



*Hymenoxys herbacea*

# ONTARIO NATURAL HERITAGE INFORMATION CENTRE NEWSLETTER



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## The NHIC Web Page

The NHIC now has a Home Page on the public World Wide Web, accessible through the Ontario Ministry of Natural Resources web site (<http://www.mnr.gov.on.ca>). Here is a brief summary of the information on the page:

### **About the Ontario Natural Heritage Information Centre**

Information on the history and mandate of the Centre.

### **Lists of Ontario Species and Vegetation Communities**

Lists of "elements of biodiversity" including Committee on the Status of Endangered Wildlife in Canada (COSEWIC), MNR and NHIC ranks.

### **NHIC Databases**

- Database Summary (summary of our database holdings).
- Database Information (documentation on the structure of our databases, and data standards used).
- Data Use Protocol (discusses data-sensitivity issues and how information obtained from the NHIC should be handled).
- Natural Areas Query by NTS Map Number (generates a list of natural areas in our database for a user-selected map number).
- Rare Species Query by County (generates a species list for a county based on records in our database).

*(Watch this space for many enhancements which are planned in the near future!).*

### **Newsletters**

Electronic versions of our previous 7 newsletters.

### **Other Information Centres**

Links to other data centres, heritage programs or other sites dealing with biodiversity conservation.

### **Communicate With NHIC Staff**

Staff list with e-mail addresses and a form for submitting and/or requesting data.

The main purpose of the web page is to provide clients easy access to commonly-requested information, allowing the NHIC staff to concentrate on enhancing the databases. ☺

**Natural Heritage Information Centre**

- [About the Ontario Natural Heritage Information Centre](#)
- [Lists of Ontario Species and Vegetation Communities](#)
- [NHIC Databases](#)
- Newsletters
  - Volume 1: [Spring 1994](#), [Summer 1994](#)
  - Volume 2: [Winter 1995](#), [Spring 1995](#), [Fall 1995](#)
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# SCIENCE

## 1997 Ontario Botanical Highlights

The 1997 field season resulted in several new species being added to the provincial flora, although most are non-native. The only possibly native addition we have heard about this year is the discovery of Spiny Naiad (*Najas marina*, Najadaceae, G5 S1) by Marianne Stainback of Erindale College from a lake north of Kingston, Frontenac County. Since Spiny Naiad has long been known from several locations in New York state, just south of Lake Ontario, the Kingston area record could be a previously overlooked native occurrence of this aquatic. Alternately the presence of Spiny Naiad in Ontario could be due to a recent introduction by natural (e.g. migrating waterfowl) or artificial (e.g. boat traffic) means.

Some interesting non-native additions to the Ontario flora (i.e. species not listed in John Morton and Joan Venn's 1990 "A Checklist of the Flora of Ontario: Vascular Plants") have been made in recent years. Bill Crins found a population of Turquoise Berry (*Ampelopsis brevipedunculata*, Vitaceae) in Halton Regional Municipality, and Sean Blaney found Hyssop-leaved Loosestrife (*Lytbrum hysopifolia*, Lythraceae) at the edge of an agricultural field near Belleville, Hastings County. Dan Brunton recently reported in Trail & Landscape the discovery of Woodland Angelica (*Angelica sylvestris*, Apiaceae) in the Ottawa area, and Paul Catling and others in a recent issue of Canadian Field-Naturalist document the occurrence and spread of Autumn Olive (*Elaeagnus umbellata*, Elaeagnaceae) in the province. Some of these species have the potential to become problem weeds, at least locally, in Ontario.

Fieldwork by NHIC staff resulted in the discovery of three new adventive plants for



Photo: M.J. Oldham

### Golden Bean (*Thermopsis rhombifolia*) near Minaki, Kenora District.

the province in 1997. An early spring check of fairgrounds in southwestern Ontario by Mike Oldham and Allison Cusick resulted in the discovery of Hard Grass (*Sclerobloa dura*, Poaceae) at single sites in Kent and Lambton Counties. This small, spring-flowering grass has been found with increasing frequency in southern Michigan and northern Ohio, particularly in fairgrounds, so its discovery in nearby Ontario was not a complete surprise. Horses and other livestock moving between fairgrounds may be one means of dispersal for this species. In northwestern Ontario Wasyl Bakowsky and Mike Oldham found two western species along railways in Kenora District: Golden Bean (*Thermopsis rhombifolia*, Fabaceae, see picture) and Little Ground Rose (*Chamaerhodos nuttallii*, Rosaceae).

Among the more interesting records of native plants we've heard about this year are Sarah Mainguy and Wasyl Bakowsky's discovery of a second Ontario population of Prairie Violet (*Viola pedatifida*, Violaceae; G5 S1) near Brantford, Brant County. Karen Cedar also found the third recent Ontario record of Slender Bush Clover (*Lespedeza*

*virginica*, Fabaceae, G5 S1) and the second Ontario record of Few-flowered Nut-rush (*Scleria pauciflora*, Cyperaceae, G5 S1) in the Ojibway Prairie area of Windsor, Essex County. While conducting research on a sand pit near Barrie, Mark Browning discovered a population of Side-oats Grama (*Bouteloua curtipendula*, Poaceae, G5 S2), the first Simcoe County record of this rare prairie and alvar grass. Ongoing fieldwork at prairie remnants in southwestern Ontario by Al Woodliffe and Ross Brown resulted in new sites for Missouri Ironweed (*Vernonia missurica*, Asteraceae, G5 S2?). Recent fieldwork suggests that this species is more common in the province than Tall Ironweed (*Vernonia gigantea*, Asteraceae, G5 S1S3).

During fieldwork for the International Alvar Conservation Initiative (see NHIC Newsletter 2(3):5-6, 1995) on Great Cloche Island, Manitoulin District, Mike Oldham collected a small, pale-flowered Agalinis, which was assumed to be Narrow-leaved Agalinis (*Agalinis tenuifolia*, Scrophulariaceae, G5 S4S5). Later examination of the specimen by Tony Reznicek and subsequently by Agalinis expert Judith Canne-Hilliker found it to be the globally rare Skinner's Agalinis (*Agalinis skinneriana*, Scrophulariaceae, G3 S2). Manitoulin District is a considerable range extension for this rare plant, previously known in the province only from Walpole Island, Lambton County, and La Salle, Essex County, both in southwestern Ontario.

Another exciting find was made by Gary Allen in the Minesing Swamp. Alerted to the presence of a possible Eastern Prairie White Fringed Orchid (*Platanthera leucophaea*, Orchidaceae, G2 S2) X Purple Fringed Orchid (*Platanthera psychodes*, Orchidaceae, G5 S5) hybrid seen in the swamp in the 1960's by Tony Reznicek, Gary found a plant which appeared to be this undescribed hybrid. A later visit to the swamp with Paul Catling and Vivian Brownell resulted in the discovery of several more hybrid plants and over 100 plants of the globally and provincially rare Eastern Prairie White Fringed Orchid. The hybrid will be formally described by Paul



Photo: M.J. Oldham

*Prairie Spikemoss (Selaginella densa) near Minaki, Kenora District.*

Catling.

Fieldwork on cliff, barrens and prairie sites in northwestern Ontario by Wasyl Bakowsky and Mike Oldham resulted in the first northwestern Ontario records of three NHIC-tracked plants: Leonard's Small Skullcap (*Scutellaria parvula* var. *leonardii*, Labiatae, G4T4 S1), Long-scaled Tussock Sedge (*Carex haydenii*, Cyperaceae, G5 S2) and Prairie Dropseed (*Sporobolus heterolepis*, Poaceae, G5 S2). Oval-leaved Milkweed (*Asclepias ovalifolia*, Asclepiadaceae, G3G5 S1), a species not seen in the province in more than three decades, was found at Ingolf, Kenora District. Several new localities were found in Kenora and Rainy River Districts for Prairie Spikemoss (*Selaginella densa*, Selaginellaceae, G5 S2; see picture). Examination by Tony Reznicek of a 1996 Sable Island Provincial Nature Reserve, Lake of the Woods, pinweed collection revealed it to be Strict Pinweed (*Lechea stricta*, Cistaceae, G? S1), the first confirmed Ontario record, rather than the more expectable Intermediate Pinweed (*Lechea intermedia*, Cistaceae, G5 S4).

This past summer the American Institute

for Biological Sciences (AIBS) meetings were held in Montreal and a number of Ontario botanists were able to participate. Dan Brunton attended and led an early August post-conference fieldtrip for a number of Quillwort (genus *Isoetes*) enthusiasts. They managed to see all 11 Ontario quillwort taxa in one 24 hour period, including both provincial populations of the nationally endangered Engelmann's Quillwort (*Isoetes engelmannii*, Isoetaceae, G4 S1). At one site in Haliburton County the group found seven taxa including a new Ontario population for Tuckerman's Quillwort (*Isoetes tuckermanii*, Isoetaceae, G4? S1) and the largest population of the rare *Isoetes* x *hickeyi* hybrid (*Isoetes echinospora* X *macrospora*) known anywhere in North America. Dan reports that this quillwort diversity is probably unmatched anywhere on the continent. A memorable day for this international group of isoetologists!

