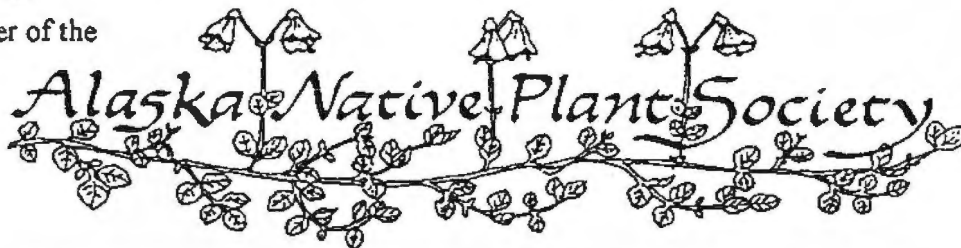


Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

December/January 2007/2008

Join us at our Next Meetings!

Monday, December 3, 7:30 p.m.

(Campbell Creek Science Center)

Topic: "Wildflowers of the Seward Peninsula"

Speaker: Anjanette Steer

Plant Family

Balsaminaceae: Forget-Me-Not

Presenter: Stan Vlahovich

Monday, January 7, 7:30 p.m.

(Campbell Creek Science Center)

To Be Announced

Plant Family

Empetraceae: Crowberry Family

Presenter: Gary Rasmussen



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

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

Animals & Tundra Meals

PART I: Caribou May Find Calcium-Rich Tundra Hits the Spot - By Ned Rozell

To the plant eaters of Alaska's North Slope, all tundra does not taste the same. Animals that survive on tundra plants may prefer tundra rich in calcium and other nutrients, a type of tundra researchers recently studied along with a more common variety on Alaska's North Slope. The difference between tundras may explain why caribou and other animals tend to stick to the coastal plain. It may also explain why some scientists are rethinking the relationship between tundra and greenhouse gases.

Skip Walker is among the scientists studying the tundra covering Alaska's North Slope. Walker, of the University of Colorado in Boulder, was in Fairbanks recently for the American Association for the Advancement of Science conference. He described two distinct types of tundra found on the North Slope-acidic tundra and calcium-rich tundra. Along with other researchers, including Terry Chapin and Chien-Lu Ping of the University of Alaska Fairbanks, Walker found the two types of tundra have distinct boundaries.

The acidic tundra, generally with a pH of 5.5 or lower, was found predominately to the south of the arctic coastal plain in the foothills of the Brooks Range. Walker said this acidic tundra is made up of cottongrass, thick carpets of moss, and tussocks that make walking less than pleasant. This type of tundra is often greener than other varieties because it contains an abundance of willow and birch shrubs.

The calcium-rich tundra of the coastal plain has a plant makeup that's quite different from the acid-rich tundra. Calcium rich-tundra has less moss and shrubs, but a larger variety of plants--twice the number of plants per square hundred meters than acidic tundra. With more plant variety comes a dramatic increase in nutrients, and the animals seem to notice. (Continued on page2)

Caribou and Tundra (cont from page 1)

Musk oxen feed primarily in areas with calcium-rich tundra. Barren-ground grizzlies come out of hibernation and gorge on the calcium-rich tundra plants. All three of Alaska's major caribou herds spend much of their time foraging and calving on tundra of the calcium-rich variety. The minerals they get from the tundra may help develop their bones, antlers, and milk, Walker said. Even the smaller animals--voles, lemmings and ground squirrels--seem to prefer living in the calcium-rich tundra, perhaps because many plants that make up acidic tundra have chemicals that make them bitter and harder to digest.

Although animals are attracted to calcium-rich tundra, it may be on the way out, if the Arctic warms due to global climate change, Walker said. A warmer, wetter Arctic favors the growth of acidic tundra, which may creep down from the foothills of the Brooks Range to change the character of the coastal plain. A change in tundra types also could affect the release and uptake of carbon dioxide. The scientists found that acid-rich tundra takes up more than twice the carbon dioxide and contains twice as much carbon in a cubic meter of soil than calcium-rich tundra.

That finding leads some scientists to believe that a warming Arctic may cause less of a release of carbon dioxide than was previously thought. More acidic tundra on the North Slope could act as a carbon "sink" rather than a carbon source.

