Hyanenoxys herbacea

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SCIENCE AND INFORMATION

NHIC Species at Risk Surveys and Natural Heritage Inventories in Ontario's Hudson Bay Lowlands

M. J. Oldham - NHIC Archive

Adult Polar Bear in the Hudson Bay Lowlands.

In 2001, as a follow-up to a successful field expedition in 2000 (see NHIC Newsletter 6(1):16-17; Winter 2000), NHIC biologists Don Sutherland and Mike Oldham joined MNR bear biologist Martyn Obbard, and technician Lyle Walton, in additional surveys in Ontario's Hudson Bay Lowlands. Survey work was conducted primarily in Polar Bear Provincial Park and was largely funded through MNR's Species at Risk program. This far northern part of Ontario has a maritime tundra-like flora and fauna and, because of its vastness and inaccessibility, has been poorly studied to date. Although it is Ontario's largest park, Polar Bear Provincial Park has received little previous life science inventory work.

The primary aim of the study was to characterize Polar Bear maternal den sites. These den sites are of critical importance to Polar Bear conservation and have been little-studied in Ontario. Using Global Positioning System (GPS) satellite radio-collars, probable denning locations were pin-pointed and visited by helicopter. Den sites were primarily on gravel former beach ridges often many kilometers inland, however, some den sites were in Sphagnum peatland and eroded river banks. At each den site, den characteristics (depth, soil type, slope, aspect, distance from water, vegetation, etc.) were recorded for later analysis.

As well as gathering data on Polar Bear dens, the survey crew gathered breeding bird

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information for the Ontario Breeding Bird Atlas and botanical information for the NHIC and Ontario Parks databases and files. Incidental observations were also made on butterflies, dragonflies, mammals and amphibians.

During thirteen days of field surveys more than 1,700 breeding bird atlas observations were made from 233 different atlas squares and 859 unique locations. Of these observations, 349 were of 21 provincially rare bird species tracked by the NHIC. Highlights included two active territories of the provincially endangered Golden Eagle, with one active nest discovered containing two downy young; breeding occurrences for such provincially rare breeders as American Golden-Plover, Hudsonian Godwit, Pectoral Sandpiper, Red-necked Phalarope, Short-billed Dowitcher and Whimbrel; and breeding evidence for Arctic Tern and Tundra Swan in 48 and 38 10 km^2 atlas squares, respectively. An additional highlight was the discovery of a singing male Sprague's Pipit, a rare western vagrant to the province and the first record of this species for the Hudson Bay Lowlands in Ontario.

Over 2,500 vascular plant observations were recorded during fieldwork, including more than 200 observations of 53 different provincially rare plant species. Botanical highlights included three species new to the Ontario flora: Pacific Fir-moss (*Huperzia miyoshiana*), Nard Sedge (*Carex nardina*) and Alpine Cinquefoil (*Potentilla crantzii*). The latter two species were both found in Polar Bear Provincial Park. In addition, ten new sites were discovered for Rock Sedge (*Carex rupestris*), first documented in Ontario in 2000 by NHIC biologists. Three additions to the flora of Ontario's Hudson Bay Lowlands were documented: Purple Reed Grass (*Calamagrostis purpurascens*), Ross's Sedge (*Carex rossii*) and Smooth Woodsia (*Woodsia glabella*), all of which are provincially rare. Nine plant species ranked SH (no Ontario records for at least 20 years) were rediscovered: Bigelow's Sedge (*Carex bigelowii*), Williams' Sedge (*Carex williamsii*), Gray-leaved Whitlow-grass (*Draba cinerea*), Norway Whitlow-grass (*Draba norvegica*), Little Snow Whitlow-grass (*Draba nivalis*), Alpine Sweet Grass (*Hierochloe alpina*), Kobresia (*Kobresia bellardii*), Confused Rush (*Luzula confusa*) and Greenland Minuartia (*Minuartia groenlandica*).

Noteworthy dragonfly records included collection records of several infrequently encountered, northern boreal/subarctic species, seven of which are considered to be provincially rare. Most exciting was the rediscovery of Azure Darner (*Aeshna septentrionalis*) and Canada Whiteface

M. J. Oldham - NHIC Archive

Arctic Tern nest along the Kenushio River.

M. J. Oldham - NHIC Archive

Golden Eagle alternate nest site on the Sutton Ridges.

M. J. Oldham - NHIC Archive

Alpine Cinquefoil (*Potentilla crantzii*), new to Ontario in 2001, growing in the Hudson Bay Lowlands.

M. J. Oldham - NHIC Archive

Greenland Minuartia (*Minuartia groenlandica*), growing on the Sutton Ridges, its only Ontario locality.

(*Leucorrhinia patricia*). The former had last been collected in the province at Cape Henrietta Maria on Hudson Bay in 1948, and the latter hasn't been reported in the province for almost 20 years. Other apparently rare northern species encountered were Subarctic Darner (*Aeshna juncea*), Zig-zag Darner (*Aeshna sitchensis*), Muskeg Emerald (*Somatochlora septentrionalis*), Ringed Emerald (*Somatochlora albicincta*) and Whitehouse's Emerald (*Somatochlora whitehousei*). Rare or infrequently reported butterfly species encountered included Arctic Blue (*Agriades glandon*) and Palaeno Sulphur (*Colias palaeno*). These two species were observed in several locations and, given the distribution of their preferred habitat, would appear to be more widespread than was previously thought.

The information gathered during fieldwork in the Hudson Bay Lowlands will assist with Polar Bear conservation efforts and help with the future management of Polar Bear Provincial Park.

