

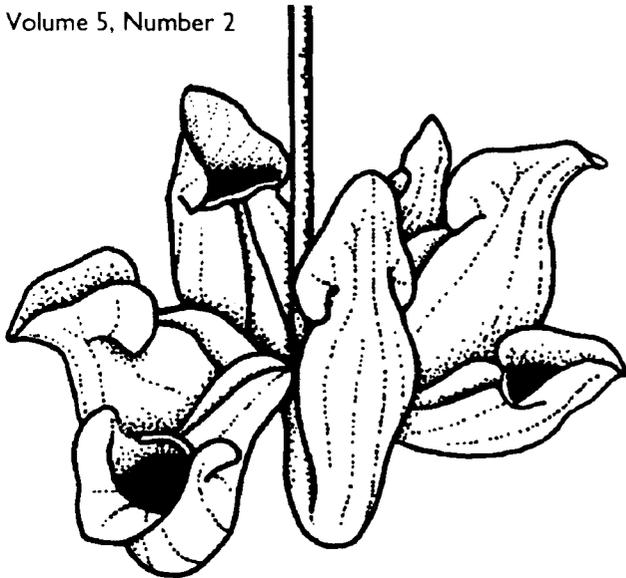
SARRACENIA

Newsletter of the Canadian Wildflower Society

Volume 5, Number 2

Newfoundland Chapter

Winter/Spring 1995



Winter/Spring Schedule

February 1: A Naturalist's Paradise

by Luise Hermanutz

A slide show and discussion by Luise on the plants she and Dave found on their recent sabbatical to study *Grevillea* (Proteaceae) in Australia.

March 1: Rocky Mountain Disjuncts

by Todd Boland

Similarities between the floras of Newfoundland and western Canada will be discussed by Todd, including Cordilleran disjuncts - species with separate populations in eastern North America and the Rockies.

April 5: Trinidad & Tobago

by Tom & Jane Smith

Their recent trip will no doubt produce an excellent slide show of the scenery, wildflowers, and birds of Trinidad and Tobago, located off the N coast of Venezuela.

May 3: AGM; Preview of '95 Field Trip

The Annual General Meeting and Election of officers will start the meeting. Following a coffee break, we will have a slide preview of the areas we will visit during our July field trip to northeast Newfoundland. Also, members are welcome to show some of their favorite slides.

June 7: Basic Flower Morphology - with focus on the Cruciferae and our spring flowers.

by Sue Meades

Slides of some of our common and not-so-common spring wildflowers will be shown and Sue will explain how to identify plants using floral characters.

Contents

General Announcements /2

Indian Pond Recollections and Speculations by Henry Mann /3

Dr. Paul Barclay: 1977 Nfld Plant Collection by Robin Day /7

Curiosities and Additions to the Flora by Sue Meades /9

Twillingate Trip by Fred Woodruff /12

Progress Report: Burnt Island by Sue Meades /13

Book Review: Fern Guide by Todd Boland /17

Book Review: Botanical Mysteries by Mary Woodruff /18

General Announcements

Our fiscal year runs from June to May. Dues (**\$10.00**) are payable in June. If not received by October, newsletters will be discontinued. A renewal form will appear in Summer newsletters. Dues for new members and 1995 renewals are accepted at any time by Tom Smith, at 10 Beech Pl., St. John's, Nf., A1B 2S7, or paid to Alice at the May or June meeting.

Regular meetings are held at 8 P.M. on the first Wednesday of each month (Oct. - Dec., Feb. - June). Members will be notified by telephone of special meetings. Cancellation due to storms will occur only if the Garden is closed down. Call the Garden or Tom if you are unsure of the weather situation.

The 1994-95 Executive & numbers to call for information about future meetings, newsletters, or field trips are as follows:

Sue Meades, president & editor	335-2669
Tom Smith, secretary	754-0949
Alice Close, treasurer	579-1474
Todd Boland.	753-6027
Howard Clase	753-6415
Caroline Harley	895-2606
Jane Smith	754-0949
Mary Woodruff, <i>Sarracenia</i> staff	738-3001

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 Sue or Mary. 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. Articles and artwork published in the newsletter may not be reproduced without the authors' or artists' written consent.

Correspondence can be sent to Sue at 633 Pouch Cove Hwy, Flatrock, Nf., A1K 1C8.

Change of Meeting Place

Due to renovations at the Botanical Garden, we will not be able to hold our Feb. and March meetings at the interpretation centre. Thus, our February and March meetings only will be held in room **3125a of the Biology Building** at MUN - our old meeting place. We will resume meeting at the Garden in April, continuing there through June.

1995 Field Trip: Northeast NF

This year's field trip will take place July 20-25, 1995. This 5 day trip will focus on the northeast portion of our province, with stops at Terra Nova NP, Cape Freels, Twillingate, and Tilt Cove. We plan to schedule the trip so that we arrive at peak flowering time for the Tilt Cove *Dactylorhiza*. If you have not been called about this trip, please call Tom or Sue. Out of province members should contact us as soon as possible if they plan to participate in our '95 trip.

Reservations have been made at the following motels for those members who have signed up for the trip. A deposit of 1/3 is due by Feb. 15th for local members.

Terra-Nova NP: Clode Sound Motel
Thursday and Friday nights, July 20-21

Twillingate: Anchor Inn
Saturday & Sunday nights, July 22-23

Tilt Cove: Bella Vista Inn, Baie Verte
Tuesday night, July 24

The trip ends after our visit to Tilt Cove on the 25th. Participants will make their own arrangements for Wednesday night, July 25.

Remember - group leaders do not charge for their services, and transportation, lodging, meals, and insurance are the responsibility of participants.

Indian Pond Recollections and Speculations

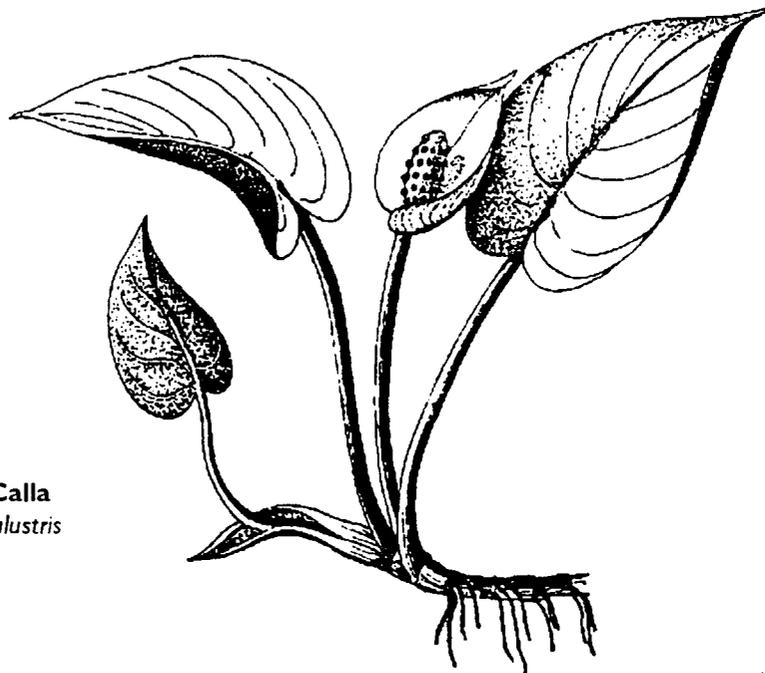
by Henry Mann
illustrations by Warwick Hewitt

