

# Field Botanists Of Ontario

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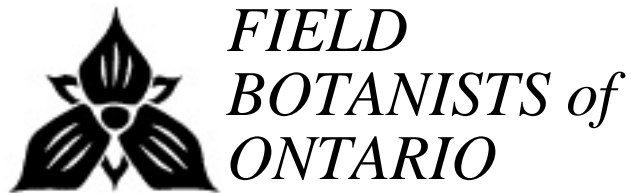
Above: Giant Cow-parsnip (*Heracleum mantegazzianum* Sommier & Levier) at Scotch Block Reservoir.  
Photo by W.D. McIlveen (1972).

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**FIELD BOTANISTS OF ONTARIO NEWSLETTER**

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*The FBO is a non-profit organization founded in 1984 for those interested in botany and conservation in the province of Ontario.*

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The **deadline** for submissions for **Volume 14(1) - Spring 2001** is **April 7, 2001**.

Standard source for scientific names of vascular plants:

Newmaster, S.G., A. Lehela, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. Ontario Plant List. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario. Forest Research Information Paper No. 123, 550 pp + appendices.

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## **Field Trip Reports:**

### **Britannia Conservation Area, Ottawa.**

Saturday September 9<sup>th</sup>, 2000.

Once again the Field Botanists of Ontario picked a marvellous weekend for this trip to accompany the Annual General Meeting. The day was sunny and warm as 15 avid botanists gathered in the parking lot of the Britannia Conservation Area near Ottawa.

Our leader, Dan Brunton, was easily picked-out, as the license plate of his vehicle bore the inscription ISOETS.

After each of us was provided with an excellent, up-to-date, annotated list of the flora of the Britannia Conservation Area (577 vascular plant taxa), we hiked toward a quiet bay on the Ottawa River called Quillwort Beach.

On the way we passed Outlet Bay on Mud Lake, a former embayment of the Ottawa River. Drawn to our attention was European Frog Bit

(*Hydrocharis morsus-ranae* L.). This aggressive plant has spread from a pond at the Canal in 1939, the Ottawa River in 1952, Lake Ontario in 1982, and Lake Erie in 1988. It has now reached northern New York State and Lake Champlain in Vermont. We also noted River Bulrush (*Scirpus fluviatilis* (Torr.) A. Gray).

We next entered a flood plain woodland and were told of the pernicious presence of Glossy Buckthorn (*Rhamnus frangula* L.) and Common Buckthorn (*Rhamnus cathartica* L.). Both of these species displace native species by the dense shade they produce. Birds love the berry-like drupes that have a cathartic effect, and they are thought to be the principal agent of spread.

Next we reached Quillwort Beach. This was a standstone cobble beach with a number of granite erratics. Since sandstone is circumneutral, it provides great habitat for quillworts.

Quillworts are fern-allies. Dan Brunton and Dr. Donald Britton have done a lot of work on their taxonomy.

We learned that quillworts' leaves have a basal cavity containing the sporangium and that the sporangium contains megaspores or microspores. Identification of species depends on the size and ornamentation of the megaspores. We soon learned to identify Spine-spored Quillwort (*Isoetes echinospora* Durieu). It is usually submersed in shallow water and has a spiny surface on the megaspores. Riverbank Quillwort (*Isoetes riparia* Engelm. ex A. Braun) is found higher and drier on the beach with larger megaspores.

The hybrid of the above two quillworts is Dodge's Quillwort (*Isoetes x dodgei* A.A. Eaton). It is estimated that on Quillwort Beach, the population size of Dodge's Quillwort is in excess of 50 000 plants! It is recognized by its larger size in

comparison to its parents, and its aborted megaspores (flattened and variable in size, shape, and texture).

The other plant we observed at this site was American Shoreweed (*Littorella americana* Fern.), a member of the plantain family. Due to the high water levels this year, all of the Shoreweed plants were submersed. American Shoreweed bears a striking resemblance to *Isoetes*. We learned that you need a certain 'gizz' to identify these aquatics. Shoreweed is lighter green in colour and grows in large patches.

