

Borealis

the newsletter of the



PO Box 141613, Anchorage, Alaska

NOVEMBER 1997

JOIN US AT OUR DEC. MEETING

Monday, Dec. 1 7:30 p.m.
at the Campbell Creek Center

MAIN PROGRAM

Natural Recolonization & Artificial
Revegetation of Arctic Tundra on
Alaska's North Slope

Presenter: Jay D. McKendrick

Dr. McKendrick is Professor of Agronomy at the Palmer Research Center, Agricultural & Forestry Experiment Station, University of Alaska Fairbanks. Since 1985 he has had a continuing research contract with BP Exploration (Alaska), Inc. first to determine how to use *Arctophila fulva* for vegetating impoundments and second to identify native plant species and site treatments to revegetate gravel fill in the Prudhoe Bay region.

Plant Family Study

Chenopodiaceae/Goosefoot Family

HELP WANTED

We need you to help keep our monthly activities flourishing. Take a look at the opportunities on page 3, and call Verna today to let her know what you can do.

TUNDRA RESEARCH

By Dr. Jay. D McKendrick

(Editor's Note: The following discussion is excerpted from an article "Long Term Tundra Recovery in Northern Alaska", published in Disturbance and Recovery in Arctic Lands, R.M.M Crawford (ed), 1997.)

Four reasons to re-vegetate tundra sites are: 1) to protect soils from erosion, 2) to create and/or restore wildlife habitat, 3) to comply with permit stipulations, 4) to improve aesthetics, i.e. to obliterate unsightliness.

1. **Controlling Soil Erosion:** Erosion on the coastal plain of Alaska's North Slope is seldom a major risk. High intensity rain storms are rare, and terrain is flat. Except where soils are very sandy, accelerated erosion is confined to fluvial processes along streams. These events occur usually in late summer, after an early snowfall in the uplands melts, suddenly increasing stream flows. At that time of the year, soils are thawed and subject to erosion. During spring break-up, soils are mostly frozen and resist erosion.
2. **Restoring Wildlife Habitat:** The justification for re-vegetation is often to improve wildlife habitat. However, re-vegetation to improve wildlife habitat has a variety of implications for managers. In the Prudhoe Bay vicinity, disturbed sites left to natural succession are useful to wildlife. For some animal species, disturbances whether vegetated or not are preferred over undisturbed sites. Therefore tundra disturbances cannot be universally considered losses in habitat for wildlife. Disturbances often contain a variety of habitat niches in close proximity to each other. This arrangement of habitats may be either uncommon in the surrounding environment or on a larger scale, but it seems to be attractive to animals. Responses by individual plant species to disturbances may also make these plants attractive to grazers. Increased flowering and seed production are common for plants on disturbed sites. This provides forage for birds and small mammals. Grazers are especially drawn to artificially re-vegetated sites particularly late in the growing season, because plants on those sites have a delayed senescence, offering forage more palatable than exists in adjacent undisturbed tundra. The same delayed plant phenological response can be found at waste water disposal sites. Disturbances increase soil temperatures which in turn hasten decomposition of organic matter and hence increase availability of plant nutrients. (Continued on Page 2: Tundra)

MYSTERY PLANT

by Verna Pratt

This small perennial plant grows in wet areas; usually near streams or waterfalls, from sea level to alpine tundra. Because of its limited distribution it is often not seen. It can however be found in coastal areas of South Central Alaska, Kodiak Island, and Southeast Alaska. It is often mistaken for a Saxifrage because of its leaf shape which is similar to many saxifrage species, and it grows in similar habitats.

Its leaves are on long petioles, are somewhat kidney-shaped and have shallow blunt teeth. Typical of most plants that grow in dump areas, the small leaves are mostly glabrous with a few hairs along the margin.

This is a small plant (5"-6" tall) with several stems of flowers in small cymes. The small white flowers have 5 united sepals, 5 united petals with 5 epipetalous (attached to the petals) stamens. The ovary has two sections that are enclosed in one round capsule. The Saxifrage genus has 2-5 carpels that are only joined at the base.

There are 2 species of this genus in Alaska, and it is the only genera of this family represented in Alaska. What plant is this? (Answer on Page 3.)

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Newsletter ("Borealis")

Editor	Ginny Moore
Circulation	Martha Hatch

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Anchorage, AK 99516. Phone or FAX:

Tundra Recovery (Continued from Page 1)

3. **Permit Requirements:** In practice, the most common reason for re-vegetation has been to comply with an agency permit stipulation. Sometimes the permits were issued on assumptions and criteria extrapolated from temperate-zone expertise before much was learned about tundra re-vegetation. There is possibly need to revise such stipulations in light of current technology.

4. **Aesthetics:** Improving the appearance of a site may be the most compelling reason to require tundra re-vegetation. Oil industry personnel in the Alaska Arctic are sensitive to the appearances of their operations and try to avoid unsightliness, especially when they know it can have negative implications for their operations. There is equal sensitivity on the part of government agencies, because the appearance of landscapes under their jurisdictions place them at risk for criticism and possible litigation by third party interests. As a consequence of the urgency to improve site appearances, short-term goals are often chosen to quickly establish a plant cover and obliterate barrenness. Percent canopy cover has been the criterion to measure re-vegetation success, and the goal has been to obtain maximum cover as quickly as possible.

