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C/o Botanical Garden, Memorial University, St John's, NL, A1C 5S7

e-mail: sarracenia@nl.rogers.com

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Boechera stricta near Cape St George. Inflorescence with maturing siliques. (p. 17) H. Mann



Listera borealis in Gros Morne. Whole plant . (p. 21) A. Voitk

Newfoundland Botany on the Web.

Back Issues of Sarracenia.

As mentioned earlier, since Vol. 16, Sarracenia has been deposited electronically with Library and Archives Canada, and these issues are available on the web. But as your editor has not been able to find them himself via the LAC's search engine here is the url:-

<http://epe.lac-bac.gc.ca/100/201/300/sarracenia/index.html>

Other useful sites.

John's Digital Flora:-

<http://www.digitalnaturalhistory.com/flora.htm>

Henry's Botany pages:-

<http://www2.swgc.mun.ca/botany/home.asp>

Sue's List:-

<http://www.digitalnaturalhistory.com/meades.htm>

Engaging the public with natural history via the web.

By Yolanda Wiersma

Department of Biology, Memorial University (St. John's)

When you're not out hiking and observing the province's plants and wildflowers, do you spend time online? Many people use the internet for trip planning, research, and online shopping for new gear and books. The Internet can also be a valuable educational tool. New advances in web technology (termed "Web 2 point oh" or "Web 2.0") that enable the user to generate online content easily (think of sites that let you upload photos, like Flickr; or upload and share videos, like YouTube) are contributing to ever-expanding content for us to spend time on. Much of this content is frivolous, but some can help raise public awareness about environmental issues.

I am part of a nation-wide research project investigating the way the general public interacts with Web 2.0 and online maps, particularly web-based ones for environmental issues. Together with my research assistant, Roman Lukyanenko, we have launched a website aimed at encouraging the public to become engaged with the plants and animals of our Newfoundland and Labrador. One of the goals of the site (www.nlnature.com) is to encourage public participation in sharing sightings of plants and animals. Individuals are

encouraged to set up a membership profile (which takes less than 5 minutes) and to post sighting using the interactive Google map. Submission of photos is possible (and encouraged). By submitting photos, those who are just learning to identify species can benefit from more experienced members who can comment on postings and offer insights as to possible identification. Thus, the site is also providing an online community of individuals with similar interests in wildlife and plants in Newfoundland and Labrador and information flow is multi-way. Members are allowed to post comments on each others sightings and may also participate in the online forum – which has discussion threads on a variety of topics (including one to post upcoming nature-based events).

Although this is very much a "citizen science" endeavour, the sightings are not being collected systematically and thus cannot be used in any comprehensive ecological analysis. However many "eyes on the ground" reporting on what they see while out and about may help indicate trends of interesting phenomena, and are more likely to see novel species than researchers who are limited in the amount of the province they can survey at any given point in time. We hope the members of the Wildflower Society will actively participate on the site, as many of you can contribute photos or help to identify the unknown species that other members post. Many members of the NHS are very skilled at identification of birds, mushrooms, wildflowers and other species. We are always open to suggestions for ways to make the site more useful and user-friendly. Please visit:

www.nlnature.com

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Uncommon Wildflowers of Newfoundland 6: Drummond's Rock Cress (*Boechea stricta* (Graham) Al-Shehbaz =*Arabis drummondii* A. Gray)

By Henry Mann.

In early July of 2007 the convoy of our Wildflower Society field trip stopped at a site between Cape St. George and Mainland on the Port au Port Peninsula. There on the exposed limestone barrens we observed and photographed many interesting calciphilous (calcium-loving) plants, most of which were small species growing close to the exposed limestone rock surface. In damper depressions where a thin skin of organic soil blanketed the rock to create low open shrubby sedge communities, the uncommon Hooker's Orchid (*Platanthera hookeri*) was observed blooming in great profusion. On the gravels around the parking spot we noticed rather upright tall plants obviously belonging to the Mustard Family (Brassicaceae or Cruciferae) (Figure 1). The species was still in bloom with its white to pale mauve four-petaled flowers, but already some fully formed seed pods (siliques) were present in the lower inflorescences (Figure 2 – see cover). From the tall stature, flower colour, and upright straight siliques the species was recognized as Drummond's Rock Cress, so named for Thomas Drummond, a Scottish botanist who explored parts of western North America. *Arabis drummondii* has recently become a synonym for the currently accepted name *Boechea stricta*, but the common name still recognizes Drummond.



