

Iris

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The Alberta Native Plant Council Newsletter

Getting Deep into Green Ecology at Coyote Lake

By Patsy Cotterill



Botanists and naturalists enjoy a break from the rain on the Botany Alberta weekend.

“Green” has become the universal buzzword these days signifying “pro-environment.” Yet what could be greener, both literally and metaphorically, than a newly leafed-out deciduous woodland on a wet, spring day in central Alberta? So I mused as I stood on a forested hill slope in Coyote Lake Nature Sanctuary, some 60 kilometres southwest of Edmonton. Of course, all this green of canopy and understorey was nothing but a giant photochemical complex gearing up for a season’s primary production. Would that human factories could be that beautiful!

I was with a contingent of botanists and naturalists assembling at Coyote Lake on the weekend of June 7–8 for Botany Alberta 2008. For the second year running, no doubt bolstered by the success of last year’s Botany AB at Milk River Ridge, the Alberta Native Plant Council (ANPC), Adopt-a-Plant Alberta (APA) and the Nature Conservancy of Canada – Alberta Region (NCC) had joined forces to organize a weekend of field trips.

The Coyote Lake area has been known for at least 25 years as a botanical hotspot, but the NCC has recently taken over the administration of much of its lands, and no doubt the idea was

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to combine veterans' expertise with the enthusiasm of a new generation of botanists to update management information. A bonus would be finding some new recruits for the NCC's Conservation Volunteers program. The weekend would almost certainly yield results in the search for this year's priority rare species as identified by the APA program.

The Coyote Lake area is a complex patchwork of well-wooded, hilly lands in a natural region that has

been described as transitional between the Dry Mixedwood of the Boreal Forest Natural Region and the Lower Foothills of the Foothills Natural Region. Administratively, these lands have varying levels of protection status. The nature sanctuary proper cradles the northern segment of Coyote Lake,

which occupies about 135 acres (54.6 ha) and is shaped roughly like a backwards comma. It comprises the original two quarter-sections (320 acres; 129.5 ha) purchased by Eric and Doris Hopkins in 1972 and donated by them to the NCC in 1996. The NCC had previously (1994) purchased two quarter-sections along the southeast side of Coyote Lake that, along with land obtained from the neighbouring Howery family in 1999, formed what is known as the Coyote Lake Conservation Area (480 acres; 194.3 ha), making a total of 800 acres (323.8 ha) under NCC protection. The NCC has since added other land in the vicinity for a total conserved area of 1,440 acres (582.8 ha).

In addition, Crown land in the area totals 4,080 acres (1651.2 ha), although only a portion of this is protected as natural area or by protective notation status. The NCC is now seeking to protect all lands within the watershed of Coyote Lake Creek (which emerges from the southeast corner of the lake and winds northwards to the North Saskatchewan River). Their vision for conservation, perpetuating that of the Hopkins, is indeed an inspiring one. Given the nature of the surrounding terrain, an undulating topography reflecting a glacial legacy of hummocky



Enjoying a hot pancake breakfast on a cool morning.

Photo NCC

moraine that makes agriculture difficult, this vision may one day be realized.

However, our goals this weekend were narrower: to have some botanical fun, and to possibly contribute towards the monitoring and management of the already protected sanctuary. For this we split into three groups to explore the three main trails traversing the sanctuary east and west of the log house that formerly was the Hopkins' home. Each group would have an opportunity to sample two trails in the course of one-and-a-half days' hiking. Designated trail leaders were Graham Griffiths, yours truly and Laurie Hamilton; Renny Grilz,

Director of Conservation at the NCC – Alberta Region, and Ed Karpuk of the ANPC, provided additional technical and navigational support. (Renny and Ed had also taken the lead in organizing the whole event, along with Kelley Kissner, Program Coordinator of APA.) Renny, indeed, was often to be seen curled in a fetal position on the wet ground as he tried to get the best angle for his photographs, while indefatigable Ed, man of the trusty tool (his spade), was ubiquitously helpful, doing everything from counting and GPSing rare plants to dispensing information on soils, topography and geomorphology.

Saturday morning began with a mingling of those who had camped at the sanctuary the night before with those who had preferred to get up early and travel. By the time breakfast was over — a substantial affair of ham and pancakes cooked by NCC staff in the forecourt of the garage, and very welcome on a cool, wettish morning — participants had assembled, having travelled from Edmonton, Red Deer and Calgary, and from as far north

as Athabasca and Fort McMurray, as far west as Hinton, and as far south as Okotoks. Over the two days, 32 people took part (not counting “staff”).

The designated trail of our group was the Old Swamp Trail. This, after a short spur down to a boardwalk giving access to Coyote Lake, swings northwest to become the Old Walking Trail, then south, west, north and finally east to return to the access road to the sanctuary, thereby traversing a good cross-section of the habitats on the west side of the sanctuary. The other two groups explored the east side of the sanctuary, taking the Moose Meadow Trail to the northeast, and the Historic Wagon Trail to the southeast, both of which join the north-south-running

East Boundary Trail.

