

# Borealis

the newsletter of the



January 1996

P.O. Box 141613, Anchorage, AK 99514

## Happy New Year!

### Anchorage Chapter ☆ January Meeting ☆

Monday,  
January 8  
7:30 p.m.

First Congregational Church  
2610 E. Northern Lights Blvd.  
(Please use back entrance)

### Landscaping Using Native Plants with Cathy Wright

Winter is a great time to make plans for your garden. Join Cathy Wright, of the Alaska Plant Materials Center, for some creative ideas on landscaping with native trees, shrubs and herbaceous plants. Using examples from local gardens, she'll show us which natives work well in landscaped settings, which ones survive transplanting, and some common pitfalls to avoid.

**Plant Family** - Martha Hatch will continue our series on non-flowering vascular plants with a look at two families of ferns: the moonworts and filmy ferns.

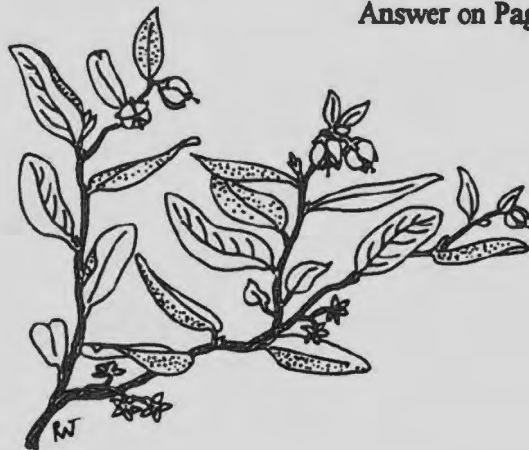
**Mini-Botany** - Plan for a hairy evening with Marilyn Barker. Using slides and all of her artistic talents, Marilyn will lead us on this exploration of plant hairs. Bring your leaf hair terminology quizzes from last month.

A board meeting will be held at 7:00 p.m.

### Mystery Plant by Trevor Ricketts

This evergreen shrub is abundant in bogs and open black spruce stands throughout the boreal forest. In fall and winter, the thick, oblong to elliptic leaves take on a reddish-brown color, but through the summer they are dark green. Their upper surfaces are covered with light-colored scales, while the underside is brown-dotted and scaly. White urn-shaped flowers appear in early May, before most other plants have leafed out. When not blooming, one might confuse it with Labrador tea, but a close inspection of the under surfaces of the leaves should leave you in no doubt.

Answer on Page 3.



Mystery Plant drawings by Toby Tyler, ANPS Kachemak Chapter.

### Dues

1996 dues are due. Please note that there has been a small increase in membership fees this year, reflecting the increased costs of newsletter printing and mailing. If your mailing label says 95, your dues are due. A membership coupon with current rates is on Page 7.

## Seed Swap Coordinator

Sue Jensen has kindly volunteered to be the seed exchange coordinator again this year.

Now let's find her some seeds to work on! So far, we only have seeds from one member and a man from Great Britain who visited Alaska a couple of times.

If you have seeds to spare and just haven't gotten around to them, now's the time to sort them out and get them to Susan.

## Plant Family The Pteridophytes continued: Polypodiophyta

Continuing our look at the pteridophytes, we now jump to an entirely new division: the polypodiophyta, or ferns. In these plants leaves become larger and more complex, and a new set of terminology is used. Fern leaves are generally called fronds, and are composed of distinctive parts: the lamina (the blade or flattened part of a leaf) and the stipe (stalk). Primary divisions of the lamina are called pinna, and further divisions pinnules. The stem between the pinna is the rachis, which is an extension of the stipe. In contrast to the microphylls discussed last month, fronds have multiple strands of vascular tissue. When fronds first emerge from the ground they are rolled up into a fiddlehead, which slowly uncoils as the fern grows, a characteristic called circinate vernation. Ferns are homosporous, producing only one type of spore that, if it germinates, will produce gametophytes with both male and female sex organs (antheridia and archegonia). We start by looking at two families: the Ophioglossaceae (Adder's Tongue or Moonwort) and Hymenophyllaceae (Filmy Fern).

continued on page 3.