This article is provided as a public service by the Geophysical Institute, University of Alaska Fairbanks, in cooperation with the UAF research community. Ned Rozell is a science writer at the institute.

Part 2: Pikas Store Their Food

As scientists have learned from the pika, collecting and storing food for winter can be a surprisingly complicated chore. A small high-altitude mammal that most literally "makes hay while the sun shines" is the Collared Pika (*Ochotona collaris*). These unique animals inhabit the rocky talus slopes of mountains in central and southern Alaska and are the northern representatives of a genus that is distributed throughout the Rocky Mountains, Cascade ranges and California. The pika is the smallest of the lagomorphs, a taxonomic group that includes hares and rabbits. In some places pika are commonly called "rock rabbits" or "little chief hare."

At first glance, which is about all one gets of them dashing about in the wild, they appear to be more closely

related to guinea pigs than rabbits. They are small robust mammals with short ears, short legs, and no external tail. The hind feet are not much longer than the front feet and their heads look elongated. They are about 7 inches long and 3 inches high and have a pelage like that of hares and rabbits. Unlike the marmot, another small mountain mammal with a whistle-like call, the pika doesn't hibernate. Because they do not hibernate, they must store food for winter. They dash back and forth between the talus slopes and the meadows where they forage, returning each time to their hay piles near the center of their territories with mouthfuls of flowers and grasses. In the meadows, pikas literally mow down plants, turning their heads to the side to bite off stems as close to the ground as possible.

They engage in two distinctly different types of foraging behavior: haying (collecting food for storage) and grazing (eating on the spot). Studies suggest that they divide their trips about equally between the two activities but found that haymakers tend to harvest stalks, leaves and blossoms of flowers, while grazers tend to munch on grasses (perhaps, as folks who mow their lawns know, because grass is a constant renewable resource). Pikas tend to select plants in a definite sequence through a season. They will select for nutritional value, harvesting plants with relatively high caloric protein or fat content. Also, during the flowering season, some plants, such as columbine, protect their leaves and stems with poisonous chemicals, but later in the summer the plant stores the toxins in its root system. That way, the plant doesn't have to go to the effort to remanufacture the toxins in the spring - when the seasonal growth once again is vulnerable to haying pikas.

Consequently, these plants get passed by in their early flowering stage but will likely be harvested later, after the toxins recede back into the roots by the haying pikas. The haystacks may contain as much as a bushel of vegetation, cached under an overhanging rock to protect it from rain and snow. One study found that pikas choose some plants that inhibit bacterial growth and act as a hay-pile preservative. Pikas preferentially hayed Alpine avens, a species toxic to pikas, apparently the plants preserve the hay piles, then the pikas later consume the avens after the toxic chemicals degrade. Hay piles are not only critical for pika's winter survival, they also enable the pikas to reproduce when their alpine meadows are still snow-covered.

From: Denali Education Center website: Natural History Notes: "Pika - Discover the fascinating world of these "Rock Rabbits". www.denali.org

Balsaminaceae –The Balsam Family

Balsaminaceae (commonly known as the balsam family) is a family of dicotyledonous plants, comprising two genera and 850+ species of which all but one belong to *Impatiens*. The flowering plants may be annual or perennial and are found throughout temperate and tropical regions. Only 2 species are native to North America.