As our group descended the slope towards the lake, a wide band of bluish-grey sedge fen hove into view on the north shore of the lake. This proved to consist largely of lakeshore sedge (*Carex lacustris*). The abundance of this sedge, which is known from fewer than 20 occurrences in the province, mainly northern lakes, is a characteristic feature of Coyote Lake; as well, the species occurs in inshore marshes throughout the property. Graham Griffiths, in his biophysical inventory of the vegetation of Coyote Lake carried out in 1987¹, speculates as to the occurrence and dominance of lakeshore sedge: does the slight alkalinity of this perched, oligotrophic lake with a mineral bottom have anything to do with it?

Water sedge (*C. aquatilis*), is by far the commoner sedge of lakesides in Alberta, and is the sedge whose similar glaucous colour makes it instantly recognizable in roadside ditches in the early spring. I must admit I initially confused the two, but with the sedge now in flower and/or forming fruit it was possible to verify identities: the flowers of lakeshore sedge are tristigmatic whereas those of *C. aquatilis* are distigmatic. The

wider leaves of *C. lacustris*, an altogether more robust plant, at 8–21 mm compared to 2–5 mm for *C. aquatilis*, are also a giveaway. In the *Flora of Alberta*² key, *C. lacustris* separates off from

awned sedge (*C. atherodes*), by the length of perigynium teeth: 0.2–0.7 mm in *C. lacustris* compared to 1.5–3 mm in *C. atherodes*, the latter also being dark green in colour and usually, although not in all populations, having hairy leaf sheaths.



Getting ready to hit the trails.

Photo NCC

Soils in the Coyote Lake area, as summarized by Ed Karpuk

The soils belong predominantly to the Breton soil series (BTN2) consisting of well-drained Orthic Gray Luvisol (Grey Wooded soil) developed on hummocky till draped over soft rock of the Paskapoo formation. The texture of the parent material is moderately fine (silty clay loam, clay loam, sandy loam). About 10–30% of this series includes the poorly drained Devon series, a Typic Mesisol developed on very deep sphagnum peat. There are also occasional imperfectly drained Gleyed Luvisols, poorly drained Gleysols and open water.

In the southern part of the sanctuary the relief is only moderate (with 7–15% slopes) on hummocky moraine or till draped over soft rock, whereas in the northern part the slopes are steeper (12–30%), on hummocky moraine over soft rock.



white! From the end of the jetty we were able to fish out some tattered remains of the rare Robbins' pondweed

(*Potamogeton robbinsii*). The characteristic two-ranked arrangement of its crowded, stiff-looking, dark-green leaves make this a distinctive pondweed. Incidentally, it was during botanical investigations of this same lakeshore that Graham first made the distinction for North America, now universally followed by taxonomists, between what we call the "true" beaked sedge (*Carex rostrata*), a sedge with grey-green

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coloration on its upper leaf surface owing to the presence of papillae, and small bottle sedge (*C. utriculata*), which had previously been lumped in with *C. rostrata*.³

The Old Swamp Trail follows a natural break along a south-facing slope, with willows and alder turning to conifer swamp on the lake side and an upland deciduous forest of aspen and birch on the upslope side of the trail. Moving westward along it, we began to keep our eyes peeled for a targeted species, long-stalked sedge (*Carex pedunculata*). Our assignment was to count the number of individuals and circumscribe the area of this population with GPS points. I found this sedge in this same spot on 28 May 1994, and Graham and I checked it again on 23 May 1998, when we noted numerous individuals. Although the species is common in eastern North America, Coyote Lake's population is only the second record for Alberta, following Derek Johnson's initial discovery of the species at Hoople Lake near Entwistle in 1984.

We had already flagged the rough extent of the long-stalked sedge on May 18 this year when several of us had reconnoitred the trail in preparation for Botany Alberta. We had then found it in flower and once we had distinguished it from the somewhat similar, and similarly caespitose, Dewey's sedge (*C. deweyana*), had had little trouble making out its dark-green, blunt, somewhat curled-over leaves amidst the leaf litter. Alas, in the intervening 20 days the ground cover had developed amazingly, changing the forest floor into a green jungle. Moreover, this particular sedge, unlike so many sedges, is not more conspicuous in fruit than in flower because the spikelets, at the ends of



Carex pedunculata, long-stalked sedge.
Photo P. Cotterill

long peduncles that arch over towards the ground, get lost amidst the leaves. Even with a good search image, it took much careful criss-crossing of the slope before we felt we had a satisfactory count.

An isolated occurrence of a rare sedge raises the question of how long the population has been there, and whether it is spreading. (How it initially came to be there, of course, is a mystery that will likely never be solved.) Was it there in 1987, when the biophysical survey was carried out? This had been done in July, except for a reconnaissance visit on June 23. Had Graham overlooked it because there were so few plants and it was inconspicuous, or had it simply not been present? Whatever, our follow-up experience served to prove a maxim of rare plant

recording: timing of search can be everything!

Other plants of interest along this section of trail were bracted bog orchid (*Coeloglossum viride*), and the occasional clump of spotted coralroot (*Corallorhiza maculata*), its flowers somewhat past their best, both species doing well on the deciduous slope. The freshly unfurled leaves of Virginia grape fern (*Botrychium virginianum*) popped up in surprising numbers.