*Mecodium Wrightii*

## What's In A Name?

### *Pinguicula vulgaris* (Common Butterwort or Bog Violet)

This tiny carnivorous plant is found in bogs, swamps, and other moist sites that are generally low in available



nitrogen. Its single flower, usually dark lavender or purple (occasionally white) in color, somewhat resembles a violet, leading to the common name of Bog Violet. The name Butterwort originates from a belief that the plant can encourage milk production in cows, thus ensuring a steady supply of butter.

To supplement its diet, the plant traps small insects on the upper surface of its greasy leaves. Insects are prevented from escaping by the leaves' rolled margins, and are slowly digested by secretions from the plant. The botanical name *Pinguicula* is derived from the Latin word *pinguis*, meaning "fat," and describes the succulent, buttery leaves. *Vulgaris* means "common."

In *A Prospect of Flowers: A Book about Wild Flowers*, published in 1945, Andrew Young wrote, "When we see a midge being slowly digested on the pale sticky leaf-rosette of Butterwort, our sympathy is with the midge, a creature we usually do not care for; yet all we are seeing is how our stomach works. The plant is not ashamed of eating any more than we are. It holds up its beautiful blue flower, described with admirable inaccuracy as 'a violet springing from a star fish,' perhaps it is amused at its botanical name, *Pinguicula*, Little Fat One. But the offense in our eyes is that such plants invade our animal kingdom."

## THANK YOU, JEAN!

A big thank you to Jean Poor, who has been our Anchorage Chapter President for the past two years and has now stepped down for a well-deserved break.

**Polypodiophyta:**  
**Ophioglossaceae and Hymenophyllaceae**  
**Moonworts and Filmy Ferns**

The Ophioglossaceae are represented by two genera in Alaska: *Ophioglossum* and *Botrychium*. They are **eusporangiate**: a primitive characteristic where sporangia are large, thick walled, and contain many spores which are released by the cracking of the spore wall. In both genera, the stem branches into two parts: One side produces a fern-like frond, and the other a cluster of sporangia, somewhat resembling a bunch of grapes. *Botrychium* is derived from the Greek word *botryos* meaning a "bunch of grapes."

Many plants of the genus *Botrychium* are ephemeral, appearing one day and fading by the next. In Alaska, Hulten lists five species. All have a compound lamina, and sporangia in a compound spike or panicle. *B. lunaria* (Moonwort) is a widespread species with light green, oblong, sterile blades divided into fan-shaped, overlapping pinnae. The soft, thick stalks are succulent and taste like butter lettuce. *B. lanceolatum* is a similar species, but its frond is triangular, and composed of pinnae that are longer than wide and often deeply incised. *B. boreale* (Northern Moonwort) is somewhat intermediate between the two, with a triangular, sterile blade, and diamond-shaped pinnae that are somewhat incised. Hulten suggests that this species may be of hybrid origin between *B. lunaria* and *B. lanceolatum*. In all three species the sterile frond is borne on the middle or upper part of the stem.



*Botrychium lunaria*

*B. multifidum* (Leathery Grape Fern) has basal, stalked, leathery blades that are bipinnate, and a long stalked fertile blade. It is the only *Botrychium* with a basal blade. It is found in sandy meadows and woods in a few places in Southeast Alaska and the Aleutians. Rattlesnake Fern (*B. virginianum*) is also very rare in Alaska, occurring at a couple of sites on the Aleutians. (A population on the Turnagain Arm trail near Potter Creek may still exist, but were probably destroyed by trail construction this summer.) Its light green sterile blades, borne in the middle of the stem, are almost

sessile (without a stalk). The frond is often two or three times pinnate, and divisions overlap.



*B. multifidum*  
 Leathery Grape Fern

*Ophioglossum vulgatum* (Adder's Tongue) is the only representative of its genus in Alaska. According to Hulten, it's been collected only a couple of times in Alaska, both on the Aleutians. Plants in this genus differ from *Botrychium*s in that the sterile frond has an entire lamina, and the sporangia on the fertile frond are in a 2-ranked spike.

