

VASCULAR PLANTS AT RISK IN ONTARIO



May 2018

Prepared by James Leslie

Introduction

Vascular plants are those that have specialized vascular systems designed to transport water and minerals throughout the plant (the xylem), as well as the compounds produced from photosynthesis (the phloem), such as sugars. These plants include gymnosperms (e.g. conifers) and angiosperms (flowering plants), as well as ferns, horsetails, and clubmosses. In contrast, non-vascular plants (the diversity and rarities of which are not discussed in this guide) lack a xylem and phloem; these include mosses, liverworts, and algae.

Ontario has the highest diversity of vascular plants in Canada, with 3,160 species documented as of May 2018; approximately 65% of these are native. When including subspecies, varieties, and hybrids, the diversity total increases to 4,133. Of the native species, 668 (21%) are considered provincially rare. These provincially rare species range from vulnerable to critically imperilled in Ontario due to factors such as restricted ranges, relatively few occurrences, recent and widespread declines, or other factors making them vulnerable to extirpation.

Of the provincially rare vascular plants, 79 are listed Species at Risk – a term that refers to species that are legally protected, as determined by the Committee on the Status of Species at Risk in Ontario (COSSARO) or recommended by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Presently, three additional species have been recommended for legal protection by the COSEWIC. These species (all of which are part of the false foxglove genus (*Aureolaria*)) have been included in this guide, though they are not technically protected under the federal Species At Risk Act as of May 2018. If these are eventually approved for federal protection, the total number of listed Species at Risk in Ontario will increase to 82.

The species addressed in this guide are at risk of extirpation, or in some cases, extinction. Two species have already been listed as extirpated in Ontario (i.e. no longer known to occur in the wild in Ontario but still occur elsewhere); these species are still legally protected, should any new populations be discovered. Threats to Species at Risk (and other rare species) vary, but include poor land use practices, pathogens, exploitation, habitat loss, competition from invasive species, and climate change being a more recent concern.

Diversity of these Species at Risk is highest in southern Ontario where the northern limit of the Carolinian zone extends into the province (Figure 1). The Carolinian zone is a species-rich assemblage of forest, wetland, prairie, and savanna ecosystems that extend down to South Carolina. In Ontario, much of this habitat has been lost or fragmented by anthropogenic activity, creating strain on remaining habitat and associated species. Species at Risk are not restricted to the Carolinian zone however, as protected species can be found in other parts of Ontario, often restricted to specialized ecosystems such as shorelines, alvars, cliffs, fens, and bogs. These species often have a strong affinity to specific habitat characteristics, such as soil texture and depth, type of underlying bedrock, and varying hydrological inputs – all of which interact to create specialized growing conditions.

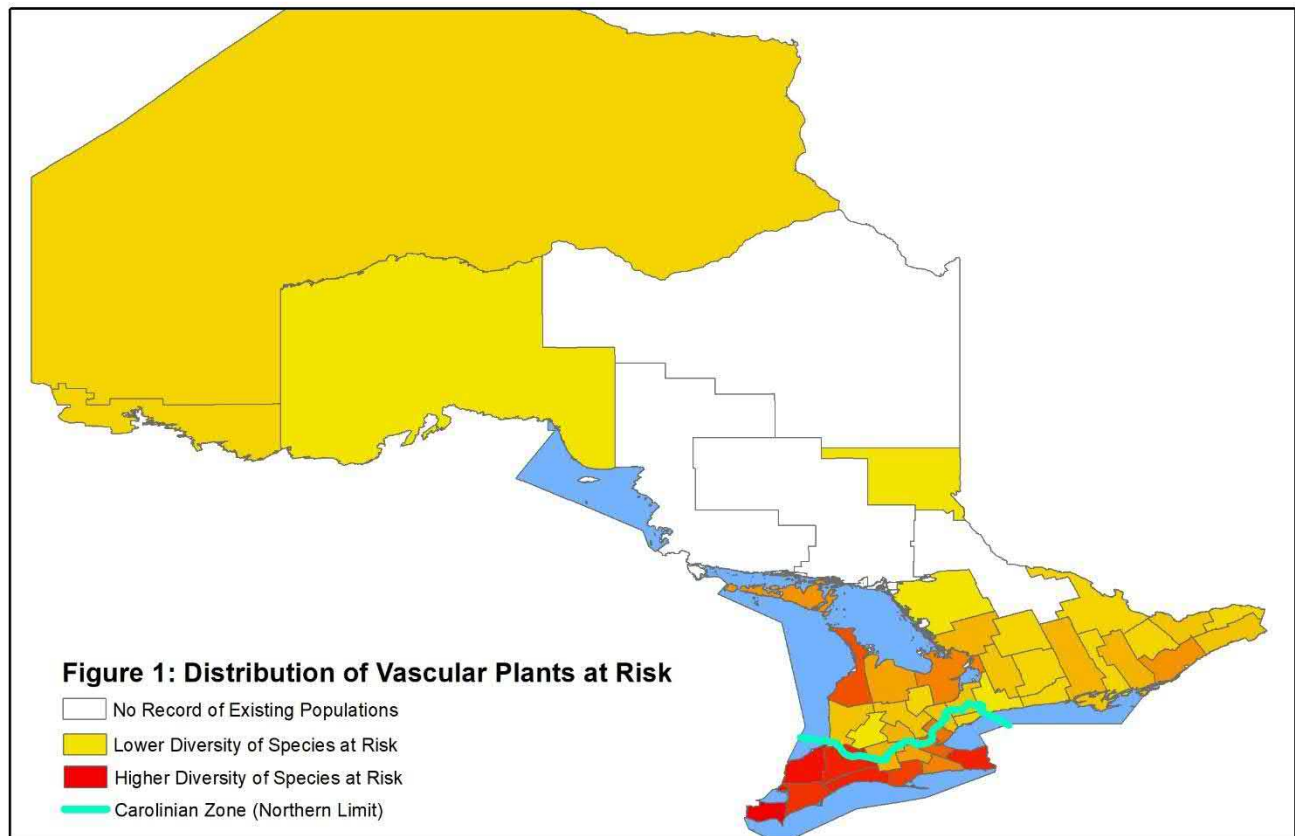


Figure 1 – Species at Risk diversity within each county; graduated colour scheme, where red represents counties having a higher diversity of species, transitioning to yellow, which represents a lower species diversity. Species at Risk in Kenora are restricted to the southwest area (visually misrepresented by the large size of the District). A breakdown of each Species at Risk within each county is provided in Table 1.

This guide is intended to assist with confirming the identification of Ontario plants suspected of being provincially and/or federally at risk. It can be printed for personal use or saved on a mobile device to ensure it's readily available when suspect species are encountered. This guide is a free educational tool and can be downloaded from the following host websites:

Field Botanists of Ontario (<https://www.fieldbotanistsofontario.com/>)

Savanta Environmental Consulting (<http://www.savanta.ca/>)

Each of the 79 Species at Risk are addressed in this guide, as well as information on the three false foxglove species that have been recommended for protection by the COSEWIC. Documentation includes a photo collage for each species, where effort was made to show the species at various stages of its lifecycle. For each species, the following is provided:

Photographs – The majority of photographs in this guide were generously provided by several photographers, made available under Creative Commons Attribution licences (<https://creativecommons.org/licenses>). The

names of these exceptional photographers (where available) are provided on each photograph. Additionally, the source of each photograph (if applicable) is identified by the number following the photographer name; please see the references section (page 90) for the corresponding website name and address. For photographs having full copyright restrictions, permission was obtained directly from the photographer or source.

Species Status – The Ministry of Natural Resources and Forestry (MNRF) assigns status designations based on the assessments of the COSSARO. Similarly, the COSEWIC is responsible for making recommendations at the federal level; unlike the provincial process, these recommendations require further consultation before receiving legal status. MNRF and COSEWIC designations are generally defined as follows:

- *Extirpated* – A species that is no longer known to occur in the wild in Ontario or Canada but still occurs elsewhere;
- *Endangered* – A species facing imminent extinction or extirpation in Ontario or Canada;
- *Threatened* – A species that is at risk of becoming endangered in Ontario or Canada if limiting factors are not reversed;
- *Special Concern* – A species with characteristics that make it sensitive to human activities or natural events.

Designations assigned to species are reviewed periodically and are subject to change; changes can include revised designations, addition of new species or removal of previously listed species. The designations provided in this guide are current as of March 2018. Although effort will be made to maintain the accuracy of this guide each year, designations can be confirmed at the following government websites:

Provincial – <https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>

Federal – http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm

Description and Preferred Habitat – Whenever possible, this information was tailored to conditions specific to Ontario through use of Provincial Recovery Strategies. Similar looking species are also discussed and their differentiating features. Technical details of identifying features were obtained from Michigan Flora Online (<https://michiganflora.net>), in association with multiple other resources.

Identification Period – Certain species require the presence of the flower or fruit to confirm identification while others can be identified without these reproductive parts. This section should assist in determining the most appropriate season to identify each species and will indicate if visual observation of specific features is necessary.

NHIC Record of County Occurrences – For the purposes of this guide, reference to “counties” includes districts, district municipalities, and regional municipalities. This section lists each county where naturally occurring extant populations are known. Counties listed in brackets represent circumstances where the species has not been observed in over 20 years. This data was obtained from the Ontario Natural Heritage Information Centre (NHIC) document *Rare Vascular Plants of Ontario, Fourth Edition* (Oldham and Brinker, 2009), with updates from 2018 provided by Michael Oldham of the NHIC. Illustrative maps are also provided for each species, where counties shaded in green represent extant populations, and those shaded in yellow represent historical

records (> 20 years old). Table 1, provided on page 81, lists each county and the vascular plant Species at Risk that are known from that county.

All scientific and common names follow the Database of Vascular Plants of Canada (VASCAN, 2010+), current as of 2018. In addition to the Table of Contents, a species index is provided at the end of this guide, which provides an alphabetical listing of all scientific and common names (as well as common synonyms) with associated page numbers.

If a suspected rare or Species at Risk has been observed, please report your observation to the NHIC or visit <https://www.ontario.ca/page/report-rare-species-animals-and-plants>. It's always good practice to include multiple photographs, location information, and any notes on habitat or other species you observed near-by. Most importantly, do not disturb the plant. For help with plant identification, consider joining the Field Botanists of Ontario and participating in the numerous field trips they offer annually, led by very knowledgeable botanists. In addition to the many invaluable field guides that are available, the iNaturalist app is also an impressive resource for suggesting possible identifications of your specimen. Conveniently, the NHIC also allows observations of Species at Risk (and any other provincially rare species) to be reported through the iNaturalist app. Be sure to join the NHIC Rare Species of Ontario Project in iNaturalist. (<https://www.inaturalist.org/projects/nhic-rare-species-of-ontario>). By joining this, the NHIC is automatically given access to the detailed locality data of rare species, which are otherwise automatically obscured by iNaturalist for conservation reasons.

James Leslie is a Vegetation Ecologist with Savanta Inc., having over 12 years' experience completing vascular plant inventories in most Ecoregions of Ontario, as well as parts of Alberta and Québec. This document was kindly peer reviewed by Michael Oldham (NHIC), Donald Sutherland (NHIC), and Dr. Christopher Zoladeski (Savanta Inc.). Effort to complete this guide was generously supported by Savanta Inc.

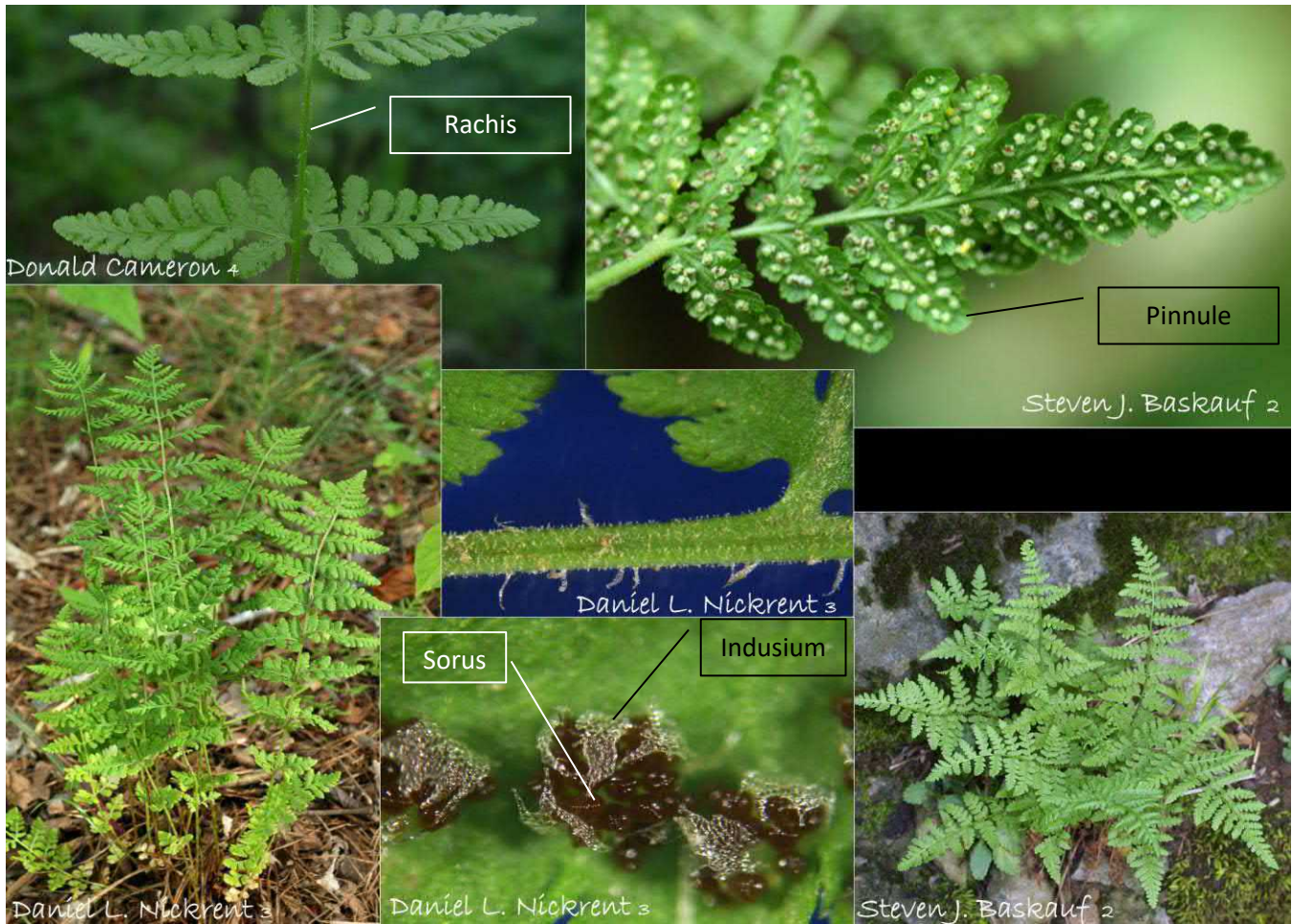
TABLE OF CONTENTS

	Family	Scientific Name	Common Name	Page #
Ferns & Allies	Cliff Fern Family (Woodsiaceae)	<i>Woodsia obtusa</i> ssp. <i>obtusa</i>	Blunt-lobed woodsia	1
	Marsh Fern Family (Thelypteridaceae)	<i>Phegopteris hexagonoptera</i>	Broad beech fern	2
	Quillwort Family (Isoëtaceae)	<i>Isoëtes engelmannii</i>	Engelmann's quillwort	3
	Spleenwort Family (Aspleniaceae)	<i>Asplenium scolopendrium</i> var. <i>americanum</i>	American hart's-tongue fern	4
Dicots	Acanthus Family (Acanthaceae)	<i>Justicia americana</i>	American water-willow	5
	Aster Family (Asteraceae)	<i>Arnoglossum plantagineum</i>	Tuberous Indian-plantain	6
		<i>Cirsium pitcheri</i>	Pitcher's thistle	7
		<i>Cirsium pumilum</i> var. <i>hillii</i>	Hill's thistle	8
		<i>Eurybia divaricata</i>	White wood aster	9
		<i>Liatris spicata</i> var. <i>spicata</i>	Dense blazing-star	10
		<i>Solidago houghtonii</i>	Houghton's goldenrod	11
		<i>Solidago pallida</i>	Pale showy goldenrod	12
		<i>Solidago riddellii</i>	Riddell's goldenrod	13
		<i>Solidago rigidiuscula</i>	Stiff-leaved showy goldenrod	14
		<i>Symphyotrichum praealtum</i> var. <i>praealtum</i>	Willow-leaved aster	15
		<i>Symphyotrichum prenanthoides</i>	Crooked-stem aster	16
		<i>Symphyotrichum sericeum</i>	Western silvery aster	17
		<i>Tetraneuris herbacea</i>	Lakeside daisy	18
	Beech Family (Fagaceae)	<i>Castanea dentata</i>	American chestnut	19
		<i>Quercus shumardii</i>	Shumard oak	20
	Birch Family (Betulaceae)	<i>Betula lenta</i>	Cherry birch	21
	Broom-rape Family (Orobanchaceae)	<i>Agalinis gattingeri</i>	Gattinger's false foxglove	22
		<i>Agalinis skinneriana</i>	Skinner's false foxglove	23
		<i>Aureolaria flava</i>	Smooth yellow false foxglove	24
		<i>Aureolaria pedicularia</i>	Fern-leaved yellow false foxglove	25
		<i>Aureolaria virginica</i>	Downy yellow false foxglove	26
		<i>Buchnera americana</i>	American bluehearts	27
		Buttercup Family (Ranunculaceae)	<i>Enemion bifernatum</i>	Eastern false rue-anemone
	<i>Hydrastis canadensis</i>		Goldenseal	29
	Cactus Family (Cactaceae)	<i>Opuntia cespitosa</i>	Eastern prickly-pear cactus	30
	Hemp Family (Cannabaceae)	<i>Celtis tenuifolia</i>	Dwarf hackberry	31
	Dogwood Family (Cornaceae)	<i>Cornus florida</i>	Eastern flowering dogwood	32
	Gentian Family (Gentianaceae)	<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	Branched bartonia	33
		<i>Frasera caroliniensis</i>	American columbo	34
		<i>Gentiana alba</i>	White prairie gentian	35
	Ginseng Family (Araliaceae)	<i>Panax quinquefolius</i>	American ginseng	36
Heath Family (Ericaceae)	<i>Chimaphila maculata</i>	Spotted wintergreen	37	
	<i>Vaccinium stamineum</i>	Deerberry	38	
Legume Family (Fabaceae)	<i>Desmodium illinoense</i>	Illinois tick-trefoil	39	
	<i>Gymnocladus dioicus</i>	Kentucky coffee-tree	40	
	<i>Lespedeza virginica</i>	Slender bush-clover	41	
	<i>Tephrosia virginiana</i>	Virginia goat's-rue	42	
Loosestrife Family (Lythraceae)	<i>Ammannia robusta</i>	Scarlet ammannia	43	

		<i>Rotala ramosior</i>	Lowland toothcup	44
	Magnolia Family (Magnoliaceae)	<i>Magnolia acuminata</i>	Cucumber tree	45
	Mallow Family (Malvaceae)	<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>	Swamp rose-mallow	46
		<i>Ripariosida hermaphrodita</i>	Virginia mallow	47
	Milkweed Family (Apocynaceae)	<i>Asclepias quadrifolia</i>	Four-leaved milkweed	48
	Milkwort Family (Polygalaceae)	<i>Polygala incarnata</i>	Pink milkwort	49
	Mint Family (Lamiaceae)	<i>Pycnanthemum incanum</i> var. <i>incanum</i>	Hoary mountain-mint	50
	Mulberry Family (Moraceae)	<i>Morus rubra</i>	Red mulberry	51
	Olive Family (Oleaceae)	<i>Fraxinus quadrangulata</i>	Blue ash	52
	Plantain Family (Plantaginaceae)	<i>Collinsia verna</i>	Spring blue-eyed Mary	53
		<i>Plantago cordata</i>	Heart-leaved plantain	54
	Poppy Family (Papaveraceae)	<i>Stylophorum diphyllum</i>	Wood poppy	55
	Rose Family (Rosaceae)	<i>Rosa setigera</i>	Climbing prairie rose	56
	Rue Family (Rutaceae)	<i>Ptelea trifoliata</i>	Common hop-tree	57
	Violet Family (Violaceae)	<i>Viola pedata</i> var. <i>pedata</i>	Bird's-foot violet	58
	Walnut Family (Juglandaceae)	<i>Juglans cinerea</i>	Butternut	59
Monocots	Arum Family (Araceae)	<i>Arisaema dracontium</i>	Green dragon	60
	Asparagus Family (Asparagaceae)	<i>Camassia scilloides</i>	Eastern camas	61
	Asphodel Family (Nartheciaceae)	<i>Aletris farinosa</i>	White colicroot	62
	Bunchflower Family (Melanthiaceae)	<i>Trillium flexipes</i>	Drooping trillium	63
	Catbrier Family (Smilacaceae)	<i>Smilax rotundifolia</i>	Round-leaved greenbrier	64
	Grass Family (Poaceae)	<i>Aristida basiramea</i>	Forked three-awn grass	65
	Iris Family (Iridaceae)	<i>Iris lacustris</i>	Dwarf lake iris	66
	Orchid Family (Orchidaceae)	<i>Cypripedium candidum</i>	Small white lady's slipper	67
		<i>Isotria medeoloides</i>	Small whorled pogonia	68
		<i>Isotria verticillata</i>	Large whorled pogonia	69
		<i>Liparis liliifolia</i>	Purple twayblade	70
		<i>Platanthera leucophaea</i>	Eastern prairie fringed orchid	71
		<i>Triphora trianthophoros</i> ssp. <i>trianthophoros</i>	Nodding pogonia	72
	Pondweed Family (Potamogetonaceae)	<i>Potamogeton hillii</i>	Hill's pondweed	73
		<i>Potamogeton x ogdenii</i>	Ogden's pondweed	74
	Sedge Family (Cyperaceae)	<i>Carex juniperorum</i>	Juniper sedge	75
		<i>Carex lupuliformis</i>	False hop sedge	76
		<i>Cyperus subsquarrosus</i>	Small-flowered lipocarpa	77
		<i>Eleocharis equisetoides</i>	Horsetail spikerush	78
		<i>Eleocharis geniculata</i>	Bent spikerush	79
	<i>Trichophorum planifolium</i>	Bashful clubrush	80	

Woodsia obtusa ssp. *obtusa*

Blunt-lobed woodsia
Cliff Fern Family



MNRF: Endangered

COSEWIC: Threatened

Description: Blunt-lobed woodsia is a small to medium-size fern with fronds (collectively referring to stem and leaves) up to 60 cm long and 15 cm wide. It is characterized by the blunt, rounded pinnules of its bright green fronds. Each indusium completely surrounds the sorus, forming a ring of cup-like scales arching over it. The rachis is yellow-green and has thin scales along its length, increasingly so toward the base. The blade (leaf-bearing portion of frond) usually has 6-20 pairs of widely spaced, short-stemmed pinnae. The stem of the blade is not jointed (i.e. lacking a small visible thickening) and is yellow-green (sometimes light brown at base). Superficially, blunt-lobed woodsia is most often confused with fragile fern (*Cystopteris fragilis*), which has stems that are dark reddish-brown at the base, a smooth rachis (no hairs or scales), and pouch-like indusia that partially conceal the sori.

Preferred Habitat: Ontario populations are known from sites with calcareous bedrock. Soils tend to be shallow (often less than 10 cm) and trees in the vicinity are typically small to moderate in size and widely scattered.

Identification Period: Easiest to identify when the sori are present (summer or early fall). Since this species remains robust into the late fall when similar-looking *Cystopteris* species are likely to have died down, late season searches are beneficial.

NHIC Record of County Occurrences: Frontenac, Leeds & Grenville.



Phegopteris hexagonoptera

Broad beech fern
Marsh Fern Family



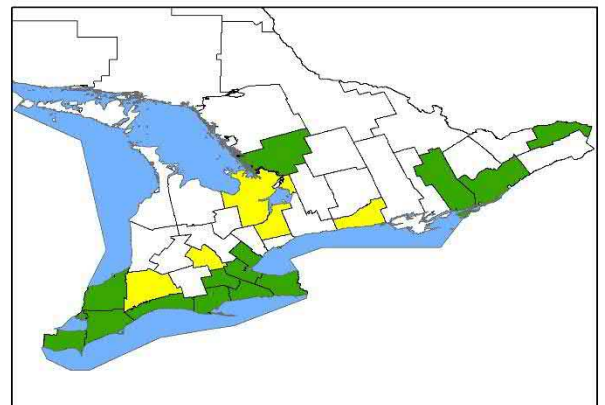
MNRF: Special Concern
COSEWIC: Special Concern (Schedule 3)

Description: Broad beech fern is a perennial fern with broadly triangular fronds that grow from 25 to 75 cm tall. The blades are between 15 and 30 cm wide (usually as wide as long or wider), slightly downy on the underside, and have a winged rachis. The fronds grow closely spaced along a long underground stem (rhizome) that is slender, scaly and slightly fleshy. This fern could be confused with northern beech fern (*Phegopteris connectilis*) but is quickly distinguished by its larger stature and winged rachis. Northern beech fern may also be winged along the upper half of the rachis, but the lowest two pairs of pinnae will not have a leafy, connective wing along the rachis.

Preferred Habitat: Rich, moist deciduous forests, often at bases of slopes, edges of seeps, and along streams.

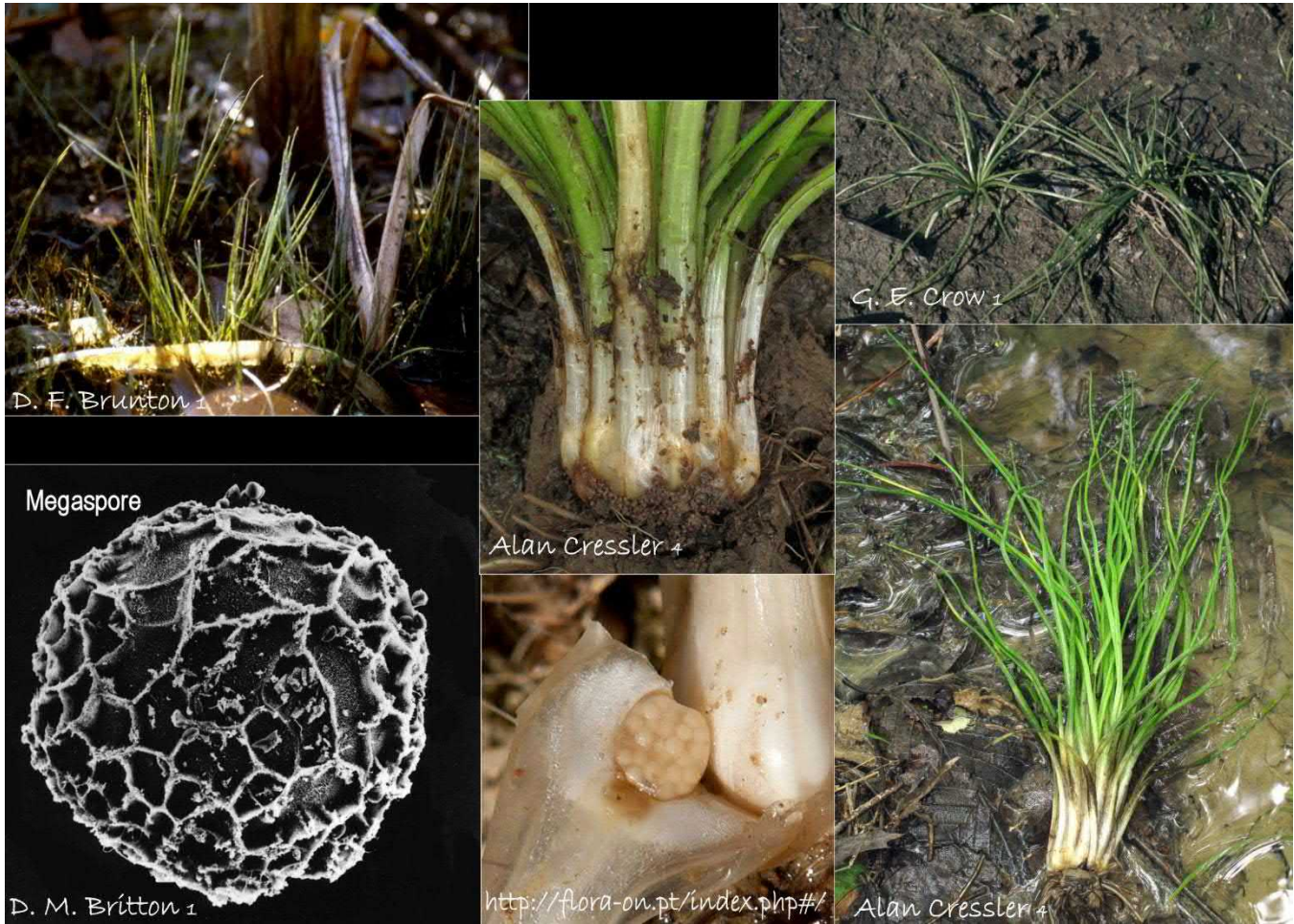
Identification Period: June to October; does not require presence of spores for identification.

NHIC Record of County Occurrences: Brant, Chatham/Kent, Elgin, Essex, Frontenac, Haldimand, Halton, Hamilton, Lambton, Leeds & Grenville, Muskoka, Niagara, Norfolk, Prescott & Russell. (Middlesex, Northumberland, Simcoe, Waterloo, York).



Isoetes engelmannii

Engelmann's quillwort
Quillwort Family



MNRF: Endangered
COSEWIC: Endangered

Description: Engelmann's quillwort is an aquatic perennial plant that's wholly or partially submerged below the water's surface. The green to yellow-green leaves are hollow and usually less than 20 cm long (rarely longer than 40cm). The leaves arise from corms buried in the substrate. Engelmann's quillwort is very similar in appearance to Ontario's four other species of quillwort but is differentiated by the presence of megaspores (<0.5mm wide) that have tall, elongated ridges that are all interconnected, forming a contiguous pattern (requires 10x magnification). Presence of megaspores with ridges that are irregular and not forming a contiguous network would suggest a different quillwort, such as lake quillwort (*Isoetes lacustris*) or spiny-spored quillwort (*Isoetes echinospora*) – two species that are more common in Ontario. Megaspores of all quillworts are whitish and located on the white inner-face of the leaf base. Five quillwort hybrids are also known from Ontario, one of which is Eaton's quillwort (*Isoetes x eatonii*) – a hybrid of Engelmann's and spiny-spored quillwort.

Preferred Habitat: Ontario populations occur along edges of flowing rivers that have a sandy substrate. In North America, habitat includes borders of ponds, lakes and reservoirs, as well as creeks.

Identification Period: Requires presence of megaspores for identification, which are mature by early August. Plants of shallower water may mature at an earlier date than those in deeper water.

NHIC Record of County Occurrences: Haliburton, Muskoka, Simcoe. Observations along Gull River and Severn River.



Asplenium scolopendrium var. *americanum*

American hart's-tongue fern
Spleenwort Family



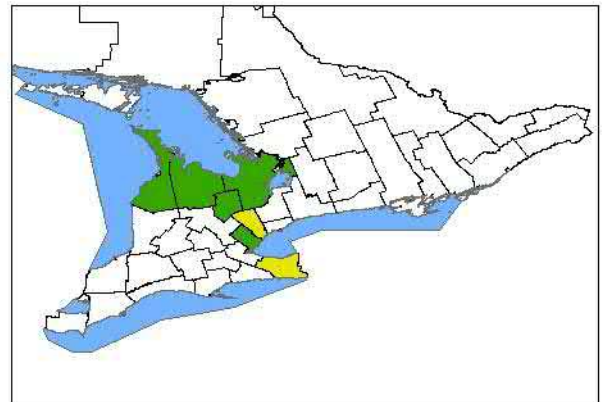
MNRF: Special Concern
COSEWIC: Special Concern

Description: American hart's-tongue fern is an erect perennial evergreen fern that grows in circular tufts from short, stout rhizomes (underground stems). Mature fronds are 8-35 cm long and 2-4.5 cm wide. The blades are thick, glossy, heart-shaped at the base and often wavy-edged along the margins. The stem of each blade is 3-12 cm long and covered with cinnamon-coloured scales. The sori are linear and nearly perpendicular to the rachis. This species could be confused with walking fern (*Asplenium rhizophyllum*) but most blades of walking fern taper to a very long and narrow tip. The longer blades will often arch over and root at the tip when in contact with the ground (hence, the fern "walks").

Preferred Habitat: Hart's-tongue fern requires calcium-rich substrate and is only found on mossy, limestone outcrops, boulders, or shallow soil overlying limestone. In Ontario, many populations are found under canopy openings of hardwood forests on moderately moist slopes that face north to northeast.

Identification Period: Due to the evergreen leaves and unique appearance, this fern can be identified in any season, when not covered by snow.

NHIC Record of County Occurrences: Bruce, Dufferin, Grey, Halton, Simcoe. (Niagara, Peel).



Justicia americana

American water-willow
Acanthus Family



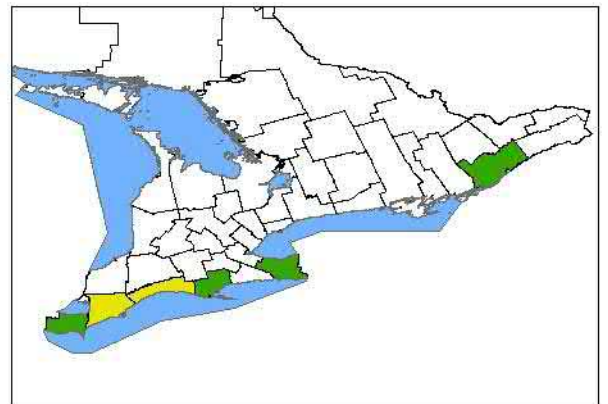
MNRF: Threatened
COSEWIC: Threatened

Description: American water-willow is an aquatic perennial that grows in colonies. The plant has an erect, herbaceous stem that reaches a height of 20 to 100 cm, growing from underground rhizomes. The leaves are undivided, narrow and elongated in shape, and occur in opposite pairs. White or pale violet, flowers appear on long thin stalks that grow from the leaf axils. The fruit is a capsule which contains 2 to 4 light brown seeds. Non-flowering plants superficially resemble and might be confused with swamp loosestrife (*Decodon verticillatus*); swamp loosestrife has opposite or whorled leaves, and stems that arch over and root from the tips when contact is made with the water/soil surface. The flowers are distinctly different and could not be confused with those of American water-willow.

Preferred Habitat: The critical habitat for this species is defined as sheltered coves, shoals and shores of rivers, streams, ponds and lakes, where it nearly forms mono-specific colonies. Preferred substrate varies from clay to sand to gravel and even rock. The species also tolerates considerable fluctuation in water levels and can even be found on non-submerged, though very wet soils adjacent to water bodies.

Identification Period: Flowers from May to August; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Essex, Leeds & Grenville, Niagara, Norfolk. (Chatham-Kent, Elgin).



Arnoglossum plantagineum

Tuberous Indian-plantain
Aster Family



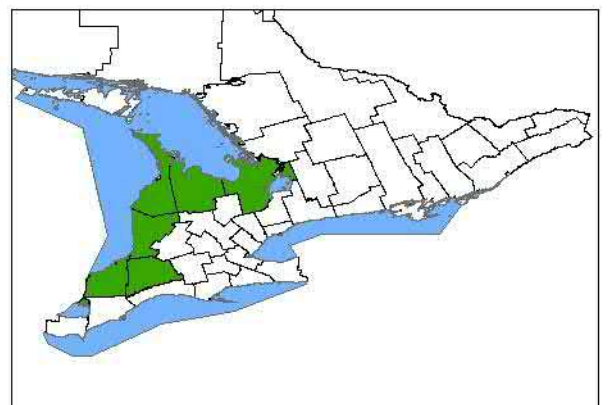
MNRF: Special Concern
COSEWIC: Special Concern

Description: Tuberous Indian-plantain is a perennial that grows from a cluster of hairless basal leaves, each with stalks as long as 10 cm. The stem is stout, hairless, light green with red longitudinal veins, and grows to a height of 1.8 m. The leaves growing from the stem are alternate, becoming smaller and less abundant and shorter stalked as they ascend the central stem. The inflorescence is a flat-topped panicle of white flowers. The greenish-white phyllaries are distinctly 5-ridged, winged, and tend to be the most conspicuous part of the flower. The narrow seeds are about 4 to 5 mm long, dark brown, and longitudinally ribbed. The apex of each achene has a tuft of spreading white hair, which assists wind dispersal. The basal leaves alone may resemble those of common plantain (*Plantago major*), which usually has shorter leaf stalks, fewer leaf veins, and are often slightly hairy on one or both surfaces.

Preferred Habitat: Fens, moist prairies, sedge meadows, and calcareous shores.

Identification Period: In Ontario, plants flower in June with seed dispersal from July to August; for those unfamiliar with this plant, reproductive parts should be present to positively identify it.

NHIC Record of County Occurrences: Bruce, Grey, Huron, Lambton, Middlesex, Simcoe.



