

Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

November-December 2004

Join us at our NEXT meeting!

Campbell Creek Center

Monday, November 1, 7:30 p.m.

Topic

"Comparative Ecology of a Rare and Common Primrose in Northwest Alaska"

Speaker

Matt Carlson, Alaska Natural Heritage Program and UAA

November Plant Family Study

**Ophioglossaceae
Adders Tongue (Fern) Family**

Presenter: Marilyn Barker

DECEMBER 6, 2004

Topic

"Spaniards and Vegetable Sheep in the Antipedes"

Speaker

Nic Church, Stepping Softly, LTD

December Plant Family Study

**Ophioglossaceae
Marsh Fern Family**

Presenter: Verna Pratt

A Long, Hot Summer

It was a summer for the record books - day after day of warm, dry, sunny weather throughout the state. We humans adapted well to this unusual weather and some commented that if this was global warming, bring it on! But, other creatures may not adapt quite as quickly and we're starting to notice a number of plant disasters and irregularities.

Verna Pratt shared these observations: "Because of this unusual weather I observed some plant disasters and irregularities. Some evergreen got baked and probably won't recover. Some *Saxifraga tricuspidata* (Bird Ridge) and *Loiseleuria procumbens* (Glen Alps) leaves turned completely brown."

"On a trip to Glen Alps in mid-August I diverted from the Blueberry Loop Trail and ascended Blueberry Hill (the mound in the middle). Often in early September, as *Arctostaphylos alpina* turns red, we see a few spring flowers making an attempt at blooming, but this was mid-August. Many patches of *Diapensia lapponicum* were in full bloom, with practically no leaves visible. *Dryas octopetalla*, *Silene acaulis*, and *Oxytropis nigrescens* were also just beginning to bloom again. I believe the most astounding thing was *Salix arctica* that had already dropped this year's leaves, had new leaves opening up, and covered with new "spring" catkins. I can only wonder what will happen to these plants next spring, as those buds that opened in August should have been next spring's blooms. Perhaps this long warm fall will produce more buds for spring."

University of Alaska ecologist Syndonia "Donie" Bret-Harte, has spent the past 10 summers studying Arctic plants at a research site in Toolik Lake near the North Slope. This summer she found eriophorum blooming twice. "It's a bad strategy for them because they'll lose their seeds to the frost," she said. "Flowers only make one set of buds each year so if they spend next year's buds now, they'll be out of luck next spring." She worries that if the warming trend continues, the flowers may go extinct.

What did you notice? Let us know, and we'll let you know.

An Introduction to Ferns

During monthly meetings this year, we will study the fern families of Alaska. Ferns are a very ancient group of plants: early fern fossils predate the beginning of the Mesozoic era, 360 million years ago. They are older than land animals and far older than the dinosaurs. They were thriving on Earth for two hundred million years before the flowering plants evolved.

As we know them now, most ferns are leafy plants that grow in moist areas under forest canopy. They are "vascular plants" with well-developed internal vein structures that promote the flow of water and nutrients. Unlike the other vascular plants, the flowering plants and conifers, where the adult plant grows immediately from the seed, ferns reproduce from spores and an intermediate plant stage called a gametophyte.

