

# WAGNER NATURAL AREA NEWSLETTER

Volume 10 Number 1 April 1996



Newsletter of the Wagner Natural Area Society, Management Committee  
and Volunteer Stewards of Wagner Natural Area, Parkland County, Alberta

## (A)frontage Road! The Nickel-and-Diming of Wagner?

Alberta Transportation and Utilities has decided the time has come to build a frontage road along the northern perimeter of Wagner. The plan calls for a 30-metre-wide service road (initially gravel) to connect Century Road to Highway 794. It would use the existing old 118 Avenue, take a slice out of Wagner property, and curve southeast to join the interchange road about half way along its paved surface. Transportation estimates that about 1.6 acres of the Natural Area would be lost.

That may not sound like much, but Wagner Society likes the idea of a frontage road no better now than when it was first floated in 1991 when the alignment of the overpass and interchange road at 794 at 16X had been settled. For one thing that slice would include a portion of the large marl pond, east of the main gate, that extends to the present fence-line, an excision that could have unknown effects on interior drainage. It would also come perilously close to large populations of yellow lady's-slipper orchids in woods west of Villeneuve field. It would bring the noise and dust and pollution and wildlife mortality-potential of traffic that much closer to the Natural Area. According to wildlife expert Edgar Jones, who has been looking out for Wagner for over 40 years, it could devastate prime breeding habitat for song and marsh birds—the ponds fringed with cattail and willow adjacent to the interchange road.

Transportation has promised to do all it can to mitigate the impacts of construction, and has developed the terms of reference for an environmental assessment study. (See next page)

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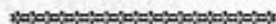
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## Editorial

As I write, just after mid-April, we are poised on the threshold of spring, taking a deep breath before the plunge into another hectic Canadian summer. The robins are back, ready to wrest nourishment from a softening, greening earth; young aspens are festooned with dangling grey catkins, the elms on city streets are in flower, and across the road from where I work a splendid silver maple is aglow in dark crimson, its red stigmas sticking out from tight clusters of flowers on its bare branches.



Wagner executive watchers will have noticed that Pat Clayton has moved up somewhat prematurely into the position of Acting President, taking over from Dave Ealey whose normal term of office would have expired early next year. With negotiations with Alberta Transportation and Utilities looming over a proposed frontage road alongside Wagner, Dave, as a provincial government employee, foresaw a possible conflict of interest and decided to step down. This change does not by any means mean that he has ceased to be a hard-working and valuable member of the executive. Happily, Pat Clayton, with her savvy of bureaucracy and the way things are, not to mention her expertise in fighting conservation wars, stepped promptly into the breach. The least we could do was honour her with a profile (see page 3). Happily, too, Irl Miller, a latter-day Wagnerite but another hard-worker, agreed to become our vice-president after only a second's hesitation. Our thanks to both of them.



This winter has been one for taking stock, literally. Alice Hendry and Pat Clayton sorted through our files at the Devonian Botanic Garden, erstwhile keeper of our archives, and eventually relocated them to Pat's basement for easier handling and reference.

Alice, in the process of writing a brief history  
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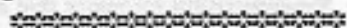
**(A)frontage Road (continued)**

Nevertheless, the frontage road proposal is particularly galling to the Society because it does not seem necessary, given the small number of people in the area who would be inconvenienced by its absence. (And in any case, alternative arrangements could be made for them, such as installation of an underpass and some tinkering with the service road system north of 16X.) The real rationale, it seems, is that the road must be in place to accommodate future development. And Wagner Society has a real problem with *that*, on principle. What is the point of protecting an area for wildlife if protected status confers no immunity against encroachment by humans?

The Society has met with Transportation representatives about the plan. It has also appealed to Premier Ralph Klein and applied for Special Places 2000 status for Wagner. Everyone is sympathetic but, to our knowledge, no alternatives are being considered. Will our priceless treasure, Wagner, be nickel-and-dimed away until it's worthless? If you wish to express *your* opinion, watch for notices of a public meetings on the frontage road or write to Wagner Society, Box 3100, Stony Plain, AB T7Z 1Y4.