Our Wildflower Society field trip on the Great Northern Peninsula this past August was one of the highlights of my summer. The companionship was excellent, the weather good, and the plants certainly didn't disappoint us. A great variety of geological features and botanical habitats unfolded before us as we travelled northward from our first foray on the Lomond Trail, eventually ending on the coastal cliffs and limestone barrens of Cape Norman. One of the stops that especially intrigued me was the Indian Pond visit of August 18.

After an overnight in Port au Choix and an early morning survey of the old Captain Cook Monument site, we emerged into the sunshine heading up the peninsula on Highway 430. Approximately 3 km north of the junction, we passed a roadside pond which had been visited the previous week on another field trip. There was something special here, so with much horn-blowing and signalling our convoy was turned around and we headed back to investigate the pond.

Indian Pond is large and shallow margined with a rich strip of sedges and other herbaceous species separating the aquatic environment from the surrounding boreal forest. Out in the shallows, patches of **yellow pond lily** leaves (*Nuphar variegatum*) bobbed in the waves contrasted by the bright golden-yellow blossoms held just above the water surface. Scattered cottages in the distance and a boat moored on shore suggested a favorite trout pond like thousands of others on the Island. Unlike most others, though, the marshy margins of this pond harboured two of Newfoundland's very showy and very rare wildflowers, wild calla and tufted loosestrife.

Wild calla or water arum (*Calla palustris*) is a low wetland plant with dark green heart-shaped leaves almost reminiscent of some of its tropical houseplant relatives. The flower is especially striking with a short golden-green spike (spadix) ensheathed with a broad white "petal" (spathe). Unfortunately on our visit none of the plants were in bloom



Wild Calla
Calla palustris

suggesting that another trip earlier in the season will definitely be warranted to obtain some good floral photographs. Only four general locations for this species are recorded on the Island, one in the Stephenville area, two (-3) from central Newfoundland, and one in the Plum Point area. Its North American range extends across the boreal forest region from northeastern U.S.A. to Labrador and westward to Alaska. The plant has a long history of uses by indigenous peoples for both food and medicinal purposes.

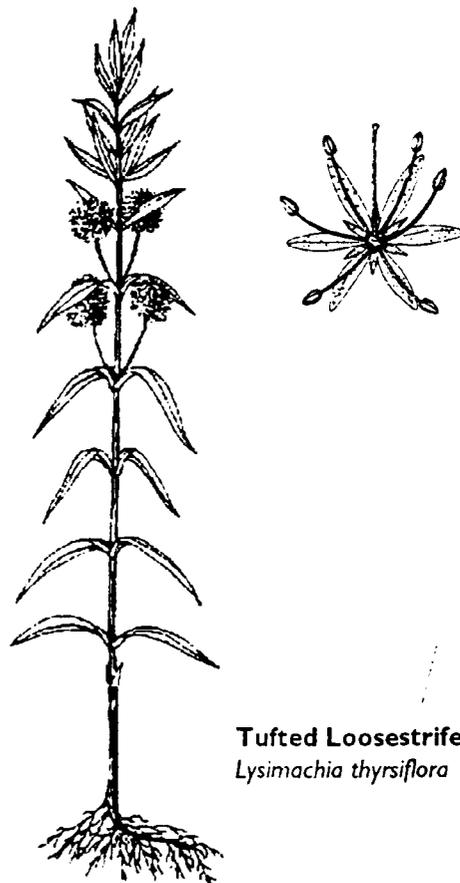
Tufted loosestrife (*Lysimachia thyrsiflora*) is even rarer and less dispersed on the Island than *Calla*, previously only known from the Deer Lake - Upper Humber region. It grows upright to a meter in height with reddish stems bearing paired opposite leaves. This pretty shoreline species has clusters of yellow flowers terminating stalks which arise in the axils of the middle leaves. Each individual flower usually has five narrow petals, but sometimes six or seven are produced. Petals are often dark spotted. Fortunately it was still in bloom on our visit ranking us among the very few to ever have seen this species flowering in Newfoundland. Its North American range is somewhat similar to that of *Calla*, and like *Calla* also ranges into Eurasia.

Along the pond margins also grew the giant bulrush, "higher than a man", as some of the older sources describe it. We have two of these very large *Scirpus* species on the Island - **hardstem bulrush** (*Scirpus acutus*) and **soft-stem bulrush** (*Scirpus validus*). Both of these species are not extremely common but of scattered occurrence. The shores of Indian Pond sported the hardstem bulrush - the northernmost collection of this plant in Nfld! Northward across the pond from where we stood appeared to be a thick stand of cattails in the sheltered lee of some shoreline woods. This may also be the northernmost *Typha* stand

known for the Island and merits a closer look.

I would guess that a thorough search of this pond will also turn up other botanical curiosities. It may be a spot to look for another rare wetland species, **sweetflag** (*Acorus americanus*). I am certain that sweetflag occurs on the Northern Peninsula having seen fragmentary material brought in by a student some years ago, but have never had the opportunity to investigate that particular inaccessible site. At present sweetflag is only recorded from a single location in the Codroy Valley. It is a tall plant with sword-like leaves which could easily be mis-identified from a distance. Might we also find **arrowhead** species (*Sagittaria* spp.) here as in the Humber Valley and St. Georges Bay?