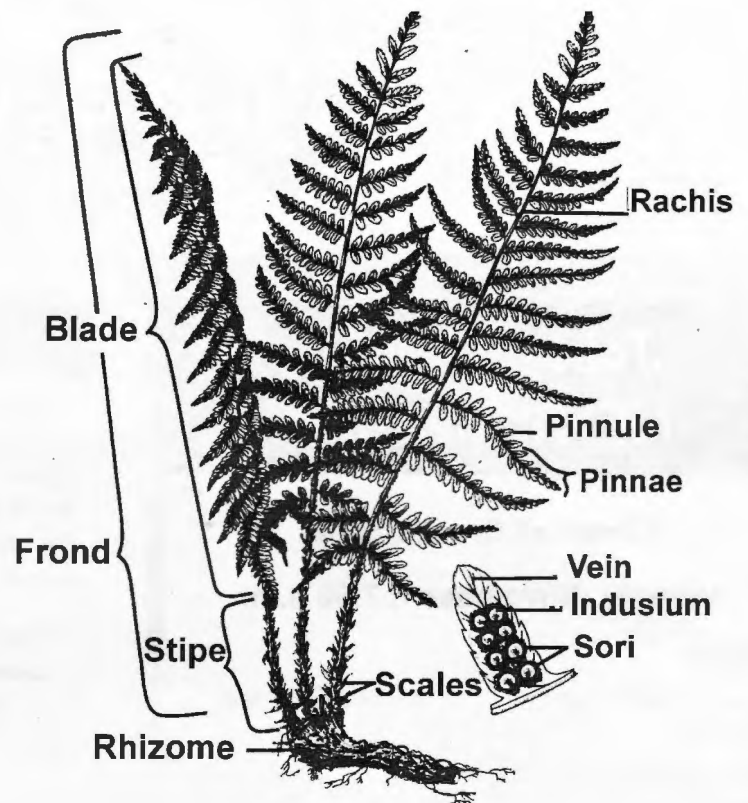
Fern Structure

Ferns are more complicated in structure than most people would suspect. Their structures, though similar in some ways to those of flowering plants are different enough to warrant a distinctive terminology. Although mature ferns consist of roots, stems and leaves, just as other more familiar plants do, their structures are different enough that terms are used to describe the various fern parts.

FronDs ("Leaf")

The **frond** is the part of the fern that we see as we wander through the woods it is the "leaf" of a fern. It is divided into two main parts, the **stipe** (leaf stalk or petiole) and the **blade** (the leafy expanded portion of the frond).

The blade may be undivided to finely cut, each degree of division having a specific term. "Pinnate" blades are divided into leaflets (**pinnae**), with each leaflet narrowly attached to the central stem (called the **rachis** in this leafy part of the frond). Blades more divided are designated as bipinnate or even tripinnate with some divided four or five times. The ultimate division are called **pinnules**. Another type of division is one where the green leafy tissue isn't completely separated from the rachis but rather it



spreads along the rachis, instead. This degree of division is called "pinnatifid".

Rhizomes ("Stems")

The "stem" of a fern is referred to as the rhizome. A fern can be thought of as an erect plant that is lying on its side. The rhizome develops horizontally beneath the surface of the soil. Some rhizomes elevate closer to the surface level of the ground at the tip. The rhizome has a growing tip that produces new fronds. Rhizomes can be comprised of solid, hard wood or of fleshy, soft skin. Within the rhizome is vascular tissue that transports water, minerals, and food. Ferns can have either a short, medium, or long creeping rhizome. The shorter rhizomes have less surface area for fronds, resulting in a cluster of leaves

The rhizome contains the conducting tissues (xylem and phloem) and the strengthening tissues (sclerenchyma fibers). The conducting tissue, known as the vascular bundle, carries the water, minerals, and nutrients throughout the plant.

There are a lot of terms to describe rhizomes but the key definitions are:

erect: In rare cases, the rhizome may protrude from the soil to form a small trunk and is referred to as erect or caudex. The plant has a clear center, with fronds surrounding that point.

erect, branching: While young the plant will be of the form above. Later, branching of the rhizome can lead to two effects. Short branches give a less-centered, more amorphous crown, and the difference between this and the following may not be observable above ground. However, if the branches are longer, the effect is dramatic, as with *Matteuccia struthiopteris*, a classic erect and branching rhizome.

short-creeping: Fronds are generally less than about 1 cm distant, branching is usual, and often unstated. *Blechnum penna-marina* branches almost as often as it throws up a new frond.

long-creeping: Fronds are generally more than 1 cm distant, branching is usual, and often unstated. *Pteridium aquilinum* forms extensive colonies, and is the most cosmopolitan, some would say weediest, of ferns.