We ate lunch on the trail, finding relatively dry ground and good back rests among the well-grown white spruce (*Picea glauca*) on the downslope side of the trail. Here ensued a lively discussion as to the affinities of the fir trees that grew among the spruce. Graham considers these to be subalpine fir (*Abies bifolia*), and certainly Coyote Lake is within the range of this species, which can of course always be identified with certainty (and often with cones)

as a krummholz component in the Alberta Rockies. Along with such plants as false Solomon's-seal (now *Maianthemum racemosum*) and white meadowsweet (*Spiraea betulifolia*) that are best seen on the east side of the sanctuary, and lodgepole pine (*Pinus contorta* var. *latifolia*), known from the southwest side of the lake, subalpine fir represents a cordilleran element in the Coyote Lake flora, which is otherwise largely boreal.



Carex backii, Back's sedge, seed head.
Photo L. Hamilton

However, Coyote Lake could also conceivably be within the western limits of the range of balsam fir (*Abies balsamea*), which is common further east in Canada. We examined twigs that variously had leaves greyish-green and upcurving (*bifolia*-like) or darker green and two-ranked (*balsamea*-like), and any combination of these character sets, without coming to any conclusion. The possibility of hybrids, even the position of the twigs on the tree, seemed likely confounding factors. In the absence of any cones, a positive identification seemed impossible — an ecological consultant's nightmare!

With the weather improving we continued westward, taking time to assess a small population of great-spurred violet (*Viola selkirkii*), a new find for the sanctuary, and later on, Back's sedge (*Carex backii*). Although this sedge was once on the tracking list as a provincial rare it is now accepted that its somewhat capricious appearance is due to its role as a colonizer. It often appears in abundance after forest disturbance (e.g., fire, logging, natural tree fall or beaver felling). Sure enough, the plants we found were close to the trail in a shrubby area that had once been forest.

We were taking a break at the western edge of the property just where the trail swings north when Leslie Monteleone found one of the tiny grape ferns or moonworts (let's call it *Botrychium* sp. for the time being). *Botrychia* never cease to amaze me: both in respect of where they turn up and where they fail to do so. The scrubby edges of well-established trails, especially on sandy or gravelly soils colonized by wild strawberry (*Fragaria virginiana*), are worth a search, but even then the chances of finding any of these errant scraps of pteridophyte are lottery-slim. When several minutes' search turned up one other specimen but no more, we lost interest and turned round and headed for home. Back at base camp



The rain did not stop the troops from getting into the weekend!
Photo NCC

(that is, the house) we discovered that our find was nothing compared with the numbers of grape ferns others had found along the Historic Wagon Trail. Graham identified these plants as *Botrychium minganense*, a rare moonwort (aren't they almost all?) that is nevertheless more usually found in the foothills (another cordilleran element?) and the somewhat commoner *B. pinnatum*. Also unusually, most of these diminutive grape ferns were growing upslope, in the shade of beaked hazelnut shrubbery. Altogether this is an interesting find, and one well worth following up in the future.

Sitting on the veranda, swapping our experiences of the day, and being entertained by a procession of lively birds to the well-stocked feeders, reminded me of old times. It seemed strange for Doris and Eric not to be there, the couple who had so graciously invited naturalists to their sanctuary home for so many years and were well known to fellow stewards in the Alberta government's volunteer stewards program. (Eric died in November 2006 and Doris very recently relocated to Edmonton.) However, the legacy of stewardship was clearly continuing

under the new administration of the NCC.

A barbecue featuring bring-your-own victuals kicked off the evening. We stared in fascination as Laurie tackled a huge steak that was entirely devoid of vegetable trimmings. Is she a plants rights activist without knowledge of the food chain, we wondered? Later, those of us who were camping up the hill in Moose Meadow found relaxation and camaraderie around a campfire, bemoaning the lack of respect that is accorded to nature in this province!

On Sunday morning campers again congregated over breakfast with returning participants who had sought shelter indoors. Even as the weather deteriorated into steady rain, we set out on further forays along the trails, east and west, particularly seeking reprises of the hotspots identified the day before. Long-stalked sedge was once again the focus of attention on the Old Swamp Trail. This time we spent some time debating whether any special features, especially edaphic ones, had made this slope particularly suitable habitat for this woodland species, and

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whether it would be worth removing one or two plants to propagate a new colony elsewhere in the sanctuary. We also took some time to examine golden saxifrage (*Chryso-splenium iowense*) and marsh violet (*Viola palustris*) in the wet bottoms of the alder-willow swamp, noting at the same time extensive patches of small enchanter's nightshade (*Circaea alpina*), which seems to have been incredibly abundant everywhere in wet woods this year.

