Borealis

the newsletter of the

Alaska Native Plant Society

January 1993

P.O. Box 141613, Anchorage, AK 99514

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HAPPY NEW YEAR

ANCH. CHAP. MEETING NEWS:

The January meeting of the Anchorage Chapter will be held on Monday, January 4th, at 7:30PM at the First Congregational Church, 2610 East Northern Lights Blvd. This is the large brown church building just east of Wendler Jr. High School on the south side of Northern Lights. Entrance is at the back of the church (east side).

BOARD MEETING---At 6:45PM immediately preceeding the general meeting. Board members please take note.

PROGRAM---Dale Funk will present a program on Lake Basins and Successions. This talk is based on research done at Barrow, Alaska, that was funded by a grant from the National Science Foundation.

PLANT FAMILY:

Each month we will study a group of plants of the Saxifrage family. We decided to try a different approach and divide them by growth form or leaf shape.

This month we will cover the small alpine plants. These have tiny leaves in either small rosettes stacked close together on short stems or from cushions that hug the ground for protection from the harsh elements of their environment. These plants make a remarkable impression on us as the flowers make a bright splash on the rocky tundra.

HOW ABOUT THIS?

More than you ever wanted to know about *Saxifrage oppositifolia L.*

Did you know that:

- "*Sax op*" has three common names: french knot plant, purple mountain saxifrage, and purple saxifrage.
- "*Sax op*" was first described by Carl von Linne, alias Carolus Linnaeus.
- "*Sax op*" has a circumpolar arctic aipine distribution.
- "*Sax op*" prefers calcareous habitats.
- "*Sax op*" *is* a perennial herb that has marcescent leaves.
- "Sax op" opens its flowers 10 days after snowmelt. That makes it one of the earliest spring flowers.
- "Sax op" flowers are triggered solely by temperature.
- "Sax op" flowers each last for approximately 11 days.
- "*Sax op*" flowers are pollinated early in the season by: bumble bee queens (*Bombus alpinis*) and lepidopter ans (*Erebia pandrose* and *Colias nastee*). Later in the season these pollinators are replaced by dipterid flies.
- "*Sax op*" produces an average of 116 to 26 ovules per ovary.
- "*Sax op*" produces bright orange pollen from dark violet anthers.
- "*Sax op*" is protogynous, that means the stigmas are receptive before the pollen matures.
- "*Sax op*" anthers bend inwards 2 days after ripening to assure pollination by auto-deposition.
- "*Sax op*" flowers which are self pollinated have reduced seed set.
- "*Sax op*" requires 53.8 ± 5.3 days from onset of flowering to capsule dehiscence.
- "*Sax op*" is a beautiful a flower!

from: Barker, M. personal notes
Stenstsrom and Molau. 1992. Arctic and Alpine Research 24:337-343.

HELP WANTED:

Plant Family Presenters-Feb thru May.
Contact Verna at .

Breakdown as follows:

1) Short stemmed clumpingplants with cream to yellow flowers. (*Saxifraga tricuspidata, S. bronchialis, S. hirculus, etc.)*

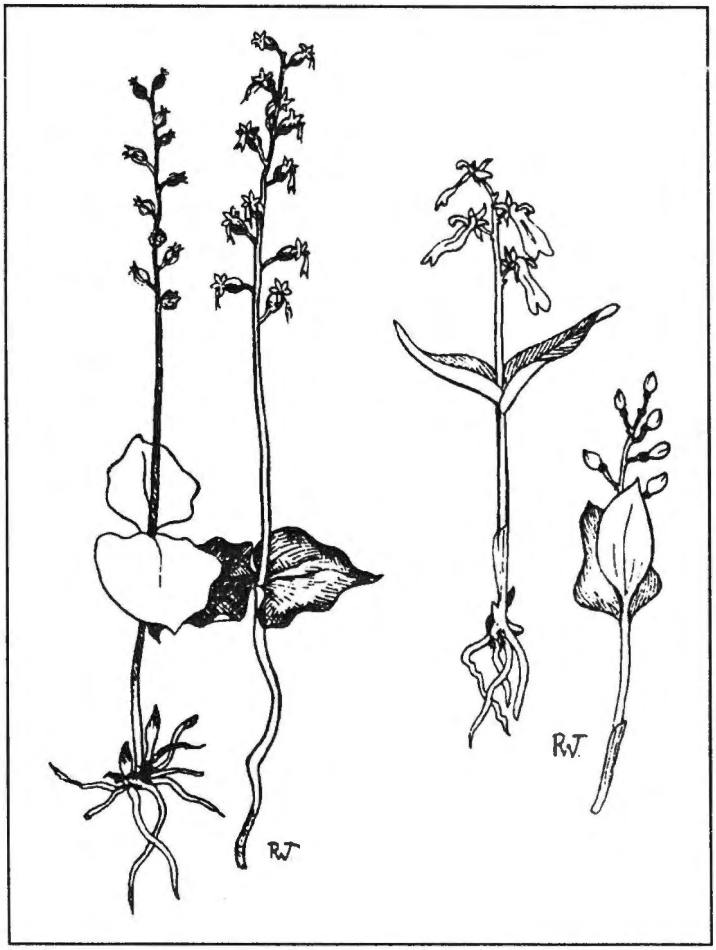
2) Wedge-shaped leaves. (*Saxifraga lyalli, S. reflexa, S. foliosa, Leptarrhena, etc.*)

3) Toothed cordate leaves. (*Saxifraga punctata, S. cernua, S. nudicaulis, etc.*)

4) Large and coarse leaves. (Boykinia, Heuchera, Tellima, etc.)

