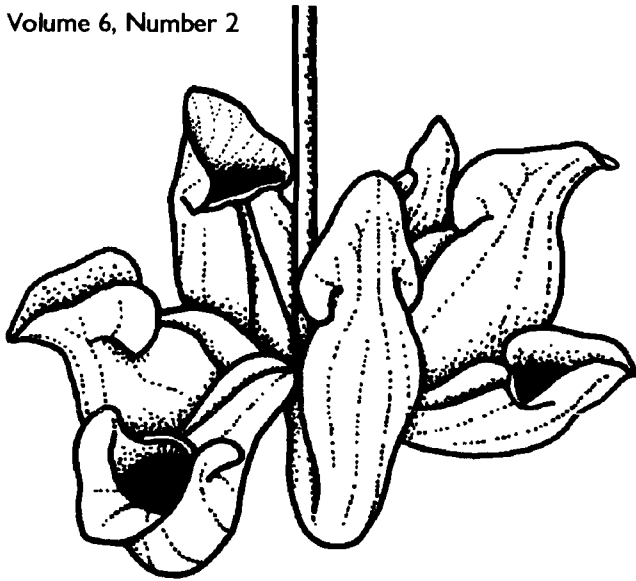




SARRACENIA

Newsletter of the Canadian Wildflower Society
Volume 6, Number 2

Newfoundland Chapter
Winter 1996



Winter Schedule

February 7: Protected Areas: What can you do to help? by *Laura Jackson, PAA exec. director.*

A talk about areas proposed for ecological reserves and National Parks, including the Torngat Mts. in northern Labrador, and what you can do to help attain protected status for these unique areas.

March 17: An Old Growth Forest Walk

with Dr. Joanne MacDonald, Canadian Forest Service

Joanne will tell us all about the old growth forest in Pippy Park. This will be an easy walk! Meet at the Fluvarium parking lot at 2 pm.

March 6: A Campers view of Newfoundland Wildflowers by *Bill and June Titford*

A slide show about our favourite subject! Their newly released wildflower book, *Traveller's Guide to Wildflowers*, will be on display.

April 3: Wildflowers of the Yukon

by Felicity O'Brien

A slide show of alpine wildflowers of the Whitehorse area that Felicity took while at the AGM of the the Candian Wildlife Federation.

May 1: Annual General Meeting

Please try and attend as there will information on the CWS field trip and the spring edition of the newsletter will be available.

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

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1996 Field Trip: Northern Peninsula

We have received an excellent response for our field trip! We have about 15 members keen to go to Labrador and an additional 8 members joining us for the Northern Peninsula leg of the trip. We are all looking forward to seeing and botanizing with Sue Meades once again! We will be taking the ferry from St. Barbe July 6 and returning July 9 to meet the rest of the group at Burnt Cape July 10. From there we will visit Cape Norman and other sites at the tip of the Great Northern Peninsula, Plum Point, Bellburns (for Hooker's orchid, *Platanthera hookeri*), and Gros Morne (for showy lady's-slipper, *Cypripedium reginae*). This trip will focus on the orchids and early summer species that we missed during our August trip in 1994.

We will publish a detailed itinerary in the next newsletter (May). If anyone has questions about the trip, please call Alice Close (579-1474) or Luise Hermanutz (737-7919 or 895-6851).

General Announcements

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 Alice. Articles should be submitted on 3 1/4" computer disk (if possible) in Word Perfect 5 or 6, IBM (PC) compatible; b&w illustrations should be no larger than 4 X 6 inches. Correspondence can be sent to Luise at MUN's Biology Dept. or to Alice Close, 20 Laughlin Cr., St. John's, Nf., A1A 2G2.

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Notes from the President

First, I would like to extend a New Year's greeting to all of you and a special thank you to those members who helped to make 1995 the successful and interesting year that it was. I would also like to welcome all you new members to the Society and encourage you to get involved with the various activities and events that take place during the course of the year. I am now looking forward to 1996 and it appears to be shaping up into a banner year, with several interesting speakers lined up for the winter and spring meetings, and another extended field trip planned for this summer to the Northern Peninsula and possibly the Straits Coast of Labrador.

As successful and interesting as 1995 was, it did have a downside - we lost our president, Sue Meades, to Sault Ste. Marie, Ontario, where her husband Bill has taken up a new position with the Canadian Forest Service. Sue was a driving force behind CWS and will be sorely missed by the Society. As a token of appreciation, the Society presented Sue with a lithograph of "Green Gardens", by Rob Rutherford. Thanks Sue for all the good things you did while you were here in Newfoundland, and best wishes to you and Bill as you take up your new residence in the "Soo".

This is not to say that Sue has disappeared from the Newfoundland scene altogether, far from it. Thanks to the miracle of technology, she will be (and is) in touch with the Society on a regular basis and will be involved with many aspects of the Society from her home in Saulte Ste. Marie, including the upcoming trip to the Northern Peninsula, and additional work at Burnt Island.

The changes to the executive as a result of Sue's departure were outlined in the Fall 1995 issue of *Sarracenia*.

There were many highlights in 1995 and I will mention just a few here in a glance back. A major highlight was the rediscovery of *Erysimum inconspicuum* - tall tower mustard - at Chimney Cove. This plant was first reported from the Island by A.C. Waghorne in 1896 and had escaped detection even by the sharp-eyed M.L. Fernald until this past summer when **Anne Marceau** spotted it on a rocky overhang on a cliff top at Chimney Cove. A trip to this spot is not for the faint-of-heart. Sue's account of the boat ride to and from the cove still sends shivers up and down my spine. Their trip to Chimney Cove has been named the *Waghorne Memorial Expedition*.

Howard Clase made a fine botanical discovery on his front lawn - *Epipactis helleborine*, the broad-leaved helleborine. This orchid species had not been previously reported from the province. **Glenda Quinn** also made a nice find on the Society's five-day field trip to the northeast coast of Newfoundland. A pretty, purple flowered plant that she came across turned out to be *Oxytropis campestris*, the field oxytrope. There are only two oxytropes listed for Newfoundland, and this one had not been previously reported for the Baie Verte Peninsula. Both Howard and Glenda wrote up their discoveries in the newsletter. I really encourage everyone to follow up on things like this. Whenever you make some unusual observation or have something to say of a botanical nature, work it up into a short article and submit it to the newsletter (or elsewhere if so merited) for publication. Such endeavours will result not only in a great sense of personal accomplishment, but will provide interesting reading for the rest of the members. After all, it is our newsletter, and this is a good way to make it really our own!

Other members who wrote articles (in some cases several) for the newsletters in 1995 were **Todd Boland, Paul Martin Brown, Robin Day, Henry Mann, Sue Meades, Fred Woodruff, and Mary Woodruff**. Many thanks to you all.