After lunch we started across 'the Ridge'--a manmade rock and earth filled ridge (c. 1910). Indian Love Grass (*Eragrostis pilosa* (L.) P. Beauv.) has been found in this area. It is thought to be locally adventive. Further along the ridge we observed the Deschenes Rapids on the Ottawa River. Dan Brunton commented that this was the last unaltered rapids on the Ottawa River, i.e. it looked the same to Samuel de Champlain as it does to us today. We had a discussion on how rapids are the lungs of a river and oxygenate the water. Among the shale slabs of the Deschenes Rapids, stretching from the Ontario to the Quebec shores, is a huge population of Horn-leaf Riverweed (*Podostemum ceratophyllum* Michx.). This plant is rare in Ontario [S2] and is found only in swift moving water. Its stems are attached to stones by fleshy discs and cursorily it resembles a moss. It is very sensitive to water quality. This population is the largest in Canada.

We next headed to the Mud Lake trail and explored a number of habitats: a Red Oak (*Quercus rubra* L.) Savannah-like area and a White Oak (*Quercus alba* L.) and White Pine (*Pinus strobus* L.) forest. We noted how Norway Maple (*Acer platanoides* L.) saplings were invading the trail

system. Unlike any other maple, Norway Maple exudes a milky sap if the leaf petiole is broken.

We also noted a small population of Common Hackberry (*Celtis occidentalis* L.), a floodplain species that is uncommon as far north as Ottawa.



Common Hackberry (*Celtis occidentalis* L.) by Mary Celestino.

Another uncommon plant in the Ottawa area is Moonseed (*Menispermum canadense* L.). This trailing vine has unisexual flowers and the site on the west side of Mud Lake has the only naturally occurring male plants in the Ottawa district. It is conjectured that native Indians may have played a role in the spread of this plant.

We ended our day overlooking tranquil Turtle Bay on the south side of Mud Lake. This area is noted for a Buttonbush (*Cephalanthus occidentalis* L.) Swamp and Painted Turtles (*Chrysemys picta*) and Blanding's Turtles (*Emydoidea blandingi*). This spot was a perfect ending to a remarkable day of botanizing. 🌿

Wayne McShane



Moonseed (*Menispermum canadense* L.) by Mary Celestino.

## **Fire and Limestone: Burnt Lands Alvar.**

Saturday, September 9<sup>th</sup>, 2000 (AGM).

Leader: Don Cuddy

### Burnt Lands Alvar

There were only four participants. Don Cuddy, MNR Ecologist for the south-central region (accompanied by faithful dog Becky) was our leader. Although the peak of summer had past, the sun quickly heated up the alvar. I was reminded of recent months of fieldwork spent sweating in similar habitats. Burnt Lands Alvar is situated on a limestone plain just west of Ottawa, near Carleton Place. The sites we visited are part of a complex of habitats featuring thin soils over limestone bedrock.

The first site is a gently undulating flat with

strips of bare pavement interspersed with islands of vegetation. Don pointed out that the orientation of the long strips of pavement is perpendicular to the direction of glacial flow: the cause of the undulations is therefore a bit of a mystery. This is a strange site. There is a communications bunker smack in the centre of the field, a holdover from the Cold War when it was part of Canada's nuclear attack contingency plan (key leaders would hold out in the 'Diefenbunker' just a few km away near Kanata in the event that aboveground civilization was destroyed). The land transferred from the Department of National Defence to Public Works, which then sold two parcels totalling 120-130 hectares to the Nature Conservancy of Canada. Other parcels of this land are to become either a provincial Nature or Conservation Reserve. A conservation reserve would allow some hunting which could reduce deer browse. On the other hand, Don pointed out that deer and other herbivores could play a role in keeping the alvar vegetation open. Many of the showier alvar species were past their peak with Gray Goldenrod (*Solidago nemoralis* Aiton<sup>1</sup>) dominating the late season floral display. A number of other typical alvar species were still identifiable including False



Early Saxifrage (*Saxifraga virginensis* Michx.) on a moss cushion. Photo by Ed Morris, West Manitoulin Island.

Pennyroyal (*Trichostema brachiatum* L.), Small Skullcap (*Scutellaria parvula* Michx.), Balsam Ragwort (*Senecio pauperculus* Michx.), and Rock Sandwort (*Minuartia michauxii* (Fenzl) Farw.).