Thanks to the following individuals for contributions to this article: Gary Allen, Wasyl Bakowsky, Peter Ball, Mark Browning, Dan Brunton, Judith Canne-Hilliker, Bill Crins, Allison Cusick, Paul Pratt, Tony Reznicek, and Al Woodliffe. ♀

**M. J. Oldham**

*In response to my request for information to include in this year's "Botanical Highlights" article, John Morton and Joan Venn of the University of Waterloo sent in the following note, which is reprinted in its entirety. MJO*

## **Two legumes from Manitoulin Island, New to North America**

In June of 1987 we found a colourful mass of Vetch (genus *Vicia*; Fabaceae) by the Greenbush Road south of Little Current on Manitoulin Island. It was similar to the common Tufted Vetch (*Vicia cracca*) but had larger more showy flowers and longer, narrower leaflets. It keyed out to Fine-leaved Vetch (*Vicia tenuifolia*

Roth) in Flora Europaea. However, because there are several similar *Vicias* we needed confirmation of the identification. Fortunately *Vicia tenuifolia* has an unusual chromosome number (2n=24) amongst this group of species. In 1990 we were able to collect seeds from the Greenbush locality and Cliff Crompton at Agriculture Canada (DAO) in Ottawa grew some of these and determined the chromosome number to be 2n=24, thus confirming the identity of our material. The plant grows abundantly in the tall grass and scrub over about 50 yards of roadside.

In 1996 we found another unfamiliar legume on Manitoulin Island by Highway 6 near Sheguiandah, growing in the tall grass of the broad road allowance at the edge of the forest at the entrance to the Lewis Trail.

The plant was an erect bushy perennial herb about 2 feet high with bright purple flowers turning blue as they faded. There was a lot of it extending over about 20 yards. It looked like a pea or vetch (*Lathyrus* or *Vicia*) but lacked tendrils. We were eventually able to identify it on a recent visit to the library and herbarium at the Royal Botanical Gardens, Kew, England. It proved to be *Lathyrus niger* (L.) Bernh. ssp. *niger*, the Black Pea.

Both these plants are new to Ontario and apparently to Canada and North America. Both are obviously aliens, being native in Europe. It is probable that the *Vicia* was introduced with fodder or a seed mix. The *Lathyrus* was probably planted in this locality. It is occasionally grown in gardens in Europe and may have been introduced by the late Mr. Murray who operated a market garden at Sheguiandah for many years and was an avid plantsman and knowledgeable botanist. Both plants are well established perennials and likely to persist. ♀

**John K. Morton and Joan M. Venn**

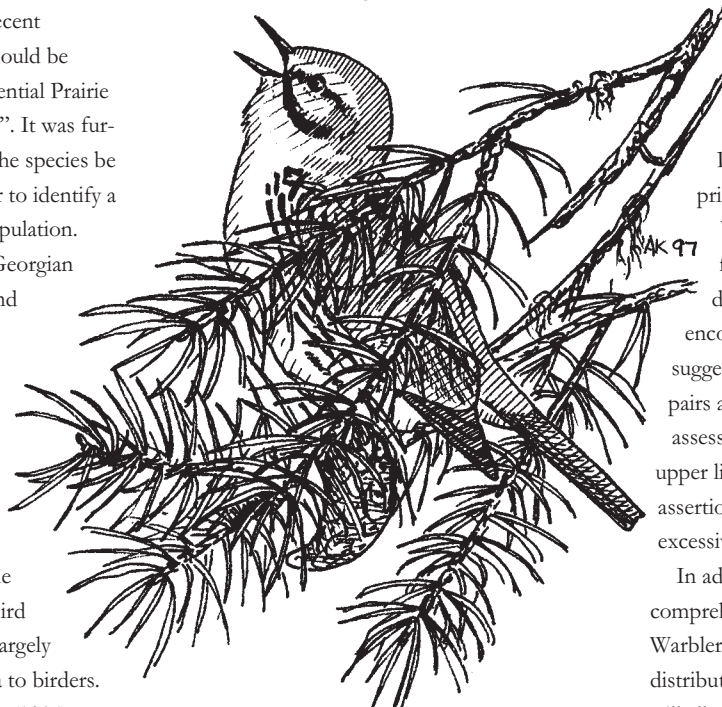
## Prairie Warbler Survey in 1997

In 1984, the Committee on the Status of Endangered Wildlife in Canada designated the Prairie Warbler (*Dendroica discolor*, G5 S3) a 'vulnerable' species in Canada, accepting the recommendation of Lambert and Smith (1984). In a 1994 reassessment of the species' provincial status, however, Austen and Cadman (1994) recommended an upgraded status of 'threatened', on the grounds that both the species' local extirpation from several southwestern Ontario sites, and significant continental and eastern North American declines (as indicated by recent Breeding Bird Survey route data) "should be regarded as a strong warning for potential Prairie Warbler declines across the province". It was further recommended that a survey of the species be conducted in the near future in order to identify a potential decline in the provincial population.

Much of the information for the Georgian Bay shoreline reported in Lambert and Smith (1984) resulted not from systematic surveys, but from a compilation of field observations made by a variety of observers over the course of roughly a decade (1970-83). Moreover, coverage of this area during the Ontario Breeding Bird Atlas (1981-85) and the subsequent Ontario Rare Breeding Bird Program was relatively poor, owing largely to the limited accessibility of the area to birders. To this end, both Lambert and Smith (1984) and Austen and Cadman (1994) advocated the need for further surveys of the Prairie Warbler in Ontario, particularly along the southeastern shoreline of Georgian Bay where the largest population was believed to occur.

In 1997, a more systematic survey of the distribution and abundance of the Prairie Warbler in southeastern Georgian Bay was undertaken by the NHIC (Harris 1997). Between May 31 and June 30, C.G. Harris and D. Whittam conducted censuses along the shoreline between Gloucester Pool, Muskoka Dist./Simcoe Co., in the south and Dillon, Parry Sound Dist., in north. With the exception of sites around Gloucester Pool and

Dillon, all survey points were accessible only by boat. Search effort was restricted to documented historic occurrences (those sites with some record of occupancy within the past 20 to 30 years) and those sites judged visually to offer suitable habitat for the species. At each site a five minute point count was conducted. If no singing male was heard initially, then a tape playback was made in an attempt to elicit a response. All survey sites were plotted on 1:10,000 Ontario Base Map sheets. Where Prairie Warblers were encountered, the territories were mapped, the site photographed, and standardized survey sheets were completed. Data gathered at each occupied site included such things as: time, weather,



*Prairie Warbler (Dendroica discolor)*  
drawing by Andrea Kingsley

estimated vegetation cover and composition, topography, evidence of past fire, associated bird species, and the behaviour of the resident Prairie Warblers. In addition, observations of other species, particularly amphibians, reptiles and odonates were recorded.

In all, some 420 sites were visited during the course of the survey. A total of 345 singing male Prairie Warblers were found at 174 (41%) sites. The single greatest concentration of singing males was found in the Honey Harbour to Cognashene

area of Muskoka District, where 108 territorial males were encountered at 69 of the 107 (64%) surveyed sites. Other areas with significant concentrations of singing males included Go Home Bay (29), San Souci (28), and Massasauga-Blackstone Harbour Provincial Park (49). This latter area is of particular interest inasmuch as it was stated by Simpson and Simpson (1973) to support "...by far the largest breeding colony in Canada...[estimated to consist of a] ...couple of hundred pair."

The results of the present study allow for an interesting comparison with figures for the Muskoka and Parry Sound areas contained in

Lambert and Smith (1984), who provided population estimates of "about 160 pairs" of Prairie Warblers for Muskoka District, and a range of between 85 and 291 pairs for Parry Sound District, concentrated primarily along the Georgian Bay shoreline. While their figure for Muskoka compares favourably with the 164 pairs encountered during the present survey, the 78 pairs encountered in 1997 in Parry Sound District suggests both that their lower estimate of 85 pairs appears to have been a more realistic assessment of the population, but that the upper limit of 291 pairs, based largely on the assertions of Simpson and Simpson (1973), was excessive.

In addition to providing the most current and comprehensive occurrence data for the Prairie Warbler in the core of its provincial breeding distribution, data gathered during the 1997 survey will allow for such things as an analysis of the characteristics of the Prairie Warbler habitat, the potential role of fire in the maintenance of the species' habitat, and survey protocols for future surveys. A more comprehensive account of the results of this survey will be reported elsewhere.

### References

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D.A. Sutherland

## Rare Communities of Ontario: Freshwater Coastal Dunes

In Ontario, freshwater coastal dunes occur along shorelines of the Great Lakes, Lake-of-the-Woods in northwestern Ontario, and along the Ottawa River.