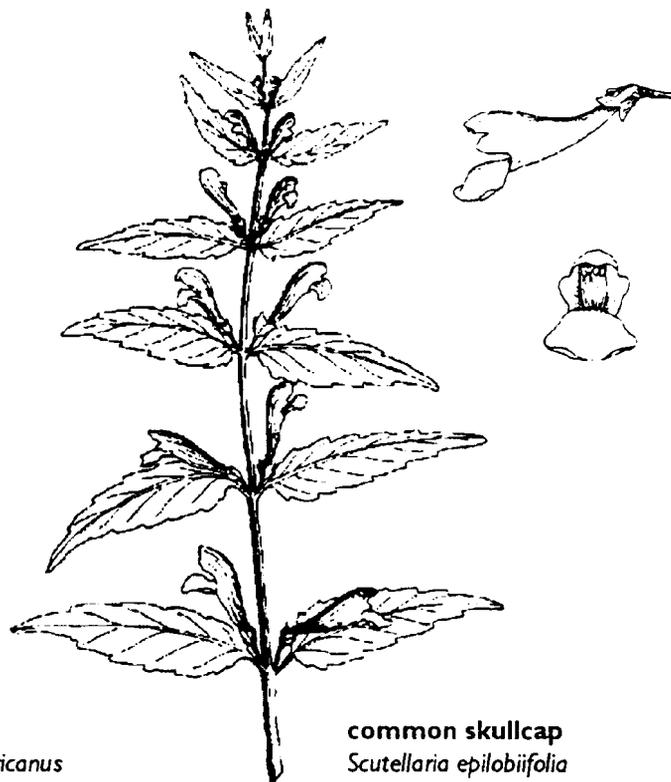
Among the tall sedges and grasses that lined the shores grew a profusion of other



Tufted Loosestrife
Lysimachia thyrsiflora



sweetflag
Acorus americanus



common skullcap
Scutellaria epilobiifolia

herbaceous species including ferns and a variety of wildflowers such as **asters** (*Aster spp.*), **wild mint** (*Mentha arvensis*), **marsh cinquefoil** (*Potentilla palustris*) and the eye catching **common skullcap** (*Scutellaria epilobiifolia*). **Bulb-bearing water hemlock** (*Cicuta bulbifera*), although not rare, is infrequently encountered by the average wildflower enthusiast. Many more than these were probably noted and recorded by other field trip participants (Sue Meades also records **marsh yellow cress** (*Rorippa palustris* var. *hispida*, another uncommon species, as well as several *Carex*, including *C. diandra* and *C. stipata*) even though in our limited time we could only investigate a tiny portion of the shore. All of us will certainly remember the profusion of **spotted touch-me-not** (*Impatiens capensis*) along a dirt road near the pond.

On my previous visit of August 8 a number of submerged species were also

collected including two **stoneworts** (*Chara spp.*), several **pondweeds** (*Potamogeton spp.*) and two aquatic mosses, but numerous others were not sampled. Masses of green fuzzy balls rafted up against the shore by the wind and waves proved to be a green filamentous alga of some type whose identity has yet to be determined. Substantial blooms of this type are not common in Western Newfoundland ponds, at least in my experience. For obvious reasons, true aquatic freshwater plants are undercollected and underrepresented in our herbaria and in our distribution records. Even though most aquatic species do not have showy blossoms and are often out of sight, freshwater botany has much to offer those not adverse to getting cold, wet and muddy.

Because this part of the Northern Peninsula is rich in "limestones", it was surprising to note that the water tested very "soft" (low in dissolved minerals) and the

"acidity" was almost exactly neutral (about pH 7). Although geological maps show Indian Pond to be adjacent to limestone and dolomite bedrock, a surficial geological map proved to be of more interest and greater significance in interpreting some of the vegetational features of the pond as well as its water chemistry. Indian Pond and surrounding ponds are sitting in a basin lined with marine sands and gravels, the area also exhibiting ancient beach ridges and berms. This indicates that in the distant past the area was probably an extensive marshland, possibly in warmer climates biologically much richer and more diverse than at present.

This pond and surrounding ones certainly deserve a closer look and thorough survey of submerged vegetation as well as shoreline species is warranted. Having seen many ponds on the west coast during years of searching for charophytes, there are too many unusual physical and biological features all occurring in one place and too many questions begging for answers. A recent geological paper indicated this coastal area escaped the last glaciation, perhaps the largest segment of the Northern Peninsula to do so. It seems that geologists are now finding hard evidence to support the once discredited "Nunatak Theory" proposed by the botanist M.L. Fernald back in 1925¹. Do we have here a centre of botanical relics from an earlier age? Did some of these wetland species disperse from such a centre during the warm climatic period and their ranges again shrink as the climate turned colder and growing seasons shortened? Todd Boland's discovery of the rare woodland species *pipsisewa* (*Chimaphila umbellata*) just a few kilometers from this site seems to add fuel to such speculations. Also, Eric Hultén is his *Circumpolar Plants*² suggests that isolated Tufted Loosestrife populations may be glacial relicts from a warmer climate period when its distribution was continuously circumboreal.

Perhaps this area holds a few more clues to some of this Island's vegetation puzzles.

One possible factor that rarely receives consideration when dealing with our vegetational history is the effect of early man. The Maritime Archaic Indians are known to have inhabited coastal Newfoundland for over 8000 years and travel across the strait and gulf must have been common. Wherever semi-nomadic peoples migrate they take their few valuables with them, including foods, but more importantly medicines. Many of the aquatic plants here at Indian Pond are known to have been utilized by natives as food, medicines, and a number as both. *Scripus*, *Calla*, cattail and pond lily all have starchy rhizomes valued as food. Sweetflag, loosestrife, cattail, mint, *Calla*, water hemlock, skullcap, pond lily and many more wetland species have medical virtues and have been so used. Native American indigenous peoples had a knowledge of herbal medicines that was quite advanced, in some aspects such as the cause and cure for scurvy even surpassing that of the Europeans with whom they first came in contact. Modern archaeology tells us that natives of the Algonkian Group inhabited the Port au Choix area for thousands of years and it is plausible and likely that they may have had some effect on the vegetation, perhaps especially in species that had important medicinal values. Elsewhere in eastern North America it is suggested that the Cree and Algonquin Indians were probably responsible for affecting the distribution of certain seasonal food plants considerably north of their modern ranges and in addition also the highly esteemed medicinal species *Acorus*. The origin of the name "Indian Pond" is not known to me but perhaps it is more significant botanically than we are aware at present.

So, in addition to the sheer joy of botanizing in new and unfamiliar areas and in

observing nature in all its many facets, broader questions often come to mind. As wildflower enthusiasts we can provide a valuable service just by recording the species we see on our field outings, their stage of growth, how common they appear to be, and so on. In this way we can help to "flesh out" present day distributions of many species whose complete ranges are still poorly known. But our observations and records may also add to the knowledge of the "big picture" of how our flora originated and developed over the millenia and how it will likely develop in the future.

Searching for wildflowers this past August was enjoyable as I am sure every field trip participant will agree. I can't wait till next year to investigate another part of the Island. Hope to see you there!

- ¹ Fernald, M. L. 1925. Persistence of Plants in Unglaciated Areas of Boreal America. *Mem. Am. Acad. Arts Sci.* 15:239-342.
- ² Hultén, E. 1971. The Circumpolar Plants II. Dicotyledons. *Kungl. Svenska Vet. Akad. Handlg.* 13(1). 463pp. Upsalla.