As is common on alvars, many of the species we saw, such as Slender-leaved Agalinis (*Agalinis tenuifolia* (Vahl) Raf.) and Umbrella Sedge (*Cyperus bipartitus* Torr.), are often found in wetter habitats. One must remember that, despite the frequency of summer drought on alvars and the presence of many upland and prairie species, the limestone bedrock provides poor drainage leading to flooded conditions in the spring and fall. Long-term residents of alvars must be able to contend with the stresses of both drought and flooding. Since this summer was quite wet, there were several patches of Purple Loosestrife (*Lythrum salicaria* L.) on the site which had bloomed earlier. There was a suggestion that during dry years this species declines on the alvar. This highlights the potential importance of environmental variability in maintaining alvar community structure. Some of the longer-lived puddles contained *Chara*, a calciphilic green alga, which I had never heard of previously as a component of alvar vegetation.<sup>2</sup> We examined the vegetation islands with Don pointing out various Panic grasses (*Panicum philadelphicum* Bernh. ex Trin. and *P. acuminatum* Sw.). A matrix of Kalm's Brome-grass (*Bromus kalmii* A. Gray) and annual Dropseeds (*Sporobolus* spp.) contained individuals of the sedges Crawe's Sedge (*Carex crawei* Dewey) and Yellow Sedge (*Carex flava* L.), also typical species of wetter habitats. Early Saxifrage (*Saxifraga virginensis* Michx.) was common on moss cushions at the edges of the pavement depressions. When this species occurs on alvars it really seems to

<sup>1</sup> Some plant names have been changed to be consistent with the Ontario Plant List. -J.L.

<sup>2</sup> Some evolutionary biologists believe that a *Chara*-like algae (Charophyceae) was the ancestor of 'land plants.' -Ed.

prefer this type of microsite.

There was an important non-native component to this alvar, Common Buckthorn (*Rhamnus cathartica* L.) and Cypress Spurge (*Euphorbia cyparissias* L.) were present but not a problem...yet, but in general, the dominants were native. There was also a strong component of weedy natives--species generally found in disturbed habitats: Poison Ivy (*Rhus radicans* L.), Canada Blue-grass (*Poa compressa* L.), and Ragweed (*Ambrosia artemisiifolia* L.)--probably reflecting the history of the site. We walked north and found huge fissures in the bedrock which drain the rest of the site. Don also mentioned the diversity of non-plant life on the site including Clay-coloured Sparrows and Chorus Frogs which successfully bred in the puddles this year. Don heard them singing as late as the first week in July this year. We also found bear tracks in the pavement mud--the first record for this site!

One of the odd things about Ontario alvars is that many local sites have species missing: species we think should be there based on their range and occurrence in similar habitats. Many alvars feature the conspicuous absence of certain species when such species are common in other sites, and even sites that flank the site of interest. Indian Paintbrush (*Castilleja coccinea* (L.) Spreng.) and Three-flowered Avens (*Geum triflorum* Pursh) are common in other alvars, but were nowhere to be found on Burnt Lands despite their occurrence on alvars on the Napanee Plain. Some species occur on Manitoulin alvars, but are rare or altogether absent on the Bruce, despite being common on the Carden Plains. I don't have an explanation for these disjunct occurrences, but it probably relates to the role of accident and chance in shaping present-day plant communities in a landscape where exposed bedrock occurs only sporadically.

Throughout the Burnt Lands trip, I was constantly impressed by the similarities to other alvars and also the differences. This seems to be another theme in alvar botany: some species are replaced by close relatives when you visit different alvar complexes (e.g. Slender-leaved Agalinis (*Agalinis tenuifolia* (Vahl) Raf.) at Burnt Lands vs. Small-flowered Agalinis (*A. paupercula* (Gray) Britton) on the Bruce). The Fringed Gentian (*Gentianopsis crinita* (Froel.) Ma) we saw at Burnt Lands has wide leaf bases, but was otherwise quite similar to the Smaller Fringed Gentian (*G. virgata* (Raf.) Holub) common on coastal pavements and unproductive backshore marshes of the Bruce Peninsula. Since the most closely related species genetically are often most similar ecologically, one is tempted to speculate that the niches available to alvar plants are quite specific across Ontario. Thus different local species pools will saturate an alvar with ecologically and taxonomically similar species.

