

The WCAs tracked by the NHIC follow standards used by the entire NatureServe network, so that just as with natural areas, plant communities, and species, the data can be rolled up and compared with those of other jurisdictions across the Western Hemisphere.

WCAs are key components of the biodiversity of the Great Lakes basin. In many cases their locations and significance are relatively poorly known and consequently tend to be under-represented in provincial databases. 2016 is the final year of a three year Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health (COA) –funded project designed to enhance OMNRF's information holdings through data mining, partnership initiatives, gap analysis, priority setting, and targeted surveys.

Combining WCA data into a single authoritative dataset was the primary driver of this project. Many groups collect this information to support a wide range of conservation, planning, and management priorities. To determine what information had already been compiled, NHIC staff collaborated with a number of OMNRF program areas, external agencies, and non-government organizations that collect and maintain data on the locations of WCAs in Ontario.

The NHIC compared the results of the data-mining exercise with existing datasets to identify information gaps. The results of this analysis were then used to prioritize field inventory and monitoring activities, and identify opportunities for outreach and partnerships to acquire additional information.

From 2014 to 2016 NHIC staff conducted targeted surveys for raptor winter concentration areas, colonial waterbird nesting areas, mixed wader nesting colonies, and shorebird migratory concentration areas, aimed at filling information gaps. The NHIC combined all field data with the results of the data mining initiative, and created a new dataset (currently 14,183 records) to be loaded into the provincial record in Land Information Ontario later this year.

We hope this work will help highlight the importance of WCAs and foster an interest in documenting these important sites. Please report your observations of WCAs to the NHIC. For external partners, the NHIC has an online form to report single observations and a spreadsheet for multiple observations. OMNRF staff should submit WCA observations directly in Land Information Ontario.

Identifying WCAs is the first step to ensuring they are flagged for conservation. With your help we can increase our knowledge of WCAs across the province and build a comprehensive record that will be a valuable tool for the conservation community.

By Mike Burrell and Simon Dodsworth

Wild Species 2015 Report on the General Status of Species in Canada coming soon

The General Status of Wildlife in Canada is a program of Environment Canada and Climate Change (ECCC) intended to assess and report on the conservation status of, ultimately, all species in Canada. The program fulfills a requirement of the Accord for the Protection of Species at Risk, an agreement in principle established in 1996 by Canadian provincial, territorial, and federal ministers responsible for wildlife. Under the auspices of the National General Status Working Group, comprised of representatives from provincial and territorial governments and three federal agencies (Canadian Wildlife Service, Fisheries & Oceans Canada, and Parks Canada), species are assessed or re-assessed at five-year intervals with 2015 marking the fouth report and conclusion of the fourth cycle of assessment. The NHIC has coordinated the General Status species assessments for Ontario species on behalf of the province since the program's beginning and first report in 2000.

A major innovation in the species assessment process for the soon to be released 2015 report was the adoption of NatureServe's subnational ranking protocols, including the use of NatureServe's conservation rank calculator. Prior to the 2015 report, General Status assessments had employed a unique 10-tier ranking system to evaluate the relative conservation risk of the various taxa. The adoption of NatureServe's ranking protocols and the use of the rank calculator enables a more consistent and unbiased approach to the development of subnational ranks (S-Ranks) and national ranks (N-Ranks) for taxa in Canada.