We explored a tamarack-black spruce-dwarf birch (*Larix laricina*-*Picea mariana*-*Betula pumila*) bog forest beyond the swamp, adding a whole new suite of species to our checklists, including the relatively rare ericoid, creeping snowberry (*Gaultheria hispidula*). By the way, when I later thought to ask Ed why there should be a bog on this part of the lakeshore and fens elsewhere, I got this reply: "I suspect [the buildup of bog sphagnum peat in the northeast portion] is the result of subsurface

flow to the southeast toward Coyote Lake pushing up fen organics above the mineral-rich, calcareous subsurface flow... resulting in the peat receiving most of its moisture from precipitation, resulting in acidic, ombrotrophic conditions more conducive to the growth of *Sphagnum* and associated ericaceous plant species and black spruce."

We were back at the house by about midday, changed into

dry clothes and downing hot drinks and snacks courtesy of Kelley, ever

solicitous for her volunteers' welfare, and NCC staff. Renny, who hadn't changed and was minimally equipped with waterproof gear, looked like a likely candidate for hypothermia, but he assured us that these climatic conditions really suited him, as a cool, temperate sort of guy. Much like the flora, maybe! Even so, none of us felt like disagreeing with Graham,

who felt that this natural region

couldn't possibly be Dry Mixedwood, it must be "Moist Mixedwood."



***Botrychium pinnatum*, a grape fern found at Coyote Lake.**

Photo L. Hamilton

Preliminary Survey of Lichens of Coyote Lake NCC Property by Janet Marsh

A preliminary lichen survey of the Coyote Lake NCC property was conducted on 18 May 2008, in preparation for the Botany Alberta 2008 weekend. Twenty-two lichens, including one tracked lichen, *Ramalina sinensis*, were observed.

The majority of lichens were found along the initial section of the Old Swamp Trail on the coniferous trees, white spruce and balsam fir. Many of these common lichens, such as *Evernia mesomorpha*, *Usnea lapponica* and *Parmelia sulcata* occur on trees in the Dry Mixedwood Boreal Forest and the Central Parkland natural subregions. Both of these natural subregions form a transition zone in the Coyote Lake area.

The Historic Wagon Trail with a drier aspect supported poplar and fewer lichens were found there than in the coniferous forest. On the trunk of poplar was the lichen, *Ramalina sinensis*, ranked provincially with an "uncertain status". This lichen has been found in scattered locations in Alberta, but is rare in the rest of the country. Other interesting lichens on poplar are the bright orange *Xanthoria candelaria* and the dull green *Melanelia albertana*.

As we packed up to go home, I deliberated whether I should detour and call in at Strawberry Creek Natural Area, about half-an-hour's drive to the southeast. The weather was a deterrent, but unusually for me, I had come prepared with maps. The idea was to check on a record of Clinton's bulrush (*Trichophorum clintonii*). I decided to go, and I was glad I did. Entering the natural area from the southeast, close to the creek, I had only been on the site for about ten minutes before I came across — guess what? — several patches of long-stalked sedge! With a search image fresh in my mind, the plants were unmistakable, although of course I checked their spikelets to be doubly sure. For the most part, these patches occurred in shallow depressions in a rather open mixed woodland of white spruce, Alaska birch (*Betula*

neolaskana) and aspen (*Populus tremuloides*). Clearly this species has better dispersal strategies up its sleeve than we give it credit for!

I only found plants in a relatively small area (after about an hour's rambling search), although the question immediately arises as to whether it occurs in scattered locations in this same (trail-less) half-section of natural area, and indeed in wooded areas in the region generally. This suggested to me that, rather than interfere with the populations at Coyote Lake, we should mount a more extensive search for this species in suitable habitat locally. Incidentally, I discovered later that the seeds of this sedge are dispersed by ants: each has a fatty appendage known as an elaiosome that is attractive to ants. The moist habitat at both sites did not seem very conducive to them, but in small numbers ants probably would not have been noticed. Unfortunately, I did not re-locate Clinton's bulrush at Strawberry Creek but in addition to the long-stalked sedge I did find another rare plant, a wood-rush (*Luzula acuminata*), so I left feeling satisfied. Clearly natural areas, even small, disconnected ones, are serving a valuable function as reservoirs for our less common plants.

Looking back over the weekend, I felt particularly inspired by the keenness of the young people, who had an enthusiasm and tenacity that rain could not dampen. Coyote Lake has clearly become an excellent site in which to conduct monitoring and research, and therefore a playground and workshop for our next generation of naturalists and stewards. Thus may the vision and the stewardship of our predecessors be continued, perpetuating their legacy into the future.

Note: In follow-ups after the weekend, Ed supplied GPS data for APA and ANHIC on about a dozen species of interest.

References:

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2. Moss, E.H. 1983. Flora of Alberta, 2nd ed. revised by J.G. Packer. University of Toronto Press, Toronto.
3. Griffiths, G.C.D. 1989. The true *Carex rostrata* (Cyperaceae) in Alberta. Alberta Naturalist 19:105–108.

Special thanks to the following people who worked so hard to make Botany AB a success, including organizing it in detail, publicity, communications,



catering, compiling records and taking photographs: Renny Grilz; Colleen Cole and Tina Sun of the NCC Conservation Volunteers program; Ed Karpuk and Kelly Ostermann of the ANPC; Kelley Kissner of the APA; and Darren Bender. Thanks also to Janet Marsh who was not able to attend the main event but compiled a list of lichens during the May 18 reconnaissance trip.