After lunch we moved south of the highway to an open White Cedar woodland. The ground flora was characterized by Bristle-leaved Sedge (*Carex eburnea* Boott) and Richardson's Sedge (*Carex richardsonii* R. Br.), Bear-berry (*Arctostaphylos uva-ursi* (L.) Spreng.), Alder-leaved Buckthorn (*Rhamnus alnifolia* L'Hér.) and a substantial population of Ram's-head Lady's Slipper (*Cypripedium arietinum* R. Br.) [S3]. Another rarity, Neglected or Cooper's Milkvetch (*Astragalus neglectus* (Torr. & A. Gray) E. Sheld.) [S3] was also common in the area. This species can be distinguished from other members of the genus by its non-septate fruits: other *Astragalus* have fruits with two chambers completely divided by a membrane. Don was leading us down a path toward an area that burned in June of 1999. This fire was set accidentally, probably from a bush party.

In order to examine succession after fire, several experimental plots were established under the auspices of the International Alvar Initiative (see Carden Plains Trip). The area that burned was largely mixed white spruce and white pine conifer forest but there were several more open alvar-like areas. The burnt portion of the forest still contained most of the trees as standing dead trunks. The understory was dominated by a carpet of a thalloid liverwort (*Marchantia polymorpha* L.), but also contained Bicknell's Crane's-bill (*Geranium bicknellii* Britton) and the mint American Dragonhead (*Dracocephalum parviflorum* Nutt.). Don said that this species had never been previously reported in the area, hence it must have persisted in the seed bank for over 50 years. When asked about the role of fire in maintaining the open nature of alvar habitats Don suggested, while periodic fires might maintain the edge of some alvars (by preventing woody plants from encroaching on the bare spots), that drought naturally maintains a core central area by lowering productivity and preventing woody species from establishing in the first place.

After exploring the burn site, the others felt it was getting too close to happy hour (including members of the Executive!) to see the last site on our agenda. I pressed Don to see more however, knowing that having volunteered for the write-up allowed me a bit of botanical self-righteousness. The next site was totally worth it. Don showed me another section of the Burnt Lands Alvar complex, a private tract containing an incredibly vast prairie of Northern Dropseed (*Sporobolus heterolepis* (A. Gray) A. Gray) [S2]. While several other native alvar species occurred amongst the grass, it seemed a near monoculture. Don drew my attention to the strong odour of the species. He likened it to

cilantro and said it gets even stronger during flowering. In fact, my car still smelled like it the next day, just from my clothes having gone through it.

And I thought I'd had enough of alvars for one summer! Thanks to Don for leading us through an interesting set of habitats and sharing his extensive knowledge of the area! 🌲

Jeremy Lundholm

A plant list, meant to accompany this article, was too long to include in the newsletter. It will be posted on the FBO website: [www.trentu.ca/FBO](http://www.trentu.ca/FBO). Those who do not have internet access may request a copy from the newsletter editor. -Ed.

## Features:

### Royston Park Revisited.

Joan Crowe

Members of the Bruce-Grey Plant Committee became interested in Royston Park when we began assembling material for our projected book on the rare species of Bruce and Grey Counties. Among the ferns listed by NHIC was Mountain Bladder-fern (*Cystopteris montana* (Lam.) Bernh. ex Desv.). Given the northern and montane distribution of this species, the listing for our area seemed somewhat questionable. Upon further enquiry, Mike Oldham informed us that the basis for this record was "A monographic study of the fern genus *Cystopteris*" by R.F. Blasdell published in Volume 21:4 of the Memoirs of the Torrey Botanical Club in 1963. A specimen of *Cystopteris montana* in the herbarium of the Academy of Natural Sciences in Philadelphia is labelled: Royston Park, Owen Sound, Macoun, 1867. Royston Park appears on the labels of many historical collections, but there was general confusion as to exactly what it meant. Some thought that it had something to do with the

Rifle Range. "The rear of the rifle range" was a popular source of collections in the 1920's. Local history also showed Royston Park to be something of a social venue for the elite of Owen Sound in the 19<sup>th</sup> century.

