

Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

MAY 1999

JOIN US AT OUR APRIL MEETING

Monday, May 3, 7:30 pm
at the Campbell Creek Center
off 68th and Lake Otis

**Topic: *Landscape and Vegetation
Management on Fort Richardson***

Presenter: Terry Schick

The U.S. Army has established a land condition monitoring and maintenance program for the training areas on Fort Richardson (and Forts Wainwright and Greely). The goal is to manage the land for both military training and the conservation of natural resources. Some of the results of this work at Fort Richardson will be presented.

PLANT STUDIES



Presenter:
Susan Klein
Castilleja spp.
Scrophulariaceae
/Figwort Family

Climate Change on the Kenai Peninsula

At the recent Alaska Rare Plant Forum held in Anchorage, Ed Berg, an ecologist with USFWS on the Kenai National Wildlife Refuge, offered a summary of recent observations about climate change on the Kenai Peninsula, and with special attention to the Kenai National Wildlife Refuge. For more information, or a full copy of the summary, contact Ed (e-mail: edward_berg@fws.gov).

Climate change on the Kenai Peninsula differs in some dramatic respects from the Interior, because the Peninsula has virtually no permafrost. Melting permafrost in the Interior is producing visibly striking thermokarst on a landscape scale and there is abundant water on the poorly drained land surface. The Kenai Peninsula presumably went through this phase at some point in the last ten thousand years since deglaciation, and is now in a much drier mode. Wetland drying may thus be one of the most visible expressions of future climate warming on the Peninsula.

- 1) **Rapid glacial retreat:** Glacier fronts have generally been receding since the end of the Little Ice Age in the 1860's. Aerial photographs of the Harding Icefield in the Kenai Mountains found 5% loss of ice area between 1950 and 1985; another study reported a 70 feet reduction in the thickness of the Harding Icefield between the early 1950's and mid 1990's.
- 2) **Rising treeline.** Sitka and white spruce on the flanks of the Kenai Mountains show a strong upslope gradient to younger trees. Ring-widths of these trees do not show a strong correlation with local temperature records, indicating that the trees are not stressed for temperature and that they could grow at still higher elevations. Physiological treeline thus appears to be advancing so rapidly that the trees have not kept up with it

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Furthermore, this process appears to be unidirectional: there are no old dead trees at treeline that might suggest that treeline has temporarily receded at some point in the past. This unidirectional character of all climate-driven processes on the Kenai is quite striking, and suggests that this climate change is a long-term trend and not an oscillating process.

3) **Wetland drying.**

- a) **Kettle pond disappearance.** Kettle holes left by foundered blocks of ice during retreat of the glaciers about 10,000 years ago became water-filled ponds, and can be seen dotting aerial photos since 1950. Today many have become grassy pans. They do not appear to have been water-filled in recent years, and would no longer be mapped as wetlands.
- b) **Spruce invasion of wetlands.**
- c) **Spruce invasion of muskegs.**
- d) **Falling lake levels.** Over the past 5 years, water levels have fallen drastically in many lakes on the Kenai lowland. Residential boat docks can be seen which no longer reach the water.

4) **Strongly increasing temperatures at the Kenai and Homer meteorological stations.** Kenai records a 2.9°F/50y increase in mean annual temperature since the mid-1940s and Homer records a 3.9°F/50y increase in the same period. Summer degree-days (>60°F) likewise increased 56 deg-day/50y in Kenai and 86 deg-day/50y in Homer. Much of this increase occurs in warmer Decembers and Januarys, but summer temperatures are up too.

5) **Treeline chronologies.** A recently prepared 290 chronology of hemlock trees growing on a north-facing slope at treeline on the Skyline Trail found that hemlock ring widths correlated best with growing season temperatures (May-July). Growing season temps at this site have increased from a low of ~47°F in the 1810s to the present ~50°F. Like the stock market, this chronology has many local ups and downs, but the long-term trend at this treeline site is clearly upward, with ~3°F in 200 years.