Roots

Roots are formed from the rhizomes or sometimes from the stipe. The roots usually do not divide once they

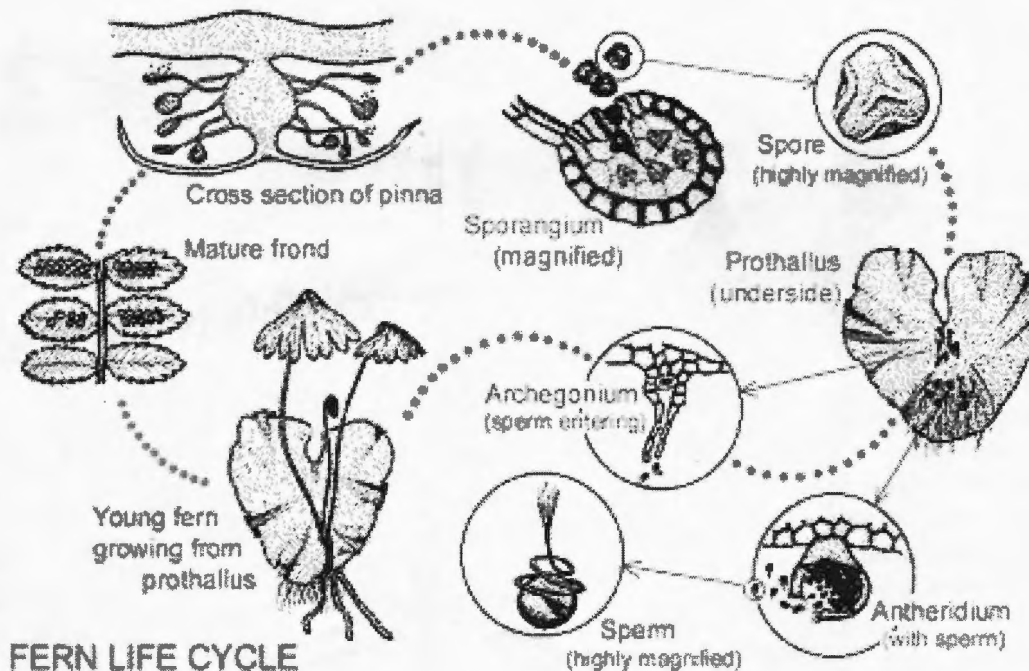
grow from the rhizome. The roots anchor the plant to the ground and absorb water and minerals.

Sporangia

The Sporangia are the reproductive structures of the ferns and fern allies. They are miniature sacks or capsules that produce the dustlike spores that are the "seeds" by which ferns are propagated. Several sporangia grouped together are called a Sorus. The arrangement of sporangia varies greatly in ferns. Most ferns that we would see as we walk through the forest would have their sporangia on the underside of the frond, arranged in an organized pattern usually associated with veins in the pinnule (leaf). Many times (but not always) the ferns provide a protective covering for the Sorus called an Indusium.

Spores

The "seeds" of the ferns and fern allies are called Spores. Normally they are formed in groups of four. Spores contain oil droplets and sometimes chlorophyll in addition to their nucleus. Ferns drop millions, often times billions of spores during their lifetime but very few ever land in a spot suitable for growth.



The Ophioglossaceae/Adder's Tongue or Grape Fern Family

Presenter: Marilyn Barker

THE Ophioglossaceae is an isolated family, not closely allied to other living family of ferns. The family shows some primitive characters, such as large, massive sporangia with high spore capacity. Family members have a high colonizing capacity, and commonly occur in recently glaciated or climatically altered regions.