M. J. Oldham - NHIC Archive

Rock Sedge (*Carex rupestris*), new to Ontario in 2000, growing in the Hudson Bay Lowlands.

M. J. Oldham - NHIC Archive

Purple Reed Grass (*Calamagrostis purpurascens*), new to the Hudson Bay Lowlands in 2001.

Michael J. Oldham & Donald A. Sutherland

Big Picture, 2002

The Big Picture, 2002 project is a Geographic Information System (GIS)-based landscape analysis, aimed at identifying the key natural heritage areas in southern Ontario and the most promising linkages between them. The maps produced through this project will help guide conservation efforts such as restoration, land securement and land-use planning. The NHIC has provided facilities and scientific/technical input to the project, and the Nature Conservancy of Canada has supported the project with funding and scientific input. A number of other organizations (Federation of Ontario Naturalists, Ducks Unlimited, Carolinian Canada, Ontario Power Generation and Ontario Parks) have provided valuable input through a peer review committee.

This newest version of the Big Picture developed out of the approach taken in southwestern Ontario (Ecoregion 7E or Carolinian Canada). The Big Picture methodology and results were described in detail in a previous newsletter (see NHIC Newsletter 6(1); Winter 2000). The revised study area for the Big Picture, 2002 includes Ecoregions 7E, 6E (Lakes

Big Picture, 2002 study area (in white) includes the ecoregions 7E, 6E, and portions of 5E and 4E.

Simcoe-Rideau Ecoregion), and a portion of 5E and 4E within 100 km north of the contact line between the Paleozoic bedrock of southern Ontario and the Precambrian Shield (see diagram of study area). Big Picture, 2002 maps illustrate the connections from southern Ontario to the more continuous forests and wetlands on the Shield. Pete Sorrill, Tracy Sorrill and Jason Henson completed the programming and delineation of the core natural areas and the connections between them. Core areas were identified with specific criteria and typically include areas where there is extensive forest cover, provincially significant wetlands or concentrations of rare species. Cores and corridors already identified in the previous Big Picture mapping and the Oak Ridges Moraine Conservation Plan are incorporated without changes. Computer processing for this project has been much greater than for the previous Big Picture project because of the higher number of natural areas and potential connections further north. By the time this newsletter is printed, a poster map, CD product and a report on the methodology should be available. The NHIC is hoping to support technology transfer workshops on the Big Picture, 2002 with our conservation partners.

Michael J. McMurtry

W.D. Bakowsky - NHIC Archive

The dune-grassland and limestone bedrock shoreline vegetation communities at Portage Bay, Manitoulin Island, are endemic to the Great Lakes basin.

Great Lakes Conservation Blueprint Project

The Canadian portion of the Great Lakes region contains some of the largest and most intact landscapes and aquatic communities in North America. Some of the continent's most significant freshwater coasts, rivers, lakes, fens, bogs, wetlands and terrestrial communities are located here. The Ministry of Natural Resources and the Nature Conservancy of Canada have undertaken two efforts to characterize and prioritize on an ecoregion-wide basis aquatic and terrestrial areas for conservation within the Great Lakes region.

The two-year terrestrial and aquatic conservation blueprint projects have reached the halfway point; project highlights and accomplishments are described below.

Terrestrial

Over the past year the terrestrial conservation blueprint project has progressed with the assistance of the project's core science team. This team includes biologists from NHIC, Nature Conservancy of Canada, The Nature Conservancy, Ducks Unlimited Canada, Canadian Wildlife Service and Ontario Power Generation. We are also working with Bird Studies Canada to align landbird conservation targets and habitat goals with the North American Bird Conservation Initiative. A list of terrestrial species conservation targets has been compiled and the NHIC is striving to compile data on the status and distribution of these target species for the provincial Element Occurrence database. Work is also underway to compile a list of the status and distribution of vegetation communities for the Ontario portion of the Great Lakes ecoregion.

In March 2002 geomatics specialist Ray Jahncke joined the project team. Currently Ray is testing a methodology for the Geographical Information System (GIS) gap analysis of species and vegetation community targets and protected areas.

Aquatic

Together with the Aquatic Research and Development Section of the MNR, the Provincial Geomatics Service Centre and guidance from the Department of Fisheries and Oceans, Environment Canada, The Nature Conservancy (U.S) and colleagues at University of Guelph and University of Toronto, we have developed and applied GIS software (Aquatic Landscape Inventory Software, ALIS) to delineate and characterize aquatic habitat. Characterization of stream habitats within the Lake Huron, Erie and Ontario drainage areas is complete. The St. Lawrence drainage area within Ontario is processing. Currently we are developing procedures to identify and display rare and representative aquatic habitats that can be prioritized for conservation and protection.

A list of aquatic conservation target species is under review. Species targets are considered according to membership in the following categories: imperiled, threatened and endangered; declining; endemic; and vulnerable species.

Future work will include identification of physical habitat targets; defining conservation objectives such as the number, size and location of target occurrences; and assessing the viability of conservation targets. The final portfolio of sites will be prioritized using the principles of irreplaceability, complementarity, efficiency and viability/suitability.

Gordon A. Wichert and Kara E. Brodribb

2002 Program Highlights

Zoology

NHIC Participates in the National Odonata Assessment Workshop

On October 9, 2002, NHIC project biologist Colin Jones participated in a National Odonata (dragonflies and damselflies) Assessment Workshop held in Winnipeg. This meeting was part of the General Status of Wild Species in Canada process, to which the Ontario Ministry of Natural Resources (MNR) is committed under "The Accord for the Protection of Species at Risk in Canada".

