

Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

February 2007

Join us at our Next Meetings!

Monday, February 5, 7:30 p.m.

(Campbell Creek Science Center)

"The Saxifrage – What's Not To Love?"

Speaker: Verna Pratt

Join Verna as she describes some of the gems of this family she has discovered, including while palling around the Seward Peninsula with British Malcolm McGregor, who wrote *The Book on the saxifrage!*

Plant Family Study

Tetraphidae: Four-Tooth Mosses

Monday, March 5, 7:30 p.m.

(Campbell Creek Science Center)

Speaker: TBA (Back By Popular Demand!)

Plant Family

Polytrichidae: Hair Cap Mosses



**For latest
information on
ANPS events,
check our website
at:**

[http:// AkNPS.org](http://AkNPS.org)

Sunburned Moss?

There has been a dramatic increase in springtime UV radiation levels over the polar regions as a result of holes in the ozone layer. The ozone layer blocks the dangerous UV of the sun. UV rays not only damage or skin, but can cause negative effects on plants and marine ecosystems. Scientists are hoping to find out what protective strategies mosses may have to deal with this change.

All living cells, whether microbes, plants or animals, contain DNA molecules. Unfortunately, DNA, readily absorbs high-energy UV-B radiation and can become damaged so that the genetic code cannot be read properly. Plants also contain the chlorophyll pigment that is so necessary in photosynthesis. Chlorophyll also absorbs UV-B light so that the system becomes bleached and non-functional. Even enzymes and other proteins are damaged by this high-energy radiation. Living organisms therefore have to protect themselves from UV-B. Humans can cover their skin with artificial sunscreens, but natural protection systems have also evolved. Many microbes, plants and other animals synthesize protective pigments. Our skin cells synthesize brown melanin to protect against and so do lichens on rocks near the edge of the polar ice-cap. A variety of sunscreen pigments are produced by organisms on land, in freshwater and in the sea.

Biologists have assumed that mosses are particularly susceptible to UV-B radiation based on their physical makeup: an undifferentiated leaf anatomy that may be only one cell layer thick, lack of the protection of a cuticle; and the dependence on air humidity. In contrast, vascular plants remain physiologically active because of their ability to control leaf water content

Many of the effects of UV-B may not involve damage, per se, but instead be a matter of the plant using this type of radiation as a signal for altering growth form and some physiological processes. One example is the increase in UV-absorbing protective compounds in plant leaves. Various indirect effects of elevated UV-B radiation are receiving attention, including effects of UV-B on decomposition of plant litter, which may influence cycling of nutrients, influence on plant pathogen susceptibility and plant attractiveness to herbivores and pollinators. Many of these indirect effects may be UV-B action mediated through changes in plant structure, secondary chemistry and timing of life cycle events. Nevertheless, these effects may ultimately be the most important on ecosystems.

Tetraphidae: Four-Tooth Mosses

The Tetraphidae is the smallest subclass of mosses, consisting of a single family, the Tetraphidaceae and two genera, *Tetraphis* and *Tetradontium*. *Tetraphis* is comprised of two species, *T. pellucida* and *T. geniculata*. *Tetradontium* has only one species. All 3 species are north temperate in distribution.

Tetraphidae, as their name implies, are unique in having only four large peristome teeth surrounding the opening of the capsule.

Occurring in acid conditions, or neutral pH conditions and acid conditions. *Tetraphis* grows on rotting wood, peat and sandstone rocks, *Tetradontium* is associated with acidic rocks in heavy shade by streams and rivers.

