BOREALIS

published monthly
October thru May
by the

ALASKA NATIVE PLANT SOCIETY

March 1991

P.O. BOX 141613, Anchorage, Alaska 99514

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ANCHORAGE CHAPTER MEETING NEWS:

The March meeting of the Anchorage Chapter will be held on Monday, March 4th, at 7:30 PM in the meeting room of the Muldoon Library in the Carr's Shopping Mall on the corner of Muldoon Road and Northern Lts. The library will be closed, so enter by the door at the rear of the building.

BOARD OF DIRECTORS:

The Board of Directors will meet at 6:45 PM, just prior to the general membership meeting.

PROGRAM: Mycorrhizae and Mine Reclamation.

The program will be presented by Dr. Dot Helm, of the Palmer Research Lab, University of Alaska, Fairbanks. The following article, submitted by Dr. Marilyn Barker, will help to explain the program title.

Mycorrhizae: A Partnership--plant style.

Submitted by Dr. Marilyn Barker, Dept. of Biological Sciences, University of Alaska, Anchorage.

Associations between different types of plants are well documented. Perhaps the best known are the partnerships between algae and fungi--the lichens. In the lichen, each partner provides something the other needs, the alga provides carbohydrates for the fungus (via photosynthesis) while the fungus provides protection from desiccation (drying out) for the alga. Technically this relationship is called mutualistic symbiosis. In the case of lichens, this relationship allows the dual organism to survive in hostile environments, such as bare rock surface, where neither alga nor fungus could live alone. The lichen survives because the partners work together.

What many of us do not realize is the fungi form partnerships--or mutualistic associations--with vascular plant roots: These associations are known as **mycorrhizae.** Actually, most vascular plants are dual organizms in the same sense that lichens are dual organisms. About 90% of all vascular plants form mycorrhizal associations--the only notable exceptions are members of the cyperaceae (sedge family) and Brassicaceae (mustard family). In many higher plants, uninfected individuals are rarely encountered under natural conditions. Interestingly enough, the underground mycelia of about 50% of the species of mushrooms are mycorrhizal.

The word "mycorrhizae" literally means "fungus roots". The fungal partner of the mycorrhizae greatly increase the absorptive surface of the roots absorbing both water and mineral nutrients for the plant--of particular importance isthe diredct transfer of phosphorous from the soil to the plant. In exchange, the plant provides the fungus with carbohydrates. Additionally, there is evidence that the fungal partner may play a role in protecting the host plant against certain soil pathogens.

A well known mycorrhizal plant family in Alaska is the Ericaceae (heath family). Ericaceous roots are often 80% fungus by weight. The fungus forms a prominent web of hyphae over the root surface, from which fine lateral hyphae penetrate the cortical cells of the plant. Although the relationship is undoubtedly an energetically expensive one for the vascular plant, it may play an important role in allowing the Ericaceae to colonize acidic soils that are poor in nutrients. This explains why many members of the heath family are difficult to transplant--such as our local rhododendrons.

(cont'd next page)

Fossil evidence (dating to the Carboniferous--300 million years ago) indicates the earliest plants on land had mycorrhizae. It has been speculated that mycorrhizae associations mayhave been a critical step allowing colonization of the land by plants. Given the relatively sterile soils available at the time of the first colonization of land, the role of mycorrhizal fungi may have been critical.

Mycorrizae are mutualistic associations between roots and fungi. They air the plant by enhancing mineral nutrition, water absorption and pathogen resistance. The earliest land plants have mycorrhizae and they are immensely important for the maintenance of natural ecosystems.

PLANT FAMILY: ANPS State President will present this months segment of the continuing saga of the Buttercup or Ranunculacae family. This months discussion will cover the last halfof the Ranunculus genus following Hulten's key. These are the erect and traller Buttercups not decumbent or rooting at the nodes. This group contains many of our common spring-flowering Buttercups seen in damp mountain meadows.

*** NEWS FLASH ***---SEMINARS

Dr. Kim Peterson of Clemson University will be in Anchorage for two presentations on 8 March 1991. Dr. Peterson developed a love of the alpine tundra while working summers as a Wilderness Ranger for the U.S. Forest Service. He received his doctorate for vegetation studies on Alaska's North Slope. His research has included a variety of topics, but his interest has continually returned to the ecosystems of the higher latitudes.

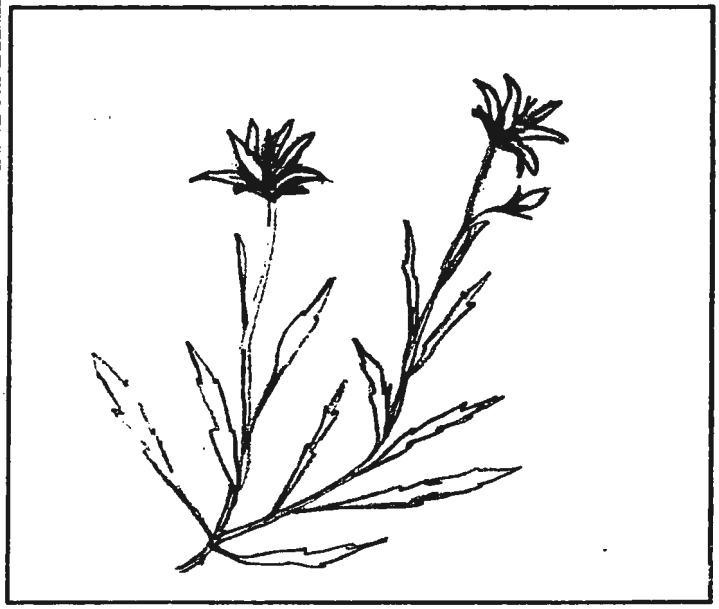
The first seminar,"Geomorphic Controls over Ecological Patterns on the Alaskan Arctic Coastal Plain", a technical presentation, will be given at 9AM in ENGR-109 on the UAA campus.