In actual fact, it was the first two farm lots in Sarawak Township, along the Georgian Bay shore, just outside the community of Owen Sound. It was purchased by William Roy in 1863 and developed as orchards - particularly apples. The name Royston was presumably derived from the family name, and parks were in vogue at that time. The area behind Royston Park was divided into 'park' lots and Park Street still runs through it. The Rifle Range was a much later development set up by the Crown in 1905, and was completely unconnected with Royston Park. It was on the property to the west of Royston Park and ran up to the Escarpment, which was its attraction for botanists. It is now private property again. In his paper *Botanical Exploration of the Canadian Watershed of Lake Huron during the 19<sup>th</sup> Century* (1989), James Pringle gives a very clear account. William Roy's wife, Jessie Dalrymple Gregg, was a well educated woman who grew up in Scotland. She was very interested in botany and probably started serious collecting when, through her brother in New Jersey, she became acquainted with Coe Finch Austin, a leading American bryologist. Mrs. Roy's bryophyte collections can be found today in TRTC and QK. She also collected some vascular plants, especially ferns. She was the first person in Canada to discover Male Fern (*Dryopteris filix-mas* (L.) Schott) in the Owen Sound area in 1866. She was also the first person to collect *D. filix-mas* x *D. marginalis* (L.) A. Gray, although it was not identified as such until 1968. She became widely known in botanical circles through her collection

exchanges and John Macoun was invited to Royston Park in 1871. Prior to that he had made major expeditions to the headwaters of the Trent River in 1868 and to Lake Superior in 1869 (Pringle 1989). On this latter expedition, he collected *Cystopteris montana* in rock crevices along the Current River, just north of the present City of Thunder Bay. It has not been found in more recent times, but the river was subjected to hydroelectric projects in the interim, as well as use as a city park.

Macoun visited Owen Sound several times and the *Cystopteris montana* collection was made in 1876, seven years after he found it in Thunder Bay. In the meantime, Mrs. Roy visited Scotland and Switzerland in 1873, the Mountain Bladder Fern being native in both countries. The *Illustrated Field Guide to Ferns and Allied Plants of the British Isles* (Jermy & Camus, 1991) states that in Scotland it was "at one time under threat from alpine gardeners." It is important to understand the European mindset of that period. Throughout their history they specialized in conquering 'new' territory and 'taming' the wilderness. Indigenous people were regarded as savages and the natural environment was discounted. Its only real value was 'fertility' so that familiar plants and animals could be introduced for agriculture. However, during the 18<sup>th</sup> and 19<sup>th</sup> centuries a new interest developed. Plants from foreign lands became curiosities and were routinely taken from one place and introduced into another, while immigrants were particularly prone to introduce plants from their home country. Gardening among the middle and upper class was becoming a status symbol. Everything was fair game from Blue Poppies to Black Tulips! Many botanists have commented on the fact that such a large and diverse number of



specimens were labelled Royston Park. The simple explanation is that they were being cultivated there. Contemporary accounts in the annals of the Fruit Growers Association of Ontario commented on 'the quantity, quality, and diversity of apples, grapes, pears, plums, and peaches produced at Royston Park' and the president R. Burnet noted 'the many varieties of flowering shrubs and rare plants, flourishing luxuriantly in Royston Park' in 1874. It is perhaps not a coincidence that the origins of the Butchart Gardens lie in Sarawak Township very close to Royston Park. Macoun must have been enchanted to find all these interesting plants when he visited Royston Park. The specimens he collected were labelled Royston Park because it never occurred to him that anyone would think they were native to the area. They simply represented the great achievements of this very well known botanist and horticulturalist who lived there. Mrs. Roy was disabled with a broken hip in 1876 so the *Cystopteris montana* collection would have recorded one of her last horticultural achievements. She did a little collecting subsequently, but her last specimen dates from 1883 and she died in Rochester, New York in 1889.