Several people were involved in planning and leading our numerous field trips. Since we are a wild flower society, these field trips are really the heart and soul of the whole thing. Without them we would languish into oblivion. So I would like to thank all those responsible for their much appreciated efforts in this regard, namely **Jean Bérubé, Todd Boland, Howard Clase, John Maunder, Sue and Bill Meades, and Gerry Yetman**. I think that is everyone. John Bérubé has led mushroom walks for the Society for the past couple of years and they have always been interesting. Unfortunately, Jean is also leaving the province due to federal forestry downsizing and will not be available to do the walks again. He will be missed.

I really must applaud the people who volunteered to give talks at our monthly meetings during 1995. The talks were, one and all, simply fascinating. And the range of topics would be hard to match by any natural history society. We were taken on trips to Australia, Trinidad and Tobago, the Rocky Mountains, to orchid heaven, and we watched the vegetation in the Waterford River valley change over a period of 25 years before our very eyes! Bravo everyone. Thanks to **Todd Boland, Luise Hermanutz, Sue Meades, Tom and Jane Smith, and Lydia Snellen**.

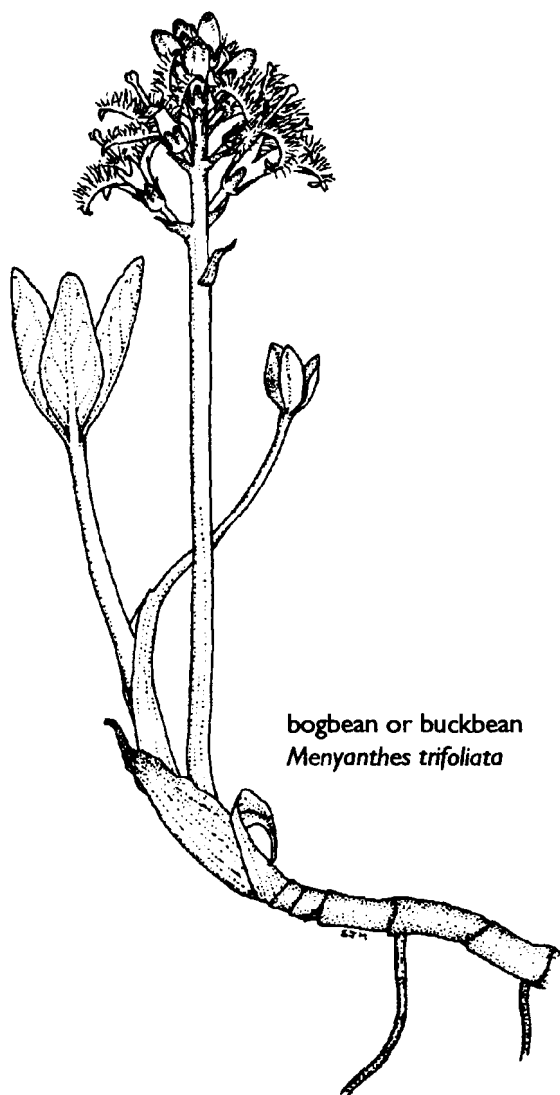
Gordon Ringius, *interim president*

Spotlight on Bogbean (*Menyanthes trifoliata*)

by Faye Thompson

"Of Water Trefoile, or Buck Beanes. The great Marsh Trefoile hath thicke fat stalkes, weake and tender, full of a spongius pith, very smooth, and of a cubit long, whereon do grow leaves like to those of the garden Beane, set upon stalks, three joined together like the other Trefoiles, smooth, shining, and of a deep greene colour: among which toward the top of the stalkes standeth a bush of feather-like floures of a white colour, dasht over slightly with a wash of light carnation".

(Gerard, 1633)

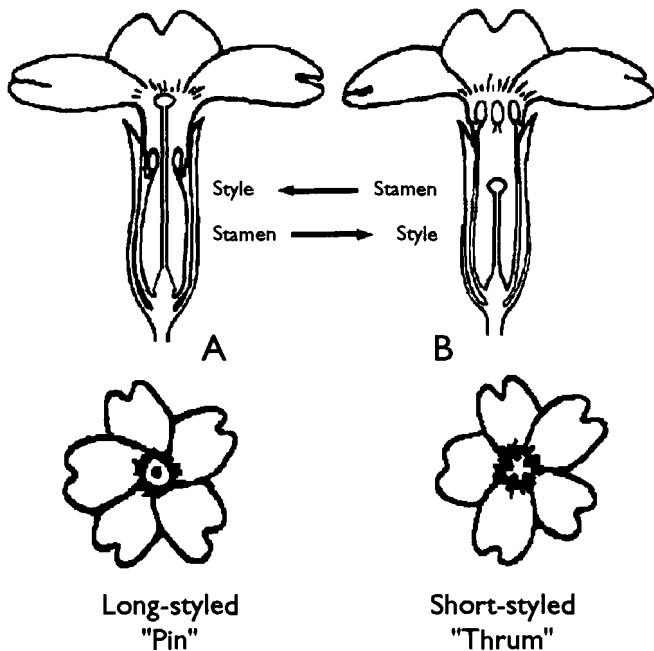


bogbean or buckbean
Menyanthes trifoliata

Menyanthes (from *menyein*, disclosing, and *anthos*, a flower) *trifoliata* (meaning three-leaved), is a beautiful but often unnoticed wildflower, common to bogs and the shallow waters of ponds and rivers throughout its circumboreal range. There is no need to venture far from home to see these wildflowers in bloom. From mid April to late July, *Menyanthes trifoliata* covers roadside bogs off the Bauline Line and Logy Bay Road with blankets of white flowers. Bitterwort, marsh-clover, moonflower, water-shamrock, and buckbean, are just some of this plant's common names. However, locally it is known as the bogbean, probably a name derived from the dutch name "boksboon".

Bogbean plants have a thick, creeping rhizome from which leaf and flower stalks emerge. The leaf stalks bear three oval leaflets and the flower stalks bear inflorescences of upwards of 30 white to pink flowers. Each flower has 4 to 6 bearded petals. A separate variety of bogbean (*Menyanthes trifoliata* var. *minor*), with smaller, paler flowers, is found in North America east of the Rockies.