Dr. Paul Barclay: 1977 Newfoundland Plant Collection

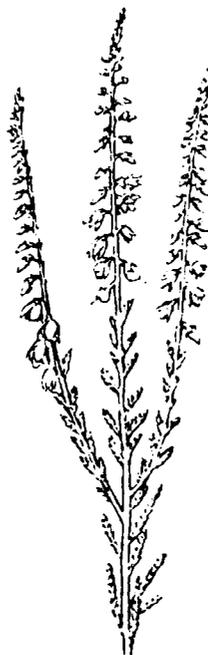
by Robin Day

The Agriculture Canada Ottawa¹ herbarium was given a small collection of Newfoundland plants collected July 4 - 7, 1977. I met Dr. Barclay on his visit to Newfoundland in 1977 and heard of his finds of heather. Dr. Barclay became quite ill in the early 90's and I do not believe his collection was published before this presentation (**Table I**, p.8). I have corrected some identifications. Most of these plants are commonly found on the island's barrens or bogs. An exception is the **forest lousewort** (*Pedicularis sylvatica*), which is a small pink-flowered herb introduced from Europe and found only in southeast Newfoundland and nowhere else in Canada.

The *Calluna*, or **heather**, is also unusual, having been introduced from Europe and now persisting in several locations. Heather shoots are eaten by sheep and rabbits throughout northwest Europe and the flowers are the source of a delicious honey. I saw heather blooming August of 1994 all along the road between Old Perlican and Bay de Verde. There are masses and masses of it. Presumably this species was introduced a long time back in our island's settling period. I have collected

heather myself one mile east of Whitbourne near the Trans Canada Highway. My plants have since been naturalized at Bow Pond on the Salmonier Line. Dr. Barclay's collections at Signal Hill and Colinet and my record for Bow Pond are new for the island.

See *Calluna vulgaris* distribution map, #313, in Rouleau & Lamoureux (1992)².



heather
Calluna vulgaris

from Peterson & McKenny
A Field Guide To Wildflowers
1968, Houghton Mifflin Co.

Table 1. Newfoundland plants collected by Dr. Paul Barclay. 1977.

scientific name	common name	collection site
<i>Amelanchier bartramiana</i>	Bartram's chuckley-pear	Old Perlican
<i>Amelanchier laevis</i>	smooth chuckley-pear	Signal Hill
<i>Aronia melanocarpa</i>	black chokeberry	Colinet
<i>Calluna vulgaris</i>	heather	Old Perlican, Signal Hill, Colinet
<i>Carex pauciflora</i>	few-flowered sedge	Colinet
<i>Centaurea nigra</i>	black knapweed	Signal Hill
<i>Coptis groenlandica</i>	goldthread	Signal Hill
<i>Cornus canadensis</i>	bunchberry	Old Perlican
<i>Deschampsia flexuosa</i>	hairgrass	Old Perlican, Signal Hill
<i>Empetrum nigrum</i>	black crowberry	Signal Hill, Colinet, Cape Spear
<i>Juniperus communis</i>	common juniper	Cape Spear
<i>Kalmia angustifolia</i>	sheep laurel	Signal Hill, Colinet
<i>Ledum groenlandicum</i>	Labrador tea	Colinet
<i>Myrica gale</i> (female)	sweet gale	Old Perlican
<i>Nemopanthus mucronata</i>	mountain holly	Old Perlican
<i>Pedicularis sylvatica</i>	forest lousewort	Signal Hill
<i>Plantago maritima</i>	seaside plantain	Cape Spear
<i>Rhododendron canadense</i>	rhodora	Old Perlican
<i>Rubus chamaemorus</i>	bakeapple	Colinet
<i>Sarracenia purpurea</i>	pitcher plant	Old Perlican
<i>Scirpus cespitosus</i>	deergrass	Colinet
<i>Spiraea latifolia</i>	meadowsweet	Signal Hill
<i>Vaccinium angustifolium</i>	low bush blueberry	Colinet
<i>Vaccinium oxycoccus</i>	small cranberry	Colinet
<i>Vaccinium vitis-idaea</i>	partridgeberry	Signal Hill
<i>Viburnum cassinoides</i>	northern wild raisin	Old Perlican

The **few-flowered sedge**, *Carex pauciflorus*, is often overlooked by collectors in boggy terrain. It has a few pendulous, hook-like fruits at the top of a short stem. This anatomy assists dispersal by animals. There is one other Newfoundland *Carex* that looks like this, *Carex microglochin*, and this species is restricted to the calcareous coastal barrens on the northwest part of the Great Northern Peninsula. *Microglochin* means small hook and *pauciflorus* means few-flowered.

¹ Biosystematics Research Centre, Agriculture Canada, Experimental Farm, Ottawa, Ontario, Canada K1A 0C6

² Rouleau & Lamoureux, 1992. *Atlas of the Vascular Plants of the Island of Newfoundland and of the Islands of St. Pierre and Miquelon*. Fleurbec, Québec.

Curiosities and Additions to the Flora:

by Sue Meades

tall wormseed mustard added, Menzies' rattlesnake plantain relocated, a new fern form (?) and more...

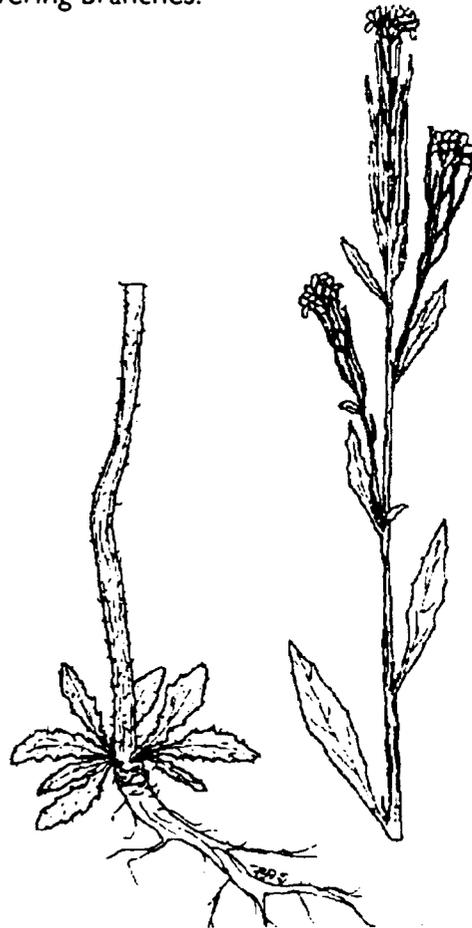
A New Mustard in Newfoundland

In August of the past two summers, I collected two specimens of wormseed mustard (*Erysimum*) on the northern peninsula that didn't quite seem to fit either the weedy **common wormseed mustard** (*E. chieranthoides*) or the rare, endemic **Gulf wormseed mustard** (*E. inconspicuum* var. *coarctatum*). The specimens appeared to be biennials. Only the crowded leaf scars at the thickened base of the flowering stem indicated the former presence of several basal leaves. Stem leaves are narrowly elliptic with nearly entire margins, but a few low teeth can be seen on most. The tall stem, to 1.8 m in height, terminates in a tight raceme of small, yellow, typical 4-merous, crucifer flowers; as seeds set, the raceme greatly elongates. Fruits (siliques), are 2-3 cm long, 1 mm wide, and strongly appressed - held erect and close to the stem. The stem and, to a lesser degree, the fruits are covered with characteristic, minute, 2-parted, appressed hairs, known as malpighiaceus hairs; these give the plant a scabrous or slightly prickly feel.