MYSTERY PLANT:

This month, we show two related plants found in our moist woods. The taller (5"-8") on the left is often a maroon color as well as pale green throughout. The one on the right is smaller and greener. The common name is an obvious description of characteristics seen in each plant. How good is your **old English**?



Mystery Plant (drawings by Toby Tyler, ANPS Kachemak Chapter)

WANTED:

A U.S. Fish and Wildlife Service
VOLUNTEER!

Description of Duties:

Help update plant files through library searches
Reviewing literature
Contacting other botanists/biologists for information.

Visit the Field Offices for information or to provide assistance.

Assist with voluntary agreements for plant protection.

Help establish a mapping/tracking system.

Assist with tasks associated with the Rare Plant Working Group.

Attend meetings to gather information and "network".

Assist in creation of a slide show

for the schools

and

Other miscellaneous tasks that will arise!

FOR MORE INFORMATION, CONTACT:

Virginia Moran, Botanist
Region 7, U.S. Fish and Wildlife Service
Division of Ecological Services
1011 East Tudor Road
Anchorage, AK 99503

DUES:

The 1993 dues are now due and payable. Your current dues status is indicated by the "92" or "93" date on your mailing label.

HELP !

October 9, 1992

Dear Dr. Barker,

Per our telephone conversation several weeks ago, the following note is for inclusion in, what I believe is, your native plant newsletter. Your time and attention are greatly appreciated!

As part of a continuing study into the life histories and early stages of butterflies, I wish to obtain seeds and/or seedlings of Corydalis pauciflora. This is the suspected larval foodplant of the Yellow Apollo, Parnassius eversmanni, which occurs on the tundra and open mountain slopes in much of Alaska. Besides live C. pauciflora material, I would also be interested in hearing from anyone who is acquainted with this butterfly. Thank you very much.

Keith Wolfe
616 Alumrock Drive
Antioch, CA 94509

Many thanks again, Dr. Barker, for your kind assistance.

Endangered Aleutian Shield-fern Grows at the University of Alaska Fairbanks

Patricia S. Holloway

Last year, Alaska's rarest fern quadrupled in number. Today three-fourths of the Aleutian shield-fern, *Polystichum aleuticum*, live in the Agricultural and Forestry Experiment Station (AFES) greenhouse-more than 300 of them. It is possibly the rarest fern in North America. In the wild it grows on the Andreanof Islands in Alaska's Central Aleutian Island District.

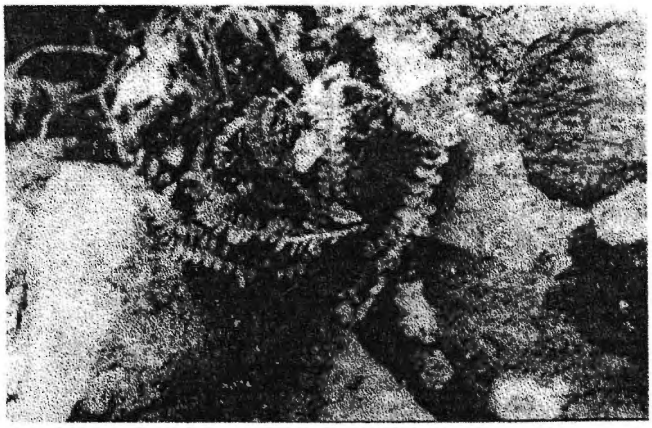
It was found originally on Atka Island in 1932 (Christensen, 1938), but subsequent attempts by botanists to relocate it on Atka failed (Smith and Davison, 1989). In 1975, seven Aleutian shield-fern plants were discovered on nearby Adak Island. its rediscovery, prompted an extensive search of Adak and nearby islands, and "Have You Seen This Plant" posters were circulated among local residents. By 1989, two populations had been located on Adak, both on the southeast- to east-facing slopes of Mt. Reed. Approximately 111 shield-ferns found on the mountain constitute the total known population of this fern.

Because of its rarity and possible imminent extinction, the Aleutian shield-fern was designated an endangered species in 1988 and afforded protec\-tion under the 1973 Endangered Species Act. This act prohibits collection or destruction of this fern and limits research to studies that do not jeopardize its existence. The Act also requires that the responsible federal agency develop a plan of recovery to ensure its future and prevent extinction.

An Aleutian Shield-fern begins to spread its leaves in the UAF Greenhouse. The fern is one of more than 300 of thei rare species now growing in the greenhouse.

Adak Island is a U.S. Department of Navy Adak Naval Reservation. The federal agency responsible for the shield-fern's recovery is the U.S. Fish and Wildlife Service (F&WS).