A closer look at bogbean flowers reveals that there are two flower types: those with long styles and short stamens, called "pin" flowers, and those with short styles and long stamens called "thrum" flowers. (See diagram, pg. 5). This is called distyly ("di"-two, "styly"-styles). The inflorescences of individual plants consist of either all pin or all thrum flowers. Seeds can only be produced if pollinated by the opposite flower type, i.e. pin pollen can only fertilize thrum ovules and vice versa. Pin flowers cannot be fertilized by pin flowers and thrum flowers cannot be fertilized by thrum flowers, which would result in selfing. Having flowers of two different style lengths ensures pollination with pollen from the other flower type, ensuring outcrossing. Distyly is a mechanism



Distyly in *Primula vulgaris* A) Pin flower; B) Thrum flower. Arrows indicate compatible matings.

that decreases self pollination and promotes outcrossing. Bogbean flowers are mainly pollinated by syrphid flies and bumblebees (*Bombus sandersonii*, *B. terricola* and *B. borealis*). As a bumblebee probes the corolla tube of a thrum flower in search of nectar, its **abdomen** comes in contact with the long anthers, and pollen sticks to its body hairs. As the pollinator moves from flower to flower, it may land on a pin flower. As the bumblebee probes the corolla tube for nectar, pollen adhering to the body will contact the pin stigma and the pin flower has been successfully pollinated. While taking nectar, the **head** of the bumblebee contacts the short pin anthers, depositing pin pollen on the bumblebee's head. The next time the bumblebee probes a thrum flower, the pin pollen on its head will be deposited on the short thrum stigma, successfully pollinating the thrum flower. By depositing pollen on two separate parts of the insect, (head vs. abdomen), the plant ensures cross pollination between the two flower types.

Once the flowers have been pollinated, fruits start to swell, and most capsules dehisce in August. Capsules contain up to 31 round, light-brown seeds which are likely dispersed by water, fish and ducks. Seedling production is rarely observed in *Menyanthes* populations, and seedlings are probably involved only in the colonization of new areas.

Vegetative propagation may be a more important method of reproduction in areas where the plant is already established. The main stem of the bogbean plant is a horizontally growing rhizome. Branching of this stem produces a network of structures from which flowering shoots emerge. Since all inflorescences from one branching rhizome have flowers with the same style length, large patches of all pin or all thrum flowers are often found together. For example, large "islands" of pin and thrum clones cover the edges of Long Pond throughout the summer. Dispersal of these vegetative units occurs by branching and the subsequent rotting of the older parts of the rhizome. These rhizome pieces move wherever the water takes them.

The bogbean is more than just a pretty plant. It is also a medicinal plant, used to treat fevers, rheumatism and other ailments. Dried leaf and root teas can be used as digestive tonics. Parts of the bogbean may also be edible: ground roots have been used by Finns and Laplanders to make "missen" or famine bread, and leaves of the bogbean have been used as substitutes for hops in beer. **BUT** I don't suggest that anyone try eating this plant, as the bogbean is a purgative.

So next summer when out for a Sunday drive, throw your waders in the trunk, and don't hesitate to stop by the roadside and take a closer look at these beautiful distylous flowers!

The Life Stages of a Balsam Fir Stand

by Joanne E. MacDonald

What is a forest stand? A forest stand is a group of trees that are sufficiently uniform in species composition and age that they can be recognized as a homogeneous and distinguishable unit. Consider two stands of trees in which the predominant species is balsam fir. The uniformity in species composition allows one to recognize the stands as balsam fir stands. Now, consider that one stand has trees that range in age from 60 to 80 years and the second stand has 20- to 30-year old trees. In the two stands, the ages of the trees are markedly different and so two stands are recognizable.

Within forest ecology, there is a sub-discipline of forest stand development. The study of forest stand development examines how individual trees behave and how they form stands. The development of a forest stand is characterized by changes in forest vegetation as the forest stand is "born", reaches middle age, then old age, and finally dies.

Four stages of forest stand development can be recognized. The stages are:

- stand initiation
- stand exclusion
- understory re-initiation
- old growth.

In the **stand initiation stage**, balsam fir seed germinates and new balsam fir seedlings quickly occupy recently available growing space. This "recruitment" of balsam fir seedlings continues for several years until the stem exclusion stage is reached.

During the **stem exclusion stage**, the number of new germinants of balsam fir becomes fewer and fewer and some of the existing balsam fir seedlings die. The surviving balsam fir seedlings start to grow in height and

diameter. With time, the balsam fir seedlings reach sapling size and they begin to differentiate into crown classes. (If one looks at the vertical pattern that exists in a balsam fir stand, it is possible to recognize individual trees that fall into dominant, co-dominant, intermediate, and suppressed crown classes).

As the balsam fir saplings approach 20 years of age, they become reproductive. In their 30s, balsam fir trees begin their prime seed production years and produce large quantities of seed. The seeds fall to the shady forest floor. As in the parable of the mustard seed, some of the seed fails to germinate, some of the seed germinates, some of the seedlings die, and some of the seedlings survive the shade cast by the overstory of their parent trees. During this **understory re-initiation** stage, "advanced balsam fir regeneration" destined to make up much of the next stand becomes established.

During the **old growth** stage, older overstory trees die in an irregular fashion creating gaps of available growing space. The advanced balsam fir regeneration takes advantage of these gaps and begins growing towards the overstory. However, as the stand completely breaks up (between 60 to 80 years of age), more available growing space is created and the stand initiation stage begins again.

Balsam fir stands are dynamic entities that will cycle repeatedly over time as the individual trees that comprise them complete their life cycles. However, balsam fir stand development is also driven by disturbance. Disturbances are important ecological forces: they kill trees and thereby create growing space. Agents of disturbance include: fire, wind, ice storms, insects, diseases, and forest harvesting.

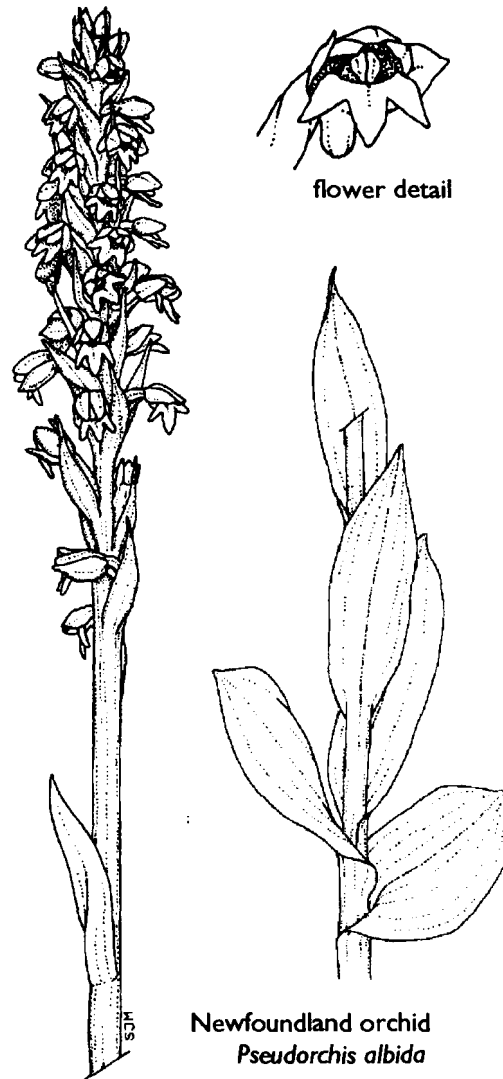
The End of Quarrying at Burnt Island

by Sue Meades

In mid July, my field trip up the Great Northern Peninsula had several purposes. In addition to continuing work on our native plant flora, I planned to visit the reported locations of our two rare *Braya* species, *Braya fernaldii* and *B. longii*, which are restricted in distribution (endemic) to Newfoundland. Of more immediate importance was our need to check out the situation at Burnt Island, also known as Burnt Cape. A few weeks earlier I was faxed a cryptic message "If you want to know what's happening to the flowers at Burnt Cape call this number." A few phone calls brought to light information that Gilbert Evans had accelerated his quarrying and was now running 7 or 8 large trucks 18 hours a day hauling gravel off the Cape. The town's people were concerned that irreparable damage would be done to the site before his quarry permit expired on August 25, 1995. The next few paragraphs describe the significance of this site, for those unfamiliar with its history.