Not satisfied with my identification using Gray's Manual, I sent both specimens to Stuart Hay at the Marie-Victorin Herbarium in Montréal. He soon informed me that both of these plants were **tall wormseed mustard** (*Erysimum hieraciifolium* L.) [vélar odorant in French], which is not described in Gray's. This weed species first appeared in Canada, near Ottawa, in 1941 and was reported by Frankton in 1954'. In Newfoundland, it was first collected in 1989 by Denis Paquette near L'Anse-aux-meadows. Its habitat is roadsides, abandoned fields and pastures, and disturbed ground.

The specimen I collected in August '93 was growing in a roadside ditch a few

kilometers south of Plum Point. It was very tall, perhaps 2 meters high, but the substate may have had much to do with its robust size. This particular ditch was a former fish offal dumping site. At first glance, the speckled ground looked like a synthetic growing medium of hydrated mica and styrofoam, but closer examination proved the dark particles to be discarded maggot exoskeletons; the white particles were fish vertebrae. Fortunately, the decay process had finished long ago and the "ground" was now very dry and crunchy. Due to its immense size, I collected only a couple of flowering branches.



tall wormseed mustard

Erysimum hieraciifolium

from *Guide des Crucifères Sauvages de L'est du Canada*, by André Sabourin (1992) - see p.11.

The second specimen was found by chance at the base of a road sign. While returning from our Northern Peninsula trip in August 1994, a moose appeared along the road near Cow Head. We slowed down to give the kids a better look, but the young female trotted into the northern turnoff to Cow Head, only to meet, head on, a wedding procession complete with tissue paper cake and blaring horns! The confused cow darted back and forth across the road a few times before escaping into the woods. As we waited for the wedding party to pass, I noticed a tall, fruiting mustard at the base of the sign for Cow Head. The growing medium was typical disturbed roadside gravels and soil. ~~Had we not stopped for the moose,~~ this plant would surely have been overlooked.

The tall wormseed mustard is rapidly spreading across eastern Canada and additional

Newfoundland specimens will no doubt be located. To aid identification, I have prepared a chart comparing the morphological characteristics of our three *Erysimum*. Measurement ranges includes extremes from descriptions in Gray's Manual (1970) and Sabourin (1992).

New Cinnamon Fern Form?

Early this August, I found an unusual colony of cinnamon fern growing along the Shoe Cove Brook in Flatrock. Cinnamon fern typically has pinnate-pinnatifid sterile fronds clustered around the fertile fronds, which have no expanded blade. The fertile fronds soon turn brown and, once spores are shed, wither. Each of the 10 or so plants that I examined had a frond with the upper 1/3 terminating in fertile pinnae. At first, the plants appeared to be forma *frondosa* (T&G) Britt.

<i>Erysimum</i> species (wormseed mustards) in Newfoundland			
Common name: Latin name:	tall wormseed mustard <i>Erysimum hieraciifolium</i>	common wormseed m. <i>Erysimum chieranthoides</i>	Gulf wormseed mustard <i>Erysimum inconspicuum</i> var. <i>coarctatum</i> = <i>E.coarctatum</i> Fern
general habit:	scabrous, tall rigid biennial	finely pubescent annual	scabrous, stiff biennial to short-lived perennial
habitat:	disturbed ground	disturbed ground	limestone cliffs and gravels
origin:	introduced from Eurasia	introduced from Eurasia	Gulf of St. Lawrence endemic
height:	60-180 cm	10-150 cm	4-75 cm
fruit (length X width)	slightly angled, scabrous 1.5-3 cm X 1 mm	subterete, glabrous 1-3.0 cm X 1 mm	4-angled, scabrous 4.5-6.0 cm; width to 2 mm
flower diameter:	6-10 mm	3-8 mm	2-3 mm
pedicels:	robust, appressed, 3-10 mm long	filiform, spreading to ascending, 7-15 mm long	robust, erect, thickened at the tips, 3-7 mm long
most easily distinguished by:	tall, rigid habit, robust, appressed pedicels	long, filiform, spreading pedicels	larger fruits and robust pedicels

Note: Measurement ranges include extremes from descriptions in Gray's Manual (1970) and Sabourin (1992).

which has fertile fronds described as "partly leafy". However, Stuart Hay informs me that the fertile portions of this form should be leafy also, my specimens had no blade on the fertile pinnae. The Flatrock specimens will now be sent to the fern expert at Guelph for his opinion. August is late for cinnamon fern to be sporulating. Thus, I am curious to see if the same morphological features appear next year. If not, perhaps the long growing season of last summer forced an aberrant second fertile period? If anyone else has seen a similar form, please share the details with us.

Goodyera oblongifolia relocated!

This past summer when Paul Martin Brown visited Newfoundland, he was unable to search for **Menzies' rattlesnake plantain**, *Goodyera oblongifolia*, first collected in 1955 by Dr. Ernest Rouleau. Since this original specimen was incorrectly identified, its importance went unnoticed until Hay et al. (1990)² reported the correct species name:

Goodyera oblongifolia Rafinesque

"This species is primarily a western taxon with disjunct eastward centers of distribution around the Great Lakes and in southern Quebec. Isolated population occur in New Brunswick, Nova Scotia and Vermont. It is very rare in Newfoundland where it is known from a single locality at Serpentine Lake. The specimen was misidentified as *G. tessellata* Lodd. (checkered rattlesnake plantain) This addition represents an important extension to the northeastern extreme of the species range."

Recently, Paul informed me that one of his students came to Newfoundland in September and hiked into Serpentine Lake. Paul had given him a copy of the reported location for *Goodyera oblongifolia*, as described by Rouleau. "Steep slope, above water, northeast end of Serpentine Lake." The orchid was

located and a photographic record taken. A map of the exact site is being sent to us for inclusion in the rare plant data base map.