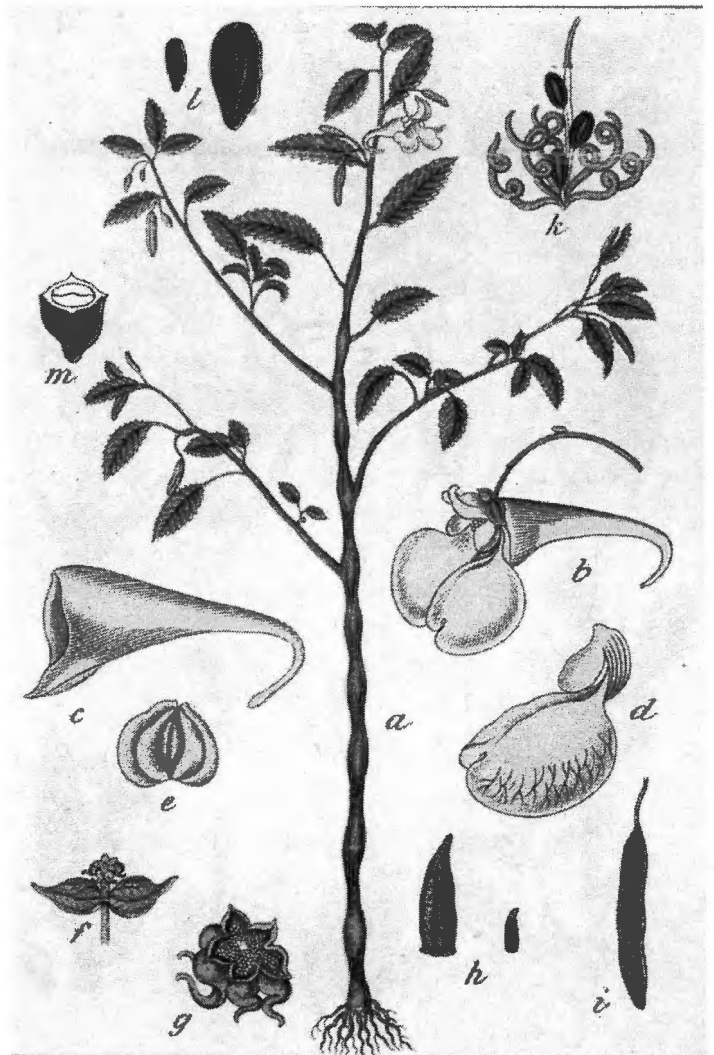
Impatiens noli-tangere (Touch-me-not Balsam) is the only native species of this family found in Alaska. It is an annual herbaceous plant found in damp shady areas and stream banks, ranging from central and western Alaska to south-central and the Panhandle. It also ranges through British Columbia and into northwest Washington.

Impatiens noli-tangere has a glabrous erect stem, alternate oblong leaves, that are coarsely serrate, and bright yellow flowers with small brown spots. The 3 sepals are of unequal size, the lowest one forming a spur. There 5 petals, two of which are united plus 5 stamens. The ovary, positioned superior, consists of 5 united carpels forming an equal number of chambers. The flowers are followed by pods which forcefully explode when ripe, ejecting the seeds for some distance, giving it the common name of “Touch-Me-Not”. It is also called Yellow Balsam, Jewelweed or Wild Balsam.

This native could be confused with the ornamental jewelweed, *Impatiens glandulifera* Royle, which is native to the Himalayan region of Asia, and is considered an invasive species here. Recent research by German botanists has shown that the popular garden plant competes successfully with native riverbank species for pollinators like bumblebees, reducing seed set in these other plants.

This success may be attributed to its abundant nectar production. In Alaska, patches of ornamental jewelweed have been found outside of cultivation in Juneau and Anchorage, and an acre-sized infestation was documented in a beach meadow in Haines in 2004. Our native Jewelweed can be distinguished from the exotic species by its yellow flowers, more coarsely serrated teeth on its leaf margins, and much smaller size.

According to Janice Schofield’s “Discovering Wild Plants”, the greens of this wild “touch-me-not” make a good cooked vegetable, and the seeds can be nibbled raw or cooked, in small quantities. It is also a good itch-relieving treatment for nettles and cow parsnip rashes. Other traditional uses are treating athlete’s foot, warts and rignworm. It makes a good hair rinse and skin-soothing bath soak. The whole plant is used as a source of yellow dye for wool.



Empetraceae –The Crowberry Family

Empetraceae (the crowberry family) includes three genera and about five species and is widespread in the colder parts of the Northern Hemisphere, southern South America, and the coastal plain of the southeastern United States. Members are low evergreen heath-like shrubs; leaves small, narrow, margins revolute, channeled underneath; flowers small, axillary or in terminal heads; sepals 3, petals 2 or 3 or none; stamens 3; style short; fruit a berry-like drupe.

In Alaska, there is found only one genus, *Empetrum nigrum*. The botanical name, *Empetrum*, is derived from the Green *en* (upon) and *petros* (rock). *Nigrum* means black. This black-fruited plant is often found in rocky soil.