Natural History of Burnt Island

Burnt Island's unique combination of climate and geology (limestone bedrock) make it the most important botanical site in insular Newfoundland. This "island", actually a 4 X 1 km cape in Pistolet Bay is attached to Raleigh by a narrow strip of sand. It has been visited by botanists for many years, starting with Dr. M.L. Fernald and his colleagues in the mid 1920's. The rediscovery last year of **dwarf hawk's beard** (*Crepis nana*), a rare Arctic disjunct, and the **fairy slipper orchid** (*Calypso bulbosa*) brought to 34 the number of rare plant species known from this small island. Burnt Island is one of very few locations for the rare **Newfoundland Orchid** (*Pseudorchis albida* = *Platanthera albida* var. *straminea*) and the endemic **Fernald's rockcress** (*Braya fernaldii*). Also, the cape is the *only known location*,



worldwide, for the **Burnt Cape Cinquefoil** (*Potentilla usticapensis*), which was discovered by Fernald and named for this location.

Because of its exposed, northerly location at the tip of the Great Northern Peninsula and its greater height (75 m), relative to adjacent headlands, Burnt Island is arguably the most Arctic coastal location on the Island of Newfoundland. Peaks on the granitic Long Range Mountains are certainly higher, but they support a lesser and different complement of rare plant species spread out over the entire



dwarf hawk's-beard (*Crepis nana*)

The plant that stopped gravel quarrying on Burnt Island.



Rod Mercer (center), Gilbert Evans (r), and Michael Burzynski (l.shadow) look down on a small *Crepis nana* (circled).

length of the mountain range. Once part of the Ordovician ocean floor, Burnt Island's nearly pure limestone bedrock contains numerous marine fossils, including some trilobites that are *new species* (D. Boyce, pers. comm.). Among its many interesting physiographic features are 2 large sea caves (the Little Oven and the Big Oven) and numerous frost polygons - circular or polygonal shaped patterns of gravel that are sorted by frost action: the larger gravels, pushed to the outside of each polygon, form a ring around the finer gravels and silt). Its exposed, wind-swept and frost-scoured limestone slopes provide suitable habitat for low, ground hugging, Arctic-alpine calciphiles (limestone-loving plants), such as dwarf hawk'sbeard and the **alpine milk vetch** (*Astragalus alpinus* var. *alpinus*).

Our Quest for Protection of Burnt Island

Last year, we had brought to government's attention the botanical significance of Burnt Island. I gave presentations to the Minister of the Environment: the Hon. Kevin Aylward; the Interdisciplinary Land Use Committee (ILUC): responsible for land use planning; the Assistant Deputy Minister (ADM) of Mines: Mr. Paul Dean; and the Wilderness and Ecological Reserves Advisory Committee (WERAC): responsible for advising Cabinet on the suitability of reserve sites. As (then) president of the Wildflower Society, I proposed to government that Burnt Island be declared an Ecological Reserve as soon as possible due to the escalating quarry activities.

As a result of our meetings with the ADM for Mines, we reached an agreement that confined the operator to work on the scree slope, located at the base of the cliff on the northwestern edge of the island. We felt it was safer to restrict quarry activity to this already disturbed site, even though this was *not* Mr. Evans' identified permit site and he was, in fact,

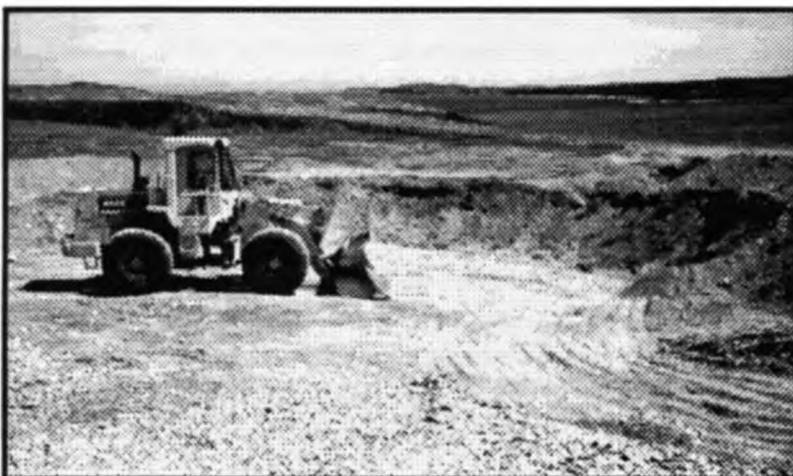
quarrying illegally. However, his actual permit site was on the eastern slope of the island, near the location of the *Crepis* population that was rediscovered last year.

We received a letter from the Hon. Dr. Rex Gibbons, Minister of Natural Resources, confirming this agreement. His letter contained the following statements: "Mr. Gilbert Evans has been instructed not to disturb any new areas." ... "I am confident that the ongoing quarry activities during 1995 will not have any further impact on the ecology or aesthetics of Burnt Island if we include the Town of Raleigh, Mr. Evans and other stakeholders in our discussions and our plans for Burnt Island." Further confirmation of government's commitment to protect this site came in a letter to WERAC from ADM Paul Dean, which stated: "Please be assured we are taking all necessary steps to curtail quarry and exploration activity so as to avoid further ground disturbance of the area until a thorough study and assessment of the botanical significance of the area can be completed." In our meeting with Mr. Dean, he assured us that if the quarry operator did not abide by these restrictions, we could call the RCMP to halt his activities. Even though Mr. Evans was quarrying on land other than his designated site, the Mineral Lands Division, directed by Mr. Ken Andrews, was reluctant to rescind Mr. Evans' permit without locating another

source of gravel for him. Mr. Andrews said the department didn't want to take this man's sole livelihood away from him. However, we learned later that Mr. Evans was a full-time employee of a large St. Anthony construction company, owned by Maurice Simmonds, which was the destination of most, if not all, of the quarried gravel.