The NHIC, on behalf of MNR, is responsible for generating the Ontario General Status Ranks for all taxa, and has already done so for birds, mammals, reptiles and amphibians, freshwater fish, butterflies, orchids and ferns. Ontario's representation at this meeting was very important, as the range of many species of Odonata in Canada is restricted to Ontario. The NHIC's presence at this meeting demonstrated Ontario's commitment to the conservation of dragonflies and damselflies (many of which are rare and are threatened by loss of or changes to aquatic habitat).

The morning of October 9th was dedicated to a variety of talks on North American dragonflies and dragonfly initiatives. The keynote speaker was Dr. Philip Corbet, long-time odonatologist and author of *Dragonflies: behavior and ecology of Odonata*, the most important treatment on the behavior and ecology of the world's Odonata. Dr. Corbet spoke on the importance of the late E.M. Walker's work, and of the opportunities Canadians have for investigating climate-dependant life-cycle strategies considering that several species exist across a wide latitudinal range. Other talks dealt with initiatives underway across the country to survey (largely with the help of interested volunteers) dragonflies and damselflies. Speakers included Rob Cannings (British Columbia), John Acorn (Alberta), Brent Elliott (Manitoba) and Paul Brunelle (Maritimes). Donna Giberson (University of Prince Edward Island) presented an overview of findings from a study of the Odonata of Prince Edward Island National Park, as well as the results of some surveys on northern Canadian rivers.

A display table was set up in order to highlight the work that has been accomplished in Ontario since 1995, and the role of the NHIC and the Toronto Entomologists Association (T.E.A.) in such achievements.
This work includes:

1) The Ontario Odonata Database-the NHIC created and maintains this provincial database that currently includes over 30,000 records.
2) *Ontario Odonata*-an annual publication produced by the T.E.A. that summarizes the year's Odonata records as well as acting as a forum for a variety of notes, papers and articles on the distribution, ecology and behavior of dragonflies and damselflies in Ontario. The NHIC is involved in the annual summary and acts as a repository for the records generated (ca. 5,000 per year).
3) The Ontario Odonata Atlas-the NHIC is using the Ontario Odonata Database to produce an atlas of the Odonata of Ontario. The intention is to feature the atlas on the NHIC web site in a similar way to the Ontario Herpetofaunal Atlas (http://www.mnr.gov.on.ca/MNR/nhic/herps/ohn.html) and/or produce a printed version.

The generation of the General Status Ranks for Ontario were possible largely due to the above initiatives, and consultation with other Odonata experts involved in these initiatives including Peter Burke, Paul Catling, Matt Holder and Paul Pratt.

During the afternoon of October 9th, the "Odonata Expert Group" sat down to review the draft General Status Ranks from each of the provinces and territories and to "roll-up" these ranks to produce a National General Status Rank for each species. The National roll-up ran very smoothly, largely because the individuals representing each jurisdiction were extremely knowledgeable about the current status of dragonflies and damselflies in their areas. The experts present at the assessment workshop will continue to work with the General Status Working Group on revising (if necessary) the draft ranks that were generated in Winnipeg. The goal is to have final General Status Ranks completed early in 2003.

The generation of these ranks is an important step in the conservation of dragonflies and damselflies in Canada. The General Status Ranks will allow the Committee on the Status of

C.D. Jones - NHIC Archive

Arrow Clubtail (*Stylurus spiniceps*) ranked "May be at Risk" in Ontario under the General Status of Wild Species in Canada process. The "May be at Risk" rank helps to identify species that should be considered for a formal risk assesment by COSEWIC and/or COSSARO.

Endangered Wildlife in Canada (COSEWIC) and the Committee on the Status of Species at Risk in Ontario (COSSARO) to better identify priority species to be considered for a formal risk assessment in Canada and Ontario, respectively.

More information about the General Status project can be found on-line at the Wild Species web site (http://www.wildspecies.ca).

Colin D. Jones

Botany

Swamp Cottonwood (*Populus heterophylla*), Another New Tree for Canada

In the past 25 years southern Ontario has been the region of several discoveries of tree species new to the flora of Canada: Shumard Oak (*Quercus shumardii*), Hill's Oak (*Q. ellipsoidalis*), Pumpkin Ash (*Fraxinus profunda*), Ohio Buckeye (*Aesculus glabra*) and Bear Oak (*Q. ilicifolia*). One might have thought that trees, being such large life forms, would have all been known by now in this well studied area. However, one additional species, known in four sites on similar habitats in nearby Michigan, was recently discovered!

During an inventory of Bickford Oak Woods (or Clay Creek Woodland, south of Sarnia, in Lampton County) in November 2002 we came upon a stand of poplars that interrupted our methodical inventorying with a jolt!

This forest occurs on a site of rolling topography and heavy clay soil. It is composed of a variety of oaks, maples, ashes, hickories and elms. In addition, there are a series of low depressions throughout the site, some with pockets of maple swamps, others open and ringed with Buttonbush (*Cephalanthus occidentalis*) or Winterberry (*Ilex verticillata*). It was at the edge of one of these open depressions that the enigmatic poplars were noticed. They have trunks more of the stature of Cottonwood (*Populus deltoides*), but with a reddish hue to their bark and are conspicuously clonal, as in Balsam Poplar (*P. balsamifera*) or aspens (*P. tremuloides, P. grandidentata*). The leaves are much larger than Balsam Poplar and the two native aspens, and lack the flattened petiole of Cottonwood and the aspens. With its olive green twigs, small buds and orange pith, our initial thought of Swamp Cottonwood (*Populus heterophylla*) was confirmed.