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Software Review

1200 Weeds of the 48 States and Adjacent Canada, An Interactive Identification Guide

Reviewed by Jim Posey

There are two distinct elements involved in the interactive digital system entitled *1200 Weeds of the 48 States and Adjacent Canada, An Interactive Identification Guide (1200 Weeds)*, developed by Dr. Richard Old, XID Services. One is a database of plants and their distinguishing characters, including pictures and distribution maps. The other is an underlying system software that, with different databases, could be used to identify anything that can be classified by distinguishing characteristics; for example, identifying tires from their tracks. The same system software is used by Bruce Barnes for his digital flora databases of western North America (e.g., *Alberta Digital Flora*, further information at <http://www.anpc.ab.ca>).

This digital system allows users to identify weeds by picking the features they can see and understand, in any order, instead of working through a dichotomous key which asks pairs of questions, possibly about characters that are not present. Each time the user picks a character, flower colour for instance, the program eliminates from consideration all the plants in its database that don't match the chosen characters, and also limits subsequent choices to those which apply to the remaining possibilities. As characters are picked, the number of possibilities becomes narrower, so that the user might decide, when only a few remain, to look at the pictures to identify a specimen.

I was surprised to learn, by choosing

“Grows in Alberta” as the only characteristic, that we have 385 broadleaf weeds and 74 grass-like weeds. On closer inspection, it seems that many native plants are classified as weeds in this database, including western blue flag (*Iris missouriensis*)! The distribution maps show which species are native for US states but not for Canada, so if you were unsure, you'd have to consult other sources. Many of the non-native species are not listed in Moss' *Flora of Alberta*. Dr. Old presumably included them because they have the potential to disperse and persist in Canada in the future. Jointed goatgrass (*Aegilops cylindrica*), for instance, is not known to be present in Alberta, but is classified as “introduced” in Montana.

The inclusion of many native plants, as weeds, raises the question, what is a weed? Should I be looking here, or in a more comprehensive flora? For cultivated and disturbed areas, this is probably not much of a problem. If there's a lot of a plant around, and it's not the crop, it's probably one of these 459 species. If you meet an unfamiliar plant in a natural area, and there are only a few individuals, it might be a weed. But it might be a rare plant, too. When you use this database, it's probably a good idea to remain skeptical about identifications that are anything less than crystal clear. Consulting Moss' *Flora of Alberta*, USDA Plants (found at <http://plants.usda.gov/>), or the Flora of North America (not to mention Google images) to see if they

provide additional information about a preliminary identification is a good idea.

In *1200 Weeds*, most of the pictures are excellent. Considerable effort has evidently gone into clearly illustrating the distinguishing characters of each species. There are more than 6000 pictures included and all are JPG files that you can access with Windows Explorer. Non-commercial use in presentations and educational materials is encouraged (with credit), and Dr. Old has allowed the Alberta Native Plant Council (ANPC) to use the images in their Rogue's Gallery Wikipedia (<http://www.anpc.ab.ca/wiki>) where many pictures have been uploaded, at reduced size (typical originals are 1200 x 1600 pixels; ANPC website images are 600 x 800 pixels).

Technical Specifications

The software can apparently run on any Windows OS from Windows 95 up, off of the DVD, or from hard disk (with 2.6 GB or more free space for installation). A 1280 x 1024 display is recommended, but not essential. Images are displayed on lower resolution screens with scrollbars, rather than being reduced. The software requires Microsoft .NET Framework, and (I suspect) Internet Explorer (IE). My default browser is Firefox, but when the program displayed HTML, it chose IE. I tried running *1200 Weeds* using WINE, a Windows virtual machine, on a Linux system. The opening page displayed properly, but trying to answer

a question resulted in errors. If an emulator was also running .NET and IE, it might work, but installing either program under emulation would be a licence violation. The *1200 Weeds* system itself is licensed for a single user, single instance. The user can run it on different computers, as long as only one copy is in use at a time. However, multi-user licences are available.

Testing the System

To test the system out, I stopped by a roadside (in October) and pulled up one of those annoying mustards that I've never bothered to be sure I could identify, and some absinthe wormwood. After selecting the database for dicots, I chose the following characters of the mustard:

- Petals: yellow, or greenish yellow, or reddish yellow (I had already discovered that the system and I don't always agree about colour.)
- Grows: in Alberta
- Leaves: alternate, pinnately lobed, sparsely hairy, leaf margin parted
- Family: *Cruciferae* (4 petals, 6 stamens)
- Fruit: 2.5–3.5 mm long and 1–2 mm wide

This got me down to two species, *Diplotaxis muralis* and *D. tenuifolia*, but which one? If I chose “not smelly,” that eliminated *D. muralis* (which is known as stinking wall-rocket in some places), but the plant did have a mild smell. The only other helpful choice was perennial versus biennial. I could not say, so I looked at the pictures and descriptions.