Cirsium pitcheri

Pitcher's thistle
Aster Family



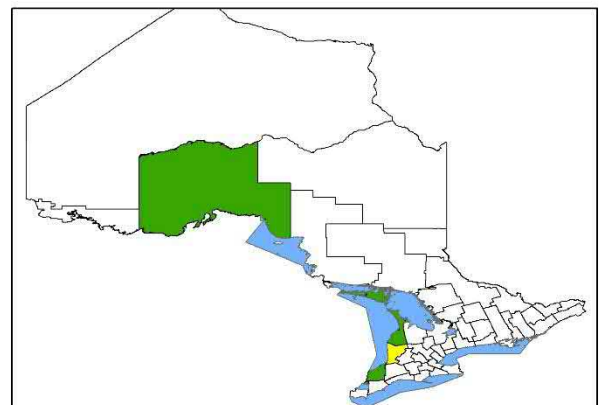
MNRF: Threatened
COSEWIC: Special Concern

Description: Pitcher's thistle is a perennial herb that lives as a basal rosette for three to 11 years before developing a stem. The rosette tends to be 15 to 30 cm in diameter, while the stem can reach a height of 50 to 100 cm. The plants have a distinctive whitish-green colour from a layer of fine hairs that cover the surface of the leaves and stem. The leaves are narrow and deeply divided, with a spine at the tip of each linear division. Pitcher's thistle produces one to many urn-shaped heads of white or pale pink flowers. It is easily distinguished from other thistles by the dense cover of whitish hairs, its pale flower colour, and its preference for sand substrate. The basal leaves of Pitcher's thistle could also be confused with those of spotted knapweed (*Centaurea stoebe*) as well as species of wormwood (*Artemisia*) – none of which have spine-tipped leaves.

Preferred Habitat: Found only on sand dunes and sandy beaches; ideal habitat is open, dry, loose sand with sparse or no vegetation immediately surrounding or shading the thistles.

Identification Period: In Ontario, this species flowers from mid-June and through July. However, by using the habitat and unique vegetative features, this thistle can be identified without the flower throughout the growing season.

NHIC Record of County Occurrences: Bruce, Lambton, Manitoulin, Thunder Bay. (Huron).



Cirsium pumilum var. *hillii*

Hill's thistle
Aster Family



MNRF: Threatened

COSEWIC: Threatened

Description: Hill's thistle is a perennial herb. Spines are present along the undulating leaf margins and at the tips of the phyllaries, but \pm absent on the main stem between leaf bases. Prior to flowering, these plants form a basal rosette and remain in that stage for up to five years. After that, they produce an upright stem (25 to 60 cm) with a single, large flower head (3.5 to 5 cm in height). Each stem usually has one flowering head, though some have as many as three. The mature flowers have a rich mauve colour. The following features distinguish this thistle from others: single flower atop the stem, involucre (a term for all the phyllaries, collectively) 3.5 to 6 cm broad and the spines on the phyllaries are mostly 1.5 to 3.5 mm long.

Preferred Habitat: Prefers open and grassy habitat, including prairies, sand barrens, oak and jack pine savannahs, alvars, open woodlands, and dunes. Hill's thistle will not grow in dense vegetation or where it is overtopped or crowded by other plants as it prefers open ground with low grasses, especially poverty oat grass, reindeer lichens, and scattered shrubs. The tree canopy, if present, tends to be coniferous and very open.

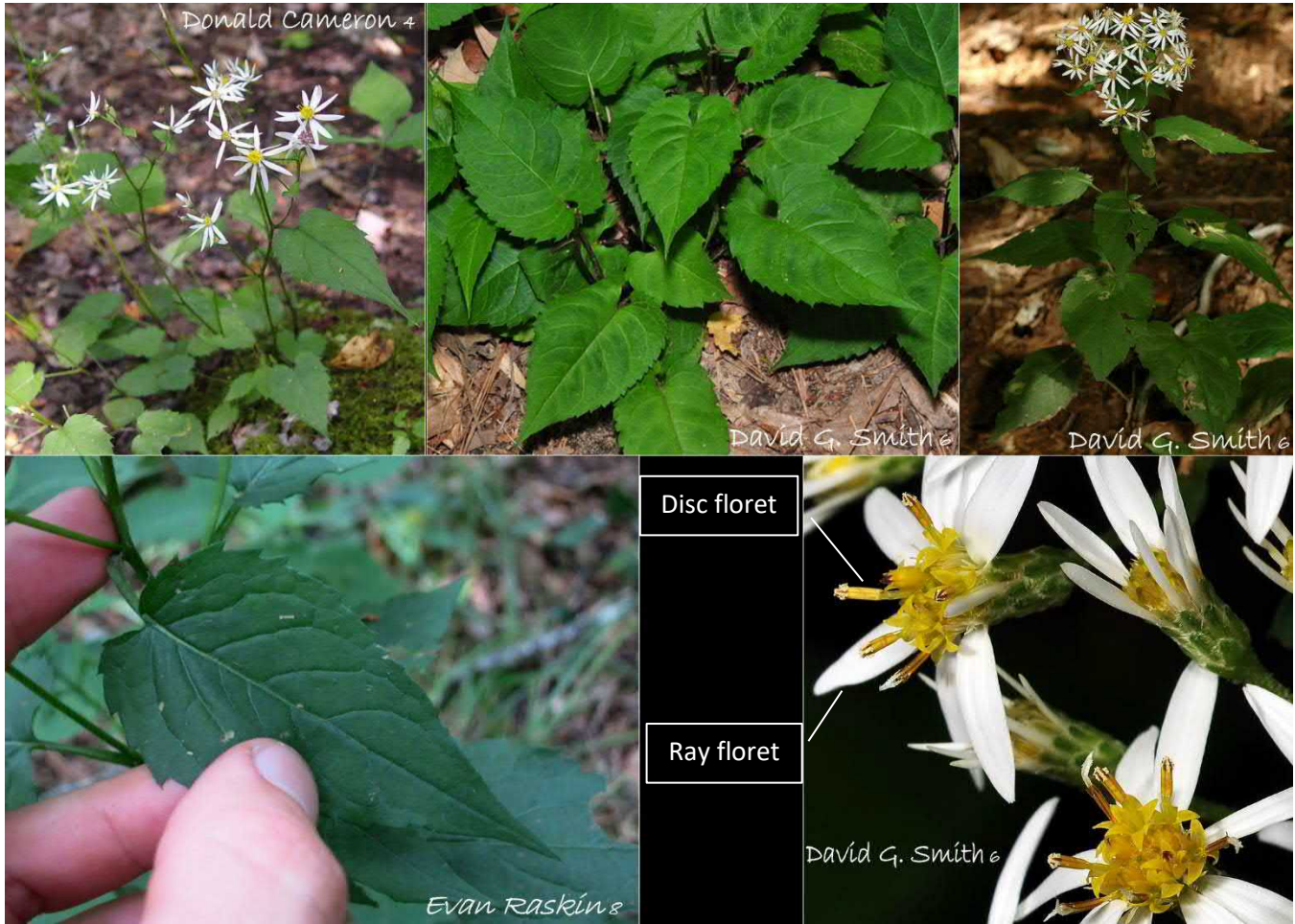
Identification Period: Flowering occurs from mid-June to mid-September, with a peak in July; the flowers are necessary for conclusive identification. Recall that specimens may take up to five years before they produce a flowering stem.

NHIC Record of County Occurrences: Bruce, Manitoulin, Simcoe.



Eurybia divaricata

White wood aster
Aster Family



MNRF: Threatened

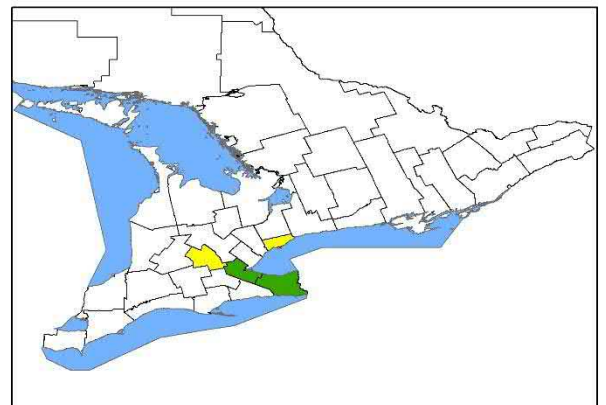
COSEWIC: Threatened

Description: White wood aster is a herbaceous perennial that grows to a height of 30 to 80 cm. It emerges from rhizomes and grows in colonies. Stems have a subtle zigzag pattern and tend to be hairless (or nearly so) on the lower half and moderately hairy on the upper half. Basal leaves are heart-shaped, dying off by flowering time. The lower stem leaves usually have a winged stalk, are heart-shaped, and have deeply serrated margins (15 or fewer teeth per side); the upper leaves are smaller. The inflorescence is flat-topped, the stalks of which are densely hairy. Ray florets (5-12) are white and 6-12 mm long. Disc florets (12-25) are yellow (sometimes becoming reddish-purple). The phyllaries are sparsely hairy, usually glandless. This species is distinguished (collectively) by the heart-shaped lower leaves having 15 or fewer teeth, serrated upper leaves, smooth (or nearly so) lower stem, flat-topped inflorescence, and glandless phyllaries.

Preferred Habitat: Open, dry deciduous forests on well-drained soils. This species is tolerant of limited disturbance, as most Ontario populations grow along trails.

Identification Period: In Ontario, this species tends to flower in late August to early September; the flowers are necessary for identification.

NHIC Record of County Occurrences: Hamilton, Niagara. (Toronto, Waterloo).



Liatris spicata var. *spicata*

Dense blazing-star
Aster Family



MNRF: Threatened

COSEWIC: Threatened

Description: Dense blazing-star is a perennial herb with numerous, narrow, grass-like leaves that progressively become smaller up the cylindrical, hairless stem. The plant usually grows to a height of 40 to 110 cm, though sometimes smaller or larger. The inflorescence is a robust and striking spike of densely packed, purple, flowering heads. This species and varieties of it are often planted in gardens, sometimes escaping into naturalized areas. To distinguish this variety from other blazing-stars, look for the cylindric inflorescence (flowering section of stem) and narrow cylindric involucres (greenish bracts subtending each flower cluster). Also ensure the axis of inflorescence is \pm hairless, and that each phyllary has a rounded tip.

Preferred Habitat: Most Ontario populations tend to occur in tallgrass prairies, although observations of this species have also been in oak savannahs, dune woodlands, inter-dunal meadows, roadsides, and along railways and hydro corridors.

Identification Period: Flowers from August to October; identification should be made during this period.

NHIC Record of County Occurrences: Chatham-Kent, Elgin, Essex, Halton, Lambton, Middlesex, Peel. Records from other counties are not believed to be naturally occurring populations, and even the records from Halton and Peel are suspect (Oldham, 2018 pers. comm.). Over 90% of all naturally occurring populations in Canada are on Walpole Island. Another large population is also known from Windsor.



Solidago houghtonii

Houghton's goldenrod
Aster Family



MNRF: Threatened
COSEWIC: Special Concern

Description: Houghton's goldenrod is about 30-60 cm high with slender reddish hairless stems. The basal leaves are hairless, up to 2 cm wide, and can still be observed when the plant is in flower. The lower stem leaves are linear, slightly clasping, up to 18 cm long and 2 cm wide; leaves become smaller and less clasping further up the stem. The inflorescence is flat-topped, usually consisting of 5 to 30 flowering heads, sometimes more. The larger involucres are about 6 to 8 mm long; atop each of these are 10 or fewer bright yellow ray florets (outer petals), each 3 to 4.5 mm long (sometimes up to 7 mm). Houghton's goldenrod is most likely to be mistaken for grass-leaved goldenrod (*Euthamia graminifolia*) or Ohio goldenrod (*Solidago ohioensis*). The common grass-leaved goldenrod can be distinguished by the absence of basal leaves during flowering time and has considerably more leaves on the stem. Ohio goldenrod is distinguished by its hairless pedicels (stalks of the flowers) (Houghton's has short, stiff hairs), its smaller involucres (< 5.5mm long), and smaller ray florets (< 3mm long). A hybrid known as Krotkov's goldenrod (parent plants *Solidago ohioensis* and *Solidago ptarmicoides*) can also be difficult to distinguish but has pale yellow rays, which are more numerous and / or longer. Also see description for *Solidago riddellii*.

Preferred Habitat: Houghton's goldenrod grows on alvars, calcareous beach sands, or interdunal wetlands along the Great Lakes shoreline. The Ontario population is primarily found on alvars.

Identification Period: Identification requires the presence of flowers, which bloom in August through early September.

NHIC Record of County Occurrences: Bruce, Manitoulin.



Solidago pallida

Pale showy goldenrod
Aster Family



MNRF: Threatened
COSEWIC: Threatened

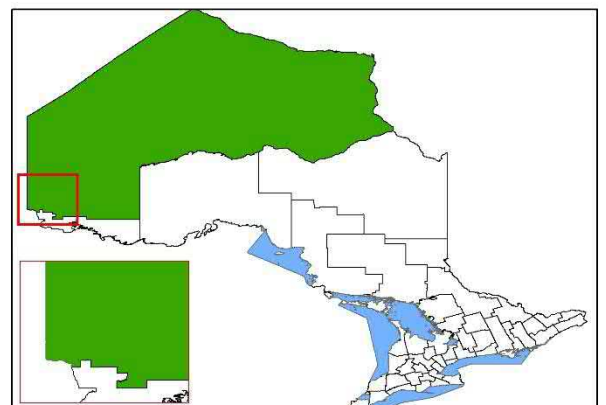
Description: Pale showy goldenrod is sometimes treated as a subspecies of showy goldenrod (*Solidago speciosa*), as is the case with existing Canadian legislation; however, recent research of the *S. speciosa* complex indicated that it should be recognized as a separate species. Based on this research, the NHIC now treats pale showy goldenrod as a separate species (Oldham, 2015 pers. comm.). The same distinction has also been applied to *Solidago rigidiuscula*, which was also treated as a subspecies of showy goldenrod.

Pale showy goldenrod is a perennial growing up to 80 cm in height (58 cm average). The basal leaves are pale green and persist when the plant flower. The mid-stem (cauline) leaves are generally not crowded, pliable, and hairless. Both the lower cauline and basal leaves have tapering blade bases with short, winged stalks (petioles). The upper leaves are smaller and lack serrated edges. The flower-bearing inflorescence grows up to 30 cm long and has ascending branches. Each flower head (capitulum) is about 4 to 6 mm long and 3 to 4 mm wide. *Solidago jejunifolia* (also a member of the showy goldenrod complex) grows in similar habitat near-by in Manitoba, but is distinguished by its basal leaves, which have long, narrow petioles the lengths of which are usually half or more of the total leaf length. Pale showy goldenrod also has similarities to bog goldenrod (*Solidago uliginosa*), which grows in wetland habitat.

Preferred Habitat: Prairie woodland with shallow, rocky soil

Identification Period: Identification requires the presence of flowers, which bloom from late August / early September until mid-October.

NHIC Record of County Occurrences: Kenora [Dufresne Island].



Solidago riddellii

Riddell's goldenrod
Aster Family



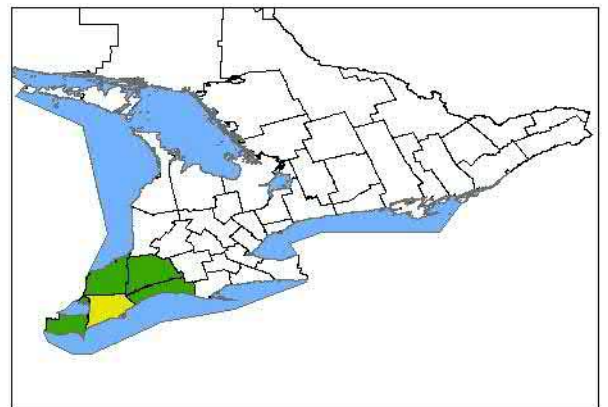
MNRF: Special Concern
COSEWIC: Special Concern

Description: Riddell's goldenrod has an erect stem, about 40 to 100 cm in height; stems grow singly or in small bunches. The leaves are linear and tapered, V-shaped in cross section, arching, and usually have three longitudinal veins (sometimes more); the upper leaves are similar, but smaller. The inflorescence is sometimes flat-topped but can also appear rounded. The ray florets are 1.5 to 3 mm long (a measurement of the outer 'petals'); the involucres are usually 3.5 to 5.5 mm long. This species could be confused with Houghton's goldenrod (described above), which has ray florets 3 to 4.5 mm long (less commonly up to 7 mm long) and involucres 5 to 8 mm long. It could also be confused with Ohio goldenrod (*Solidago ohioensis*), which has leaves flat in cross-section with only one longitudinal vein.

Preferred Habitat: In Ontario, this plant tends to grow in wet prairie or prairie-like habitat. Several populations are also known to persist along railway corridors.

Identification Period: Identification requires the presence of flowers, which bloom between late August and early October.

NHIC Record of County Occurrences: Elgin, Essex, Lambton, Middlesex, (Chatham-Kent).



Solidago rigidiuscula

Stiff-leaved showy goldenrod
Aster Family



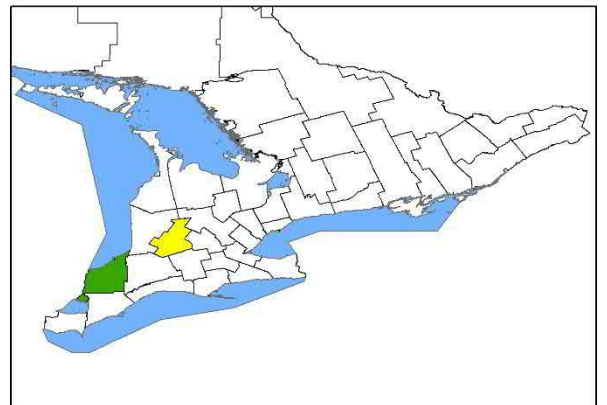
MNRF: Endangered
COSEWIC: Endangered

Description: Stiff-leaved showy goldenrod is sometimes treated as a subspecies of showy goldenrod (*Solidago speciosa*), which is further discussed under the description of *Solidago pallida*. Stiff-leaved showy goldenrod is a perennial growing up to 120 cm in height (80 cm average). The basal leaves are dark green, toothless or shallowly serrate, and usually die off before the plant flowers. Leaves growing along the stem (cauline) are often crowded, usually stiff, and somewhat rough-feeling; there are usually 11 to 30 of these leaves below the inflorescence. The margins of the mid to lower cauline leaves are often toothless or sparsely toothed in the upper half of the leaf. The inflorescence grows up to 30 cm long and has ascending branches. Each individual flower is about 4 to 6 mm long and 3 to 4 mm wide. This species could be confused with hairy goldenrod (*Solidago hispida*), which differs in having 3 to 17 cauline leaves below the inflorescence and lower/middle cauline leaves with crenulate (wavy) margins; hairy goldenrod also has soft, hairy stems and leaves (although *Solidago hispida* var. *huronensis* is glabrous (hairless)).

Preferred Habitat: Moist oak savannah and open tallgrass prairie on sandy loam and sandy clay loam soils.

Identification Period: Identification requires the presence of flowers, which bloom from late August / early September until mid-October.

NHIC Record of County Occurrences: Lambton. (Perth).



Symphotrichum praealtum var. *praealtum*

Willow-leaved aster
Aster Family



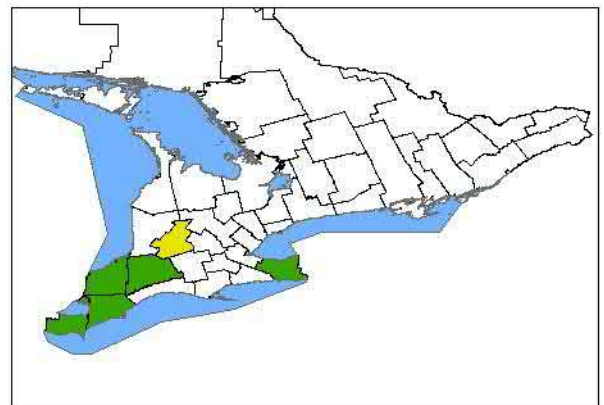
MNRF: Threatened
COSEWIC: Threatened

Description: Willow-leaved aster is a herbaceous, perennial with a relatively smooth and waxy stem growing to 1.5 m. The upper stem leaves are thick, narrow, linear, and lack stalks (peduncles). The leaf margins roll downward slightly, are toothless or with a few small teeth, and the undersides are hairless with a distinct network of veins. The lowermost leaves usually die off at the time of flowering. The inflorescence is leafy with few to many flower heads, the stalks of which are moderately to densely hairy. The phyllaries (green bracts below the flower petals) are sparsely hairy or hairless, most with darker green tips that have a diamond shape. Each flower head has 20-35 pale blue-violet ray florets (outer petals), and 20-30 yellow disc florets (center cluster), which become purple with age. This species is distinguished by its smooth and somewhat waxy stems, its pale violet ray florets, and its leaves with pronounced veins on the underside. It could be confused with the common white paniced aster (*Symphotrichum lanceolatum*), which never has a stem waxy in appearance.

Preferred Habitat: Willow-leaved aster is found in prairies, meadows, and areas of dense shrubs or small trees. In southwestern Ontario, it grows most often in oak savannahs, but is also found in disturbed areas such as roadsides, along railways, and in abandoned fields.

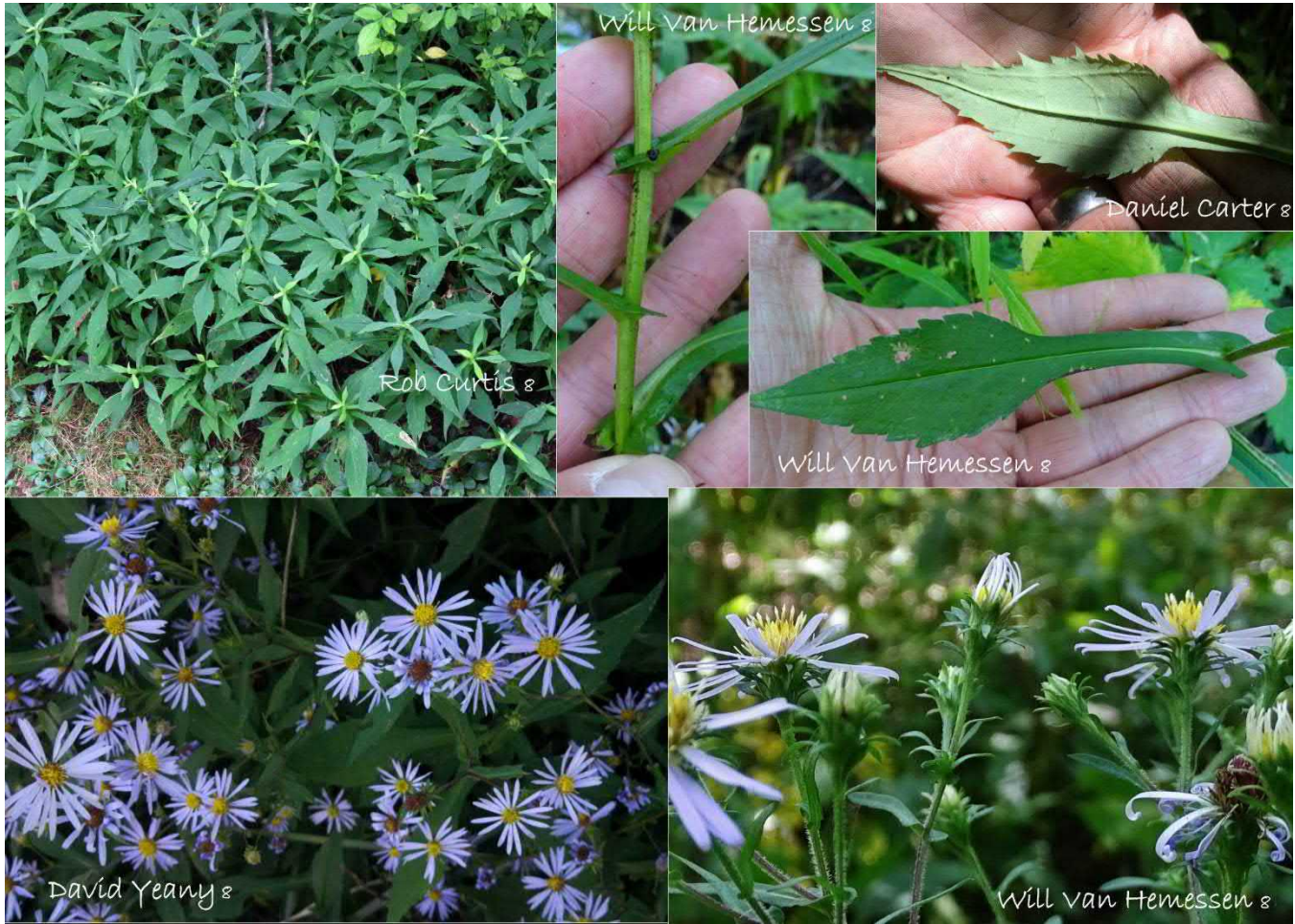
Identification Period: Flowers from late September to October; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Chatham-Kent, Essex, Lambton, Niagara, Middlesex. (Perth). Most populations are concentrated in the Windsor area and on Walpole Island.



Symphotrichum prenanthoides

Crooked-stem aster
Aster Family



MNRF: Special Concern
COSEWIC: Special Concern

Description: Crooked-stem aster is a perennial herb, 20 to 90 cm tall, with zig-zagging stems that grow in colonies. The lower stem leaves are widest above the middle and constrict down to the leaf base, then widen out again where the leaf clasps the stem; the margins are sharply serrated. These leaves die off before the plant flowers. The upper stem leaves are similar but less constricted. The peduncles are sparsely to densely hairy, which lead to an involucre that is 5 to 6 mm long. The phyllaries of the involucre are often arching back and sparsely hairy. There are 17 to 20 ray florets – usually lavender or blue (rarely white), and 40 to 65 yellow disc florets, which later turn purple or brown. This species is distinguished by its zig-zagging stem, leaves that are strongly constricted above the lobed, clasping bases, and leafy phyllaries that arch back. It could be confused with purple-stemmed aster (*Symphotrichum puniceum*), which is usually found in wetter habitat, such as swamps and marshes, and has upper leaves that are scarcely if at all constricted.

Preferred Habitat: This aster is found along the banks of streams and creeks draining into the north shore of Lake Erie. It prefers rich, sandy, loamy soil, and is usually found at the edge of woods in partial to full shade.

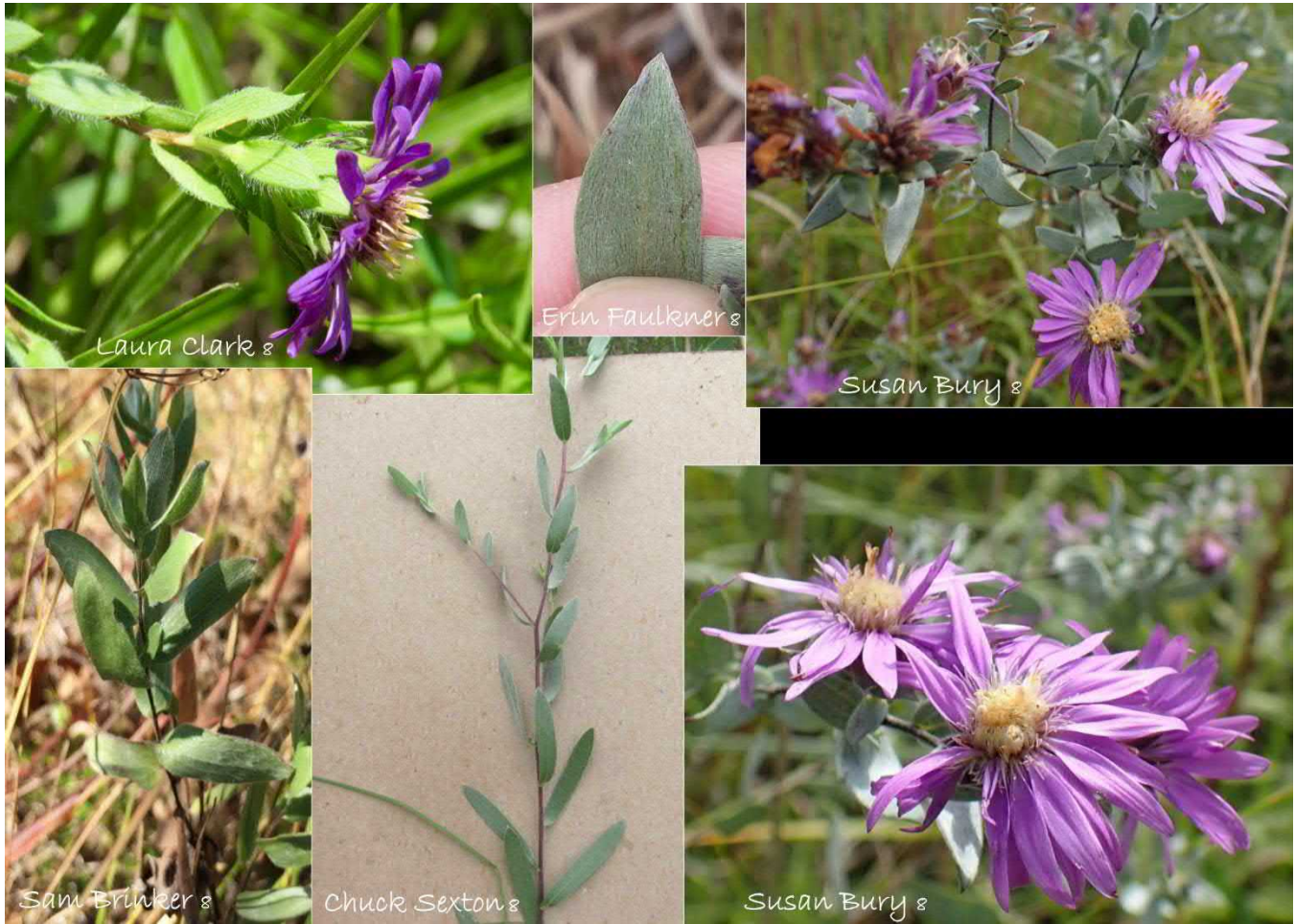
Identification Period: Flowers from late August to early October; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Elgin, Middlesex, Norfolk, Oxford. (Niagara).



Symphotrichum sericeum

Western silvery aster
Aster Family



MNRF: Endangered
COSEWIC: Threatened

Description: Western silvery aster is a perennial with several upright stems 30 to 70 cm in height. The lower stem leaves are stalkless, covered with silvery silky hairs, which die off before it flowers. The upper stem leaves are lance-shaped, 1 to 3 cm long, and also covered with silky hairs. The ray florets are rose-purple (rarely white), while the disc florets are pink but turn purple. This species is distinguished by its silvery hairy leaves and phyllaries; it is unlikely to be confused with any other aster species.

Preferred Habitat: In Ontario, this aster grows in grassy openings in Bur Oak savannahs on shallow, discontinuous clay soils, where it has a fidelity to mafic (basic) bedrock.

Identification Period: Flowers from early August to mid-September; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Kenora, Rainy River [Populations are restricted to Lake of the Woods area in both Districts, and formerly also Rainy Lake].



Tetraneuris herbacea

Lakeside daisy
Aster Family



MNRF: Threatened
COSEWIC: Threatened

Description: Lakeside daisy is a small perennial herb with flowering stems arising from one or more leafy rosettes, growing to a height of about 10 cm. The leaves are mostly linear and somewhat fleshy in appearance, becoming dark green and moderately hairy at maturity. The flower buds form in the fall and bloom the following spring as a solitary blossom. The phyllaries are overlapping and of variable length/arrangement. A similar-looking species on the Bruce Peninsula and Manitoulin Island is lance-leaved tickseed (*Coreopsis lanceolata*). Lance-leaved tickseed has phyllaries arranged in two distinct rows and is taller (~10 to 30 cm in height). It also has one to three flowers per stem, which usually bloom about three weeks later than lakeside daisy.

Preferred Habitat: Lakeside Daisy is generally restricted to alvars and limestone shorelines where it grows from a few centimeters of accumulated sand or organic soil over bedrock; it occasionally occurs on limestone cliffs (Bruce Peninsula).

Identification Period: Flowers from early May to early July; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Bruce, Manitoulin.



Castanea dentata

American chestnut
Beech Family



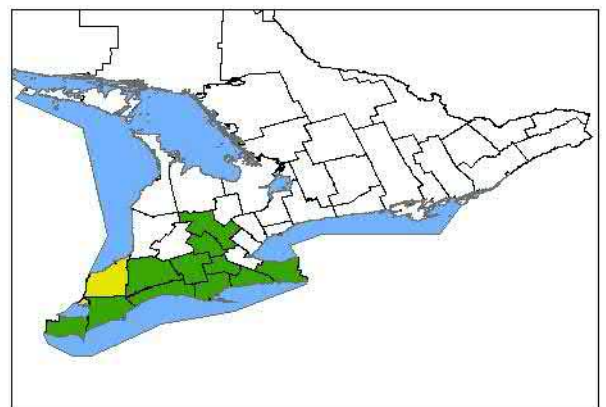
MNRF: Endangered
COSEWIC: Endangered

Description: Once a prominent tree in southern Ontario, American chestnut is now rare due to chestnut blight. It can grow to heights of 30 m, though it seldom grows taller than 10 m nowadays due to the blight. When young it has smooth, thin, dark grey-brown bark, gradually becoming furrowed with age. Leaf buds are alternate and 5 to 8 mm long; leaf blades are 15 to 30 cm long and 5 to 10 cm wide, with tapered tips and bases, and sharp teeth (2 to 5 mm long) along the margins. Both leaf surfaces are smooth and green; leaf buds are short and egg-shaped. Male flowers occur on long catkins, female flowers are found individually or in small clusters at the base of some catkins, forming prickly burs at maturity containing 1 to 5 nuts. American beech (*Fagus grandifolia*) may look similar, but the teeth along leaf margins are <2 mm long, the leaf buds are >1 cm long, and mature specimens have smooth grey bark. Chinese chestnut (*Castanea mollissima*) is sometimes planted as a blight-resistant alternative to American chestnut; this exotic tree is distinguished by the dense pubescence (hairs) on the leaf undersides, buds, and young twigs, which are ± glabrous (hairless) on American chestnut.

Preferred Habitat: The typical habitat is upland deciduous forests on sandy acidic soils, occurring with red oak, black cherry, sugar maple and beech.

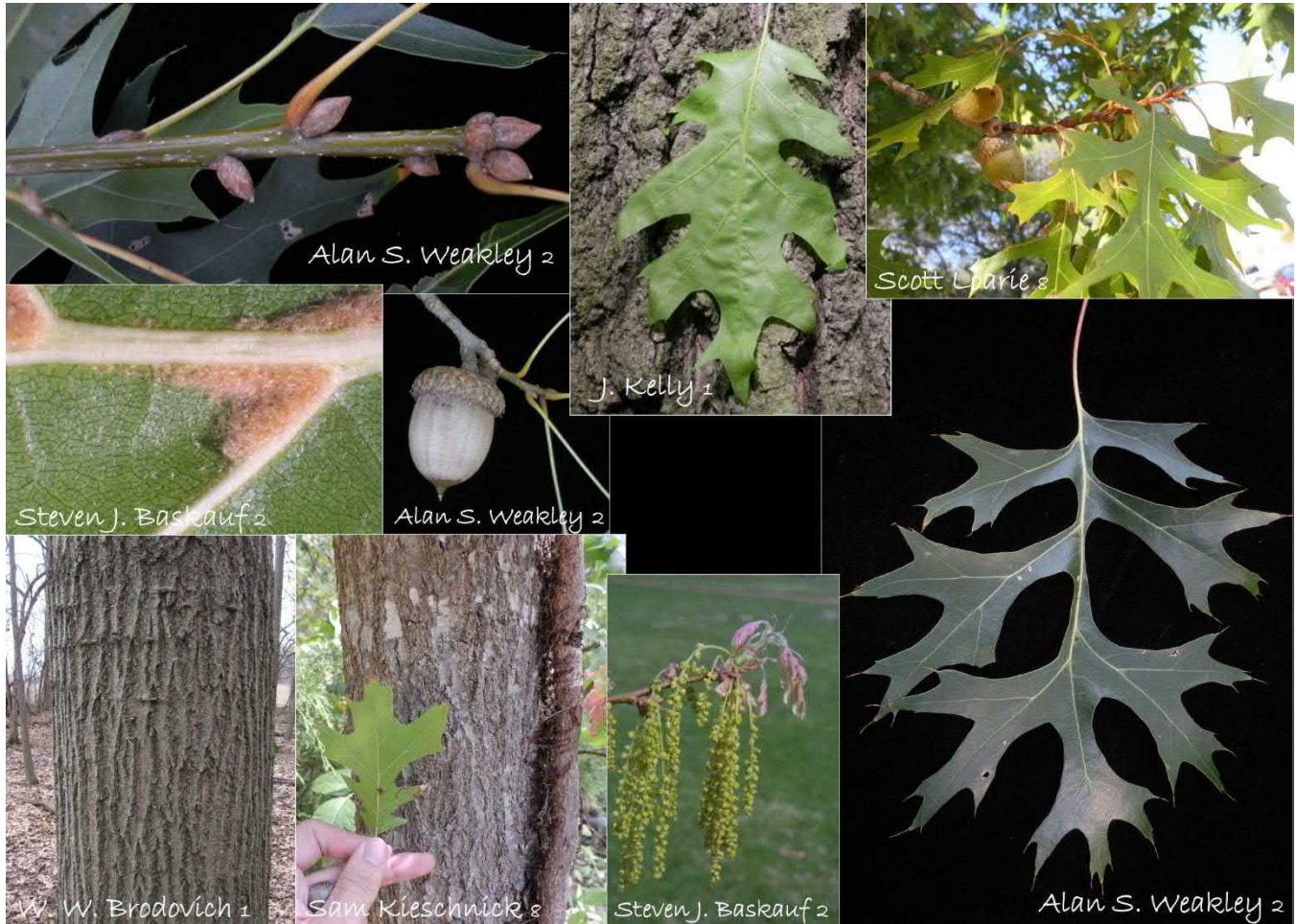
Identification Period: This species should be identified during leaf-on season (mid-May to October), although positive identification can be made year-round.