The stand appears to be confined to one small area of 19 X 31 m. The largest specimen has a height of 26.6 m and a dbh (diameter at breast height) of 52.7 cm; in total there are 63 specimens of 10 cm or greater diameter and many other smaller ramets, plus a fallen tree of 22 m. The soil at this site is organic to 12 cm depth and then clay below. It is at the edge of a Buttonbush swamp, with the following associates: Silver Maple (*Acer saccharinum*), Swamp White Oak (*Quercus bicolor*), Bur Oak (*Q. macrocarpa*), American Elm (*Ulmus americana*), Crack Willow (*Salix fragilis*), Peach-leaved Willow (*S. amygdaloides*), Buttonbush (*Cephalanthus occidentalis*), Winterberry (*Ilex verticillata*), Swamp Rose (*Rosa palustris*), Lake Sedge (*Carex lacustris*), Common Reed (*Phragmites australis*), Canada Blue-joint (*Calamagrostis canadensis*) and Mad-dog Skullcap (*Scutellaria lateriflora*). Across the Buttonbush pond in a similar habitat is a large *Populus deltoides*.

Although this site was overlooked in earlier surveys of important natural areas due to past intensive forest harvesting, clearing and pasturing of livestock, as it matures Bickford Oak Woods is showing a significant natural diversity as well as a good east-west forest connection. This find helps confirm the local as well as national importance of this site, which was recently secured by the Nature Conservancy of Canada with assistance of the Ontario Ministry of Natural Resources and other partners. Bickford Oak Woods is currently under management planning and is scheduled to become a provincial reserve.

Gerry Waldron, John Ambrose and Lindsay Rodger

Lindsay Rodger

Discoverers John Ambrose (left) and Gerry Waldron (right) beside a Swamp Cottonwood (*Populus heterophylla*) in Bickford Woods.

Natural Areas

Natural Areas Database

The natural areas database provides information on Ontario's natural areas, including life science and earth science Areas of Natural and Scientific Interest, evaluated wetlands, provincial and national parks, conservation reserves, non-governmental organization sites, International Biological Program sites and other areas recognized for their important or unique features. By assessing the natural areas database through the NHIC web site (http://www.mnr.gov.on.ca/MNR/nhic/areas.cfm), you can obtain information on the natural areas within a municipality, find out about a specific area or print a map of natural areas. On-line data entry is available for Ontario Living Legacy checksheets. The database provides information on the location of an area, a general description, vegetation types, landforms, features represented, biodiversity features, land uses, threats and reports that are available. More detailed information is available for many sites in the NHIC Resource Centre, Peterborough.

Keeping the natural areas database up-to-date and integrated with other MNR databases and information systems is a priority for the NHIC. Last summer, two summer students, Laurie Kryshka and Jaime MacLeod entered new information on 133 natural areas into the database, including the Kawartha Highlands Signature Site (see photo), Georgian Bay Living Legacy Sites, Rainy Lake, the Kolapore Escarpment and Backus Woods.

We thank those who have sent us reports on natural areas over the past year and we encourage readers who may have information on natural areas to send the information to Mike McMurtry, Natural Areas Ecologist at the NHIC. We would also appreciate any feedback you may be able to provide on the natural areas database, so we can make the database as accurate and useful as possible.

The NHIC is working with the Information Resource Management Branch to develop a link between the coordinates locating the centroid of areas in the natural areas database and the spatial data (polygons) for the same areas in the Natural Resource Values Information System (NRVIS), the MNR-wide Geographic Information System (GIS) for storing natural resources information.

Michael J. McMurtry

W.D. Bakowsky - NHIC Archive

Kawartha Highlands Signature Site.

Networking News

This new section of our newsletter will highlight coordination and networking activities of the NHIC.

The NHIC is connected to local, regional, provincial, national and international conservation communities through many formal and informal networks, agreements and partnerships. The coordination and integration of NHIC activity and effort needs to be managed carefully so that resources can be directed towards opportunities that best meet our client needs and advance our goal of conserving biodiversity in Ontario.

Within the pages of the NHIC newsletters, many interesting articles can be found about the unique flora, fauna, ecological communities and natural areas of Ontario. Innovative projects, leading edge initiatives, key fieldwork and significant reports are consistently featured. The NHIC wishes to continue to bring our newsletter readership these articles of conservation and scientific interest, but to also provide our readers with some insights into the operations, networks, partnerships, projects and initiatives that support the delivery of NHIC activities and information. We hope that this new behind-the-scene view of the NHIC will provide some context for our traditional scientific and conservation practitioner readership, while providing insight, transparency and accountability to our expanding business management and corporate readership. Enjoy!