Having unearthed all this information, our curiosity was thoroughly aroused. Thanks to Bill and Mac Turner, we were able to visit Royston Park this summer. The Turners have owned the property since the 1920's, although there were two previous owners after the death of William Roy in 1891. Housing lots have been severed along the road which now parallels the lakeshore, and a small section was turned into a plant nursery by one of the family. However, a substantial portion remains as a working farm. The orchards were finally grubbed-out a couple of decades ago, although ancient apple trees can still be seen in

some of the local gardens. The original house, built from soft limestone quarried on the property, still stands. There is evidence that the Roys had intended to extend it to a full mansion, but it remains a modest family home. There is a more sizeable forest remnant which Nels Maher and I were able to explore. There seems to be a low limestone ridge covered with recent clay sediments. A couple of streams gully through it to the lakeshore. There is no doubt that this was once a rich, moist deciduous forest with a variety of niches for plants. Even today, in spite of logging and cattle grazing, a good variety of ferns including Christmas Fern (*Polystichum acrostichoides* (Michx.) Schott) and several species of *Dryopteris* are still flourishing. Near the house, there is evidence that at one time a 'park' in the 18<sup>th</sup> century aristocratic tradition was created. There are several enormous locust and horse chestnut trees, easily three times the height of the two-storey house. These must be over 100 years old and were probably planted by Mrs. Roy.

This brings us back to the problem of *Cystopteris montana* at Royston Park. It does seem most probable that it was being cultivated. It could have come from spores donated by Macoun or some other botanist, or maybe Mrs. Roy brought it back from her European trip. Somehow it was passed on to Philadelphia, probably as an exchange specimen. If it really had been the southernmost record in Ontario, surely more care would have been taken of it. In spite of the richness of the fern flora, the relatively unspoiled nature of much of the Owen Sound area, and the huge amount of collecting by expert botanists that has taken place over the last century and a half, it has never been reported again. There seems to be nothing unique about the habitat at Royston Park that would not have been

replicated elsewhere in the locality.

There is one last trace of Mrs. Roy. Nestled into the stone wall on the north side of the house, there is a two foot wide flower bed packed with one type of luxuriant fern. In early September, under the dark green leathery leaves, fat croziers were already pushing up--ready for next spring. Planted by Mrs. Roy, perhaps, and still there 130 years later? Don Britton believes it to be a very robust hybrid of Male Fern - a fitting memorial to this remarkable botanist. 🌿

**Note:**

For those interested in learning more about the botanical history of the Bruce Peninsula and Lake Huron shore, a useful acquisition would be James Pringle's paper "Botanical Exploration of the Canadian Watershed of Lake Huron during the Nineteenth Century." This is available from Linda Brownlee, The Library, The Royal Botanical Gardens, Box 399, Hamilton, ON. L8N 3H8. It is in Volume 2, Numbers 1 and 2, 1989, of the Canadian Horticultural History Journal. It is 88 pages long and occupies the whole issue. There is a lot of very interesting and useful information about the early days of botany in that unique area. Price is \$15.00.

Joan Crowe

## **Dispersal of Giant Cow-parsnip (*Heracleum mantegazzianum*) along streams in Halton County.**

W.D McIlveen

### **Introduction**

Giant Cow-parsnip (*Heracleum mantegazzianum* Sommier & Levier) or Giant Hogweed is a relatively recent addition to the flora of North America. It was first identified in Ontario in 1972 (Morton, 1975) where it had obviously become well established along the banks of the

Saugeen River at Tara in Bruce County by that date. Subsequent sightings of the species were reported for southwestern Ontario (Morton, 1978) at a number of other locations on the Bruce Peninsula, as well as in Huron, Perth, Wellington, Waterloo, and Grey Counties. It was found further east in the Districts of Muskoka and Haliburton. The species was first found in Michigan in 1992 (Case, 1992). It has been sighted at Seattle and Vancouver (Morton, 1978).