NHIC Record of County Occurrences: Brant, Chatham-Kent, Elgin, Essex, Haldimand, Middlesex, Niagara, Norfolk, Oxford, Waterloo, Wellington. (Lambton).



Quercus shumardii

Shumard oak
Beech Family



MNRF: Special Concern
COSEWIC: Special Concern

Description: A large tree, often with massive limbs and an open, wide-spreading canopy. The bark is typically grey-brown to dark brown, shallowly fissured with scaly or light-coloured flat ridges; inner bark pinkish. Twigs are grey to light brown (sometimes reddish) and hairless. The terminal buds are pointed, grey to greyish brown, 5 to 8.5 mm long, often noticeably 5-angled in cross section, and hairless. The largest leaves are usually 11 to 17 cm wide, often with 5 to 7 lobes cut more than half way to the midrib; lobes and teeth prolonged into a distinct bristle. The upper surface is shiny and the lower has conspicuous tufts of hair in the axils of the veins. The acorns are about 2.5 cm long and 12 to 26 mm wide, while their cups are generally 7 to 12 mm tall. The cups cover about 1/4 to 1/3 of the nut, where the outer cup surface is either hairless or sparsely hairy and the scale tips are tightly pressed against the cup. Shumard oak resembles some other oak species but can usually be distinguished by its long, deeply cut leaf lobes that are bristle-tipped, and its hairless, pale gray-brown leaf buds. Since vegetative features of oaks can vary, the acorns are also important for identification.

Preferred Habitat: Shumard oak requires rich, moist, poorly-drained clay or clay loam soil; it's typically found in open-canopy deciduous forests, swamps, and hedgerows.

Identification Period: Due to vegetative variability, the acorns should be present to confirm this species identity (Oldham, 2014 pers. comm.). Mature acorns can be found from August to October; intact acorns from past years can sometimes be found on the ground throughout the growing season.

NHIC Record of County Occurrences: Chatham-Kent, Elgin, Essex, Lambton, Niagara.



Betula lenta

Cherry birch
Birch Family



MNRF: Endangered
COSEWIC: Endangered

Description: Cherry birch is a medium-sized tree, up to 25 m tall and 95 cm in diameter. The bark is smooth and dark, with conspicuous lenticels when young, but gradually breaks up into large plates; these plates do not curl at the edges like most birches do. The twigs and scales of the catkins are hairless, which help distinguish it from yellow birch (*Betula alleghaniensis*). The leaves are alternate and have toothed edges. The bark of cherry birch is very similar to that of the escaped domestic sweet cherry (*Prunus avium*). The latter species is now fairly common in the forests of the Niagara Region and is often confused with cherry birch. To distinguish, look for two conspicuous warty glands near the top of the petiole (stalk of the leaf), which are characteristic of *Prunus*; petioles of cherry birch are smooth and do not have any glands.

Preferred Habitat: Cherry birch grows best on moist, well-drained soils but is also found on coarse textured or rocky shallow soils. This species is generally shade intolerant, and in Ontario it occurs in deciduous or mixed forest communities with red oak, white oak, sugar maple, and eastern hemlock.

Identification Period: For those unfamiliar with this tree, identification should be made during the leaf-on growing season (mid-May to October).

NHIC Record of County Occurrences: Niagara.



Agalinis gattingeri

Gattinger's false foxglove
Broom-rape Family



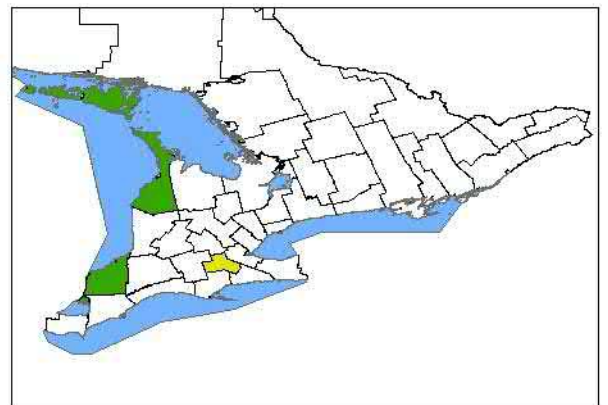
MNRF: Endangered
COSEWIC: Endangered

Description: Gattinger's false foxglove is a slender annual with a height of 10 to 60 cm. The stem is often branched; relative to the stem, these branches are spreading. The leaves are very narrow, measuring 10 to 34 mm in length by 0.4 to 1 mm in width. There is often only one flower per branch. The flowers are bell-shaped, pink, and have two yellow lines and many red spots on the inside petals. There are four species of *Agalinis* in Ontario – this one being distinguished by the length of each flower stalk (pedicel), which are at least 5 mm long at maturity (often longer), its consistently light green to yellowish coloured stem and leaves, and a net-like vein pattern on each calyx tube (i.e. the cup from which the petals emerge). It can further be distinguished from Skinner's false foxglove (*Agalinis skinneriana*) by its nearly cylindrical stem (tapering slightly on two sides) and the presence of branches from which the flowers/fruit develop.

Preferred Habitat: In Ontario, this species is known to grow in the drier areas of remnant prairies of Lambton County, and on alvar in Bruce and Manitoulin counties. Outside of Ontario, the species is known from dry prairies, dry open woodlands, dry roadsides, bluffs, and alvars.

Identification Period: Flowers from August to mid-September and the fruits mature from mid-September to October; identification should be made during this reproductive period.

NHIC Record of County Occurrences: Bruce, Lambton, Manitoulin. (Brant).



Agalinis skinneriana

Skinner's false foxglove
Broom-rape Family



MNRF: Endangered
COSEWIC: Endangered

Description: Skinner's false foxglove is a slender, pale green annual. In Ontario, it's usually 5 to 35 cm tall but can grow to 65 cm elsewhere. The stem is not usually branched, though a few strongly ascending, upright branches in the upper plant can occur. The stem is square in cross-section with stiff corners, and slightly rough on the edges. The linear leaves are opposite (or nearly so), stalkless, and up to 2 mm wide and 20 mm long. The flowers typically grow singly on a short stalk, directly from the main stem (i.e. not from branches). The flowers are white to very pale pink, 10 to 17 mm long and may occasionally have very pale-yellow lines and red dots on the interior. The underside of the petals are hairless, although a fringe of hairs is present on the margins of the petals. This species has the same physical features as Gattinger's false foxglove (page 22) except that the stem of the former is distinctly square in cross-section and is usually not branched, with the flower stalks (pedicels) growing directly from the axils of the leaves. If branches are present, they are strongly ascending relative to the stem – almost parallel to it.

Preferred Habitat: Throughout its range this species grows in dry to mesic prairies, open woods on shallow soil over limestone or granite, in open rocky glades, bluffs, barrens, and dunes. All the known Ontario populations grow in moderately moist to moist prairies.

Identification Period: In Ontario, this species flowers from August to late September while the fruits mature in October. The flowers, however, usually fall off by mid-afternoon on the day they open. Identification should be made during this reproductive period.

NHIC Record of County Occurrences: Essex, Lambton.



Aureolaria flava

Smooth yellow false foxglove
Broom-rape Family



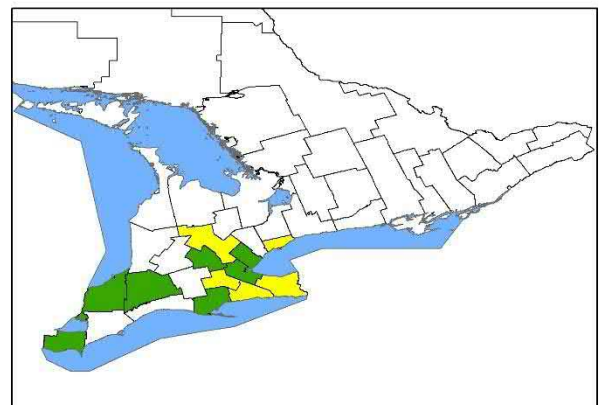
MNRF: Not Assessed
COSEWIC: Threatened (pending review)

Description: *Aureolaria* species are hemiparasitic, meaning they do photosynthesize but are also parasitic on the roots of trees – specifically oak trees with this genus. Some sources indicate this species is more commonly associated with white oak (*Quercus alba*). Smooth yellow false foxglove is a perennial, the stems of which are sometimes tinged with purple, hairless and glaucous (having a whitish coating that's easily rubbed off), growing 1 to 2 m high. The leaves are opposite (rarely whorled in a group of 3). The lower leaves are 7.5 to 15 cm long, short-stalked and deeply lobed. Further up the stem the leaves become smaller and often less lobed; the leaf-like bracts in the upper stem are not lobed, instead having smooth or toothed margins. The tubular flowers are yellow and 3.5 to 5 cm long. The pedicels (stalks of flowers) are stout and usually shorter than the calyx (green cup-like feature from which the flower arises). The fruit capsules are hairless and 12 to 20 mm long. Old stems with opened capsules can remain standing into the next growing season. This species could be confused with the other false foxgloves (discussed below) but are quickly distinguished by the hairless stem, calyx, and fruit capsules.

Preferred Habitat: Dry, sandy, open woodlands and savannas composed of oak (often white oak), with associations of hickory and pine.

Identification Period: Flowering mid July to late August; surveys for this species should be conducted during this period or into the fall while it's in fruit. Those familiar with this plant could confirm its identification outside this window based on habitat, leaf appearance, and hairless, glaucous stem.

NHIC Record of County Occurrences: Essex, Halton, Hamilton, Lambton, Middlesex, Norfolk, Waterloo. (Brant, Haldimand, Niagara, Toronto, Wellington)



Aureolaria pedicularia

Fern-leaved yellow false foxglove
Broom-rape Family



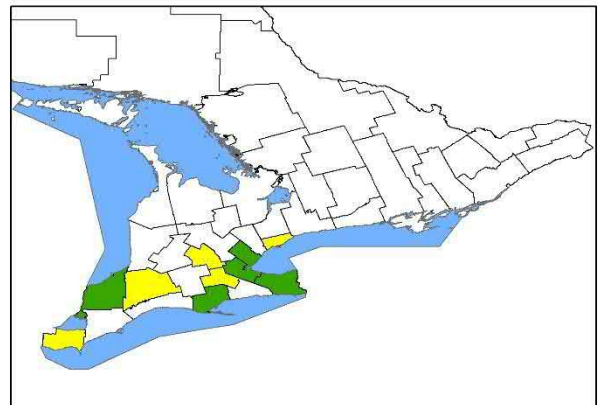
MNRF: Not Assessed
COSEWIC: Threatened (pending review)

Description: Fern-leaved yellow false foxglove is an annual growing up to 1 m high. The stem is light green to pale purplish green, much-branched, leafy, and is moderately to densely covered with fine, minute, gland-tipped hairs (hairs may not be gland-tipped on upper stem). The leaves are opposite, the largest being 3 to 6 cm long, stalkless or short-stalked, pinnately divided with 5 to 8 pairs of irregularly serrated or deeply cleft pinnae. The flowers are yellow (interiors streaked or tinged with reddish-brown markings) and are 2.5 to 4 cm long; the petal lobes have fine, gland-tipped hairs. The pedicels (stalks of the flowers) are slender, glandular, upcurved, and mostly longer than the calyx when the plant is in flower/fruit. The calyx lobes are spreading, 7 to 10 mm long (longer than the tube), glandular or with fine, gland-tipped hairs. Each fruit capsule is 10 to 15 mm long and glandular-hairy. Old stems with opened capsules can remain standing into the next growing season. This species could be confused with the other false foxgloves (discussed herein) but are quickly distinguished by the presence of glandular hairs (especially of calyx and pedicels) and long (8 to 25 mm) upcurved pedicels.

Preferred Habitat: In Ontario, this species occurs in dry, sandy, open woodlands and savannas composed of oak (particularly black oak (*Quercus velutina*)) often with associations of hickory and pine.

Identification Period: Flowering August to September; surveys for this species should be conducted during this period, although those familiar with this plant could confirm its identification outside this window based on habitat, leaf appearance, presence of gland-tipped hairs, and upcurved pedicels.

NHIC Record of County Occurrences: Halton, Hamilton, Lambton, Niagara, Norfolk. (Brant, Essex, Middlesex, Toronto, Waterloo).



Aureolaria virginica

Downy yellow false foxglove
Broom-rape Family



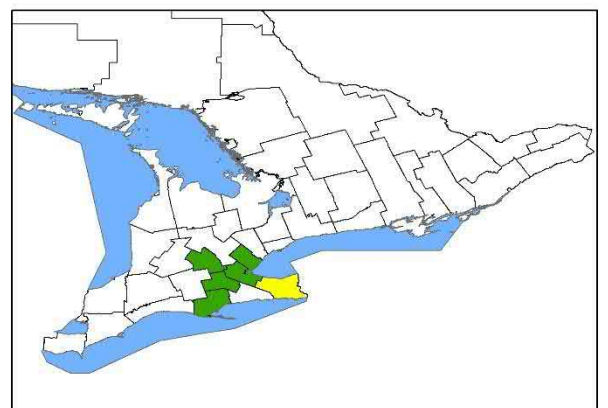
MNRF: Not Assessed
COSEWIC: Endangered (pending review)

Description: Downy yellow false foxglove is a perennial growing 0.5 to 1.5 m high. The stem is finely downy with ascending branches (or not branched). The leaves are opposite and 6 to 12 cm long; the lower ones usually have one or two pairs of large lobes at the base of each blade. Progressively up the stem the leaves become smaller and less lobed (or not at all); the uppermost leaf-like bracts are small, not toothed or lobed. The flowers are yellow and 3.5 to 4.5 cm long. The pedicels are straight, ascending, and 2 to 5 cm long. The fruit capsule is 10 to 15 mm long and densely pubescent. This species could be confused with the other false foxgloves (discussed herein) but are quickly distinguished by the presence of downy, non-glandular hairs on the stems, calyx, and fruit capsule.

Preferred Habitat: Dry, sandy, open woodlands and savannas composed of oak (particularly white oak) often with associations of hickory and pine.

Identification Period: Flowering mid June to August; surveys for this species should be conducted during this period or into the fall while it's in fruit. Those familiar with this plant could confirm its identification outside this window based on habitat, leaf appearance, and distinctly fine-hairy stem.

NHIC Record of County Occurrences: Brant, Halton, Hamilton, Norfolk, Waterloo. (Niagara).



Buchnera americana

American bluehearts
Broom-rape Family



MNRF: Endangered
COSEWIC: Endangered

Description: American bluehearts is a herbaceous perennial ranging in height from 40 to 80 cm. Plants are erect, unbranched, and have hairy stems. The well-spaced, stalkless leaves are 4 to 8 cm long and grow opposite each other along the stem. The inflorescence is a spike, where all flowers are directly attached to the upper part of the stem. Each flower is about 15 to 22 mm in diameter, bluish to purple, and stalkless. This species is a hemiparasitic plant that lives off the roots of several plant species, particularly trees. American bluehearts can also mature on its own, without attaching to a host. This species could resemble wild blue phlox (*Phlox divaricata*), which has a terminal cluster of flowers arising from stalks or branches; flowers bloom in the spring and have evenly spaced petals.

Preferred Habitat: In Ontario, this species grows on the edges of wet, interdunal depressions near Lake Huron. Elsewhere in its range, it inhabits prairies, open woods, pine barrens, and beaches.

Identification Period: Flowers are necessary for identification; in Ontario, flowering begins in mid-July and lasts until September.

NHIC Record of County Occurrences: Lambton.



Enemion biternatum

Eastern false rue-anemone
Buttercup Family



MNRF: Threatened
COSEWIC: Threatened

Description: Eastern false rue-anemone is a spring-flowering herbaceous perennial. Its height generally ranges from 10 to 40 cm tall. Stems are ribbed and smooth originating from a tuberous rootstock. The flowers are solitary or in loose groups of 2 to 4. Each flower has 5 white petal-like sepals (4 to 10 mm long, 3 to 8 mm wide) surrounding a cluster of stamens with yellow anthers. It has alternate leaves along the stem, as well as basal leaves. The thin leaves are hairless, olive green in colour, and composed of three leaflets, each leaflet having 2 to 3 lobes. The lobes have one or more sinuses extending at least a third of the way to the base of the leaflet. The tips of each lobe also have a tiny gland, which help distinguish this species from the superficially similar rue-anemone (*Thalictrum thalictroides*). Rue-anemone has basal leaves and a whorl of leaves immediately below the flowers (i.e. no leaves along mid-stem); its leaf lobes are not gland-tipped.

Preferred Habitat: This species inhabits open wooded slopes, river floodplains, rich woods and thickets.

Identification Period: Flowers from April to early June and bears fruit from May to June; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Elgin, Lambton, Middlesex.



Hydrastis canadensis

Goldenseal
Buttercup Family



MNRF: Threatened

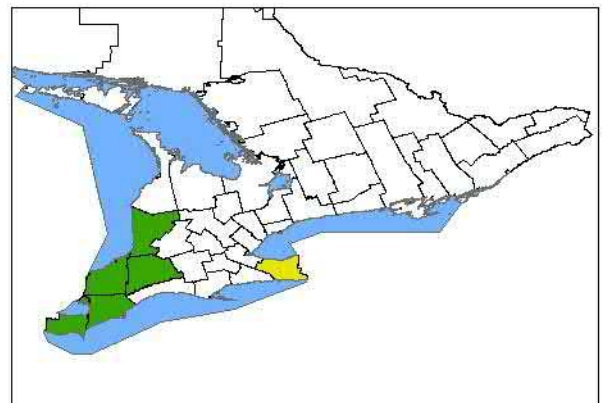
COSEWIC: Threatened

Description: Goldenseal is a herbaceous perennial with an erect, hairy stem about 20 to 50 cm tall, with 3 to 4 yellowish scales at the base of each stem. The rhizome is bright yellow internally – hence its name. The rough-hairy plants usually have 3 palmately lobed leaves (maple-like) – one basal leaf (which often falls off early) and two persistent leaves near the top of the stem. The leaves have 5 to 7 toothed lobes and are up to 25 cm in diameter (smaller while in flower, becoming larger as the fruit develops). Plants produce a single greenish-white flower (8 to 18 mm wide) at the top of the stem. The flower drops its sepals soon after opening and does not have petals; it usually remains showy for up to a week. The fruit is a globular, fleshy, bright red berry, resembling a raspberry (though inedible). This species could be confused with Maryland sanicle (*Sanicula marilandica*), which is in the Carrot Family. The leaves of Maryland sanicle are smaller and tend to be more deeply lobed – sometimes compound (like Virginia creeper (*Parthenocissus*)). It has numerous small flowers arranged in umbels, and the stem is hairless.

Preferred Habitat: Prefers rich moist areas of deciduous forests dominated by sugar maple, or moist floodplain forests dominated by red maple and white oak.

Identification Period: These plants flower in April or May, with fruits maturing in July or August; identification should be made during this reproductive period.

NHIC Record of County Occurrences: Chatham-Kent, Essex, Huron, Lambton, Middlesex. (Niagara).



Opuntia cespitosa

Eastern prickly-pear cactus
Cactus Family



MNRF: Endangered
COSEWIC: Endangered

Description: Formerly recognized as *Opuntia humifusa* (which is now considered to be a different species), Eastern prickly-pear cactus is a short, succulent plant. The green stems are flattened and consist of segments that are often 5 cm long or longer (excluding spines). Segments usually either have no spines, or 1 to 2 stout spines (25 to 60 mm long) per areole. Flowers are yellow to yellow-orange with red-tinged centers, which grow along the margins of mature segments. The flowers are somewhat waxy, measuring 4 to 6 cm wide. The fruit are 3 to 5 cm long, juicy, and change colour from green to red as they mature; fruit often remain on the plant until the next spring. There is one other cactus species in Ontario - brittle prickly-pear cactus (*Opuntia fragilis*), which has somewhat spheric to cylindric segments that detach quite easily; these segments are less than 3 cm long and have 3 or more spines per areole, each spine 8 to 24 mm long.

Preferred Habitat: Local populations are restricted to dry, sandy habitats adjacent to the shoreline of Lake Erie. Its habitat in Ontario corresponds generally with the limits of the Lake Erie sand spit savannahs, which include Point Pelee, where the species can also persist in some later successional habitats such as thicket, woodland and forest.

Identification Period: Flowers in June; identification can usually be confirmed without the flower, although it may be required in some instances.

NHIC Record of County Occurrences: Essex. (Elgin, Norfolk). Records from Chatham-Kent, Niagara, and elsewhere are not believed to be the result of naturally occurring populations.



Celtis tenuifolia

Dwarf hackberry
Hemp Family



MNRF: Threatened

COSEWIC: Threatened

Description: Dwarf hackberry is a shrub or small tree capable of growing up to 10 m tall but usually ranges from 1 to 4 m in Ontario. The bark is light grey, gradually becoming furrowed and warty with age. The leaves are thick, broadly oval at the slightly asymmetrical base and taper to a point at the tip; these can toothless or toothed nearly to the base. The leaves are usually 5 to 8 cm long by 3 to 4 cm wide; the surfaces have a rough feel while the undersides are hairy. Flowers emerge in April / May and are usually solitary but sometimes grow in clusters of 2 or 3. The fruits are orange to brown or cherry red, round, and usually 5 to 8 mm in diameter. This species could be confused with common hackberry (*Celtis occidentalis*), which is a tree that grows to about 15 m tall and has leaves that are slightly longer, narrower, and distinctly asymmetrical at the base. The fruits of common hackberry are dark orange to dark purple or blue-black and are usually 7 to 11 mm in diameter.

Preferred Habitat: Dwarf hackberry grows in open habitats on dry sand or limestone-based substrates. In sandy sites, it occurs in open habitats near shorelines and in open woods along sand ridges. In limestone-based sites it tends to prefer open woods influenced by drought conditions, such as alvars.

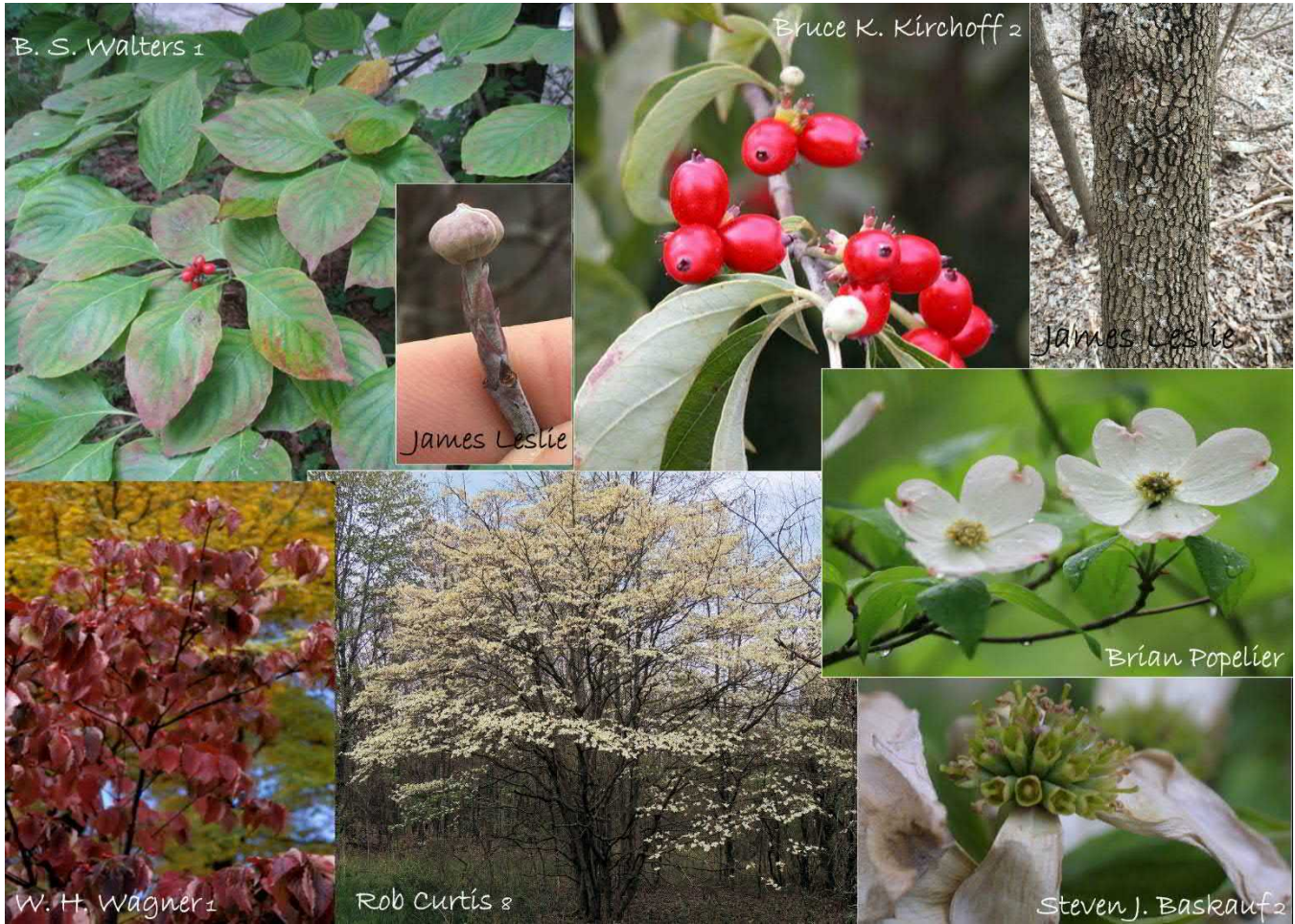
Identification Period: Flowers from April to May, although the fruits tend to be more useful for identification. This species could be identified any time during leaf-on season based on the leaf characteristics.

NHIC Record of County Occurrences: Essex, Hastings, Lambton, Middlesex.



Cornus florida

Eastern flowering dogwood
Dogwood Family



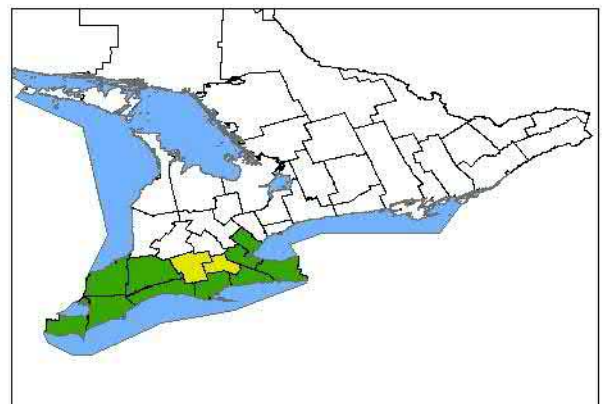
MNRF: Endangered
COSEWIC: Endangered

Description: Eastern flowering dogwood is a tall shrub or small tree measuring 3 to 10 m in height. In larger specimens, the bark is brownish grey and separated into quadrangular plates. The main branches are arranged in a distinctly tiered pattern around the trunk. Leaves are oval and arranged opposite each other. Deceivingly, the actual flowers are small and grow in clusters at the tips of branches, surrounded by four white bracts that look like petals but are actually enlarged bud scales. The scarlet red fruits grow in spreading clusters. Without flowers or fruit, this species could be confused with other native dogwoods, but can usually be distinguished by its opposite leaves, layered branch pattern, and its bark, which may resemble black cherry (*Prunus serotina*) or “alligator skin”. A fungal disease is causing a serious decline of flowering dogwood throughout its native range.

Preferred Habitat: Typically occurs as an understory or edge species of open dry to slightly moist deciduous or mixed forests, on sand to sandy loam or occasionally on clay loam soil, usually in mid-age to mature forests. This species can also be found in agricultural hedgerows where soil and moisture conditions permit.

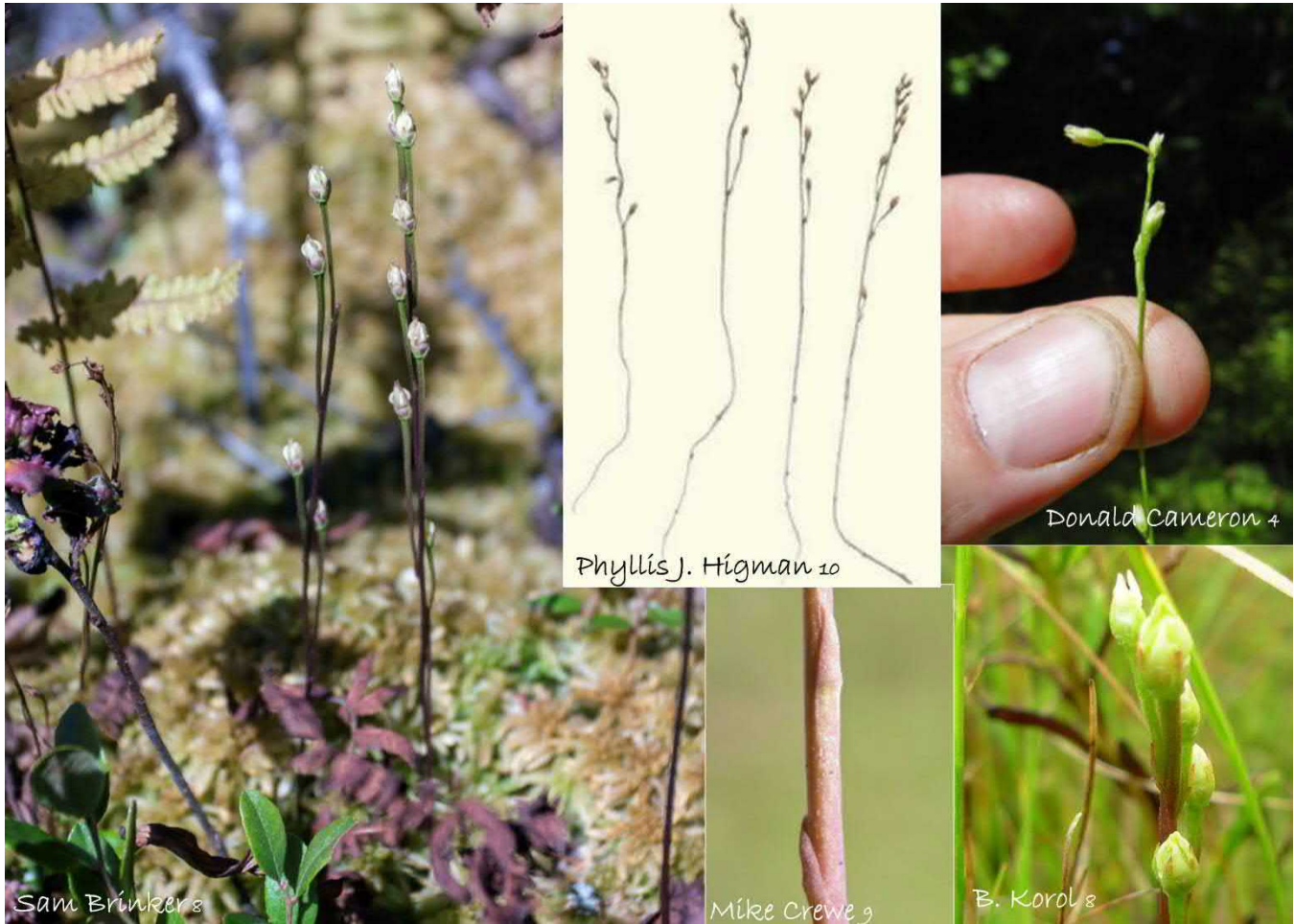
Identification Period: Flowers from May to early June, although the species can be identified any time during leaf-on season (mid-May to October).

NHIC Record of County Occurrences: Chatham-Kent, Elgin, Essex, Haldimand, Halton, Hamilton, Lambton, Middlesex, Niagara, Norfolk. (Brant, Oxford).



Bartonia paniculata ssp. *paniculata*

Branched bartonia
Gentian Family



MNRF: Threatened

COSEWIC: Threatened

Description: Branched bartonia is a small, annual herb 10 to 40 cm tall. The stem is green or purple and often angled (occasionally twining). Due to its common habit of growing deeply nestled in sphagnum moss, it may appear much shorter. Populations generally occur as small clumps; occasionally a few plants might be scattered over a wide area. The inconspicuous leaves are alternate (at least along mid-stem), appearing to be nothing more than minute scales. The inflorescence is usually a panicle of few to numerous small white flowers with 4 petals, typically on divergent or curved ascending branches. The fruit is a capsule, which tapers to a blunt tip and averages 4.2 mm long. This species looks similar to yellow bartonia (*Bartonia virginica*), which has mid-stem leaves that are opposite each other (or nearly so).

Preferred Habitat: This species grows in peat substrate in the Georgian Bay region where it prefers open graminoid or low shrub sphagnum bogs, or fens with scattered larch and black spruce.

Identification Period: Flowers from August to October, which are necessary for identification.

NHIC Record of County Occurrences: Muskoka, Parry Sound.



Frasera caroliniensis

American columbo
Gentian Family



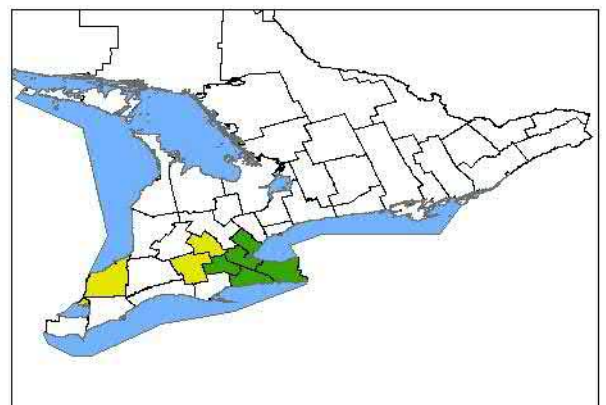
MNRF: Endangered
COSEWIC: Endangered

Description: American columbo is a robust perennial herb with a thick taproot. Each year it produces a basal rosette of 3 to 25 broad leaves. Plants flower only once after 7 to 15 (or more) years of vegetative growth. Each plant produces one flowering stem, 2 to 3 m in height. Stem leaves grow in whorls of 4 to 5; the lower leaves are up to 40 cm long and are of similar shape to the basal rosettes, while the upper leaves are progressively shorter. Flowers are greenish-yellow and 2-3 cm wide, with numerous dark spots or streaks. Each of the four petals have a large circular gland conspicuously fringed along the margins. The fruit is a compressed ellipsoid capsule 1.5 to 2 cm long. Capsules contain 4 to 14 dark brown, crescent-shaped winged seeds. When in flower this species is unlikely to be confused with anything else.

Preferred Habitat: In Ontario, most populations are found in deciduous woodlands or forests, while some have been observed in dense shrub thickets and open meadows. All Ontario populations have found to grow in dry mesic to mesic clay and clay-loam as well as mesic silty clay.

Identification Period: Ontario populations usually flower in June, which last for about 3 weeks. Leaf tissue may wither and decompose by August or September, although flowering stalks may persist. For those unfamiliar with this plant, the reproductive parts should be present to identify it.

NHIC Record of County Occurrences: Brant, Haldimand, Halton, Hamilton, Niagara. (Lambton, Oxford, Waterloo).



Gentiana alba

White prairie gentian Gentian Family



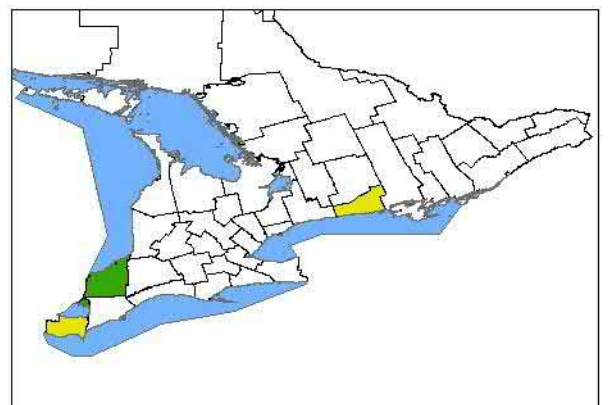
MNRF: Endangered
COSEWIC: Endangered

Description: White prairie gentian is a perennial growing up to 1 m tall, with a long, thick taproot and a stout, smooth unbranched stem. The growth form tends to be somewhat sprawling, with the plants often leaning on adjacent vegetation. Leaves are pale yellowish or olive green, about 5 to 8 cm broad with toothless margins, and the bases are somewhat heart-shaped. They are opposite in arrangement except just beneath the flowers where they are whorled. Each leaf has a prominent central vein and usually two lateral veins. Flowers grow in the axils of the leaves and at the apex of the stem. The flowers are white, greenish-white or pale creamy-white with closed mouths and are about 4 cm long with 5 petals. White prairie gentian is the only whitish-flowered gentian in southern Ontario except for rare albino forms of other species. Albino forms of Andrews' bottle gentian (*Gentiana andrewsii*) have rough to slightly serrated leaf edges, and sepals with a fringe of hair along the margins. Purple-stemmed gentian (*Gentiana rubricaulis*) has creamy-white flowers suffused with blue near the tips and edges of the petals. The sepals of white prairie gentian are distinctly keeled basally on the underside, while those of purple-stemmed gentian are not.