Figure 1: Plant of *Boechea stricta* on the lime-stone gravels near Cape St. George.

Renaming plant species has again become common in the last 20 years or so because more and more taxonomists are using minor DNA differences to split or rearrange formerly accepted groupings of species. Naturalists and non-specialists are often not aware of nomenclature changes because there is a considerable lag in getting these scientific revisions into the popular literature, such as new or revised field guides, so this sometimes causes frustration for scientists, naturalists, students and editors alike. As naturalists,

however, we should take solace that actually nothing in nature has changed. Before and after a name change the plants are still the same, they grow in the same habitats, their common names need not change, their structural features by which we distinguish them are the same, and the "old" keys and guides still work as well as they ever did!

Drummond's Rock Cress is a biennial or short-lived perennial 30 – 90 cm tall developing from seed into a leafy rosette in its first year (Figure 3), the subsequent tall stems arising from the centre of the rosette in the second year. Basal leaves are 2 – 8 cm long with short petioles, narrowly oblanceolate, and with entire, wavy or sparsely toothed margins. Stem leaves are 2 -3 cm long, pointy-tipped, entire, and with ear-like bases clasping the stem.

Characteristic erect flattish siliques are 4 – 10 cm long with two rows of winged seeds in each of the two chambers. As plant enthusiasts, we need to be aware that in the



Figure 3: Leafy first year rosette.

Mustard Family mature seed pods are often necessary for species identification. The family also has a variety of hair types (trichomes) which may be simple or variously branched or forked. These are also often important for identification purposes. Although *B. stricta* is not a very hairy species, especially in its upper parts, the lower stem and basal leaves bear simple hairs as well as “malpighiaceus” hairs (appressed two-forked hairs) which are uncommon in this genus.

Drummond’s Rock Cress is distributed across Canada in all the provinces and territories except perhaps PEI, and in most of the USA except the extreme south and south-east. A few States, all eastern, list it as an endangered species because of its local uncommonness, although globally as a species it is secure. In Insular Newfoundland it has been listed as S1 (critically endangered) because of low numbers and few recorded locations. It also occurs in southern to central Labrador where its status is probably similar. Like so many of our provincially rare species, Drummond’s Rock Cress is rare because its habitat is rare. In Newfoundland *B. stricta* is considered a calciphile because it is mostly associated with the limestone barrens. However, like many of our so-called calciphiles, it is probably not a need for calcium *per se* that determines this preferred distribution, but the general conditions which that habitat provides. Throughout its North American range it prefers rocky, gravelly, well drained warmer soils that are not excessively saline or of extreme pH at either end of the scale. It will apparently flourish in normal agricultural and garden soils of minor calcium content. Open unshaded habitats and habitats where it

cannot be out-competed or crowded by other dense herbaceous or shrubby vegetation also are important. The only habitats in our province where all these conditions can be found are the limestone barrens, alpine cliffs, talus slopes and associated sites of human disturbance. Exposed limestone barrens are relatively uncommon in Newfoundland, but even a large portion of them are unfavorable for the growth of some species such as this one because of extreme climatic conditions of wind, temperature, frost damage, salt spray or water-logging.



Figure 4: Typical “crucifer” flowers of *B. stricta*.

Much research, with resulting literature, was carried out in the 20th century examining the difference between supposed calcium-loving and calcium-hating plants (i.e. the calciphile – calciphobe problem). Sometimes the plants were referred to as calcicoles (occurring only on calcium substrates) and calcifuges (not occurring on calcareous substrates). It became clear that that a multitude of factors both physical and biological determine whether a given species preferentially grows on or avoids calcareous habitats, the

presence or absence of calcium is only one of these. And not all “calciphiles” growing in the same locations are there for the same reasons. For some it is avoidance of aluminum toxicity in acid soils, some do not germinate well in acid conditions but could tolerate conditions in the adult state, others require well aerated warm soils, and so on in all possible combinations. Very few species have been critically studied to see which suite of factors actually determines their ecological distribution.