Mustard Book

In addition to his help in identifying several specimens, Stuart Hay sent me a very useful book on the native mustards of eastern Canada, by André Sabourin, which includes a description of tall wormseed mustard, the recent introduction from Eurasia. This book is titled **Guide des Crucifères Sauvages de L'est du Canada**. It was published in 1992 by Les Amis du Jardin Botanique (friend of the Montréal Botanical Garden). Descriptions of the family characters and terminology precede the species keys. Full-page pen & ink illustrations, with distribution maps (Ontario to Newfoundland & Labrador!), face each description page. All mustard species found in eastern Canada are covered in the book, including the many and often confusing *Drabas*.

Available only in french, it is a valuable addition to every serious botanist's library, whether you're uni- or bi-lingual. With the help of a good French-English dictionary, the french equivalents of english botanical terms can be mastered quickly. The 8½ X 11 book is surlock-bound and its cost is modest: \$12.00 + S&H and tax. *Guide des Crucifères Sauvages de L'est du Canada*, by André Sabourin (1992), can be obtained from Les Amis du Jardin Botanique; 4101, rue Sherbrooke Est, ch. 125; Montréal, Quebec, H1X 2B2.

¹Frankton, C. 1954. A new weed, *Erysimum hieraciifolium*, in Canada. *The Canadian Field-Naturalist*. 68:27-28.

²Hay, S.G., A. Bouchard, and Luc Brouillet. 1990. Additions to the Flora of the Island of Newfoundland. *Rhodora* 92(872):277-293.

Twillingate - Summer '95 Trip

by Fred Woodruff

Twillingate Islands (North and South, linked by a causeway) are about 10Km long by 6Km wide with a population of 4,000; 1500 of these in Twillingate town, the rest in the many small villages on the shore line. Twillingate was linked to the main Island of Newfoundland via New World Island in 1973; a ferry had operated from NWI from 1965 onward. (We arrived there in 1963).

Twillingate Hospital was built in 1924; sited there because it was the focal point of Notre Dame Bay. It was the only hospital on the East Coast of Newfoundland between St. Anthony and St. John's; and it was there that Dr. J.M. Olds punched in 50 years of service with a wide range of surgery and medical treatment of the then prevalent tuberculosis, beriberi, scurvy, and rickets. The present modern hospital is now the major source of employment on the island.

The locals are mainly of South-west English descent. Fishing from its start in the late 1600s was tremendously successful and by 1857 there was a population of 2,300 and 400 fishing vessels operating. Twillingate became the focal point for the Labrador fishery and scores of schooners used to assemble there. It became a prosperous community for many years with the many fish-plants dealing with the inshore catches right up to the present crisis.

Traditionally Twillingate's religious groups are Anglican and Wesleyan, though the Salvation Army and Pentecostal are now very popular churches. St. Peter's Anglican Church is the oldest wooden church in Newfoundland and contains many fine brasses donated by a church in Poole, Dorset, England. This town was a major fish-trading partner of Twillingate in earlier years.

Notre Dame Bay in Central Newfoundland is, apparently, a geologist's paradise.

During next year's tour of the Twillingate area by the Wildflower Society it will become evident why this is so. From Lewisporte to Twillingate is about 100 Km and the last 20 Km are fascinating as the road follows a series of causeways joining the islands. The last two being Chapel Island - the only building on this is a large Pentecostal school - and New World Island which has about 5000 people divided among many small communities.

On Chapel Island, towers of granite indicate the volcanic activity of the "Dunnage melange". These are solidified magma chambers of 400 million years ago, while Cobb's Arm on New World Island has limestone beds, including an old limestone quarry, which are part of the curving reefs formed at a distance round the volcano. Much deformation and twisting followed as the continents of North America and Europe/North Africa collided and the tectonic plates over-lapped, bringing deposits of minerals from below - the old copper mine at Sleepy Cove, Twillingate Island is an example.

When the continents drifted apart, sediment, including the topsoil of the area, slid down onto the Continental Shelf, leaving the rocks bare. These are now covered with a very thin layer of newly forming soil. There is evidence of this in many areas where roads have been blasted through the granite. Tree roots are seen spreading like mycelia over the underlying rock - no tap-roots here!

Despite the poor soil the variety of wild flowers in the area is quite extensive. Habitats represented are peat-bogs, meadows, woods, high-cliffs, and inter-tidal areas. We collected over 100 species during our 25 yrs in the area.

Clothing for the trip should be warm and waterproof; it's a windy spot. It is a delightful area to visit. There are excellent

house-keeping cabins in Robin's Cove and the Anchor Inn, a motel with a great restaurant. The lighthouse is a good vantage point for "iceberg alley" and the museum with its gift shop is arguably the best in Newfoundland.

Last but not least, it should be noted by those interested in the "Flat-Earth Society" that you will be very close to one of the corners, so be very careful on any boat trips you might choose to take.

Progress Report: Protecting the Flora of Burnt Island

by Sue Meades

At each of our past few meetings, we have kept members informed of progress in our campaign to get Burnt Island declared an Ecological Reserve. This article provides a statement of these issues and an update to members who are unable to attend meetings. After reading it, we hope that you will each take the time to write a letter of support to Premier Wells and Dr. Rex Gibbons, Minister of Natural Resources. Government's address is provided at the end of the article.

Burnt Island is a peninsula of Ordovician age limestone situated on the east coast of Pistolet Bay at the northern tip of the Great Northern Peninsula. The island is approximately 4 km long, 1 km wide, and over 75 m elevation at its highest point. Ha Ha Bay lies between Burnt Island and the Community of Raleigh, which are connected by a narrow isthmus of sand at the southeastern end of the island. Burnt Island is characteristic of the Strait of Belle Isle Ecoregion, which has the shortest growing season, the lowest summer temperatures, and the lowest mean annual minimum temperatures of any coastal region in insular Newfoundland (Damman, 1983)¹. Due to its extreme northern location and high elevation, Burnt Island is the most Arctic location in insular Newfoundland.

The two main kinds of vegetation on Burnt Island are limestone barren, which covers much of the island, and tuckamoor, which occurs in depressions and fault ravines. Also, coastal areas of the island contain narrow

stretches of beach and saltmarsh habitat. Compared to the calcareous barrens along the west coast of the Northern Peninsula, there is considerably less vegetation cover on the barrens of Burnt Island. Many areas support only isolated rosettes of deep-rooted Arctic perennials. In contrast, the tuck ravines are a continuous carpet of dwarf fir or spruce and dwarf shrubs interspersed with many species of herbs, including 11 species of orchids. The most prominent of these are the **Newfoundland Orchid** (*Pseudorchis albida*), the **long-bracted frog orchid** (*Coeloglossum viride*), the **small round-leaved orchid** (*Amerorchis rotundifolia*), the **flat-petalled yellow lady's-slipper** (*Cypripedium calceolus* var. *planipetalum*), and the **fairy slipper orchid** (*Calypso bulbosa*).