The second presentation, "The Challenge of Predicting Global Change", designed for a more general audience, will be given at 7PM in K-166 on the UAA campus.

Dr. Peterson is currently obtaining frozen cores from the Fairbanks area for use as microcosms in Phytron experiments to determine the factors controlling the rates of uptake and release orf several greenhouse gasses including methane.

MYSTERY PLANT: This beautiful blue flower, like that of the *Bupleurum triradiatum*, grows on some of the driest sites in Alaska. But unlike the widespread Bupleurum, this plant is restricted in its range. It is found along the Yukon Riover out of Eagle, in a small area of the eastern Brooks Range and in the Delong Mtns.

One to several straight, slender stems arise from a branched rootstock. Only stem leaves are present. Flowers are solitary, or a few at the top of the stem. The deep blue corolla is cleft nearly to the base; the reflexed lobes are lanceolate, surpassing the calyx lobes. Like the fireweed, the style is bent at a 90 degree angle upward and the petals are bent backwards towards the sepals (an unusual configuration).



Mystery Plant

VOLUNTEERS NEEDED: Alaska Day is March 8th. The elementary schools present children with experiences from different aspects of Alaskan life and culture. Chester Valley School has asked if the Alaska Native Plant Society would do sessions on Alaska plant life. We will have a simple slide program with commentary sheet (which you may follow or not) to aid the presenter. There are 6 one-half hours sessions that need to be filled. Lunch is provided is you like (from 11:05 to 11:35AM). You may also attend sessions on other topics (very good presentations). Call Verna at if vou can help out on this great project. Sessions begin at :40AM, 9:10AM, 10:30AM, 1:15PM, aned 2:15PM. This is a very good project and has proven very popular in the past. Please help if you can.

WILDFLOWER CLASSES:

Alaska Wildflower Classes presented by Verna Pratt, author of Field Guide to Alaskan Wildflowers.

Biology-075 1 credit
Section 001 9:30AM-1:00PM
Tuesdays----------May 7-14-21-28
Section 002 6:30PM-10:00PM
Tuesdays----------May 7-14-21-28

A combined field trip to Bird Ridge will be held on Sunday June 2.

Classes meet in the Room 248 of the Science Building, UAA campus. Some inside lab sessions, but most time is spent on field trips to local areas.

Indian Paintbrush and Parasitism

[From Bull. Native Plant Society of Oregon 23(8): 94 (1990)]

It has long been assumed that the more than 150 species of *Castilleja* or Indian paintbrush are partial parasites. Many horticulturists early on assumed them to be impossible to grow, but reports of flourishing cultivated plants have appeared. Rock gardeners have grown them with daisies native and exotic, and a commercial grower in Colorado has grown them very well in gallon cans with some of their many local native daisies.

The National Wildflower Research Center in Texas has published a report on their research into this matter. Their study required growing three groups each of 100 plants. One group was of *Castilleja indivisa*, another of *Lupinus texensis* and the third of both planted together. These fast-developing annuals provided quick results, and the test lasted only four months.

The results support the notion that *Castilleja* is indeed a partial (facultative) parasite. Nearly two-thirds of the paintbrush grown with its host had flowered, while none growing alone had (a few were setting flowering stems). Those paintbrushes growing with a host averaged eight times heavier than those growing alone. And it was noted that the host lupines wilted readily while those grown alone did not. In addition, the mortality rate among host lupines was high, and almost none flowered, while about one-third of those grown alone bloomed.

MYSTERY PLANT ANSWER:

Campanula aurita, Yukon Bellflower

Visitors Threaten Survival of Canada's Largest Tree

[From Associated Press, Seattle P-I, 10 June 1990, B3]

Canada's tallest tree, a 310-foot Sitka spruce known as the Carmanah Giant, may become a victim of those who fought to save it.

The tree stood for more than 1,000 years in a watershed on the north side of Vancouver Island, protected by the deep forests of the Carmanah Valley.

When logging threatened the Giant and other ancient trees, environmentalists made the towering spruce a symbol of their successful fight to preserve the lower valley.

But since the completion last year of a four-mile trail to the Giant, thousands of visitors have hiked in to pay homage to the magnificent spruce – and they may be the death of it.

Thick moss that once surrounded the tree has been trampled underfoot, compacting the soil and creating erosion problems.

People crowding close to have their pictures taken with the towering tree have torn its roots with their hiking boots.

And some have started taking tiny pieces of its bark as souvenirs.

Viewing platforms and retaining fences are needed to protect the Giant and other big trees from their visitors, said Mac Elder, chief park warden for Pacific Rim National Park.

The world changed for the Carmanah Giant in 1988, when environmentalists found the tree and began a fight to save it.

At the time, the entire valley was slated for logging by MacMillan Bloedel Ltd. There were no plans to save the groves of huge spruce in Carmanah Creek's rich floodplain.

Using the Giant as a symbol, the Western Canada Wilderness Society committee mounted a preservation campaign that carried the name of the valley across Canada.

People began streaming into the valley last year, when the committee completed a trail to the Giant. At least 15,000 people visited the tree last year.

What's in a name?

Alyssum---------Greek origin
A----Not
lyssa--madness
(cure for Rabies)

Species:

alpestris, alpestre---lower mountains
maritima---by the sea
montanum, montane---in the mountains
murale--growing on the walls
procumbens--sprawling on the ground(
(low to the ground)
saxitile--like a saxifrage
serpyllifolia--thyme leave
spinosum--having a spine
americana--from the America's
Wulfenianum--named after Wulfen an explorer. Capital letter indicates persons name.