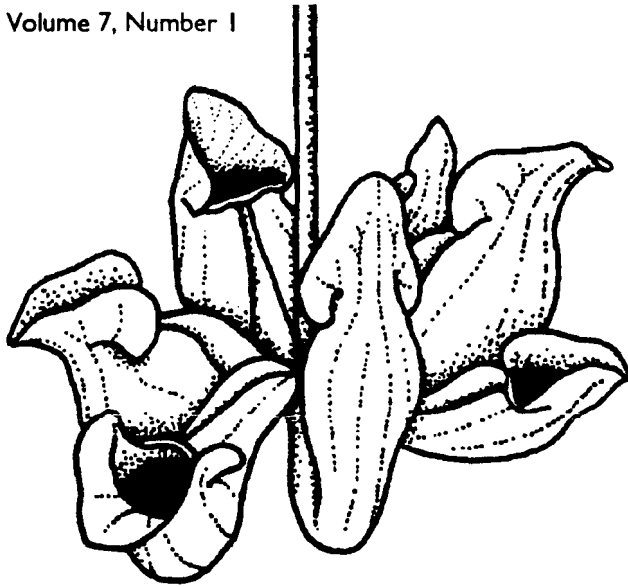


SARRACENIA

Newsletter of the Canadian Wildflower Society
Volume 7, Number 1

Newfoundland Chapter
Fall 1996 / Winter 1997



Fall/Winter Schedule

September 1: Annual Potluck & Gallows Cove walk. Walk led by Howard Clase; meet at 2 P.M. Potluck begins at 4 P.M. at Luise & Dave's place.

October 2: Plant Collecting Techniques. A workshop by Gordon Ringius on how to press plants properly. This should be an invaluable meeting for members wishing to contribute to the growing collection of specimens in the Newfoundland Museum collected on our Wildflower Society fieldtrips. Optional: bring pressed or fresh plant specimens.

November 6: Remembering the Northern Peninsula. A much anticipated slide show of our summer field trip to the Northern Peninsula, featuring the beautiful photography of Helen Jones.

December 4: Christmas get-together and orchid update/mystery slides! Come and enjoy a pre-Christmas celebration. Howard Clase will update us on the status of the *Dactylorhiza* orchids in Newfoundland. Also bring any slides from your personal collection that you'd like to share with the rest of the membership, or would like identified. We will consider possible destinations for the 1997 Annual Field Trip.

NO meeting in January. Happy New Year!

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Winter/Spring Schedule

February 5: Endangered Species Legislation in Newfoundland by Joe Brazil, *Newfoundland Wildlife*. Joe has been single-handedly working on draft legislation for Endangered Species in Newfoundland. In this talk, he will tell us about Federal and Provincial Endangered Species Legislation, and how it affects rare and endangered members of our flora and fauna. This is a chance to see what is being done to protect our rare plants, and offer any suggestions.

March 5: Ferns of Newfoundland by Todd Boland. Ferns are often overlooked by wildflower enthusiasts. Todd will give us an overview of the fern flora of Newfoundland, and instruct us on how to distinguish the major genera found on the island.

April 2: Now, WHAT was that plant? A plant identification workshop. We hope to make identifying those troublesome groups of very similar species less frustrating! John Maunder will compare *Astragalus* and *Oxytropis*; Todd Boland will disentangle the green and white small-flowered orchids; Gordon Ringius and Luise Hermanutz will tackle how to tell a *Draba* from a *Braya*.

May 7: Annual General Meeting. Please try to attend to let us know what you want to see the CWS do in the coming year. Lydia Snellen will give us a short slide show on the hidden life of trees in the St. John's area. There will be information on the CWS-NF Annual Field trip. We will also elect a new executive. Get involved!

Unless otherwise noted, all talks will be held at the MUN Botanical Garden at 8 pm.

Notes from the President

I have noted on several occasions, both in the field and at our monthly meetings, that the level of botanical expertise among our membership has grown rapidly over the past couple of years. What this means is that the Chapter is maturing and there are now members who can speak with authority on a number of botanical matters in this province. I think this speaks volumes on the quality of the field trips that have been undertaken to many parts of the Island and

Labrador, and the slide presentations and talks that have been given at the meetings.

As a result, we are now beginning to take more care in documenting our efforts with photographs, field records, plant collections (Lydia Snellen showed up at the November meeting with a beautifully pressed specimen of **sticky groundsel**), and articles. Some members are developing interests along artistic lines such as wildflower photography, drawings, and paintings, while others are moving in more scientific directions such as consulting with world experts in order to track down the correct names of plants. There is almost an audible hum to the activity that is taking place. Luise Hermanutz has suggested that the Society start to keep a journal (with text and slides) of the field trips for historical purposes. I think this is a good idea and one that should be followed up on.

The Society as a whole is also becoming more aware of the value of our wildflower heritage and initiatives are being taken, both by the Society and by individual members, to ensure that the provincial government does not neglect this vital part of our natural environment. It is in this area that I think our Society can make a particularly valuable contribution. By undertaking field trips to diverse areas around the province and documenting any unusual plants that may be present, we can help protect these species from the destructive forces of uninformed development. The federal government has just released a discussion paper on the proposed Canadian Species Protection Act and the provincial government is preparing its own rare and endangered species legislation. By becoming informed about the wildflowers in our province our members can become spokespersons for them. And, as we learned from the experience that Sue Meades and others had with the quarry development on Burnt Island, they badly need the representation.

- Gordon Ringius

Potpourri

I want to remind members that it is time to renew your membership! If you have a RED STAR on your address label, it indicates this is your last edition of the *Sarracenia*, unless you renew. There is a renewal form on the last page. Sorry we have to implement this policy but we have been sending people newsletters for up to 2 years without payment. Please send your payment (\$10) to Canadian Wildflower Society-Newfoundland Chapter, P.O. Box 23012, Churchill Square Postal Outlet, St. John's, NF A1B 4J9. Yes, we have our own postal box now!

IMPORTANT!! IMPORTANT!! Please send letters in support of the emergency designation of Burnt Cape (or Burnt Island) as an Ecological Reserve. The Cabinet is currently reviewing the status of the Cape, and it is important that Minister Kelly (Minister of Tourism, Culture and Recreation) realizes the level of support for this designation. CWS members which visited the Cape this last summer will remember the host of rare and vulnerable arctic/alpine species, and the threat the entire plant community faces from gravel quarrying. If you need to refresh your knowledge of the Burnt Cape flora, refer to the article by Sue Meades in the Winter 1996 *Sarracenia*. Letters need not be long, and should be addressed to Minister Sandra Kelly, Minister of Tourism, Culture and Recreation, Office of the Minister, P.O. Box 8700, St. John's, NF, A1B 3X9. REMEMBER as well-informed members of the CWS, you do have a voice!