**Editorial (continued)**

of Wagner Society for the Federation of Alberta Naturalists' 25<sup>th</sup> Anniversary publication, soon to appear, took the opportunity to summarize the major events in the history of the Society and the Natural Area. As well, she drew up an impressive "job jar" of tasks for us to do. We have also tracked down and listed our various holdings of Wagner "assets"—anything from reports and slides to lapel pins, lumber and post-hole augers! Even I was goaded into cleaning up my "computer room" and filing miscellaneous Wagner papers. (The result has not been entirely satisfactory: I still can't find things, but at least now I have a better handle on what I know I should have!) Taking stock is a salutary exercise, demonstrating the importance of keeping written records. When I look through old papers I am always amazed at how much I have forgotten or misremembered!



One little long-postponed task I did accomplish was to add up the total number of volunteer hours that have been committed to Wagner Natural Area to date: a worthy 11,710 hours from the inception of the Society at the end of 1982 (when we began counting) to the end of 1995. Please see the Wagner Grapevine on page 5 for a further analysis.

Here's wishing us all happy wanderings in Wagner in the summer of '96! *Patsy Cotterill*

**Wagner Society Executive, 1996-97**

Acting President – Pat Clayton (456-9046)  
Acting Past President – Dave Ealey (422-0858)  
Past President – Derek Johnson (436-8231)  
Vice-President – Irl Miller (455-3866)  
Treasurer/Membership Director – Janice Cantafio (963-3938)  
Secretary/Newsletter Editor – Patsy Cotterill (481-1525)  
Director/Public Relations – Alice Hendry (962-4836)  
Directors – Leota Cummins (447-4256); Beth Jenkins (458-1794); Edgar Jones (436-5327); Terry Thormin (482-1389)

**Information/Emergency!** For further information on Wagner Natural Area or other Natural Areas in the province, or to report information or emergency situations in Natural Areas, please call Alberta Environmental Protection at 427-5209.

## Executive Profile — Pat Clayton, Acting President



**P**at Clayton's connections to the Wagner Natural Area Society go back to the beginning. Late in 1982 Pat, then President of the Edmonton Natural History Club (ENHC), chaired the first three meetings that set up the Wagner Management Committee as it was then known, and worked with a lawyer to develop a constitution for the fledgling steward group. Having launched the committee on its course, Pat bowed out for a while to concentrate on other commitments. The Wagner committee had been formed in response to a threat to the Natural Area (established as such in 1975) from road development. It was no coincidence that when Pat became part of the Society as a director in early '89, the road issue was on the front burner again. Beneath her benign, slightly refined, English exterior, Pat is a determined conservationist and a tenacious fighter for environmental causes.

Pat was born in Calcutta, India, but spent her formative years in the U.K. She came to Alberta in 1953. Her latent interest in natural history found expression in her employment with City of Edmonton Parks and Recreation, which led to involvement with Cam Finlay in the start-up of the John Janzen Nature Centre and to work at the Muttart Conservatory and Fort Edmonton Park. By the mid-'70s Pat had begun her long-standing association with the ENHC and the Federation of Alberta Naturalists (FAN). She has since been president of both societies and continues to date on the executive of both, a situation that allows her to fulfill roles she performs very well, those of communicator, coordinator, facilitator.

Pat is a detail person, as interested in constitutional rules and financial statements (she is currently treasurer for FAN) as she is in ferreting out information and discussing strategies. But this does not mean she is an armchair naturalist. She participates frequently in field trips. And she and her husband Dick Clayton do more than their share of on-site chores in Wagner: anything from cleaning out birdhouses to fixing signs to monthly monitor duties. Since Pat retired from paid employment she has volunteered full time on behalf of natural history and conservation. We are tremendously lucky to have her.

### Membership in Wagner Natural Area Society

The membership year runs from January 1 to December 31. Please consider renewing promptly to continue your support of the Society and Wagner Natural Area. Fill out the membership/renewal form below and mail it with a cheque to Wagner Natural Area Society. Do the same if you are joining the Society for the first time. As a member, you will receive free copies of the newsletter (2 per year) and an invitation to the Annual Members' Night in October. Field trips and other activities are organized from time to time. Donations are tax deductible. For more information, contact Janice Cantafio at 963-3938 (evenings).

