

Borealis

the newsletter of the



December 1992

P.O. Box 141613, Anchorage, AK 99514

ANPS STATE OFFICERS ARE: President---Forrest Baldwin, Vice-President---Jean Poor, Secretary---Jean Tam, Treasurer---Yaso Gurusingan-Thiru, Newsletter (appointed)---Frank Pratt

ANCHORAGE CHAPTER OFFICERS ARE: President---Gary Davies, Vice-President---Charles (Chuck) Adsit, Secretary---Andrea Woods, Treasurer---Ram Srinivasan, Rep. to State Board---Frank Bogardus

STATE ELECTION:

Your ballot(s) for the election of ANPS State Officers for the 1993-1994 term is attached to this newsletter. Please take the time to complete and mail the ballot; it is you, the members, that elect the officers.

ANCH. CHAPTER ELECTION:

The election of ANPS Anchorage Chapter Officers will take place at the December meeting. The nominating committee has presented the following slate:

President-----Chuck Adsit
Vice-President-----"none"
Secretary-----Andrea Woods
Treasurer-----"none"

Additional nominations will be accepted from the floor. We need some help!

MEMBERSHIP DUES:

1993 membership dues are now payable. Dues are: Students---\$5, Individuals---\$10, and Family---(2 voting members)---\$15. You may send your dues to the Society's P.O. Box or pay at one of the meetings.

"This we know. The earth does not belong to us; we belong to the earth. This we know. All things are connected like the blood which unites one family. All things are connected."

-----Chief Seattle

ANCH. CHAP. MEETING NEWS:

The December meeting of the Anchorage Chapter will be held on Monday, December 7th, 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 preceding the general meeting. Board members please take note.

PROGRAM---Dr. Jonathan Davis, Assistant Professor, UAA Biological Sciences Department, Kenai Campus, will present "Experiential Learning: Ecology and Conservation in the Rocky Mountains" or "Learning by Doing: A hands-on approach to conservation studies".

Dr. Davis is a plant ecologist for UAA. This past summer he worked in the Colorado Rockies for the School of Field Studies (based from Beverly, Mass.). All courses are field oriented emphasizing different aspects of ecological research, as how to make vegetation maps, how to set a trap lines, how to approach data analysis, etc. It is an experience centered approach to studying ecology and conservations. Jack's ANPS talk will develop the highlights of his Colorado Course.

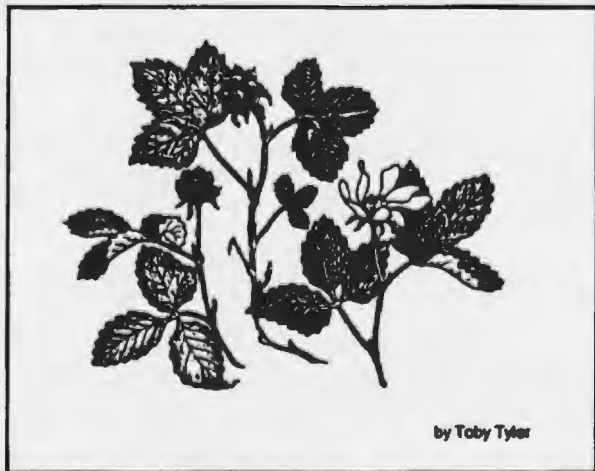
PLANT FAMILY:

This month we will begin a study of the Saxifrage (Saxifragaceae) Family. As this is a large family, we will continue each month into spring. Plants in this family usually have 5 sepals, 5 petals--often clawed (narrowed

at base), 5 or 10 stamens and usually 2 carpels united at the base. Most have basal leaves, alternate and reduced if on the flowering stem. There are 10 genera in Alaska and 49 species and sub-species. Most Saxifrages grow in the cooler portions of the northern hemisphere. Marilyn Barker will present the first section of this family with Parnassia and Chrysosplenium. Parnassia has an ovate capsule with fertile stamens alternating with sterile staminodia. There are 3 species in Alaska. Chrysosplenium has 2 species. The seed capsule has 2 horns and lacks staminodia.

MYSTERY PLANT:

Another low-growing plant with a distinctive pale pink flower and tasty berries on good years. Tripartate leaves (variable) alternating on 4 to 6" stems. Found throughout the State. A prime open meadow site with plentiful berries is worth checking regularly as these are one of Alaska's premium native berries.



SEEDS:

Last call for wildflower seeds for our Annual Seed Sale. Please bring them to the meeting, mail to ANPS P. O. Box, or call Verna at 333-8212.