Preferred Habitat: Usually a prairie species, but it also grows in a variety of other habitats including open woodlands, savannahs, glades and even roadsides. It can tolerate a fairly wide range of moisture regimes but seems to prefer drier sites with prolonged periods of sunlight.

Identification Period: Flowering starts in mid to late August and extends through September; flowers are necessary for identification.

NHIC Record of County Occurrences: Lambton (Essex, Northumberland).



Panax quinquefolius

American ginseng
Ginseng Family



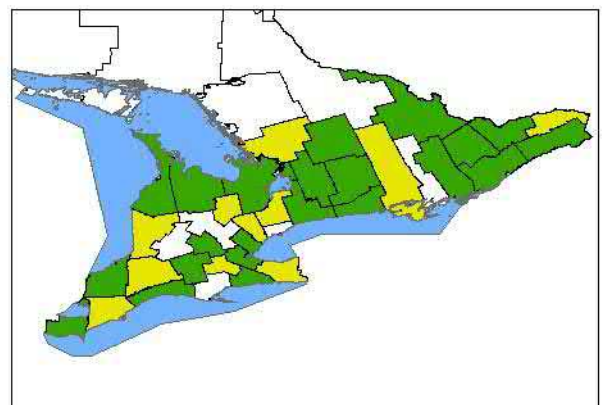
MNRF: Endangered
COSEWIC: Endangered

Description: American ginseng is a perennial herb that grows to about 20-70 cm tall. The main stem extends up to a whorl of three leaves. Each leaf consists of 5 leaflets, the stalks of which converge to a central attachment point (i.e. palmately compound). The largest leaflets are usually 3.5 to 6 cm wide. The inflorescence is a single umbel that grows from the top of the stem. When ripe, the fruit is bright red. A similar looking species is wild sarsaparilla (*Aralia nudicaulis*), which is quite common. Wild sarsaparilla has pinnately compound leaves (see distinction in photo), and the stalk of the inflorescence grows from the rhizome and has at least 2 (usually 3) umbels. Dwarf ginseng (*Panax trifolius*) may also look similar but has smaller, stalkless leaflets and yellow-green fruit when mature.

Preferred Habitat: American ginseng prefer rich, undisturbed, mature sugar maple-dominated forest. These forests occur on moist (yet well-drained) soil, often over limestone or marble bedrock. Colonies are often found near the bottom of gentle slopes facing south-east to south-west.

Identification Period: This species blooms in the early summer but can be identified without its reproductive parts.

NHIC Record of County Occurrences: Bruce, Durham, Elgin, Essex, Frontenac, Grey, Haldimand, Haliburton, Halton, Hamilton, Kawartha Lakes, Lambton, Lanark, Leeds & Grenville, Northumberland, Ottawa, Oxford, Peterborough, Renfrew, Simcoe, Stormont/Dundas/Glengarry, Waterloo. (Brant, Chatham-Kent, Dufferin, Hastings, Huron, Middlesex, Muskoka, Niagara, Peel, Prescott & Russell, Prince Edward, York).



Chimaphila maculata

Spotted wintergreen
Heath Family



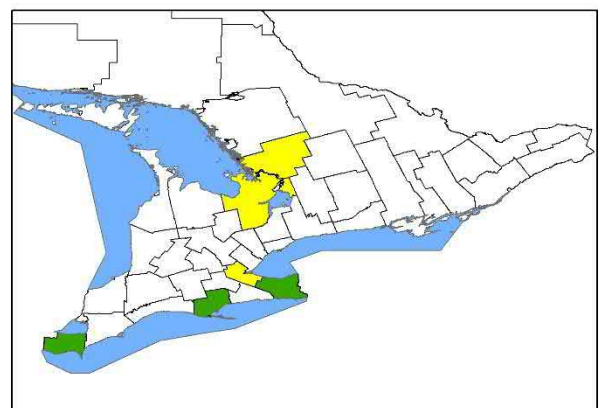
MNRF: Endangered
COSEWIC: Threatened

Description: Spotted wintergreen is a low-growing, evergreen herb that spreads by creeping rhizomes to form sparse colonies. Each stem is 10 to 25 cm tall and have a whorl of thick, evergreen, toothed leaves. These leaves have a variegated upper surface with white streaks mainly along the mid-rib and larger veins. Above the whorl of leaves is a stalk supporting 1 to 5 nodding flowers, which have white or pinkish reflexed petals; not all stems in a colony will produce flowers. After flowering, the stalks of the seed capsules become erect. Common pipsissewa (*Chimaphila umbellata*) may appear similar but has solid green leaves without white-streaking. The white-streaked leaves of spotted wintergreen may also resemble those of rattlesnake-plantain (*Goodyera spp.*); rattlesnake-plantains, however, are orchids with leaves that are not evergreen or toothed.

Preferred Habitat: Spotted wintergreen requires sandy habitats in dry-mesic oak-pine woods.

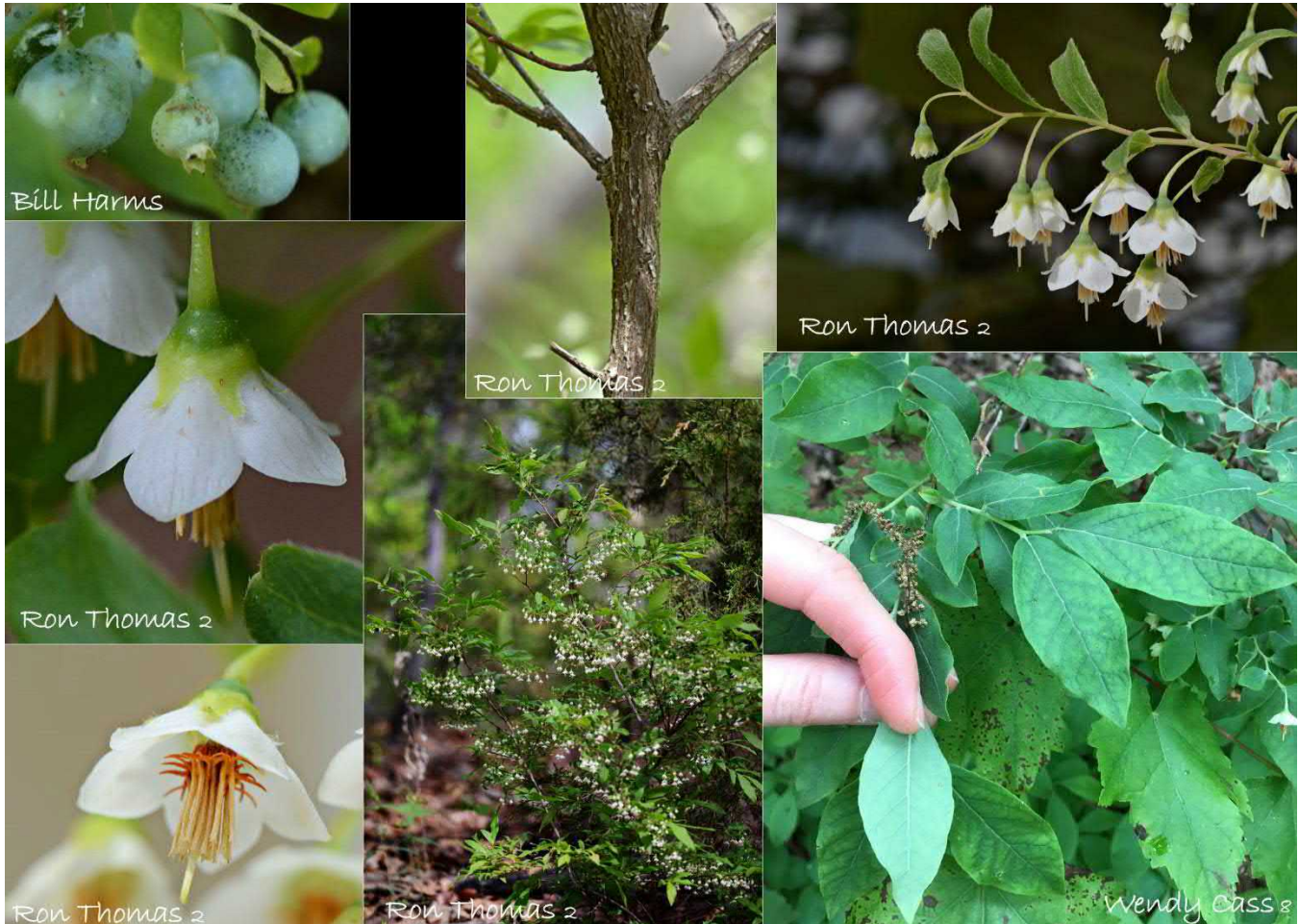
Identification Period: In Ontario, this species flowers in late July to early August. Reproductive parts (although helpful) are not critical for identification of this species since the leaves are quite distinct.

NHIC Record of County Occurrences: Essex, Niagara, Norfolk. (Hamilton, Muskoka, Simcoe).



Vaccinium stamineum

Deerberry
Heath Family



MNRF: Threatened
COSEWIC: Threatened

Description: Deerberry is an upright, spreading, deciduous shrub that usually has multiple primary stems; the stems are often twisted and have thin, peeling, reddish-brown bark. This shrub rarely grows over 1 m tall and has alternate, oval-shaped deciduous leaves that have toothless margins. The upper surface of the leaves are green, while the undersides are usually pale green and glaucous (having a whitish coating that's easily rubbed off); they are elliptic in shape and can be hairless or slightly hairy. Twigs of the current season are often narrow (~1 mm wide) and can be variously coloured, though usually green or glaucous; they are quite hairy but lose their hair and develop peeling bark with age. There are usually 2 to 7 white pendulous flowers per floral grouping, each flower is bell-shaped with five petals. The fruit is round and greenish to bluish in colour and often lightly glaucous. Deerberry is most likely to be confused with other species of blueberry. Features that will help distinguish this shrub from others are its short height, leaves whitened beneath and broadest at or above the middle, numerous bell-shaped flowers having petals adjoined most of their length, and the greenish to bluish colour of the berry. The leaves may also superficially resemble black huckleberry (*Gaylussacia baccata*), which have conspicuous orange gland-dotted leaves (especially beneath).

Preferred Habitat: This species prefers sandy, well-drained soils in open oak / oak-pine woodlands and savannahs, usually on acidic substrates.

Identification Period: Deerberry blooms between May and end of June, while the mature fruit may persist until September; reproductive parts are necessary for identification.

NHIC Record of County Occurrences: Leeds & Grenville, Niagara.



Desmodium illinoense

Illinois tick-trefoil
Pea Family



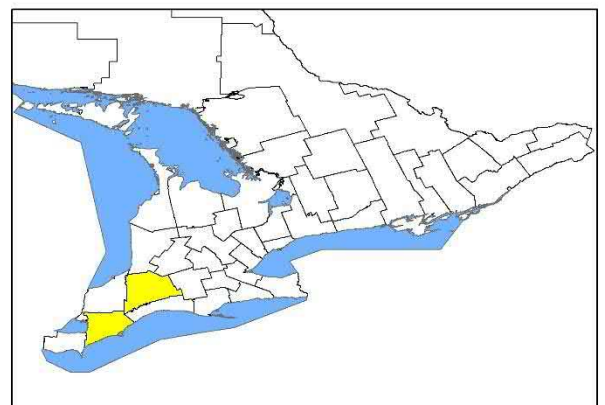
MNRF: Extirpated
COSEWIC: Extirpated

Description: Illinois tick-trefoil is an erect perennial herb that can grow to a height of 2 m. The thick leaves consist of three lance-shaped leaflets that are covered on both sides with hooked hairs that create a rough texture. The inflorescence is a single raceme, the axis of which is covered with hairs that are shorter than its diameter; these hairs are usually glandular or hooked. The flowers are either pale purple or white, with only a few flowers in bloom at the same time. The fruit is a flat seed pod divided into 2 to 9 segments with hooked, clinging hairs. This species may look similar to hoary tick-trefoil (*Desmodium canescens*), which often has two or more flowering branches (the axes of which have numerous hairs that are longer than its diameter, straight, and glandless). Other similar tick-trefoils (including the more common Canada tick-trefoil (*Desmodium canadense*)) can be differentiated by the absence (or near-absence) of hooked hairs on the leaf undersides (recognizing that hooked hairs may be present on other features, such as the stem, petiole, or fruit).

Preferred Habitat: Historical observations in Ontario were made in prairie habitat and along a railroad.

Identification Period: This species flowers during the summer. For those unfamiliar with this plant, the reproductive parts should be present to identify it.

NHIC Record of County Occurrences: (Chatham-Kent, Middlesex). Extirpated from Canada; last Ontario observation was in 1978. This species could be overlooked and should be considered when conducting plant inventories in suitable locations (Sutherland, 2018. pers. comm.).



Gymnocladus dioicus

Kentucky coffee-tree
Legume Family



MNRF: Threatened
COSEWIC: Threatened

Description: Kentucky coffee-tree is a shade-intolerant, medium-sized tree with stout, widely-spaced branches. The leaves are twice compound and as big as 60 x 90 cm - the largest leaves of any tree species in Canada. Each leaf is composed of about 70 leaflets that are usually 2 to 4 cm wide, smooth margined, bluish-green in colour, and have sharply pointed tips. After the leaves emerge in the late spring, the tree produces greenish-white flowers in terminal clusters, which are often inconspicuous or sometimes absent. The fruit is a hard, dark, leathery bean-like pod that's usually 10 to 15 cm long; it contains 4 to 7 seeds and remains on the tree all winter. The tree drops its leaves in early fall so it is essentially bare for half of the year. The only other tree with which Kentucky coffee-tree is likely to be confused is honey locust (*Gleditsia triacanthos*), which shares the double compound leaves, but with smaller (1.5 cm wide) and merely acute-tipped leaflets, and which further differs in its flat, spiraled seed pods (18 to 45 cm long) and three-branched thorns (except in the cultivated variety *inermis*, which does not have thorns).

Preferred Habitat: Open floodplains and edges of wetlands that have rich, mesic soil; on the Erie Islands, it occurs in rocky, calcareous woodlands.

Identification Period: For those unfamiliar with this tree, the leaves should be present to identify it (June to September).

NHIC Record of County Occurrences: Chatham-Kent, Essex, Lambton. (Oxford). Records from other counties are not believed to be the result of naturally occurring populations. The species is often planted in urban landscapes of southern Ontario.



Lespedeza virginica

Slender bush-clover
Legume Family



MNRF: Endangered
COSEWIC: Endangered

Description: Slender bush-clover is a perennial herb, usually less than 1 m tall. It has one to several erect or leaning stems that are hairy, and sometimes branch near the top of the plant. The numerous leaves each consist of three narrow leaflets that are 3 to 5 mm wide; most of these leaflets have short stiff appressed hairs on both surfaces. The purplish-pink flowers grow in few-flowered clusters, the stalks of which do not exceed the leaves, giving the entire inflorescence a dense appearance. The fruits are pods, sparsely hairy, 4 to 7 mm long. This species is most likely to be confused with violet bush-clover (*Lespedeza frutescens*), which does not have hairs on the upper surface of the leaflets (or rarely with a few hairs near midvein).

Preferred Habitat: In Ontario, slender bush-clover grows on dry, sandy soil in tallgrass prairies. It is shade intolerant and is therefore vulnerable to larger plants that outcompete it for sunlight.

Identification Period: Flowers or fruit should be present to identify this species; it is in bloom from August to September and in fruit throughout the fall.

NHIC Record of County Occurrences: Essex.



Tephrosia virginiana

Virginia goat's-rue
Legume Family



MNRF: Endangered
COSEWIC: Endangered

Description: Virginia goat's-rue is an erect perennial herb with stems reaching 30 to 70 cm in height. The stems, branches, and leaf stalks are densely covered with fine whitish hairs. The leaves are alternate, short-stalked, and always have a terminal leaflet. The flowers, 14 to 20 mm long, are bicoloured and have a yellow to cream-coloured upper petal, two pink, rudder shaped lateral petals, and a lower petal that is somewhat concealed by the lateral petals. The fruits are hairy, flattened, linear pods usually 3.5 to 5.5 cm long, containing 6 to 11 kidney-shaped seeds. While in flower, this species is unlikely to be confused with anything else as the floral arrangement and colours are quite distinct.

Preferred Habitat: In Ontario, the only sands on which *Tephrosia* grows (Normandale Series) are acidic in reaction. This sand series is quite restricted in distribution, whereas other sand series on the Norfolk Sand Plain and elsewhere in southwestern Ontario are weakly acidic to calcareous in reaction. In Ontario, all known sites occur on the Norfolk Sand Plain in open mixed black oak and white oak woodland and savannah.

Identification Period: This species flowers from late June through July and is in fruit in August. For those unfamiliar with this species, the flowers should be present to identify it.

NHIC Record of County Occurrences: Norfolk.



Ammannia robusta

Scarlet ammannia
Loosestrife Family



MNRF: Endangered
COSEWIC: Endangered

Description: This herb is an annual, shoreline wetland plant that varies in height from 5 cm up to 1 m. The hairless stem may be erect or sprawling in habit and can be either branched or branchless. The 1.5 to 8 cm long leaves are opposite, thick, and somewhat heart-shaped at the base, clasping the stem. The small, stalkless, pale lavender flowers have yellow anthers and grow in the leaf axils, usually 1 to 3 per axil. The fruits are somewhat spherical, about 4 to 6 mm long. This species could be confused with lowland toothcup (*Rotala ramosior*), which tends to be a smaller plant of similar habitats with non-clasping leaves that narrow towards base often forming short stalks, and has only 1 flower per leaf axil (further described on following page). Lowland toothcup is also not known to occur in Essex County.

Preferred Habitat: In Ontario, habitat consists of mudflats, sand beaches, wetland edges, dried pond bottoms, and moist sandy depressions created by recreational vehicles. The species is dependent on water level fluctuations for the creation and maintenance of suitable habitat.

Identification Period: Flowers from July to September, while fruits are present September to October; these reproductive features should be present when identifying this species.

NHIC Record of County Occurrence: Essex.



Rotala ramosior

Lowland toothcup
Loosestrife Family



MNRF: Endangered

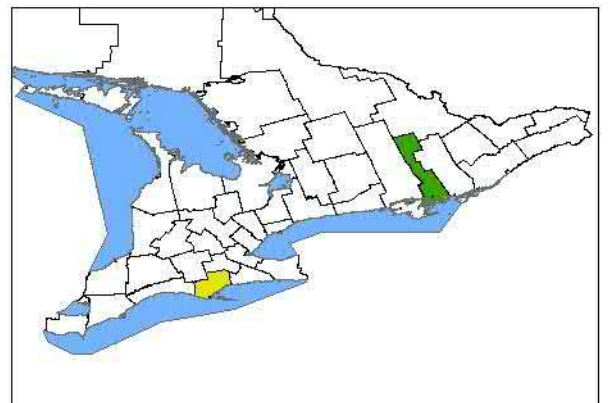
COSEWIC: Threatened

Description: This annual plant stands erect or curves upward from a horizontal stem base, growing to a height of 10 to 40 cm, and is often branched. The leaves are usually opposite, 1 to 5 cm long, tapering toward the base, and usually have short stalks. The flowers grow singly in the leaf axils, and the petals are quite small (about 1 mm long), white to pinkish in colour. The base of each flower is a thickened cup surrounding the ovary and is called a hypanthium. The name “toothcup” is derived from this hypanthium, which has small triangular appendages around its rim that give it a toothy appearance. This species could be confused with scarlet ammannia (*Ammannia robusta*), which is described on the preceding page. It could also be confused with water purslane (*Ludwigia palustris*), which has flaccid stem that grows horizontally along the ground (or water’s surface), often developing roots where contact is made. It also has much broader leaves that abruptly taper to a stalk that’s about as long as the leaf blade. The floral arrangement of both species is similar, but the flowers of water purslane do not have petals.

Preferred Habitat: Inhabits sandy to mucky shores, interdunal swales, and clearings, usually periodically inundated. Also known to grow on open rocky lake shores near the waterline.

Identification Period: Flowers from late July through September; the reproductive parts should be present when identifying this species. This species can easily be overlooked, especially where populations are small or during years when water levels are high.

NHIC Record of County Occurrences: Lennox & Addington. (Norfolk).



Magnolia acuminata

Cucumber tree
Magnolia Family



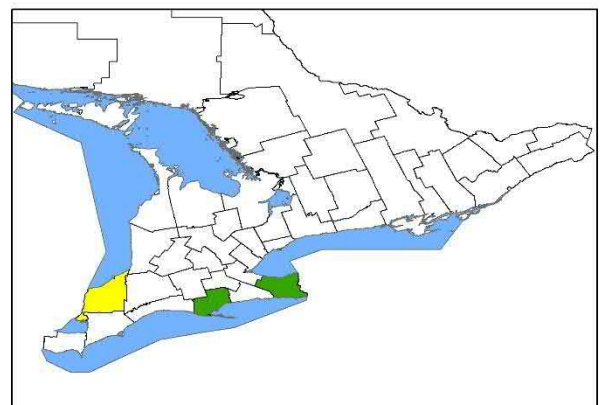
MNRF: Endangered
COSEWIC: Endangered

Description: Cucumber tree is a forest canopy species that can grow to 30 m in height. Its crown is pyramidal when young, becoming rounded as it matures. It has alternate leaves 10 to 24 cm long and widest near the middle, with a pointed tip and flattened stalk. The buds have a single scale covered with short downy hairs; the bud at the tip of the twig is usually 15 to 20 mm long, though lateral ones are much smaller. The bark is brownish-grey and longitudinally furrowed into loose scaly ridges. Flowers are solitary, greenish-yellow and 6 to 8 cm long, appearing as the leaves reach full size. Immature fruits are elongate and cucumber-like and mature into a red knobby cone-like structure from which the seeds are suspended on long slender threads. Mature seeds have a fleshy orange to scarlet seed coat. If reproductive features cannot be found and the leaf buds are immature, the leaves of this species could be mistaken for those of black gum (*Nyssa sylvatica*). Black gum leaves are smaller (5 to 12 cm), usually widest above the middle, and are a shiny dark green on the upper surface. The twigs of black gum have a pith with hard, greenish partitions, while the piths of cucumber tree are entirely white.

Preferred Habitat: Cucumber trees grow in forests with rich, moist, medium to coarse-textured soils, sometimes near standing water in swampy woodlands but on slopes or rises above the saturated soils; regeneration occurs in forest openings or areas of partly open forest canopies.

Identification Period: Trees flower in May and release their ripe seeds by the first week of October. Specimens can be identified year-round, but surveys should ideally be conducted during leaf-on season (mid-May to early October).

NHIC Record of County Occurrences: Niagara, Norfolk. (Lambton). Records from Wellington County are unlikely to be the result of naturally occurring populations (Oldham, 2014. pers. comm.).



Hibiscus moscheutos ssp. *moscheutos*

Swamp rose-mallow
Mallow Family



MNRF: Special Concern

COSEWIC: Special Concern

Description: Swamp rose-mallow is a robust perennial growing to two metres in height. The upper stems with a somewhat whitish appearance due to presence of small, fine, white hairs. The toothed leaves are often lance-shaped but can also be lobed at the top, bearing slight resemblance to maple leaves; the leaf undersides have a velvety feel due to the hairs. Plants have up to eight showy flowers growing from the axils of the upper leaves. The large hollyhock-like flowers are distinct, with the pink or white petals 6 to 10 cm long. The fruit is a globular or tapering to the short-beaked summit. The robust stems of this plant often remain vertical through the winter, with large, opened seed capsules still attached. This species resembles halberd-leaved rose-mallow (*Hibiscus laevis*), which has leaves with divergent basal lobes (shaped like a halberd) and hairless leaf surfaces. Halberd-leaved rose-mallow is considered to be extirpated from Ontario though, so it is unlikely to cause confusion.

Preferred Habitat: Swamp rose-mallow is most common in two types of wetlands: in deep-water cattail marsh, where it occurs along the interface with the open water; and meadow marsh habitat. It is less commonly found in open wet woods, thickets, spoil banks, and drainage ditches.

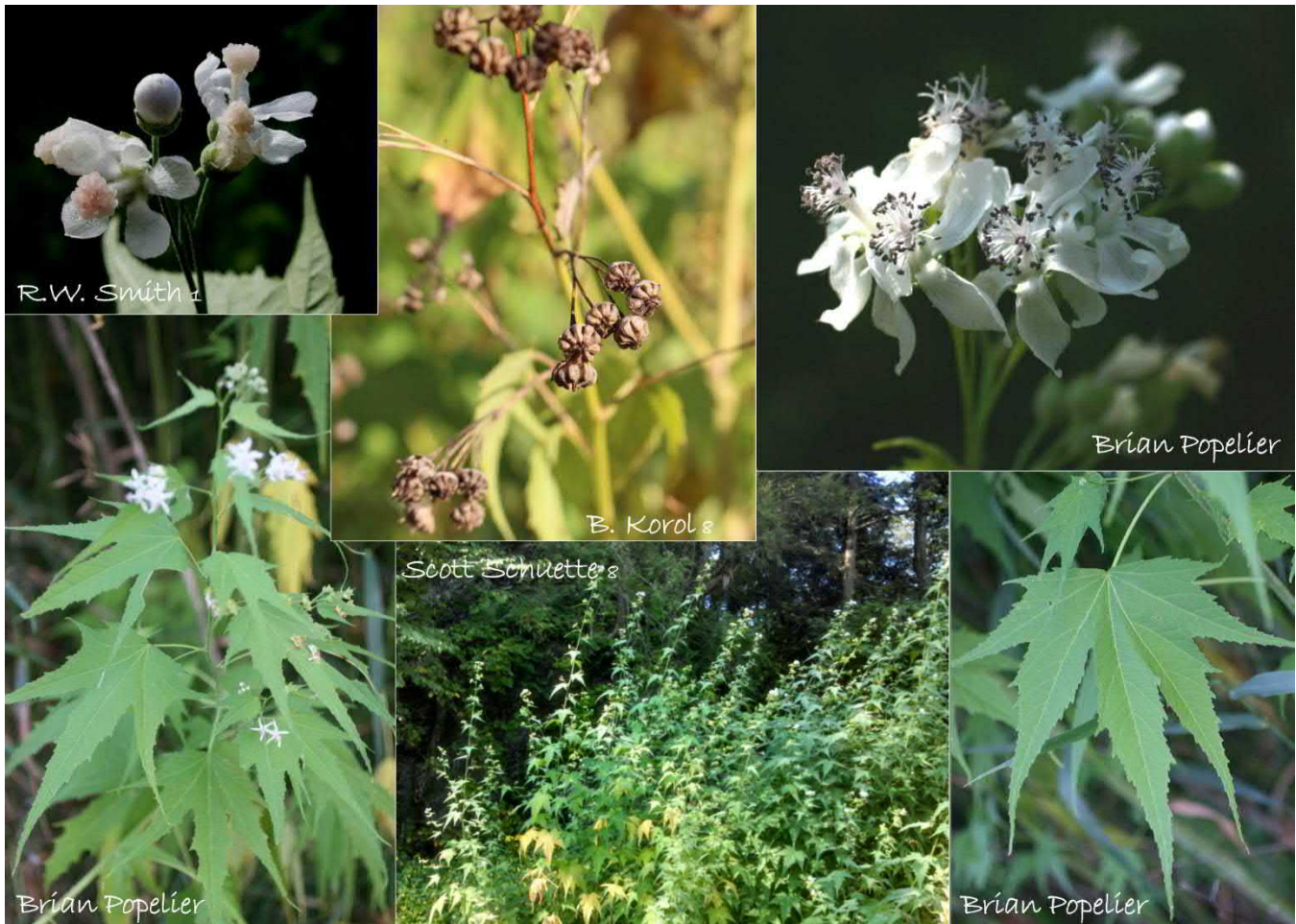
Identification Period: Flowering from late July to late September, with the height of flowering in mid-August. For those unfamiliar with this species, the flowers should be present to identify it.

NHIC Record of County Occurrences: Chatham-Kent, Elgin, Essex, Lambton, Niagara, Norfolk, Prince Edward.



Ripariosida hermaphrodita

Virginia mallow
Mallow Family



MNRF: Endangered
COSEWIC: Endangered

Description: Virginia mallow is a tall perennial herb that reaches heights of 1 to 3 m. The stem is hairy when young but becomes hairless as the plant matures. The hemp-like leaves are 10 to 20 cm long, grow alternately along the stem, and usually have 3 to 7 irregularly toothed lobes with the middle lobe being the longest. The flowers are white and grow in small clusters in the upper half of the plant. The clusters are long stalked and grow from the leaf axil. Each flower has 5 petals that are 6 to 10 mm long. The stem height and leaf shape of this plant make it fairly distinct.

Preferred Habitat: This species is a plant of open, moist, sunny to partly shaded riparian habitats. Preferred soils tend to have a high proportion of sand and low proportion of organic matter.

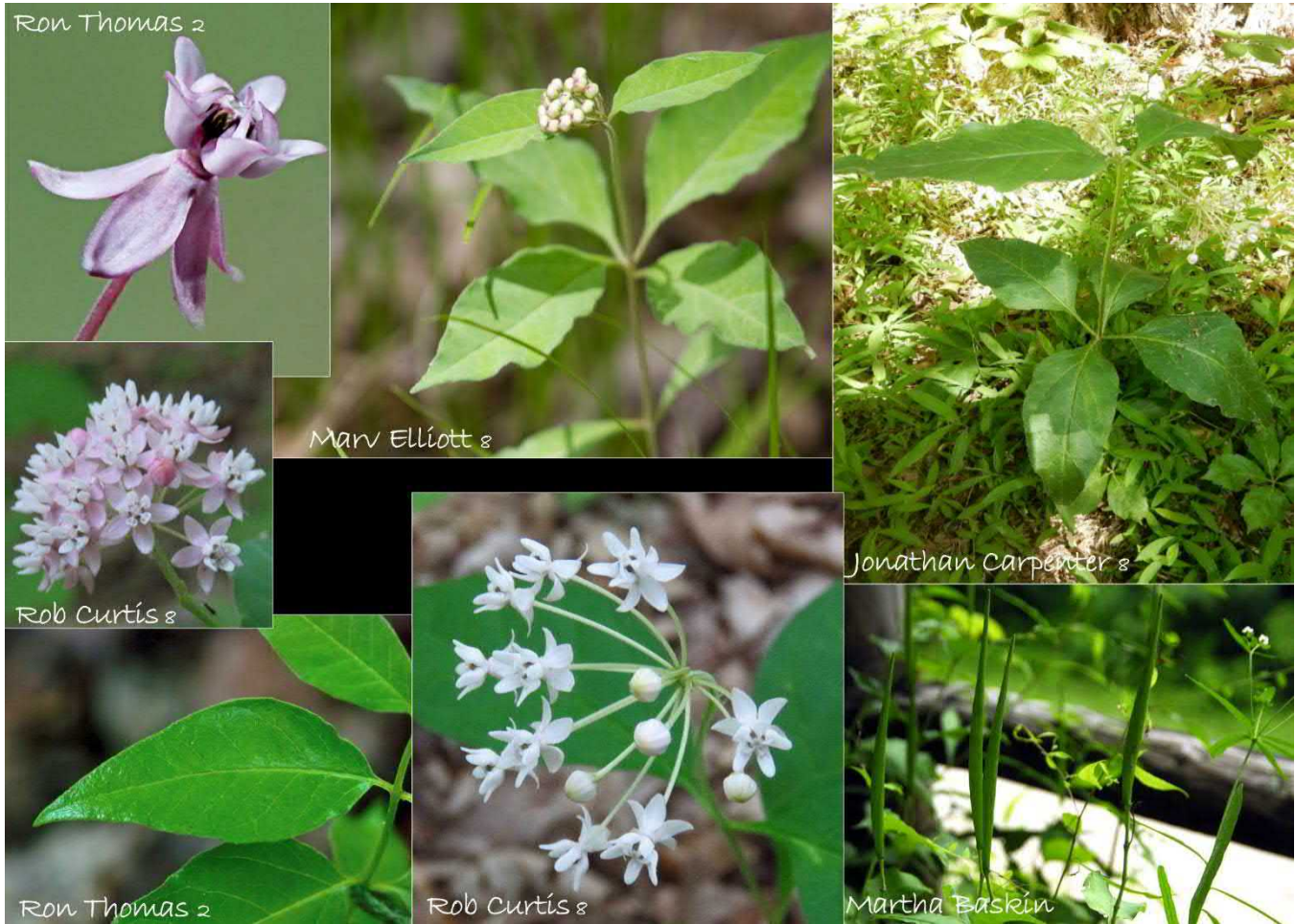
Identification Period: Flowering begins in early August and continues until the first hard frost; however, this plants large stature and maple- or hemp-like leaves make it identifiable throughout the summer and fall.

NHIC Record of County Occurrences: Haldimand, Niagara.



Asclepias quadrifolia

Four-leaved milkweed
Dogbane Family



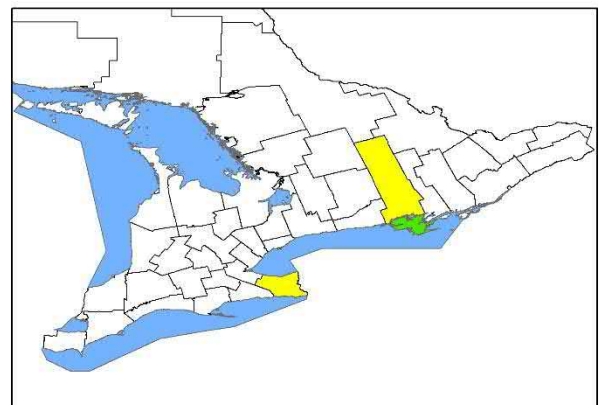
MNRF: Endangered
COSEWIC: Endangered

Description: Four-leaved milkweed is a herbaceous perennial that grows to a height of 30 to 80 cm; the stem is erect and unbranched. Eight leaves typically grow along the stem from three locations: two leaves grow opposite each other on the lower stem, and also on the upper stem. On the mid-stem, leaves grow in a whorl of four; these leaves are larger, usually 6 to 12 cm long. The inflorescence consists of one to four clusters of 10 to 25 white or pinkish flowers. The fruits develop into long, narrow, erect pods. When mature, the pods opens to expose tufts of long, silky hairs that are attached to the seeds. This milkweed can usually be distinguished from all other milkweeds by its unique leaf arrangement. Very rarely, however, all 8 of its leaves will grow in 4 opposite pairs, making it similar to other milkweeds, such as poke milkweed (*Asclepias exaltata*). Distinguishing features in these instances are flower colour, erect fruit pods, and leaves that gradually narrow towards the tip (i.e. lanceolate to lance-ovate, as opposed to broadly ovate or oblong); also ensure the specimen is growing in woodland habitat.

Preferred Habitat: In Ontario, four-leaved milkweed grows in open, dry to slightly moist woodlands or treed alvars on fairly shallow soils on the plateau, rim, or slopes of steep limestone escarpments. Dominant tree species in these communities tend to be bur oak and shagbark hickory.

Identification Period: In Ontario this plant flowers from late May to June, and seed pods mature in the late summer. For those unfamiliar with this species, the reproductive parts should be present to identify it.

NHIC Record of County Occurrences: Prince Edward. (Hastings, Niagara).



Polygala incarnata

Pink milkwort
Milkwort Family



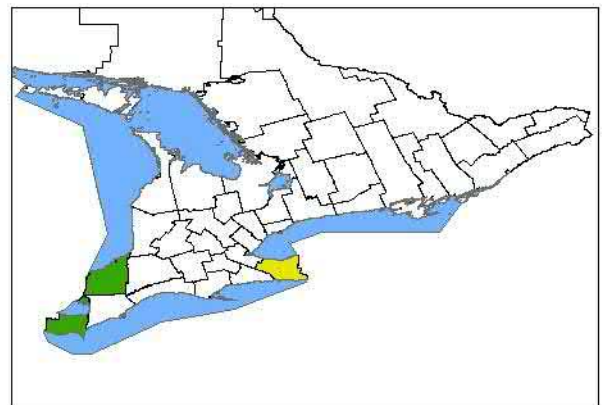
MNRF: Endangered
COSEWIC: Endangered

Description: Pink milkwort is an annual herb with an erect stem growing 20 to 60 cm tall. The stem is slender, glaucous (whitish coating that is easily rubbed off), and unbranched or sparingly branched. Rose-purple, tubular flowers are clustered in a dense, terminal group; each individual flower is about 5 to 7 mm long. The leaves are short (5 to 12 mm) and narrow (< 1 mm), the blades nearly vertical, growing alternately along the stem. By the time the plant begins to flower, most of its leaves will have fallen off. The flowers open sequentially, starting at the base of the inflorescence and continuing upward. The mature seeds are black, hairy, and have a small air-filled appendage. This species can be distinguished from other milkwort species by its leaves (if present) being less than 1 mm wide and growing alternately along the stem, and the rose-purple inflorescence tightly clustered at the tips of the stem/branches.

Preferred Habitat: Pink milkwort grows in open, mesic to dry mesic sand prairie habitat.