6) **Drought stressed trees and spruce bark beetles.** Many of the larger white/Lutz/Sitka spruce in mature stands show substantial narrowing of the annual rings in recent decades. Slow growing spruce trees are

especially vulnerable to bark beetle attack. Part of this narrowing is due to increased canopy competition as the stands have matured. Part of it, however, may be due to drought stress, which is a potentially greater problem for large trees than small trees.

Spruce bark beetle outbreaks have followed two recent periods of multi-year warm weather drought stress (1968-69 and 1989-97). We also have substantial tree-ring evidence of regional beetle outbreaks in the 1800s. In these two cases the beetle outbreaks occurred after a cool period, rather than a warm period. Probably the key variable here is drought rather than temperature. Warm summers can certainly create drought stressed trees, but low annual precipitation can also create drought stress. We are hoping to study this problem by preparing a chronology of stable carbon isotopes (C-13/C-12) in tree rings, which should be a better measure of drought stress than ring widths.

ALASKA NATIVE PLANT SOCIETY

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Newsletter ("*Borealis*")

Editor	Ginny Moore
Circulation	Martha Hatch

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CASTILLEJA

Scrophulariaceae/Figwort Family



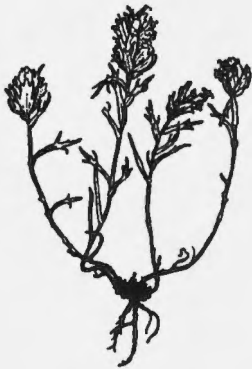
When paintbrushes/Castillejas are mentioned, most people immediately think of *Castilleja miniata*, the Indian Paintbrush. This bright-colored plant is featured in many books and photos showing alpine meadows as it paints the landscape with its red to orange colored bracts. Unfortunately, it is only found in the extreme southern portion of SE Alaska. There are, however, nine other species found throughout the state, some just as colorful but not often seen.

The brightly colored “flowers” of Castillejas are actually modified leaves enveloping the inconspicuous, green true flowers.

Castilleja parviflora is probably the most colorful, but occurs mostly in SE Alaska and up to about Valdez. The meadows around alpine lakes above Haines and Skagway can be magnificent with this tall bright pink species.



The only other bright-colored species is *Castilleja elegans*, a much shorter pink variety found in the Alaska Range and north and west of the Brooks Range. Most species have yellow or whitish bracts possibly tinged with pink or maroon. The flowers on these plants are very inconspicuous and tucked down in amongst the colorful bracts.



The most common Castilleja in Interior Alaska is probably *C. caudata* and the most common species in S. Central Alaska is *C. unalaschensis*, which is shown to the left.

These plants seem to be reliant upon other plants in the area for some of their nourishment and survival without a host plant seems nearly impossible. There does not seem to be any particular plant involved but members of the daisy and grass families seem to be the most common host plants. In recent years it has been suggested that perhaps all these plants are searching for is additional nitrogen.

Castillejas are found in a variety of soil conditions from rich humusy woodlands and meadows to gravelly roadsides and coastal areas.

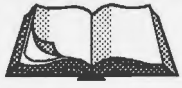
All drawings are from Hulten, Eric: Flora of Alaska and Neighboring Territories

Mystery Plant

by Verna Pratt

The mystery plant this month is an annual weed/an introduced plant. It was chosen because frequently people question what this tall orchid is that they suddenly found growing in their yard or along the edge of a farming area. Actually it is a member of the Mint/Lamiaceae family but the small flowers look a bit like an orchid or possibly a member of the figwort family. Typical of the mint family, the toothed leaves are opposite each other on the 10-24 inch square and hairy stems. The small pinkish-lavender flowers are clustered in close to the main stem. Do you have this species in your back yard. If so you won't care for the feel of the still irritating hairs.