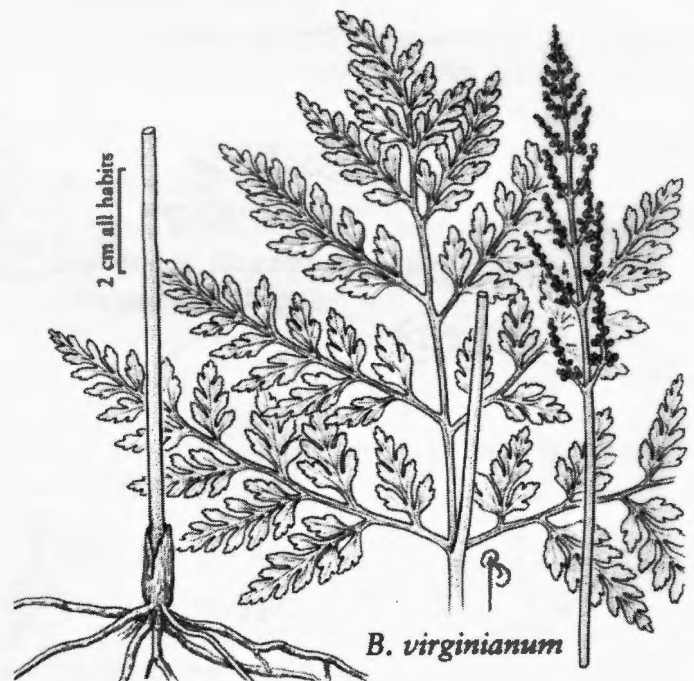
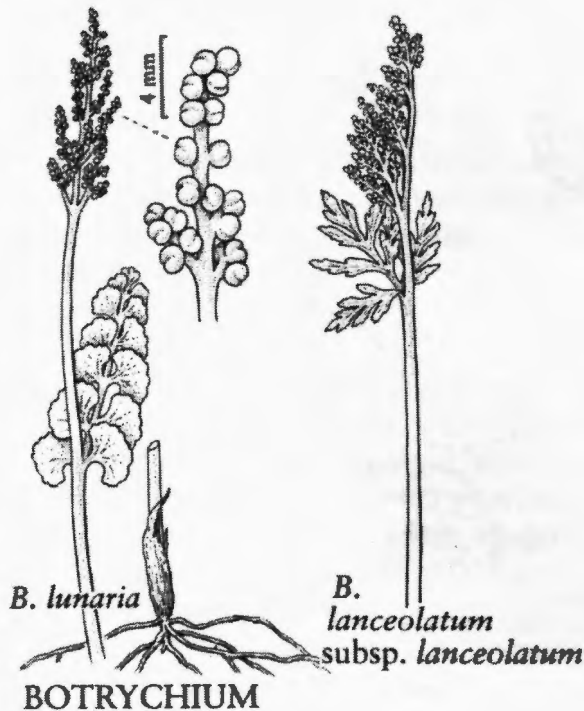
This family of ferns is very unique and easily recognized. Its members can be distinguished by the way the leaves (fronds) develop. Other ferns unroll their new leaves, but the grape ferns open them laterally. Also, the sporangia among the grape ferns are globe-shaped sacks on a stalk or at the base, as opposed to the true ferns with their "dots" on the underside of the leaves. World-wide there are 4 genera and 70 species.

Fronds consisting of a simple or pinnately divided *sterile, slightly fleshy lamina* and a simple or compound, *fertile, linear, stalked spike*. Sporangia are large, thick-walled, dehiscing by a slit into 2 valves.

Botrychium (Grapefern, moonwort, botryche [Latin *botry*, bunch (of grapes), and *-oides*, like; in reference to the sporangial clusters]) is the only genus in Alaska, but it includes five species.

B. lunaria, *B. boreale* and *B. lanceolatum* are usually found in dry open areas. Commonly known as moonworts, they are more common than originally believed, but are often overlooked as they are very small.

B. virginianum is known as the rattlesnake fern and is quite rare. It has a large dissected fleshy, yellowish leaf and sprouts from rhizomes in deciduous woods. *B. multifidum* is also very rare and is known as the leathery grape fern. It also grows on a long rhizome in woods and sandy meadows. Its new leaf is thick and leathery and the past year's leaf is often still present.



The Thelypteridaceae/Marsh Fern Family

Presenter: Verna Pratt

The *Thelypteridaceae* as a family includes those members formerly placed in the genus *Thelypteris*, *sensu lato*. In fact, the entire family was at one time only considered to be a section or two of the genus *Dryopteris* (or *Aspidium*), a group to which it is actually only remotely related. This family includes several complexes of species that are difficult to distinguish, and seem to represent a remarkable evolutionary radiation.

Recent genetic evidence shows that the family is clearly monophyletic. The same genetic studies show that the traditional genus *Phegopteris* is, in fact, a clearly segregate group that diverges at the very base of the family tree.