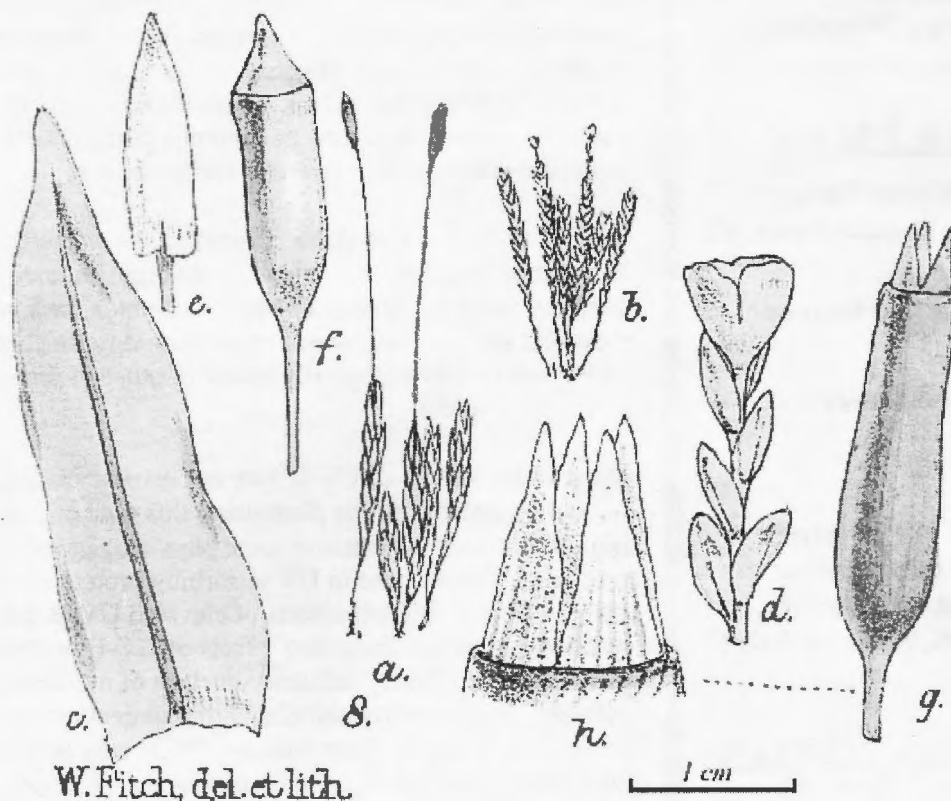
Tetraphis pellucida (four tooth moss) is a very small moss. The sporophytes are small as well

Description—Forms short, dark to pale green turfs of erect, unbranched plants. The peristome (the apical opening of the moss capsule through which spores are shed) is ringed by four peristome teeth (h). This moss seasonally has gemmae or asexual reproductive structures (tiny bits of plant tissue) that grow in a leafy “cup” on top of the stems (d). The cups resemble a miniature bird’s nest with eggs.

Habitat—Usually on well decomposed wood such as logs and stumps, but also on sandstone and soils high in organic matter.

The first shoots to be produced are gemmiferous shoots. They are terminated by a flower-like structure which contains gemmae.

Having trouble with all of these mossy terms? You’ll find many of them in the previous newsletter and you’ll learn even more when you attend the monthly meetings, see some beautiful photos and have all of your questions answered.



Polytrichidae – Hair Cap Mosses

The Polytrichidae family are called the haircap mosses. Haircap mosses are so named because the capsules of many have a distinctive hairy covering and an unusual method of releasing spores. The fibrous covering (calyptra) which protects the developing sporophyte from water loss is present within most genera of the group. When the sporangium matures and the spores are ready to be released, the calyptra falls off so that the spores can be dispersed unimpeded. In some hairy cap mosses the capsule mouth is covered by a delicate membrane. There is a ring of small pores around the periphery of this membrane and the tips of the peristome teeth are attached to this membrane. Movements of the peristome teeth move the membrane in and out, stimulating the release of spores through the pores.