Dunes are depositional features composed of unconsolidated sandy sediments. They arise when winds act on exposed sand surfaces, such as ancient glacial outwash plains and lake bottoms, and beaches in modern shoreline environments. Modern dune systems in Ontario form along shorelines when beach and nearshore sands are piled up by onshore winds. Dunes and other features formed by wind action are referred to as being of aeolian origin (Kor pers. comm.).

Coastal dunes are rare in Ontario, as they are narrow linear features restricted to localized areas along major shorelines, and their total area is quite small. The vegetation is sparse, with much bare sand. They are dominated by grasses, herbs and shrubs. Trees may occur as scattered individuals, or as small patches of forest.

In Ontario, the following coastal dune classification has been developed for freshwater sys-

tems (Davidson 1990) according to their geomorphology:

- Cove Dunes
- Big Bay Dunes
- Foreland Dunes
- Baymouth Barrier Dunes
- Tombolo Bar Dunes

Cove Dunes develop in the rocky coves of irregular coastlines, and include a narrow crescent-shaped beach and a small transverse foredune. The foredune usually has small parabolic dunes and blowouts, with individual dunes normally reaching several metres in height.

Big Bay Dunes are large dune systems found along the eastern shore of Lake Huron, ranging in size from several ha to many km<sup>2</sup>. They have developed at the heads of large shallow bays on top of barriers and plains abandoned by post-glacial Nipissing Lake stage. These systems include an active transverse foredune and one or more higher secondary dune ridges separated by low interdune areas. These dunes may reach heights of 30 m.

Foreland Dunes have formed over large sandy promontories, such as at Point Pelee and Long Point on Lake Erie. These dune complexes range in size from several ha to as large as 18 km<sup>2</sup> at Long Point. The smaller systems consist of series of transverse foredunes, while larger examples consist of foredunes backed by inland dune sequences separated by low interdune areas.

Baymouth Barrier Dunes occur in bays, and develop on top of the barrier bars which have formed in these areas. Baymouth barrier systems range in size from a few ha to as much as 3 km<sup>2</sup> at Sandbanks Provincial Park. Such dune systems typically have a narrow beach, a low discontinuous foredune, a flat interdune area, and high secondary dunes. Open water lagoons or wetlands occur behind the secondary dunes. The dune ridges are quite variable, often with blowouts and parabolic dunes developed, and may reach heights of over 20 m.

Tombolos are sandy bars which form between coastlines and offshore islands. They develop when offshore currents are slowed by the island, which causes suspended sediments to be deposited between the island and the coast. At Point



Photo: W.D. Bakowsky

*American Dune Grass (Leymus mollis), a characteristic species of Lake Superior dunes and sandy arctic shorelines.*

Abino and Presqu'île, tombolo dune systems between 1 and 2 km<sup>2</sup> have evolved on top of tombolos. The Point Abino system consists of a long narrow active foredune, while the Presqu'île dunes are less active, and are comprised of numerous low transverse foredunes, adjacent low interdune areas, and higher stable inland dunes.

The following section describes the dune vegetation and rare species of coastal dunes and beach ridges in the province. Only the dry, active portions of dune vegetation are discussed. Stabilized dunes with continuous vegetative cover are excluded, as are associated wetlands such as the interdune pannes; they have been written up in a previous article on Great Lakes Coastal Meadow Marsh (Anonymous 1995).

### Sable Islands

The largest dunes in northwestern Ontario are on the Sable Islands, a provincial Nature Reserve which is part of a baymouth barrier dune system located just north of the mouth of Rainy River on Lake of the Woods. The name 'Sable' is derived from the French word for sand. The islands together are approximately 8 km in



S1), an officially Endangered species, nests here in years where lower water levels expose extensive sand flats. Other rare species found here and at other coastal dune locations are listed in Table 1.

### Lake Superior

The cove dunes along Lake Superior are not very extensive, with the largest example occupying 0.9 km<sup>2</sup> at Prisoner's Cove in Neys Provincial Park. Other relatively large examples occur at the mouths of the Pic and Sand Rivers (0.4 km<sup>2</sup> each), and smaller examples 0.1 km<sup>2</sup> in area are found at Prairie Cove and Hattie's Cove.

The vegetation is usually dominated by herbaceous species such as Beachgrass (*Ammophila breviligulata*), American Dune Grass (*Leymus mollis* or *Elymus mollis*), Beach Pea, Wormwood and Canada Wild Rye. Other species frequently occurring include Lyre-leaved Rock Cress (*Arabis lyrata*), Red Anemone (*Anemone multifida*), Slender Wheatgrass (*Elymus trachycaulus*), and Sweet Grass (*Hierochloa odorata*). Shrubs such as Red-osier Dogwood, Common Juniper, Creeping Juniper, Sand Cherry, Soapberry (*Shepherdia canadensis*) and Bush Honeysuckle (*Diervilla lonicera*) may form extensive patches. Protected areas, such as the bottoms and lee slopes of old blowouts, allow small patches of White Spruce (*Picea glauca*) forest to develop.

A number of arctic coast species occur on the dunes along Lake Superior. For example, Lake Huron Tansy (*Tanacetum huronense*) occurs at the Sand rivermouth, while the Pic rivermouth supports a population of Franklin's Lady's Slipper (*Cypripedium passerinum*).

### Lake Huron – Georgian Bay

Most of the dunes in this lake basin are Big Bay Dunes, although Foreland Dune and Cove Dune also occur. The dunes along southern Lake Huron, from Kettle Point northward to Grand Bend are the largest in Ontario, covering approximately 36 km<sup>2</sup>, although most of this is forested. Other large dune systems are found at Wasaga Beach (18 km<sup>2</sup> including forest) and Sauble Beach.

Dunes in this region are usually dominated

by herbaceous vegetation, with shrubs prominent in local areas. Composition is variable, but the following herbaceous species are the principal dominants: Beachgrass, Little Bluestem (*Schizachyrium scoparium*), Big Bluestem (*Andropogon gerardii*), Switchgrass (*Panicum virgatum*), Indian Grass (*Sorghastrum nutans*), Canada Wild Rye, Wormwood, Puccoon (*Litbospermum croceum*) and Sand Dropseed (*Sporobolus cryptandrus*). These species are also the characteristic dominants of dunes along Lakes Erie and Ontario. Additionally, two species of grass, historically restricted to dunes along Lake Huron and the other lower Great Lakes, Sand Grass (*Triplasis purpurea*) and Long-spined Sand Bur (*Cenchrus longispinus*), are characteristic of this vegetation. They are now occasionally adventive in sandy areas inland.

Long-leaved Reed Grass (*Calamovilfa longifolia* var. *magna*) is a southern Great Lakes endemic which is also a dominant species at many Lake Huron dunes. Another Great Lake endemic, Pitcher's Thistle (*Cirsium pitcheri*), occurs in dunes along Lakes Huron and Superior.

Common shrubs include Bearberry, Sand Cherry, Common Juniper, Fragrant Sumac,



**Trailing Wild Bean (*Strophostyles helvula*), restricted in Ontario to sandy shores and dunes along Lakes Erie and Ontario.**

**Dune grassland along Lake Superior dominated by Marram Grass (*Ammophila breviligulata*).**

length, and average about 75 m in width. They are formed of calcareous sand, and reach a maximum height of 9 m.

The vegetative cover is variable, consisting of open vegetation intermixed with thickets and meadow marsh. Where the open vegetation is dominated by herbaceous species, it usually consists of Wormwood (*Artemisia caudata* ssp. *campestris*), Canada Wild Rye (*Elymus canadensis*) and Beach Pea (*Lathyrus japonicus*). Other open areas are dominated by low shrubs, which often form near-monocultures. Typical species here include Sand Cherry (*Prunus pumila*), Bearberry (*Arctostaphylos uva-ursi*), Poison Ivy (*Rhus radicans*) and Virginia Creeper (*Parthenocissus inserta*).

Thickets are mostly dominated by willow (*Salix* spp.), with serviceberry (*Amelanchier* spp.) and Choke Cherry (*Prunus virginiana*) also common. A few thickets near the south end of the islands are dominated by small trees of Green Ash (*Fraxinus pennsylvanica*), Manitoba Maple (*Acer negundo*), and Common Hackberry (*Celtis occidentalis*), which is at the northern limit of its range in this vicinity.

The Piping Plover (*Charadrius melodius* G3

Shrubby Cinquefoil (*Potentilla fruticosa*), Poison Ivy, Wild Grape (*Vitis riparia*), willows (*Salix* spp.) and Snowberry (*Symphoricarpos albus*).

Prevalent tree species include Red Pine (*Pinus resinosa*), White Pine (*Pinus strobus*), and Red Oak (*Quercus rubra*). In the northern dune systems such as on Manitoulin Island and along the North Channel, White Spruce and Tamarack (*Larix laricina*) also occur, while Eastern Red Cedar (*Juniperus virginiana*), Black Oak (*Quercus velutina*) and Dwarf Chinquapin Oak (*Q. prinoides*) are common along southern Lake Huron dunes.