The Mustard Family is easy to recognize because of its characteristic flower structure, usually 4 petals, 6 stamens, four long and two short, (Figure 4) and by the type of fruit (silicle or silique). Great variation occurs in mature fruit structure making this an excellent character for identification purposes. In Newfoundland and Labrador we have at least 66 species in this family of which about half have been introduced. In almost every outing members of the Brassicaceae will be encountered so getting to know the family will be well worth the effort. Most of our common species can easily be identified with the available field guides, but the family also offers some challenges like distinguishing the little *Drabas* from one another. An excellent introduction to the family can be found in the small BSBI Handbook, “The Crucifers of Great Britain and Ireland” (Rich 1991). Not only does it clearly discuss and illustrate all features necessary for identification, it also describes and illustrates 40 of our 66 species. A more local publication for those capable of reading French includes all of our species and is authored by Andre Sabourin (1992).

Happy Botanizing!

Cited Literature

Rich, T.C.G. 1991. Crucifers of Great Britain and Ireland. B.S.B.I. (Botanical Society of the British Isles) Handbook No. 6, London. UK.

Sabourin, A. 1992. Guide Des Cruciferes Sauvages De L'Est Du Canada. Les Amis du Jardin Botanique, Institut Botanique de Montreal, Montreal, PQ.

Bladderworts Anyone? A Request from Henry Mann.

This is 4707 on the Chinese calendar and the year of the Tiger (Geng Yin). For me personally this is 2010 and the year of the Bladderwort!

Many of you know that I am trying to obtain a range of photos for every one of our carnivorous plant species. The genus *Utricularia* is particularly challenging because of its aquatic habitat and because some species are difficult to find in bloom as they will only flower under optimum low water conditions in their season. My goal is to get a series of photos for each species; habitat, full plant, flower close-ups, leaf and trap close-ups, micro shots, etc. for an intended photographically oriented book (booklet?). Again this year I am alerting the botanical community to be on the lookout for bladderwort species in bloom and to inform me where such are located. This is especially needed for the rarer species for which I have few or no photos at present. These include the purple-flowering *U. purpurea* and the yellow-flowering *U. geminiscapa* and *U. ochroleuca*.

The other species are more common, yellow flowered, bloom more regularly, and are easier to locate (i.e. *U. macrorhiza* = former NA *U. vulgaris*, *U. minor*, *U. intermedia*, and the terrestrial *U. cornuta* is especially common and flowers profusely each year). I should have little trouble locating and adding these four common species to my photos, but of course, getting those "really good" shots of all

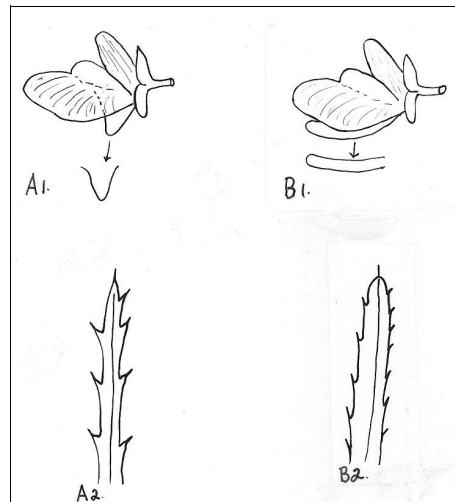


Figure 1:

A. *Utricularia ochroleuca*,
1. Flower, side view with pouch-like spur less than half the length of the lower petal. 2. Ultimate green leaf segment with distinct teeth terminated by a bristle, tip of leaf segment quite sharply pointed.

B. *Utricularia intermedia*,
1. Flower, side view with tubular spur more than half the length of the lower petal. 2. Ultimate green leaf segment with indistinct teeth, bristles almost arising directly from leaf margin; leaf tip less pointed, sometimes blunt or almost rounded.

species requires taking many, many snaps at varying lighting, orientation, exposure, magnification, etc., especially since I am still somewhat of a novice in the art of wildflower photography.