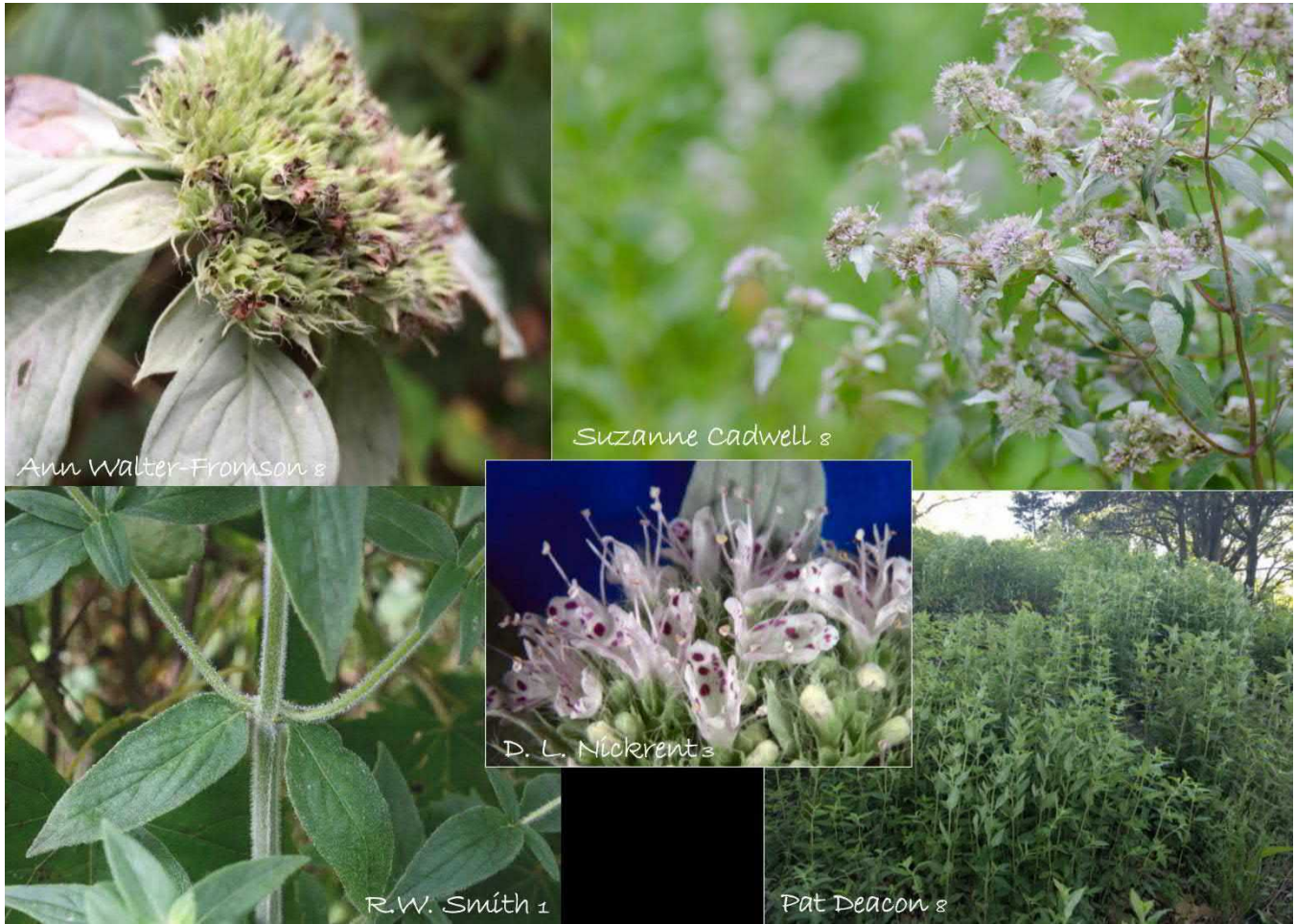
Identification Period: Flowers should be present to identify this species; it blooms from July to October.

NHIC Record of County Occurrences: Essex, Lambton. (Niagara).



Pycnanthemum incanum* var. *incanum

Hoary mountain-mint
Mint Family



MNRF: Endangered
COSEWIC: Endangered

Description: Hoary mountain-mint is a conspicuous, hairy, and fragrant species that grows up to 1 m tall. The square stem is hairy on all four sides with fine, white hairs. The plant has 1.5 to 3.5 cm wide ovate-elliptic leaves that are opposite each other often have a frosted (hoary) appearance at their bases; the leaf stalks are at least 2.5 mm long. The larger leaves are 5 to 10 cm long and have few teeth, are densely hairy on the lower leaf surface, and have a fragrant, minty scent. The inflorescence contains loose clusters flowers, growing from the top of the stem and in the upper leaf axils; each grouping is about 1.5 to 3.5 cm in diameter. The small individual flowers are white with purple spots. This mint is unlikely to be confused with other mint species, recognizable by its wide leaves that are densely and finely white-hairy beneath, its short but distinct leaf stalks, stems that are hairy on all four sides, and the loosely clustered flowers.

Preferred Habitat: This plant requires open, dry, sandy-clay habitats in often sloped, open-canopied deciduous woods where sunlight penetrates.

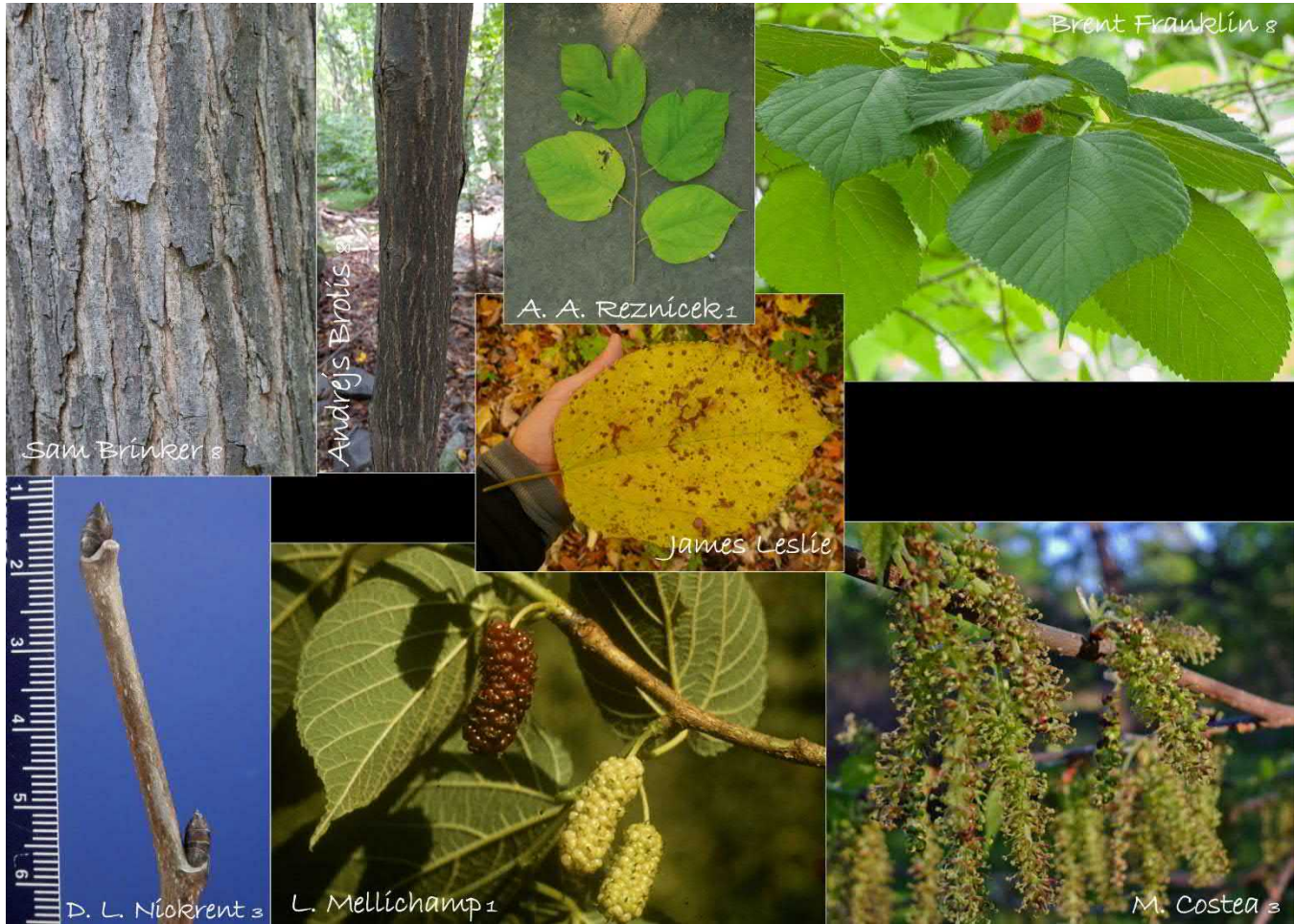
Identification Period: Flowers should be present to identify this species; it blooms from August to October.

NHIC Record of County Occurrences: Halton, Hamilton.



Morus rubra

Red mulberry Mulberry Family



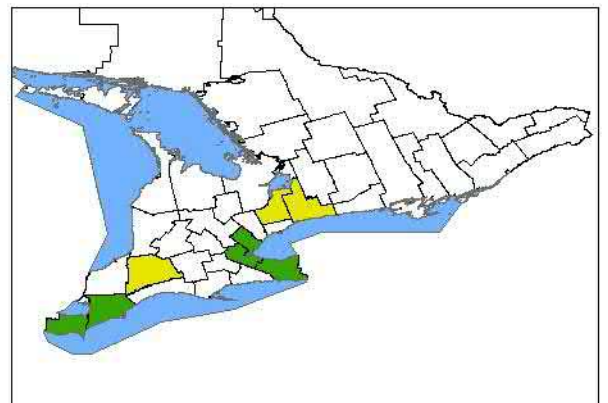
MNRF: Endangered
COSEWIC: Endangered

Description: Red mulberry is a small to medium-sized tree, growing 6 to 18 m tall. The bark on young trees is smooth and reddish brown, becoming light brown with loose vertical plates as it matures. Young twigs are greenish becoming light reddish brown, hairless, and exude a milky sap when cut. Leaves are alternate, 8 to 24 cm in length, some with lobes but many without. The leaves are also somewhat heart-shaped with serrated margins, and have rough upper surfaces and sparsely to densely hairy undersides (less so towards the seasons end). Leaf buds mostly dark brown with 6 to 8 scales and often finely hairy. The flowers are yellow-green to reddish on pendulous catkins. The cylindrical fruit is 2 to 3 cm in length and turns deep red to dark purple at maturity. The leaves of red mulberry could be confused with those of the common American basswood (*Tilia americana*); the twigs of basswood, however, do not have milky sap, its leaves are not rough on the upper surface, and its red or reddish leaf buds have only 2 or 3 scales. Red mulberry can also be tricky to distinguish from white mulberry (*Morus alba*), which has yellow-brown hairless bud scales with dark margins, twigs that are orange-brown or dark green and often sparsely hairy (though sometimes hairless), and leaves that are hairless or sparsely hairy along major veins (or in tufts in primary vein axils), with upper surfaces hairless or sometimes sparingly hairy. These two mulberry's hybridize and can be very difficult to distinguish, often requiring genetic testing for confirmation.

Preferred Habitat: Red mulberry is an understory forest tree species found in moist habitats. In Ontario, these include slopes and ravines of the Niagara Escarpment, and sand spits and lowland communities.

Identification Period: Flowers bloom in early spring and fruit matures in mid to late July; species can be identified any time during the leaf-on season.

NHIC Record of County Occurrences: Chatham-Kent, Essex, Halton, Hamilton, Niagara. (Durham, Middlesex, York)



Fraxinus quadrangulata

Blush ash
Olive Family



MNRF: Threatened
COSEWIC: Threatened

Description: Blue ash is a medium-sized tree that grows up to 20 meters tall. The bark of blue ash produces a blue dye when boiled, and the sap turns blue when exposed to air. Most twigs grow opposite each other and are light greyish brown with conspicuous ridges that make them four-sided. The compound leaves are opposite and each has 5 to 11 leaflets. The leaflets are dark green above and lighter green underneath and have coarsely toothed edges. The flowers grow in small dense clusters and expand with the new leaves. The fruit is slightly twisted and has a flattened seedcase at one end containing one seed; the tips of the fruit often have a slight notch. The opposite, compound leaves and ridged, four-sided twigs make this tree easy to distinguish.

Preferred Habitat: In Ontario, blue ash grows in deciduous floodplain forests, and along sandy beaches and on limestone outcrops associated with Lake Erie.

Identification Period: Blue ash flowers in April and its fruit mature in the fall, normally at the beginning of October. This species can be identified at any time of the year by its young twigs that are opposite and four-sided.

NHIC Record of County Occurrences: Chatham-Kent, Elgin, Essex, Lambton, Middlesex.



Collinsia verna

Spring blue-eyed Mary
Plantain Family



MNRF: Extirpated

COSEWIC: Extirpated

Description: Spring blue-eyed Mary is a winter annual that reaches 20 to 40 cm in height. The stem tends to be weak and finely hairy. The leaves are opposite, toothed or not, the largest ones 7 to 26 mm broad (widest below the middle), and 1 to 6 cm long, often clasping the stem. There are typically 1 to 3 whorls, each containing 4 to 6 flowers (although solitary flowers occasionally emerge from the axils of the upper leaves). The flowers have long stalks (1 to 2.5 cm), are bell-shaped, composed of five lobes, and approximately 1.5 cm long. The bottom two lobes are blue, whereas the upper two lobes are bright white. A fifth, inconspicuous lobe forms a small pouch that is often hidden beneath the lower lobes. Seed capsules are 4 to 5 mm in length and contain up to four seeds. This species could appear superficially similar to small-flowered blue-eyed Mary (*Collinsia parviflora*), the largest leaves of which are 2 to 7 mm broad (widest at or above the middle), smaller flowers and an upper lip that's often at least partly blue. The flowers of spring blue-eyed Mary do have a resemblance to violet species, though the arrangement of the leaves and the whorl of long-stalked flowers make it distinct.

Preferred Habitat: Rich deciduous forests, especially in ravines and moist areas. In Ontario, the spring blue-eyed Mary was known from open wooded areas located near water. It prefers moist, rich, alluvial soils.

Identification Period: Flowering begins in April and continues through May, although historic Ontario records indicate that local plants flowered around late May. Flowers should be present to identify this species.

NHIC Record of County Occurrences: (Elgin, Middlesex, Oxford). Last documented in Ontario in 1954.



Plantago cordata

Heart-leaved plantain
Plantain Family



MNRF: Endangered
COSEWIC: Endangered

Description: Heart-leaved plantain is a semi-aquatic perennial herb with thick (5 mm or more), fleshy, branching roots, and a basal rosette of large, heart-shaped leaves. The large, distinct leaves are evident only in the summer, while smaller, narrower leaves persist in the cooler seasons. Small flowers are loosely clustered along a narrow spike at the top of a 10 to 50 cm tall, leafless stalk. The fruit is a capsule containing finely pitted, dark brown seeds, 2.5 to 3.5 mm long. This plantain is quite distinct from other plantains, though perhaps not for those unfamiliar with the genus. Collectively, the identifying features of this plant are the heart-shaped leaves (look at the largest leaves), complete absence of hairs, and its preferred wet habitat.

Preferred Habitat: In Ontario, this plantain occurs along intermittent streams in deciduous woodlands. Outside of Ontario it is also found growing in the cracks of bedrock or gravel within shallow streams where it prefers limestone or dolomitic substrates.

Identification Period: Ontario specimens of heart-leaved plantain bloom in mid-April. Reproductive features are helpful when identifying this plant, though not critical.

NHIC Record of County Occurrences: Lambton, Middlesex. (Essex).



Stylophorum diphyllum

Wood poppy
Poppy Family



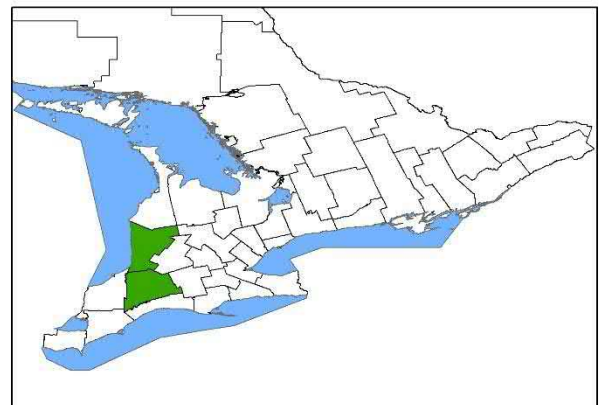
MNRF: Endangered
COSEWIC: Endangered

Description: Wood poppy is a hairy, perennial herb with stout rhizomes, and grows to a height of 40 cm or less. The leaves are mostly basal, have long stalks, and are pale underneath. They are deeply divided into 5 to 7 lobes that are toothed. One to four flowers are produced at the end of an elongated stem, above 2 or 3 opposite leaves. The buds of unopened flowers are densely hairy; the flower has four yellow petals, 2 to 5 cm in length. The fruit is a nodding, densely hairy capsule with a distinct beak at the tip. All parts of the plant contain yellow to orange coloured sap. This species could be confused with greater celandine (*Chelidonium majus*) (see photo). Greater celandine, however, has alternate leaves, flower petals only about 1 cm long, and fruit capsules and buds of unopened flowers that are hairless.

Preferred Habitat: Wood poppy is typically found in rich, moist woods, forested ravines and slopes, ravine bottoms, along woodland streams, and at the base of bluffs. In Ontario, it is found in wooded ravines and on valley slopes in deciduous forests dominated by sugar maple, white ash, American beech and black cherry.

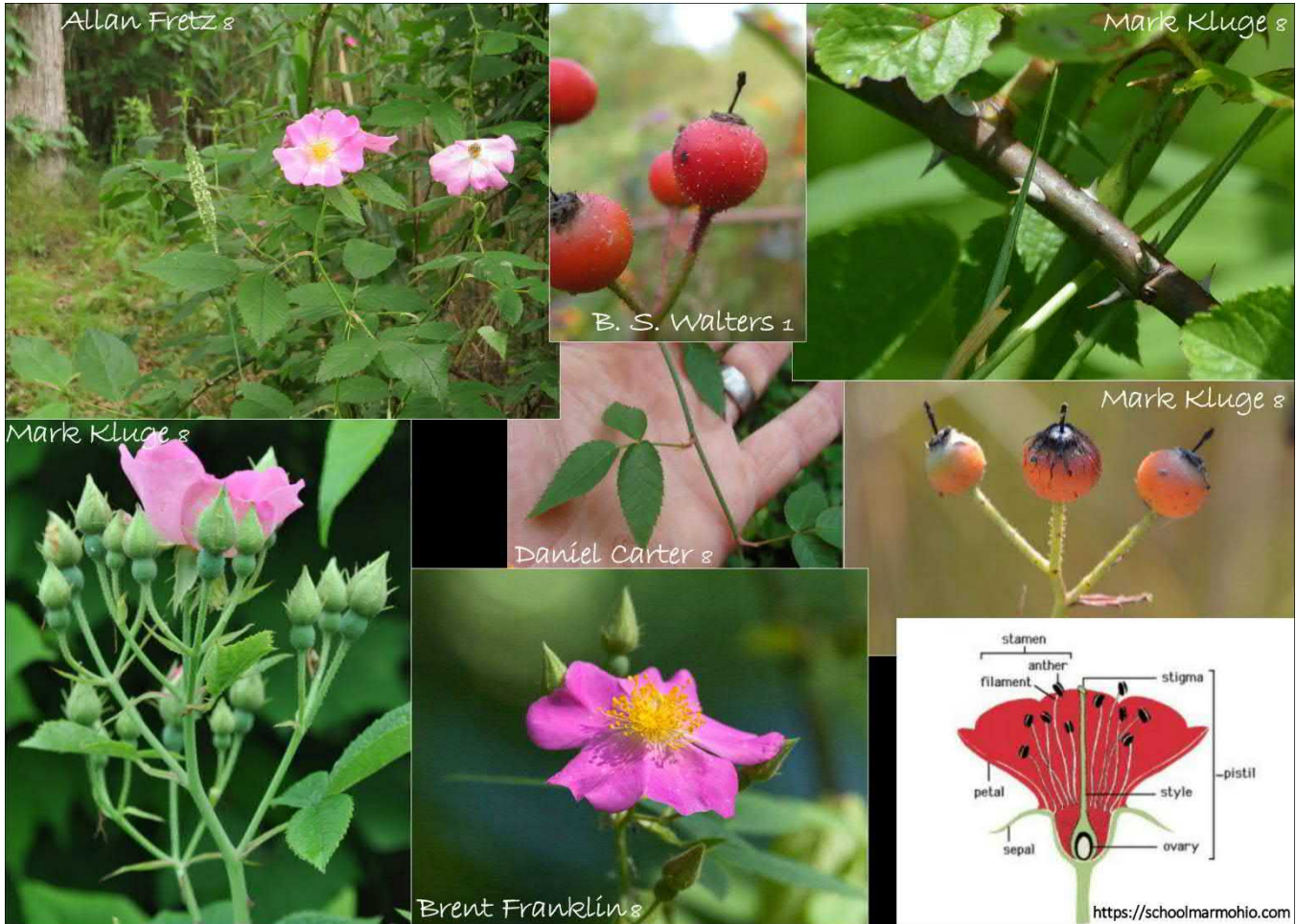
Identification Period: This plant flowers from May to early June and the capsules mature and open in late June to July. This species should be identified during this reproductive period.

NHIC Record of County Occurrences: Huron, Middlesex.



Rosa setigera

Climbing prairie rose
Rose Family



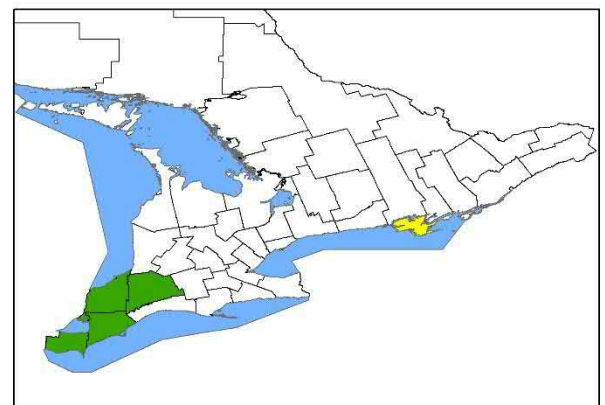
MNRF: Special Concern
COSEWIC: Special Concern

Description: Climbing prairie rose is a robust shrub with arching or climbing branches, often several metres long. Where the branch tips touch the ground roots can emerge and develop “new” plants. Prickles are broad based and have a slight backwards bend. Leaves with only 3 leaflets grow on flowering branches (very rarely with 5 leaflets), while leaves with 3 or 5 leaflets grow on juvenile or non-flowering branches. Flowers grow in clusters, having 2 to 3 cm long petals that are light pink or rosy. The sepals (found below the flower petals) are straight-edged (i.e. not toothed, lobed, or divided). The center of the flower contains numerous golden coloured anthers that surround a single style; this style is hairless and smooth. In dry years, this species may not produce flowers. The fruits are round and reddish-orange. This species can be distinguished from other rose species by the leaves having (usually) only 3 leaflets on fertile branches, the straight-edged sepals, and the hairless style that’s nearly the same height as the filaments/anthers.

Preferred Habitat: In Ontario, climbing prairie rose occurs in old fields and shrub thickets, most commonly on sites with moist heavy soils, but occasionally on sandy or shallow soils that dry out during part of the growing season.

Identification Period: The flowers are necessary when identifying this plant, which blooms from late June to mid-July.

NHIC Record of County Occurrences: Chatham-Kent, Essex, Lambton, Middlesex. (Prince Edward).



Ptelea trifoliata

Common hop-tree
Rue Family



MNRF: Special Concern
COSEWIC: Special Concern

Description: Common hop-tree is a deciduous and short-lived tall shrub or small tree that grows up to 10 m high and 24 cm in diameter. It is often many-branched and has a reddish-brown trunk. The leaves are alternate and consist of three nearly-stalkless, sharp-pointed leaflets that are entire (toothless) along the margins (or essentially so). When crushed, the leaves have a pungent, citrus odour. Fragrant, cream-coloured flowers are produced in the early summer. The round 'fruit' contains one or two centrally located seeds and is surrounded by a flat, veined, wing. This species is most likely to be confused with American bladdernut (*Staphylea trifolia*), which has opposite leaves, the leaflets of which are finely and closely toothed. The fruit of bladdernut are also inflated, as opposed to the flat fruit of common hop-tree. The leaves of common hop-tree may also resemble poison ivy (*Toxicodendron*), which is a vine that sprawls along the ground or up tree stems.

Preferred Habitat: In Ontario, common hop-tree occurs almost exclusively along or near the Lake Erie shoreline. It is often found in areas of high natural disturbance where it forms the outer edge of shoreline woody vegetation. It grows on nutrient poor sand, but occasionally on other droughty substrates such as thin soil over limestone. This species shows little tolerance for deep shade.

Identification Period: Flowers usually bloom the first two weeks of June in its Ontario range; fruit matures late in the summer. This species can be identified at any time during the leaf-on season.

NHIC Record of County Occurrences: Brant, Chatham-Kent, Elgin, Essex, Niagara, Norfolk. Records from other counties are not believed to be the result of naturally occurring populations.



Viola pedata var. *pedata*

Bird's-foot violet
Violet Family



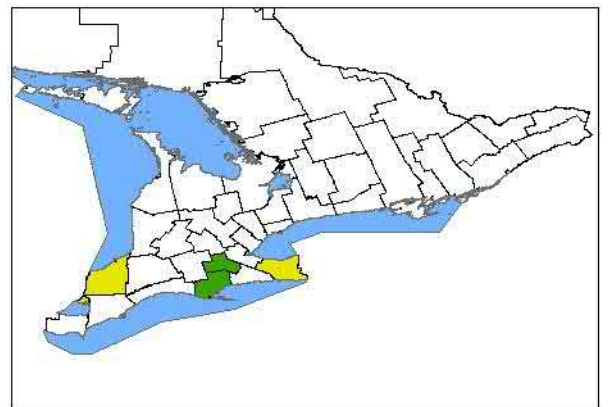
MNRF: Endangered
COSEWIC: Endangered

Description: The name bird's-foot violet is derived from its distinctive, deeply divided leaves that resemble the splayed toes of a bird. Each leaf is three-parted and each 'part' is further divided into 3 to 5 segments. In spring and autumn, lilac-purple flowers develop individually on the leafless stalks that grow directly from the base of the plant (i.e. there is no stem). The five petals of the flower may be all the same colour, or the upper two may be darker than the lower three petals, all of which are hairless (i.e. beardless). Flowers are broader (up to 3 cm across) than most violets and have a distinct flat, pansy-like aspect. An entirely white form also exists and has been reported from Ontario populations. This species could be confused with prairie violet (*Viola pedatifida*), which has a small beard of hairs on the lateral petals (and usually the lower one) close to the center of the flower. It can be distinguished from other violets by its deeply lobed leaves, large flowers, and the absence of bearded petals.

Preferred Habitat: Bird's-foot violet favours dry, open, sandy sites, including savannah, prairies and slopes, and usually grows in association with oaks and/or pines. Soils are well-drained sandy loams and silty sands, which are dry through the late spring and summer.

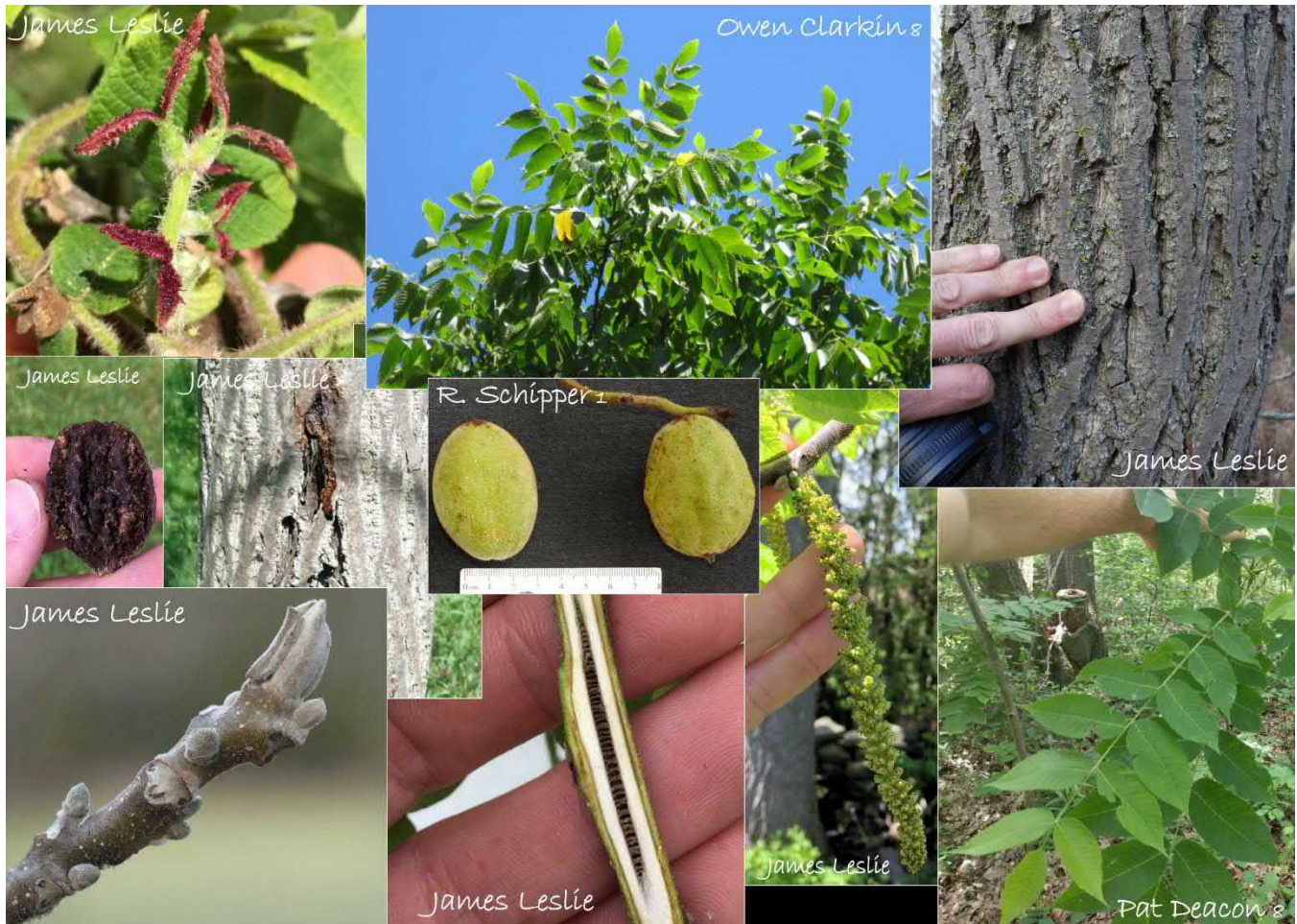
Identification Period: In Ontario, bird's-foot violet flowers in mid-May to mid-June, and sometimes again in late September to mid-October. For those unfamiliar with the species, flowers should be present to identify it.

NHIC Record of County Occurrences: Brant, Norfolk. (Lambton, Niagara).



Juglans cinerea

Butternut
Walnut Family



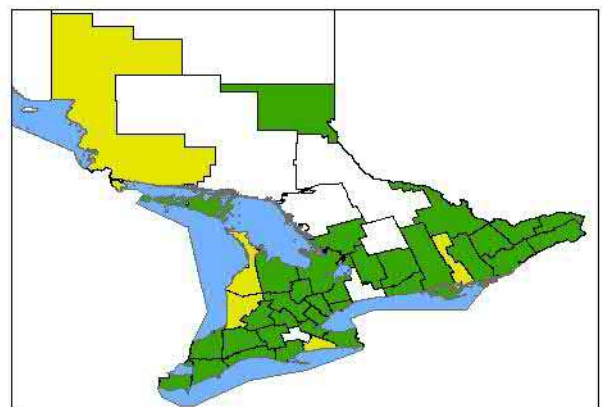
MNRF: Endangered
COSEWIC: Endangered

Description: Butternut is a small to medium-sized tree that seldom exceeds 30 metres in height. The bark of younger specimens is grey and smooth, gradually developing flat-topped ridges and shallow dark groves as it matures. Twigs are stout, hairy, and have a narrow, dark brown chambered pith. Leaf buds are hairy, the terminal one 12 to 18 mm long. Leaves are 30 to 60 cm long, densely hairy beneath, and consist of 11 to 17 leaflets; the terminal leaflet is about the same size as the two leaflets below it. The leaf scars are flat on the upper margin, edged with a raised pad of hairs. The fruit is elongated, 5 to 8 cm long, with a pointed tip, growing in clusters of 1 to 5; the green husk is densely covered with short sticky hairs. This species could be confused with black walnut (*Juglans nigra*), which has a wide, light brown pith, leaves with the terminal leaflet absent or smaller than the adjacent ones, heart-shaped leaf scars, and a globular, nearly hairless fruit. Butternut populations are succumbing to a fungus that causes cankers to develop on the stem and branches. Butternut hybridizes (most commonly) with Japanese Walnut (*Juglans ailantifolia*), producing hybrids known buartrnuts (*Juglans x bixbyi*); these hybrids tend to be less susceptible to the fungus, are not uncommon and can be difficult to distinguish from pure butternuts, sometimes requiring genetic testing for confirmation.

Preferred Habitat: Grows best on well-drained, fertile soils in shallow valleys and on gradual slopes. It prefers direct sunlight and can be found along hedgerows, in open meadows, and forest edges. The species also grows in deciduous forests, obtaining sunlight as a canopy species or persisting in the understory where adequate sunlight exists.

Identification Period: Surveys should be conducted during leaf-on season, although identification can be made year-round.

NHIC Record of County Occurrences: Chatham-Kent, Dufferin, Elgin, Essex, Frontenac, Grey, Halton, Hamilton, Hastings, Kawartha Lakes, Lambton, Lanark, Leeds & Grenville, Manitoulin, Middlesex, Muskoka, Niagara, Norfolk, Northumberland, Ottawa, Oxford, Peel, Perth, Peterborough, Prescott & Russell, Prince Edward, Renfrew, Simcoe, Stormont/Dundas/Glengarry, Temiskaming, Toronto, Waterloo, Wellington, York. (Algoma, Bruce, Haldimand, Huron, Lennox & Addington).



Arisaema dracontium

Green dragon
Arum Family



MNRF: Special Concern
COSEWIC: Special Concern (Schedule 3)

Description: Green dragon produces a leaf at the end of a 15 to 90 cm stalk. The leaf consists of leaflets – usually 7 to 13, although some have more or fewer. Mature plants produce a single flowering stem each year, which is usually shorter than the leaf stalk. The flowers are tightly clustered around the lower section of the cylindrical spadix. The spathe, which is a leaf-like bract, conceals these developing flowers until they mature, at which time it begins to open. The spadix of this plant is distinct in that it includes a long, non-flowering segment, most of which is not concealed by the spathe. When mature, this non-flowering segment turns bright orange or yellow and extends 3 to 17 cm beyond the top of the spathe. The flowers of the spadix slowly develop into fleshy red or orange fruit. This species has some similarities to the common Jack-in-the-pulpit (*Arisaema triphyllum*), but is easily distinguished by its leaf, which has only 3 leaflets, and a spadix that's shorter than the spathe.

Preferred Habitat: Green dragon grows in damp deciduous forests, swamps, and along stream and river floodplains (e.g. Thames and Sydenham Rivers).

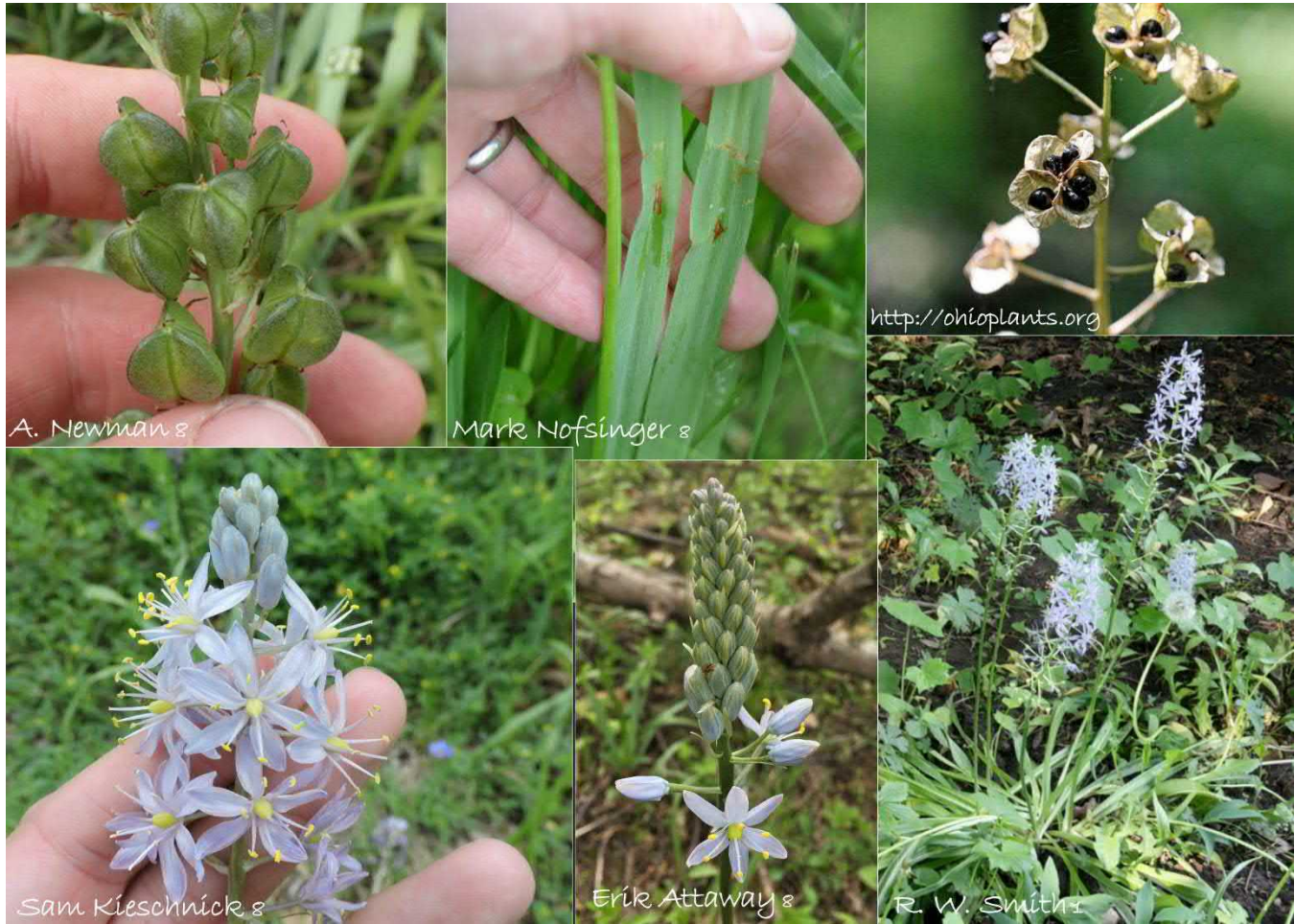
Identification Period: This species typically flowers in May and June after surface water recedes. The plant remains in flower for one to two weeks then begins to develop fruit, at which time the spathe and non-flowering spadix wither and fall. The fruit remains standing and visible into the fall, after the leaf has wilted. This species is easiest to detect while it is in flower, though it can be identified throughout the summer.