GREENHOUSE CONFERENCE:

Having just returned from the 12th Annual Alaska Greenhouse and Nursery Conference in Soldotna, I thought that some members might be interested in knowing that the basic topic for the second day of the conference was "Wildflowers" (by popular demand from last years after-conference survey).

Dick Baldwin, owner of Baldwin Seed Co. gave a presentation on "Wildflower Production". He has the only true packets of wildflower seeds. Nancy Moore from the Plant Materials Center spoke on "Revegetation with Wildflowers". They are working with Park Service and Highway Department in an attempt to find good Alaska material for revegetation. I provided a program on "Landscaping with Native Plants". The strong interest in landscaping with native plants prompted a study of wildflower seed mixes. A display, set up by UAF, showed the results obtained by efforts of Ouina Rutledge, a graduate student. One mix studied was produced by Gena Delucchi of Fairbanks. I believe she has the right approach and, in time, may reach a pleasing compromise. Alaska has few annuals, which most people desire for instant color in their gardening. Perhaps the answer is Alaskan perennial wildflowers with a few colorful annuals (non-native) for first year color. It would, of course, be best if these were species that eventually do not reproduce in Alaska.

Submitted by Verna Pratt.

SEMINAR:

On November 19th and 20th, Virginia Moran, botanist for U.S. Fish & Wildlife Service, conducted a seminar concerning Rare Plants of Alaska. This was a first for Alaska—bringing together botanists from throughout the State. They pooled their knowledge and observations of these plants in an attempt to place them in proper categories. The conclusions were based on how many areas the plants are found and how numerous they were in these locations. Even if a plant is locally abundant, it could easily be endangered if only found in one area. It was agreed that ANPS should monitor the pink dandelion site on the Bonnie Lake Road to see if the plant population stays stable, increases or decreases. They are not plentiful at the site and it is the only site that we are aware of that is not alpine. It is now known that the sites are more numerous than previously thought. Other species of rare plants will be monitored or studied by other organizations or individuals. A great job, Virginia.--Well Done!!

Submitted by Verna Pratt

RELATIVELY SPEAKING:

"Everyone who is seriously involved in the pursuit of science becomes convinced that a Spirit is manifest in the Laws of the Universe—a Spirit vastly superior to that of man, and one in the face of which we, with our modest powers, must feel humble."

----Albert Einstein

CHRONOBIOLOGY:

The importance of biological rhythms in animals and plants was recorded about 5000 B.C. Biological rhythms are ubiquitous and occur in all forms of life, ranging from unicellular to complex multicellular organisms. Biological systems are precisely organized not only in space, but also in time. *Chronobiology*, the study of biological rhythms is not a new science. Unfortunately, physicians and other health care professionals are not fully aware of chronobiology and its clinical applications.

In reading some articles on chronobiology recently, I became aware of some facts relative to the plant world that I thought our readers might find interesting.

First, some terminology. *Cycle*, *rhythm* or *oscillation* can be defined as a sequence of events which, in a steady state, repeat themselves in the same order and at the same interval. The *circadian rhythm* is linked to the light-dark cycle of the solar day, and is the most common biological rhythm. *Period* is the amount of time required to complete one cycle of a rhythm. *Frequency*, the reciprocal of period, is the number of cycles per unit time.

The rhythmicity of the different biological functions varies according to the amount of time required to complete one cycle. The term circadian, which means around the day, required 24 +/- 4 hours to complete one cycle.

The major concept of chronobiology is the endogenous biological rhythm, or biological clock. Prior to 1729, it was believed that the driving force of biological rhythms in organisms depended completely upon the cyclical changes in the environment (or light-dark cycle). In 1729, a French astronomer, Jead de Marian, showed that biological rhythms can persist in the absence of environmental time cues. He observed that the movement of the leaves and stems of the heliotropic plant depended upon the sun's position. Each morning, when the sun rose, the leaves and stems opened; and at night, when the sun set, the leaves and stems folded. When the heliotropic plant was maintained in constant darkness, the position of the leaves and stems continued to follow the same time schedule. This was the first experiment to show that biological systems could keep time, and was the beginning of a wide variety of research.

About 100 years later, Augustin de Candolle, a plant physiologist, noted not only that the circadian rhythms of the leaf movements of the heliotropic plant persisted in darkness, but that the period was 22 to 23 hours instead of 24. This suggested that the movements of heliotropic

plants were independent of the solar day and that, indeed, some form of internal biological clock probably did exist. In the 1800s, Wilhelm Pfeffer, a German botanist, confirmed the concept that circadian rhythms of plant movement were endogenous.