**Please include me as a member of the Wagner Natural Area Society!**

<input type="checkbox"/> Family/Organization	\$12	<input type="checkbox"/> Individual	\$10
<input type="checkbox"/> Student	\$ 8	<input type="checkbox"/> Senior	\$ 8

Besides my membership fee, I enclose a gift to support the activities of Wagner Natural Area Society: \$ \_\_\_\_\_.

Name \_\_\_\_\_

Address \_\_\_\_\_

Town/City \_\_\_\_\_

Telephone No. \_\_\_\_\_

Mail to: Janice Cantafio, Treasurer/Membership Director, c/o Wagner Society,

Box 3100, Stony Plain, Alberta T7Z 1Y4

## Alberta's Native Orchids: Plants with a Taste for Fungi!

Carla Zelmer, M.Sc.

Alberta is home to 27 species of native orchids, but most of these species are rarely seen by the casual observer. You may be familiar with the diminutive but striking flowers of the calypso orchid (*Calypso bulbosa*), the showy pouched blossoms of the yellow lady's-slipper (*Cypripedium calceolus*), or even the tall white bog orchid's (*Platanthera dilatata*<sup>1</sup>) fragrant spikes, but what about the other 24 species?

Many of our orchids are tiny and greenish-flowered and inhabit moist, shady places in forests, along streams and in wetlands. They rarely form the dominant plant cover of an area, and so are often overlooked. These secretive little plants deserve some notice, however, for their unusual means of obtaining nutrients. Like the better known carnivorous plants, our orchids make their living by eating other organisms. When an orchid seed is first released from its capsule, it is dust-like; just a microscopic ball of cells enclosed in a papery seed coat that is so oversized it looks like a hand-me-down! Unlike most seeds at the time of release, it has not yet developed a distinct embryo and it lacks cotyledons ("seed leaves") and a large food reserve to draw upon for germination and initial growth. When the tiny seed finally settles into a moist crevice in the soil, and is ready to germinate, it has reached the riskiest stage of its life. It now has to contact, control and consume a fungus.

The seeds of some orchids, like the ladies'-tresses (*Spiranthes* spp.), sit passively waiting for an appropriate fungus to wander by, while others, such as the bog orchids (*Platanthera* = *Habenaria*) seem to take a more aggressive approach by putting out long thread-like cells in an attempt to contact one. Once contact is made, the fungus penetrates into the germinating seed, forming coils that look like balls of wool within the innermost cells. If all goes well, the seed constrains the growth of the fungus to a specific region of its body, and begins to digest some of the coils, using the liberated contents of the fungal cells for its own growth. The fungal coils that are left intact serve as a source of inoculum

for the recolonization of the digestion cells, forming new coils that are again digested. This food source permits the germinating seed to begin growth. In time it forms a fleshy, white, top-shaped *protocorm*, a developmental state similar to that of the embryo of most flowering plant seeds at dispersal. The orchid protocorm, with no need to photosynthesize for energy, develops underground where moisture is uniform and it is hidden from many predators. After a few months to several years, a meristem at the top produces leaves, and a root or two grows from stem tissue at the base of the leaves.

I learned through my field experiments conducted in Alberta and Manitoba that this happy outcome is rarely achieved. More frequently, the orchid seed is unable to control the fungal growth within its body, and the protocorm is overrun and killed, or the fungal coils are all digested at once, leaving no hyphae for recolonization. This too results in the eventual death of the protocorm. The relationship between the orchid and the fungus is affected by many factors, including the nutritional sources available to the fungus. It is a delicate balance between the vigour of the fungus and the ability of the orchid to control it. Fortunately, orchid seeds are produced in great abundance (a few thousand per capsule for a lady's-slipper orchid), thereby increasing the chance of at least a few successful encounters.

In tropical epiphytic orchid species, successfully colonized protocorms often turn green soon after infection, quickly producing their first leaves and roots, and then abandoning their fungus-munching habits. Here in Alberta, most of our orchids retain a dependency on a fungal food source even at maturity. The fungi are housed, or perhaps "farmed," in the cortex region of fleshy roots, termed mycorrhizas (= fungus roots). The rest of the plant is protected from the fungal invasion by the production of fungicides, such as orcinol.