Two subspecies, *E. nigrum nigrum*, and *E. Nigrum hermaphroditu*, may be found. The main difference is that in *E. nigrum hermaphroditum* the flowers are bisexual, the leaves are somewhat shorter and broader, and the fruit and seeds are generally larger. Both plants generally grow to about 6 inches high, with trailing woody stems that may extend 2 feet in length; fruits are blue-black with several seeds; the evergreen leaves are narrow and needlelike, edges roll back and meet; and flowers are practically inconspicuous. Since the fruits are persistent into the winter, they are an important food source for birds, bears, and pikas. Although they are one of the most popular berries used by Arctic natives, they are often considered tasteless by others. They are much more interesting when cooked and used in deserts, cordials, juices and jellies!

Empetrum leaves and litter have high phenolic content resulting in their slow decomposition, and with the formation of an organic top soil, nutrients are kept in an organic nutrient bank in the soil mainly available for plants with ericoid mycorrhiza. *Empetrum nigrum* ssp. *hermaphroditum* is a strong nutrient competitor and outcompetes most plants in late successional stages. This is due to chemical interference (allelopathy) and resource competition. Crowberry as an organism is resistant to atmospheric pollution and may even increase in vigor by high atmospheric nitrogen deposition in coastal heaths, but is very sensitive to mechanical disturbances and fire. However, there are indications that the closed nutrient cycle established when *Empetrum* is dominant may be disturbed after airborne inputs of inorganic nitrogen.



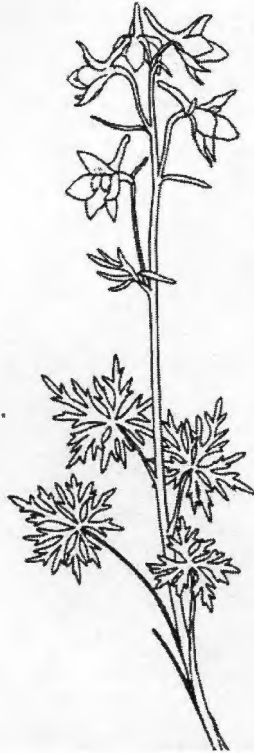
NOTE: Recent genetic research by the Angiosperm Phylogeny Group has resulted in the inclusion of the formerly recognised families Empetraceae, Epacridaceae, Monotropaceae, Prionotaceae and Pyrolaceae into Ericaceae.

MYSTERY PLANT

The mystery plant this month looks suspiciously like horticulture species that many of us grow in our gardens. It grows to a height of two feet in meadows, but is often less than 12 inches when growing in scree.

The 5-parted calyx has a long spur, is pubescent on the outside and bright blue to purplish depending upon habitats. The petals are usually whitish and small. The leaves are 3-parted, lobed and deeply cut, nearly to the middle and divided again.

It grows in the mountains in the Brooks Range, Seward Peninsula, Alaska Range in Interior Alaska, Eastern Russia, Japan and isolated areas of northern Europe.



Get Ready for the....

SEED EXCHANGE!!!

For many years the Alaska Native Plant Society has operated a native seed exchange, to make native plant seed available to members at nominal cost. Seeds are contributed predominantly from ANPS members' gardens, but some donations are wild collected. Once seed is sent to us we endeavor to store it appropriately (e.g. moist medium for hydrophilic seed, refrigeration at the appropriate time). We are only able to do this after the seed is mailed to us.

It is not our intention to generate revenue from the seed exchange, but simply to cover the costs of packaging and mailing.

The list of available seed will be mailed to members with the Feb/March edition of our newsletter. We will respond to timely requests by April 15, 2008.

Please help Alaskan flora to flourish by growing locally native plants in your own garden and offering some of their seed to our Exchange.

Seeds should be sent to ANPS, P.O. Box, by January 1st, 2008

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Newsletter ("*Borealis*")

Editor	Ginny Moore
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FAX:

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

MYSTERY
PLANT
ANSWER
Delphinium
brachycentrum
Dwarf Larkspur
Ranunculaceae/
Buttercup Family



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!

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

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- Full-time Student \$ 5
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Membership is on a calendar year basis.

Membership is on a calendar year basis. It is time to renew!



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