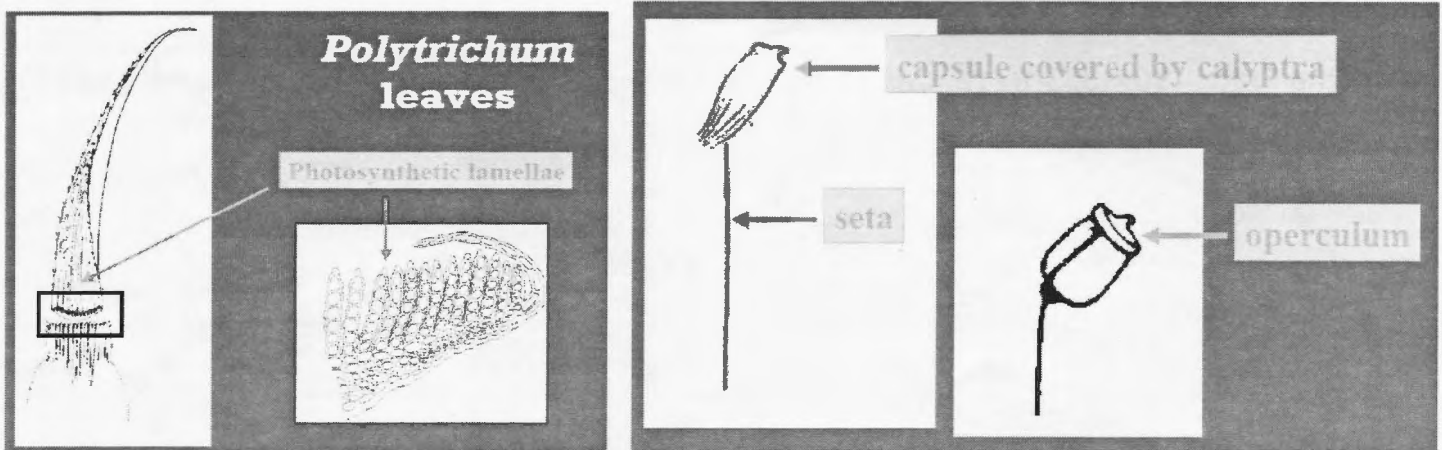
Unlike most other mosses, members of the subclass Polytrichidae have tissue specialized for the transport of water and nutrients (the hydromes and leptomes), analogous to what can be found in ferns, gymnosperms and flowering plants. The presence of conducting tissue allows this group of mosses to be relatively large compared to other mosses, and indeed, the tallest known moss, *Dawsonia superba* of New Zealand, can grow to a height of several feet.

These mosses have erect stems, with narrow and sharply-pointed leaves. Their leaves are complex with the upper surface consisting of several upright walls of cells (lamellae) which are flaps on the leaves that look like the fins on a heat sink. These help it retain moisture. They differ from other mosses in other details of their development and anatomy too, and can also become larger than most other mosses, with e.g. *Polytrichum commune*, Common Haircap Moss, forming cushions up to 40 cm high. The most widely distributed species often may form large tussocks or wide beds.

Looking down on it, the Common Hair Cap Moss has a star shaped appearance because of the pointed leaves arranged spirally at right angles around a stiff stem. Like other mosses, it is generally a dark green color and doesn't grow very tall. Growing like a lush green carpet, the average life span of this moss is three to five years, although ten has been recorded, and even dead the moss remains intact, and up the lower portion of this organism.

Living all over the world both in the wild and as decorative ground coverings in personal gardens Common Hair Cap Moss is easy to find. Preferring to live in lightly shaded areas with moist slightly acidic soil, it can also survive in areas of full sunlight provided the soil is moist. The Common Hair Cap Moss can also grow in areas of poor soil and slow drainage. These characteristics make this moss a good plant for all types of gardens and gardeners. In gardens of Japan, where mosses are used commonly, the Common Hair Cap Moss is used more than all other species combined. In the wild it grows in many places, from granite outcrops to the coastal plain to the banks of ponds or lakes.

Juniper haircap moss (*Polytrichum juniperinum*) is a botanical citizen of the world, occurring on every major continent (including Antarctica!).



CALLING FOR FIELD TRIPS

It's that time of year again - time to "Think Summer" - as in "Field Trips"!

It is time to start planning this summer's field trips so that all members can arrange their own summer plans accordingly, especially if trips require extra time or money, or a limit on how many can attend. Our outings are ALWAYS fun, no matter what size the group, or whatever the weather. There have been many memorable trips. Let's make this a memorable year.