Recent Developments

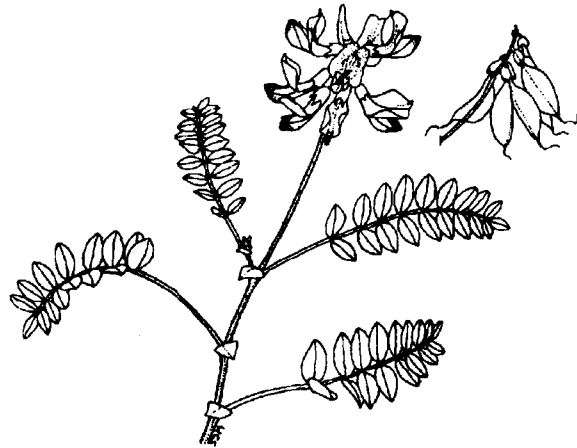
When we arrived at Raleigh on July 14, we were greeted by the news that the quarry operator had barred the access road to Burnt Island with a chain. Although restricting access to a quarry is legal (for the public's protection), there had been no chain across the road to Burnt Island during its 10 previous years of quarry activity. The chain appeared after the town started complaining about the increased quarry activity. In late June '95, many of the townspeople blocked the quarry trucks from reaching Burnt Island. The RCMP were called and the quarry operator led them to two sites with newly staked permits issued by the Mineral Lands Division of Natural Resources. Everything appeared legal to the RCMP, so the trucks were allowed to continue hauling gravel off the Cape. It was after this incident that I faxed the message about Burnt Island.



One of two new pits quarried on Burnt Cape (east side) during June of 1995, contrary to our agreement with the provincial government to restrict further digging to the base of the scree slope. This site is adjacent to the only known Newfoundland population of *Crepis nana*, an Arctic calciphile, and other rare plant species.



Burnt Cape cinquefoil
Potentilla usticapensis



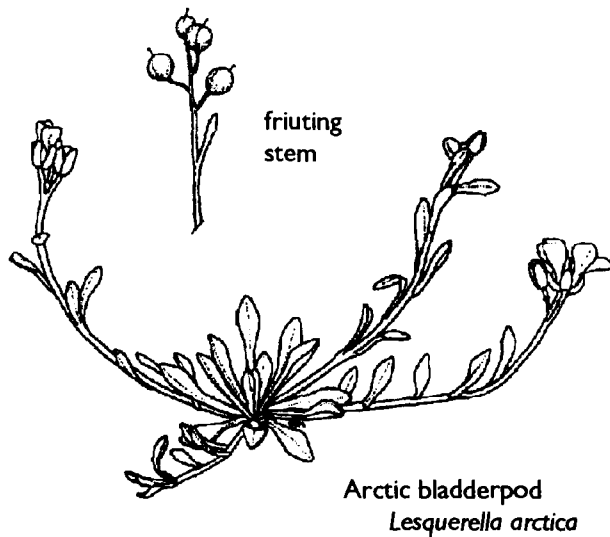
alpine milk-vetch
Astragalus alpinus var. *alpinus*

To assess new damage to the important botanical sites, the town's deputy mayor, Ian Martin, obtained a key to the chain's lock and lead us to the newly disturbed sites. In addition to Mr. Martin, I was accompanied by my friends from Gros Morne, Anne Marceau and Michael Burzynski; Noah Smith, a resident of Raleigh; Dr. George Beatty, a retired botanist from Pennsylvania who had spent many summers on Burnt Island with his late wife; and his assistant, Maggie Harnum.

On the way up the road, we saw a bulldozer pushing peat over a previous quarry pit. As we drove past, I noticed several small plants in the gravel that looked like live mustards. I got out of the van for a closer look - sure enough, they were **Fernald's rockcress** (*Braya fernaldii*). This was one of only three confirmed locations in Newfoundland where this endemic plant still grows - and the bulldozer was burying the entire site with peat! I went over to the bulldozer operator and said he would have to stop what he was doing, since this was a very rare plant. I was ready for a real argument, but he said "Are you the lady that knows about the plants?" I said, "I guess that would be me." Then he said Mines

and Energy told him they had to listen to me about matters of "reclamation." So I said, "Good, you can leave", which he did.

We continued on to the newly disturbed sites to assess the damage. Approximately 4 acres of new ground had been excavated in two new areas. The first was on the top of the cliff, high above the scree slope where Mr. Evans was supposed to restrict his activity. This quarry, more than twice as deep as the height of our van, was actually two connected pits (photo, pg. 12). The site overlooked a breathtaking view of Pistolet Bay, dotted by numerous icebergs, Cook's Harbour, and the Labrador coast. The pit was surrounded by **purple** and **white-mountain saxifrages**, (*Saxifraga oppositifolia* and *Saxifraga paniculata* (= *S. aizoon* var. *neogaea*), the very rare **foliose oxytrope** (*Oxytropis foliolosa*) and the endemic **Burnt Cape cinquefoil** (*Potentilla usticapensis*). The white mountain-saxifrage is an eastern Arctic calciphile with disjunct populations in more southerly Arctic-like or alpine areas, such as the tip of the Northern Peninsula and the highest mountain tops of New England. Along the cliff edge, this attractive species forms extensive mats, many of which could be seen



overturned or buried under newly excavated gravel. Recently uprooted vegetation mats of several rare species lined the boundary of the quarry. Once uprighted, still-blooming stalks on these dying plants would spring back, evidence of their very recent disturbance. This is the site at which George Beatty says he saw hundreds of dwarf hawk's-beard (*Crepis nana*) growing about 15 years ago. We found none there now.

The second new quarry, also two connected pits, was on the eastern edge of the island (photo, pg. 9), amongst plants of the rare **dwarf hawk's-beard** (*Crepis nana*) and **alpine milk-vetch** (*Astragalus alpinus* var. *alpinus*). As reported previously, the only known location in insular Newfoundland for the dwarf hawk's-beard is Burnt Cape. The alpine milk-vetch is found at only one other location in Newfoundland - Quirpon Island, near L'Anse aux Meadows. Nearby, we located several other rare plants, including the **small round-leaved orchid** (*Amerorchis rotundifolia*), the **Newfoundland orchid** (*Pseudorchis albida*), the **flat-petalled yellow lady's-slipper** (*Cypripedium calceolus* var. *planipetalum*), and the **Arctic bladderpod** (*Lesquerella arctica* = *L. purshii*).

Broken Promises and Semantic Arguments

Obviously, the gravel quarrier did not heed government's orders not to disturb new ground. We documented the new disturbance and returned to Raleigh to try and find out what could be done to prevent more habitat destruction. As per our instructions from the ADM, we went to the local RCMP, who said they were "tipped off" we were coming. Curious... They said it was Mines' responsibility to monitor quarry activity and they would do nothing. I tried calling the ADM for Mines, but, due to poor weather, he, the Deputy Minister, and the Minister were stuck somewhere in Labrador on their way to the Torngat Mts. National Park site. So, I talked to the Director of Mineral Lands, Ken Andrews, who is in charge of quarry activities and regulations. He smugly said that the words "new areas" in the Minister's statement "*Mr. Evans has been instructed not to disturb any new areas...*" were open to interpretation. His interpretation seemed to be that any place on Burnt Island was fair game, regardless of rare species. After a lengthy discussion, he said he could do nothing to stop the quarry activities and that no one, neither resident nor tourist, would be allowed to use the road without Mr Evan's permission to unlock the chain across the road. Furthermore, when the quarry permit expired, the road would be ditched to prevent further access to the site, for the safety of the public, of course. He did say that he would send a quarry inspector to the site to make sure everything was O.K.