And lastly, it's time to start thinking about where we should explore for our next Annual Field Trip! Two suggestions so far include: Codroy Valley/Port-au-Port Peninsula, or St. Pierre et Miquelon. Any other ideas? We will discuss all possible destinations at the December meeting, and try to get planning underway by February.

If you have any comments or ideas, please contact me at (w) 737-7919, (h) 895-6851, or Department of Biology, Memorial University, St. John's, NF, A1B 3X9

- Luise Hermanutz

General Announcements

The 1996-97 executive of the Newfoundland Chapter, Canadian Wildflower Society is as follows:

President..... Gordon Ringius (579-6613)
 VicePresident..... Luise Hermanutz (739-7919)
 Treasurer..... Alice Close (579-1474)
 Secretary..... Glenda Quinn
 Board Members: Howard Clase & Tom Smith
Sarracenia Editor Sue Meades

Anyone wishing to get in touch with Sue Meades may write to her at Box 14, Peace Tree Dr., Sault Ste. Marie, Ont., P6A 5K7 or the e-mail address below.

Any member who would like to write an article for the newsletter or submit a black and white graphic (preferably pen and ink), please contact Luise or Sue. If you have access to a computer, articles may be submitted to Luise on 3 1/4" computer disk in Word Perfect 5 or 6, IBM (PC) compatible; or sent directly, via e-mail, to Luise (lhermanu@morgan.ucs.mun.ca) or Sue Meades (sjmeades@sympatico.ca). Black & white illustrations should be no larger than 4 X 6 inches.

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Have a Merry Christmas & Happy New Year !

Joseph Banks: Naturalist Extraordinaire

Banks upon our shores

by Glenda Quinn

One of the earliest and, arguably, the first extensive and properly documented scientific exploration of the flora of Canada was carried out in 1766 in Newfoundland and Labrador. The plants collected on this expedition became part of the original herbarium of the British Museum. We owe this distinction to Sir Joseph Banks (1743-1820), a wealthy Englishman with an extraordinary range of interests who dominated and supported the European scientific community during the second half of the 18th century. Sir Joseph Banks was to science as Samuel Johnson was to literary circles. One hundred and forty-four years were to elapse before significant studies and extensive field work were again undertaken in our province. We can hold also claim to being the site of the first scientific expedition to Canada as the Treaty of Paris, which ceded Canada to England, was signed in 1763. Canada was still a French possession when Swedish naturalist Peter Kalm botanized in North America several years before Banks's visit.

One may ask, why did Banks journey to Newfoundland and Labrador? It appears that his neighbours were responsible, although not for his interest in natural history. He lived near the Chelsea Physic Garden, whose curator, Philip Miller, was a highly skilled gardener and benevolent teacher. And he lived near the Moravian headquarters whose missionaries, upon returning from Labrador (1765), presented him with plant specimens and, no doubt, stories that kindled his inclination for exploration. Nearby, too, lived Lord Sandwich, the First Lord of the Admiralty, who probably secured him passage on the NIGER, a fishery protection vessel (we're still using them today!). The NIGER'S mission was to build a fort at Chateau Bay, Labrador, whose garrison would protect the English from

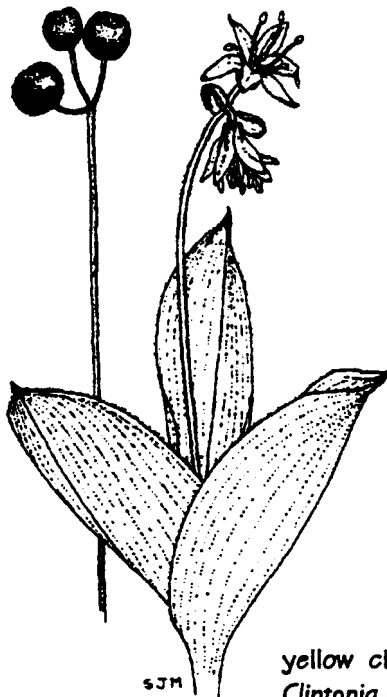
the French. The reason I'm writing this article is that I accidentally stumbled upon Sir Joseph's diary at the A.C. Hunter Library while searching the catalogue for books on botany. Not the original, for that is on display in the Library of the South Australian Branch of the Royal Geographic Society, Adelaide. When I found Dr. Averil Lysaght's book I was enthralled. There's also a copy of the diary in this book. It's exciting to read about events that happened over 200 years ago written in the words of a man who seems so interested in everything around him. For one so educated, his writing skills seem odd as he didn't use any punctuation and inappropriately capitalized all sorts of words. It's a little disconcerting at first, but once you're absorbed into his world, you adjust to the language.

The first half is a daily account of his scientific observations and zealous collecting, while the second is a more general description of events and life in 18th century Newfoundland and Labrador. The marked difference between the two styles began in August after he had been very ill during July. I could write pages about his journal but I won't. Instead I'll tantalize you with tidbits so that you will seek it out and read it and those of you who have, will re-read it. The language is a little different. The seamen call jellyfish, blubbers; penguins, auks; and icebergs, islands of ice. He comments on our weather (it hasn't changed). Snow was 4' - 5' deep at Petty Harbour on the 21st of May, 1766. Banks botanized in and around St. John's and even trawled for lobsters in the harbour before sailing north to Croque on the Great Northern Peninsula. Near Englee he had "an opportunity of Examining a small Island above the Harbour which I found Loaded with Plants I had not seen before in a Wonderful manner." In Chateau Bay, he writes of quantities of old whalebone