Canopy cover is relatively simple to gauge and fits easily into a compliance stipulation. Based on long-term observations on experimental plots however, it is clear that management to obtain high cover quickly is a short-term approach that can obstruct return of natural tundra communities. If a long goal of tundra restoration is desired, i.e. encouraging natural succession, then the rehabilitation plan should be designed for that and not necessarily focus on rapidly developing plant cover. Seeking return of natural tundra is ecologically acceptable and ultimately appealing aesthetically.

This approach relies on correcting terrain disturbances to provide a re-contoured surface, correcting soil deficiencies, and judiciously using seed and fertiliser. Seed applications should imitate the natural process by first establishing an open community of plants to trap snow and propagules of indigenous plants, which will establish later. The seeded species should not compete with naturally invading plant species. Seeded species unpalatable to grazers are also desirable, because grazing by geese and caribou is often a damaging factor on re-vegetation sites. However, grazers may be important vectors that bring seed to disturbed sites.

Implementing a long-term approach to tundra re-vegetation necessitates revision of compliance stipulations. Canopy cover should not be the main measure of performance, if the goal is developing natural tundra. The gauging should be done on the basis of plant community trend. If the trend is positive, i.e. the community is moving toward climax, then the undertaking should be considered successful. If the trend is negative, then it is unsuccessful. From our experience, treatments that in the short term seemed to be failures when rated in the early stages by canopy cover, often proved more desirable in the long term because natural succession eventually eclipsed the seeded grasses. The short-term triumphs in terms of rapid cover development were often less desirable in the long term, because they hindered succession.

Chenopodiaceae/ Goosefoot Family

By Verna Pratt

The Chenopodiaceae family contains mostly herbaceous plants that grow in saline soil or very poor or dry soils. Most of the Alaskan species are annual plants. Leaves are simple and alternate, except for *Saliconia*, which has opposite leaves.

There are 104 genera world-wide, and 1510 species. Alaska has only 5 genera - *Chemopodium*, *Atriplex*, *Corispermum*, *Saliconia*, and *Suaeda*; and 13 species. The coastal species are all native but most of the inland species except *Chemopodium capitatum* (strawberry spinach, or strawberry blight) have been introduced and grow in waste areas.

The flowers on all of these plants are very small and inconspicuous. They have 5, usually greenish, sepals, 5 stamens, 1 pistil and an ovary with 2 or 3 carpels.

Most of these plants are edible (they are related to beets, swiss chard and spinach), and the fruit of strawberry spinach has been used for making jelly. It does not contain much pectin so usually ends up as pancake syrup. *Saliconia* has thick, jointed, succulent leaves and has been used for pickling by ethnic groups. Geinga coastal plant it contains a large amount of salt. It grows on the mud flats and turns a bright pinkish-red in the fall.

HELP WANTED

Plant Family Presenters

This year we will be covering families with inconspicuous flowers. Most are smaller families with just a few species; one is large so we will spread it over two months. The families we will cover this year are PLANTAINACEAE (pg 832, Hulten's), POLYGONACEAE (pg 373), ARACEAE (pg 281), and BETULACEAE (pg 364). Assistance and additional information is available. Call Verna, 333-8212, if you can help.

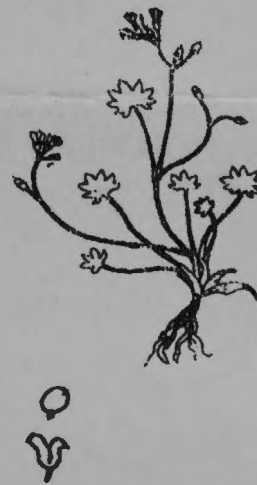
Seeds - and Seed Curator

Without seeds and someone to collect and package them, we won't have a seed sale this year. Call Verna (), send seeds to our PO Box or bring to the December meeting.

Mini-Botany Presenters

We need volunteers to do five minute presentations on any topic having to do with botany - a subject of your choice. Help us make the monthly meetings lively and informative! Call Verna () with your 5-minute ideas.

Mystery Plant



Romanzoffia saxifraga



Birds in the Field and Laboratory

January 15-April 12: Tues: 7-9:15 pm
 Plus 5 Saturdays (Mar7-April4) in the field
 UAA Course ID: CRN 28691/BIOA126-041
 2 credits * Self-support credit and lab fee: \$167
 Instructor: Todd Eskelin

Are you intrigued by the local bird population? Do you ever wonder how they survive Alaska's harsh winters? Learn how to identify local resident and migratory birds, touching on rare species from around the state. Enjoy guest lectures from top bird watchers in the state. Catch more than a glimpse of the rarer species through slides. Learn about research tools.

Alaska Native Plant Society
P.O. Box 141613
Anchorage, AK 99514



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,
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