### Lake Erie

The southern-most dunes in Ontario occur along the shoreline and islands of Lake Erie. Consequently, many species of southern floristic affinity occur that are found nowhere else in the province.

The dunes themselves are dominated by the same herbaceous species listed previously for the Lake Huron – Georgian Bay dunes. These species also dominate the dunes along Lake Ontario. However, some areas have been disturbed by human activities such as vehicle or pedestrian traffic (Point Pelee), or by very high levels of deer herbivory and trampling (Long Point). Consequently, species such as Kentucky Bluegrass (*Poa pratensis*) and Canada Bluegrass (*Poa compressa*) may also be prominent.

Trees may occur in Lake Erie dune systems, usually as scattered individuals. The principal species are Eastern Red Cedar and Cottonwood (*Populus deltoides*).

### Lake Ontario

Dune systems occur at the eastern end of Lake Ontario, in the vicinity of Prince Edward County, with smaller examples occurring on the Toronto Islands and Burlington Bay. Historically, the Hamilton Beach bar was a fairly extensive dune system, but this has now been almost completely built over.

### Ottawa River

Sand dunes also occur along the Ottawa River, with the most extensive example occurring at Constance Bay. This Foreland Dune system is composed of acid sand, and originated

during the later stages of the Champlain Sea. Originally, the dunes were mostly forested with coniferous Jack Pine (*Pinus banksiana*) forest and mixed Jack Pine – Red Oak forest, but the margins along the shorelines were open and supported active dune vegetation. Most of this open dune vegetation has been destroyed through cottage development, but it still exists as small fragments.

Characteristic species include Little Bluestem, Canada Wild Rye, Thimbleweed (*Anemone cylindrica*), Sand Cherry, Bearberry, Harebell (*Campanula rotundifolia*), Balsam Ragwort (*Senecio pauperulus*), Starry False Solomon's-seal (*Maianthemum stellatum*), Puccoon and Sweet-fern (*Comptonia peregrina*).

### Fauna

Dune systems support numerous faunal species, many of which are provincially rare (Table 1).

One of the most celebrated species, Piping Plover, formerly nested along the dry sandy beaches and dune flats at Long Point, the Toronto Islands, Hamilton Beach, Burlington Bay, Point Abino, Rondeau, Point Pelee, Wasaga, Oliphant and Carter Bay. It is now only found in very small numbers (one pair in 1997) in the extreme southwest of the Rainy River area. Increases in human traffic, predators (notably gulls), and shoreline development have been implicated as causes for this species'

decline (Sutherland pers. comm.).

A number of rare tiger beetles occur in Ontario dunes. The Spectral Tiger Beetle (*Cicindela lepida*, G4 S2) is known from Long Point, Pinery Provincial Park, Constance Bay and elsewhere along the Ottawa River. The Beach Dune Tiger Beetle (*Cicindella birticollis*, G5 S3?) has been collected at Long Point, and in northwestern Ontario from Lake Nipigon, and Lake Superior at Batchawana Bay and Pancake Bay (Sutherland pers. comm.).

The type locality for the Lake Huron Locust (*Trimerotropis buroniana*, G2G3 SH) is Southhampton, Bruce County. It has also been collected at Giant's Tomb island and Wasaga Beach. Another orthopteran, the Seaside Locust (*Trimerotropis maritima* ssp. *interior*, G?T? S4) occurs only in southern Great Lakes dune systems (Sutherland, pers. comm.).

The only Ontario location for the Dusted Skipper (*Atrytonopsis bianna*, G4G5 S1) is the Pinery Provincial Park – Port Franks area. Another species, the Glorious Flower Moth (*Schinia gloriosa*, G4 S1) which feeds on Cylindrical Blazing-star, is only known in Ontario from Port Franks.

### Threats

Coastal dunes have long been associated with recreational activities in Ontario and elsewhere. Due to the unstabilized dune sands, activities such as traffic (outdoor recreational vehicles, (continued on page 9)



Hop-tree (*Ptelea trifoliata*), a shrub found in Lake Erie dunes.

**Table 1. Tracked elements occurring in Ontario freshwater coastal dunes.**

Element	Rank	Sable Island	Lake Superior	Lake Huron	Lake Erie	Lake Ontario	Ottawa River
<b>Vegetation Types</b>							
American Dune Grass - Beach Pea - Sand Cherry Dune Grassland	G? S2		◆				
Little Bluestem – Long-leaved Reed Grass – Great Lakes Wheat Grass Dune Grassland	G? S2			◆			
Little Bluestem – Switchgrass – Beachgrass Dune Grassland	G? S2				◆		◆
Wormwood - Canada Wild Rye-Rough Sand Sedge Dune Grassland	G? S1	◆					
Juniper Dune Shrubland	G? S2			◆	◆		◆
Hop-tree Dune Shrubland	G2Q S1				◆		
Sand Cherry Dune Shrubland	G2Q S2			◆			
Cottonwood Dune Savannah	G1G2 S1				◆		◆
Red Cedar Dune Savannah	G? S1			◆	◆		
<b>Flora</b>							
Beachgrass ( <i>Ammophila breviligulata</i> )	G5 S3		◆	◆	◆		◆
Coast Jointweed ( <i>Polygonella articulata</i> )	G5 S3		◆				◆
Cylindrical Blazing-star ( <i>Liatris cylindracea</i> )	G5 S3			◆	◆		◇
Dwarf Chinquapin Oak ( <i>Quercus prinoides</i> )	G5 S2			◆			
Dwarf Hackberry ( <i>Celtis tenuifolia</i> )	G5 S2			◆		◆	
Eastern Prickly Pear Cactus ( <i>Opuntia humifusa</i> )	G5 S1					◆	
Fringed Puccoon ( <i>Lithospermum incisum</i> )	G5 S1					◆	
Giant Pinedrops ( <i>Pterospora andromedea</i> )	G5 S2			◆		◇	
Great Lakes Wheat Grass ( <i>Elymus lanceolatus</i> ssp. <i>psammophilus</i> )	G5T3? S3			◆			
Green Milkweed ( <i>Asclepias viridiflora</i> )	G5 S2			◆		◆	
Greene's Rush ( <i>Juncus greenei</i> )	G5 S3		◆				
Hoary Tick-trefoil ( <i>Desmodium canescens</i> )	G5 S2					◆	
Hop-tree ( <i>Ptelea trifoliata</i> )	G5 S3					◆	
Inland Rush ( <i>Juncus interior</i> )	G4G5 S2S3	◆					
June Grass ( <i>Koeleria macrantha</i> )	G5 S2	◆		◆			
Long-leaved Reed Grass ( <i>Calamovilfa longifolia</i> var. <i>magna</i> )	G5TU S3			◆		◆	
Pinweed ( <i>Lecbea stricta</i> )	G3 S1	◆					
Pitcher's Thistle ( <i>Cirsium pitcheri</i> )	G3 S2		◆	◆			
Porcupine Grass ( <i>Stipa spartea</i> )	G5 S3	◆		◆		◆	
Prairie Ragwort ( <i>Senecio plattensis</i> )	G5 S2S3			◆		◆	
Prairie Thistle ( <i>Cirsium billii</i> )	G3 S3			◆			
Pumpell's Brome Grass ( <i>Bromus inermis</i> ssp. <i>pumpellianus</i> )	G4G5T? S1		◇	◆			
Purple False Oats ( <i>Trisetum melicoides</i> )	G4 S3S4		◆				
Rough Blazing-star ( <i>Liatris aspera</i> )	G4G5 S2			◆		◇	◇
Rough Sand Sedge ( <i>Cyperus schweinitzii</i> )	G5 S3	◆				◆	
Sand-heather ( <i>Hudsonia tomentosa</i> )	G5 S2S3	◆	◆			◇	
Slender Mountain-mint ( <i>Pycnanthemum tenuifolium</i> )	G5 S3			◆			
Trailing Wild Bean ( <i>Strophostyles helvula</i> )	G5 S3					◆	
Smooth Sand Sedge ( <i>Cyperus boughtonii</i> )	G4? S3			◆			◆
<b>Fauna</b>							
Piping plover ( <i>Charadrius melodus</i> )	G3 S1	◆		◇		◇	◇
Hognose Snake ( <i>Heterodon platirhinos</i> )	G5 S3			◆		◆	
Spectral Tiger Beetle ( <i>Cicindela lepida</i> )	G4 S2			◆		◆	◆
Beach Dune Tiger Beetle ( <i>Cicindela hirticollis</i> )	G5 S3		◆			◆	
Lake Huron Locust ( <i>Trimerotropis huroniana</i> )	G2G3 SH				◇		
Dusted Skipper ( <i>Atrytonopsis bianna</i> )	G4G5 S1			◆			
Glorious Flower Moth ( <i>Schinia gloriosa</i> )	G4 S1			◆			

Note: historical occurrences are indicated by ◇

human and deer trampling) can severely impact dune systems, and lead to their degradation and destruction. Other threats include cottage development, high controlled water levels, and invasion by exotic species.