The Hymenophyllaceae, or filmy ferns, are generally small ferns found in wet habitats. Their distinctive leaves are mostly one-cell thick, and often appear semitransparent. Fertile and sterile leaves are similar in appearance. Sporangia are arranged in sori (clusters of sporangia) along the edge of the pinnae, and are enclosed by a two-lipped **indusium** (an outgrowth from the leaf that forms a protective flap over the sori). Unlike members of the Ophioglossaceae, they are **leptosporangiate** (their sporangia are smaller and thin-walled, with a row of thick-walled cells on the surface in a band called the **annulus**. Thin-celled lip cells tear in response to drying of the annulus, thus releasing spores.). Only one member of this family is found in Alaska: *Mecodium Wrightii*, a small moss-like fern that grows in wet places in Southeast Alaska.

**Mystery Plant Answer:**



*Chamaedaphne calyculata*  
 Leatherleaf  
 Ericaceae (Heath Family)

## Field Trips by Verna Pratt

### Now's the Time to Plan '96 Field Trips

Yes, believe it or not, it's time to start planning our 1996 field trips. Remember, all it takes is an idea of a nice place to go, and an ability to lead the group back to the meeting point afterwards. Members are very good at using field guides to identify plants together, so you don't have to be an expert.

If you do want assistance with plant ID you can always make arrangements for a knowledgeable member to help you, but talk to them early, before submitting your trip. If you have a great location in mind but are unable to lead a trip yourself, pass your idea on to the field trip coordinator. Field trip planning sheets will be available at meetings and in the February newsletter.

It doesn't matter if you don't live in Anchorage; consider leading a trip in your own area. You may be surprised at the interest it generates, and it might help you to make contact with other ANPS members in your area.

### Arctic Valley to Hiland Road Traverse

I found the last trip of the season, Aug. 19, Arctic Valley to Hiland Road, led by Nancy Krieger, very enjoyable. Most of the flowers were gone, but Fall color was just beginning and it was a warm sunny day (to begin with). At times, we were completely engulfed in fog while making the traverse. A folding chair at the top of the mountain, near Rendezvous Peak, attracted a lot of attention and afforded opportunities for crazy photos. The blueberries were fabulous and the hills were covered with berry pickers.

I was particularly pleased to see how well used the Hiland Road parking area was. We fought hard and long (when I was on the Chugach Park citizens advisory board) to acquire that piece of land for access to the park. It needs to be larger, but it's great to see that it's being utilized and appreciated.

### Pamela J. Lowry Memorial Park: Unusual plant found in neighborhood park

Sometimes simple walks, close to town, can be very rewarding. A good example was our evening stroll in the Pamela J. Lowry Park in south Anchorage on June 22nd, 1995. I had a strong interest in seeing the results of Brad Lowry's (Pamela's brother) Eagle Scout project, as I had assisted him with plant identification. He had built a nice kiosk showing plants and birds of the area, and placed signs on common, obvious plants. Unfortunately, rogues had vandalized some of his efforts.

This small neighborhood park at first seemed very ordinary with a potentilla bog, some wet woodlands, a nice pond filled with ducks, a small stream packed full of wild calla lilies, etc. It did, however, have one

really outstanding plant that is very uncommon in the Anchorage area; most people on the walk had never seen it before. Tufted loosestrife (*Lysimachia*) is a member of the primrose family that grows in water around the margins of lakes. At first glance you might think it's a willow herb (*Epilobium* sp.). The small racemes of yellow flowers can trick an untrained eye as the flower parts vary in number; it is quite common to see flowers with 5, 6 or 7 petals all on the same raceme!



Tufted loosestrife

flowers with 5, 6 or 7 petals all on the same raceme!

Although it's always nice to renew our acquaintance with familiar plants, this find made the trip special for everyone.