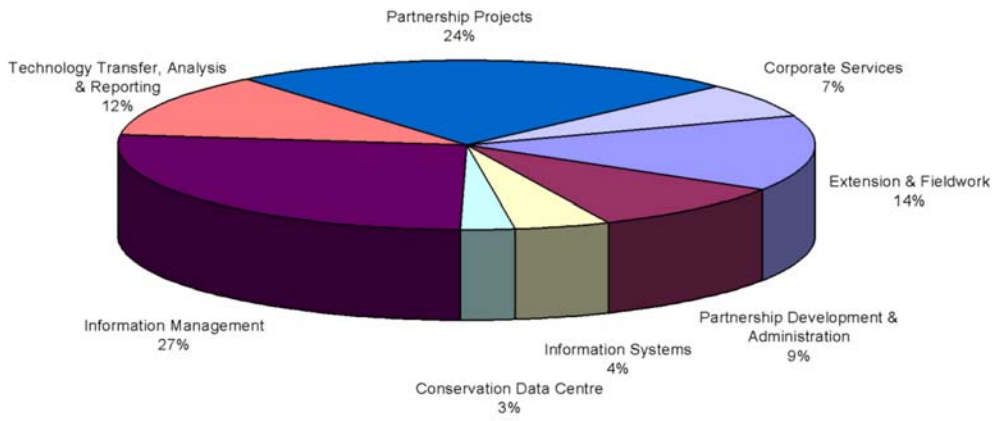
Jim Mackenzie

NHIC Activity Analysis

At the February 2002 inaugural session of the NHIC Partners Advisory Council, a suggestion was made to conduct an analysis of NHIC activities in order to provide insight into the various services being delivered by the NHIC. Building on this good advice, NHIC staff defined and accounted for activities conducted from April 1, 2001 to March 31, 2002. These activities were grouped into service categories to represent the various functional and structural components of the Centre's operations. In total, 50 discrete

NHIC activities were identified for which staff assigned effort as time spent engaged within each activity. These activities were then assigned to 8 service category definitions.

2001/02 NHIC Activity Analysis by Service Category



1. Extension & Fieldwork: providing knowledge and expertise to clients on demand. Examples include: science support to Species at Risk recovery teams, information extracts, species identification, Element Occurrence update & verification, Ontario Breeding Bird Atlas, conservation property inspections and public inquiries.

2. Partnership Development & Administration: creating a business environment that enables government and non-government agencies to share information and collaborate for biodiversity conservation. Examples include: NHIC Partners Advisory Council, Memorandum of Agreement (MOA), information exchange agreements, data use protocols, Special Purpose Account (SPA) and project management activities.

3. Information Systems: making data and information readily available in a secure and responsible fashion to NHIC clients and partners. Examples include: data import routines, web site development and maintenance, and database architecture.

4. Conservation Data Centre: participating in national and international networks to establish scientific rigor and data standards for recording, tracking, ranking and reporting elements of biodiversity. Examples include: NatureServe and NatureServe Canada membership, network data exchanges, GeoConnections and the national vegetation classification.

5. Information Management: assembling, organizing, and maintaining a permanent and dynamic central repository of data and information on Ontario's rare natural species and spaces. Examples include: element observation and occurrence entry, data update and verification, species taxonomy and nomenclature, sub-national ranking documentation, herbarium and resource centre.

6. Technology Transfer, Analysis & Reporting: disseminating knowledge and information on rare natural heritage species, spaces and ecological communities in support of land use and resources management decision making. Examples include: newsletters, technical manuals, interpretation guides, reports, workshops and presentations.

7. Partnership Projects: delivering collaborative, partner and joint partner funded projects for spatial and tabular data processing, analysis and modeling in support of natural heritage and biodiversity conservation. Examples include: Big Picture, Great Lakes Biodiversity Conservation Blueprint and Species at Risk projects.

8. Corporate Services: investing in NHIC staff and supporting Ontario Public Service, Ministry of Natural Resources, and Land and Resources Cluster initiatives and activities. Examples include: professional development, youth employment programs, Ontario Living Legacy and Business Solutions Services.

The NHIC hopes to use this information to ensure that we are delivering a well balanced and client-focused program. Coupled with client and partner feedback, this information will help guide the distribution of our efforts and to monitor changes in our business activities over time.

Jim Mackenzie

Ducks Unlimited Canada
Conserving wetlands for waterfowl, wildlife and people

Ducks Unlimited Canada joins NHIC Partnership MOA

On March 12, 2002 Ducks Unlimited Canada was officially welcomed into the NHIC Partnership Memorandum of Agreement (MOA) by Frank Kennedy, Chair, Natural Heritage Information Centre Partners Advisory Council. Jamie Fortune, Director of Regional Operations for Ducks Unlimited Canada, made

News and Notes

an application to join the NHIC Partnership MOA based upon a new conservation vision and mandate that includes conservation of wetland habitats for waterfowl, wildlife and people. Since joining the MOA, Ducks Unlimited Canada has initiated two partnership projects with MNR that are utilizing NHIC expertise and information.

NHIC is happy to have this new and active partner.

Jim Mackenzie

NatureServe
A Network Connecting Science With Conservation

NatureServe is an international non-profit and charitable research organization dedicated to connecting science with conservation. Built on a foundation of member conservation data centres (CDC) that operate across Canada in six provinces, one territory (NatureServe Yukon) and one region (Atlantic Canada) (http://natureserve-canada.ca/), all fifty U.S. states, and nine countries of Latin America and the Caribbean, the NatureServe network connects science with conservation in the western hemisphere. NatureServe and its member CDC programs focus on assessing the status of species and ecosystems, documenting their localities through targeted field inventories, and managing spatially explicit databases that focus on rare species and ecological communities. NatureServe Canada constitutes the Canadian section of NatureServe and the NHIC delivers Ontario's contribution of knowledge, information and expertise.

For more information on NatureServe and NatureServe Canada, please visit on-line the NatureServe web site (http:// www.natureserve.org/).

Jim Mackenzie

NHIC Assists with Technical Guidelines for RTE Species on the Oak Ridges Moraine

W.D. Bakowsky - NHIC Archive

Eastern Hognose Snake, a nationally threatened species found on the Oak Ridges Moraine.