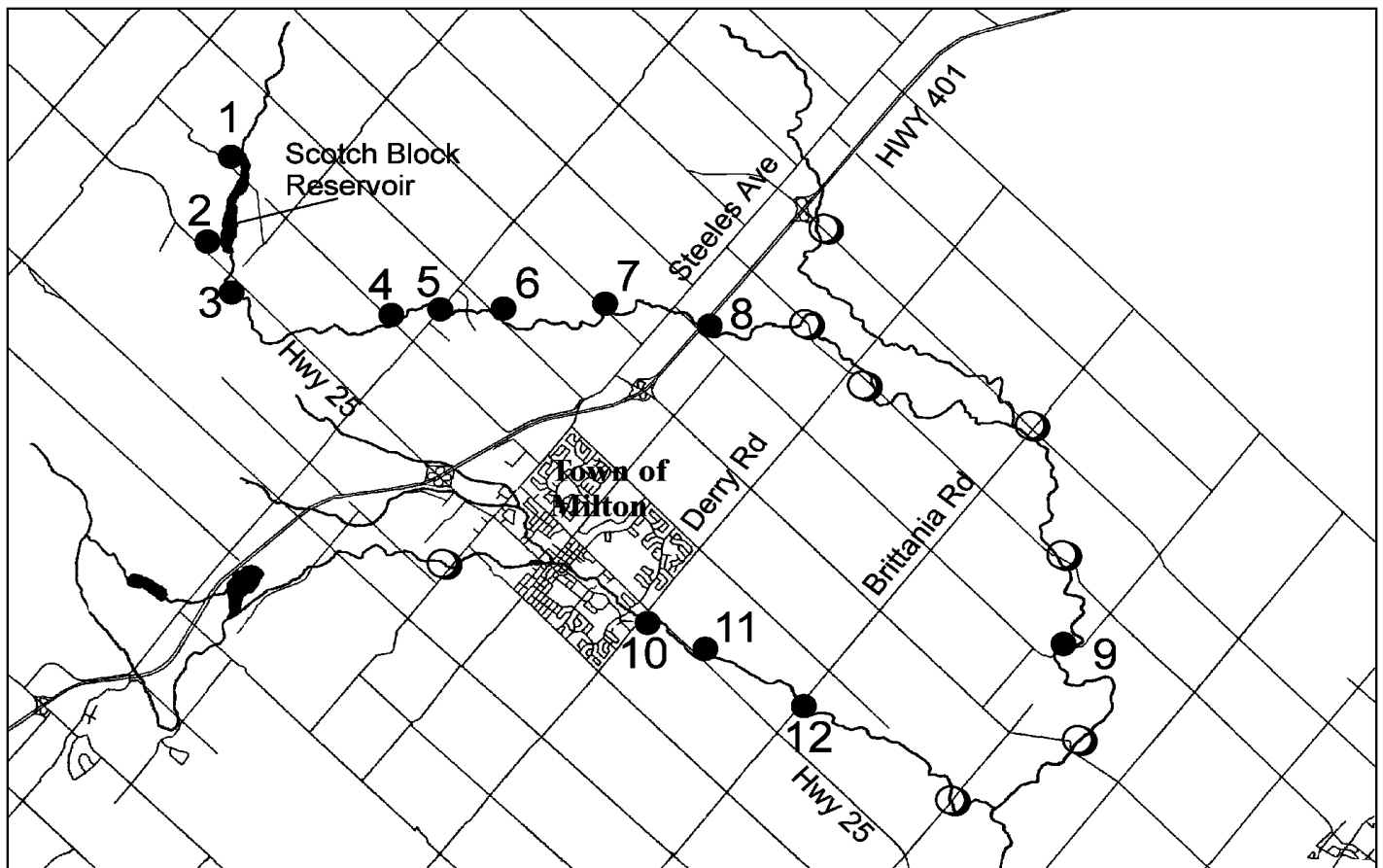
More recently we have found the species at several other locations in Ontario, including a colony of at least 32 flowering plants south of Gore Bay on Manitoulin Island in June, 1998. Several plants were noted in a ditch north of Orillia in 1997 in Simcoe County. The present report, however, focuses on records of the species in the Regional Municipality of Halton near Milton.

The plant was likely introduced to North America as a garden ornamental, likely as curiosity because of its size. Although the species is somewhat invasive, concern over its presence is warranted primarily because of the potential for skin irritation and blistering when sap is allowed to contact bare skin.