We had heard rumors from several sources that, despite our agreement with the Minister, the Mineral Lands Division would do whatever they could to prevent Burnt Island from becoming a reserve and hoped that if enough damage was done to the site, maybe we

(the Wildflower Society) would no longer be interested in pursuing the reserve idea. If true, these actions were in direct contravention of our agreement with the Minister of Natural Resources. This attitude only serves to undermine any goodwill and understanding that is established between government and NGOs (non-government organizations).

The Quarry Inspection

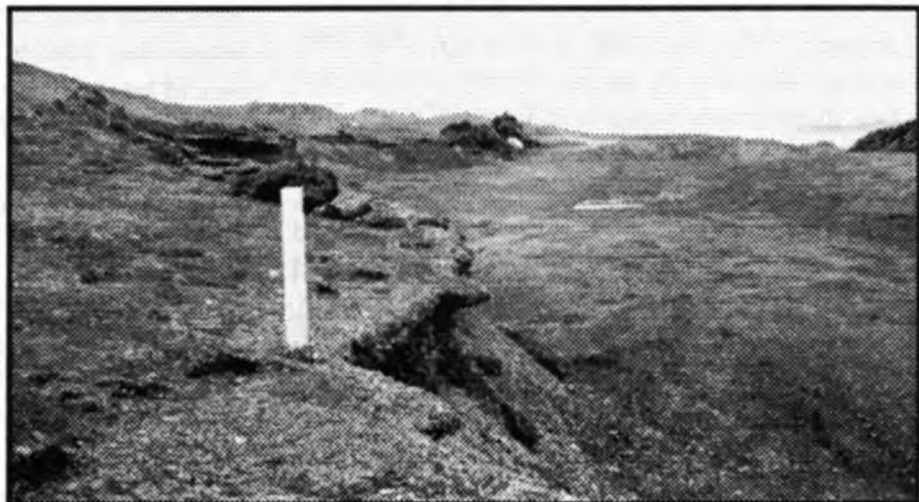
We could not undo the damage caused during June and July, but Anne, Michael, and I decided to stick around and talk to the mining inspector who was to arrive on Tuesday. That morning, along with Noah Smith and a couple of other Raleigh residents, we waited at the chained road entry until Gilbert Evans and the inspector, Rod Mercer, drove down from the top of Burnt Cape. We showed him our letters and he agreed to accompany us back to the pits so we could explain our concerns. Just as we were ready to start up the hill, a car pulled up behind us. Two women jumped out and ran up to our window, saying "Hi, we're from Georgia. We heard that you know about the rare plants here, could you show us where they are?" We agreed to let them accompany us and, as we spoke to the quarry inspector, they

videotaped many of the rare plant species, as well as the spectacular scenery.

We showed Rod the recently uprooted vegetation mats and explained which plants were rare and their significance. He listened attentively to our arguments and came to a compromise that he hoped would please everyone. On the eastern side of the Island, Rod marked off a smaller disturbed area for Gilbert to work within until his permit expired. Each corner of the new area was marked with stones wrapped in red flagging tape. We documented the positions photographically while Rod took GPS readings and explained the changes to Gilbert. Although we felt some progress had been made, we still had another month to wait until all quarry activity would cease on Burnt Island. After Rod and Gilbert left, we drove to the base of the cliff with our new friends from Raleigh and the ladies from Georgia, Christina Bird and Reta Taylor.

North of the excavated areas, the scree slopes below the cliff are covered with *krummholz* (wind and frost-stunted fir and spruce) and various herbs, including **purple avens** (*Geum rivale*) and **Labrador violet** (*Viola labradorica*). Closer to the cliff edge are carpets of **black crowberry** (*Empetrum nigrum*) - or blackberry as the locals call it, and clumps of **dwarf birch**

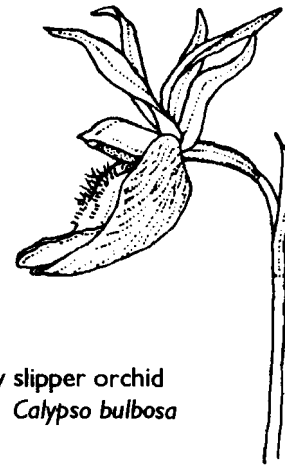
Another site that was quarried contrary to our agreement. This pit is located on the top of Burnt Cape, (north-west side) overlooking Cook's Harbour and Pistolet Bay - a prime tourist spot for watching icebergs and whales. It is also in the midst of the main population of the rare endemic **Burnt Cape cinquefoil** (*Potentilla usticapensis*), which was named for this site.



(*Salix reticulata*, *S. vestita*, and *S. glauca* = *S. cordifolia*), **mountain avens** (*Dryas integrifolia*), and **red bearberry** (*Arctostaphylos rubra*). I was surprised to find both **Crantz's cinquefoil** (*Potentilla crantzii*), which has 5 leaflets, green on both surfaces, and the **snowy cinquefoil** (*Potentilla nivea*), its 3 leaflets carpeted beneath with snowy white hairs. There was also a profusion of low, purple-flowered **dwarf raspberry** or plumboy (*Rubus arcticus* ssp. *acaulis*) scattered in the crowberry mats, along with one very tiny **early coralroot orchid** (*Coralorrhiza trifida*). In the far reaches of the ravine, we discovered a rare **sweet cicely** (*Osmorhiza depauperata*), never before reported from Burnt Island! While our previous days on the cape had been mauzy and cold, this day was glorious. We relaxed on the crowberry carpets and swapped plant hunting stories as we scanned the horizon. The sun shone bright, making the gleaming white icebergs stand out even more against the bright blue north Atlantic. We wished the day could continue forever, but it was getting late and we said our goodbyes, disappointed that we had been unable to find the elusive *Calypso*.

The Search for Calypso and Other Memories

George Beatty and Maggie had left two days earlier. George seriously injured two ribs due to a fall off The Arches, and thus had to cut his trip short. Before leaving, however, he insisted on leading us to a site in Cook's Harbour where we found many **fairy slipper orchids** (*Calypso bulbosa*) 15 years prior. Sure enough, there they were, right where George said they would be - tucked in under the **juniper** (*Juniperus communis*) - close to the shoreline, but sheltered from winter sea ice by a large boulder. However, we still hadn't found the population of *Calypso* that was rediscovered by Paul Martin Brown last year. Anne, Michael, and I decided to



fairy slipper orchid
Calypso bulbosa

make one final stop at an unexplored ravine. Noah had taken Christina and Reta back to their car, but had seen us turn off the main road. After a few minutes of searching, we were about to give up when I spied a glint of bright pink under a stunted larch. A closer look revealed our first fairy slipper, beautifully backlit by the setting sun. As Anne walked closer, we spotted several more flowers and were all soon busy photographing and counting plants (17 flowering plants, over 60 basal leaves). Since this orchid was too rare to collect a specimen for drawing purposes, I set to work sketching in the field. Meanwhile, Michael returned with Noah and his wife, Bernette, who invited us to their home for supper at the end of the day. Over the last few days, we had eaten several wonderful meals at Taylor's B&B owned by Bernette's parents, Ross and Vida Taylor, so we anticipated another great meal, and it was.