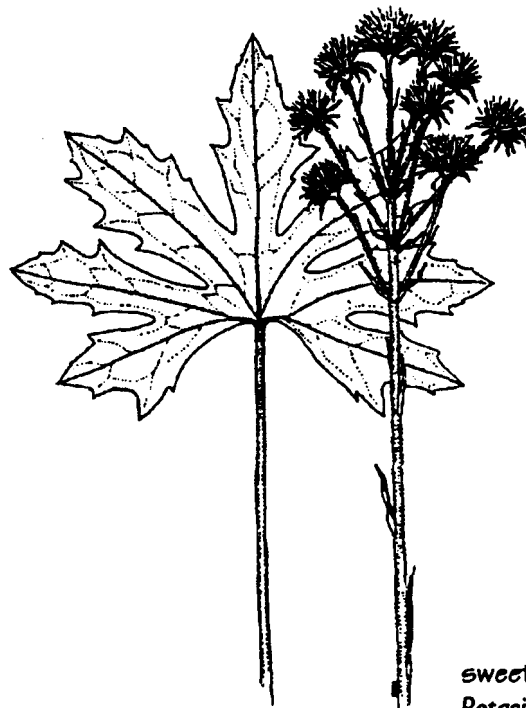
that are a sure sign of a considerable whale fishery at sometime or other. A recipe for fish'n brewis, "the rich Even in England at Least in my opinion might be fond of it" appears as does one for spruce beer! In great detail, he describes and compares the fishing methods of the French and the English. It also seems very probable that he met Captain James Cook on Palliser's flag-ship, the GUERNSEY, in St John's harbour. Two years later, they would sail the world together. To paraphrase Sir Joseph, his diary is *loaded with information in a wonderful manner*. I recommend that you read it.

On the return voyage, the NIGER met with a heavy gale off the Azores and, to Banks's great disappointment, seeds stored in his cabin were lost and his box of plants that were on deck were demolished. (Some specimens were to suffer a different fate two centuries later when the British Museum experienced war damage, when London was under blitz from the Germans.) When Sir Joseph arrived home, he had a collection of at least 340 plants, 91 birds, many

fishes and invertebrates, and a few mammals. Some species new to science collected by Banks on this expedition include **yellow clintonia** (*Clintonia borealis*), **broad-lipped twayblade** (*Listera convallarioides*), and **sweet coltsfoot** (*Petasites palmatus*). It was the beginning of an herbarium that was soon to become famous. Upon his return, Banks arranged to have 23 specimens painted by G. D. Ehret, a renown botanical illustrator. Over the years, Soho Square -- his London home, was a meeting place for European scientists and explorers. Through Banks' generosity, they had the use of his magnificent library and personal herbarium. His librarian, close friend, and scientific colleague was Daniel Solander, a gifted and favourite pupil of Linnaeus. When Sir Joseph Banks died in 1820, he willed his scientific collection to Robert Brown, a brilliant botanist who had succeeded Solander as his librarian. It was stipulated that the collection go to the British Museum after Brown's death, or earlier, if he wished. Down through the years, many emi-



yellow clintonia
Clintonia borealis



sweet coltsfoot
Petasites palmatus

ment scientists have studied the collection and two, to whom we can readily relate, are Fernald and Rouleau. Early this century, Fernald, author of the eighth edition of *Gray's Manual*, visited the museum and examined Banks' specimens. In 1949, Professor Ernest Rouleau of the Institut Botanique, Université de Montréal, spent some months in the British Museum researching Banks' plants.

Banks' influence on enthusiastic, trail-blazing men of science and exploration, and his own range of interests were phenomenal. He organized the scientific staff and equipment, and sailed round the world with Captain James Cook on the ENDEAVOUR (1768-71). The voyages mission was to observe the transit of Venus. There were numerous other expeditions that he sponsored. Remember the breadfruits in *Mutiny on the Bounty*? Sir Joseph acted as a consultant for this ill-fated voyage whose mission it was to transplant breadfruits from the East Indies to the sugar plantations of the West Indies, where they were meant to be a cheap source of food for the slave labourers. On another expedition, Archibald Menzies, selected as naturalist by Banks, made many discoveries, including the **Douglas fir** (*Pseudotsuga menziesii*), when he sailed with Captain George Vancouver on the DISCOVERY (1791-1795). John Ross set sail for the Arctic in 1818 with Edward Sabine on board. This was the first Arctic expedition to collect significantly and Sabine had been recommended by Banks. At St. John's in 1766, Banks was introduced to George Cartwright, father of ornithology in Labrador, and the two men formed a friendship and a correspondence that lasted many years. Another friend was King George III, who sought his advice and assistance with the development of Kew Gardens.

Joseph Banks name has been immortalized. Edward Parry, Arctic explorer, named Banks

Island after him and the **Banksian rose** (*Rosa banksiae*) was sent from China by William Kerr, a Kew collector. An Australian genus of the Proteaceae, *Banksia*, commemorates the former president of the Royal Society - a post he held for forty-one years.

These are just a smattering of facts that illustrate the impact and far-reaching tentacles of Sir Joseph Banks' keen interest in botany. What an adventurous life he lead and what interesting people were part of his world!

(When I was handed Lysaght's handsome volume, *Joseph Banks in Newfoundland and Labrador, 1776*, I was curious about the cover illustration. After I read her preface, I couldn't help wonder about the fate of this picture. She thanked the Honourable Judge Furlong for photographing a watercolour of his that depicts St John's around 1770, artist unknown. I couldn't help but wonder the fate of this historical painting. Judge Furlong died tragically in a fire that destroyed his home February, 1996).

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Divining for rare plants ?

by Luc Brouillet, Stuart Hay, and André Bouchard

In 1992, our explorations of Newfoundland for rare plant sites took us to the tip of the Great Northern Peninsula. We had undertaken to do an inventory of the rare plants for L'Anse-aux-Meadows National Historic Park. While we were in the area, we also took time to explore part of the White Hills, a vast plateau of peridotite (also called serpentine) that lies to the west of St. Anthony. The high massif covers almost 100 km². The ochre-colored, peridotite bedrock forms a very unique feature of the landscape because it is barren of most vegetation due to toxic levels of metals such as magnesium.