Many of the pictures in the database are excellent, but in this case they were of no help. USDA Plants was not much help either (except that it says *D. tenuifolia* does not occur in Alberta, contradicting the database, but agreeing with Moss' *Flora of Alberta*). Google image searches for both species just about convinced me that it was *D. tenuifolia*, because the stems were

leafy compared to most pictures of *D. muralis*, not to mention the lack of stinkiness. But, I was still not entirely sure.

Scoggan's *The Flora of Canada* pushed me the other way. The fruits were much longer than their pedicels, and they were nonstipitate. (I had found a Google image of *D. tenuifolia* showing a stipe at the summit of the pedicel supporting the base of the fruit, so I knew what to look for.) The petals and sepals were the right length for *D. muralis*.

A new weed for Alberta? On the first try? Maybe.

With a conventional flora, if you can wade through the key, there is generally a description of the plant with information not used in the key that helps to confirm your diagnosis. In this case, the photos were of little help, and there's not much verbal description. In

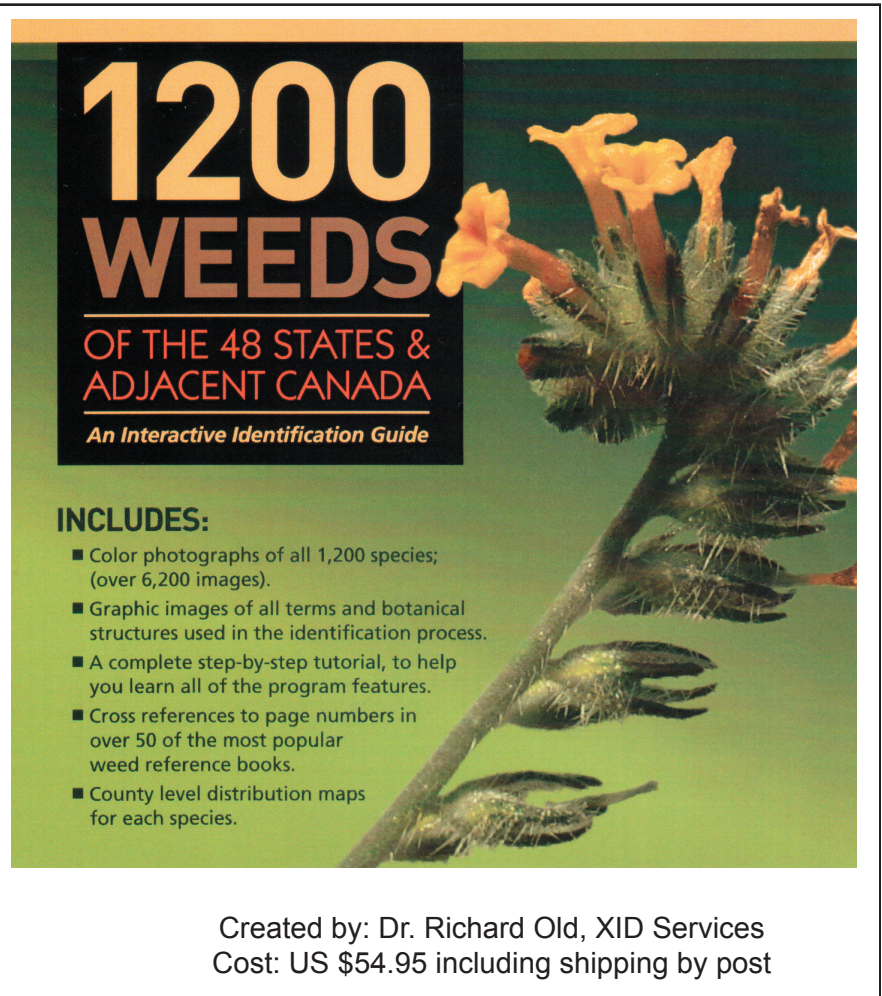
other cases, the photos would provide enough information to confirm an identification. You can view, for each species, a list of all the characters the system uses to distinguish that species.

Using Moss' *Flora of Alberta*, I can identify this plant in a fraction of the time, but that might not be true for everyone, and the identification would be wrong, without my suspecting anything, if the plant actually were *D. tenuifolia*, since as far as the *Flora of Alberta* is concerned, it does not occur here and does not need to be differentiated.

For my next test, I chose a plant I knew — absinthe wormwood. I was able to identify it without describing flowers or fruit by choosing:

- Grows: in Alberta
- Plant: aromatic

See *1200 Weeds*, page 10



1200 WEEDS
OF THE 48 STATES & ADJACENT CANADA
An Interactive Identification Guide

INCLUDES:

- Color photographs of all 1,200 species; (over 6,200 images).
- Graphic images of all terms and botanical structures used in the identification process.
- A complete step-by-step tutorial, to help you learn all of the program features.
- Cross references to page numbers in over 50 of the most popular weed reference books.
- County level distribution maps for each species.