The retention of mycotrophy (fungus-eating) at maturity allows our native orchids to live safely below ground for several years before producing their first leaves and flowers. It also supplements the energy obtained through photosynthesis in the weak sunlight of the forest floor.

(Continued on page 6)

<sup>1</sup> Also known as *Habenaria dilatata* (see Moss, *Flora of Alberta*, 1983)



## The Wagner Grapevine



**Acheson Industrial Area Structure Plan**  
The County of Parkland is preparing an Area Structure Plan (ASP) for the Acheson Industrial Area, 16 sections of land immediately west of Edmonton city limits, between Highway 16X to the north and the Enoch Cree Indian Reserve to the south. The eastern boundary of the main portion of Wagner Natural Area borders the Acheson Industrial Area, and two parcels of land that will be added to Wagner Natural Area are within the western portion of the Acheson Industrial Area.

The completed ASP, being prepared by UMA Engineering Ltd. of Edmonton, will be approved as a by-law by the County of Parkland and will outline the principles and guidelines for growth and development in the Acheson Industrial Area for a period of time established by the County.

In its public information bulletins about the ASP, the County has stated that it recognizes the need for environmentally sound growth, as well as the environmental sensitivity of Wagner Natural Area. (Nevertheless, the County did not think to include the Society on its mailing list for notices of open house meetings!)

The Acheson Industrial Area includes part of the water recharge zone for Wagner Natural Area. Hence the Society is concerned about the effect any future development in the Area might have on the quantity and quality of water reaching Wagner. We are also interested in identifying and maintaining ravines and other wildlife corridors and habitats within the Industrial Area. We would like to see a wide buffer zone maintained between the Natural Area and any future development. Our other concerns include increased levels of noise, light and air pollution that would possibly result from development in the Industrial Area. The Society would oppose plans that would increase traffic levels or require road development in the vicinity of Wagner.

Wagner Society has sent a letter to the County requesting that we be kept informed about the ASP. We recently met with UMA representatives to discuss our concerns and we attended the first Open House on the Plan. We intend to

stay tuned as the Plan is being developed (it should be complete by the end of May).

One more public Open House meeting is scheduled for late April or early May and will be held in the Winterburn Hall. *Alice Hendry*

### **Bouquets!**

Congratulations first and foremost to Alice Hendry, on winning the Wagner Recognition Award for her wholehearted devotion to the welfare of Wagner Natural Area over the last 16 years or more. Her comment on being presented with the award at the Annual Members' Night last October: "Oh, you guys!"

Congratulations also to Derek Johnson who won this year's Edmonton Natural History Club's Conservation Award. Last year Terry Thormin won this award from the ENHC and Patsy Cotterill the Appreciation Award. All were awarded in part for activities in Wagner.

### **Summer Employment**

It's too soon to know whether we shall be successful in obtaining a SEED grant to pay for our summer employee(s). However, with luck we shall have a new young face around this summer—with very good luck maybe even two!

### **Volunteer Hours**

Since the Society began in 1982 until the end of 1995 members and many others have poured a total of **11,710 volunteer hours** into the upkeep of Wagner Natural Area and related projects. The last time we totalled this time commitment was in 1989 when the number reached 7,121. The break-down by year since then is as follows: 1990 (902); 1991 (1,006); 1992 (612); 1993 (627); 1994 (583); 1995 (859). In the 8 years from the end of 1982 until the end of 1990 we racked up 8,023, and in the 5 years from 1991 to the end of 1995 3,687 hours.

If we appear to have been coasting a bit for the last few years we should recall that the first eight represent our *establishment* phase, when we worked madly to install facilities on the site and develop a management plan and then became involved in the environmental impact assessment for the interchange. Taking part in the 2<sup>nd</sup> Volunteer Steward Conference in 1993 was also a significant time commitment. These totals do not include, of course, the uncounted number that volunteers such as Edgar Jones expended prior to 1982 on getting protected status for the present Natural Area!