This family typically has creeping rhizomes, simply pinnate to pinnate-pinnatifid fronds, either no frond dimorphism or only mild dimorphism, either open venation or very simple anastomosing, sori mostly reniform and indusiate, except for the *Phegopteris* group.

THE THELYPTERIDACEAE are characterized by two vascular bundles at the base of each petiole.

SORI are spherical to elongate, and borne on the lower surface of leaves. If an indusium is present, it is reniform.

SPORANGIA are borne in sori, or (rarely) on the leaf tissue. The annulus is vertical, and interrupted by the stalk.

SPORES are homosporous, and lack chlorophyll. They are generally monolete and ellipsoidal, but may be spherical or trilete.

STEMS may be erect, decumbent or long-creeping. Stout to slender, they are usually indurated and bear scales.

PETIOLES lack stipules.

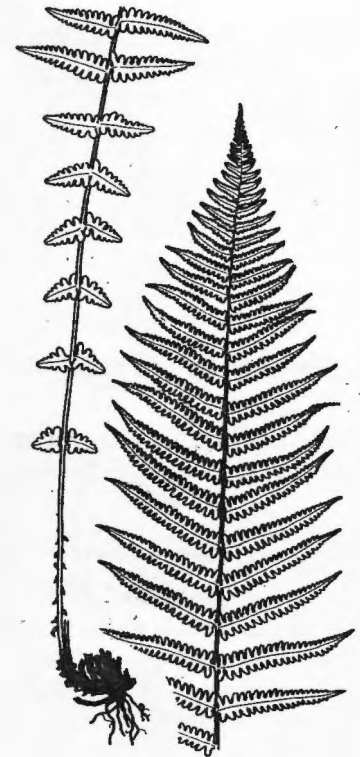
LEAVES are entire, or (usually) pinnate, and range from 10 cm - 5 m in length. They are circinate in bud, and bear trichomes.

THE VASCULAR CYLINDER is dictyostelic.

THE GAMETOPHYTE is epigeal, and photosynthetic. More or less obcordate, it is slightly thickened centrally, and often bears trichomes and/or glands. Archegonia and antheridia are mostly borne centrally on the lower surface.

The family Thelypteridaceae, is represented in Alaska by one genus, *Thelypteris*, with 2 species.

T. limbosperma is 12-30 inches tall, grows on a rhizome, and is found in woods from lowland to sub-alpine in Southeast and coastal Southcentral Alaska. This species is often sterile.



Thelypteris phegopteris is commonly called the Beech fern, and is found on the Aleutian Chain, Southcentral, Southeast and Western Alaska. It grows on a rhizome with leaf blades widely spaced. Leaf blades are 10-15 inches tall, triangular in outline and terminating in a sharp point. The lower pinnae are angled downward. This fern is generally found in low alpine or sub-alpine woods, but is occasionally found in lowlands.

Use this page to RENEW or join ANPS and to VOTE for next year's officers!

ELECTION TIME

Everyone's having elections and the Alaska Native Plant Society is no exception! it is also time to elect the Board of Officers to preside over activities for the coming year..

The nominating committee has submitted the following names. You can vote either by mail or in person at the December 6 meeting in Anchorage. Please indicate your choices and return to Alaska Native Plant Society no later than November 27, in order to be included in the count taken at the December 6 meeting.

Mark the box indicating your vote:

Yes No

	Yes	No
President: Mervin (Andy) Anderson-Smith		
Vice President: Ken Johnson		
Secretary: Cara Wardlaw-Bailey		
Treasurer: Sue Jensen		

MEMBERSHIP APPLICATION/RENEWAL

ANPS membership is based on a calendar-year, so everyone's membership comes due at the end of December. Take advantage of this reminder to renew/join so that you'll always be "in the loop" with ANPS!