### **Field Records**

The photograph (see cover of this issue) was taken in June 1972 at the causeway across the Scotch Block Reservoir on the Sixteen Mile Creek located north of Milton. The population was well established and remains there to the present time. It is assumed that this population is the probable source of seed for much of the spread of the species presented in this report.

Recording of flora distribution throughout Halton has been conducted on a regular but unstructured basis for about ten years. Considering



**Figure 1.** Distribution of Giant Cow-parsnip along sections of Sixteen Mile Creek in June, 2000. Closed circles correspond to sites listed in table. No plants were observed at sites with open circles.

Site	Plants	Location
1	2000†	Scotch Block Reservoir at 3rd Line Esquesing
2	5	Hwy 25 north of Sixteen Mile Creek outlet from Scotch Block Reservoir
3	2	Sixteen Mile Creek at Hwy 25 south of Side Road 10 Milton
4	170	Sixteen Mile Creek at 3rd Line Esquesing
5	138	Sixteen Mile Creek at Campbellville Road Esquesing
6	350	Sixteen Mile Creek at 4th Line south of Campbellville Road Esquesing
7	11	Sixteen Mile Creek at 5th Line Esquesing
8	2	Sixteen Mile Creek south of Hwy 401 at 5th Line Milton
9	4	Sixteen Mile Creek at Lower Baseline Oakville
10	79	Sixteen Mile Creek at Hwy 25 just south of Derry Road Milton
11	19	Sixteen Mile Creek at Hwy 25 south of Derry Road Milton
12	32	Sixteen Mile Creek at Britannia Road Milton

† Estimated number, too numerous to count. Site of original observations in 1972.

**Table 1:** Number of flowering plants of Giant Cow-parsnip observed along Sixteen Mile Creek, Halton in June, 2000. Site numbers correspond to sites shown in the accompanying map (Figure 1). Site 2 is upstream from the reservoir and main creek.

the distinctively large size of the plants, it is unlikely that the species would have been overlooked during these surveys, at least during the flowering period in June. The survey carried out in June 2000 was the most systematic with respect to Giant Cow-parsnip. The data is tabulated in the following table and the sites where plants were seen are shown in Figure 1.

All of the records are for plants along or very close to the Sixteen Mile Creek. There are three separate foci of plant colonies. The largest population by far is on the north bank of the Scotch Block Reservoir (Site 1) where the species was first observed. The origin of this colony is not known but there is an old farmstead located just above the reservoir. The colony is confined to the low-lying lands along the banks of the reservoir and was not observed to extend into the residential area of the farm although such a connection might have existed in the past. The small colony at Site 2, although situated very close to the Sixteen Mile Creek, is not directly downstream of the main colony as is positioned in a ditch and uphill from the creek. There is no possibility that the original seed(s) were brought to this location by water. Their position in a ditch is not considered likely to have been a deliberate introduction, but this can not be ruled out. Several colonies have been established downstream from Site 1 (and 2) including Sites 3 to 9. The larger of these were Sites 3, 4 and 5 which are nearest the reservoir. The colonies further downstream are smaller. A few plants (i.e. less than 25) had become established at Sites 3 and 4 by 1991. Colonies at Sites 10, 11 and 12 are located on a separate stream branch from the others mentioned previously. They likely spread downstream from Site 10 but there is no obvious origin for that colony.

We must conclude that Giant Cow-parsnip is spreading downstream on Sixteen Mile Creek from at least three points of introduction. The dispersal from these is undoubtedly via water movement in the creek. Many plants were observed right at the water's edge or in adjacent flood plain along the stream. These observations are consistent with those made by Morton (1978) who noted that the seeds could float for up to 3 days and remained viable for at least seven years in a dry state. The pattern of dispersal with respect to the original colony suggests that the dam creating the Scotch Block Reservoir and the causeway just downstream from the main group of plants may have presented a barrier to the downstream movement of seeds. The delay is indicated by the size of the original colony in 1972 and the fact that the next larger colonies (Sites 5 and 6), located about 5 km below the dam, were not noted until 1991. After these colonies had become established, spread has been more rapid reaching Site 9 another 15 km away (a much greater distance in a much shorter time. It is reasonable to expect that the spread of the species further downstream will continue, likely at a much greater rates than encountered previously.

#### Literature Cited.

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