NHIC natural areas ecologist Mike McMurtry is working with Roxanne St. Martin of the MNR Southcentral Region Planning Unit, and members of the Oak Ridges Moraine Project Team in Aurora, to produce technical guidelines for the identification of rare, threatened and endangered (RTE) species and their habitat on the moraine. The Oak Ridges Moraine Conservation Plan, released on April 22, 2002, prohibits development or site alteration on land within key natural heritage features on the moraine, including significant portions of the habitat of rare, threatened and endangered species. The technical guidelines will provide definitions for the species covered by the Plan and describe a process for identifying occurences and mapping habitat. Some of the species that will receive increased protection include the Eastern Hognose Snake (*Heterodon platirhinos*), Red-shouldered Hawk (*Buteo lineatus*) and Prairie Buttercup (*Ranunculus rhomboideus*).

Michael J. McMurtry

NHIC Web Site Update

The NHIC web site has undergone major modifications to ensure that it will be accessible to persons with disabilities. These changes to the back end code allow the NHIC web pages to be read properly through a screen reader for the sight impaired. Also, the user can increase or decrease the size of the font to suit their preference. There are also more helpful hints when a user hovers over a tect link. The new NHIC web site has the same functionality as its predecessor, including querying the NHIC database for species, vegetation communities and natural areas information, the ability to submit rare species observation data and a spatial query for species locations, but with a new look.

The redesigned look and addition of a side menu bar makes it easier and quicker to navigate the NHIC web site. The location bar at the top of the page enables users to know their location at all times and the side menu bar makes navigating through the site quick and easy. The top and bottom navigation menus are present on every page to encourage users to explore and extract information and resources from other areas of the MNR web site.

Please take a tour on-line (http:// www.mnr.gov.on.ca/MNR/nhic/nhic.cfm.). The NHIC welcomes your comments in order to serve you better.

Joel Opulencia

COSEWIC Designates Additional Ontario Species at Risk

During 2002 the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) met in May and November to examine the status of species at risk in Canada. At these meetings the status of 30 Ontario species were examined (see table 1). Eight Ontario species were examined for the first time by COSEWIC and were added to the national list of species at risk. These included two moss species, the first Ontario mosses ever to be evaluated by COSEWIC. Macoun's Shining Moss

Table 1. 2002 Ontario additions and changes to the COSEWIC list.

COMMON AND SCIENTIFIC NAMES	NEW COSEWIC STATUS	CURRENT MNR STATUS	OLD COSEWIC STATUS & DATE OF ASSESSMENT	RANGE OF OCCURRENCE IN CANADA
MOSSES				
Incurved Grizzled Moss (*Ptychomitrium incurvum*)	Extirpated	none	new report	ON
Macoun's Shining Moss (*Neomacounia nitida*)	Extinct	none	new report	ON
VASCULAR PLANTS				
Bird's-foot Violet (*Viola pedata*)	Endangered	none	Threatened (April 1990)	ON
Climbing Prairie Rose (*Rosa setigera*)	Threatened	none	Special Concern (April 1986)	ON
Crooked-stem Aster (*Symphyotrichum prenanthoides*)	Threatened	Vulnerable	Special Concern (April 1999)	ON
Forked Three-awned Grass (*Aristida basiramea*)	Endangered	none	new report	ON QC
Hop-tree (*Ptelea trifoliata*)	Threatened	Vulnerable	Special Concern (April 1984)	ON
Lakeside Daisy (*Hymenoxys herbacea*)	Threatened	none	new report	ON
Small-flowered Lipocarpha (*Lipocarpha micrantha*)	Endangered	Threatened	Threatened (April 1992)	BC ON QC
Wild Hyacinth (*Camassia scilloides*)	Threatened	Threatened	Special Concern (April 1990)	ON
FISHES				
Longjaw Cisco (*Coregonus alpenae*)	Invalid taxon	none	Extinct (May 2000)	ON
Margined Madtom (*Noturus insignis*)	Data Deficient	Indeterminate	Threatened (April 1989)	ON QC
Northern Madtom (*Noturus stigmosus*)	Endangered	Vulnerable	Special Concern (April 1998)	ON
Pugnose Shiner (*Notropis anogenus*)	Endangered	Threatened	Special Concern (April 1985)	ON
REPTILES				
Stinkpot (*Sternotherus odoratus*)	Threatened	none	new report	ON QC
Eastern Milksnake (*Lampropeltis triangulum*)	Special Concern	none	new report	ON QC
Northern Map Turtle (*Graptemys geographica*)	Special Concern	none	new report	ON QC
Northern Ribbonsnake (Great Lakes population) (*Thamnophis sauritus*)	Special Concern	none	new report	ON
MAMMALS				
Grey Fox (*Urocyon cinereoargenteus*)	Threatened	none	Special Concern (April 1979)	MB ON

was designated as extinct. This moss has only been found in the Belleville area of southern Ontario, but has not been seen for more than a century. Another species designated for the first time is the Lakeside Daisy, a globally rare plant of alvars which has most of its populations in Ontario (this plant also appears on the NHIC logo). Four reptiles were designated for the first time, two turtles (Northern Map Turtle and Stinkpot) and two snakes (Northern Ribbonsnake and Eastern Milksnake).

The table accompanying this article lists the 19 Ontario species examined by COSEWIC in 2002 where a new COSEWIC status was assigned. Another 11 species were examined, but the status assigned was the same as the previous status; these species are: White Wood Aster (Threatened), Channel Darter (Threatened), Spring Salamander (Special Concern), Blue Racer (Endangered), Common Watersnake (Not At Risk), DeKay's Brownsnake (Not At Risk), Eastern Box Turtle (Data Deficient), Eastern Massasauga (Threatened), Eastern Spiny Softshell Turtle (Threatened), Polar Bear (Special Concern) and Woodland Caribou (boreal population) (Threatened).