In 1935, Bünning, a German biologist, demonstrated that the circadian rhythms of bean plants are genetic in origin.

In 1954, Aschoff, a German physiologist, coined the term *Zeitgeber*, which means "time-givers". These are synchronizing agents, or environmental cues, which do not create circadian rhythms but strongly influence them. The purpose of a zeitgeber is to synchronize the circadian rhythm, or biological clock, with the solar day. Some zeitgebers include the 24-hour light-dark cycle, environmental temperature changes, humidity, and social cues.

The basic properties of biological rhythms in both plants and animals are best summarized as having these characteristics:

- Genetically determined
- Characteristic of a particular species
- Free-running, or able to persist independent of environmental time cues
- Influenced by environmental factors, e.g.; 24-hour light/dark cycle.

This will give you some basic food for thought. Perhaps we can consider these concepts in more detail at some later date.

(The plant pertinent information was liberally extracted from "A Revue of Chronobiology and Chronopharmacology", by Linda Tolstoi, R.Ph., M.S., M.Ed., in the May 1992 issue of *Pharmacy Times*).

Submitted by Frank Pratt

Happy Holidays!

QUIZ ANSWER:

Nagoonberry, *Rubus arcticus*.

There are three subspecies of this member of the prolific Rose family: Rosaceae, determined primarily by the difference in the leaf lobes, whether separate or joined at the base.

ALASKA NATURAL HISTORY EXPEDITIONS

Discover Alaska's amazing natural history. These wilderness expeditions are led by naturalist/wildlife biologist, John Wenger, a natural history instructor for the University of Alaska.



The Natural History of the Wrangell-St. Elias National Park. June 3-13
\$585 (includes all transportation in Alaska for expedition)

Backpack the world's largest park. Van from Anchorage to the Park's north side and backpack into the high country. See fantastic views of Mt. Sanford and the Wrangell Mountains. From a secluded alpine lake basecamp, take daily hikes to explore this expansive parkland. Good physical condition required.

The Natural History of the Arctic National Wildlife Refuge. June 14-30
\$985 (includes all transportation in Alaska for expedition)

Travel the rugged Trans-Alaska Pipeline haul road to the Brooks Range and backpack the Arctic National Wildlife Refuge. Explore wilderness as you have never before! En route, cross the mighty Yukon River and the Arctic Circle. Later, camp at Denali National Park. Good physical condition required.

The Natural History of the Denali Parks (Biology 176). 2 credits July 5-18
\$885 (train fare: \$120) Credit, if desired, is provided by the University of Alaska.

Explore Denali Parks - Denali National Park, with its abundant wildlife and Denali State Park, a backpacker's paradise of solitude. Travel by train on the Alaska Railroad and by river rafts. Field observation and recording techniques including photography will be stressed for interpreting natural phenomena. Excellent physical condition required.

The Natural History of the Gates of the Arctic National Park. July 21-August 4
\$1085 (includes all transportation, even air fare, in Alaska for expedition)

Raft the beautiful Koyukuk River in the Gates of the Arctic National Park. Travel the famous Trans-Alaskan Pipeline haul road. See the mighty Yukon River and cross the Arctic Circle. Fly back in a bush plane. En route returning, camp at Denali National Park. Fair physical condition required.

The Natural History of the Yukon-Charley Rivers National Preserve. August 9-25
\$1085 (includes all transportation in Alaska for expedition)

Raft the mighty Yukon River in the pristine Yukon-Charley Rivers National Preserve. From Anchorage, van to historic Eagle and float the river 150 miles to Circle. En route, camp and hike at the Wrangell-St. Elias and the Denali National Parks. Fair physical condition required.

These expeditions provide the perfect opportunity to study, enjoy, and photograph the natural history of Alaska. Emphasis is on learning the bird, mammal, and flowering plant species. All expeditions are designed to be enjoyable outdoor learning experiences. Typically attending are career-established individuals averaging about 30-45 years of age who are seeking an in-depth and reasonably priced Alaskan wilderness adventure. Participants provide their own food and camping gear. 13 maximum.

Note: all requested long distance returned calls are collect. Office hours/mail response begin 1 Feb.

For details, contact leader, John Wenger,
(7-9am Tue & 3-5pm Fri) Anchorage time

or call home office

Please pass this information on to a friend who may be interested.

ALASKA NATIVE PLANT SOCIETY
P. O. Box 141613
Anchorage, AK 99514