### Protection

Many of Ontario's best examples of coastal dunes have been identified and protected. They are found in National and Provincial Parks, Provincial Nature Reserves, and in Areas of Natural and Scientific Interest (ANSIs). However, at some of these sites, including those in parks, inappropriate uses continue to threaten this fragile ecosystem.

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*W.D. Bakowsky*

## STEWARDSHIP

### "Lands for Life" Natural Heritage Gap Analysis

In late May 1997, the Natural Heritage Information Centre (NHIC) agreed to assist MNR Natural Heritage Section in the natural heritage gap analysis project for "Lands for Life", a land use planning exercise that is being undertaken in 1997-98 for three major regions of Ontario: the Great Lakes - St. Lawrence region, the Boreal East region, and the Boreal West region.

Together, these three regions cover approximately half of the province, extending from the southern edge of the Canadian Shield to approximately 51° N. Each regional land use strategy aims to resolve land use and allocation issues relating to forest management, parks and protected areas and resource-based tourism, and strategies will also address uses such as recreational hunting and fishing, and mineral exploration and development (MNR 1997). Planning in each region is to be an open, public process led by a Round Table that includes representatives from the forest and mining industries, remote tourism, and conservation organisations.

In order to identify the most appropriate areas for natural heritage protection, MNR Ecologist Dr. William Crins of MNR developed a methodology to select candidate areas for protection in each ecological site district, using Geographic Information Systems (GIS) technology and applying it to the following criteria: 1) representation of landform-vegetation patterns; 2) diversity; 3) condition; 4) ecological considerations; and 5) special features. These are the same criteria that have been used in the past by MNR to identify Areas of Natural and Scientific Interest (ANSIs), but because they are being applied in a GIS environment, the process differs somewhat, both in terms of the data sets that are being used, and in the application of the site selection criteria.

NHIC element occurrence data will be used as part of the special features criterion, primarily in

the delineation of natural heritage area boundaries. NHIC staff Peter Sorrill and Jarmo Jalava have provided technical input to the GIS and methodological components of the overall gap analysis process; however, Pete's and Jarmo's involvement in the gap analysis work has been focussed primarily to ecological site districts 5E-7 and 5E-8, which extend from the southern edge of the Canadian Shield north to the French River area and just south of Lake Nipissing, west to Georgian Bay, and east to near Algonquin Park. Gap analyses for other site districts are being undertaken by other MNR staff and consultants.

The following is a summary of the steps being used to select candidate sites for protection:

- 1) Identify landform features. Landform or physiographic features are identified, using the best digital physiographic data set available for each ecological site district. (e.g., Noble 1983)
- 2) Identify vegetation features. In site districts 5E-7 and 5E-8, MNR's Forest Resource Inventory (FRI) mapping at 1:10,000 scale is used as the digital vegetation layer. In site districts where digital FRI data are not available, satellite imagery (LANDSAT) data are used as the vegetation layer. Each vegetation type (which, in the case of FRI data, means each "working group", as identified by dominant tree species and one of three age classes: young, middle, or old) is overlaid on each landform type in each site district, and each landform-vegetation unit becomes an individual polygon.
- 3) Assess existing representation. Landform-vegetation features that are found in protective zones within provincial parks, conservation reserves and national parks are considered protected, and are subtracted from the analysis.
- 4) Overlay disturbance layer. Areas of human disturbance, such as roads, utility lines, logging, and residential, agricultural and industrial development, are subtracted from the analysis.
- 5) Identify "best" representative areas. Using GIS, aggregations of contiguous, unrepresented landform-vegetation features are selected. The cluster that contains the greatest number of unrepresented features (i.e., the most "eco-

logically diverse" area) is chosen as the first "candidate protected area". At this stage, input is sought from MNR field office biologists and foresters regarding recent disturbances to the candidate area, and in some cases the selected site is deemed too disturbed to be protected and a different candidate is sought to protect the features of the site. If a candidate is deemed viable, then each landform-vegetation feature found in the candidate is subtracted from the list of features that still need to be represented. This iterative process is run until all landform-vegetation types are represented in undisturbed candidate protected areas.

- 6) Look for unrepresented landform-vegetation types that occur only in disturbed areas. Some landform-vegetation types may occur only in disturbed areas. Where possible, additional candidate protected areas may be delineated, or boundaries of existing candidates may be adjusted, to incorporate these unrepresented features.
- 7) Delineate and refine candidate area boundaries. Using contour and hydrological information, as well as special features data (such as locations of rare species), candidate area boundaries are delineated.
- 8) Re-run step 5 to identify alternate candidate areas for protection. Because the Round Table may decide that a given candidate area is unsuitable for protection, a set of alternate sites that would also represent the landform-vegetation diversity of the site district is provided as an option.
- 9) Re-run step 5 for Crown Land only. Because the new parks and protected areas in the "Lands for Life" process are to be created on Crown Land, the analysis may also be run for Crown Land only, in order to determine what landform-vegetation representation can be found on Crown Land and the locations of the "best" sites, using the same methodology that is applied to the site district as a whole.

Protected areas selection will also incorporate areas of geological significance, as identified in an earth science gap analysis co-ordinated by Phil Kor, Conservation Geologist of the MNR Natural Heritage Section.

The great scope and the strict timetable of the

"Lands for Life" process, the size of the digital data sets involved in the gap analysis, and the limitations of available technology, have meant an almost full-time commitment of NHIC GIS staff and resources, and half-time commitment of the NHIC Natural Areas Ecologist, to the project over the past six months. Similar commitments of time and effort are being made to "Lands for Life" by staff in many disciplines throughout the MNR as well as in the non-government organisation (NGO) community.

It is hoped that the data sets and the methodology used in the gap analyses are sufficiently well-resolved to adequately identify the representative core natural heritage areas, and that the surrounding landscape is managed in an "ecologically sustainable" manner that does not jeopardise the values for which those core areas have been selected. More information on the "Lands for Life" process is available on the provincial government web site:

[www.mnr.gov.on.ca](http://www.mnr.gov.on.ca).

#### References

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*Jarmo V. Jalava*<sup>\*</sup>

## Priority Sites for Conservation Action

In the spring of 1997, the Ontario Natural Heritage Information Centre (NHIC) was approached by Ontario Parks to discuss a "score-carding" system for important natural areas in the province, to assist in prioritising sites for the Ontario Parks / Nature Conservancy of Canada "Land Acquisition Partnership Agreement" (Parks Ontario 1995). Ontario Parks and NHIC staff agreed that an expedient approach to identifying priority sites would be to focus on ecologi-

cal themes, such as prairies and savannahs, alvars, Great Lakes coastal communities, and the Niagara Escarpment. As a first attempt for peer review, NHIC Natural Areas Ecologist Jarmo Jalava and consultant Helen Godschalk designed a methodology for prioritising sites along the Niagara Escarpment, which was submitted as a paper and presentation at "Leading Edge '97: The Edge and the Point", a conference exploring research, monitoring and community involvement in Ontario's World Biosphere Reserves (Jalava and Godschalk 1997).

The Niagara Escarpment ecological theme has the benefit of having a great deal of accessible data, since the Ontario Ministry of Natural Resources (MNR) and the Ontario Heritage Foundation co-funded the Ecological Survey of the Niagara Escarpment Biosphere Reserve (Riley *et al.* 1996). This report summarises the results of previous studies and six years of biological inventories at the most significant natural areas along the escarpment. The Survey identified or re-confirmed 62 provincially significant and 38 regionally significant natural areas, using standard MNR criteria to identify areas of natural and scientific interest (ANSIs). The site-specific data gathered on Niagara Escarpment ANSIs is sufficient for further ranking and prioritisation of the 100 sites for conservation action based on:

- 1) the presence of exceptional diversity of natural communities and conservative plant species (i.e., species that display a high degree of fidelity to specific habitats) (Herman *et al.* 1996; Oldham *et al.* 1995; Wilhelm and Masters 1995);
- 2) the presence of globally and provincially rare vegetation communities, flora and fauna (as ranked in NHIC lists); and
- 3) the presence of unique or high quality occurrences of natural communities. Conservation concerns such as human disturbance, as well as the level of protection, contributed to the recommended conservation options for each site.

The paper will be published in the proceedings of the Leading Edge '97 conference. However, in addition to seeking peer review, the authors plan to harmonise the site prioritisation methodology with the revised The Nature Conservancy (TNC) element occurrence data standards (TNC 1997)

and with the most current concepts used by TNC in site conservation planning (TNC 1996), and to produce a more extensive report on their work in 1998. Similar exercises are planned for other ecological themes, in order to contribute to the Ontario Parks/NCC agreement.