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 goal 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, fill in the form below and mail it with the appropriate remittance to:

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

STATUS New RENEWAL
CATEGORY

- Full-time Student \$ 5
 Senior Citizen \$10
 Individual \$12
 Family \$18
 Organization \$30

Name _____

Address _____

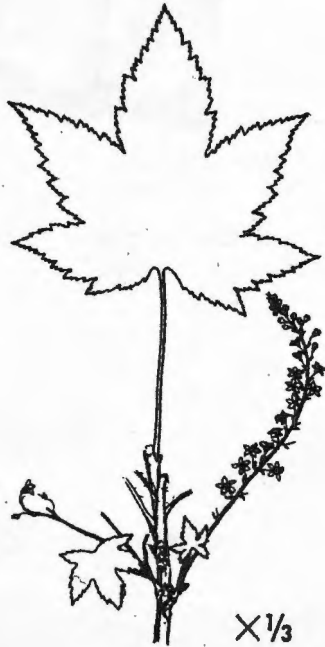
City: _____ State _____ Zip _____

Telephone: (Home) _____ (Work) _____ E-Mail: _____

Membership is on a calendar year basis.



MYSTERY PLANT



This month's mystery plant is a 4 to 6 feet tall shrub, found growing along streams in wooded areas in Southeast Alaska, northwestward to Whittier. It prefers moist to wet locations in low to subalpine elevations. Branches are sometimes weak and sprawling, flowers are small, white and on a long raceme. The grayish, hairy berries have a strong, rather disagreeable taste. The leaves have 5-7 lobes, are toothed and are about 3 to 6 inches across. The whole shrub has a strong skunky aroma.

(ANSWER BELOW)

ALASKA NATIVE PLANT SOCIETY State and Anchorage Chapter Officers

President Leonard Grau
Vice President Connie Kison Keeney
Secretary Cara Wardlaw-Bailey
Treasurer Sue Jensen

Anchorage Chapter Program Coordinators

Main Program Luise Woelflein
Plant Family Verna Pratt
Mini-Botany Marilyn Barker
Field Trips Anjanette Steer

Newsletter ("Borealis")

Editor Ginny Moore

Borealis is published bi-monthly October through May.
Articles may be sent to Ginny Moore,
Anchorage, AK 99516. Phone or FAX:
or E-mail: tgmoore@gci.net



To ALL the field trip leaders who shared
your knowledge and enthusiasm on
outings throughout that glorious summer!

YOU MAKE IT HAPPEN!

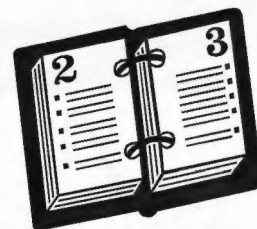
**Mystery Plant
Answer**

Ribes bracteosum
Stinky Gooseberry

Saxifragaceae
Saxifrage Family

UPCOMING PLANT EVENTS

(AND Check Out Our Field Trip Schedule Inside!)



November 1, Monday

Alaska Native Plant Society: 7:30 p.m., Campbell Creek Science Center off 68th and Lake Otis

November 4, Thursday

Anchorage Garden Club meeting, "Bamboo & Grasses Growing in Alaska", a public education program open to all. George Lyle will speak on tips for growing bamboo and grasses. Pioneer schoolhouse, 3rd & Eagle, 7:30 pm – 9 pm.

November 11, Thursday (2nd Thursday)

Alaska Pioneer Fruit Growers, 7:00 - 9:00 p.m. Dan Elliot, President: (

November 11, Thursday (2nd Thursday)

Wildflower Garden Club, 10:00 a.m. Janet Brower:

Voice Mail:

November 15, Monday

Anchorage Master Gardener Association, Invasive Garden Plants, Julie Riley, 7:00 pm, Cooperative Extension Service, 2221 E. Northern Lights,

November 16, Tuesday

Anchorage Garden Club 44th Annual Holiday Flower Show, 7:30 pm – 9 pm, Wells Fargo Bank, C Street and Northern Lights Blvd.

November 20, Saturday

Alaska Rock Garden Society, Board Meeting (10AM) General meeting 11AM in Anchorage. Call Carmel at or check website www.args.org for details and updates.

December 6, Monday (1st Monday)

Alaska Native Plant Society: 7:30 p.m., Campbell Creek Science Center off 68th and Lake Otis

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



ANNUAL VOTE/MEMBERSHIP RENEWAL TIME!! Use form on Page 6 and don't miss a thing!