The Arctic nature of Burnt Island is reflected in its flora, which contains the southernmost populations of several Arctic calciphiles, including the **dwarf hawksbeard**



one of our Gulf endemics -
flat-petalled yellow lady's slipper, flower detail
Cypripedium calceolus var. *planipetalum*

(*Crepis nana*) and an **Arctic dandelion** (*Taraxacum phymatocarpum*). Of the more than 200 species of vascular plants on Burnt Island, 33 species are listed as rare in Newfoundland (Bouchard et al, 1991)². The only known Newfoundland location for 4 of these rare species is Burnt Island. Also, the **alpine milk vetch** (*Astragalus alpinus* var. *alpinus*) is known only from Burnt Island and Quirpon Island. Rare endemic species include **Fernald's rockcress** (*Braya fernaldii*) and the **Burnt Cape Cinquefoil** (*Potentilla usticapensis*), which is known world-wide only from Burnt Island.

Historically, Burnt Island has been an important botanical site since M.L. Fernald, the world-renown Harvard botanist, and his colleagues first crossed Ha Ha Bay from Raleigh to visit the island in the early 1900's. Fernald was responsible for the identification of most of our endemic plant species, including the Burnt Cape Cinquefoil, whose type locality is Burnt Island. Some botanists now consider *Potentilla usticapensis* to be the southernmost extension of the Arctic *Potentilla pulchella*. More recently, continual explorations to the island have been conducted by a series of botanists from the United States, Quebec, and Newfoundland. New populations of the **fairy slipper orchid** (*Calypso bulbosa*) and **dwarf hawksbeard** (*Crepis nana*) were located at Burnt Island in 1994. According to the literature, these species had not been reported from Newfoundland since 1929 and 1926, when first collected by Fernald. Recently, we learned that Dr. George Beatty, professor emeritus from Penn State University, relocated *Crepis nana* at Burnt Island in 1980 and *Calypso bulbosa* at Cook's Harbour in 1978. However, from his description of the locations, it is probable that both of his collection sites have been destroyed by gravel quarrying.

In addition to its diverse flora, Burnt Island contains numerous species of fossil trilobites, graptolites, gastropods, and

cephalopods, including one trilobite species known only from Burnt Island. Other interesting geologic features include very well-developed frost-heaved polygons in the weathered gravels, fossil sponges and algal mounds, and two sea caves known as the "Big Oven" and the "Little Oven."

Due to a gravel quarrying operation, which has been active for the last 10 years, and a mining entrepreneur who is seeking funds to develop an extensive open-pit limestone bedrock quarry, Burnt Island's unique flora and fossil fauna are in serious jeopardy. If left unchecked, these activities would cause the extirpation of 4 plant species in Newfoundland (*Calypso bulbosa*, *Crepis nana*, *Potentilla usticapensis*, and *Taraxacum phymatocarpum*) and seriously reduce the gene pool of several endemics and the southern range of several Arctic species. There are other limestone bedrock deposits that can be mined, but there are no other locations in Newfoundland for the four plant species mentioned above.

I started writing letters to the Provincial Government in September. In November, a couple of Wildflower Society members and I met with the Minister of Environment and, later, the ADM for Mines and the ADM for Forestry and Wildlife. I also gave a presentation to ILUC (Inter-department Land Use Committee) and WERAC (Wilderness and Ecological Reserves Advisory Council). We have received considerable support from all departments, but until reserve status can be obtained for Burnt Island, we need to continue reminding government about the importance of these issues. In a recent letter from Dr. Gibbons, Minister of Natural Resources, the Mines Division has agreed not to issue any further quarry or exploration permits for Burnt Island. Mines is now working with the Department of Transportation to develop a bedrock quarry site in the St. Anthony-Raleigh area, but that will not be in operation by next

summer. While an alternate site is being located for this quarry operator, Mines will allow him to continue excavating on Burnt Island - until his permit expires on August 25, 1995, but only in areas he has already disturbed. He has been instructed not to disturb new land or the rare plant populations.

In regards to the exploration permit, the promoter is circulating a proposal to mine *all* of Burnt Island for limestone aggregate (used to make concrete). In addition to destroying all of the vegetation on Burnt Island and the island's tourist potential, such a mine would compete with the current limestone quarry on Port au Port, which only recently has become financially viable. Mines cannot legally cancel this permit, but if financial support is not found, the permit will eventually lapse.

In early December, WERAC made a formal request to ILUC that a Crown Land Reserve be established on Burnt Island. This will provide some degree of protection until Ecological Reserve status can be achieved. I am confident that we can get Burnt Island declared an Ecological Reserve, but it is necessary for Government to see that we have support for this reserve.

There are only a handful of botanists living in Newfoundland, and our collective weight with Government is minimal. I have requested support from conservation-minded organizations and several botanists from across Canada and the United States who have visited Burnt Island. One of the companies that has agreed to support our efforts is the Body Shop, which is very active in conservation issues. We also have support from the Community Council of Raleigh and the Viking Trail Tourism Association.

In our last newsletter, I included an article on ecotourism, which talked about the garbage at many of our rare plant sites. I spoke with Mr. Ian Gall of the Canadian Coast Guard

in November about the Cape Norman site. He informs me that the Coast Guard already has a cleanup designated for the Northern Peninsula. At each of their automated lighthouse sites, cleanups have been organized to remove old equipment. In most cases, a helicopter is used to transport large discarded metal and large items of garbage to a ship anchored near the site. On-site cleanups of material such as glass bottles will have to be done by hand. Because of the small size of some of our rare plants, it will be necessary to flag sensitive sites so that they are not trampled in the cleanup process. I will be keeping in touch with his office to offer our assistance in the on-site cleanup.

Several other areas on the Northern Peninsula that contain many rare plants are in need of organized cleanups. I have been in contact with the Viking Trail Tourism Association about these sites, particularly Brig Bay, near Plum Point, and Reef's Harbour, on the New Ferrolle Peninsula (between Plum Point and Port au Choix). We have learned that a firm called Metal Recyclers Ltd., in Mount Pearl, will send a flat-bed trailer to any site and retrieve large car wrecks and metal refuse. This material is then transported to their metal fragmentation plant in Argentina, where it is recycled. For areas distant from the Avalon, a minimal fee of a few hundred dollars is charged to cover transportation of the heavy equipment.

To protect future rare plant sites from disturbance, the Newfoundland Forest Service has taken the initiative to map these sites, identified by Bouchard *et al.* This map will become part of the Land Use Atlas and Province's new land planning system. The map will very useful to government agencies that set or approve the location of gravel pits, land fills, development areas, etc. As we discover new rare plant sites, our Wildflower Society will pass this information on to Forestry for inclusion in up-to-date revisions of the map.

Finally, to protect the few remaining calcareous barrens along the western coast of the Northern Peninsula, we are asking Government to declare a moratorium on gravel quarrying west of the coastal road. Officials in the Mines Division have indicated that bedrock quarries on the interior (eastern) side of the road could be developed to replace the loose aggregate quarries that are rapidly destroying our endemic flora. The Viking Trail Tourism Association is very supportive of this goal too.