(Continued from page 4)

Coral-root orchids (*Corallorhiza* spp.) have taken mycotrophy to its ultimate extent. These non-green, rootless plants rely solely on the consumption of fungal hyphae for their nutrition, coming above ground only to flower. There is evidence that some of the typically green orchids can also remain underground, feeding on fungi, should the conditions for growth that season be unfavourable.

I can't close off this article without saying a few words about the fungi involved in these symbioses. To me they are as fascinating as the orchids. Generally, these fungi belong to a broad group known as Rhizoctonia.<sup>2</sup> You may have heard of them, as some Rhizoctonias are virulent plant pathogens, causing cereal and other crop diseases and "damping off" of seedlings. You've probably handled them as well. That "dirt" that won't scrub off the potatoes is often the sclerotia (a kind of storage and resting structure) of *Rhizoctonia solani* (= *Moniliopsis solani*). In the lab, strains of Rhizoctonia isolated from diseased crops have aided the germination and continued growth of orchid seeds. Considering the origin of these fungal strains, it seems these tiny orchid seeds are not as defenceless as they appear.

Although Rhizoctonia are related to mushroom-forming fungi, you probably won't notice them fruiting. They tend to form inconspicuous, paint-like, cobwebby, or waxy fructifications under clods of freshly turned soil, or under fallen logs or litter.

It is relatively easy to isolate and culture orchid fungi from the mycorrhizas of orchids, and in culture they are often nutritionally undemanding. They will use sugars as food if they are offered, but if not, many strains can also degrade the cellulose of plant materials, and some may also be able to break down the lignin in wood. Obviously, these hardy fungi are well adapted to being scavengers, as well as

<sup>2</sup> Rhizoctonia is a form-genus, meaning that it contains many fungi that appear morphologically similar but may not be closely related. In 1987 the genus Rhizoctonia was subdivided into several form-genera, three of which are associated with orchids: *Epulorhiza*, *Ceratorhiza* and *Moniliopsis*. The term Rhizoctonia is used here in its general sense, and includes the members of these three genera.

pathogens, so why do they associate with orchids?

Some researchers believe that there is no benefit to the fungi in symbiosis with orchids, suggesting that the orchids are actually parasitic upon their fungal partners. Other researchers, however, claim that some fungal strains associated with orchids may require vitamins or other substances that the orchids produce, indicating a mutualism rather than parasitism. Whatever the final decision is, it is obvious that this unique association affects the ecology of our orchids, and may help to explain their distribution and habitat choice. It may also explain why transplanting of native orchids so often results in failure. Once the plant and its fungi are removed from the conditions under which the delicate balance between them was achieved, re-establishment is unlikely. Unless they're directly in front of a bulldozer, orchids are much better off left where they are found.

Speaking of finding orchids, there are a number of good books available to help you in your search for the other 24 species. I've listed a couple below, along with a reference on general orchid biology. Good luck, and next time you're slicing mushrooms, remember—orchids have a taste for fungi, too!

#### Further Reading

- Arditti, J. 1992. *Fundamentals of Orchid Biology*. John Wiley and Sons, Inc., Toronto. 691 pp.  
Currah, R.S., E.A. Smreciu, S. Hambleton and L. Sigler, 1990. *Orchids of Alberta*. Univ. of Alberta Devonian Botanic Garden, Edmonton. 111 pp.  
Luer, C.A., 1975. *The Native Orchids of the United States and Canada Excluding Florida*. New York Botanical Garden, NY. 361 pp.

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#### Orchid Facts

Orchids (family Orchidaceae), with about 23,000 species worldwide, are the second largest family of flowering plants after the Daisy family (Compositae). In Canada, they mostly inhabit moist soil, where their fungal partners live. Here only rattlesnake-plantains (*Goodyera* spp.) have the capacity for vegetative spread. So, given orchids' precarious start in life, no wonder many produce prodigious amounts of seeds—up to 4,000 in a single capsule of sparrow's-egg lady's-slipper, for example!