On the next page you'll find the standard Field Trip Planning Worksheet and once again we're asking you to get all excited about taking a group of plant lovers to one of your favorite places to enjoy the summer bounty.

All members are encouraged to submit field trip proposals. Preliminary proposals for field trips should include the following: 1) your name and email address, 2) title of the field trip, 3) name(s) and contact information for all organizers, 4) a brief description of the field trip, 5) preferred day(s) of the field trip, 6) special needs, 7) enrollment limit and 8) tentative budget (e.g., travel and food items; estimated cost per participant). It would be great if we could have the whole slate of summer activities lined up by the end of April!

FIELD TRIP TO SEWARD PENINSULA/NOME - June 27-June 30

The early bird gets the first worm, and maybe even an extraordinary field trip! Frank and Verna Pratt have already started planning a special trip to Nome and the Seward Peninsula, Wednesday, June 27 through Saturday, June 30 (returning on July 1). Five rooms have already been reserved at the Nugget Inn in Nome, but you'll have to hurry because there aren't many rooms available in high season. At the Nugget Inn, a room with a Queen-sized bed will be \$109.00, (including tax), and a room with two twin-sized beds costs \$130 (including tax). The rooms are small so there is no room for cots/extra persons. The schedule will allow for 3 full days to explore the three roads out of Nome and two half days to explore Anvil Mountain, visible from downtown Nome) and the town itself. This area is fabulous floriferous tundra with many unique plants. Participants are responsible for getting themselves to Nome, for their daily food and lodging, and for a share of the cost of the rental van.

Leader: Verna Pratt;

Call to reserve your spot. We need to know by March 31.



ALASKA NATIVE PLANT SOCIETY

2006 FIELD TRIP PLANNING WORKSHEET

Return this form to: Anjanette Steer E-mail: sheepmtl@ak.net, Tel:
Mail: HC 03 Box 8490, Palmer, Alaska 99645

Leader: _____

Telephone: _____ FAX: _____ E-Mail: _____

Field Trip to: _____

Date: _____ Day of Week: _____ Time Allotted: _____

Meeting Time: _____ Meeting Place: _____

Driving Distance/Car Pooling, etc. _____

Reservations by (date): _____

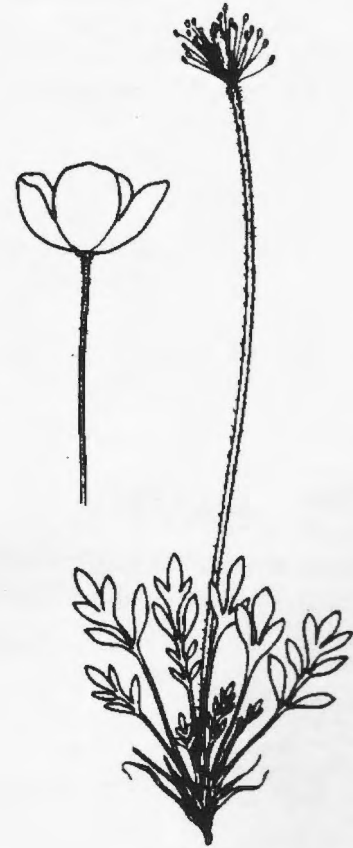
Level of Difficulty _____ Minimum Age: _____

Description of Trip: _____

Special Instructions: _____

MYSTERY PLANT

Many people are puzzled over the identification of native poppies. Identification keys and descriptions are sometimes confusing even though the specific characteristics are there. Perhaps much of the reason for puzzlement is that there are a lot of *usually's* involved. If you put them all together, though, it really isn't difficult to tell the two large flowered, light lemon colored species apart. Be sure to take into consideration that irregularities, hybridization, soil and latitude can easily alter things. This poppy can be found on moist arctic or alpine tundra in eastern, central, northern and northwestern Alaska. It *usually* has flowers that are about 2 inches across, its height is *usually* about 6-8 inches. The seed capsule is *usually* tall and slender with 4-5 stigmatic rays. The plant is loosely caespitose with just a few slightly hairy lobed leaves. Do you know which Alaskan poppy this is?