## BUNCHBERRY

### *Cornus canadensis* or *Cornus unalaschkensis*?

Ken Chambers — Emeritus professor of Botany, Oregon State University

*Editor's Note: There have been several recent articles about the taxonomic status of bunch-berry species. The extracted material comes from an article in the October 1991 Oregon Native Plant Society Bulletin that was re-published in Spring 1994 in "Douglasia," the newsletter of the Washington Native Plant Society.*

There's an old botanical joke to the effect that *Cornus*, the genus of dogwood, can be recognized by its "bark." This is hardly true, however, of *C. canadensis* (bunchberry), an herb, only a few inches tall, lacking both wood and bark, and forming an extensive groundcover by means of creeping rhizomes. Its relationship to the tree-like species of *Cornus* is evident only in its inflorescence: the four white, petal-like bracts which surround a head-like cluster of tiny flowers. *Cornus* leaves are always opposite, but in *C. canadensis* the upper two to three pairs are very closely spaced and appear whorled at the tip of the stem. Its natural range is throughout Canada, Alaska, and the northern tier states of the "lower 48," south in the Rocky Mountains to New Mexico, along the Pacific coast to northwestern California and, disjunctly, in eastern Asia. The only other herbaceous species of dogwood is *C. suecica*, a plant of northern Europe, Greenland, eastern Canada, Alaska, and coastal eastern Asia. It has several pairs of stem leaves (instead of a "whorl"); also, its flower cluster is purplish rather than greenish-yellow. Although their distribution patterns are not identical, the two species overlap in eastern Canada, Alaska and eastern Asia. Biologists have long been aware of their hybrids, but assumed that the morphologically intermediate plants were infertile and propagated themselves only by rhizomes.

In recent floristic publications, taxonomists James Calder and Roy Taylor have proposed using the name *C. unalaschkensis* for nearly all "*C. canadensis*" plants of coastal and southwestern British Columbia, plus Washington, Oregon, and California. Their evidence is based on the known ability of *C. canadensis* and *C. suecica* to hybridize (where their natural ranges overlap), and the discovery that many of the Northwest American plants presently called "*C. canadensis*" — especially in areas with a maritime rather than continental climate — not only have a hybrid-like morphology but are tetraploids. That is, their chromosome number (44) is twice the usual number

found in diploid *C. canadensis* and *C. suecica* (22). Like many plants of hybrid origins and doubled chromosome numbers, the tetraploids are reproductively fertile and genetically distinct from their original parents; therefore, they are evolutionarily and biologically a separate species. The name *C. unalaschkensis* was given to such plants a century-and-a-half ago by German botanist Carl Ledebour. Recent collections of bunchberries from Unalaska Island — the type locality — were re-examined and have cell-size characteristics of tetraploids; therefore, the species properly must bear the name assigned to it by Ledebour.

All collections of "*C. canadensis*" in the OSU Herbarium from southwestern British Columbia, Washington (from the Cascades to the coast), and Oregon are *C. unalaschkensis*. The one most consistent difference is flower color: In *C. canadensis*, the petals are greenish-yellow, whereas in *C. unalaschkensis* they are purplish on the tip and midline, and yellowish at the edges and base. This coloration is the only clear-cut characteristic inherited from *C. suecica*, which has dark purple petals; all other traits appear to be variable and only subtly different from *C. canadensis*. One unanswered question is: are there spots in the US or Canada where *C. unalaschkensis* and *C. canadensis* exist together? Superficially these two species look very much alike, but at a deeper biological level, the hybrid origin and doubled chromosome number of *C. unalaschkensis* strongly argue against lumping it taxonomically under *C. canadensis*.

There must have been two or more periods in the history of these species when hybridization occurred between *C. canadensis* and *C. suecica*. Today, where they grow together in the far north, sterile diploid hybrids with 22 chromosomes and a distinctly intermediate morphology are formed. A much earlier cycle of hybridization in preglacial times probably produced *C. unalaschkensis* through chromosome doubling, stabilization of its characteristic features,

and establishment of a discrete geographical range south of the continental ice sheets. After the retreat of the glaciers, it migrated northward in British Columbia and southern Alaska. All aspects of this historical narrative need further study and scientific verification, however. The questions posed by these bunchberries are typical of the many unsolved puzzles so characteristic of our fascinating native flora.