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*Jarmo V. Jalava*

## NEWS AND NOTES

### International Alvar Conservation Initiative

Field work for the International Alvar Conservation Initiative was conducted by NHIC staff in 1997 for Smiths Falls Plain, Napanee Plain, Carden Plain, Flamborough Plain, Pelee Island and Bruce Peninsula sites. The data will be summarised in an Ontario alvar theme study. Consultant Vivian Brownell has been hired by the Federation of Ontario Naturalists to prepare the theme study report. An alvar symposium is planned for early June 1998 on the Bruce Peninsula. ☼

### Great Lakes Coastal Wetlands Projects

Throughout the summer and fall of 1997, NHIC contract staff have been mapping and entering data for a catalogue of Great Lakes coastal wetlands, funded in part by Environment Canada, NCC, and MNR. NHIC natural areas, GIS and community ecology expertise and resources have contributed to the compilation of a Great Lakes coastal wetlands database, which is derived largely from MNR wetland evaluations. The project is being coordinated by consultant Helen Ball, who is also writing the final report. Contract employee Tanya Pulfer mapped the wetlands, and Tayarna King has entered extensive amounts of detailed wetland evaluation data into the NHIC Natural Areas Database. Some of this data set will soon be available to the public on the NHIC Web Site.

Earlier in the year, consultant Elizabeth Snell was hired by the Nature Conservancy of Canada (through support from Environment Canada) to develop an initial monitoring framework for Great Lakes coastal wetlands, as part of the Great Lakes Wetlands Biomonitoring Project, to meet objectives of the Great Lakes Wetlands Conservation Action Plan (GLWCAP). Elizabeth worked in

close collaboration with NHIC staff to design the methodology, and Tayarna King was hired to assist in data compilation, verification and entry. The biomonitoring methodology involves the selection of sentinel and reference coastal wetland sites, and a long-term data collection method for effective indicators (Snell and Cecile Environmental Research 1997). Standardised transects, minimal field equipment, as well as application of the Marsh Monitoring Program protocol are incorporated into the methodology.

#### References

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### The Nature Conservancy Eastern Heritage/Stewardship Conference

Six NHIC staff attended The Nature Conservancy's Eastern Heritage /Stewardship Conference at Cape Cod, Massachusetts, during the first week of November. The conference was well-attended by staff from heritage programs in all north-eastern United States, as well as staff from the Quebec and the new Atlantic Canada conservation data centres. Concurrent sessions covered topics ranging from ecoregional planning, preserve management, spatial data modelling, element occurrence specifications, element viability, community ecology, stewardship, site conservation planning, biological monitoring and conservation of small populations, to

Web-site development, heritage program administration, air photo interpretation and identification of mosses, lichens and tiger beetles—to name but a few! NHIC staff were rewarded not only with exposure to some of the most current information and techniques in their disciplines, but also with the opportunity to meet and exchange ideas with their counterparts in other provinces and states. Three NHICers took an extra vacation day at the end of the conference to bird “The Cape”, and were rewarded with a thrilling but chilling Nor’easter that brought in large numbers of gannets, shearwaters, kittiwakes, storm-petrels, alcids and other pelagic birds, as well as some seals and whales, all within easy view from shore. ☘

## Tallgrass Prairie Recovery Plan

Tallgrass prairie and savannah formerly occupied at least 1,000 km<sup>2</sup> of the present-day landscape in southern Ontario, but today, less than 1% of this ecosystem remains. What little is left supports a disproportionate number of rare species, including almost 20% of Ontario’s rare plants. Numerous other rare species, such as butterflies, grasshoppers, leafhoppers etc., are also closely associated with this vegetation.

Clearly, by protecting and restoring tallgrass prairie and savannah, many rare species can benefit, instead of just a single species, which is usually the goal of a species recovery plan.

To address this goal, an ecological community-based recovery plan (a first for Ontario) for tallgrass prairie and savannah vegetation has been initiated by the Lands and Natural Heritage Branch, Ontario Ministry of Natural Resources (MNR), and the World Wildlife Fund. It is being authored by Lindsay Rodger, who is now with World Wildlife Fund. The NHIC is assisting by contributing botanical, zoological and community components to the plan.

As part of this effort, a Tallgrass Prairie Recovery Team has been formed to scope and guide the recovery plan. Team members

include other MNR staff, researchers, and knowledgeable individuals.

A final draft is currently being completed, with a final review set for January 1998. The final document should be available in the spring of 1998.

One of the report’s main recommendations is the formation of a Tallgrass Communities Association, to help lead and co-ordinate a concerted recovery effort. The formation of this group is already underway. For details on how to get involved, please contact Lindsay Rodger at World Wildlife Fund (416-489-4567 ext. 281, [lrodger@wwfcanada.org](mailto:lrodger@wwfcanada.org)). ☘

## Queen’s University Herbarium Database

In conjunction with the preparation of an updated plant checklist for the Kingston region (see publications, page 16), staff and volunteers at the Queen’s University herbarium (QK) have been entering Kingston area plant records into a database. A copy of this database, which contains over 35,000 records, has been made available to the NHIC so that rare plant records can be incorporated into the NHIC database. As part of an information exchange NHIC provided recent information on plant records from the Kingston area for incorporation into the revised checklist. Thanks to Adele Crowder, Karen Topping, and John Topping of Queen’s University for working with the NHIC on this project. ☘

## Botanical Journals Donated to NHIC

Retired North Carolina State University botanist James Hardin recently donated bound back issues of a number of important botanical journals to the NHIC library: *Sida*, *Brittonia*, *Journal of Economic Botany*, *Castanea*, *Taxon*, and *Systematic Botany*. This valuable donation has been catalogued by summer student Elaine Matthews and added to the NHIC library.

## Portions of Bill Stewart and Bill Dore Files to NHIC

Some of the literature and files of two recently deceased Ontario naturalists, Bill Stewart of St. Thomas and Bill Dore of Ottawa, have been donated to the NHIC.

Bill Stewart, long time Elgin County naturalist, passed away in 1997 (see obituaries in *The Cardinal* No. 168:20-21, Aug. 1997, and *Field Botanists of Ontario Newsletter* 10(2), Summer 1997) and through the kindness of his wife, Eileene Stewart, a number of his significant natural history holdings have been deposited at the NHIC. Bill’s Unionid mollusc collection, original plant collection book, files on Elgin County natural areas and species, and several boxes of journals, reprints and natural history files are all now housed at the NHIC. This information will be available to future Ontario naturalists wishing to consult it.

Dr. William G. Dore, for many years a botanist at Agriculture Canada’s Biosystematics Research Institute in Ottawa, died in 1996. Bill Dore is probably best known to Ontario naturalists through his 1980 book “Grasses of Ontario” (co-authored with John McNeill), but he had diverse botanical and natural history interests (see obituary in *Trail & Landscape* 30(3):92-93, July-September 1996). Stephen Darbyshire, also a botanist at Agriculture Canada, is helping to incorporate Bill’s vast literature collection into the Agriculture Canada reprint files and library. Through Stephen, some literature which is surplus to their needs has been donated to the NHIC and incorporated into our botany manual files. ☘

## NRVIS Data Loading Project

Next spring MNR will begin distributing data to its field offices throughout Ontario via a new high-tech data system called NRVIS, the Natural Resources Values and Information System. In order to contribute a large number of rare species, community and

natural area records to NRVIS, six contract biologists were hired by one of our partners, Nature Conservancy Canada, to load data at the NHIC. Working with Natural Area Ecologist, Jarmo Jalava, loading wetlands and Areas of Natural and Scientific Interest (ANSI) data are Tayarna King and Helen Godschalk. Helping Community Ecologist Wasyl Bakowsky is Susan Tschirky. Matt Holder is working with Zoologist Don Sutherland on various zoological data sets, and Jennifer Line and Madeline Austen are working on botanical and herpetological records with Mike Oldham. The NHIC is very fortunate to have the assistance of six skilled and experienced biologists to work on this important project. ☘

## Ontario Endangered and Threatened Plant Bibliography

One of the problems faced by resource managers when trying to preserve populations of rare animals and plants is a lack of basic information on these frequently understudied species. In order to assist MNR field staff and others in finding information on Ontario's 35 officially designated Endangered and Threatened plant species, NHIC has compiled a bibliography of information sources on these plants. Single copies of the bibliography are available by contacting the NHIC. ☘

## 1997 NHIC Information Requests

A considerable amount of NHIC staff time is spent responding to the many requests for data and advice. At the start of the year we initiated a project to track these requests in a spreadsheet in order to determine who was making requests of us, what the nature of the requests was, and how long it was taking to respond to the requests. Although we've undoubtedly missed a few, over 1,500 requests for information have already been catalogued this year. These requests come from a variety of individuals and agencies. Most (36%) are

from within MNR, both field office and main office staff; other major requestors of information have been environmental consultants (14%), naturalists (10%), academics (9%), non-government organizations (7%) and federal government departments (4%). The majority of requests (50%) are for NHIC staff expertise, 35% of requests require access to our manual files and 13% involve accessing one or more of our databases. About an hour was spent responding to the average information request, meaning that over 1,500 hours (or one person fulltime for 11 months) were spent this year handling these requests. By continuing to track and analyse the compiled request information we will hopefully be able to deal more efficiently with the ever increasing number of enquiries received by the centre. ☘