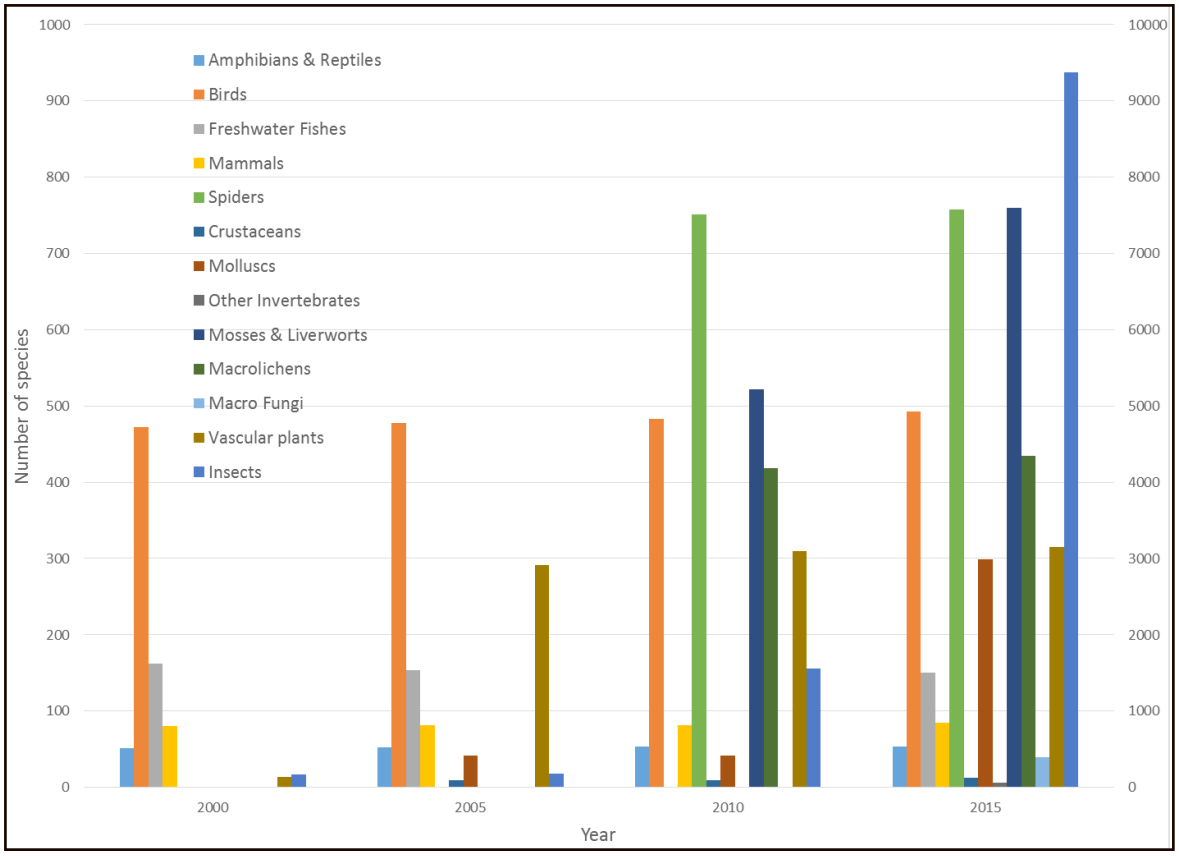
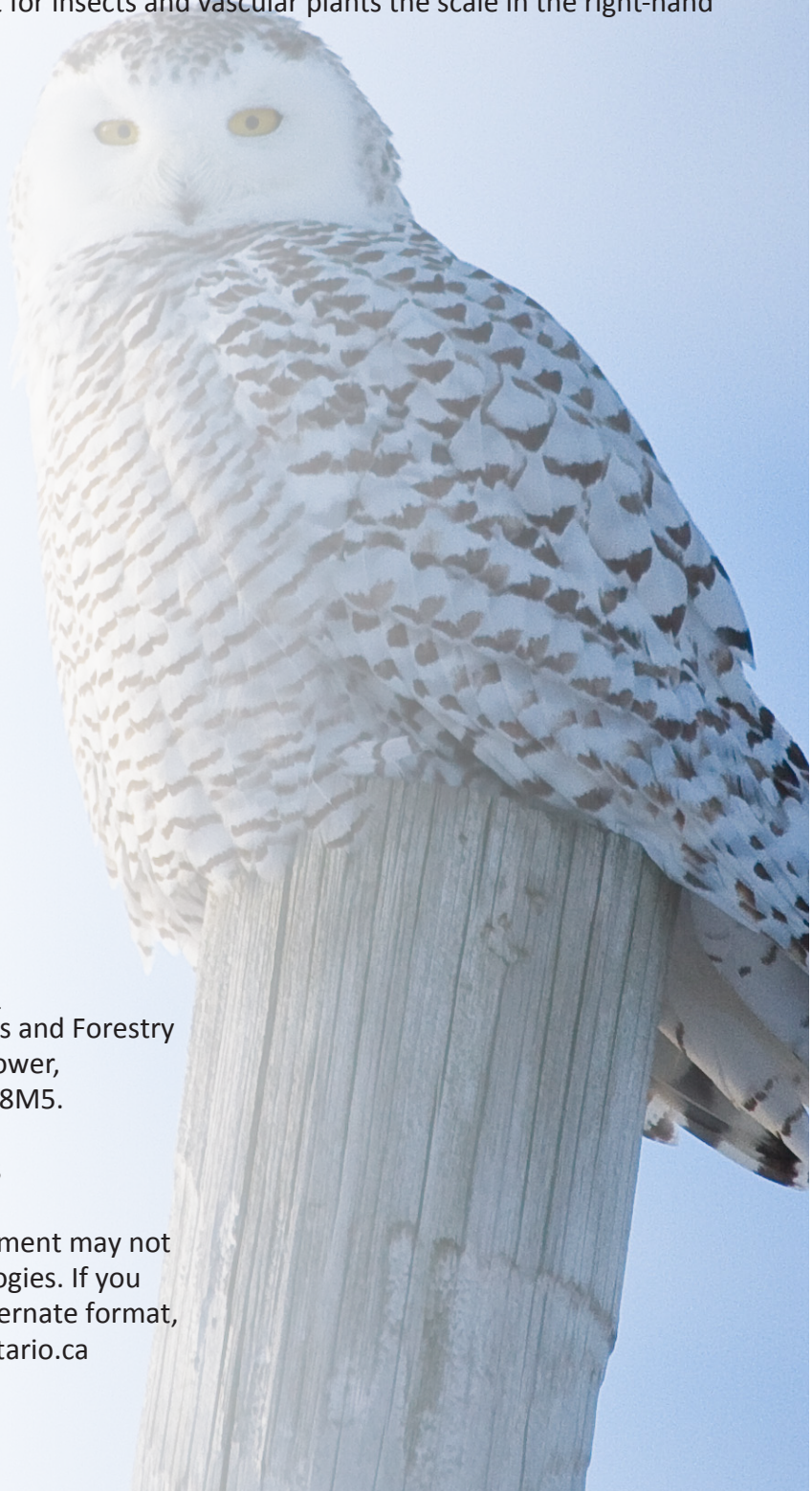