For further information on species nationally designated in 2002 see the COSEWIC web site (http://www.cosewic.gc.ca) and for the current Ontario Ministry of Natural Resources list of designated species at risk see the MNR web site (http:// www.mnr.gov.on.ca/MNR/ fwmenu.html.).

Michael J. Oldham

Trent University - NHIC Internships in Conservation Biology

Students in the Trent University "Internship in Conservation Biology" course are jointly supervised by a Trent faculty member and a practicing conservation biologist. They work on a project of interest to the student and of practical benefit to the non-Trent partner (NHIC in this case). For the fourth consecutive year the NHIC is jointly supervising a Trent University student in this program.

Debra Mohammed, co-supervised by Mike Oldham and Dr. Joe Cebek, finished her internship project in April 2002. Debra looked at "Ontario's Conservation Responsibility for Reptiles and Amphibians" (*Development of a Responsibility Index based on Range Proportions and existing Conservation Ranks*) by examining the proportion that Ontario comprised of the global range of the province's herp species. Debra did this using data from the Ontario Herp Atlas (posted on the NHIC web site) and range maps digitized from field guides. She also used subnational conservation status ranks (Sranks) from all jurisdictions within the range of each species. A number of Ontario herp species have a large proportion of their global distribution within Ontario (e.g. Eastern Fox Snake, Blanding's Turtle amd Eastern Massasauga Snake). A copy of Debra's final report is on file in the NHIC Resource Centre.

Sonya Richmond is the current Conservation Biology Intern at the NHIC, also jointly supervised by Mike Oldham and Joe Cebek. Sonya is undertaking a project using NHIC Element Occurrence data, records from the Ontario Herpetofaunal Atlas database, and other information on file at the NHIC. Her project involves compiling data on turtle populations in the Kawartha Lakes region and includes preparing Geographic Information System (GIS) range maps and other information for the Kawartha Turtle Watch Project (http://www.trentu.ca/ biology/turtlewatch/).

Michael J. Oldham

Updated IUCN Red List of Threatened Species Released On-line

In October 2002 the World Conservation Union (IUCN) Species Survival Commission released an updated Red List of Threatened Species, a key tool used to determine the status of the Earth's biodiversity. The IUCN Red List includes 11,167 species threatened with extinction. This searchable list (and other useful information such as criteria used and status category definitions) is now available on-line (http://www.redlist.org/). Table 1 indicates Ontario species currently listed by the IUCN (non-breeding and accidental species have been omitted).

Michael J. Oldham

TABLE 1. Ontario species included in the 2002, IUCN Red List of Threatened Species.

SCIENTIFIC NAME	COMMON NAME	IUCN STATUS CATEGORY
Acipenser fulvescens	Lake Sturgeon	Vulnerable
Alasmidonta marginata	Elktoe	Data Deficient
Anthus spragueii	Sprague's Pipit	Vulnerable
Charadrius melodus	Piping Plover	Vulnerable
Clemmys guttata	Spotted Turtle	Vulnerable
Clemmys insculpta	Wood Turtle	Vulnerable
Coregonus alpenae	Longjaw Cisco	Extinct
Coregonus hoyi	Bloater	Vulnerable
Coregonus johannae	Deepwater Cisco	Extinct
Coregonus kiyi	Kiyi	Vulnerable
Coregonus nigripinnis	Blackfin Cisco	Extinct
Coregonus reighardi	Shortnose Cisco	Critically Endangered
Coregonus zenithicus	Shortjaw Cisco	Vulnerable
Delphinapterus leucas	Beluga	Vulnerable
Dendroica kirtlandii	Kirtland's Warbler	Vulnerable
Ectopistes migratorius	Passenger Pigeon	Extinct
Emydoidea blandingii	Blanding's Turtle	Lower Risk-Near Threatened
Epioblasma torulosa ssp. rangiana	Northern Riffleshell	Critically Endangered
Etheostoma pellucidum	Eastern Sand Darter	Vulnerable
Gulo gulo	Wolverine	Vulnerable
Neomacounia nitida	Macoun's Shining Moss	Extinct
Nicrophorus americanus	American Burying Beetle	Critically Endangered
Numenius borealis	Eskimo Curlew	Critically Endangered
Ophiogomphus anomalus	Extra-Striped Snaketail	Lower Risk-Near Threatened
Puma concolor	Cougar	Lower Risk-Near Threatened
Puma concolor ssp. couguar	Eastern Cougar	Critically Endangered
Somatochlora incurvata	Incurvate Emerald	Lower Risk-Near Threatened
Terrapene carolina	Common Box Turtle	Lower Risk-Near Threatened
Ursus maritimus	Polar Bear	Lower Risk-Conservation Dependent
Vertigo paradoxa	A Terrestrial Snail	Data Deficient

Ontario Fern Catalogue Donated to NHIC

Dr. Donald Britton, a retired botanist and geneticist from the University of Guelph, recently donated his catalogue of Ontario fern label data to the NHIC. This catalogue consists of 7 drawers of 3 X 5 inch herbarium specimen labels for all Ontario ferns and fern allies (Pteridophytes). The labels are for thousands of specimens examined and annotated by Dr. Britton from most Ontario herbaria and the label data form the basis for the Ontario dots appearing in Cody and Britton's (1989) *Ferns of Canada* book. The label data will be archived at the NHIC and will be a very valuable reference for work on rare ferns or the distribution of Ontario ferns. NHIC biologists are currently comparing the fern herbarium specimen labels with existing Element Occurrence records, since Britton's catalogue will undoubtedly add many new Element Occurrences. Anyone wishing to consult this catalogue should contact NHIC botanist Mike Oldham.