How does one recognize the three rarer species? *U. purpurea* is easy because it is our only purple-flowering bladderwort. To my knowledge it has never been photographed in bloom in Newfoundland although it appears to be more widely distributed than formerly recognized. *U. geminiscapa* is yellow flowered and has a distinctly 3-lobed lower corolla lip. Also it has tiny green non-showy underwater flowers bending downward from the stolon near the base of the upright above-water showy yellow flowered stalk. No other species has these tiny (cleistogamous) underwater flowers. Both *U. purpurea* and *U. geminiscapa* are free floating plants not attached to the substrate of the pond. You are encouraged to revisit an article in *Sarracenia* Volume 14(3), 2006 on the Bladderworts of NL which illustrates these two species.

The rare *U. ochroleuca* and the common *U. intermedia* are superficially very similar, both have yellow flowers, conspicuous flattened green leaves on the surface of the substrate with few or no traps, and branches that are white which penetrate into the substrate of the pond and which bear the many bladder traps. The easiest way to tell the two apart is by examining with a hand-lens the flower spur and the

green divided ultimate leaf segments. Both species have teeth with bristles along the margins of their leaf

segments, but they differ in size, shape and number per leaf segment. Refer to the Figure 1 and the

following excerpt from Ceska and Bell (1973).

Spur of flower more than 1/2 the length of the lower lip, cylindrical, positioned at an acute angle to the lower lip; tip of the leaf segments obtuse, with an abruptly starting bristle, the ultimate segment usually with more than 3 bristles on each side arising from the leaf margin-----*U. intermedia*

Spur of flower less than 1/2 the length of lower lip, pyramidal, positioned at a right angle to the lower lip; tip of leaf segments acute, gradually narrowed to a bristle, the ultimate segment usually with less than 4 bristles on each side arising from small teeth on the leaf margin -----*U. ochroleuca*

Although the flower of *U. minor* is quite distinct from that of the two above, *U. minor* can also readily be distinguished by vegetative means. It has no teeth or bristles along the sides of its green ultimate leaf segments, only a bristle at the tip.

The blooming season of our bladderworts is July-August, so if you are out and about the wetlands of our province during that time, be on the look-out for these pretty wildflowers. If you especially locate any of the three rarer species in bloom please let me know of the locations. You

may call me at home (709) 686-2340 or email me at hmann@swgc.mun.ca.

Any and all help will be greatly appreciated and eventually acknowledged.

Happy Botanizing!

Cited Literature

Ceska, A. and M. Bell. 1973. *Utricularia* (Lentibulariaceae) in the Pacific Northwest. Madroño 22(2): 74 – 84.
Mann, Henry. 2006. The Bladderworts (*Utricularia* spp.) of Newfoundland and Labrador. Sarracenia 14(3): 28 – 38.

Confusingly Similar Species #2: Mayflowers.

By Howard Clase.

Everyone knows the Wild Lily-of-the-Valley (*Maianthemum canadense*), which is very common in our woods as I write this, but there is another similar plant, the Three-leaved False Solomon's Seal (*Maianthemum trifolium* syn. *Smilacena trifolia*), which is fairly common too. The most obvious distinction is given in the name: *M. trifolium* usually has three leaves when flowering and *M. canadense* two, but there are exceptions, I recently found a *M. canadense* with 3 leaves, and non-flowering plants have only one leaf. Both species have short racemes of small white flowers, bloom in early summer, and grow in woodland shade. It's the shapes of the leaf bases that give the



Figure 1 The two leaf shapes.

game away. The following details should help you to sort the two species out.

Maianthemum canadense.

Leaves generally two; leaf bases cordate (heart shaped) - right side in fig. 1; flowers four parted (unusual for a monocot, which usually have their various parts in multiples of three!); generally growing in drier locations.

Maianthemum trifolium.

Leaves generally three; leaf bases taper to a short petiole (leaf stem) – left side in fig. 1; flowers six parted; generally growing in wetter locations. The larger plant of the two.