**Addendum 1994.** There continues to be disagreement among taxonomists on whether the hybrid-origin tetraploid species ought to be recognized as different

from *C. canadensis*. The petal color difference -- greenish-yellow vs. purplish-tipped -- is minor but easy to observe. Anyone who prefers a broad and inclusive species concept for bunchberry is free to use the name *C. canadensis* for both flower types, in spite of the chromosome difference and hybrid influence of *C. suecica*. The name *C. unalaschkensis* is more precise for the purplish-flowered plants, but because this is not a well known name it may cause confusion among people who don't know of the botanical studies explaining the subtle distinction between the two species.

## An "Instant" Winter Retreat by Virginia Moran

"Unemployment office, library, UAA, store... what else?" I think to myself as I "manage" yet another day on furlough. I feel anxious as I drive down the cluttered streets of mid-town. I need to get away from the congestion, and even with a bad case of flu, I decide to stop and walk the trails on the UAA/APU campus. Normally at this time of year, I'd SKI the trails; having time off from an unexpected furlough when there's no snow on the ground can only be interpreted as a cruel joke on the part of ol' man winter.

Soon, I am walking within a "forest" of black spruce (the trees reach to my head), Labrador-tea, sweetgale, and bluejoint reedgrass. In a few more minutes, I am among the white sinuous boles of paper birch, arching alder and stately white spruce. My worries dissipate as I walk deeper and deeper into the woods where, soon, I am alone and it is quiet. The Labrador-tea appears as I feel -- leaves still hanging on but folded inward, like a lonely soul gone underground; the rusty-colored woolly hairs insulate the leaves from freezing temperatures and prevent water loss.

I do a double-take as I walk past rusty menziesia; for a glimmer, the dried fruits, still on the twigs, appear as flowers against the semi-white background. A mountain ash, full with fruit, stands as if awaiting the Bohemians (waxwings, that is). Where are they? I sit amongst my dormant friends, feeling like one of them, energy reserves on low, shut-down for the winter. The trees that dropped their leaves, by now, have translocated sugars back into their trunks and roots. They stand dormant, while the evergreens and semi-evergreens, crowberry, Labrador-tea, even with their leaves, appear beleaguered. The evergreens have shut-

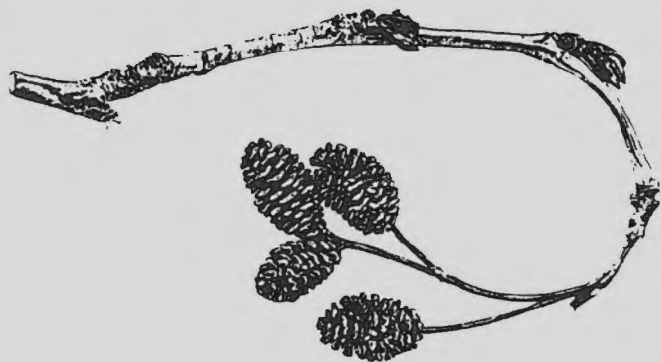
down, too, but translocation of valuable sugars does not take place to the same degree as in deciduous species.



Mountain Ash (*Sorbus* sp.)  
Drawing by Toby Tyler, ANPS Kachemak Chapter

I wonder how these plants will look come spring, given the lack of snow cover this winter. I push away a thin layer of snow and find the flaccid light green leaves of *Pyrola*, or wintergreen. Plants that endure hard winters must be able to survive freezing of their tissues. Ice crystals can form both between and inside the cells, eventually breaking the cells apart. This causes a form of desiccation in the leaf as available water is absorbed into the developing ice crystal. It seems to me, as I lift up the limp leaf, that the lack of snow cover will surely take its toll on *Pyrola*.