Macrolichens of the Pacific Northwest



By Bruce McCune & Linda Geiser
A co-publication with the U.S.D.A.
Forest Service

A key component in healthy ecosystems, lichens can be found in almost any natural habitat in the Pacific Northwest. This first comprehensive guide to the region's macrolichens includes keys to 92 genera and 495 species – all those known or expected to occur in Oregon and Washington. The keys provide reasonable coverage from the coast inland to the Continental Divide. Exquisite color photographs, line drawings, and full-age detailed descriptions are provided for over 200 species, emphasizing those found in forested ecosystems. The illustrated glossary and appendices cover the terminology needed to identify lichens and provide information on collection and handling. The biology and ecology of lichens are discussed, and regional air quality sensitivities are provided for more than 100 species.

Macrolichens of the Pacific Northwest is intended for use by beginners as well as specialists; weekend naturalists will be able to identify specimens and recognize the great diversity of lichens, while lichenologists and mycologists will gain greater knowledge of the distribution and abundance of various species.

Macrolichens of the Pacific Northwest (paperback, \$29.95; 400 pages; ISBN 0-87071-3949) is available in bookstores and libraries or can be ordered directly from the Oregon State University Press. (541)737-3166.

Alaskan Moss Makes The "Red List"



An Alaskan moss is on the "Red List" Of Most Endangered Bryophytes (mosses and liverworts). *Takakia ceratophyllum*), with a distribution in Sikkin, Nepal, Tibet, and the Aleutian Islands, is found primarily on shaded, dampish cliff and very wet ground with late snow cover. Its population range is highly fragmented and unstable. Habitats threatened by human activities. The genus has a unique combination of characters of mosses and hepatics. A distinct subclass of Class Musci.

The official list of world's most endangered bryophytes was first published by IAB/TUCN in 1994, with the purpose of generating publicity to promote Bryophyte conservation on a worldwide basis. The 3 criteria used in selection of a species for the current red list are 1) the species must be threatened on a world-wide scale; 2) the species must be confined to a threatened habitat; and 3) the species should be narrowly distributed and not due to under-collection in the area. A 4th criterion gives priority to those species that possess a unique morphology/biology among bryophytes, or occupy a special position in the evolution of bryophytes.

Requests for Plant Material

(see also <http://www.uaf.edu/museum/herb/requests.html>)

1. *Carex flava* and related taxa:

As part of my project I am trying to acquire live plant material from as wide a range of localities as possible. I would like a minimum of twenty individuals per population, map ref. And as much ecological information about the site as possible. I would therefore be grateful if you could collect some samples of the *C. flava* complex (including *C. oederi*) and forward them to me. Colleagues working on *C. filiformis* and *maianthemum* spp. are also looking for possible seed sources. Contact: Nigel Blackstock blackstn@admin.ehche.ac.uk, Dept. of Natural and Applied Sciences, Edge Hill University College; St. Helens Rd, Ormskirk, Lancashire, L39 4QP UK

2. *Elymus violaceus* and related taxa:

I am working on some DNA aspects of *Elymus*, particularly *E. violaceus*, also known as *E. trachycaulus* ssp. *violaceus*, *Agropyron violaceum*, and *A. latiglume*. I am looking for seeds from a number of populations. Just a few seeds per population would be enough to germinate and grow seedlings for DNA extraction. Contact: Bernard R. Baum; Agriculture and Agri-Food Canada; Eastern Cereal and Oilseed Research Centre, B.R.P.; Neatby Bldg. B2, Central Exp. Farm; Ottawa, Ontario, Canada K1A 0C6

3. *Geranium* spp.:

I am working on a world-wide monograph of the genus *Geranium* (Geraniaceae). I would like some specimens of *Geranium eranthum* DC. as well as other northern species. Contact: Carlos Aedo, Real Jardin Botanico (CSIC)Paz. De Murillo, 2, 28014 Madrid Spain e-mail: aedo@ma-rjb.csic.es

4. *Rumex arcticus*:

I am setting up a UK National Collection of *Rumex* on behalf of our National Council for the Conservation of Plants and Gardens. As well as cultivating plants of horticultural interest, I am trying to make it a botanical collection by including representatives by sub-genus and by geographical region. I would like to include *Rumex arcticus*. Do you know where I might obtain seed? See: <http://www.geocities.com/RainForest/Vines/5149/>. Contact: Nigel Hurneymann: NHURNEYM@uk.oracle.com

5. Saxifragaceae:

Could you keep an eye out for a few Saxifragaceae that I really need for a study of ovary evolution/diversification, so in addition to a voucher and some leaf material for DNA I would also appreciate some flowers in FAA: *Boykinia richardsonii*, *Saxifraga flagellaris*, *Saxifraga oppositifolia*, *Saxifraga tricuspidata*
Doug Soltis dsoltis@mail.wsu.edu Marion Ownbey Herbarium, Washington State University Pullman, WA 99164-4309

Wilderness Workshop Adventures in Southeast Alaska

Raven's Backyard in Ketchikan, offers credit and non-credit courses and workshops that explore the ecology, natural history, plants and their uses, art, geology, marine life and birds of Southeastern Alaska's coastal environment. Head instructor Phyllis A. Woolwine is a professional botanist who has also been teaching at Uof A Southeast. Sample workshops include:

- Wildflowers of Southeast Alaska**, Ketchikan, June 4-6
- Drawing From Nature**, Ketchikan, June 18-20
- Spring Medicinals**, Ketchikan, May 14-16 (including full-day kayak excursion)
- Summer Edibles and Medicinals**, 7-day kayak expedition; July 30-Aug.5
- Summer Edibles and Medicinals**, Metlakatla, Aug 20-22,
- Fall Medicinals**, Ketchikan and environs, September 3-5
- Fall Edibles**, Ketchikan and environs, September 17-19

Educational walks, including fern walks and alpine wildflower walks, are offered and can be customized for your group. For more information, contact Raven's Backyard, PO Box 23346 Ketchikan, AK 99901 (907)247-2836, e-mail: corvus@alaska.ktn.net.

SPRING PLANT SALES

Don't miss Cathy Sage's Herb Plant Sale, Saturday and Sunday, May 22 and 23, 10 am to 5 pm. Road.

Sally Arant and Lori Abel invite you to visit their nursery this spring. They have an extensive variety of hardy plants including wildflowers, perennials for shade, ornamental grasses, geraniums, dwarf conifers, groundcovers annuals, and a selection of outstanding perennials for sun.

GARDEN FAIR

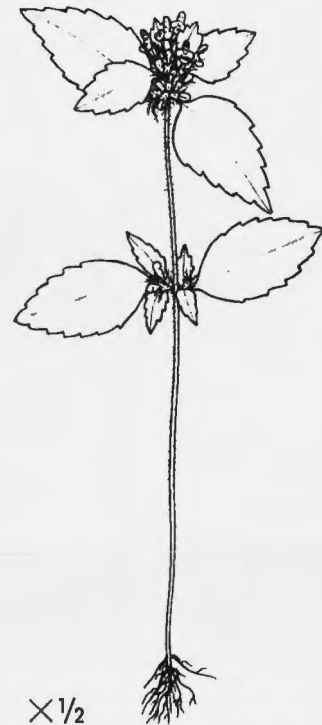
Alaska Botanical Garden's annual Garden Fair will be held June 26, at the Botanical Gardens. A fund raiser for the Botanical Gardens, the fair features plant and craft sales, gardening talks, music and food.



MYSTERY PLANT ANSWER:

Galeopsis bifida/Hemp Nettle

Lamiaceae/Mint Family



(From Hulten: Flora of Alaska and Neighboring Territories)



Close-up of Hemp Nettle Flower

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) _____

Membership is on a calendar year basis.

**Alaska Native Plant Society
PO Box 141613
Anchorage, AK 99514**