We drove back to Rocky Harbour late that night, promising to return and explore the base of the cliff and the lone peatland deposit at the south end of the island. On Thursday, I called the ADM for Mines, who had now returned from Labrador. After explaining the situation, he agreed that the access road would remain unbarred. He did not know about the new

disturbance, but nothing could be done to rectify the situation after the fact. I went on to meet the Wildflower Society group and my family at Terra Nova, oblivious to the confrontations that would soon take place at Raleigh and Burnt Island.

When we returned in mid August, Ross and Vida Taylor filled us in on the activities of the past weeks. Although Gilbert Evans had been ordered to leave the road unbarred, he refused. This was causing worry for the community, since much of their extra revenue comes from tourism. Burnt Island is a prime spot for whale watching, iceberg viewing, and nature photography. With the road barred, tourists were turned back and sent to other communities to spend their day. Ross Taylor, as a Bed & Breakfast owner, wrote letters to 3 or 4 ministers and received replies stating that Gilbert Evans had to remove his barriers. When he continuously refused, someone cut off the metal posts holding up the chain. Gilbert then placed a big boulder in the road path, which was removed by several men from the community. When he tried to block the road again with more boulders, a confrontation between Gilbert, the front end loader operator, and much of the community ensued. A rock was thrown, breaking the window of the front end loader, but no one was hurt. The RCMP were called and after seeing the letters ordering Gilbert to leave the road unbarred, he was ordered to comply. His quarry equipment was moved, for its own protection, off the site.

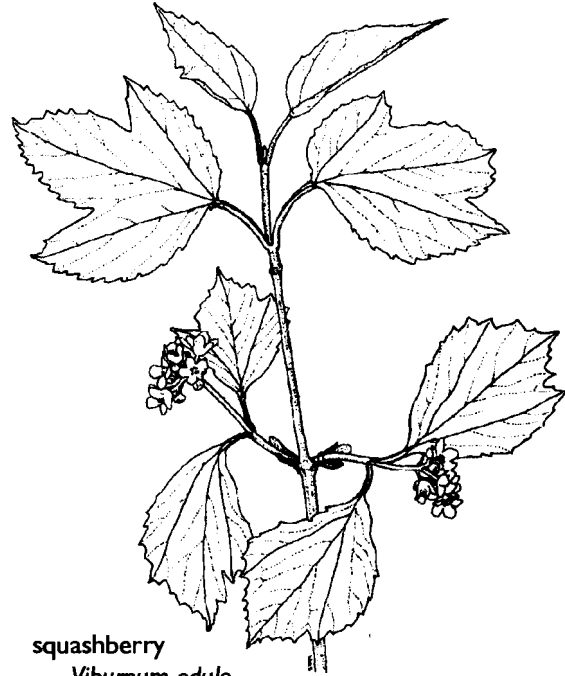
Later, when we returned to the quarry site that Rod Mercer had marked off, we were not surprised to see that the flagged markers had been bulldozed off of their boundary positions into a heap at the edge of the vegetation. So much for respecting quarry regulations! Having checked out the quarry pits, we proceeded to explore other areas of the island. Noah and

Bernette Smith led us to a sheltered cove at the north end of the island where local residents go for a boil-up. Following an old sheep path back along the crest of the cliff, I noticed the large quantity of seagull droppings and feathers on the ground. Apparently, when the capelin came in, the whales and seagulls followed in great numbers. For a few days there must have been much competition between bird and human for the best vantage points. I revisited the ravine at the cliff base and after much searching, discovered a small population of our native variety of **cuckoo flower** (*Cardamine pratensis* ssp. *angustifolia*) and some **birdseye pearlwort** (*Sagina procumbens*), both new reports for Burnt Island. Meanwhile Michael and Anne returned along the coast, stopping to explore the cannonholes area (a series of round holes in the limestone terraces formed by waves pounding against small stones caught in ever widening depressions). Later they reported finding a clump of buttercups with linear leaves, which turned out to be **spearwort** (*Ranunculus flammula*), another new species for the cape!

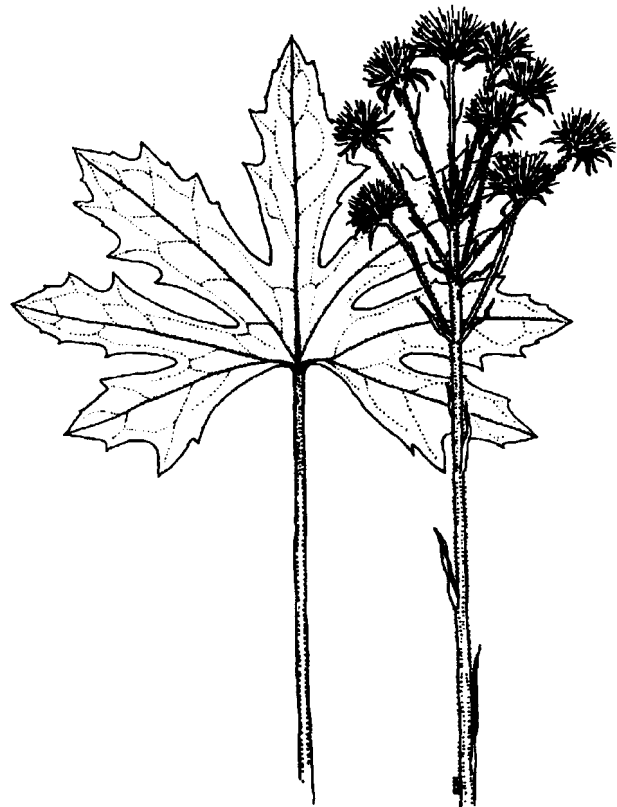
The last area we wanted to explore on this trip was the island's lone bog. There are no streams on the island, thus no source of fresh water, other than runoff. Noah gave me a lift to the cliff above the bog and returned to Raleigh. As I looked over the edge, the vegetation below seemed so dense and tall, I thought I would not be seen by Michael and Anne when they arrived. I backtracked a good distance, descended the cliff where I would be more visible, and started hiking toward the bog. By the time I reached the first hummocks, Michael and Anne were picking their way down the cliff through the trees, which were not nearly as tall as they appeared from above. The bog was very disappointing - very typical of nutrient-poor peatlands throughout Newfoundland. Dwarf ericaceous shrubs, **bakeapple** (*Rubus chamaemorus*), and the common rusty