(See Vol11 #2 p.9 for #1: Roses)

***Listera borealis* Morong: Historic Orchid Relocated at a New Site in Gros Morne National Park.**

By Glenda Quinn, John Maunder, Michael Burzynski, Anne Marceau, Claudia Hanel, Henry Mann, Phyllis Mann, Maria Voitk, Andrus Voitk

As the name suggests (*borealis* = northern), *Listera borealis* is a northern plant, restricted to North America's northern forested areas, extending a bit southward at higher altitudes in the west. Although it is found across the continent, classically it is thought of as a western plant, with the similar *Listera auriculata* Wiegand replacing it in the east. Indeed, *Listera borealis* appears to be very rare in Newfoundland and Labrador. We are aware of only two previous records: M. L. Fernald collected the species at Eddies Cove West ("Eddy's Cove" in his records at the time) in 1929 (Fernald, 1933), and Paul Martin Brown reported it, but did not collect it, from Eddies Cove East and Burnt Cape about 15 years ago. The two Eddies Coves are about 100 km apart, the westerly one being south of its easterly namesake. In the Lomond area of Gros Morne National Park, during the Wildflower Society's 2008 Field Trip one of the authors (GQ) noted an unusual twayblade, past flowering with the beginnings of plump seed capsules. Only a single plant was evident. Without flowers a definitive identification was not immediately possible, but another of the authors (JM) circulated photographs for consultation. The prevalent opinion confirmed his suspicion that the plant was *Listera borealis*. Strengthened by this reassurance, JM made this tentative identification available on the Digital Flora of Newfoundland and Labrador: http://www.digitalnaturalhistory.com/flora_orchidaceae_index.htm



Figure 1b Close-up of inflorescence.

On July 1, 2009, a solitary plant was seen at the same location as the previous year's specimen; further searching by three of the authors failed to locate others in the area. The plant was past peak blooming. Another search of the area on June 11, 2010, by six of the authors was more fruitful: it revealed more than 60 plants within a few metres of the original, over an area about 35 m x 60 m, in *Rhytidiadelphus* moss on a moist slope under a balsam fir-white spruce-white birch canopy. The orchid seemed to prefer dappled sunlight, and did not grow in fully cleared areas or very dense and dark woods. Plants varied from sturdy to very frail; the tallest measured 21 cm and had 16 blossoms and longer, narrower and more pointed leaves. About one-half of the plants were in open bloom, while the remainder were still in bud. A small number had not yet developed an inflorescence.

Many plants showed evidence of herbivore (presumably slug) damage.

Most identifying features of *L. borealis* are illustrated in Figures 1a (see cover) & 1b. The flower bract and ovary are pubescent. The lip has outwardly flared auricles at the base of the column, with an outwardly projecting horn-shaped outer corner, is bluntly lobed at the apex, is angled downwards at 45° relative to the stem, and has a hint of blue colouring, appearing as dark green central bands. The narrowly egg-shaped glabrous leaves, somewhat pointed in this specimen, are slightly staggered above one another and proportionately high on the stem. The stem is smooth below the leaves and finely hairy above.

Later a voucher specimen was taken for the Gros Morne National Park Herbarium. Currently, this is the only population of *Listera borealis* known to exist in the province. It is also the first time this orchid has been observed three years in a row in the same location in our province. Its location is significantly removed from the sites of previous sightings. An account of the three findings follows. The humour common to all three authors is perhaps noteworthy, as is the role of serendipity and perseverance, the last two emphasized in the third account: five experienced observers really did not see any other plants during the first search. No doubt this phenomenon explains why some plants are under reported.

Fernald's 1933 account of his August 2, 1929, find:

The woods near the settlement at Eddy's Cove are terribly overrun by cattle, and almost none of the unspoiled forest-carpet remains. While Stanley Lavers and his father were packing the motor boat for the return to Old Port au Choix, Long [Bayard Long, of Long's braya], never through botanizing until the boat is leaving, crept on hands-and-knees among the ruined and pastured knolls; and, when "all aboard" was shouted, he came half-beaming, half-reluctant, to the shore. For he held Calypso bulbosa, one of the rarer Newfoundland orchids, which the cattle had not wholly exterminated; and with it Listera borealis Morong, the northern cordilleran species which Marie-

Victorin had been finding in the sea-shore spruce thickets of Anticosti and the Mingan Islands.