Figure 11: Numbers of Ontario species by major taxonomic group assessed for Wild Species, 2000-2015 (note that for insects and vascular plants the scale in the right-hand axis applies).

More species were assessed for the Wild Species 2015 report than during any of the previous reports. At its inception in 2000, the Canadian status of 1,670 species in eight taxonomic groups was assessed and reported; for the 2015 report that number has increased to 30,123 species in 34 groups! Much of this knowledge increase is attributed to lesser-known groups, particularly insects (9,370) as well as spiders, mosses & liverworts and macrolichens. As might be expected for a comparatively biodiversity-rich province such as Ontario, around 52 per cent (15,605 species) of all taxa assessed for Canada occur in this province. Figure 11 shows the increase in numbers of assessed and reported Ontario species by major taxonomic group for each of the four for Wild Species reports 2000-2015 (note that for insects and vascular plants the scale in the right-hand axis applies).

By Don Sutherland



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Some of the information in this document may not be compatible with assistive technologies. If you need any of the information in an alternate format, please contact info.mnrfscience@ontario.ca

List of acronyms used in document:

United Nations Educational, Scientific and Cultural Organization (UNESCO)
Vegetation Sampling Protocol (VSP)
Ontario Ministry of Natural Resources and Forestry (OMNRF)
Natural Heritage Information Centre (NHIC)
Importance Values (IV)
Coefficient of Conservatism (CC)
City of Kawartha Lakes (CKL)
Ontario Master Naturalist Program (OMNP)
Land Information Ontario (LIO)
Committee on the Status of Endangered Wildlife in Canada (COSEWIC)
Species at Risk in Ontario (SARO)
Pollinator Health Action Plan (PHAP)
Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
Southern Ontario Land Resource Information System (SOLRIS)
Agriculture and Agri-Food Canada (AAFC)
Wildlife Concentration Areas (WCAs)

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