On the serpentine barrens, we were looking in particular for several rare plants including **dry-leaved sandwort** (*Minuartia marcescens* - of the Caryophyllaceae family), a plant that is unique to this type of rock deposit in Newfoundland (the Tablelands of Bonne Bay and the Bay of Islands) and in Québec (Mont Albert on the Gaspé Peninsula). In spite of the fact that the habitat seemed propitious, and that we did find several of the serpentine plants we expected to see, we were unable to find any trace of *Minuartia marcescens*.



dry-leaved sandwort
Minuartia marcescens

As it turned out, this was only a minor setback for us because, as luck would have it, we did discover three other species that were fantastic new additions to the island - all three are part of our arctic-alpine flora and members of the same Caryophyllaceae family: **two-flowered sandwort** (*Minuartia biflora*, also known as *Arenaria sajanensis*), **tufted pearlwort** (*Sagina caespitosa*, also known as *Sagina nivalis*) and **Arctic pearlwort** (*Sagina saginoides*). And that wasn't all! Along the northeast-facing flank of the White Hills, above the chain of lakes formed by Eastern and Western Long Pond, we also found colonies of other highly significant rare plants - **alpine speedwell** (*Veronica alpina*, = *V. wormskjoldii*, a member of the Scrophulariaceae family), and the **Arctic willow** (*Salix arctica*, Willow family) that were previously known from only one locality in Newfoundland. What a day it turned out to be - a bonanza for rare plants! This anecdote just goes to show that, in the realm of floristic discoveries, good luck often plays as important a role as any so-called knowledge of plants and their milieu. Having said this, though, once we begin to understand more about particular plants and their habitat, we can begin to make some predictions about the chances of finding a particular species at a given place.

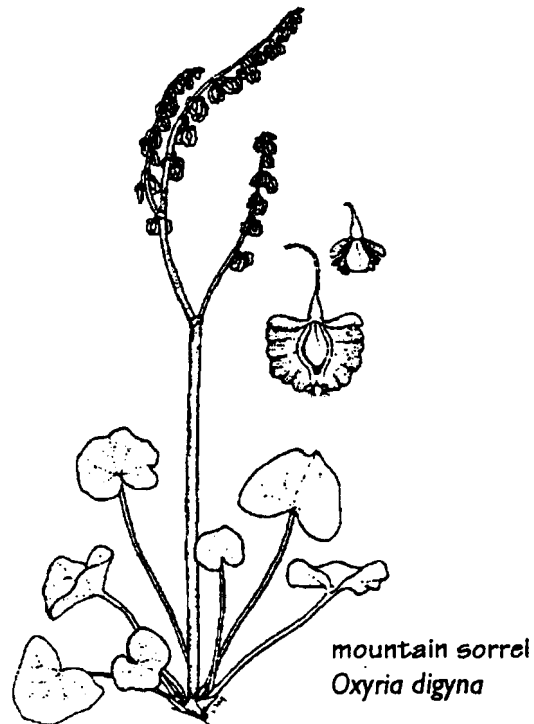
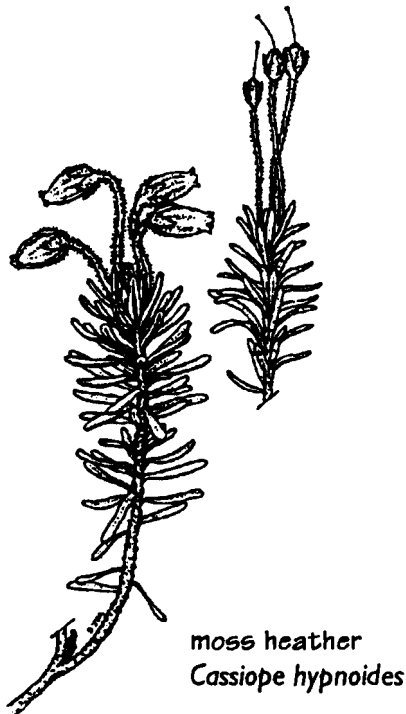
In 1995, we returned to Gros Morne National Park with the intention of putting "la touch finale" to our study of the rare plants there. Although we had conducted a very thorough survey of these plants in 1984 and 1993, we had not yet had the chance to explore several inaccessible sites in the park that seemed to hold promise, either because of their special geology, or because they were at fairly high elevations. One of these sites was the northeast perimeter of the serpentine Tablelands on Bonne Bay, where several late-melting snowbeds lie

strung out along the steep flank of the plateau. Snowbed ecosystems have a particularly high incidence of rare plants in Newfoundland. Their special ecological conditions account for several plants of arctic-alpine affinity, such as **moss heather** (*Cassiope hypnoides*), **alpine willowherb** (*Epilobium anagallidifolium*), **herb-like willow** (*Salix herbacea*), *Veronica alpina*, and **alpine marsh violet** (*Viola palustris*).

We were hoping that the tiny *Minuartia biflora* that we had discovered in 1992 in the White Hills might just be here in the Tablelands too. Why not? All the indicators seemed to be there. *Minuartia biflora* is a circumpolar plant at arctic latitudes. It has, however, some southern outposts in alpine situations in the Rockies of Western Canada and the United States, where it reaches as far south as Montana. In the eastern part of the continent, it comes down as far as Hudson Bay and northern Labrador, with one exceptionally southern outpost on the high serpentine plateau of Mont Albert, on the Gaspé Peninsula. Our discovery of it in the White Hills in 1992 had filled a huge gap in its range, between

locations where it was known in Labrador and the Gaspé. *Minuartia biflora* is also known as a species that favors the special habitat created by late-lying snowbeds. Might we not stand a good chance of finding it on the Gros Morne Tablelands where our observations seemed to indicate that its habitat could be found?

On July 31, we flew in by helicopter to the southeastern part of the Tablelands. The day got off to a good start with the discovery of a couple of populations of *Salix arctica* in one of the deep ravines at the head of Sellars Brook. This arctic willow is on the list of rare plants in Newfoundland, and was known from just one other site on the Tablelands. Working north along the steep flank of the plateau, it was only by the end of the afternoon that we reached the first important snowbed site, where some hard-packed snow still remained. Two caribou were grazing in the area when we got there, but shied off as we soon as we got close. In the short time that we had left to explore, we began finding several species that are typical of alpine snowpatches, such as *Epilobium anagallidifolium*



and *Salix herbacea*. We were in a hurry though, and we were on the point of having to leave when Luc, quite amazingly, discovered several plants of *Veronica alpina*. The tiny plants weren't even flowering, but there was no mistaking them! This discovery was an encouraging sign that the divining rod was working since *Veronica alpina* was one of the species we were hoping to find, but we were still a bit disappointed to have to leave without having found *Minuartia biflora*. On August 8th, we returned to the same flank on the Tableland in order to explore a second snowbed that, judging from our observations of the aerial photos, covered a larger area. We were accompanied by the chief park warden, Doug Anions and his wife Marilyn, a park naturalist. Right off the bat, we found **mountain sorrel** *Oxyria digyna* (Polygonaceae) in part of the snowbed that was strewn with large boulders and rocky outcrops. Stuart had moved on to explore a larger, promising, turfy area, and upon discovering beautiful flowering specimens of *Cassiope hypnoides*, called the others over to start compiling a relevé. Low and behold, at the

very place where he was sitting on the ground, preparing the data sheets, we discovered what we had been hoping to find - tiny, flowering tufts of the elusive *Minuartia biflora*. It was an exciting moment, and we were really pleased with ourselves that our prediction had come true.