NHIC Record of County Occurrences: Brant, Chatham-Kent, Elgin, Essex, Haldimand, Hamilton, Huron, Lambton, Middlesex, Niagara, Norfolk, Oxford, Waterloo.



Camassia scilloides

Eastern camas
Asparagus Family



MNRF: Threatened

COSEWIC: Threatened

Description: Eastern camas is a spring-flowering perennial herb that develops from an underground bulb, growing to a height of 30 to 70 cm. The leaves are linear and keeled, growing from the base of the plant, and reaching lengths of 20 to 40 cm. The inflorescence contains up to 100 star-shaped flowers, which have 6 pale blue to white petals. This species could be confused with star-of-Bethlehem (*Ornithogalum spp.*), which have white petals with a green stripe on undersides. It could also be confused with white camas (*Anticlea elegans*), which have glaucous stems (whitish coating that's easily rubbed off) and cream colored to greenish petals, each with a green heart-shaped gland toward the base; it also flowers in the summer.

Preferred Habitat: In Ontario, the extant populations of eastern camas are in low, moist woods on clay soil as well as drier scrubby alvar woodland.

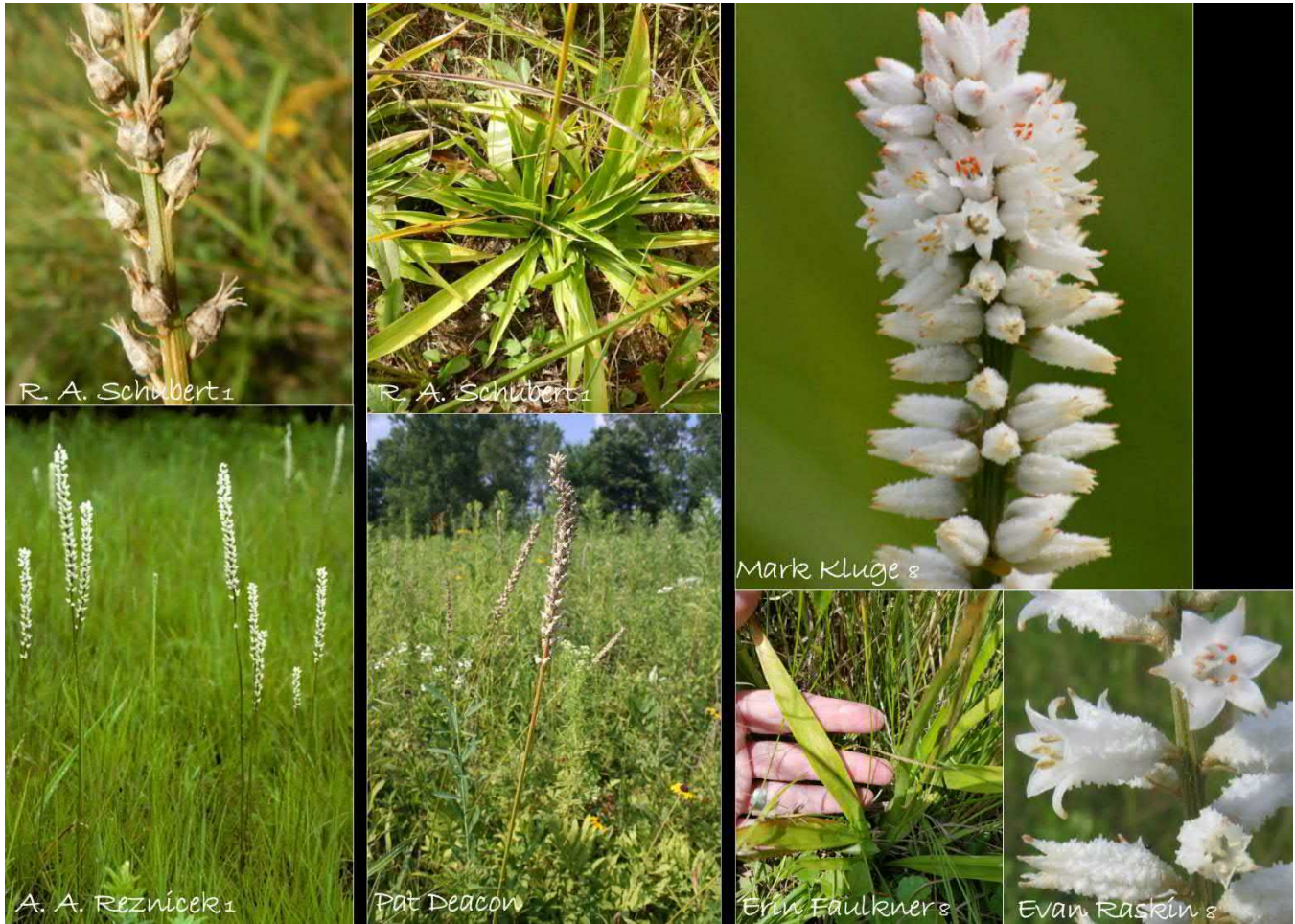
Identification Period: Flowers are necessary to identify this species, which bloom in mid to late May. As with many spring ephemerals, the leaves and fruiting stalks of this plant die-back by mid-summer.

NHIC Record of County Occurrences: Essex.



Aletris farinosa

White colicroot
Asphodel Family



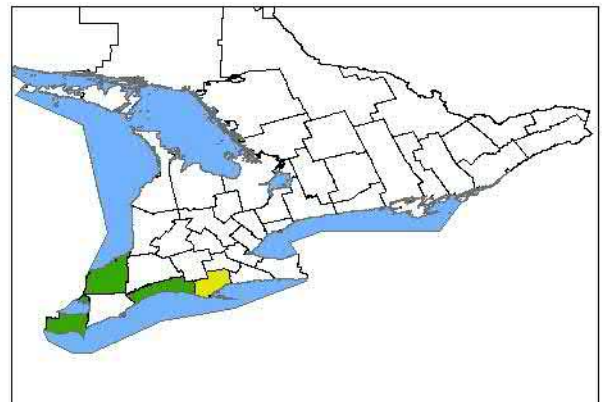
MNRF: Endangered
COSEWIC: Endangered

Description: White colicroot has a flowering stem that grows 40 cm to 1 m tall. Leaves are all basal, although the stem is scattered with linear leaf-like bracts (3 to 20 mm long); basal leaves are pale yellowish-green, 8 to 20 cm long and 0.5 to 2.6 cm wide. The tubular flowers are 7 to 10 mm long and grow directly from the main stem; they are white to creamy white with six spreading lobes at the tip and have an unusual rough-looking texture. The fruit is a capsule, which remains on the stem into the fall and contain many small seeds. The flowers of white colicroot make this plant distinct and unlikely to be confused with other species.

Preferred Habitat: In Ontario, white colicroot grows in open, sunny, and moist habitats on sandy or mucky soil, such as prairies and old abandoned fields. It has also been found along roadsides and forest edges. It does not tolerate shade or competition from other plants and appears to do well in areas that are kept open by fire, drought, grazing and other disturbances.

Identification Period: In Ontario, this plant flowers from late June to late July; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Elgin, Essex, Lambton. (Norfolk).



Trillium flexipes

Bent trillium
Bunchflower Family



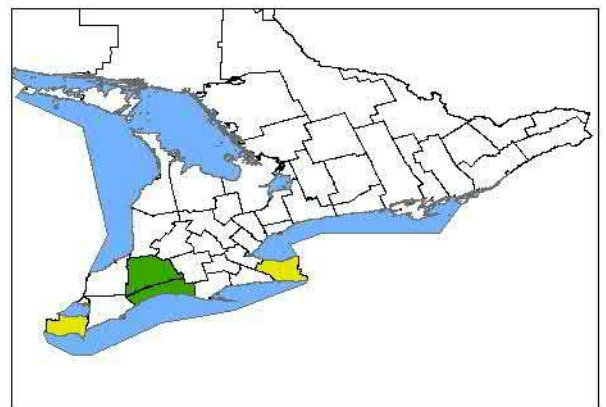
MNRF: Endangered
COSEWIC: Endangered

Description: Bent trillium is a herbaceous perennial with an erect stem 20 to 50 cm tall. Like all trilliums, this species has a whorl of 3 leaves atop the stem; the leaves are stalkless, and often wider than they are long (up to 25 cm long). A single flower grows from a stalk 3 to 12 cm long; this stalk usually arches downward or grows horizontal (most often the flower will be below the leaves, rarely above). The sepals are either shorter than the petals or equal in length. The flower is normally white but can be reddish or maroon. Bent trillium has very short filaments (stalks of the anthers) relative to the anther itself (the pollen bearing structure). These filaments are almost always less than 2 mm long and less than 1/4 the length of the anthers. The ovary is white and 6-angled. Similar species: nodding trillium (*Trillium cernuum*) also has a flower arched below the leaves but only has white petals (rarely pale pink) and filaments that are about as long as the anthers; red trillium (*Trillium erectum*) has the flower above the leaves, usually has red or maroon coloured petals and a maroon coloured ovary (also 6-angled). White trillium (*Trillium grandiflorum*) has the flower above the leaves, the petals are always white to pink and are distinctly longer than the sepals.

Preferred Habitat: In Canada, bent trillium grows in forested floodplains and slopes adjacent to watercourses. It prefers circumneutral, sandy loam soils. Most Ontario populations are associated with watercourses suggesting that fluvial processes are responsible for creating and maintaining a suitable habitat.

Identification Period: In Ontario, the peak blooming period typically occurs during the second week of May and extends to the beginning of June. The flowers are necessary to identify this species.

NHIC Record of County Occurrences: Elgin, Middlesex. (Essex, Niagara).



Smilax rotundifolia

Round-leaved greenbriar
Cattbrier Family



MNRF: Threatened
COSEWIC: Threatened

Description: Round-leaved greenbriar is a high-climbing woody vine that ascends shrubs and trees, usually to a height of 4 m or more. Stems are round or more often obscurely four-angled in cross-section (young branches distinctly four-angled); older stems are armed with broad-based flattened thorns. These thorns are green, usually with a dark tip. Leaves are alternate, hairless on both surfaces, and are either rounded at the base or heart-shaped. The main stalk of the berry cluster (peduncle) is usually equal to (or slightly longer) than the length of the subtending petiole (stalk of the leaf). The berries are blue-black and often glaucous (having a whitish coating that's easily rubbed off). This species is often confused with bristly greenbriar (*Smilax tamnoides*; (syn. *Smilax hispida*)), which typically have slender, cylindrical (or nearly so) thorns or prickles that are dark-coloured (green when young); some of these prickles often resemble stiff hairs/bristles. Further, the fruiting peduncles of bristly greenbriar are typically twice as long as the subtending petioles or longer.

Preferred Habitat: In Ontario, round-leaved greenbriar prefers open moist to wet woodlands, often growing on sandy soils.

Identification Period: Flowers from late May to mid-June in southern Ontario; fruits mature in the fall but are often retained on the vine over the winter. Mature specimens can be identified throughout the year, including winter when the green stems are often conspicuous.

NHIC Record of County Occurrences: Essex, Niagara, Norfolk.



Aristida basiramea

Forked three-awn grass
Grass Family



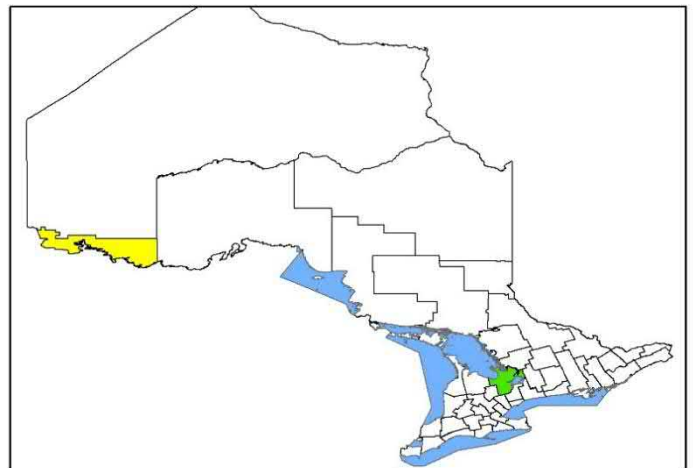
MNRF: Endangered
COSEWIC: Endangered

Description: Forked three-awn grass is an annual that grows in tufts. The stems are 25 to 45 cm tall and more-or-less vertical. The leaves are pale green, 3 to 8 cm long and quite narrow (1 to 1.5 mm wide); they can be flat or folded and are sparsely hairy on the upper surface. The inflorescence is usually 4 to 10 cm long and 1 to 2 cm wide. Each spikelet is nearly vertical and only slightly overlapping the ones above and below it. Each glume has one distinct vein, the lower glume is often 6 to 12 mm long – shorter than the upper glume. The body of the lemma (measured from the base of the point of attachment to the divergence of the awns) is 8 to 9 mm. The lemma has three awns – two relatively short lateral ones which are 5 to 10 mm long, strongly bent but not coiled; the central awn is 10 to 15 mm long with 2-3 spiral coils at the base. There are four other species of three-awn grass in southern Ontario, most of which are restricted to southwest counties. Church-mouse three-awn grass (*Aristida dichotoma*) may look similar but has smaller spikelets, and glumes that are \pm equal in length. None of the other *Aristida* species in Ontario have awns coiled at the base.

Preferred Habitat: This species requires areas of sandy, open ground and is found in open sand barrens, forest openings and, fallow fields, as well as edges of roads and trails.

Identification Period: In Ontario, forked three-awn grass flowers in mid-August to early September and sets fruit into early October; it should be identified after it flowers, roughly between September and October.

NHIC Record of County Occurrences: Simcoe. (Rainy River - introduced).



Iris lacustris

Dwarf lake iris
Iris Family



MNRF: Special Concern
COSEWIC: Special Concern

Description: Dwarf lake iris is a small perennial that grows from slender rhizomes (less than 5 mm thick). The flowering stem less than 15 cm tall (usually shorter than 10 cm). The basal leaves are flat, often 4 to 6 cm long when in flower (up to 16 cm long post-flowering) and 6 to 8 mm wide (up to 10 mm wide post-flowering). Single flowers develop from the top of the stem (rarely with 2 flowers); flowers are 3 to 5 cm wide and blue to purple (rarely white). The sepals are hairless and have 3 yellow and white, toothed, low ridges. The fruit is a capsule, roundly triangular, up to 8 mm long, containing dark brown seeds that have a white appendage spiraled around them. Other iris species may have similar colour patterns but will be taller than 15 cm. Dwarf lake iris could be mistaken for other similarly-small, introduced iris species (e.g. dwarf iris (*Iris pumila*)) but these are rarely encountered in naturalized habitats; dwarf iris is distinguished by a distinct beard on the upper surface of the sepals. When not in flower, dwarf lake iris could be confused with sticky tofieldia (*Triantha glutinosa*), which grow in many of the same habitats. Distinguishing the two based on leaves alone could be difficult, but the leaves of sticky tofieldia tend to be longer (up to 30 cm); it also flowers later in the summer.

Preferred Habitat: In Ontario, dwarf lake iris grows on sand or thin soil over limestone gravel or bedrock. It prefers open or somewhat shaded areas. It is mostly found in eastern white cedar or balsam fir woodlands, but also occurs in cedar swamps, clearings on forested sand dunes, and in open alvars.

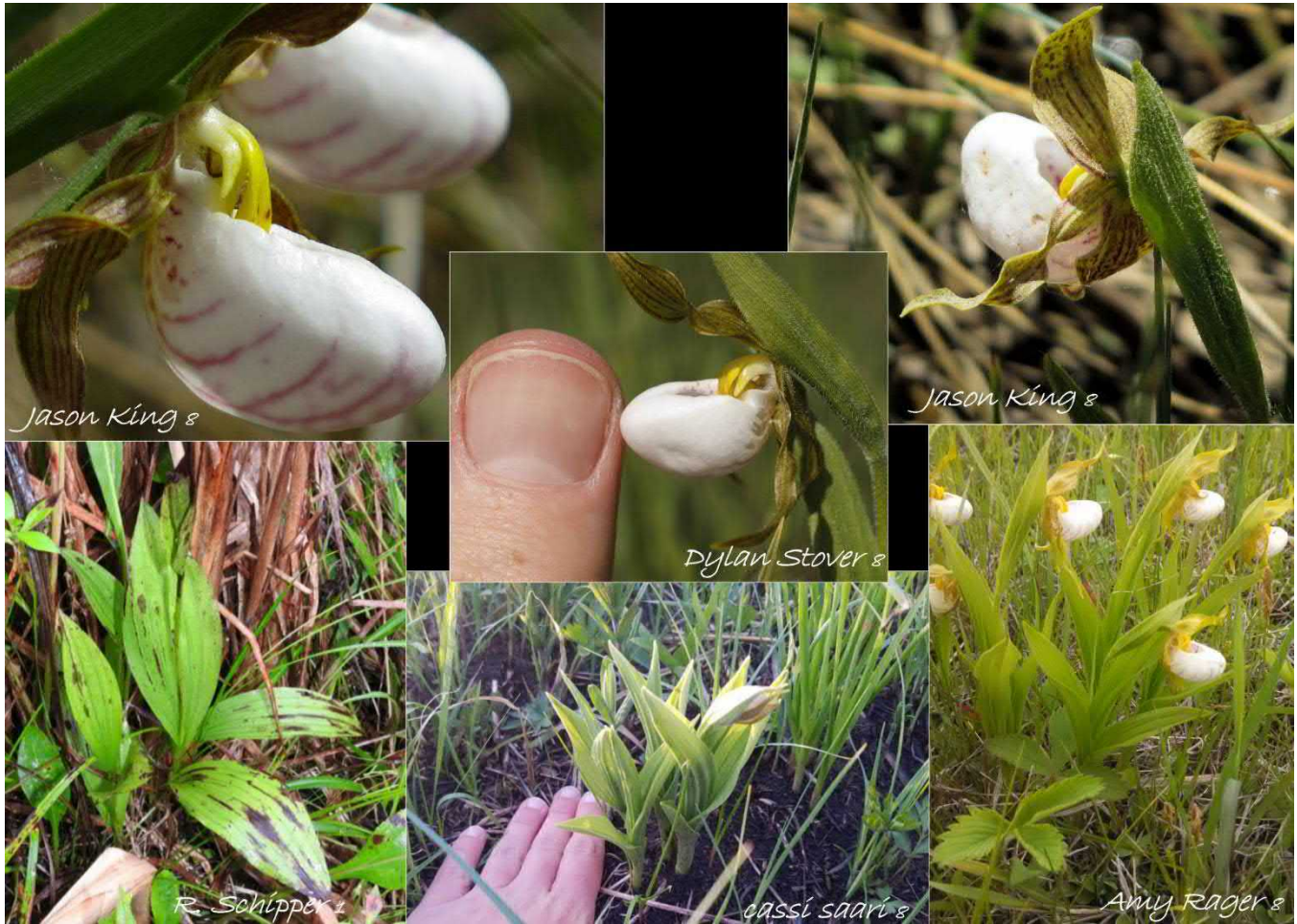
Identification Period: Flowers in early June; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Bruce, Manitoulin. (Essex, Huron).



Cypripedium candidum

Small white lady's slipper
Orchid Family



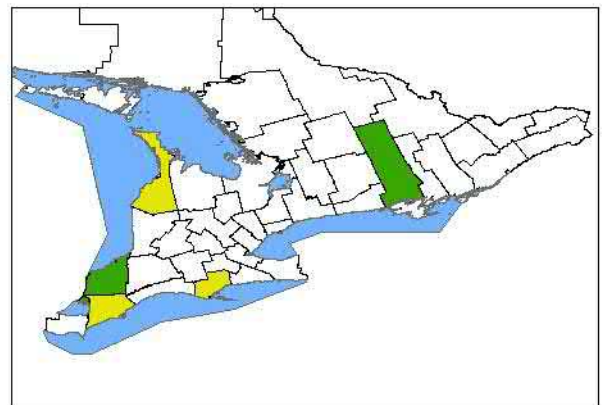
MNRF: Endangered
COSEWIC: Threatened

Description: Small white lady's slipper is a perennial orchid growing 11 to 40 cm in height. It develops from a rhizome that produces 3 to 60 stems. This plant begins blooming while the stem and leaves are still immature, at which time the leaves are all clustered at the base. As the stem continues to grow it moves some of the leaves into more of a mid-stem position. Once mature, 3 or 4 near-vertical leaves appear alternately along the stem, most 7 to 20 cm long. The flower consists of a white lip, 3 sepals and 2 petals – the latter two have the same greenish colour with streaks of reddish brown. The 2 lower sepals are adjoined and look like a single sepal. This species is known to hybridize with yellow lady's-slipper (*Cypripedium parviflorum*). This hybrid is called Andrew's lady's-slipper (*Cypripedium ×andrewsii*), which typically has pale yellow to ivory lips and relatively dark sepals and petals.

Preferred Habitat: In Ontario, this orchid grows in moist prairies, savannahs, and rich calcareous wetlands, such as fens; it grows best in full sunlight.

Identification Period: Flowers bloom in May and early June and are necessary for identification.

NHIC Record of County Occurrences: Hastings, Lambton. (Bruce, Chatham-Kent, Norfolk).



Isotria medeoloides

Small whorled pogonia
Orchid Family



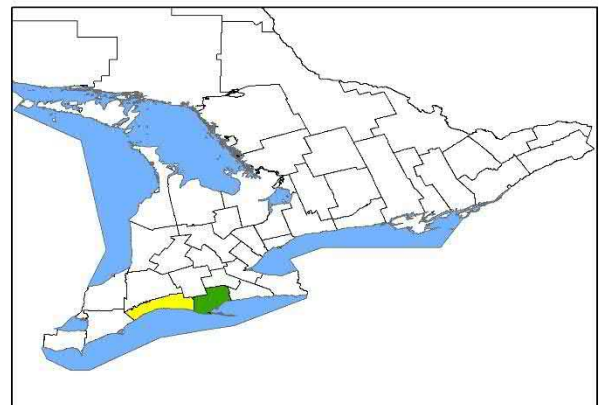
MNRF: Endangered
COSEWIC: Endangered

Description: Small whorled pogonia has a pale grayish green, hairless stem, reaching 9.5 to 25 cm in height. It has 1 or 2 flowers growing just above a whorl of 5 to 6 pale grayish green leaves. The stem and both leaf surfaces are glaucous (have a whitish coating that rubs off easily) giving them their pale colour – less so as the plant matures. The sepals are green to light green and short (<30 mm long) – barely longer than the petals (which are a similar colour). The lip is light yellowish green to pale greenish white, streaked with green. The flower is odourless. The fruit is a cylindrical capsule; when mature, the stalk of the capsule is 5 to 17 mm long. This capsule often persists on the stalk into the next year. When not in flower, this species could be confused with Indian cucumber-root (*Medeola virginiana*), which has two whorls of leaves – one at the top of the stem and another half way down. It also has white-woolly hairs on the stem when young, regular flowers (as opposed to the orchid-like irregular flowers), and small, round fruit. This species is also similar to large whorled pogonia, described below.

Preferred Habitat: In Ontario, small whorled pogonia is found in moist, mixed forests with acidic soils and a rich layer of decaying leaves. It prefers flat terrain and canopies with small openings to provide light.

Identification Period: Flowers from mid-May to mid-June with flowers lasting from a few days to almost two weeks. Prior to flowering, however, it can remain dormant in the soil for at least three years, possibly up to 20. For those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: Norfolk. (Elgin).



Isotria verticillata

Large whorled pogonia
Orchid Family



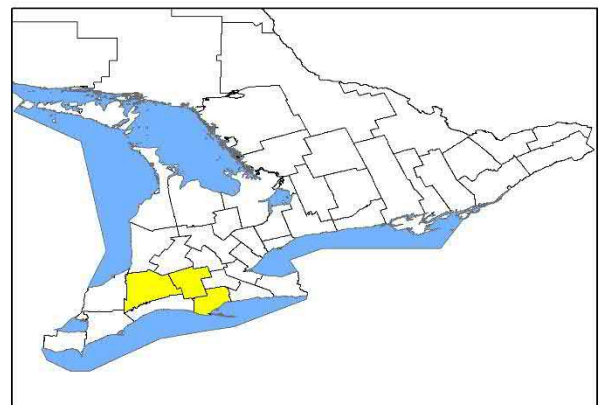
MNRF: Endangered
COSEWIC: Endangered

Description: Large whorled pogonia has a purplish brown, hairless stem reaching 4 to 40 cm in height. It has a single flower growing just above a whorl of 5 to 6 green to dark green leaves (sometimes pale on the underside). The stem and sometimes the leaf undersides are glaucous (have a whitish coating that rubs off easily). The sepals are spreading, turn a purplish brown, and much longer than the petals (> 30 mm); the petals are yellowish green. The lip is yellowish green to white, streaked with purple. The flower has a sweet fragrance. The fruit is a cylindrical capsule; when mature, the stalk of the capsule is 20 to 55 mm. This species has a similar appearance to that of the more common Indian cucumber-root (*Medeola virginiana*) as well as small whorled pogonia, the distinctions of which are described in the summary above.

Preferred Habitat: In Ontario, large whorled pogonia has been found in deciduous or mixed forests with sandy soil and a thick layer of decaying leaves. It prefers forest cover where the canopy is thin enough to allow penetration of sunlight.

Identification Period: In Ontario, this pogonia flowers in late May or early June; for those unfamiliar with this plant, the flowers should be present to identify it.

NHIC Record of County Occurrences: (Middlesex, Norfolk, Oxford).



Liparis liliifolia

Purple twayblade
Orchid Family



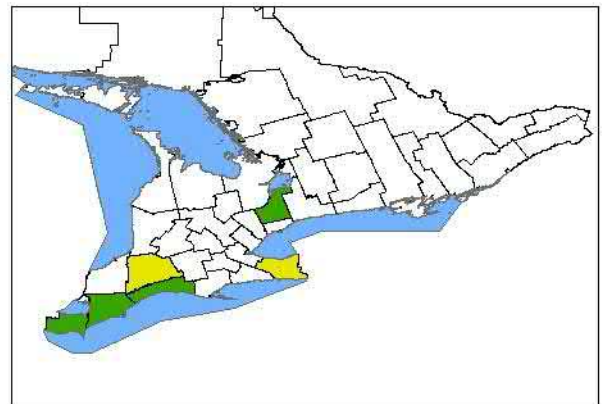
MNRF: Threatened
COSEWIC: Threatened

Description: Purple twayblade is a perennial orchid that develops from a bulbous corm, growing 9 to 25 cm tall. The leafless stem is slightly angled, sometimes obscurely winged toward the tip, arising from the center of two dark green, succulent leaves. The inflorescence contains 5 to 33 flowers; the sepals are greenish-white and narrow, the petals are mauve to pale purple (rarely green), linear to thread-like, while the lip is much larger (8 to 12 mm long and 6 to 10 mm wide) and finely streaked with purplish veins. The fruit is an ellipsoid capsule (image 4), with veins often slightly winged. The capsules are equal to or shorter than their stalks. This species could be confused with Loesel's twayblade (*Liparis loeselii*), which has a lip that is <6 mm long, an overall yellowish green to yellowish white colour, and the capsules are longer than their stalks.

Preferred Habitat: In Ontario, this plant is found in a variety of habitats including open oak woodland and savannah, mixed deciduous forest, shrub thicket, shrub alvar, deciduous swamp, and sometimes conifer plantations. It will grow in partial shade but is intolerant of full shade.

Identification Period: In Ontario, flowering occurs between late May and mid-July, usually at their peak in mid-June. This species should be identified while in flower.

NHIC Record of County Occurrences: Chatham-Kent, Elgin, Essex, York. (Middlesex, Niagara).



Platanthera leucophaea

Eastern prairie fringed orchid
Orchid Family



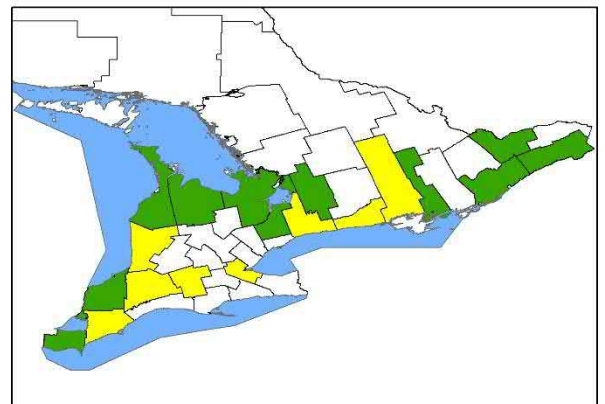
MNRF: Endangered
COSEWIC: Endangered

Description: Typically reaching a height of 50 to 100 cm, this orchid is characterized by an inflorescence of 10 to 40 white flowers. Flowers range from 1.8 to 2.5 cm in width and have a prominent lip consisting of 3 distinctly fringed segments. The sepals are green to whitish green and usually 6.5 to 9 mm long; the two upper petals are white and broad (widest near or above the middle). A long spur (28 to 47 mm) projects out from the backside of the flower. The flowers open sequentially, starting at the base of the inflorescence. The leaves are alternately arranged along the stem, 8 to 20 cm long, and oval or lance-shaped. This species could be confused with ragged fringed orchid (*Platanthera lacera*), which has whitish green or yellowish green upper petals that are linear (or narrowly lance-shaped) and sepals that are usually 3.5 to 5 mm long. This species is known to hybridize with ragged fringed orchid and small purple fringed orchid (*Platanthera psycodes*).

Preferred Habitat: Eastern prairie fringed orchid grows in fens, along limestone shorelines, and in wet mesic prairie and old field habitat.

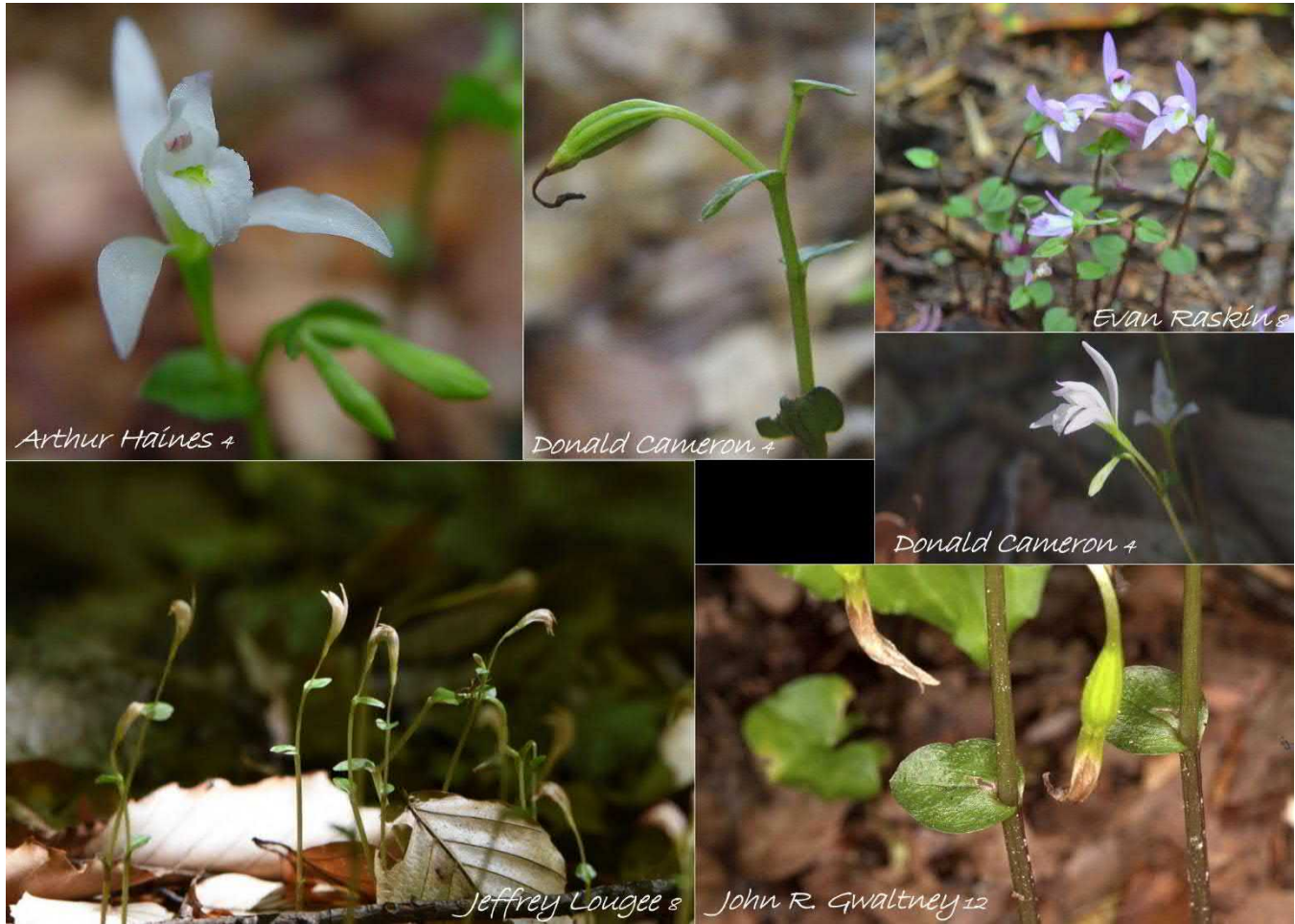
Identification Period: Flowering occurs from late June to late July, though the plant can remain dormant in the soil for several years. Flowers are necessary for identification.

NHIC Record of County Occurrences: Bruce, Essex, Grey, Kawartha Lakes, Lambton, Leeds & Grenville, Lennox & Addington, Ottawa, Simcoe, Stormont/Dundas/Glengarry, York. (Chatham-Kent, Durham, Hamilton, Hastings, Huron, Middlesex, Northumberland, Oxford).



Triphora trianthophoros ssp. *trianthophoros*

Nodding pogonia
Orchid Family



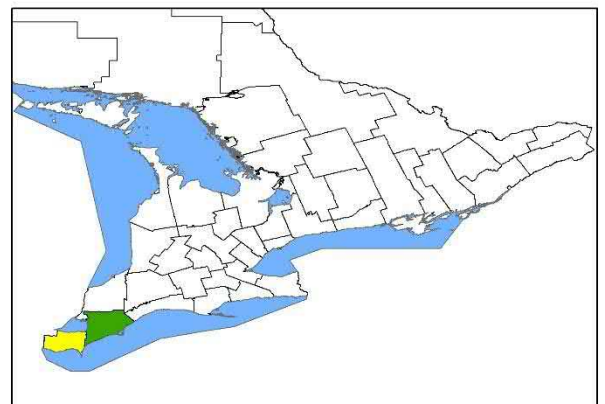
MNRF: Endangered
COSEWIC: Endangered

Description: The delicate purplish-green stems of nodding pogonia range from 7 to 30 cm in height, though usually no taller than 20cm. The stems are arched when young, straightening as they mature. The stalkless leaves are egg-shaped and grow alternately along the stem. Often the plant produces 3 flowers that are subtended by a leafy bract, but there may be as few as 1 or as many as 7 flowers. Each flower consists of 3 sepals, 2 petals, and a lip. The sepals and petals are white and similar in appearance (sometimes magenta). The white lip has 3 prominent, green ridges on the upper surface extending down toward the throat. Nodding pogonia, with its small size, leaf arrangement, and flower make it unlikely to be confused with other species.

Preferred Habitat: Nodding pogonia grows in rich, moist deciduous beech-maple forests with deep leaf litter and a well-developed tree canopy. It often grows on or near rotting logs.