Michael J. Oldham

BOOK REVIEWS

Celestino, Mary. 2002. **Wildflowers of the Canadian Erie Islands.** Essex County Field Naturalists' Club, Windsor, Ontario. 281 pp.

Pelee Island and adjacent islands in western Lake Erie comprise the most southerly land masses in Canada and are home to many rare and interesting plant and animal species. Pelee Island resident Mary Celestino has produced a beautifully illustrated guide to 420 wildflowers, shrubs and vines found on the Erie Islands. In addition to plant drawings and descriptions, the book includes information on the geology, early vegetation, climate, human history, botanical exploration and descriptions of botanically interesting natural areas on the islands. NHIC botanist Mike Oldham contributed an appendix to the book which provides a complete vascular plant checklist for the Canadian Erie Islands, including four natural areas on Pelee Island (Fish Point, Lighthouse Point, Stone Road Alvar and Middle Point) and the adjacent smaller islands. Mary Celestino's book should help naturalists visiting the Erie Islands as well as contribute to the conservation of the many significant natural areas and species on these islands.

MacCulloch, Ross D. 2002. **The ROM Field Guide to Amphibians and Reptiles of Ontario.** Royal Ontario Museum and McClelland & Stewart Ltd., Toronto. 168 pp.

With increasing concern about declining amphibian and reptile populations in Ontario and elsewhere, this new field guide will be a well-used publication. Beautiful and useful colour photographs illustrate this guide (typically several views for each species) which will help the user to identify the province's 23 amphibian and 24 reptile species. In addition to colour photos, the guide includes information on the appearance, habitat and behaviour, reproduction and status for each species. The Ontario distribution maps are based on information in the Ontario Herpetofaunal Atlas and provided by

the NHIC. Ross MacCulloch and the Royal Ontario Museum are to be commended on producing such an attractive and useful guide.

Monkman, Drew. 2002. **Nature`s Year in the Kawarthas: A Guide to the Unfolding Seasons.** Natural Heritage/Natural History Inc., Toronto, Ontario. 338 pp.

Although primarily focused on the Kawartha region, this book will be of interest to naturalists in a broad area of southern and central Ontario. Peterborough teacher and naturalist Drew Monkman has produced a readable, accurate and informative guide to the seasonality of nature. Covering many different aspects of flora and fauna as well as the weather and night sky, *Nature's Year in the Kawarthas* is a month-by-month chronicle of interesting natural history events. This book should appeal to a wide range of naturalists and outdoor enthusiasts of all ages. Several NHIC staff provided assistance to the author in the preparation of this book. The book retails for $32.95 and is available at most Chapters stores, as well as Coles and W.H. Smith, from Toronto through to Ottawa. If it is not in stock, it can be ordered through Chapters, or any other book store for that matter. The book can also be ordered on-line through Chapters web site (http://www.chapters.ca/) and the Natural Heritage Books web site (http://www.naturalheritagebooks.ca/).

Semple, John C., Stephen B. Heard and Luc Brouillet. 2002. **Cultivated and Native Asters of Ontario (Compositae: Astereae): *Aster* L. (including *Asteromoea* Blume, *Diplactis* Raf. and *Kalimeris* (Cass.) Cass.), *Callistephus* Cass., *Galatella* Cass., *Doellingeria* Nees, *Oclemena* E.L. Greene, *Eurybia* (Cass.) S.F. Gray, *Canadanthus* Nesom, and *Symphyotrichum* Nees (including *Virgulus* Raf.).** University of Waterloo Biology Series No. 41:1-134.

This publication is essentially the third edition of John Semple's *Asters of Ontario*, earlier editions of which were published in 1987 and 1996. *Asters of Ontario* and the companion volume "Goldenrods of Ontario" (see book announcement in NHIC Newsletter 5(2):18) are essential references for anyone trying to understand and identify Ontario's asters and goldenrods. *Cultivated and Native Asters of Ontario* treats 8 genera and 43 species in detail and includes 92 colour photographs, and dot distribution maps and keys for all native taxa. An additional useful feature is the discussion of various classifications of asters. The generic limits used in this publication are those which will be used in the upcoming treatment used by the Flora of North America project.

For ordering information go on-line (http://www.scence.uwaterloo.ca/biology/jcsemple/jcs-asto3.htm.).

Focus On... Mike McMurtry

Mike joined the NHIC in May 2002 as the Natural Areas Ecologist, taking over the position from Jarmo Jalava. Prior to this, Mike worked as the District Ecologist in MNR's Aurora District, a jurisdiction corresponding to the Greater Toronto Area. Here he was involved in the monitoring and recovery of Species at Risk, natural heritage planning for the Oak Ridges Moraine, managing the impacts of peat and aggregate extraction, and helping to direct development away from natural areas. Mike also has experience in aquatic ecology and watershed planning, having worked with the Lake Simcoe and Muskoka Lakes Fisheries Assessment Units. His formal education includes a Bachelor of Science degree in Zoology from the University of Manitoba, and a Master of Science degree in Zoology and Environmental Studies from the University of Toronto.

As the NHIC Natural Areas Ecologist, Mike is working with other NHIC staff and partners towards the identification and protection of natural areas in Ontario and managing the NHIC natural areas database.

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