When botanists are doing fieldwork, exploring for interesting elements of the flora, their search is often guided by ecological and geographic data that they have at their disposal. Sometimes Lady Luck will turn up an unexpected discovery, but more often than not, the practiced botanist makes interesting finds because he has developed a sense of where to look and what to expect.

Editor's Note: Luc Brouillet, Stuart Hay, & André Bouchard are affiliated with the Montréal Botanical Garden (l'Institut de recherche en biologie végétale, 4101 est. rue Sherbrooke, Montréal, QC, H1X 2B2). Many of our members may recognize them as the major authors of *The Rare Vascular Plants of the Island of Newfoundland*.

The Labrador Straits - 1996

by John Maunder

The first segment of the Society's 1996 field trip lurched haltingly into existence on the cool, grey, drizzly afternoon of July 6, in the Labrador ferry lineup, at St. Barbe.

Events had not developed exactly as planned. Sue Meades, who was supposed to lead both the Labrador and the Northern Peninsula segments of the trip, found herself out of commission with the mumps! Then, Howard and Leila Clase, who were apparently going to fill in for Sue, got waylaid at St. John's after Leila badly injured a foot! A number of other participants had also gotten delayed, or had been forced to bow out of the summer's field trip entirely. By the time the remaining group boarded the ferry, it was

becoming apparent that the Labrador segment of the field trip was going to have a rather flexible agenda, to say the least.

The weather was not encouraging either. All thoughts of seabird and whale watching quickly vanished into a cold pea-soup fog and a steadily increasing mist. Apart from a few harbour seals and some large red *Cyanea* jellyfish observed close to the ship, NOTHING was seen on the Strait of Belle Isle crossing.

It was a decidedly bedraggled bunch that finally staggered into the Northern Lights Inn in L'Anse-au-Clair. But, the plants of Labrador beacons, and after considering a number of far more

sensible options, like curling up with a good book, several hardy souls eventually struck out into the fog and cold for late afternoon rambles. John Maunder quickly located an excellent botanizing spot on a steep limestone bluff rising above the shore, between the hamlet of L'Anse-Amour and the historic lighthouse just beyond. Another party found similar good botanizing along the "Bubbling Sands" Trail, leading left, along the coast, from a point above the beach at L'Anse-au-Clair.

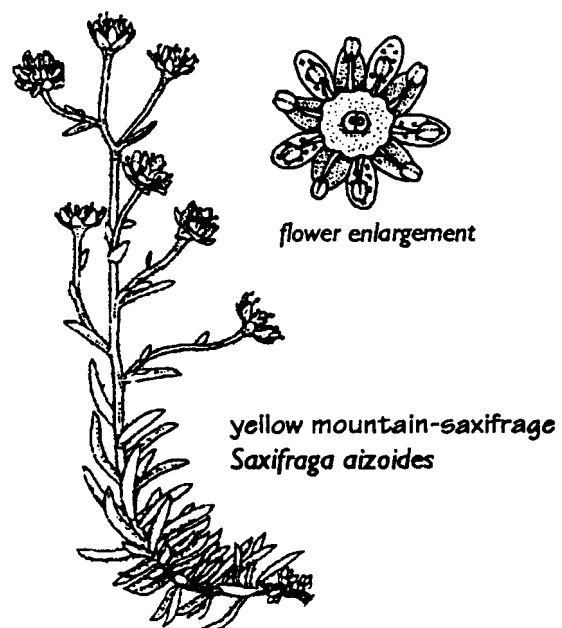
The next day continued foggy, rainy, and cold. In fact, conditions were actually worse than the day before. There was nothing to do, it seemed, but to don all available rain gear and head out. John took an early hike out the trail towards "Bubbling Sands" and managed to find, among other things, **northern yarrow** (*Achillea borealis*), **purple-stemmed angelica** (*Angelica atropurpurea*), **alpine rockcress** (*Arabis alpina*), **Pennsylvania bittercress** (*Cardamine pensylvanica*), **cuckoo flower** (*Cardamine pratensis* var. *angustifolia*), **scurvygrass** (*Cochlearia cyclocarpa*), **Swedish bunchberry** (*Cornus suecica*), **large-leaved avens** (*Geum macrophyllum*), **seabeach sandwort** (*Honckenya peploides*), and **kidneyleaf buttercup** (*Ranunculus abortivus*).

After breakfast, the whole group headed off to the limestone bluff, near L'Anse-au-Clair. Just before reaching L'Anse-au-Clair, a compulsory stop was made at the famous 7500 year old Maritime Archaic Indian burial site. The interpreted, roadside site was of great interest to all, but so also was the sand blow-out area surrounding it, where *Honckenya peploides*, **Norwegian whitlowgrass** (*Draba norvegica*), and **long-stalked chickweed** (*Stellaria longipes*) abounded.

The limestone bluff, beyond L'Anse-au-Clair, really did prove to be a great find. The wet and treacherous rubble slope below the upper cliff

was well-vegetated with a bewildering selection of mostly alpine and calcium-loving plants growing amongst a tangle of low willows. Of particular interest were five representatives of the pea family, including **alpine milkvetch** (*Astragalus alpinus* var. *alpinus*), **white elegant milkvetch** (*Astragalus eucosmus* forma *albinus*), **alpine hedysarum** (*Hedysarum alpinum*), **field oxytrope** (*Oxytropis johannensis*), and **Newfoundland oxytrope** (*Oxytropis terrae-novae*).

Also prominent on the slope were **red baneberry** (*Actaea rubra*), **northern or small-flowered anemone** (*Anemone parviflora*), *Arabis alpina*, **alpine chickweed** (*Cerastium alpinum*), **smooth whitlowgrass** (*Draba glabella*), **Laurentian whitlowgrass** (*Draba laurentiana*), **reddish sandwort** (*Minuartia rubella*), **naked mitrewort** (*Mitella nuda*), **Kotzebue's grass-of-parnassus** (*Parnassia kotzebuei*), **northern green orchid** (*Platanthera hyperborea*), **alpine bistort** (*Polygonum viviparum*), **Laurentian or birdseye primrose** (*Primula laurentiana*), **yellow mountain-saxifrage** (*Saxifraga aizoides*), **tufted saxifrage** (*Saxifraga cespitosa*), and **starry false Solomon's-seal** (*Smilacina stellata*).