## Herbarium Update

Thanks to 1996 summer students Becky Martin, Elaine Matthews and Lori Reker and 1997 summer student Elaine Matthews, the 6,800 specimen NHIC herbarium is now fully organized, catalogued and computerized. An herbarium is a collection of dried, labelled, and mounted plant specimens used by naturalists, botanists, and biologists for education and research purposes. The NHIC herbarium, which is housed in MNR's main office building in Peterborough, has already been used in a number of training courses, and has been visited by several botanists. NHIC participates in specimen exchanges with a number of institutions and botanists. The specimens are housed in 5 cabinets donated to us from the former MNR Wildlife Research Station in Maple. ☘

## Karen Ness leaves NHIC

Karen Ness, the NHIC Office Administrator since our inception in December 1993, has taken a new position as External Client Liaison with MNR's Science and Information Resources Division. We wish Karen well in her new role and thank her for all she has done for the NHIC over the past four years. ☘

## NCC Assists NHIC Client Services

The Nature Conservancy of Canada (NCC) continues to demonstrate its strong interest in, and supporting partnership with, the NHIC. Rebecca Goodwin, National Projects Director, and Thea Silver, Projects Consultant, made application to the federal government last summer to take part in the Summer Career Placement Program. Their proposal was accepted and they were able to hire a student who worked at the NHIC responding to data requests, updating mailing lists, and replenishing data products, and organizing holdings. The majority of funding required for this project was granted from the federal government. Heather Saitz, Data Request Provider, conducted her work at the NHIC for fourteen weeks over the summer. This work provided joint benefits to both the NHIC and NCC as well as other clients that utilize NHIC information. Thank you Heather for your good work and thank you NCC for your continued support. ☘

## Co-op Student Help

Martin Williamson worked for the centre's GIS Specialist, Pete Sorrill, for four months from February to June 1997 on a variety of projects related to the centre's GIS. He developed his skills in ARC/INFO and ARCVIEW, and produced a number of mapping projects and digital products. One publication, the Ontario Endangered and Threatened Plant Bibliography bears his mark in the form of species range maps.

Thank you, Martin, for all your assistance during the year, and best wishes for the future. If your work ethic is indicative of the high school co-op programs, we look forward to working with future co-op students. ☘

## Publications

Wake, W. 1997. **A Nature Guide to Ontario**. University of Toronto Press, Toronto, Ontario. 469 pp.

- Winifred (Cairns) Wake has summarized a colossal amount of information on over 600 sites of interest to naturalists throughout Ontario. The book is well researched, well laid out, and very useful, particularly for a naturalist travelling to an unfamiliar part of the province. "A Nature Guide to Ontario" is a complete rewrite of "A Naturalist's Guide to Ontario", which was edited by Bill Judd and Murray Speirs, and published in 1964.

Winifred Wake and the Federation of Ontario Naturalists are to be congratulated for producing this fine publication which will guide the next generation of Ontario's naturalists. The book sells for \$19.95 and can be found in many Ontario bookstores.☞

Crowder, A., K.E.J. Topping and J.C. Topping. 1997. **Plants of the Kingston Region: 1996**. Fowler Herbarium, Queen's University, Kingston, Ontario. 123 pp.

- This annotated checklist of vascular plants covers a large area of southeastern Ontario, centred on Kingston. It is an extensive update of the 1970 checklist by Beschel, Garwood, Hainault, Macdonald, van der Kloet, and Zavitz. For each species, information is provided on scientific name (following Morton and Venn's 1990 Ontario checklist), common name, introduced or native status, whether or not there is a local specimen in the Queen's herbarium (QK), local status and habitat. This booklet will be useful for botanists and naturalists in southeastern Ontario. "Plants of the Kingston Region" is available by mail from John Topping, Manager, Department of Biology, Queen's University, Kingston, Ontario K7L 3N6 (phone 613-545-6137, email toppingj@biology.queensu.ca) for \$14.00.☞

Bruce-Grey Plant Committee. 1997. **A Guide to the Orchids of Bruce and Grey Counties, Ontario**. Stan Brown Printers Limited, Owen Sound, Ontario. 106 pp.

- The Bruce Peninsula is a favourite location for orchid lovers from throughout North America. This book covers the 46 orchid species (77% of Ontario's orchids) known from these two counties; 44 species occur on the Bruce Peninsula alone. A key is provided as well as descriptions and illustrations for each species. Colour photographs by Donald Gunn add to the attractiveness and usefulness of the book, as does a chart of flowering times and a glossary. The book is available for \$17.00 from the Bruce-Grey Plant Committee, c/o Owen Sound Field-Naturalists, Box 401, Owen Sound, Ontario N4K 5P7.☞

Reddoch, J.M. and A.H. Reddoch. 1997. **The orchids in the Ottawa District: floristics, phytogeography, population studies and historical review**. Canadian Field Naturalist 111(1):1-184.

- An entire special issue of Canadian Field-Naturalist is devoted to this superb treatment of the orchids of the Ottawa District. Orchids have long been a favourite group among botanists and naturalists, and the Reddachs have provided a detailed and thorough article which will have utility far beyond the Ottawa District. Forty-four species are treated with sections on description, blooming period, colony sizes, current status, distribution, habitats, history, and other topics. Each species account includes one or more illustrations as well as an Ottawa area distribution map. Copies of this issue of Canadian Field-Naturalist can be purchased for \$12.50 from William J. Cody, Business Manager, P.O. Box 35069, Westgate P.O., Ottawa, Ontario K1Z 1A2.☞

Waldron, G.E. 1997. **The Tree Book: Tree Species and Restoration Guide for the Windsor - Essex Region**. Project Green Inc., Windsor, Ontario. 219 pp.

- Gerry Waldron has produced a book of great value to those wishing to propagate and grow native tree species. Although the book is written for the Essex County area, many of the 71 species covered are widely distributed in southern Ontario, so the book will have use beyond the borders of Essex County. Each species account includes sections on

Description; Quick Check; Wood; Habitat; Wildlife Value; Propagation, Culture and Use; Problems; and Remarks. Also included are sketches of leaves, twigs, fruit and tree habit, an Essex County distribution map, and measurements on the largest Ontario specimen. Several useful introductory chapters precede the species accounts. The book is available for \$45.00 (including shipping and handling) from the Essex County Field Naturalist's Club, P.O. Box 23011, Devonshire Mall, Windsor, Ontario N8X 5B5. All profits support the activities of the Natural Habitat Restoration Program.☞

Flora of North America Editorial Committee. 1997. **Flora of North America North of Mexico, Volume 3, Magnoliophyta: Magnoliidae and Hamamelidae**. Oxford University Press, New York. 590 pp.

- The long-awaited third volume of the Flora of North America project is now in print. This volume covers important Ontario families such as the buttercup family (Ranunculaceae), nettle family (Urticaceae), oak family (Fagaceae), hickory and walnut family (Juglandaceae), and birch family (Betulaceae). Descriptions, taxonomic keys, and range maps can be found for all species, subspecies and varieties occurring in North America, as well as line drawings of selected species. Volume three is available for U.S. \$85.00 from Oxford University Press, 198 Madison Avenue, New York, New York 10016.☞

Newmaster, S.G., A.G. Harris and L.J. Kershaw. 1997. **Wetland Plants of Ontario**. Lone Pine Publishing, Edmonton, Alberta. 240 pp.

- Persons wishing to identify common wetland plants in Ontario will find this a very helpful book. More than 475 species of wetland plants are described and most are illustrated by colour photographs. The fact that some bryophytes, aquatics, sedges, rushes, and grasses are included and illustrated make this publication particularly useful, since these groups are often poorly covered or not covered at all in many field guides. Copies are available for \$24.95 in many Ontario bookstores.☞

**Ontario Insects.** The Newsjournal of the Toronto Entomologists' Association.

- Ontario Insects, now in its third volume, is an informative and attractive publication of the Toronto Entomologists' Association (TEA), currently edited by Matt Holder (now working on contract with the NHIC) and Phil Lester. Although Toronto based, the TEA is a province-wide group of mostly amateur entomologists, with a primary focus on butterflies, but an increasing interest in moths, dragonflies and damselflies (Odonata), and other insect groups. In addition to Ontario Insects, published tri-annually, the TEA also publishes an annual summary of Ontario Lepidoptera, which in recent years has included information on more than just butterflies. Membership in the TEA is \$20 per individual, \$10 for students, and \$25 per family. Dues can be sent to Alan J. Hanks, Treasurer, 34 Seaton Drive, Aurora, Ontario L4G 2K1. ☛

Catling, P.M. and V.R. Brownell. 1997.

**Damselflies (Zygoptera) in Ontario from 1900 to 1952: An atlas of E. M. Walker's distributional data for monitoring, and biodiversity and biogeography studies.**

Privately published. 10 pages plus distribution maps.