## Wagner Field Trips, 1996 (Join us for free!)

**Thursday, May 9. Frog-and-Toad Walk with Wayne Roberts.** Meet at the main gate at Wagner at 6:30 p.m. Veteran amphibian watcher Wayne will lead us along the Mari Pond Trail to the boardwalk where we'll gauge the progress of the frog and toad mating season and most likely thrill to the piping tones of the male boreal toads as they call to attract their mates. Dress warmly if the evening is cool. Wayne will return for a repeat performance (same time, same place) on **May 16.**

**Sunday, May 26. May Count of Plant Species in Flower.** Meet at the main gate at 10 a.m. It's become an annual tradition to participate in this province-wide event to record all the species that are in flower on the last weekend of May. (A bird and mammal count is held simultaneously, and people with expertise in these groups are welcome too.) Bring boots, a lunch, and sun gear or warm clothes depending upon weather. You can join us for the whole day's hike or leave when you wish. Call Alice Hendry (962-4836) or Patsy Cotterill (481-1525) for more information.

**Sunday, June 23. Wagner Orchid Walk.** Meet at the main gate at 2:00 p.m. Every year we gamble on when is prime time to see our orchids in bloom but lady's slippers and round-leaved orchids are usually a good bet in the third week of June. And that's not to mention all the other flowers! Bring boots and cameras. Alice Hendry is the contact

person again but various members of the Society will be on hand to help with guiding.

**Sunday, July 21. Annual Bug Walk with Terry Thormin.** Meet at the main gate at 1:00 p.m. Join Terry of Provincial Museum Bug Room fame for an in-depth look at insects (including butterflies) and spiders in Wagner. This walk won't take place if the weather is poor, but if it is good we are guaranteed a fascinating time!

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P.S. In our last newsletter we promised to have a **weed-pulling party** sometime during this coming summer. We'll advertise this when we've fixed a date (depending upon weed growth). Everyone's invited because, as the saying goes, many hands make light work!

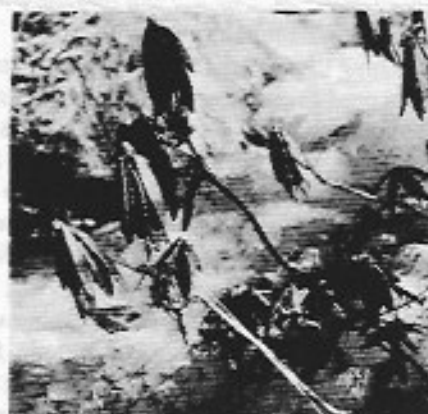
P.P.S. Our last year's summer employee **Natasha Klingsh** got so hooked on bugs during her dragonfly study in Wagner that she is now co-founding with entomologist and TV nature-entertainer **John Acorn** a new group entitled the **Bug and Spider Group**, under the auspices of the Edmonton Natural History Club. The inaugural meeting of this group will take place in the Provincial Museum lecture room on April 30 at 7:30 p.m. Call Natasha at 453-1924 for more information.



Many volunteer hours are spent on the upkeep of the Natural Area. Here (from left) Irl Miller, Mike Jenkins and Glenn Jenkins take advantage of a fine spring day in March to prop up the boardwalk—and so prevent that sinking feeling!

Photo by P. Cotterill

The leaves of Common Labrador Tea (*Ledum groenlandicum*) are folded down like miniature umbrellas for protection during the winter. For a profile of this plant see page 8 of the newsletter. Photo by P. Cotterill ⇒