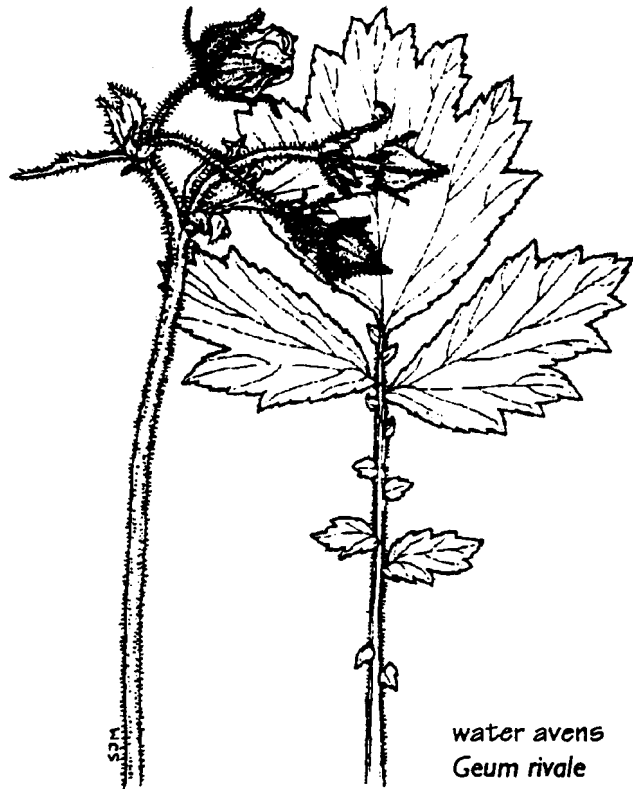


The shingle beach across the road from the bluff was of particular interest to Luise Hermanutz, primarily because her research subject, **moss campion** (*Silene acaulis*), along with **diapensia** (*Diapensia lapponica*), was growing almost at high water mark. Others in the group marveled at the profusion of cone-shaped, Lower Cambrian, archaeocyathid patch-reef fossils to be found in the pinkish rocks and boulders strewn along the beach. John Maunder rummaged about, turning over wet rocks and bits of wood, and managed to find about a dozen species of land snails.

All the while, our activities below the bluff were closely monitored by a pair of vociferous **ravens**; and a rather indignant **woodchuck**, who had dug a system of deep burrows on the upper slope.

The geology of the north shore of the Strait of Belle Isle is quite remarkable. The country to the north is underlain by the Precambrian granite gneisses of the Canadian Shield. But, between Bradore Bay (just west of Blanc Sablon) and L'Anse-au-Diable (just south of Pinware), a series of four flat summits of fossiliferous Cambrian limestone, underlain by reddish sandstone, rise above the surrounding terrain. It is on these limestone tablelands and on outliers of the same origin, such as the area of the high bluff near L'Anse-Amour, that most of the really interesting plants were found. Botanically, the gneiss and sandstone areas were fairly ordinary, though some good finds were made in some of the wet, sheltered gullies and river valleys, and in a few sheltered places along the shore.

Almost unexpectedly, July 8 dawned a beautiful day. John managed a before-breakfast hike from Forteau, off to the right, below the shore cliffs, to Overfalls Brook. The **American pipits** trilling and spiraling high overhead in the still, clear, morning air were a joy to behold. The coastal botany was surprisingly interesting as



water avens
Geum rivale

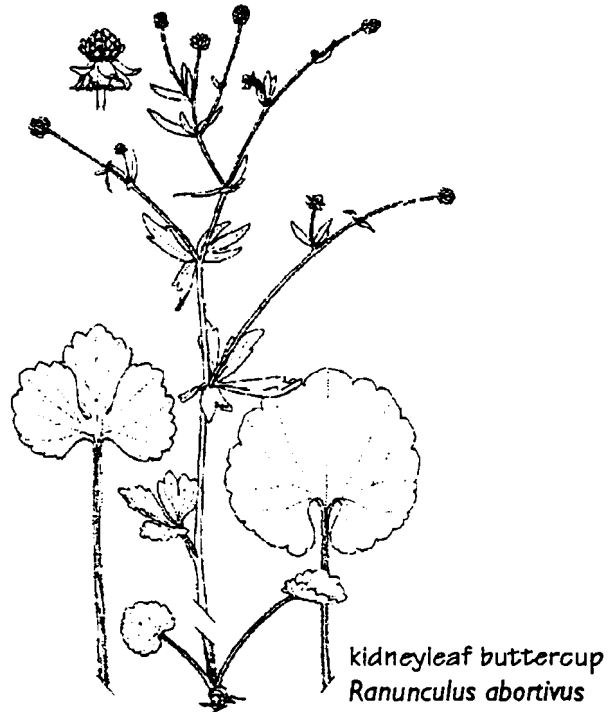
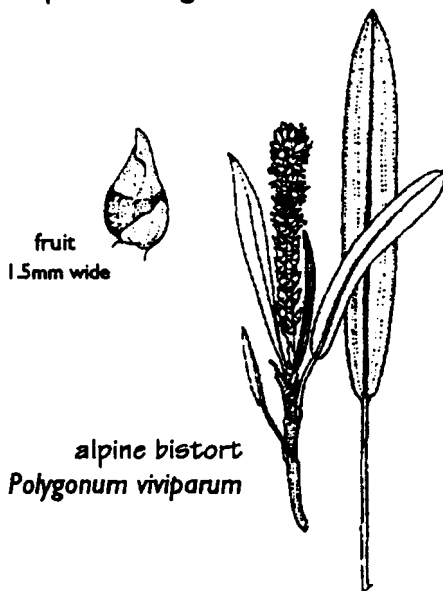
well. In addition to the expected coastal heathland plants, there were patches of *Angelica atropurpurea*, *Ranunculus abortivus*, **water avens** (*Geum rivale*), **small northern bog orchid** (*Platanthera obtusata*), **gall-of-the-earth** (*Prenanthes trifoliolata*), and **clasping-leaved twisted-stalk** (*Streptopus amplexifolius*), in the more sheltered areas. At the base of the impressive falls, which tumble almost directly into the sea, there is a small spray zone that may bear further investigation.