Garden Literature Index

Alaska Botanical Garden members can now search over 300 gardening and horticulture journals online thanks to a special donor contribution. This database provides popular, practical, scholarly and R&D literature on gardening and horticulture in one place.

Just go to Garden Literature Index and enter the EBSCO username and password printed in your fall ABG newsletter *Gardens North*. The URL for this website is <http://search.epnet.com/login/asp?authtype=uid>

The Garden Literature Index (GLI) is made available through the EBSCOhost Research Databases. It indexes and abstracts over 300 journals on gardening, horticulture, landscape design, botany, ecology, plant conservation, garden management, and horticultural therapy, with a special emphasis on environmentally sustainable gardening practices. Its target audience ranges from gardening enthusiasts to horticulture students to professional landscape designers. Most titles are in English and include, among many others, *Agroforestry Systems*, *American Horticulturist*, *Better Homes & Gardens*, *Biodiversity & Conservation*, *Carolina Gardener*, *Community Gardener*, *Ecological Landscaper*, *Gardener for the Prairies*, *Journal of Environmental Horticulture*, *Journal of the Bromeliad Society*, *Martha Stewart Living*, *PlantAmnesty*, *Southern California Gardener*, and *Wildflower: Journal of the National Wildflower Research Center*.

HOW DOES IT WORK? GLI uses the well-designed and effective EBSCOhost interface, with its Basic Search (a straightforward Find box), along with the Advanced Search and its power to limit results to Full Text, by dates, authors, and certain publications, with Expanders to search for related words within the full text and Boolean operators.

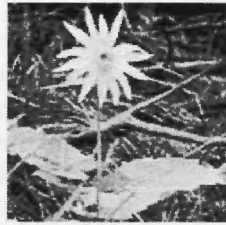
Heartleaf Arnica
(*Arnica cordifolia*)

Did you know? In alpine areas or in open places along roads,, leaves may be narrower and without the notch at the base blade. All western species have paired leaves on the this one has heart-shaped leaves.

The heartleaf arnica has stems with 2-4 pairs of heart-shaped leaves that are topped by 1-3 broad yellow heads. This plant flowers from April to June, occasionally flowering to September.

Did you know? In alpine areas or in open places along roads, the leaves may be narrower and without the notch at the base of the blade. All western species have paired leaves on the stems, but only this one has heart-shaped leaves

The National Wildlife Federation lists Heartleaf as one of the "Top 10 Native Plants of Alaska" – check out the others at <http://www.nwf.org/backyard/alaska.cfm>



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Mystery Plant Answer

Macoun's Poppy
Papaver Macounii
Papaveracea/Poppy Family

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



To guest speakers, plant family leaders, and mini-botany speakers, as well as those who do the behind-the-scenes coordinating.

YOU MAKE IT HAPPEN!

Want to participate more? Don't hesitate to "raise your hand" and make an offer - you won't be turned down! We need the support of everyone!

SAXIFRAGE – Arctic Belly Flowers!

Saxifrage. Like many arctic plants, saxifrage grows low to the ground, where it absorbs heat radiated from the soil in the summer and is protected from winds and wind-borne ice by a blanket of snow in the winter. If you really want to enjoy these tiny plants, it's best to get down on your belly first!



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

- | | | |
|--------------------------|-------------------|------|
| <input type="checkbox"/> | Full-time Student | \$ 5 |
| <input type="checkbox"/> | Senior Citizen | \$10 |
| <input type="checkbox"/> | Individual | \$12 |
| <input type="checkbox"/> | Family | \$18 |
| <input type="checkbox"/> | Organization | \$30 |

Name _____

Address _____

City: _____ State _____ Zip _____

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

Membership is on a calendar year basis.

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Anchorage, AK 99514**



Membership is on a calendar-year basis - it is time to renew!