The shredded bark of a northern red currant is all I can use to identify this species. No fruits ...hmmm. The highbush cranberry fruits are at eye level and I grab a few and chew on them. A little soggy, but the sweetness still comes through. A boreal chickadee flies above my head and chatters at me. No doubt telling me to keep my grimy hands off its winter food cache. The clubmoss looks vigorous. I have an urge to whisper to it, "Hey, it's wintertime... you're supposed to look a bit more pitiful."



American Green Alder: *Alnus crispa*  
Winter Twig

All around me is bark with long narrow "eyes" -- lenticels; on birch, alder, and sweetgale. "Lenticels," I think to myself. "In a half hour, how could I go from needing a half gallon of milk to lenticels?" What are lenticels? The name is derived from the Latin word *lenticella*, which means "small window." According to my plant physiology text, they are "small openings in the corky tissue (or periderm) covering stems and twigs," and they function in "gaseous exchange." It

goes on to say that transpiration or water loss through lenticels may cause some desiccation in trees that shed their leaves at the onset of winter. Also, during a cold winter when water absorption by the roots is at a minimum, lenticular transpiration may have detrimental effects on a tree or shrub. Unlike stomata, these openings do not possess guard cells to regulate their opening and closing.

I pinch off a sweetgale bud and chew on it. It is hot and spicy, like a mini chili pepper. Male flower spikes leftover from summer fool me. I am daydreaming of summer and the spicy mint-like odor one smells while tromping through bogs. "Oh my gosh . . . I'm daydreaming about summer in December." Then I hold a twig close and scratch and sniff one of the golden resin dots and, suddenly, I'm thinking of Christmas. Better to be thinking of Christmas in December than summer.

Time passes and my reverie and botanical wonderings/wanderings must end. With some sadness, I leave this quiet, little place and head back down the trail. I am not quite ready for humans yet, but have little choice. There are 250 000 of them here. I feel thankful for these trails, the spruce tree I sat at the base of, the sweetness of the high-bush cranberries, the crimson color of the sky. In the midst of human uncertainty, nature never fails to accept my presence, renew and restore me so I can, once again, re-enter "reality," as defined by my own species.

Have a Happy New Year.

## ANNUAL MEMBERSHIP APPLICATION / RENEWAL

The Alaska Native Plant Society was organized in 1982 by an enthusiastic group of amateur and professional botanists. It is a non-profit educational organization with the aim of uniting all persons interested in the flora of Alaska. Membership is open to any interested individual or organization. If you wish to join us, please indicate the category of membership you desire, then clip and mail this application with the appropriate remittance to: Alaska Native Plant Society, Membership Dept., P.O. Box 141613, Anchorage, AK 99514.

Select the membership category you desire:

Full Time Student	[ ] \$5	Name: _____
Senior (over 65)	[ ] \$10	Address: _____
Individual	[ ] \$12	City: _____ State: _____ Zip: _____
Family	[ ] \$18	
Organization	[ ] \$30	Telephone: (Home) _____ (Work) _____

Membership is on a calendar year basis.

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### Borealis

Editors Julia Ricketts  
Trevor Ricketts  
Circulation Martha Hatch

The newsletter of the ANPS is published monthly except for June, July, August and September. Material for the February issue should be mailed to: Julia and Trevor Ricketts, Anchorage, AK 99516 to arrive by January 12.

What Will the Best-dressed People  
of '96 be Wearing?

A L A S K A

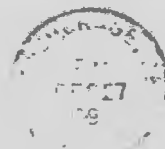


Of course, an ANPS T-shirt! The shirts, jointly designed by Susan Jensen and Verna Pratt, feature favorite wildflowers and berries printed on an ivory background for T-shirts, and on white for sweatshirts. Prices are as follows:

Short-sleeved T-shirt	\$16
Long-sleeved T-shirt	\$20
Sweatshirt	\$25

Shirts are available at Anchorage Chapter meetings or by mail. Postal orders: Please add 10% to cover mailing costs.

Alaska Native Plant Society  
P.O. Box 141613  
Anchorage, AK 99514



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Please take a moment to check your mailing label and make sure that your name, address and your renewal date are correct. If your mailing label says '95,' your dues are due!