Long had but one individual of Listera borealis and he wanted another, for the agreement was that the first set of specimens should come to the Gray Herbarium! So, on Aug 5th we tried again ... Starting out on a real search for Listera borealis, we first landed on two islands at the entrance of Old Port au Choix, Savage's Island and Grassy Island ... [but found no Listera borealis, so we] ... started for Back (or Bustard) Cove and Eddy's (or Old Man's) Cove for the Listera.

Fogg and I were landed at the former place and were to follow the shore for four miles to Allan Ofrey's;

Long went on to renew the search at the original spot ... Reaching Allan Ofrey's house (a tiny house with a large family) in the late afternoon we were met by Long. We all had the same sad report: no Listera borealis. He and the cows before him had got it all; but we optimistically feel that another year (especially in July, instead of in August) it will be found in quantity. Accepting the cordial invitation of Allan and Mrs. Ofrey to have tea with them, we ... enjoyed such a delicious feast of lobster, lettuce, cream and hot biscuit as we shall never forget; but, while eating the rich cream, we could not help mourning that we were not getting the Listera borealis and Calypso in undigested form.

Glenda Quinn's account of the July 10, 2008, find:

On a hot day in early July, 2008, several members of the Wildflower Society of Newfoundland and Labrador, led by John Maunder, set off to explore a river estuary on the west coast of our province. The only access to the river flats was down a very steep embankment, but, luckily, steps were in place. Hundreds of steps! Under hot sunny skies, we descended the very rickety old log staircase and it was in the back of all our minds that we had to climb back up this same embankment. At the bottom, all thoughts of steep steps quickly left us as we started to discover the interesting plant life of the estuary. One plant stood out because it was in full bloom in July! The Marsh Marigold (Caltha palustris) normally blooms in early

spring, but here it was, a brilliant splash of yellow. It was flourishing in a little stream fed by icy waters flowing from the high hill above.

As lunchtime approached, we began our formidable ascent back up the old wooden steps. John took the lead, and we straggled along behind. Eventually, we reached a little platform where we stopped for a quick rest. It was there that I noticed a plant that I knew I hadn't ever seen before, although it had all of the characteristics of a twayblade orchid. I looked up and saw John at the top. Should I stop him? Oftentimes you can mistake a plant, call it by name, and find out that you called "Wolf." Nevertheless, I called up to him and said "I think there's something here that might interest you." I could see

him hesitate, mulling over the heat and those darn steps. I sensed that he wasn't coming down, so I called out the magic words, "I think it's an orchid." He bounded down! John was immediately intrigued and excited, but also a little frustrated, because the plant was past its best, and gone to fruit. Without its flowers, the plant was difficult to identify. However, he knew that he had fallen upon something very special!

Later, I learned I had spotted a very rare orchid, the elusive Northern Twayblade. The only previous record of the plant, for the province (country), was a collection made in 1929 by the great man who rewrote Gray's Manual of Botany, American botanist Merritt Lyndon Fernald.

Henry Mann's account of the June 11, 2010, find:

I am still puzzled by the experience! All field botanists are aware of the "search image phenomenon", but this was the most blatant example I have ever encountered. Having seen the only slug-gnawed specimen that we all knew was there, I began a search of the surrounding area, and with good eyes and a slow pace came up with nothing. Soon a second, then third, etc. plant were found by others very near the original and we all spread

out and began to find dozens of plants. What was shocking to me was that in the exact path I had taken (confirmed by an obvious marker point) numerous orchids now existed (appeared?). Some were large, in full bloom and solitary on the moss carpet, not shaded or obscured by other vegetation, impossible to not see!

I have often dismissed quantum physics as scientific fantasy, but am

beginning to wonder whether the phenomenon where the "presence of an observer changes the nature of the observed" is in operation here, i.e. the Heisenberg Uncertainty Principle/Schrodinger's Cat/Parallel Universes, etc. i.e., the orchids were not there as long as we believed they were not there, but when we believed they actually were there, then they appeared from a parallel universe in which they existed unknown to us, and became visible.

Listera borealis produces nectar and its column is readily accessible, so that pollination is not restricted to specific insect shape or tongue length. Mushroom gnats are the most commonly reported pollinators. The pollination mechanism of *Listera borealis* is such that self-pollination of the same flower is rather unlikely, but can occur with different flowers on the same scape. Therefore, if only a single plant is found with plump seed capsules for several years, a

concerted search for other plants is warranted. It is the first twayblade to bloom, and it is unlikely that petals would last into July.