## Wildflowers of Wagner No. 9

### Common Labrador Tea Heath Family

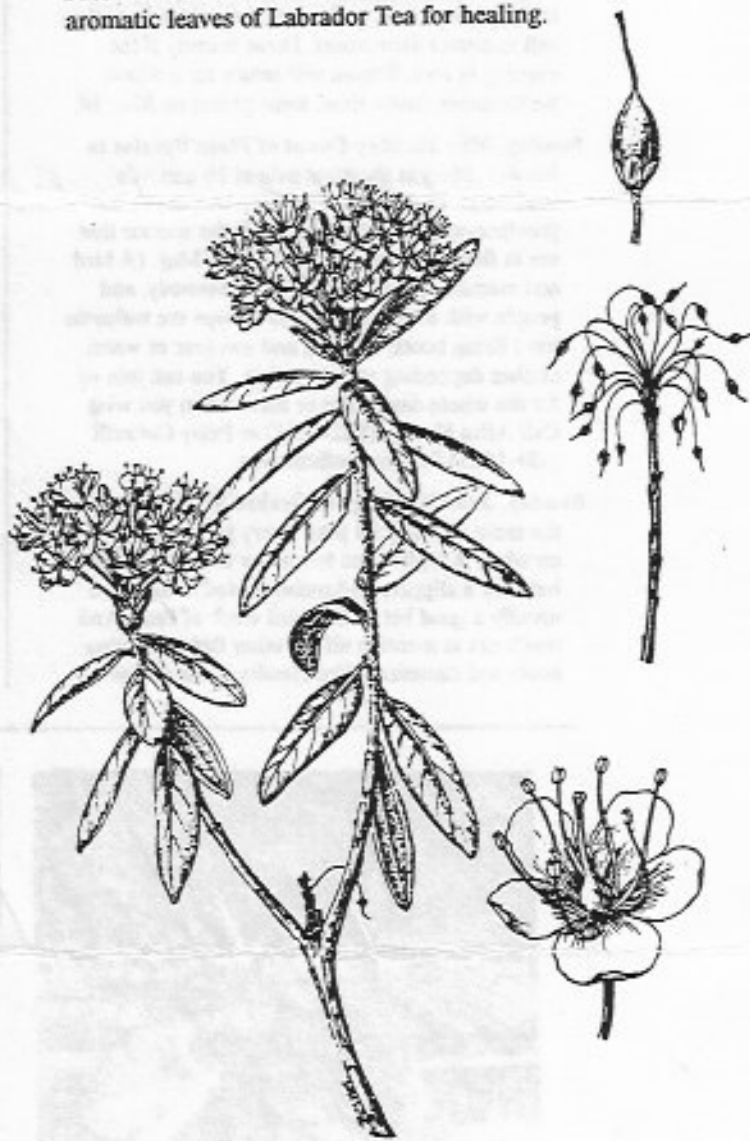
For most of us, Common Labrador Tea is a symbol of the boreal forest. It is common or abundant in bogs and moist coniferous forests, particularly in association with black spruce, where it can be a major component of the understory. In Wagner it can be found in black spruce-tamarack stands and in the somewhat drier treed ridges amidst the marl ponds.

This medium-high shrub (40-80 cm) bears, in early summer, showy white flowers in clusters at the ends of the branches. The long-oval or narrowly elliptical leaves are unmistakable; they are hard-leathery on the upper surface, the edges are rolled under, and the undersides are covered in a dense fuzz of rusty brown hairs. Most leaves are evergreen, persisting throughout the winter, often under the snow. When the new shoots grow out from beneath the flower clusters or at the tips of vegetative branches their fresh green is in striking contrast to the dingy olive green of mature leaves. The flowers have five white spreading petals (5-8 mm) which are separate to the base and long, protruding stamens. They are borne on long, glandular stalks which curve downward as the fruit, a brown capsule tipped by the remains of the style, matures. The capsule takes on the appearance of a tiny half-folded umbrella when it splits into five segments from the base upwards to release the winged seeds.

Common Labrador Tea leaves show *xeromorphic* characters in their texture and hairiness, i.e., they appear adaptive to drought by having features that reduce transpiration and hence water loss. Considering that the species grows in predominantly wet soils, this is something of a puzzle, though clearly evergreen plants need to conserve water in the winter when the soil water is frozen. The plant's most adaptive feature, however, is rarely seen. Most members of the Ericaceae family develop a symbiotic relationship with fungi in the soil (mycorrhiza; see p. 4). The fungal threads cover the plant's roots and penetrate them. The fungus is able to take up nitrogen and phosphorus compounds, both inorganic and organic, from the soil efficiently, and in return receives the products of photosynthesis, carbohydrates, from

### *Ledum groenlandicum* Oeder Ericaceae

the green plant. This allows both plant and fungus to live in cold, wet, acid, nutrient-poor soils that neither would be able to tolerate alone. Most native tribes have used infusions of the aromatic leaves of Labrador Tea for healing.



*Drawing courtesy of John Maywood,  
University of Alberta Devonian Botanic Garden*