- Paul Catling and Vivian Brownell have compiled a vast amount of historical information on Ontario damselflies from the publications of Edmund Walker, author of the classic three volume work on "The Odonata of Canada and Alaska" and many other publications on Canadian dragonflies and damselflies. The 1900 to 1952 distribution of 43 damselfly taxa is plotted on dot distribution maps, providing the basis for evaluation of recent changes in status and distribution. With the increasing interest in Odonata among Ontario naturalists, this publication will become a valuable resource. Copies can be obtained for \$10 from the authors at 2326 Scrivens Drive, R.R. 3, Metcalfe, Ontario K0A 2P0. ☛

Marshall, S. 1997. **Insects of Algonquin**

**Provincial Park.** Friends of Algonquin Park, Whitney, Ontario.

- Steve Marshall of the University of Guelph

has produced a beautifully-illustrated booklet on Algonquin Park insects. Anyone with even a casual interest in insects will enjoy this publication which contains a wealth of information on the insects of this part of Ontario. The more than 200 excellent colour photos alone are well worth the purchase price. Copies are available for \$2.95 from the Friends of Algonquin Park, Box 248, Whitney, Ontario K0J 2M0. ☛

Harding, J.H. 1997. **Amphibians and Reptiles of the Great Lakes Region.** University of Michigan Press, Ann Arbor, Michigan. 378 pp.

- Beautiful colour photographs are one noteworthy feature of this excellent new book, which covers all Ontario amphibian and reptile species. Information on each species is provided under the following headings: description, confusing species, distribution and status, habitat and ecology, reproduction and growth, and conservation. Shaded distribution maps show the range of each species in the Great Lakes area. The paperback edition is available for U.S. \$19.95 from the University of Michigan Press, P.O. Box 1104, Ann Arbor, Michigan 48106, U.S.A. ☛

Christie, P. 1997. **Reptiles and Amphibians of Prince Edward County, Ontario.** Natural Heritage/Natural History Inc., P.O. Box 95, Station 0, Toronto, Ontario M4A 2M8. 143 pp.

- Peter Christie's guidebook covers 30 amphibian and reptile species reported from Prince Edward County in southeastern Ontario. The book is compiled from an analysis of over 1,000 records from Prince Edward County, most of which were contributed by the Ontario Herpetofaunal Summary database via the Natural Heritage Information Centre. Each species account contains a sketch of the animal, a map showing the distribution of records from the county, plus sections on description and distribution. This book will be a useful reference for naturalists visiting Prince Edward County as well as those having a general interest in the province's amphibians and reptiles. ☛

Green, D.M., editor. 1997. **Amphibians in**

## Focus on.... Pete Sorrill

Pete is the GIS/Mapping Specialist for the NHIC. Pete has been with the centre since its inception in December 1993.

Pete's background includes studies in Geography at the University of Waterloo, and the Geographic Information Systems Applications Specialist course at Sir Sandford Fleming College (SSFC). Prior to coming to the NHIC, he worked on contract for the Abitibi Model Forest Project at SSFC.

Pete caters to the GIS requirements of the centre, manages the center's ARC/INFO-based GIS, and is involved with natural heritage-related projects such as the Lands for Life Gap Analysis for site districts 5E7 and 5E8. Pete also does the layout and editing of the NHIC newsletter. ☛

**Decline: Canadian Studies of a Global Problem.** Herpetological Conservation Number 1, Society for the Study of Amphibians and Reptiles, St. Louis, Missouri, 338 pp.

- "Amphibians in Decline" is the culmination of several years work by the Canadian Declining Amphibian Populations Working Group (DAPCAN) in addressing the amphibian decline question in Canada. The book contains 29 chapters on amphibian conservation and decline topics, as well as an appendix on "Checklist and current status of Canadian amphibians". This book belongs on the bookshelf of any naturalist or biologist with an interest in Canadian herpetology. Copies can be obtained from the Publications Secretary, Society for the Study of Amphibians and Reptiles, Department of Biology, Saint Louis University, 3507 Laclede Avenue, St. Louis, Missouri 63103-2010, U.S.A. for CAN \$55.00 plus shipping and handling. ☛

# NHIC INFORMATION PRODUCTS

[The following publications, authored by NHIC staff, have been prepared since the previous listings (NHIC Newsletter 2(1):10 and 3(1):9).]

- Blaney, C.S., **M.J. Oldham** and A.A. Reznicek. 1997. Hyssop-leaved Loosestrife, *Lythrum hyssopifolia* L. (Lythraceae), new to Canada. Canadian Field-Naturalist 111(4):664-665.
- Catling, P.M., **M.J. Oldham**, **D.A. Sutherland**, V.R. Brownell and B.M.H. Larson. 1997. The recent spread of Autumn-Olive, *Elaeagnus umbellata*, into southern Ontario and its current status. Canadian Field-Naturalist 111(3):376-380.
- Harris, A. and **M.J. Oldham**. 1996. New plants for Thunder Bay District, Ontario. Field Botanists of Ontario Newsletter 9(2):6-10.
- King, R.B., **M.J. Oldham**, W.F. Weller and D. Wynn. 1997. Historic and current amphibian and reptile distributions in the island region of western Lake Erie. American Midland Naturalist 138:153-173.
- Jalava, J.V.** 1996. Sooty Tern on Lake Ontario. Birders Journal 5(5):234-235.
- Jalava, J.V.** 1996. Provincial Life Science Areas of Natural and Scientific Interest in Ecological Site Regions 6 and 7: Summary of Locations, Sizes and Evaluation Reports. Natural Heritage Information Centre, Peterborough. iv + 41 pp.
- Jalava, J.V.** and **H. Godschalk**. 1997. Priority Sites for Conservation Action in the Niagara Escarpment Biosphere Reserve. Paper presented at the Leading Edge '97: The Edge and the Point Conference, 17 October 1997, Burlington, Ontario. 9 pp.
- Jalava, J. V.** and **M.J. Oldham**. 1996. Detectives of Biodiversity. Aski 21(1):17.
- Oldham, M.J.** 1996. A day on Middle Sister Island. The Egret 11(3):1, 4-8.
- Oldham, M.J.** 1996. Natural Heritage Resources of Ontario: Rare Vascular Plants. Second edition. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough. 53 pp.
- Oldham, M.J.** 1996. Natural Heritage Resources of Ontario: Amphibians & Reptiles. Second edition. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough. 10 pp.
- Oldham, M.J.** 1996. Status and Conservation of Ontario Reptiles. Paper presented at the 1st meeting of the Working Group on Amphibian and Reptile Conservation in Canada (WGARCC), 6 October 1996, University of Calgary, Alberta. 4 pp.
- Oldham, M.J.** 1997. County distribution of southern Ontario vascular plants. Field Botanists of Ontario (FBO) Newsletter 10(1):7-8.
- Oldham, M.J.** 1997. Additions to the vascular flora of the Hamilton-Wentworth Regional Municipality, Ontario. Field Botanists of Ontario (FBO) Newsletter 10(1):8-11.
- Oldham, M.J.** 1997. Bibliography of Ontario Endangered and Threatened Plant Species. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough. 34 pp.
- Oldham, M.J.** 1997. Potential additions to the native vascular flora of Ontario. Field Botanists of Ontario (FBO) Newsletter 10(2):4-11.
- Oldham, M.J.** 1997. Obituary - William G. Stewart. Field Botanists of Ontario (FBO) Newsletter 10(2):11.
- Oldham, M.J.** 1997. Correct authorship for the scientific name of Lakeside Daisy, *Hymenocys berbecea*. Field Botanists of Ontario (FBO) Newsletter 10(3):11.
- Oldham, M.J.** and **W.D. Bakowsky**. 1996. An Ecological Evaluation of the Gallagher Tradeland, Gunflint Lake, Thunder Bay District, Ontario. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough. 31 pp.
- Oldham, M.J.** and M. Zinck. 1997. New and noteworthy records from the vascular flora of Nova Scotia, Canada. Canadian Field-Naturalist 111(3):393-398.
- Riley, J.L., **J.V. Jalava**, **M.J. Oldham** and **H.G. Godschalk**. 1997. Natural Heritage Resources of Ontario: Bibliography of Life Science Areas of Natural and Scientific Interest in Ecological Site Regions 6E and 7E, Southern Ontario. First Edition. Ontario Ministry of Natural Resources, Natural Heritage Information Centre, Peterborough. 156 pp. + 3 maps.
- Weller, W.F., **M.J. Oldham**, F.W. Schueler and M.E. Obbard. Undated [1996]. Report of the Historical Database Committee: Report of the Historical Population Trends Subgroup, Canadian Working Group – Declines in Canadian Amphibians Identified Using Historical Distributional Data. Pages 19-21, in "Proceedings of the Fourth Annual Meeting of the Task Force on Declining Amphibian Populations in Canada", compiled by B. Preston and R. Larche, Manitoba Museum of Man and Nature, Winnipeg. 🐸

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