Listera borealis is very similar to *Listera auriculata*, and they can easily be confused with each other. When present, a blunt, outwardly projecting upper, outer corner of the lip (as seen in Figure 1), or even a small horn-like projection, is a useful differentiating feature. However, a

small number of plants have a smoothly curved upper, outer lip corner, just as that of *L. auriculata*. The consistent and therefore more reliable difference between the two is the relationship of the upper lip to the base of the column: the auricles of *L. borealis* project away from the column, while those of *L. auriculata* clasp or envelop the column (Figure 2). Table 1 summarizes some of the distinguishing features between the two.

Table 1.
Differentiating features of *L. auriculata* and *L. borealis*.

	<i>Listera borealis</i>	<i>Listera auriculata</i>
Ovary	finely hairy	smooth
Lip auricle	flared outwards	incurved around column
Lip shape	shorter, broader	longer, narrower
Leaf shape	narrowly egg-shaped, oblong	oval to subglobose
Habitat	drier, higher ground, moss-covered humus, coniferous forest	wet, alluvial soil, muddy riverside, under alder

Figure 2. Comparison of *Listera auriculata* (L) and *Listera borealis* (R). The stem above the leaves is hairy for both. However, the ovaries of *L. auriculata* are smooth, while those of *L. borealis* are hairy. This hairiness is present at all stages of development. The lip of *L. auriculata* is longer and thinner, with a longer cleft. Dark central bands on the lip (caused by blue pigment) can be found on both species, making it unreliable for differentiation. A small midline tooth has not been a consistent feature in our experience, being present in some *L. auriculata* and absent in some *L. borealis*. The upper outer corner of the lip of *L. borealis* usually has a blunt projection, as on the right, but in a small number of plants it may be round, as on the left. However, the relationship of the upper projections (auricles) of the lip to the column is consistently different for the two species, illustrated by the lower line drawings, taken from the depicted flowers. Light green depicts the auricles, dark green the column. Black lines show the final angle of the auricles, relative to the column. In *L. auriculata* the auricles part to make room for the column (dotted gray line), but once beyond it, come together again as if to envelop or clasp it. The projected final angle meets above the column. In *L. borealis* the auricles flare out from the column as in *L. auriculata*, and continue in this direction, making a divergent angle that only meets below the column. Please note that this angle is the same, whether the auricles have a round or horn-like upper outer corner.



Figure 2

Cited Literature.

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Fernald, M. L. 1950. *Gray's Manual of Botany* (Eighth edition). D. Van Nostrand Co., NY.

Summer Field Trips

In addition to the July 19-24 trip to the Burin, we have a few short, local trips planned. This is a brief summary, and subject to confirmation. More details – meeting places, leaders etc., – will be e-mailed out closer to the time. Or phone John 335-2462 or Howard 753-6415.

Regatta Day (Aug 4, Wed?) Day trip to Haricot area.
Aug 18, (Wed) 6-8 p.m. Old Airport & environs.
Sept 1, (Wed) 6-8 p.m. Neil's Pond Paradise.
Sept 12, (Sun) 10-12 a.m. Water & Duckworth Streets.
Sept 25 or 26, Nagles Hill revisited for Crowberries.

Index of Scientific Names of Plants

Arabis drummondii.....17	Listera auriculata.....21, 23, 24 borealis... 15, 21, 22, 23, 24	trifolium.....20	intermedia.....19, 20
Boechera stricta.....15, 17, 18	Maianthemum canadense.....20	Platanthera hookeri..... 17	macrorhiza..... 19
Caltha palustris.....22		Utricularia cornuta..... 19 geminiscapa..... 19	minor..... 19, 20 ochroleuca.....19, 20 purpurea..... 19 spp.....20

(Scientific names without authorities follow: "Annotated Checklist of the Vascular Plants of Newfoundland and Labrador" by Susan J. Meades, Stuart G. Hay, and Luc Brouillet, 2000. <http://www.digitalnaturalhistory.com/meades.htm>) (including synonyms.)