The day's main expedition was to Red Bay, where the group took a speedboat over to Saddle Island, the site of a major sixteenth century Basque whaling station. The botany of the island was not overly spectacular, although the blackflies certainly were! But a number of interesting species, including *Polygonum viviparum*, were found on the shore barrens. Among the shore rocks, *Cerastium alpinum*, **seaside plantain** (*Plantago maritima*, = *P. juncoides*), **seaside**

buttercup (*Ranunculus cymbalaria*), **birds-eye pearlwort** (*Sagina procumbens*), and **roseroot** (*Sedum rosea*), were very common.

As well, Saddle Island afforded an excellent opportunity to examine **scurvygrass** (*Cochlearia* spp.). Fernald recognized three species in our region, **Greenland scurvygrass** (*C. officinalis*, = *C. groenlandica*), **three-fingered scurvygrass** (*C. tridactylites*), and **round-fruited scurvygrass** (*C. cyclocarpa*). All three appear to occur on Saddle Island, and, in many places it was possible to see all three growing closely together. However, it was certainly easy to see why many authors tend to lump one or more of these taxa together. Several ecological forms of each sometimes occurred within metres of each other, and the degree to which flowering and fruiting schedules varied was truly bewildering.

Returning from Red Bay, a number of the group hiked part of the way out the Schooner Cove Trail, on the high ground between L'Anse-au-Loup and L'Anse-Amour Junction. A few interesting plants were seen, but generally this area of mostly coastal heath and tuckamoor was rather ordinary, botanically. One highlight was a small, but spectacular, patch of permafrost-generated "patterned ground".



The morning of July 9 also showed great promise. John went off botanizing before breakfast, as was his custom, and had good success at L'Anse-au-Cotards (also known as the "Jersey Rooms"), just to the west of L'Anse-au-Clair. The place had once harboured a very extensive and thriving fishing concern. The series of flat, damp terraces that the various premises were built upon now harbour a lush growth of plants, including [40 cm tall!] *Arabis alpina*, *Anemone parviflora*, and *Ranunculus abortivus*. The vegetation of the nearby shoreline is quite different, being characterized by such open country species as **alpine bearberry** (*Arctostaphylos alpina*), **Laurentian whitlowgrass** (*Draba laurentiana*), and **alpine azalea** (*Loiseleuria procumbens*). Hearing of John's success at the Jersey Rooms, Glenda and Lorne Quinn made a quick trip to the site after breakfast.

But, alas, the morning's main item of business was to get the ferry back to Newfoundland, and to begin the second segment of what was rapidly becoming a very successful trip, despite its wet and rocky start.

Dactylorchids in Newfoundland

by Howard J. Clase and Susan J. Meades

A new Dactylorchiza taxon from St. John's, Nfld.

The first adventitious European *Dactylorchiza* in North America, originally identified as the **European heath spotted-orchid**, *Dactylorchiza maculata* (L.) Soó, was discovered in Timmins, Ontario, in 1960. Luer (1975, p. 160) commented that the dactylorchids are so common in Europe that it is not surprising that they should eventually turn up on this side of the Atlantic. In 1989, a large population of a *Dactylorchiza* was also found at Tilt Cove, Newfoundland, on the Baie Verte Peninsula. Subsequent investigation has established that it probably had been growing there at least since the early 1900s (Meades 1994). Now, in 1996, a third well-established population has been discovered within the city limits of St. John's, Newfoundland. On July 11, Charles Horwood Jr., responsible for the environmental impact of a new ring road, noticed a lilac coloured flower, clearly some sort of orchid, growing alongside the route. Further exploration of the area during the next few days revealed a colony of around 1000 plants growing in an area spanning roughly 500 m in both directions. The only native *Dactylorchiza* in North America is *D. aristata* (Fischer) Soó, which extends from Japan and Siberia across the Aleutian Island chain into adjacent Alaska, (Luer 1975, p. 158).

The St. John's plants are 40 - 65 cm high with a fairly dense raceme of about 50 attractive, pinkish-lilac coloured flowers with distinctive purple markings on their lips. The labellum has three barely separated lobes; the centre lobe projects like a small tongue and the lateral lobes of most flowers are strongly reflexed. The two upper petals and the top sepal come together to form a hood, while the two lateral sepals are turned back and twisted up in a pose aptly described as resembling a hovering tern's wings

(Meades 1994, 1995). The pale central area of the labellum is surrounded by an almost continuous thin purple line broken only near the bottom. Inside the line the labellum is patterned with purplish dots, loops, and broken lines, which may extend to the middle lobe. The remainder of the labellum is unmarked pinkish-lilac. Purple dots are also found on the insides of the side sepals and faintly on the upper sepal, but not on the upper petals. The details of the pattern are variable even amongst flowers on the same raceme. The pale pink spur is fairly stout, slightly downcurved, and just over half the length of the ovary.

The lower halves of the relatively stout, hollow stems have four large clasping lanceolate leaves, which are up to 15 - 20 cm long and 3 - 5 cm broad. These are bright green, but spotted with large (up to about 7 mm across) purplish-brown markings, which, especially on the lower leaves, may be annular rather than spots and tend to be slightly elongated transversely on the leaf. The patterning of the leaves is more variable than that of the flowers. Between the main leaves and the inflorescence are 1 - 3 smaller, bract-like leaves, and there is also a bract associated with each flower that projects beyond the flower only in the lower part of the raceme; many of the cauline and lower flower bracts are also spotted. The upper part of the stem and the flower bracts are purplish. The raceme is 5 - 9 cm high, 2 - 3 cm across, and tapers slightly while there are still unopened buds at the top.

The plants, mostly growing in sphagnum, are on a sloping site perforated with small springs that keep the ground moist even in the height of summer. Part of it was once poor grazing land attached to a now abandoned farm. Dactylorchids have not been found outside the small watershed that encompasses this farm.

Local attempts to identify the plant failed to reach any definite conclusion despite the availability of a small library of books on the European and British floras. All that could be concluded was that they were one of the "marsh-orchids" (*Dactylorhiza incarnata* (L.) Soó and *D. majalis* (Reichenbach) P.F. Hunt and Summerhayes aggregates, rather than the "spotted-orchid" group (*D. fuschii* (Druce) Soó and *D. maculata* (L.) Soó. Plants in both groups may have spotted leaves, so this is not a useful identifying feature, neither is the hollowness of the stem (Bateman and Denholm 1989). The situation was not helped by the fact that each of the books contained a different list of taxa - one author's species was another's subspecies and some included varieties and forms that were not mentioned by any of the others. Summerhayes (1951, p. 278), one of the earlier authorities on the British orchids, commented that "The Marsh Orchids are far and away the most difficult group of British orchids both for the serious student and for the ordinary nature-lover." The situation has changed little since his day!