Identification Period: In Ontario, flowers have been observed as early as July 30 and as late as September 27, though the plant can remain dormant in the soil for an unknown length of time. The species should be identified when flowers are present.

NHIC Record of County Occurrences: Chatham-Kent. (Essex).



Potamogeton hillii

Hill's pondweed
Pondweed Family



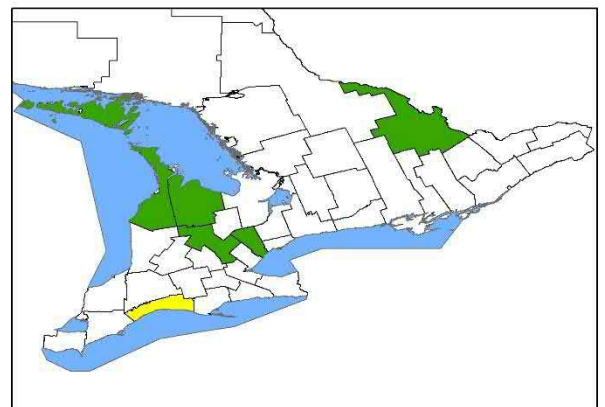
MNRF: Special Concern
COSEWIC: Special Concern

Description: Hill's pondweed is a slender, submerged aquatic plant, green to olive-green in colour, with stems generally 30 to 60 cm long. The leaves are linear, 2 to 6 cm long and usually 1 to 2.5 mm wide, with 3 longitudinal veins (rarely 5) and usually bristle tipped; it often does not have glands at the leaf base. The mid-vein of each leaf is narrowly bordered by 1 to 2 cellular rows (lacunae). Flowers are borne in small, nearly globular spikes 4 to 7 mm long, which are held just above the water surface on short, curved stalks (peduncles) 1 to 1.5 cm long. The fruits are 2 to 4 mm long with 3 low ridges or keels and are usually present in August and September. This species has similarities to other linear-leaved pondweeds (e.g. *P. foliosus*) but can often be distinguished by the bristle-tipped, 3-veined leaves with the mid-vein bordered by lacunae, and an absence of leaf glands. Any deviation from these characteristics would suggest the inflorescence should be examined to confirm identification (i.e. look for short, curved peduncles and 3 low ridges on fruit).

Preferred Habitat: Hill's pondweed occurs in cold, clear, alkaline water. It can be found in channels in open wetlands; in small slow-moving streams, ponds, and beaver ponds with muddy substrate; around springs and small inlets in ponds or marshes; and where water collects, such as above beaver dams and road culverts.

Identification Period: In fruit from August-September. This species can be identified without the reproductive parts, though vegetative variability may trigger the need to examine reproductive features.

NHIC Record of County Occurrences: Bruce, Grey, Manitoulin, Peel, Renfrew, Wellington. (Elgin).



Potamogeton x ogdenii

Ogden's pondweed
Pondweed Family



MNRF: Endangered
COSEWIC: Endangered

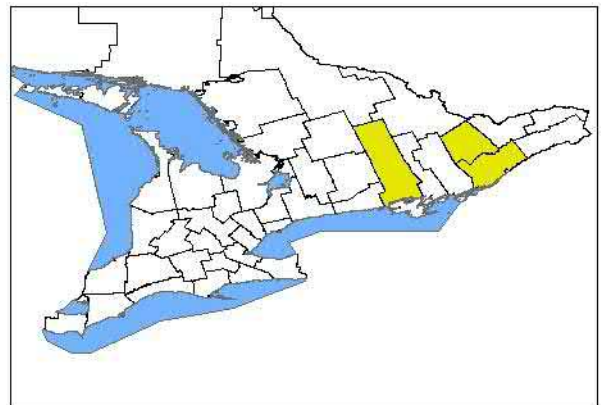
Description: Ogden's pondweed is a submerged aquatic plant with narrow branching stems that are somewhat flattened and rigid. The leaves are green to greenish-brown, 5 to 7 cm long and 3 to 9 veined. Leaves are 1.2 to 2.9 mm wide often with 2 to 4 cellular rows (lacunae) on each side of the leaf midrib (sometimes absent); its apex is sharp-tipped (infrequently bristle-tipped). The leaf-like stipules are brown and slightly fibrous with a partially shredded tip. Fruits grow on typically erect stalks 10 to 30 mm long in terminal (occasionally axillary) cylindrical spikes 5 to 11 mm long. Each fruit is dark green and 2.2 to 3 mm wide.

This taxon was formerly treated as a distinct species but further research shows that it is a hybrid of *P. hillii* and *P. zosteriformis*. Although hybrid species are not typically afforded federal or legal protection, it will remain a legally listed endangered species in Ontario and Canada until reassessment by COSSARO and COSEWIC (Oldham 2015, pers. comm.). The distinguishing features of this species are the presence of glands at the base of most leaves, fibrous stipules, sharp-tipped (infrequently bristle-tipped) leaves that most often have 5 to 9 veins, and 2 to 4 rows of lacunae (rarely absent); inflorescences are 5 to 11 mm long.

Preferred Habitat: Ogden's pondweed is found in clear, slow-moving streams, beaver ponds, and lakes; habitat in Ontario is associated with marble bedrock.

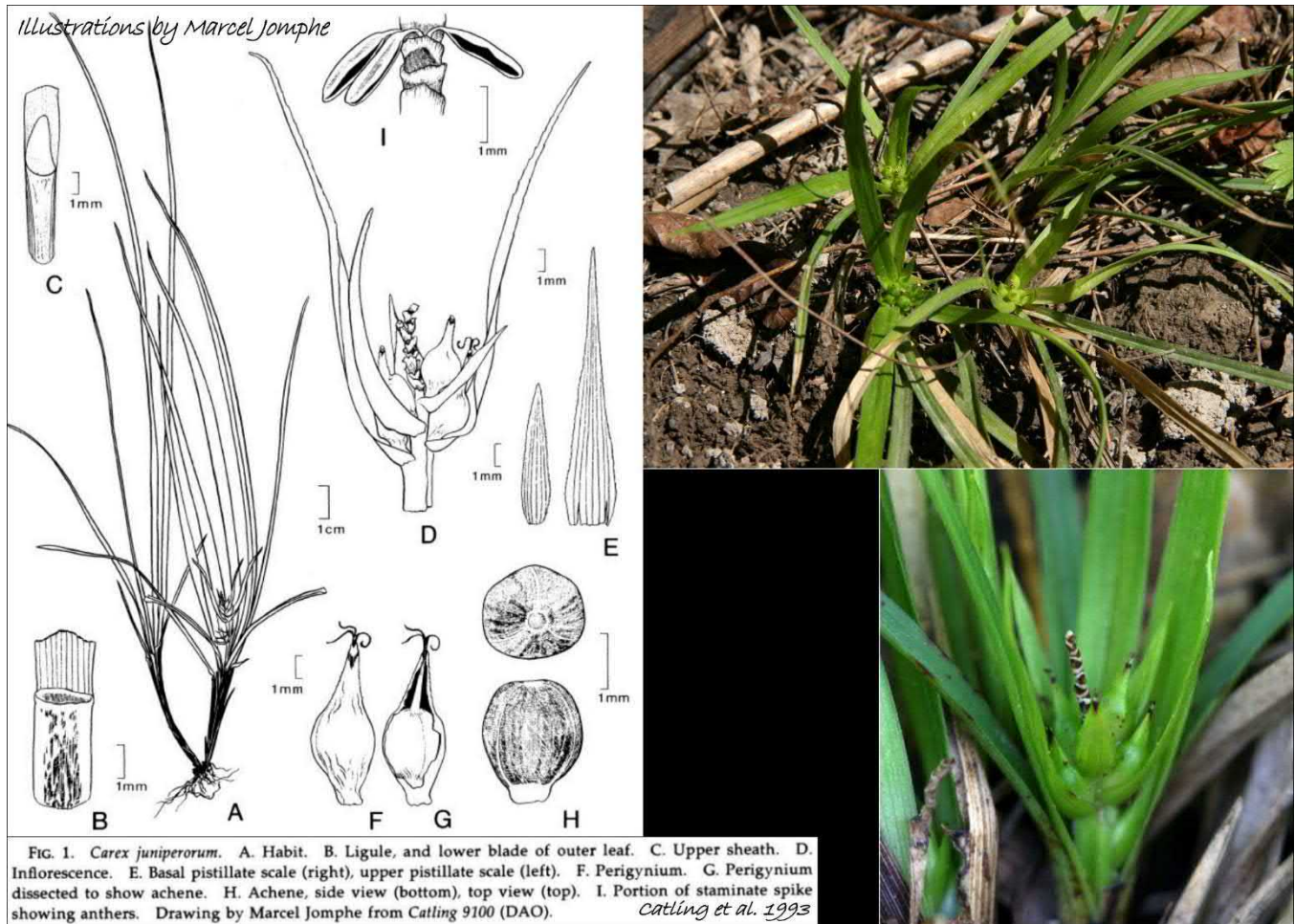
Identification Period: This species is in fruit mid-summer (though fruit may be absent some years); it should be identified while fruit are present.

NHIC Record of County Occurrences: (Hastings, Lanark, Leeds & Grenville). Only three Ontario records are known, and the species has not been relocated at historic sites despite searches.



Carex juniperorum

Juniper sedge
Sedge Family



MNRF: Endangered
COSEWIC: Endangered

Description: This sedge belongs to the Phyllostachyae section, which are characterized by having leaf-like pistillate scales, few-flowered solitary spikes near the base of the plant, and peduncles which are expanded at their tip. The leaves of juniper sedge are longer than the culm (up to 30 cm long) and have reddish brown basal sheaths. The culms (stems) of this plant are relatively short – usually 2 to 6.5 cm high. The pistillate scales are 1.2 to 2.5 mm wide at their base – narrow enough that they do not conceal their respective perigynia. The perigynium beak is 1.4 to 2.1 mm long. Staminate spikes usually have between 5 and 25 male flowers. The mature achenes are dark brown. While this sedge may share similarities with many other sedges, its habitat, short stem height, and leaf-like pistillate scales limit the possibilities. Species most similar are *Carex willdenowii*, *C. jamesii*, and *C. backii*; the former two have stems 8 to 30 cm high, while the latter (*C. backii*) has wider pistillate scales (2.4 to 4.5 mm), which are much wider than the perigynia and essentially concealing them.

Preferred Habitat: In Ontario, occurs primarily in alvar habitat but also documented in oak savannah communities.

Identification Period: This sedge fruits in early May to late June and is identifiable during this period.

NHIC Record of County Occurrences: Hastings, Haldimand.



Carex lupuliformis

False hop sedge
Sedge Family



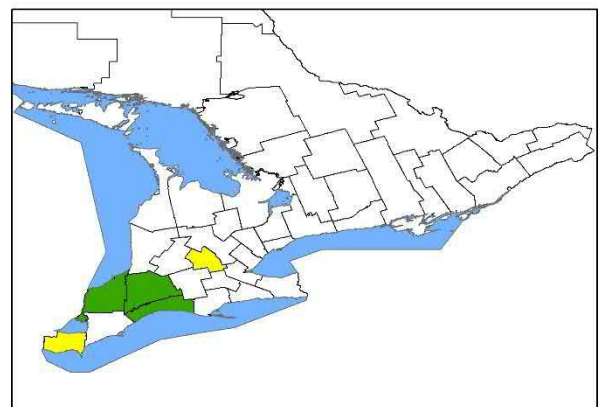
MNRF: Endangered
COSEWIC: Endangered

Description: False hop sedge is a member of the Lupulinae group. It grows in tufts, typically consisting of 5 to 30 erect stems arising from a dark, scaly rhizome and can reach a height of 50 to 130 cm. The inflorescence is 6 to 40 cm long and consists of male (staminate) and female (pistillate) flowers. The one or two staminate spikes per stem are on a 1 to 12 cm stalk. The achenes (seeds within the encasing perigynia) have concave faces and are triangular with prominent knobs on each of the three corners. False hop sedge and hop sedge (*Carex lupulina*) share many visual similarities and can occupy the same habitat types. Two main characteristics used to distinguish fruiting specimens of false hop sedge are the prominent knobs on the angles of its achenes, and the mature spikes, which are often longer and somewhat loosely flowered with more widely spreading perigynia.

Preferred Habitat: The Ontario populations of false hop sedge are found primarily in vernal pools that flood in the spring, small shallow ponds, and in marshes that are isolated in swamps. The species is usually found in areas with little competition from herbaceous vegetation where soil generally consists of clay loam.

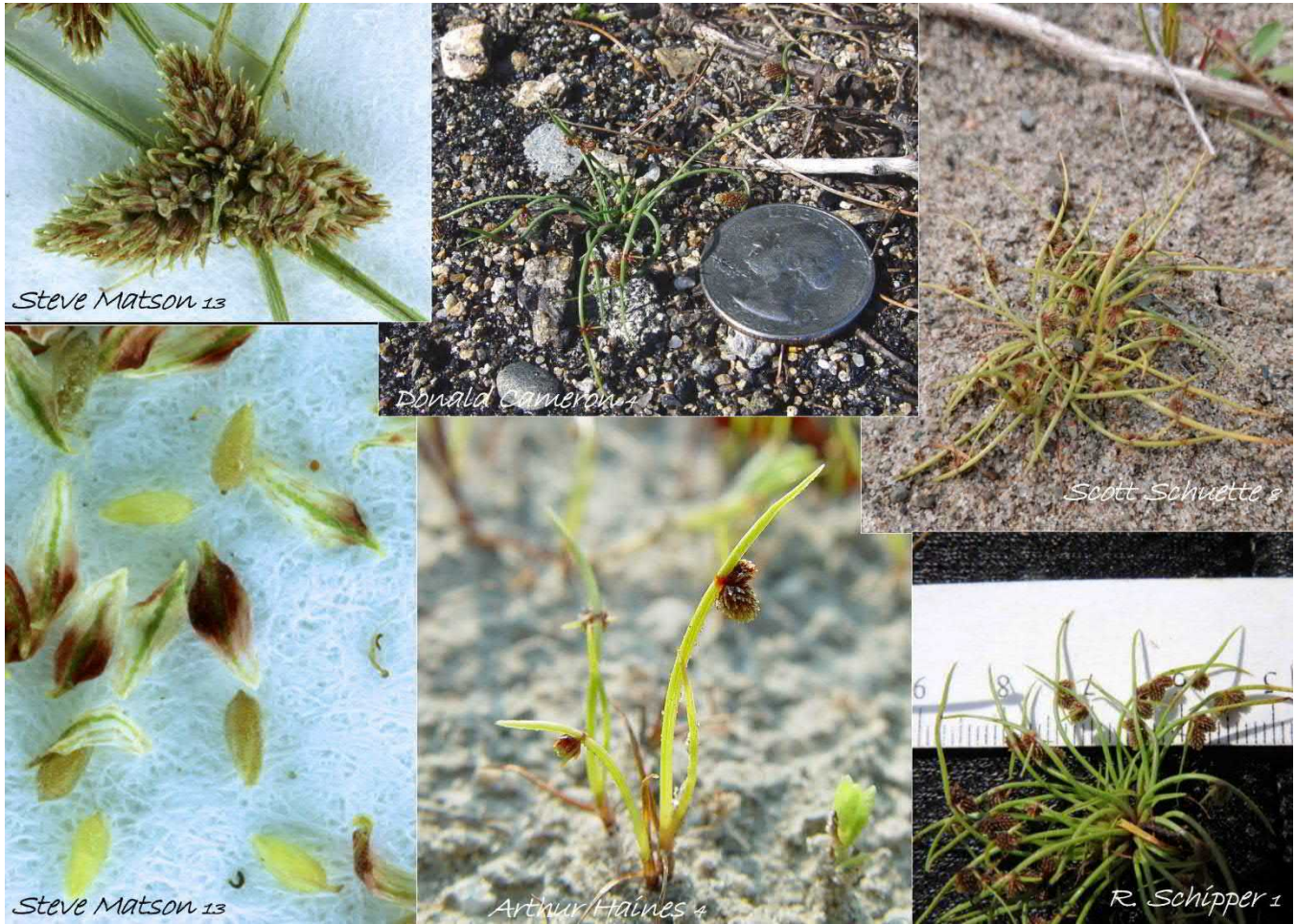
Identification Period: Although the inflorescence of this species may have a subtly distinct appearance, the achenes are necessary for positive identification; these are present from July to October.

NHIC Record of County Occurrences: Elgin, Lambton, Middlesex. (Essex, Waterloo).



Cyperus subsquarrosus

Small-flowered lipocarpha
Sedge Family



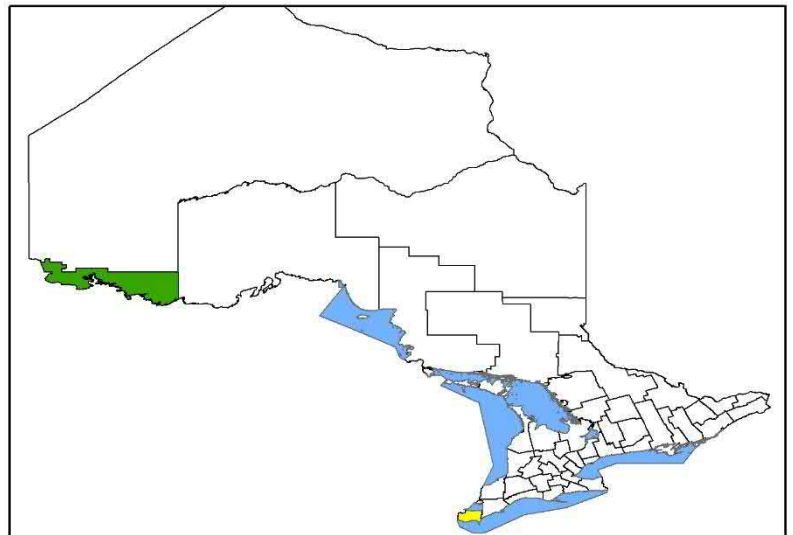
MNRF: Threatened
COSEWIC: Endangered

Description: Also known as *Lipocarpha micrantha*, this species is a very small annual. At flowering, the stems and leaves are often less than 10cm tall and are ≤ 0.5 mm wide. The flowers are arranged in dense oval spikes 2 to 6 mm long. There are 1 to 3 spikes on each stem, which are subtended by 1 to 3 leafy bracts. Each spike has numerous inconspicuous flowers. The reproductive structures are concealed by 1 to 2 scales that are 1 to 2 mm long and spine-tipped. Each spikelet or cluster of spikelets occur on one side of the stem at the base of a leafy bract.

Preferred Habitat: This species grows on sandy beaches or sandy swales that are subject to seasonal flooding but are protected from high waves or strong currents. It is usually found in areas of very sparse vegetation, and apparently does not tolerate competition from other plant species.

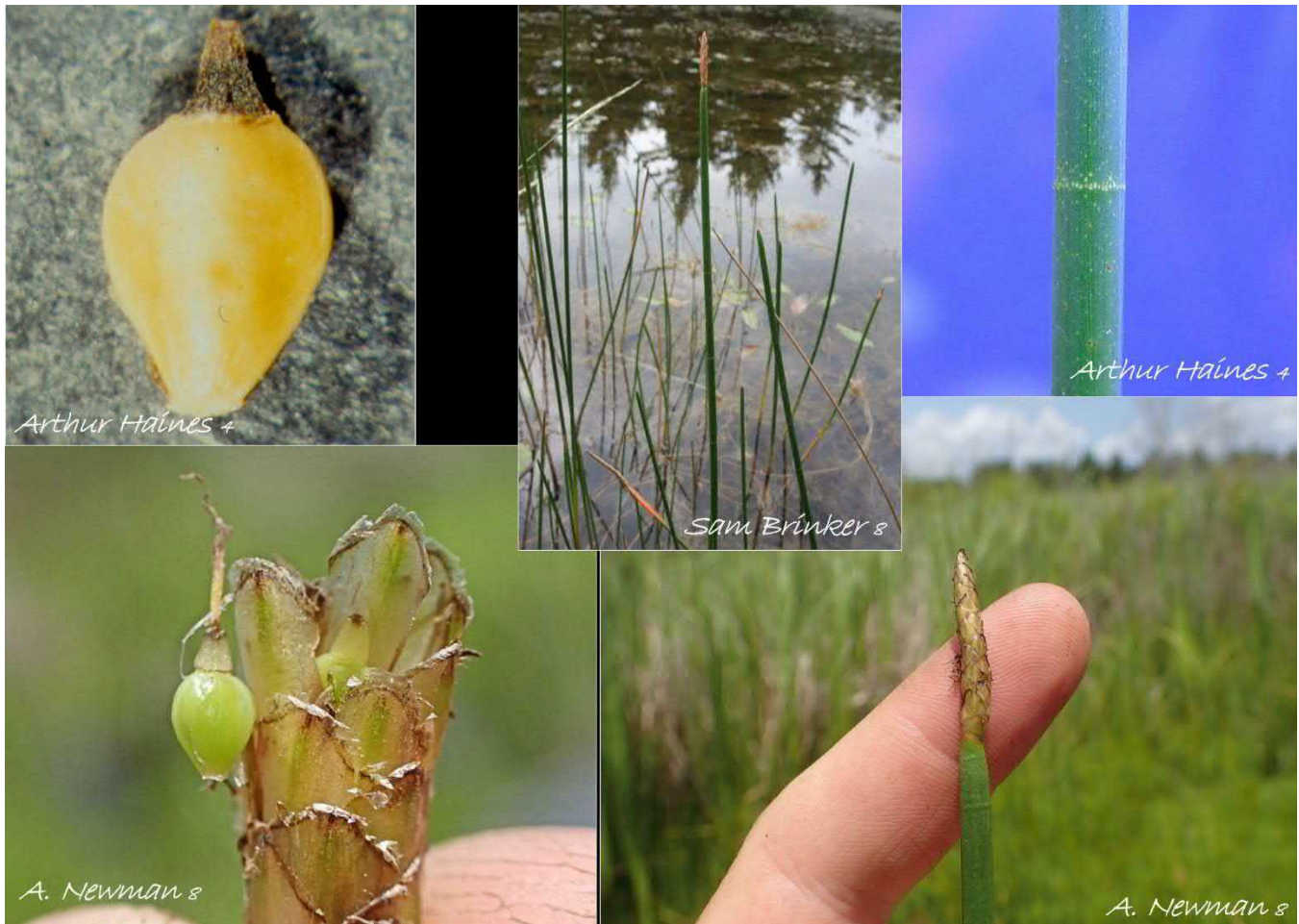
Identification Period: This species is in fruit from August to September; surveys should be conducted during this period. Note that this species may be absent, or the number of plants greatly reduced in some years, becoming abundant only in low water years following one to several years of inundation. The seeds of this species can remain dormant and undetected in the soil for multiple years if water levels are high.

NHIC Record of County Occurrences: Rainy River. (Essex).



Eleocharis equisetoides

Horsetail spikerush
Sedge Family



MNRF: Endangered
COSEWIC: Endangered

Description: Horsetail spikerush is a perennial with tall, erect, unbranched culms (stems) that are round in cross-section, growing 50 to 100 cm in height and 3 to 5 mm in diameter. The mature spikelet (fruiting body atop the culm) is usually 15 to 40 mm in length and 4 to 5 mm wide, covered by ≥ 30 pale brown / yellowish scales. Horsetail spikerush can be distinguished from other spikerushes by its relatively narrow spikelet that's usually no wider than the main portion of the culm (contrast with mature spikelets that are wider than the culm) and the round, hollow stem with transverse septa (cross-partitioning membranes) inside the culm. Each septum can be seen from the outer surface as a narrow, light-coloured band (top-right photo).

Preferred Habitat: This species is only known from Long Point, Ontario. Here, it grows in shallow water along the edge of a pond in sandy organic muck. Horsetail spike-rush is considered an aquatic species, growing in water between 4 and 35 cm deep. Presently, the Ontario population occurs at only a single site occupying an area only a few square meters in extent.

Identification Period: July to October. Unlike most *Eleocharis* species, mature achenes are not critical for identification in Ontario.

NHIC Record of County Occurrences: Norfolk.



Eleocharis geniculata

Bent spikerush
Sedge Family



MNRF: Endangered
COSEWIC: Endangered

Description: Bent spikerush is a small annual with densely tufted, green and slightly waxy-looking culms (stems) 2 to 20 cm long and 0.2 to 0.5 mm in diameter. The base of the culms are wrapped with a sheath, which remains relatively firm and tight against the culm throughout the growing season. The single spikelet is usually 3 to 7 mm long and 3 to 4 mm wide (much wider than culm) with a rounded or egg-shaped appearance. The scales of the spikelet are rusty or pale brown and about 1.5 to 2 mm long. The fruit is a smooth, black, glossy, achene about 1 mm long and broadly obovoid (widest at the top). The achene is 2-sided and surrounded by 6 to 7 red-brown bristles. The top of each achene is capped with a distinct, pale green structure known as a tubercle. The combination of short, thin stems supporting orbicular / ovoid spikelets containing shiny black achenes and annual growth habit will distinguish this species from other similar species.

Preferred Habitat: In Ontario it is found on muddy or silty soils at the edge of ephemeral ponds, beaches and wet meadows that are flooded early in the year but later dry out. It appears in places where other vegetation is sparse or absent so that competition from other species is low.

Identification Period: Achenes mature in late summer / early autumn, usually around the first week of September in Ontario. Identification of this species is generally restricted to the month of September.

NHIC Record of County Occurrences: Chatham-Kent, Norfolk.



Trichophorum planifolium

Bashful clubrush
Sedge Family



MNRF: Endangered
COSEWIC: Endangered

Description: Bashful clubrush is a perennial sedge with erect, triangular culms and grass-like leaves that form dense tufts, 10 to 40 cm tall. The length of the leaves either equal or exceed the length of the culms (stems). Usually by July, however, the leaves and culms become flattened and matted on the forest floor. Each tuft produces flowering spikes in the spring before the forest canopy leafs out. Each spike has 3 to 8 flowers, and each flower has a scale that is orange-brown to dark brown and has a small tooth at its summit (i.e. mucronate). Of the three other clubrush species known from Ontario, Clinton's clubrush (*Trichophorum clintonii*) is most likely to be confused with bashful clubrush as it can have overlapping habitat preferences. Clinton's clubrush, in contrast, will have scales with an obtuse or rounded tip (not mucronate) and leaves that are equal to or shorter than the culms.

Preferred Habitat: Bashful clubrush can be found in open-canopied deciduous and mixed forest (often with oak component) with few shrubs in the understory and good drainage.

Identification Period: This species typically matures between June and July; surveys should be conducted during that time.

NHIC Record of County Occurrences: Hamilton, Toronto.

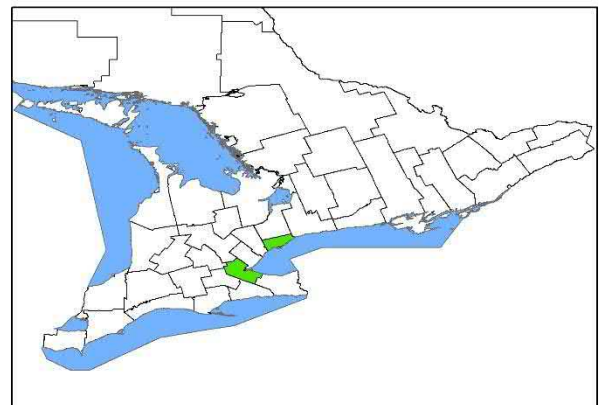


Table 1 – Species at Risk Within Ontario Counties

(* Historical record)

County	Species
Algoma	* Butternut (<i>Juglans cinerea</i>)
Brant	American columbo (<i>Frasera carolinensis</i>) American chestnut (<i>Castanea dentata</i>) Bird's-foot violet (<i>Viola pedata</i> var. <i>pedata</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Common hop tree (<i>Ptelea trifoliata</i>) Downy yellow false foxglove (<i>Aureolaria virginica</i>) Green dragon (<i>Arisaema dracontium</i>) * American ginseng (<i>Panax quinquefolius</i>) * Eastern flowering dogwood (<i>Cornus florida</i>) * Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) * Gattinger's false foxglove (<i>Agalinis gattingeri</i>) * Smooth yellow false foxglove (<i>Aureolaria flava</i>)
Bruce	American ginseng (<i>Panax quinquefolius</i>) American hart's-tongue fern (<i>Asplenium scolopendrium</i> var. <i>americanum</i>) Dwarf lake iris (<i>Iris lacustris</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) Gattinger's false foxglove (<i>Agalinis gattingeri</i>) Hill's pondweed (<i>Potamogeton hillii</i>) Hill's thistle (<i>Cirsium pumilum</i> var. <i>hillii</i>) Houghton's goldenrod (<i>Solidago houghtonii</i>) Lakeside daisy (<i>Tetranneuris herbacea</i>) Pitcher's thistle (<i>Cirsium pitcheri</i>) Tuberous Indian-plantain (<i>Arnoglossum plantagineum</i>) * Butternut (<i>Juglans cinerea</i>) * Small white lady's slipper (<i>Cypripedium candidum</i>)
Chatham-Kent	American chestnut (<i>Castanea dentata</i>) Bent spikerush (<i>Eleocharis geniculata</i>) Blue ash (<i>Fraxinus quadrangulata</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Climbing prairie rose (<i>Rosa setigera</i>) Common hop tree (<i>Ptelea trifoliata</i>) Dense blazing-star (<i>Liatris spicata</i> var. <i>spicata</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Goldenseal (<i>Hydrastis canadensis</i>) Green dragon (<i>Arisaema dracontium</i>) Kentucky coffee-tree (<i>Gymnocladus dioica</i>) Nodding pogonia (<i>Triphora trianthophoros</i> ssp. <i>trianthophoros</i>) Purple twayblade (<i>Liparis liliifolia</i>) Red mulberry (<i>Morus rubra</i>) Shumard oak (<i>Quercus shumardii</i>) Swamp rose-mallow (<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>) Willow-leaved aster (<i>Symphotrichum praealtum</i> var. <i>praealtum</i>) * American ginseng (<i>Panax quinquefolius</i>) * American water-willow (<i>Justicia americana</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Illinois tick-trefoil (<i>Desmodium illinoense</i>) * Riddell's goldenrod (<i>Solidago riddellii</i>) * Small white lady's slipper (<i>Cypripedium candidum</i>)
Chochrane	No records
Dufferin	American hart's-tongue fern (<i>Asplenium scolopendrium</i> var. <i>americanum</i>) Butternut (<i>Juglans cinerea</i>) * American ginseng (<i>Panax quinquefolius</i>)
Durham	American ginseng (<i>Panax quinquefolius</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Red mulberry (<i>Morus rubra</i>)

Elgin	<p>American chestnut (<i>Castanea dentata</i>) American ginseng (<i>Panax quinquefolius</i>) Bent trillium (<i>Trillium flexipes</i>) Blue ash (<i>Fraxinus quadrangulata</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Common hop tree (<i>Ptelea trifoliata</i>) Crooked-stem aster (<i>Symphyotrichum prenanthoides</i>) Dense blazing-star (<i>Liatris spicata</i> var. <i>spicata</i>) Eastern false rue-anemone (<i>Enemion biternatum</i>) Eastern flowering dogwood (<i>Cornus florida</i>) False hop sedge (<i>Carex lupuliformis</i>) Green dragon (<i>Arisaema dracontium</i>) Purple twayblade (<i>Liparis liliifolia</i>) Riddell's goldenrod (<i>Solidago riddellii</i>) Shumard oak (<i>Quercus shumardii</i>) Swamp rose-mallow (<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>) White colicroot (<i>Aletris farinosa</i>) * American water-willow (<i>Justicia americana</i>) * Eastern prickly-pear cactus (<i>Opuntia cespitosa</i>) * Hill's pondweed (<i>Potamogeton hillii</i>) * Small whorled pogonia (<i>Isotria medeoloides</i>) * Spring blue-eyed Mary (<i>Collinsia verna</i>)</p>
Essex	<p>American chestnut (<i>Castanea dentata</i>) American ginseng (<i>Panax quinquefolius</i>) American water-willow (<i>Justicia americana</i>) Blue ash (<i>Fraxinus quadrangulata</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Climbing prairie rose (<i>Rosa setigera</i>) Common hop tree (<i>Ptelea trifoliata</i>) Dense blazing-star (<i>Liatris spicata</i> var. <i>spicata</i>) Dwarf hackberry (<i>Celtis tenuifolia</i>) Eastern camas (<i>Camassia scilloides</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) Eastern prickly-pear cactus (<i>Opuntia cespitosa</i>) False hop sedge (<i>Carex lupuliformis</i>) Goldenseal (<i>Hydrastis canadensis</i>) Green dragon (<i>Arisaema dracontium</i>) Kentucky coffee-tree (<i>Gymnocladus dioicus</i>) Pink milkwort (<i>Polygala incarnata</i>) Purple twayblade (<i>Liparis liliifolia</i>) Red mulberry (<i>Morus rubra</i>) Riddell's goldenrod (<i>Solidago riddellii</i>) Round-leaved carrion-flower (<i>Smilax rotundifolia</i>) Scarlet ammannia (<i>Ammannia robusta</i>) Shumard oak (<i>Quercus shumardii</i>) Skinner's false foxglove (<i>Agalinis skinneriana</i>) Slender bush-clover (<i>Lespedeza virginica</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>) Spotted wintergreen (<i>Chimaphila maculata</i>) Swamp rose-mallow (<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>) White colicroot (<i>Aletris farinosa</i>) Willow-leaved aster (<i>Symphyotrichum praealtum</i> var. <i>praealtum</i>) * Bent trillium (<i>Trillium flexipes</i>) * Dwarf lake iris (<i>Iris lacustris</i>) * Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) * Heart-leaved plantain (<i>Plantago cordata</i>) * Nodding pogonia (<i>Triphora trianthophoros</i> ssp. <i>trianthophoros</i>) * Small-flowered lipocarpa (<i>Cyperus subsquarrosus</i>) * White prairie gentian (<i>Gentiana alba</i>)</p>

Frontenac	American ginseng (<i>Panax quinquefolius</i>) Blunt-lobed woodsia (<i>Woodsia obtusa</i> ssp. <i>obtusa</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>)
Grey	American ginseng (<i>Panax quinquefolius</i>) American hart's-tongue fern (<i>Asplenium scolopendrium</i> var. <i>americanum</i>) Butternut (<i>Juglans cinerea</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) Hill's pondweed (<i>Potamogeton hillii</i>) Tuberous Indian-plantain (<i>Arnoglossum plantagineum</i>)
Haldimand	American columbo (<i>Frasera caroliniensis</i>) American chestnut (<i>Castanea dentata</i>) American ginseng (<i>Panax quinquefolius</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Green dragon (<i>Arisaema dracontium</i>) Juniper sedge (<i>Carex juniperorum</i>) Virginia mallow (<i>Sida hermaphrodita</i>) * Butternut (<i>Juglans cinerea</i>) * Smooth yellow false foxglove (<i>Aureolaria flava</i>)
Haliburton	American ginseng (<i>Panax quinquefolius</i>) Engelmann's quillwort (<i>Isoetes engelmannii</i>)
Halton	American columbo (<i>Frasera caroliniensis</i>) American ginseng (<i>Panax quinquefolius</i>) American hart's-tongue fern (<i>Asplenium scolopendrium</i> var. <i>americanum</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Dense blazing-star (<i>Liatris spicata</i> var. <i>spicata</i>) Downy yellow false foxglove (<i>Aureolaria virginica</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) Hoary mountain-mint (<i>Pycnanthemum incanum</i> var. <i>incanum</i>) Red mulberry (<i>Morus rubra</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>)
Hamilton	American columbo (<i>Frasera caroliniensis</i>) American ginseng (<i>Panax quinquefolius</i>) Bashful clubbrush (<i>Trichophorum planifolium</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Downy yellow false foxglove (<i>Aureolaria virginica</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) Green dragon (<i>Arisaema dracontium</i>) Hoary mountain-mint (<i>Pycnanthemum incanum</i> var. <i>incanum</i>) Red mulberry (<i>Morus rubra</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>) White wood aster (<i>Eurybia divaricata</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Spotted wintergreen (<i>Chimaphila maculata</i>)
Hastings	Butternut (<i>Juglans cinerea</i>) Dwarf hackberry (<i>Celtis tenuifolia</i>) Juniper sedge (<i>Carex juniperorum</i>) Small white lady's slipper (<i>Cypripedium candidum</i>) * American ginseng (<i>Panax quinquefolius</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Four-leaved milkweed (<i>Asclepias quadrifolia</i>) * Ogden's pondweed (<i>Potamogeton x ogdenii</i>)
Huron	Goldenseal (<i>Hydrastis canadensis</i>) Green dragon (<i>Arisaema dracontium</i>) Tuberous Indian-plantain (<i>Arnoglossum plantagineum</i>) Wood poppy (<i>Stylophorum diphyllum</i>) * American ginseng (<i>Panax quinquefolius</i>)