Created by: Dr. Richard Old, XID Services
Cost: US \$54.95 including shipping by post

Key for Dry and Crunchy Slender Mouse-Ear Cress

by C. Dana Bush

I don't recommend identifying rare plants when they are senescent, but occasionally one is driven to do so. Slender mouse-ear cress (*Halimolobos virgata*) is a delicate mustard with white or pinkish flowers, and long, erect, cylindrical siliques. The standard cruciferae keys rely on flower colour, and the length and shape of the siliques, characteristics that are not present in July. Here is a comparison table that distinguishes the dried plants from similar mustards.

Species	Stem Hairs	Siliques	Seeds
<i>Arabis hirsuta</i>	stem hairy to summit with spreading, mostly simple hairs	siliques erect and flat, 3–5 cm long	seeds in one row, winged
<i>Erysimum inconspicuum</i>	stems grey-pubescent and scabrous with 2–3 branched hairs	siliques erect, cinereous (smoky coloured), 2–5 cm long and 1 mm thick; pedicels thick with an enlarged tip, and shorter than the siliques	seeds in one row in each locule, oblong, marginless
<i>Halimolobos virgata</i>	stems with longer straight, simple or forked hairs plus shorter branched hairs; hairs very persistent and can be seen on the dried stalk	siliques glabrous, erect or nearly so, terete (circular in cross-section), 1.5–4 cm long, 1 mm wide	seeds irregularly biseriata (in two ragged rows)



***Halimolobos virgata*, with persistent leaves and hairs on the stem. The seeds in the siliqua, shown below the stem, are not quite uniseriate or biseriata — they form a ragged double line.**

Photo C. Dana Bush

Reference:

Moss, E.H. revised by J.G. Packer. 1992. *Flora of Alberta*. University of Toronto Press, Toronto, Ontario.

1200 Weeds, from page 9

- Plant: biennial or perennial
- Plant: 4–10 dm high
- Leaves: alternate, pinnately dissected
- Leaf tips: acute or rounded
- Leaves: not glabrous, glaucous or sparsely hairy

That left *Artemisia campestris* and *A. absinthium*. The pictures would have made the choice perfectly clear, had I not already known. I don't remember if absinthe wormwood is biennial or perennial, and could not judge from the few dead leaves from a previous year. (I wish I'd noticed the aphids earlier, though. There were thousands of them crawling all over me.)

In my collected plants, I discovered a fragment of a third species that I did not recognize. I could answer 13 questions, though, or thought I could, but that eliminated all the possibilities. By asking the software to ignore one of my answers (not any particular answer, just each one in turn), my list of possible species expanded from zero to 30 and I was quickly able to identify the fragment from the photographs. I could have asked for any combination of two or more answers to be ignored, if necessary. Had I been using *Flora of Alberta*, I would have been out of luck.

There are two separate databases, one for broadleaf plants, the other for grass-like plants. I picked two grasses that were still reasonably intact, and with the first grass sample I was able to easily get down to two possibilities with these choices:

- Grows: in Alberta
- Family: *Poaceae*
- Plant: perennial, rhizomatous, erect, 8–10 dm high
- Habitat: mesic
- Spikes: 1 spike or raceme
- Spikelets: 1–1.5 cm or 1–2 cm