brown **peatmoss** (*Sphagnum fuscum*) dominated the area. There were no unpredictable herbs here. The ephemeral pools were littered with feathers and the sedges heavily grazed by the hundred of seagulls that had occupied the island when the whales and capelin were in. We decided to hike farther south and climb back to the car via a less steep route. This leg of our journey proved to be one of the most interesting. In contrast to the limestone barrens of the northern and eastern portions of the cape, the southwestern corner of Burnt Island was thickly vegetated with trees and shrubs. Some of our more interesting finds were tall **balsam poplar** (*Populus balsamea*), **swamp thistle** (*Cirsium muticum*), fruiting **sweet coltsfoot** (*Petasites palmatus*), and the woodland variety of **pink pyrola** (*Pyrola asarifolia*). As we scrambled back onto the top of the cliff we found a lone purple flower of **rhodora** (*Rhododendron canadense*), still blooming in mid August. On the way back to Gros Morne, we noticed the road out of Raleigh was lined with many robust, 1-2 meter tall **blue lettuce** (*Lactuca biennis*) and an occasional bright yellow mustard, which proved to be escaped (or can I say feral) **rutabaga** (*Brassica napobrassica*)!

My last visit of the year to Burnt Island took place right after the quarry permit expired on August 25th. I wanted to check out the site and photographically document its condition so that we would be aware of any further disturbance or quarry activity. This time, I was able to bring Bill and our children along. Unfortunately, the weekend turned out to be very cold and wet, so our most memorable moments were spent visiting with the Taylor family. Vida had prepared a fabulous going home meal for us, complete with roast, pease pudding, blackberry (crowberry) pudding, turnip (rutabaga), turnip greens, potatoes, and lemon cake for dessert (I hope I didn't forget



squashberry
Viburnum edule



sweet coltsfoot
Petasites palmatus

anything). As usual, breakfast consisted of an ample supply of eggs and bacon or sausage, juice, tea, buttered toast, and the most wonderful selection of homemade jams, including **squashberry** (*Viburnum edule*), **partridgeberry** (*Vaccinium vitis-idaea*) and **bakeapple** (*Rubus chamaemorus*). My son, Shawn, was most impressed with Vida's bakeapple jam, so she gave him a container of her prized jam when we left, which he savored for many weeks.

The Northern Peninsula's Ecotourism Potential

Back in St. John's, we made plans for our move to Ontario and tried to finish up last minute business. I talked to WERAC about the situation at Burnt Island and just before we moved, had meetings with Susan Sherk, the ADM for Tourism and the Hon. Dr. Rex Gibbons, Minister of Natural Resources. At my meeting with Ms. Sherk, I stressed the tourism potential of the area. Following our first few days in Raleigh, botanists from across North America, who had either heard about this intriguing botanical site, word of mouth, or were referred there by the staff at various hotels or B&Bs, continued to visit the cape. Burnt Island is just one of many interesting places on the Northern Peninsula, which is truly a botanist's paradise. Although it is our favored site and the site most in need of formal protection, the entire coastal limestone barrens on the Northern Peninsula are in danger of being destroyed. Why? Because of careless gravel quarrying. Sure, gravel is needed for road construction and driveways, but what is the cost of limestone gravel in northern Newfoundland? Is it the extirpation of all Newfoundland's rare and endemic plants? Is it sacrificing the potential ecotourism industry that would otherwise surely develop on the Northern Peninsula? It shouldn't be. If gravel is in such demand, the contactors should

be willing to pay the price to have a regional gravel crusher constructed in a non-coastal site. The gravels that are now so attractive to quarriers are the result of natural in situ weathering, which means they have no work to do - simply scoop up the gravel and truck it away. If the vegetation gets in the way, it is either bulldozed or burned off. During my talk with Dr. Gibbons, I explained that we would like to see a moratorium on gravel quarrying placed on the whole coastal strip of the Great Northern Peninsula, between the highway and the Straits. These limestone barrens are unique in the world, and with the adjacent scenery, are the backbone of a future ecotourism industry on the Northern Peninsula. As the Division of Mineral Lands is fully aware, there are many limestone areas on the interior side of the coastal road where crusher operations could be located. What is needed is a commitment by government to put the needs of all resources in perspective, not just the gravel suppliers'.

If the Burnt Cape quarry site had been inspected regularly, why wasn't the discrepancy between the actual and permitted quarry site noted? Part of the problem is the quarry regulations. In applying for a quarry permit, the operator places an X on the map where he plans to work. Once a permit is granted, if he finds the site not suitable, the operator simply moves somewhere else to dig without amending his permit. While this practice is all too common, I doubt it is legal. I don't know if proposed quarry locations are regularly sent to other resource agencies for input, but the present environmental screening of sites is woefully inadequate. As we've seen on Burnt Island, moving 200 meters away can cause major conflicts with rare species populations. Obviously the regulations need tightening. It should be mandatory that all sites be located by GPS coordinates and adequately assessed for resource conflicts.



Relaxing on the scree slope base, northwest tip of Burnt Cape. Left to right: Michael Burzynski, Reta Taylor and Christina Bird (the two ladies from Georgia), Anne Marceau, and Noah Smith. This picture is representative of the kind of memories we hope tourists will take back to their home provinces and states, rather than photos of calcareous (limestone) barrens gutted for driveway gravel.

I was very impressed with the cooperation we received from the Minister of Natural Resources and his ADM. They both seemed to appreciate that the biological significance and tourism potential of this and similar important sites should be considered above their use as gravel sources. The Department of Natural Resources supports the establishment of an Ecological Reserve at Burnt Island. There are no outstanding mineral or exploration permits or rights on Burnt Island. There is more known botanically about this site than any other reserve in Newfoundland, established or proposed. There are no conflicts with the community. In fact, we will be working with Raleigh to establish a rehabilitation program that will erase some of the scars of quarrying, without disturbing the natural regeneration. As the first official step in protection, WERAC requested that Burnt Island be made a Crown Land Reserve, which was granted. We are now waiting for WERAC to complete the necessary steps to grant complete protected status to the cape, a process which include meetings with the community, public meetings, and a Cabinet paper submission.

Summary

Once Burnt Island becomes an Ecological Reserve, it will enjoy the highest degree of protection from destructive development activities that exists within our Province. However, it will take centuries to undo *all* the physical damage caused by illegal quarrying and the inadequate enforcement of quarry regulations by the government's Mineral Lands Division. Even though many upper level government officials understand the importance of conserving the best of our Province's natural history, barriers to real progress still exist at some lower levels. Let's hope that public pressure will force present and future governments to revise toothless quarry regulation and inspection practices so that more than developers' rights are protected. You can help by writing in support of Burnt Island and urge the Premier to take prompt action to declare this site a reserve. Please write to :

Premier Brian Tobin

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