Huron (cont'd)	* Butternut (<i>Juglans cinerea</i>) * Dwarf lake iris (<i>Iris lacustris</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Pitcher's thistle (<i>Cirsium pitcheri</i>)
Kawartha Lakes	American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)
Kenora	Pale showy goldenrod (<i>Solidago pallida</i>) Western silvery aster (<i>Symphotrichum sericeum</i>)
Lambton	American bluehearts (<i>Buchnera americana</i>) American ginseng (<i>Panax quinquefolius</i>) Blue ash (<i>Fraxinus quadrangulata</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Climbing prairie rose (<i>Rosa setigera</i>) Dense blazing-star (<i>Liatris spicata</i> var. <i>spicata</i>) Dwarf hackberry (<i>Celtis tenuifolia</i>) Eastern false rue-anemone (<i>Enemion biternatum</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) False hop sedge (<i>Carex lupuliformis</i>) Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) Gattinger's false foxglove (<i>Agalinis gattingeri</i>) Goldenseal (<i>Hydrastis canadensis</i>) Green dragon (<i>Arisaema dracontium</i>) Heart-leaved plantain (<i>Plantago cordata</i>) Kentucky coffee-tree (<i>Gymnocladus dioica</i>) Pink milkwort (<i>Polygala incarnata</i>) Pitcher's thistle (<i>Cirsium pitcheri</i>) Riddell's goldenrod (<i>Solidago riddellii</i>) Shumard oak (<i>Quercus shumardii</i>) Skinner's false foxglove (<i>Agalinis skinneriana</i>) Small white lady's slipper (<i>Cypripedium candidum</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>) Stiff-leaved showy goldenrod (<i>Solidago rigidiuscula</i>) Swamp rose-mallow (<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>) Tuberous Indian-plantain (<i>Arnoglossum plantagineum</i>) White colicroot (<i>Aletris farinosa</i>) White prairie gentian (<i>Gentiana alba</i>) Willow-leaved aster (<i>Symphotrichum praealtum</i> var. <i>praealtum</i>) * American columbo (<i>Frasera caroliniensis</i>) * American chestnut (<i>Castanea dentata</i>) * Bird's-foot violet (<i>Viola pedata</i> var. <i>pedata</i>) * Cucumber tree (<i>Magnolia acuminata</i>)
Lanark	American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) * Ogden's pondweed (<i>Potamogeton x ogdenii</i>)
Leeds & Grenville	American ginseng (<i>Panax quinquefolius</i>) American water-willow (<i>Justicia americana</i>) Blunt-lobed woodsia (<i>Woodsia obtusa</i> ssp. <i>obtusa</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Deerberry (<i>Vaccinium stamineum</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Ogden's pondweed (<i>Potamogeton x ogdenii</i>)
Lennox & Addington	Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) Lowland toothcup (<i>Rotala ramosior</i>) * Butternut (<i>Juglans cinerea</i>)
Manitoulin	Butternut (<i>Juglans cinerea</i>) Dwarf lake iris (<i>Iris lacustris</i>) Hill's pondweed (<i>Potamogeton hillii</i>) Hill's thistle (<i>Cirsium pumilum</i> var. <i>hillii</i>)

Manitoulin (cont'd)	Houghton's goldenrod (<i>Solidago houghtonii</i>) Lakeside daisy (<i>Tetranneuris herbacea</i>) Pitcher's thistle (<i>Cirsium pitcheri</i>)
Middlesex	American chestnut (<i>Castanea dentata</i>) Bent trillium (<i>Trillium flexipes</i>) Blue ash (<i>Fraxinus quadrangulata</i>) Butternut (<i>Juglans cinerea</i>) Climbing prairie rose (<i>Rosa setigera</i>) Crooked-stem aster (<i>Symphyotrichum prenanthoides</i>) Dense blazing-star (<i>Liatris spicata</i> var. <i>spicata</i>) Dwarf hackberry (<i>Celtis tenuifolia</i>) Eastern false rue-anemone (<i>Enemion biternatum</i>) Eastern flowering dogwood (<i>Cornus florida</i>) False hop sedge (<i>Carex lupuliformis</i>) Gattinger's false foxglove (<i>Agalinis gattingeri</i>) Goldenseal (<i>Hydrastis canadensis</i>) Green dragon (<i>Arisaema dracontium</i>) Heart-leaved plantain (<i>Plantago cordata</i>) Riddell's goldenrod (<i>Solidago riddellii</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>) Tuberous Indian-plantain (<i>Arnoglossum plantagineum</i>) Willow-leaved aster (<i>Symphyotrichum praealtum</i> var. <i>praealtum</i>) Wood poppy (<i>Stylophorum diphyllum</i>) * American ginseng (<i>Panax quinquefolius</i>) * Broad beech fern (<i>Phegopteris hexagonoptera</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) * Illinois tick-trefoil (<i>Desmodium illinoense</i>) * Large whorled pogonia (<i>Isotria verticillata</i>) * Purple twayblade (<i>Liparis liliifolia</i>) * Red mulberry (<i>Morus rubra</i>) * Spring blue-eyed Mary (<i>Collinsia verna</i>)
Muskoka	Branched bartonia (<i>Bartonia paniculata</i> ssp. <i>paniculata</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Engelmann's quillwort (<i>Isoetes engelmannii</i>) * American ginseng (<i>Panax quinquefolius</i>) * Spotted wintergreen (<i>Chimaphila maculata</i>)
Niagara	American columbo (<i>Frasera caroliniensis</i>) American chestnut (<i>Castanea dentata</i>) American water-willow (<i>Justicia americana</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Cherry birch (<i>Betula lenta</i>) Common hop tree (<i>Ptelea trifoliata</i>) Cucumber tree (<i>Magnolia acuminata</i>) Deerberry (<i>Vaccinium stamineum</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) Green dragon (<i>Arisaema dracontium</i>) Red mulberry (<i>Morus rubra</i>) Round-leaved greenbriar (<i>Smilax rotundifolia</i>) Shumard oak (<i>Quercus shumardii</i>) Spotted wintergreen (<i>Chimaphila maculata</i>) Swamp rose-mallow (<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>) Virginia mallow (<i>Sida hermaphrodita</i>) White wood aster (<i>Eurybia divaricata</i>) Willow-leaved aster (<i>Symphyotrichum praealtum</i> var. <i>praealtum</i>) * American ginseng (<i>Panax quinquefolius</i>) * American hart's-tongue fern (<i>Asplenium scolopendrium</i> var. <i>americanum</i>) * Bent trillium (<i>Trillium flexipes</i>) * Bird's-foot violet (<i>Viola pedata</i> var. <i>pedata</i>) * Crooked-stem aster (<i>Symphyotrichum prenanthoides</i>)

Niagara (cont'd)	<ul style="list-style-type: none"> * Downy yellow false foxglove (<i>Aureolaria virginica</i>) * Four-leaved milkweed (<i>Asclepias quadrifolia</i>) * Goldenseal (<i>Hydrastis canadensis</i>) * Pink milkwort (<i>Polygala incarnata</i>) * Purple twayblade (<i>Liparis liliifolia</i>) * Smooth yellow false foxglove (<i>Aureolaria flava</i>)
Nipissing	No records
Norfolk	<ul style="list-style-type: none"> American chestnut (<i>Castanea dentata</i>) American water-willow (<i>Justicia americana</i>) Bent spikerush (<i>Eleocharis geniculata</i>) Bird's-foot violet (<i>Viola pedata</i> var. <i>pedata</i>) Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) Common hop tree (<i>Ptelea trifoliata</i>) Crooked-stem aster (<i>Symphyotrichum prenanthoides</i>) Cucumber tree (<i>Magnolia acuminata</i>) Downy yellow false foxglove (<i>Aureolaria virginica</i>) Eastern flowering dogwood (<i>Cornus florida</i>) Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) Green dragon (<i>Arisaema dracontium</i>) Horsetail spikerush (<i>Eleocharis equisetoides</i>) Round-leaved greenbriar (<i>Smilax rotundifolia</i>) Small whorled pogonia (<i>Isotria medeoloides</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>) Spotted wintergreen (<i>Chimaphila maculata</i>) Swamp rose-mallow (<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>) Virginia goat's-rue (<i>Tephrosia virginiana</i>) * White colicroot (<i>Aletris farinosa</i>) * Eastern prickly-pear cactus (<i>Opuntia cespitosa</i>) * Large whorled pogonia (<i>Isotria verticillata</i>) * Lowland toothcup (<i>Rotala ramosior</i>) * Small white lady's slipper (<i>Cypripedium candidum</i>)
Northumberland	<ul style="list-style-type: none"> American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) * Broad beech fern (<i>Phegopteris hexagonoptera</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * White prairie gentian (<i>Gentiana alba</i>)
Ottawa	<ul style="list-style-type: none"> American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)
Oxford	<ul style="list-style-type: none"> American chestnut (<i>Castanea dentata</i>) American ginseng (<i>Panax quinquefolius</i>) Crooked-stem aster (<i>Symphyotrichum prenanthoides</i>) Green dragon (<i>Arisaema dracontium</i>) * American columbo (<i>Frasera caroliniensis</i>) * Eastern flowering dogwood (<i>Cornus florida</i>) * Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) * Kentucky coffee-tree (<i>Gymnocladus dioicus</i>) * Large whorled pogonia (<i>Isotria verticillata</i>) * Spring blue-eyed Mary (<i>Collinsia verna</i>)
Parry Sound	Branched bartonia (<i>Bartonia paniculata</i> ssp. <i>paniculata</i>)
Peel	<ul style="list-style-type: none"> Butternut (<i>Juglans cinerea</i>) Dense blazing-star (<i>Liatris spicata</i> var. <i>spicata</i>) Hill's pondweed (<i>Potamogeton hillii</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>) * American hart's-tongue fern (<i>Asplenium scolopendrium</i> var. <i>americanum</i>) * American ginseng (<i>Panax quinquefolius</i>)
Perth	<ul style="list-style-type: none"> Butternut (<i>Juglans cinerea</i>) * Stiff-leaved showy goldenrod (<i>Solidago rigidiuscula</i>) * Willow-leaved aster (<i>Symphyotrichum praealtum</i> var. <i>praealtum</i>)
Peterborough	<ul style="list-style-type: none"> American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>)

Prescott & Russell	Broad beech fern (<i>Phegopteris hexagonoptera</i>) Butternut (<i>Juglans cinerea</i>) * American ginseng (<i>Panax quinquefolius</i>)
Prince Edward	Butternut (<i>Juglans cinerea</i>) Four-leaved milkweed (<i>Asclepias quadrifolia</i>) Swamp rose-mallow (<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>) * American ginseng (<i>Panax quinquefolius</i>) * Climbing prairie rose (<i>Rosa setigera</i>)
Rainy River	Small-flowered lipocarpha (<i>Cyperus subsquarrosus</i>) Western silvery aster (<i>Symphotrichum sericeum</i>) * Forked three-awn grass (<i>Aristida basiramea</i>)
Renfrew	American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) Hill's pondweed (<i>Potamogeton hillii</i>)
Simcoe	American hart's-tongue fern (<i>Asplenium scolopendrium</i> var. <i>americanum</i>) American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) Engelmann's quillwort (<i>Isoetes engelmannii</i>) Forked three-awn grass (<i>Aristida basiramea</i>) Hill's thistle (<i>Cirsium pumilum</i> var. <i>hillii</i>) Tuberous Indian-plantain (<i>Arnoglossum plantagineum</i>) * Broad beech fern (<i>Phegopteris hexagonoptera</i>) * Spotted wintergreen (<i>Chimaphila maculata</i>)
Stormont, Dundas, & Glengarry	American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)
Sudbury	No records
Temiskaming	Butternut (<i>Juglans cinerea</i>)
Thunder Bay	Pitcher's thistle (<i>Cirsium pitcheri</i>)
Toronto	Bashful clubrush (<i>Trichophorum planifolium</i>) Butternut (<i>Juglans cinerea</i>) * Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) * Smooth yellow false foxglove (<i>Aureolaria flava</i>) * White wood aster (<i>Eurybia divaricata</i>)
Waterloo	American chestnut (<i>Castanea dentata</i>) American ginseng (<i>Panax quinquefolius</i>) Butternut (<i>Juglans cinerea</i>) Downy yellow false foxglove (<i>Aureolaria virginica</i>) Green dragon (<i>Arisaema dracontium</i>) Smooth yellow false foxglove (<i>Aureolaria flava</i>) * American columbo [(<i>Frasera caroliniensis</i>) * Broad beech fern (<i>Phegopteris hexagonoptera</i>) * False hop sedge (<i>Carex lupuliformis</i>) * Fern-leaved yellow false foxglove (<i>Aureolaria pedicularia</i>) * White wood aster (<i>Eurybia divaricata</i>)
Wellington	American chestnut (<i>Castanea dentata</i>) Butternut (<i>Juglans cinerea</i>) Hill's pondweed (<i>Potamogeton hillii</i>) * Smooth yellow false foxglove (<i>Aureolaria flava</i>)
York	Butternut (<i>Juglans cinerea</i>) Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>) Purple twayblade (<i>Liparis liliifolia</i>) * American ginseng (<i>Panax quinquefolius</i>) * Broad beech fern (<i>Phegopteris hexagonoptera</i>) * Red mulberry (<i>Morus rubra</i>)

Species Index

<i>Agalinis gattingeri</i>	22	Columbo, American.....	34
<i>Agalinis skinneriana</i>	23	<i>Cornus florida</i>	32
<i>Aletris farinosa</i>	62	Cucumber Tree.....	45
<i>Ammannia robusta</i>	43	<i>Cyperus subsquarrosus</i>	77
Ammannia, Scarlet.....	43	<i>Cypripedium candidum</i>	67
<i>Arisaema dracontium</i>	60	Deerberry.....	38
<i>Aristida basiramea</i>	65	<i>Desmodium illinoense</i>	39
<i>Arnoglossum plantagineum</i>	6	Dogwood, Eastern Flowering.....	32
<i>Asclepias quadrifolia</i>	48	<i>Eleocharis equisetoides</i>	78
<i>Aureolaria flava</i>	24	<i>Eleocharis geniculata</i>	79
<i>Aureolaria pedicularia</i>	25	<i>Enemion biternatum</i>	28
<i>Aureolaria virginica</i>	26	<i>Eurybia divaricata</i>	9
Ash, Blue.....	52	False Foxglove, Downy Yellow.....	26
<i>Asplenium scolopendrium</i> var. <i>americanum</i>	4	False Foxglove, Fern-leaved Yellow.....	25
Aster, Crooked-stem.....	16	False Foxglove, Gattinger's.....	22
Aster, Western Silvery.....	17	False Foxglove, Skinner's.....	23
Aster, White Wood.....	9	False Foxglove, Smooth Yellow.....	24
Aster, Willow-leaved.....	15	False Rue-anemone, Eastern.....	28
<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	33	<i>Frasera caroliniensis</i>	34
Beech Fern, Broad.....	2	<i>Fraxinus quadrangulata</i>	52
<i>Betula lenta</i>	21	Gentian, White Prairie.....	35
Birch, Cherry.....	21	<i>Gentiana alba</i>	35
Blazing-star, Dense.....	10	Ginseng, American.....	36
Blue-eyed Mary, Spring.....	53	Goats-rue, Virginia.....	42
Bluehearts, American.....	27	Goldenrod, Houghton's.....	11
Branched Bartonia.....	33	Goldenrod, Riddell's.....	13
<i>Buchnera americana</i>	27	Goldenrod, Showy.....	12, 14
Bulrush, Dwarf.....	77	Goldenseal.....	29
Bush-clover, Slender.....	41	Grass, Forked Three-awn.....	65
Butternut.....	59	Green Dragon.....	60
Cactus, Eastern Prickly-pear.....	30	Greenbriar, Round-leaved.....	64
Camas, Eastern.....	61	<i>Gymnocladus dioicus</i>	40
<i>Camassia scilloides</i>	61	Hackberry, Dwarf.....	31
<i>Carex juniperorum</i>	75	Hart's-tongue Fern, American.....	4
<i>Carex lupuliformis</i>	76	<i>Hibiscus moscheutos</i> ssp. <i>moscheutos</i>	46
Carrion-flower, Round-leaved.....	64	Hop Tree, Common.....	57
<i>Castanea dentata</i>	19	<i>Hydrastis canadensis</i>	29
Catbriar, Common.....	64	Indian-plantain, Tuberous.....	6
<i>Celtis tenuifolia</i>	31	<i>Iris lacustris</i>	66
Chestnut, American.....	19	Iris, Dwarf Lake.....	66
<i>Chimaphila maculata</i>	37	<i>Isoetes engelmannii</i>	3
<i>Cirsium pitcheri</i>	7	<i>Isotria medeoloides</i>	68
<i>Cirsium pumilum</i> var. <i>hillii</i>	8	<i>Isotria verticillata</i>	69
Clubrush, Bashful.....	7	<i>Juglans cinerea</i>	60
Coffee-tree, Kentucky.....	40	<i>Justicia americana</i>	5
Colicroot, White.....	62	Lady's Slipper, Small White.....	67
<i>Collinsia verna</i>	53	Lakeside Daisy.....	18

<i>Lespedeza virginica</i>	41	Rose, Climbing Prairie.....	56
<i>Liatrix spicata</i> var. <i>spicata</i>	10	Rose-mallow, Swamp.....	46
<i>Liparis liliifolia</i>	70	<i>Rotala ramosior</i>	44
<i>Lipocarpa micrantha</i>	77	Sedge, False Hop.....	76
Lipocarpa, Small-flowered.....	77	Sedge, Juniper.....	75
<i>Magnolia acuminata</i>	45	<i>Sida hermaphrodita</i>	47
Mallow, Virginia.....	47	<i>Smilax rotundifolia</i>	64
Milkweed, Four-leaved.....	48	<i>Solidago houghtonii</i>	11
Milkwort, Pink.....	49	<i>Solidago riddellii</i>	13
<i>Morus rubra</i>	51	<i>Solidago speciosa</i>	12, 14
Mountain-mint, Hoary.....	50	Spikerush, Bent.....	79
Mulberry, red.....	51	Spikerush, Horsetail.....	78
Oak, Shumard.....	20	Spotted Wintergreen.....	37
<i>Opuntia cespitosa</i>	30	<i>Stylophorum diphyllum</i>	55
<i>Opuntia humifusa</i>	30	<i>Symphytotrichum praealtum</i> var. <i>praealtum</i>	15
Orchid, Eastern Prairie Fringed.....	71	<i>Symphytotrichum prenanthoides</i>	16
<i>Panax quinquefolius</i>	36	<i>Symphytotrichum sericeum</i>	17
<i>Phegopteris hexagonoptera</i>	2	<i>Tephrosia virginiana</i>	42
<i>Plantago cordata</i>	54	<i>Tetranneuris herbacea</i>	18
Plantain, Heart-leaved.....	54	Thistle, Hill's.....	8
<i>Platanthera leucophaea</i>	70	Thistle, Pitcher's.....	7
Pogonia, Large Whorled.....	69	Tick-trefoil, Illinois.....	39
Pogonia, Nodding.....	72	Toothcup, Lowland.....	44
Pogonia, Small Whorled.....	68	<i>Trichophorum planifolium</i>	80
<i>Polygala incarnata</i>	49	<i>Trillium flexipes</i>	63
Pondweed, Hill's.....	73	Trillium, Drooping.....	63
Pondweed, Ogden's.....	74	<i>Triphora trianthophoros</i> ssp. <i>trianthophoros</i>	72
Poppy, Wood.....	55	Twayblade, Purple.....	70
<i>Potamogeton hillii</i>	73	<i>Vaccinium stamineum</i>	38
<i>Potamogeton</i> × <i>ogdenii</i>	74	<i>Viola pedata</i> var. <i>pedata</i>	58
<i>Ptelea trifoliata</i>	57	Violet, Bird's-foot.....	58
<i>Pycnanthemum incanum</i> var. <i>incanum</i>	50	Water-willow, American.....	5
<i>Quercus shumardii</i>	20	Wood Poppy.....	55
Quillwort, Engelmann's.....	3	<i>Woodsia obtusa</i> ssp. <i>obtusa</i>	1
<i>Ripariosida hermaphrodita</i>	47	Woodsia, Blunt-lobed.....	1
<i>Rosa setigera</i>	56		

Photograph Sources

1. Michigan Flora Online. A. A. Reznicek, E. G. Voss, & B. S. Walters. February 2011. University of Michigan. <http://michiganflora.net/home.aspx>.
2. Bioimages. <http://bioimages.vanderbilt.edu/>
3. Phyto Images. <http://www.phytoimages.siu.edu>
4. New England Wild Flower Society. 2018. <https://gobotany.newenglandwild.org/>
5. Center for Invasive Species and Ecosystem Health. 2010. The University of Georgia. <http://bugwood.org/>
6. Delaware Wildflowers. David G. Smith. <http://www.delawarewildflowers.org/index.php>
7. Emerald Ash Borer Guelph. <https://eabguelph.wordpress.com>
8. iNaturalist. The California Academy of Sciences. <https://www.inaturalist.org>
9. Cape May Wildlife: An Identification Guide. Mike Crewe. <http://capemaywildlife.com/index.html>
10. Flora of Wisconsin. Consortium of Wisconsin Herbaria. <http://wisflora.herbarium.wisc.edu>
11. North Carolina Native Plant Society. 2017. <http://ncwildflower.org/>
12. <http://www.southeasternflora.com/>
13. CalPhotos. 2017. University of California, Berkeley. <https://calphotos.berkeley.edu/>
14. Astereae Lab. 2018. University of Waterloo. <https://uwaterloo.ca/astereae-lab/research/goldenrods/>
15. COSEWIC assessment and status report on the Showy Goldenrod *Solidago speciosa* (Great Lakes Plains and Boreal Populations) in Canada. (www.sararegistry.gc.ca/status/status_e.cfm).

References

- Ambrose, J.D. 2002. Update COSEWIC status report on the common hoptree *Ptelea trifoliata* in Canada, in COSEWIC assessment and update status report on the common hoptree *Ptelea trifoliata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 14 pp.
- Ambrose, John D. 2002. Update COSEWIC Status Report on the Climbing Prairie Rose *Rosa setigera* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 15 pp.
- Barkworth, Mary E., Laurel K. Anderson, Kathleen M. Capels, Sandy Long, and Michael B. Piep. 2007. Manual of Grasses for North America. Utah State University Press: Utah.
- Bickerton, H.J. 2013. Recovery Strategy for the American Columbo (*Frasera caroliniensis*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 23 pp.
- Bickerton, H.J. 2013. Recovery Strategy for the Bird's-foot Violet (*Viola pedata*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural
- Bowles, J. M. 2010. Recovery strategy for the Bent Spike-rush (*Eleocharis geniculata*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 17 pp.
- Bowles, J.M. 2014. Recovery strategy for the Showy Goldenrod (*Solidago speciosa*) – Boreal population in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. v + 14 pp.
- Britton, Nathaniel and Addison Brown. 1970. An illustrated flora of the northeastern United States and Canada, 2nd Edition. Dover Publications: New York.
- Brownell, V.R. 1998. Update COSEWIC status report on the Heart-leaved Plantain *Plantago cordata* in Canada, in COSEWIC assessment and update status report on the Heart-leaved Plantain *Plantago cordata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-15 pp.

- Campbell, L., B. Husband and M.J. Oldham 2002. COSEWIC status report on the lakeside daisy *Hymenoxys herbacea* in Canada, in COSEWIC assessment and status report the lakeside daisy *Hymenoxys herbacea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-24 pp.
- Carolinian Canada. 2018. Carolinian Canada Coalition. <https://caroliniancanada.ca/about>.
- Catling, Paul M., Anton A. Reznicek, and William J. Crins. 1993. *Carex juniperorum* (Cyperaceae), a New Species from Northeastern North America, with a Key to *Carex* sect. Phyllostachys. Systematic Botany 18(3): 496-501.
- Cedar, K. 1999. Update COSEWIC status report on the slender bush-clover *Lespedeza virginica* in Canada, in COSEWIC assessment and update status report on slender bush *Lespedeza virginica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 9 pp.
- Cobb, Boughton, Elizabeth Farnsworth, & Cheryl Lowe. 2005. A field guide to ferns & their related families of northeastern and central North America. 2nd Ed. New York: Houghton Mifflin Company.
- COSEWIC 2002. COSEWIC assessment and update status report on the small-flowered lipocarpa *Lipocarpa micrantha* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 16 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
- COSEWIC 2002. COSEWIC assessment and update status report on the white wood aster *Eurybia divaricata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 23 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
- COSEWIC 2004. COSEWIC assessment and status report on the American chestnut *Castanea dentata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
- COSEWIC 2004. COSEWIC assessment and update status report on the swamp rose-mallow *Hibiscus moscheutos* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC 2005. COSEWIC assessment and status report on the Houghton's goldenrod *Solidago houghtonii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 17 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC 2005. COSEWIC assessment and update status report on the false rue-anemone *Enemion biternatum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC 2006. COSEWIC assessment and status report on the cherry birch *Betula lenta* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 16 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
- COSEWIC 2006. COSEWIC assessment and update status report on the American Columbo *Frasera carolinensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC 2006. COSEWIC assessment and update status report on the blunt-lobed woodsia (*Woodsia obtusa*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 17 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
- COSEWIC 2007. COSEWIC assessment and status report on the Ogden's pondweed *Potamogeton ogdenii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
- COSEWIC 2007. COSEWIC assessment and status report on the eastern flowering dogwood *Cornus florida* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 22pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC. 2003. COSEWIC assessment and update status report on the branched bartonia *Bartonia paniculata* ssp. *paniculata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 14 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
- COSEWIC. 2007. COSEWIC assessment and update status report on the round-leaved greenbrier (Great Lakes Plains and Atlantic population) *Smilax rotundifolia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp. (www.sararegistry.gc.ca/status/status_e.cfm)

COSEWIC. 2007. COSEWIC assessment and update status report on the wood-poppy *Stylophorum diphyllum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 23 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2009. COSEWIC assessment and status report on the Virginia Goat's-rue *Tephrosia virginiana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2009. COSEWIC assessment and update status report on the Drooping Trillium *Trillium flexipes* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 31 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Cucumber Tree *Magnolia acuminata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 18 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Dense Blazing Star *Liatris spicata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 23 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Dwarf Lake Iris *Iris lacustris* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 29 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Eastern Prickly Pear Cactus *Opuntia humifusa* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 30 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Four-leaved Milkweed *Asclepias quadrifolia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Pitcher's Thistle *Cirsium pitcheri* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 32 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Purple Twayblade *Liparis liliifolia* in Canada. Committee on the Status of Endangered Wildlife. Ottawa. xii + 25 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Showy Goldenrod *Solidago speciosa* (Great Lakes Plains and Boreal Populations) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 23 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Skinner's Agalinis *Agalinis skinneriana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 24 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the Virginia Mallow *Sida hermaphrodita* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 18 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010. COSEWIC assessment and status report on the White Prairie Gentian *Gentiana alba* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 18 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2011. COSEWIC assessment and status report on the Bluehearts *Buchnera americana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 34 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2011. COSEWIC assessment and status report on the False Hop Sedge *Carex lupuliformis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 35 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2012. COSEWIC assessment and status report on the Crooked-stem Aster *Symphotrichum prenanthoides* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 33 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2014. COSEWIC assessment and status report on the Blue Ash *Fraxinus quadrangulata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 58 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2014. COSEWIC assessment and status report on the Small White Lady's-slipper *Cypripedium candidum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 48 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm)

COSEWIC. 2015. COSEWIC assessment and status report on the Common Hoptree *Ptelea trifoliata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 33 pp.

COSEWIC. 2017. COSEWIC assessment and status report on the Spotted Wintergreen *Chimaphila maculata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 39 pp. (<http://www.registrelep-sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1>).

Database of Vascular Plants of Canada (VASCAN). 2010+. Brouillet, L., F. Coursol, S.J. Meades, M. Favreau, M. Anions, P. Bélisle & P. Desmet. <http://data.canadensys.net/vascan/>

Donley, R., J.V. Jalava and J. van Overbeeke. 2013. Management Plan for the Green Dragon (*Arisaema dracontium*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 43 pp.

Eastern Prairie Fringed-orchid Recovery Team. 2010. Recovery strategy for the Eastern Prairie Fringed-orchid (*Platanthera leucophaea*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 30 pp.

Engelmann's Quillwort Recovery Team. 2010. Recovery Strategy for the Engelmann's Quillwort (*Isoetes engelmannii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. ii + 4 pp. + Appendix ix + 27 pp.

Environment and Climate Change Canada. 2017. Recovery Strategy for the Western Silvery Aster (*Symphyotrichum sericeum*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. vii + 53 pp.

Environment Canada. 2006. Recovery Strategy for the Horsetail Spike-rush (*Eleocharis equisetoides*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 17 pp.

Environment Canada. 2010. Recovery Strategy for the Spring Blue-eyed Mary (*Collinsia verna*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. iv + 12 pp.

Environment Canada. 2011. Recovery Strategy for the Bluehearts (*Buchnera americana*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. iv + 21 pp.

Environment Canada. 2012. Recovery Strategy for the Pink Milkwort (*Polygala incarnata*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 18 pp.

Environment Canada. 2012. Recovery Strategy for the Skinner's Agalinis (*Agalinis skinneriana*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. iv + 16 pp.

Environment Canada. 2013. Recovery Strategy for the Heart-leaved Plantain (*Plantago cordata*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. iv + 21 pp.

Farrar, John Laird. 1995. Trees in Canada. Fitzhenry & Whiteside Ltd: Toronto.

Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 19+ vols. New York and Oxford.

Forest Gene Conservation Association. 2010. Butternut Health Assessment in Ontario – Finding Retainable Trees. Revised ed. Forest Gene Conservation Association, Peterborough, Ontario.

Forest Gene Conservation Association. Butternut Tree: A Landowner's Owners Resource Guide. 20 pp.

Gleason, Henry A., and Arthur Cronquist. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. New York Botanical Garden Press: New York.

Goldenseal Factsheet. 2004. Ministry of Agriculture, Food and Fisheries; British Columbia.
http://www.al.gov.bc.ca/speccrop/publications/documents/goldenseal_factsheet.pdf.

Hill, Steven R. 2002. Conservation Assessment for Deerberry (*Vaccinium stamineum*). Prepared for USDA Forest Service, Eastern Region. Champaign, Illinois. 19 pp.

Hilty, John. 2017. Illinois Wildflowers. <http://www.illinoiswildflowers.info/index.htm>

Jalava, J.V. 2013. Recovery Strategy for the Wild Hyacinth (*Camassia scilloides*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 26 pp + appendix.

Jalava, J.V. and J.D. Ambrose. 2012. Recovery Strategy for the Drooping Trillium (*Trillium flexipes*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 20 pp.

Jones, J., J.V. Jalava and J.D. Ambrose. 2012. Recovery Strategy for the Large Whorled Pogonia (*Isotria verticillata*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 19 pp.

Jones, J., J.V. Jalava, and J. Ambrose. 2013. Recovery Strategy for the Nodding Pogonia (*Triphora trianthophora*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 29 pp.

Jones, J.A. 2011. Recovery Strategy for the Forked Three-awned Grass (*Aristida basiramea*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. ii + 18 pp. + Appendix vii + 25 pp.

Kaplan Z., V. Jarolímová, and J. Fehrer. 2013. Revision of chromosome numbers of Potamogetonaceae: a new basis for taxonomic and evolutionary implications. *Preslia* 85: 421–482.

Kraus, T. 2011. Recovery Strategy for the Small Whorled Pogonia (*Isotria medeoloides*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. ii + 6 pp. + appendix iv + 13 pp. + addenda.

National Deerberry Recovery Team. 2010. Recovery Strategy for Deerberry (*Vaccinium stamineum*) in Ontario. Prepared for the Ontario Ministry of Natural Resources. Peterborough, Ontario. vi + 27 pp.

Nault, A., and D.J. White. 1999. Update COSEWIC status report on the American ginseng *Panax quinquefolius* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 17 pp.

Nielsen, C., M. Cherry, B. Boysen, A. Hopkin, J. McLaughlin, and T. Beardmore. 2003. COSEWIC status report on the butternut *Juglans cinerea* in Canada in COSEWIC assessment and status report on the butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 32 pp.

Oldham, Michael J., Kelly Ramster, and P. Allen Woodliffe. 2003. Addendum to the Update COSEWIC Status Report on the Climbing Prairie Rose *Rosa setigera*. Ontario Natural Heritage Information Centre.

Oldham, M.J., and S.R. Brinker. 2009. Rare Vascular Plants of Ontario, Fourth Edition. Natural Heritage Information Centre, Ontario Ministry of Natural Resources. Peterborough, Ontario. 188 pp.

Ontario Invading Species Awareness Program. 2018. Peterborough. <http://www.invadingspecies.com/>

Ontario Ministry of Natural Resources and Forestry. 2017. Recovery Strategy for the Colicroot (*Aletris farinosa*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. v + 6 pp. + Appendix.

Ontario Ministry of Natural Resources. 2013. Recovery Strategy for the American Water-willow (*Justicia americana*) in Ontario. Ontario Recovery Strategy Series. Ontario Ministry of Natural Resources, Peterborough, Ontario. iii + 5 pp + Appendix vi + 36 pp.

- Ontario Ministry of Natural Resources. 2013. Recovery Strategy for the Dwarf Hackberry (*Celtis tenuifolia*) in Ontario. Ontario Recovery Strategy Series. Ontario Ministry of Natural Resources, Peterborough, Ontario. iii + 5 pp + Appendix vi + 43 pp. Adoption of Recovery Strategy for Dwarf Hackberry (*Celtis tenuifolia*) in Canada (Parks Canada Agency 2011).
- Parks Canada Agency. 2011. Recovery Strategy for Hill's Thistle (*Cirsium hillii*) in Canada. Species at Risk Act Recovery Strategy Series. Parks Canada Agency. Ottawa. vii + 84 pp.
- Parks Canada Agency. 2011. Recovery Strategy for the Dwarf Lake Iris (*Iris lacustris*) in Canada. Species at Risk Act Recovery Strategy Series. Parks Canada Agency. Ottawa. x + 43 pp.
- Parks Canada Agency. 2011. Recovery Strategy for the Red Mulberry (*Morus rubra*) in Canada. Species at Risk Act Recovery Strategy Series. Parks Canada Agency. Ottawa, Ontario. vi + 47 pp.
- Parks Canada Agency. 2012. Management Plan for Hill's Pondweed (*Potamogeton hillii*) in Canada [Proposed]. Species at Risk Act Management Plan Series. Parks Canada Agency, Ottawa. v + 23 pp.
- Parks Canada Agency. 2012. Recovery Strategy for the Common Hoptree (*Ptelea trifoliata*) in Canada. Species at Risk Act Recovery Strategy Series. Parks Canada Agency. Ottawa. vi + 61 pp.
- Poisson, G., K. Ursic, and M. Ursic. 2011. Recovery Strategy for Four-leaved Milkweed (*Asclepias quadrifolia*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 21 pp.
- Radford, Albert E., Harry E. Ahles, & C. Ritchie Bell. 1968. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press, Chapel Hill.
- Reznicek, A. A., E. G. Voss, & B. S. Walters. February 2011. Michigan Flora Online. University of Michigan. <http://michiganflora.net/home.aspx>.
- Semple, J.C., L. Tong, and Y.A. Chong. 2017. Multivariate studies of *Solidago* subsect. *Squarrosae*. The *Solidago speciosa* complex (Asteraceae: Astereae). *Phytoneuron* 2017-18: 1–23.
- Semple, John C., Stephen B. Heard, and Luc Brouillet. 2002. Cultivated and native asters of Ontario. *University of Waterloo Biology Series* 41: 1-134.
- Smith, T.W. and C.J. Rothfels. 2010. Recovery Strategy for Few-flowered Club-rush (*Trichophorum planifolium*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. ii + 4 pp. + Appendix vi + 22 pp. + addenda.
- Soper, James H., and Margaret L. Heimburger. 1982. *Shrubs of Ontario*. Royal Ontario Museum: Toronto.
- Thompson, M.J. and C.J. Rothfels. 2006. Recovery Strategy for Hoary Mountain-mint (*Pycnanthemum incanum* (L.) Michx.) in Canada. Hoary Mountain-mint Recovery Team, vii + 18 pp.
- University of Guelph Arboretum. 2012. Trees. <https://www.uoguelph.ca/arboretum/thingstosee/trees>
- van Overbeeke, J.C., J.V. Jalava and R.H. Donley. 2013. Management Plan for the Broad Beech Fern (*Phegopteris hexagonoptera*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 25 pp.
- White, D. J. 2010. Recovery Strategy for Ogden's Pondweed (*Potamogeton ogdenii*) in Ontario. Ontario Recovery Strategy Series. Prepared for Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 14 pp.
- White, D.J. 1998. Update COSEWIC status report on spotted wintergreen *Chimaphila maculata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 6 pp.
- White, D.J. 1998. Update COSEWIC status report on the Hoary Mountain-mint *Pycnanthemum incanum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 6 pp.

White, D.J. 1999. Update COSEWIC status report on the shumard oak *Quercus shumardii* in Canada in COSEWIC assessment and update status report on the shumard oak *Quercus shumardii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 11 pp.

White, D.J. 2002. Update COSEWIC status report on the tuberous Indian-plantain *Arnoglossum plantagineum* in Canada, in COSEWIC assessment and update status report on the tuberous Indian-plantain *Arnoglossum plantagineum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 11 pp.

Zhang, J.J., D.E. Stephenson, J.C. Semple and M.J. Oldham. 1999. COSEWIC status report on the crooked-stem aster *Symphyotrichum prenanthoides* in Canada, in COSEWIC assessment and status on report on the crooked-stem aster *Symphyotrichum prenanthoides* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 16 pp.

Zhang, J.J. 1999. COSEWIC status report on the willowleaf aster *Symphyotrichum praealtum* in Canada, in COSEWIC assessment and status report on the willowleaf aster *Symphyotrichum praealtum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 16 pp.

Zoladeski, C. and K. Hayes. 2013. Recovery Strategy for the Cherry Birch (*Betula lenta*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 12 pp.