In 1989 the F&WS initiated an attempt to locate additional populations of ferns. Simultaneously they conducted a comprehensive census of existing populations and began an ecological characterization of the existing fern habitat (Tande, 1989). The F&WS signed a contract with the Agricultural and Forestry Experiment Station to attempt spore propagation under controlled laboratory conditions. Resulting plants would be used for future research into basic life history and breeding biology which is necessary for the complete recovery of this species. The Endangered Species Act both protects plants and animals and tries to reintroduce them back into the natural world. The ultimate goal is to bring this species to the point where the protections afforded by the Endangered Species Act are no longer necessary for its survival.



In the wild the Aleutian Shield-fern grows to several inches height. Today,just slightly more than 100 known plants still grow in the wild.

The Environmental Protection Agency granted permits to collect spore-bearing fronds from Mt. Reed in August, 1989. Pat Wagner of AFES gathered fronds and brought them to Fairbanks. Since this is the first time the Aleutian shield-fern had been grown under growth chamber and greenhouse conditions, researchers used a variety of media including aseptic agar-based nutrient media and a mixture of milled peat and sand. Approximately six weeks after sowing, the spores germinated on nearly all of the media tested. Six months after sowing, the first shield-fern plantlet (sporophyte) appeared, but most plantlet development did not occur until nine months after sowing. One year after the spores were sown, 303 young fern plantlets had developed. This preliminary trial showed that the Aleutian shield-fern produces abundant, viable spores that are easily germinated in controlled conditions. Its rarity is not related to spore viability, but perhaps to environmental factors that prevent germination of these viable spores. Because of the successful germination, the total number of Aleutian shield-ferns in the controlled environment is nearly three times the size of the existing known population in the Aleutians.

How this shield-fern came to the Aleutians and why it is so rare is unknown. Researchers have speculated that it might be a relict species that flourished thousands of years ago and is gradually dying out. Alternatively, reindeer introduced onto Atka in 1914 and caribou introduced onto Adak in 1958 may have destroyed the population by trampling the plant or causing erosion of the fragile habitat.

Not only is this species extremely rare, but its existence in North America is intriguing. Its closest relative is believed to be another shield-fern, *Polystichum lachenense*, that grows in the Himalayan Mountains in western China (Christensen, 1938) .

Today more than 300 Aleutian shield-ferns grow in the university's AFES greenhouse. In slightly more than a year the university's experimental effort quadrupled the known world population of this endangered species. University researchers will continue to raise the ferns. In the future, some of the plants may be reintroduced to the wild, thus expanding the population.

If successful, their work will eliminate the need for further protection under the Endangered Species Act. That's in the future. Between now and then, a healthy population will be maintained at the university while researchers work to learn more about this mysterious and almost extinct plant.

References

Christensen, C. 1938. On *Polystichum aleuticum* C. Chr., a new North American species. *American Fern journal.* 28(3):111-113.

Smith, D.K. and P.G. Davison. 1989. *Po lystichum aleuti cum* C. Chr. in Hulten. Site Survey of Atka Island, Alaska, 1988. Unpublished field Report. U.S. Fish & Wildlife Service, Anchorage, Alaska.

Tande, G.F. 1989. Aleutian shield-fern *(Polystichum aleuticum* C. Chr.) Field studies for 1989: Establishment of permanent population monitoring plots and habitat characterization. U.S. Fish and Wildlife Service Unpublished field Report. Anchorage, Alaska.

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QUIZ ANSWER:

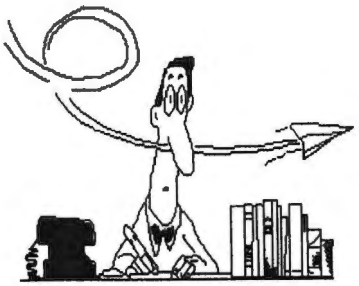
Twayblade (Twyblade) *Listera cordata* (on left)
Listera borealis (on right)

These are the two most common Twayblades found in Alaska with similar one (*L. caurina*) found only in the panhandle forests. *L. cordata* is coastal while *L. borealis* is an inland species. Family Orchidaceae, the orchis family, which is well represented in Alaska.

HELP !!!

Your editor is worried. It seems that very few of our good ANPS members take the time to write to (or for) us anymore. I'm starting to feel like the General in the Beetle Bailey comic strip (no mail).

So, why not get out the old scratch pad, typewriter, or whatever and jot off a little article for us. Get your name in print. Be a star!



Make my day! There's still a lot of room for articles in the Feb, Mar, Apr and May editions before we all take our summer break.How about some ideas for the Field Trip planners, too. They need input from the membership NOW in order to come up with a good set of trips for the summer. (It's really not that far away. ----------Really!)

Late Breaking News: It appears that, barring any unforeseen changes in the current plan, the editorial duties will be passed to Lynne Balogh before the next newsletter. Thanks to all ANPS members for the help and support that I have received over the years. It's been interesting. I hope that you will give Lynne lots of support to make her task easier.

Frank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