The Northern Peninsula has been specifically designated for the development of ecotourism. ~~This expectation can~~ only be realized if the diversity of our native flora and their habitats are protected. In areas where we encourage tourism, such as the Viking Trail, gravel pits should be placed well out of sight. Old pits can be revegetated, but it will take time. Fortunately, many of the plant species that colonize calcareous soils are very attractive. To borrow a term from forestry, these plants can act as "nurse species" as other less common plants gradually return. Past attempts to replace aggregate quarries with bedrock quarries have been unsuccessful due to their higher cost. While replacing aggregate quarries with bedrock quarries may raise the cost of local road gravel, the alternative is cheaper gravel beneath roads that lead to nothing but gravel pits!

Interest from ecotourism companies is increasing every year. Mrs. Miki Ishiwata, of Miki Enterprises, has asked me to lead her group of visiting Japanese botanists to Burnt Island and other sites to see the various orchids. And, I will be meeting with another tour operator to try to establish specific botanical tours, which would have trained guides. Over the next two years, I know of at least 5 groups of visiting American botanists, in addition to several researchers, who will be

visiting Newfoundland. An American ecotour operator told me that she has trouble booking tours to Newfoundland because many naturalists find it easier to make their own plans to visit the Island. Obviously, the Tourism Department has done a successful job in promoting the Province. Now, we can help by prompting our Government to protect the many interesting habitats and endemic species that have made Newfoundland a botanists' paradise in North America.

We have proposed to the Provincial Government that Burnt Island be declared an Ecological Reserve as quickly as possible. To encourage this action, we are requesting that letters of support for the establishment of the Burnt Island Ecological Reserve be sent to the Premier, the Hon. Clyde Wells; the Minister of Natural Resources, Dr. Rex Gibbons; and the Minister of Tourism and Culture, Mr. Roger Grimes. Also, please consider requesting that gravel pits be prohibited on the coastal side of the Northern Peninsula highway and that adequate steps are taken to clean up our rare plant sites. The address for all government offices is:

Government of Newfoundland and Labrador
P.O. Box 8700
St. John's, NF, Canada, A1B 4J6
fax: (709) 729-0112

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- ¹ Damman, 1983. An Ecological Subdivision of the Island of Newfoundland. pp.163-206. In: G.R. South (ed.), 1983. *Biogeography and Ecology of the Island of Newfoundland*. Junk Publishers, The Hague, Netherlands.
 - ² Bouchard, A., S. Hay, L. Brouillet, M. Jean, and I. Saucier, 1991. The Rare Vascular Plants of the Island of Newfoundland. *Syllogeus* 65. Canadian Museum of Nature.

Book Review:

by Todd Boland

A Field Manual of the Fern and Fern-Allies of the United States and Canada.

by: David B. Lellinger. 1985. Smithsonian Institution.

I have been a member of the Garden Book Club for the last two years. A few months ago I was quite surprised to find this book listed among all the "Gardening" books. I thought the book might be a nice reference guide for the wildflower enthusiast.

This soft cover book contains 389 pages of detailed information on the ferns and their relatives. These relatives include clubmoss, spikemoss, horsetails, quillworts and the moonworts. In total, the book covers 406 species of these primitive vascular plants from across North America.

The book begins with an overview of ferns and their allies. Such information as geography, ecology, structure and life cycles are covered. The main text describes the individual species (or in some circumstances, natural hybrids). Here, the author gives the common name of an individual species, a technical description of the species, their geographic distribution, and information on how to cultivate them (I daresay this is why the book was offered in the Garden Book Club).

For those of you who like coloured pictures, this book offers a colour photo of each species described. While this sounds ideal, ferns and their allies are not always easy to distinguish by photo alone. The book would be more complete if they also included detailed botanical drawings of each species.

As I stated, the author uses technical terms to describe the plants. While this may intimidate the novice, the author also includes a detailed glossary to describe the terms. There are also drawings that help emphasize the terms. Finally, the book ends with a list of further references which may be consulted should you wish even more details on a particular species.

Overall, I find the book to be very good. The lack of drawings is a little disappointing, but not detrimental. The only other problem is the details of the geographic distribution given for each species. While the author may specifically state Newfoundland as being part of the plants distribution, such information is not complete for all local species. Some species are not listed as being on the island, when in fact, they are. For this reason, you may need to refer to Rouleau's list to ensure that the fern you think you recognize from the photos does actually occur in Newfoundland.

These problems are not too serious. I think the book is a worthwhile investment (I say this since the book costs \$40 US) for any wildflower enthusiast. It is a good reference guide and the information is timeless. Ferns and their allies are not always easy to recognize, but this book can help tremendously in the identification of this large group of primitive vascular plants.

Book Review:

by Mary Woodruff

A Bouquet of Thorns - and other works of John Sherwood, Macmillan, London
The Audubon Society Pocket Guides - Audobon Society

A Bouquet of Thorns

Have you ever met the owner of the nursery gardens when last you visited? I am talking about the white-haired, youthful looking woman botanist, Celia Grant, who owns the Archercroft Nurseries. Perhaps not, as she lives in the imagination of John Sherwood, his readers, and on the pages of his many novels. Sherwood, who graduated from Oxford, and worked as a journalist and administrator for the BBC, is now retired and devotes his time to gardening and writing detective novels laced with well researched botanical information. In this novel, as well as solving a local murder, "Celia Grant" talks about the Victorian language of flowers, the biological control by *Amblyseius mackenzii* of mites (*Tarsonemus pallidus*) on cyclamen (*Cyclamen libanolicum*), as well as the type of plants to use in a limestone border and the best growing conditions for *Iris stylosa*.

When your back aches too much to continue wrestling with your garden, try these who-done-its. They are very enjoyable.

Other books written by John Sherwood and published by Macmillan, London: *A Bouquet of Thorns*, *A Botanist at Bay*, *Green Trigger Fingers*.

The Audubon Society Pocket Guides

The very best thing about these books is that they are really pocket sized and contain clear photographic illustrations. As a novice, I am delighted with them as they have all the information needed for a budding botanist.

I have just bought the *Guide to the Familiar Trees of North America, the Eastern Region*, which encompasses the land from the Atlantic Ocean to the Rockies. Eighty trees, arranged visually by their overall shape, are shown in winter profile with an accompanying colour plate showing both the leafy structure and a close up of the bark. The facing text describes the important features of the tree, including its flowers, fruit, cones, habitat, geographic range, etc.

There is quite a selection in this series; butterflies, flowers, seashells, insects and spiders, and many others. I haven't had much discovery luck since buying the one on dinosaurs so far.