Luckily, because of the Tilt Cove discovery, we were already in touch with a current authority on the group, Dr. Richard Bateman of the Royal Botanic Garden, Edinburgh, and it proved possible to get a few specimens to him via a direct flight within 48 hours of being collected. On the basis of his archive of morphometric data, he was able to say that they closely matched an orchid found in Southern England and the Low Countries, known as the "leopard marsh-orchid" (on account of its spots!). While this plant has been nominated as a candidate for full species status, it was considered by Bateman and Denholm (1983) to be *Dactylorhiza majalis* ssp. *praetermissa* (Druce) D. Moresby Moore and Soó var. *junialis* (Vermeulen) Senghas, but this must be considered provisional. Dr. Bateman

and colleagues are currently in the middle of a project to try to determine the relationships between the various taxa using isozyme analysis. While there is currently no isozyme data available on any authentic leopard marsh-orchids from Europe, there is already a suggestion that the classification based on morphometric studies may have to be revised. At least the English name, leopard marsh-orchid, should stand! The main difference between the St. John's orchid and typical British ones is in the reflexing of the outer lobes of the lip. In Britain, the lip tends to be initially flat, only folding back as the flowers age, while ours are reflexed as soon as they open.

Dr. Bateman noticed that the Timmins dactylorchid, as described and depicted in Luer (1975, p. 160), appeared identical to the St. John's plant. The flower differs only in variable character, such as orientation of the lateral sepals. Also, the leaves appear to be narrower than those of typical St. John's plants. While the original Timmins *Dactylorhiza* site was destroyed, there are two other sites known within the Timmins area. A re-evaluation of the identity of the Timmins plants in the light of current knowledge of the genus would clearly be in order.

The origin of the St. John's orchid is even more speculative than its identity. The size of the population suggests that they must have been here for tens of years at least, and one local resident says that they have been there as long as he can remember. While European colonies of Marsh-orchids often show a great deal of variability (as a result of introgressive hybridization), the homogeneity of the St. John's population suggests that it originated from very few plants, perhaps just a single individual. One possibility is that the minute, dust-like seeds were brought over from England along with hay or some other livestock feed at a time when agricultural regulations were less stringent than

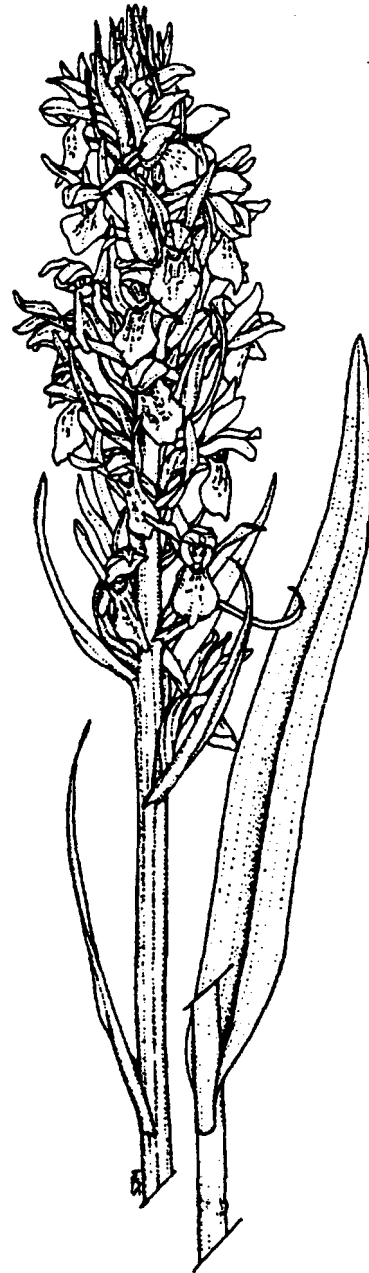
they are today. There certainly were close connections between Newfoundland and south Devon and Dorset, both strongholds of the leopard marsh-orchid.

Road construction has probably destroyed part of the site, but most of what remains is not presently threatened and steps are being taken to protect it from future disturbance. Luckily the site is on public land, a part of C. A. Pippy Park, an area on the northern edge of St. John's, which includes recreational and institutional uses. It is hoped that a wild flower conservation area will be established here. While the Tilt Cove site is well off the beaten track, the discovery of a well established population of a large spectacular orchid only about 1 km from the Memorial University Botanic Garden makes one wonder what else there is to be found! We shall certainly be keeping an eye on the sites to which boggy material was moved during the road bed construction.

Current Status (1996) of the Tilt Cove Dactylorhiza

While the identity of the St. John's orchid is fairly certain, the Tilt Cove *Dactylorhiza* is still a bit of a mystery. Several fresh leaves were collected on August 24 and sent to Edinburgh for isozyme analysis. Due to the more circuitous, 4-day journey from Tilt Cove to Edinburgh, the bands on the isozyme gels were more difficult to code than those of the St. John's plants. Nevertheless, Dr. Bateman was able to determine that "the Tilt Cove plants seem to have a typical *praetermissa* genotype." Apparently, the Tilt Cove plants are morphologically distinct from European dactylorchids studied by Bateman, so a more detailed identification will have to wait until comparison with more European populations is feasible.

Unlike the St. John's plants, the Tilt Cove dactylorchids grow in seepage fens (with a basic pH) that overlay slag from the former copper



Tilt Cove marsh-orchid
Dactylorhiza majalis ssp. *praetermissa*

and nickel mine. The largest population, located on the former site of a miners' barracks, was estimated at 600 individuals in 1994. In July of 1996, less than 100 plants were observed. This dramatic decline in population numbers may be attributed to a lack of snow cover during the winter of 1995-96; but, regrettably, it may be more likely due to excessive trampling of this much-visited fen. The former location of the lone albino *Dactylorhiza* was still visible due to the well-trodden path that encircled it, but the plant itself was nowhere to be seen! It is hoped that future visitors to this site will respect the sensitivity of this habitat and keep their tracks to a minimum.

The authors are grateful to Dr. Richard Bateman for his identification of the plants and his help in the preparation of this article.

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