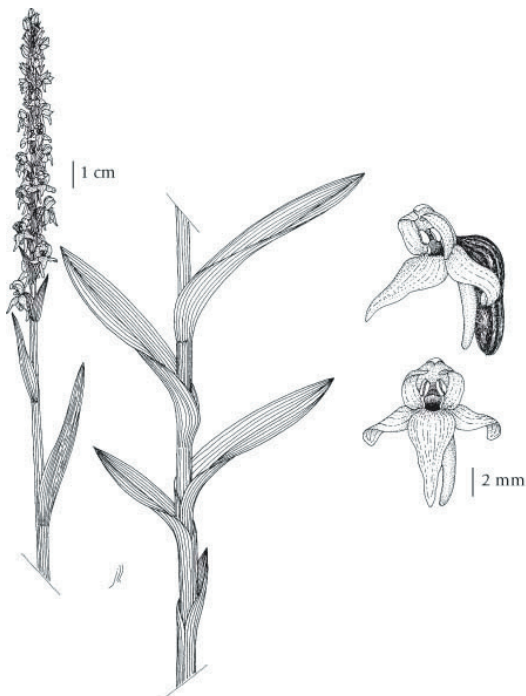
See 1200 Weeds, page 12

Puzzling Pairs: Two Northern Green Orchids to Admire

by Lorna Allen

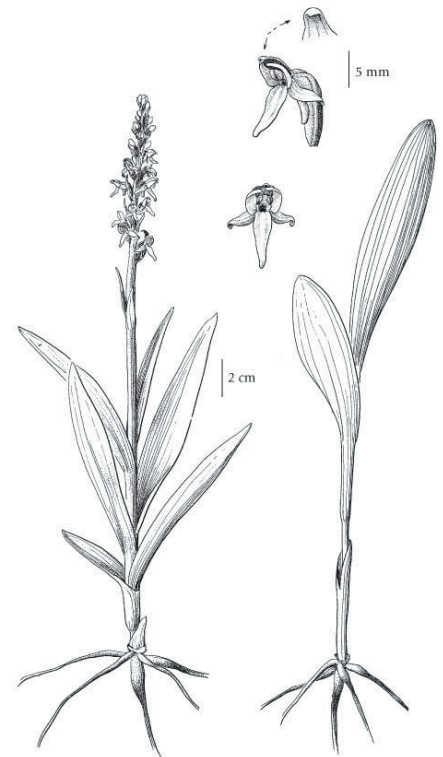
So, you think you know the northern green orchid when you see it? Well, here is a puzzling pair for you. Not only has *Habenaria hyperborea*, as it is called in the *Flora of Alberta*, switched genus to *Platanthera* (well, that change came a while ago), but what keys out to *H. hyperborea* in the *Flora of Alberta* is one of two different species — either *Platanthera huronensis* or *P. aquilonis*. There is a species called *Platanthera hyperborea* but, according to the *Flora of North America*, it is restricted to Greenland and Iceland.

So, in Alberta we have *Platanthera huronensis* (tall northern green orchid) and *Platanthera aquilonis* (leafy northern green orchid). But if you look at the table below, you will see that the features of both are often similar. The best distinguishing characters may be anther position and whether the pollinia masses are free and trailing (leafy northern green orchid) or remain closed in the anther sacs as in tall northern green orchid. The identification challenge is summed up by this note from the *Flora of North America*: “*Platanthera hyperborea* refers to a bewildering complex that has defied satisfactory treatment.”



Platanthera huronensis

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Platanthera aquilonis

© University of Washington Press

Characteristic	Leafy Northern Green Orchid (<i>Platanthera aquilonis</i>)	Tall Northern Green Orchid (<i>Platanthera huronensis</i>)
Anther position	anther low, appearing to lie atop stigma	anther high, rising above stigma
Pollinia	rotate forward or fragment, with pollen masses free and trailing down onto the stigma	remain enclosed in anther sacs
Lip shape	rhombic to lanceolate	lanceolate usually with obscure basal dilation
Lip colour	yellow to yellowish green	whitish green
Spur shape	clavate	slenderly clavate to cylindric
Spur length	2–5 mm; mostly shorter than lip	4–12 mm
Leaf position	ascending to spreading	ascending
Scent	usually unscented	typically fragrant
Alberta distribution	found throughout	possibly restricted to the western half

Reference:

Flora of North America Editorial Committee, eds. 2002. *Flora of North America North of Mexico*, Volume 26: Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, New York. 723 pp.

The possibilities were quack grass (*Elymus repens* [syn. *Elytrigia repens* var. *repens*]) or western wheat grass (*Pascopyrum smithii* [syn. *Agropyron smithii*]). There were still plenty of questions I could choose from to distinguish between them. Had the ligules not been weathered to more-or-less gone, the difference between erose and ciliate might have done the job. All the remaining questions had to do with the floret anatomy, and length ratios between various parts. A fresher specimen and a microscope would have made answering these questions easier, but I could only answer one: the upper and lower glumes were of approximately equal length, hence quack grass. Measuring the length of the spikelets more carefully (and choosing 1–1.5 cm) would have led to the same answer.

Lastly, I picked a grass I thought I knew, but was not sure of. The characters I chose were:

- Grows: in Alberta
- Plants: with ligules, stems not triangular, perennial, rhizomatous, erect, 1–2 m high
- Inflorescence: 1–1.5 dm long, dense panicle
- Leaf blades: 1.5–2 cm wide

I could have simplified this list by saying it was a grass. By now, you've probably identified it, or at least you have enough information to do so. It was, as I thought, reed canary grass (*Phalaris arundinacea*). I could have answered different questions, about ligules (shape and other characters), auricles, glumes, lemmas, spikelets, pubescence, and more, but in this case none of these were necessary. For grass-like plants in particular, and even for broadleaf plants, there will be more difficult cases, and you'll need a magnifying glass and a ruler. But, you won't need a botanical dictionary (at least not often) since when you select a question to answer, a screen of drawings and definitions is displayed that will almost always suffice.

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The Alberta Native Plant Council strives to:

- Promote knowledge of Alberta's native plants.
- Conserve Alberta's native plant species and their habitats.
- Preserve plant species and habitat for the enjoyment of present and future generations.

The Council's specific objectives are:

- To educate individuals, industry, and government about native plants.
- To promote awareness of native plant issues through a newsletter, an annual workshop, and in the media.
- To co-ordinate information and activities concerning Alberta's native plants.
 - To develop briefs or position papers for special projects; for example, biodiversity, forest vegetation management, wetlands, rare species or phenology.
 - To organize field trips, plant studies and May Species Counts.
 - To update lists of current research and conservation projects.
- To preserve natural habitats and plant communities.
 - To support legislation that protects native plants.
 - To take action to establish, preserve and manage protected areas.
 - To undertake Alberta projects jointly with like-minded groups.
- To encourage appropriate use of Alberta's native plants.
 - To produce information on the use of native plants in land reclamation.
- To develop and distribute collection, salvage and management guidelines.
 - To update a list of native seed sources and suppliers for horticulture and reclamation.

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