

Colorado Native Plant Society



NEWSLETTER

Volume III Number 2

March-April 1979

"DEDICATED TO THE APPRECIATION AND CONSERVATION OF THE COLORADO FLORA"

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SCHEDULE OF MEMBERSHIP FEES

Life	\$250.00
Supporting	50.00
Society	25.00
Family	12.00
Individual	8.00
Student & Retired	4.00

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The CONPS Newsletter is sent to all other Native Plant Societies in exchange for theirs. Nonmembers may subscribe to the Newsletter for \$4.00.

NEWSLETTER

EDITOR: Dieter H. Wilken, Dept. of Botany & Plant Pathology, Colorado State University, Ft. Collins, CO 80523.

The editor seeks articles of interest to all aspects of Society activities. Such articles should not generally exceed 4 typewritten, double-spaced pages, although consideration will be given to longer articles if space permits.

Deadlines for the 6 bimonthly newsletters are the last day of January, March, May, July, September, and November.

ANNUAL MEETING APRIL 7

The semi-annual Spring meeting of the CONPS is scheduled for SATURDAY, APRIL 7 from 1:00 PM to 4:30 PM at the Denver Botanic Gardens.

The featured speaker will be George Kelly, well known native plant horticulturist and honorary life member of the Society. George will have copies of his several books available and has consented to autograph any copies presented to him.

In addition, two workshops will be held, one on native grass lawns and the other on the use of shrubs in attraction of birds to the garden.

All members and their interested friends are encouraged to attend.

FIELD TRIPS

A field trip to the sand hill country of Yuma County is scheduled for the weekend of June 16-17, 1979. The field trip will be led by Margaret Sikes and Miriam Denham and is sponsored by both the Denver Botanic Gardens and The Colorado Native Plant Society. The excursion will center around the identification and enjoyment of the early summer wildflowers in the vicinity of Bonny Reservoir. Both camping facilities and motel facilities are available in the area. The field trip tentatively will begin at 9:00 AM, June 16 at the Denver Botanic Gardens, 909 South York Blvd., Denver. Please contact Margaret Sikes at 303-297-2547 for further details.

A field trip, led by Scott Ellis and Jim Ratzloff, will feature some rare and unusual plants and habitats of the western slope during the weekend of May 26-27. The excursion will center around Hotchkiss and Delta and will include visiting the unique hanging gardens of the BLM Cottonwood Springs area in Escalante Canyon. Jim Ratzloff will give an introductory slide presentation Saturday, May 27 at 7:00 PM in the Memorial Hall in Hotchkiss. The field trip will begin promptly at 9:00 AM, Sunday May 27 at the junction of Highway 92 and Highway 133 in Hotchkiss, Colorado. Participants anticipating an early arrival and attendance at Jim's presentation may seek motel facilities in Hotchkiss. Camping facilities are available at the Black Canyon National Monument, Erickson Springs east of Paonia and at the Scott Ellis farm 4 miles west of Hotchkiss. Please contact Jim Ratzloff (303-249-7791) in Montrose or Scott Ellis (303-493-6069) in Ft. Collins for further details.

MAPPING WORKSHOP

Interested CONPS members are invited to assist the Threatened and Endangered Species Committee in plotting the known locations of threatened and endangered plant species of Colorado. Locational information in textual form will be transcribed onto maps. Your efforts in accomplishing this task will be greatly appreciated. The product of the workshops will provide the Society with a visual aid of its locational information and will identify areas of critical concern. CONPS members interested in participating should meet at 10:00 AM, Saturday, APRIL 21, in Room E 19, Plant Sciences Building, Colorado State University, Ft. Collins. Further information may be obtained from J. Scott Peterson at 491-6824 or 491-6524.

ENDANGERED SPECIES BOTANISTS

Dr. James Miller recently assumed the position of Endangered Species Botanist for Region 6, USFWS which includes Colorado. Jim is based at the Denver Federal Center. Dr. Stephen Talbot was recently appointed as Endangered Species Botanist for Region 2, based in Albuquerque and includes our neighboring states of Oklahoma, New Mexico and Arizona.

FIRST FLOWER OF 1979

Despite an urgent appeal on the part of the Editor in the last Newsletter (January-February) no one has yet responded with a record of the first native plant to flower in 1979.

In order to make the contest more attractive, Anne Bliss has offered a copy of her "WEEDS, A GUIDE FOR DYERS" to the first person who reports the earliest wildflower of 1979.



NOTE: THE NUMBER 78 IN THE UPPER RIGHT CORNER OF YOUR ADDRESS LABEL INDICATES THAT YOU MAY BE IN ARREARS FOR 1979 DUES. PLEASE RENEW YOUR MEMBERSHIP AND CONTINUE SUPPORT FOR THE CONPS AND ITS VARIOUS ACTIVITIES.

LOOKING FOR PLANTS ON THE PLAINS

Have you seen Azolla mexicana in Colorado?

The South Platte River is cool, deep, and fast-flowing mid-September. Walking along a side-channel (near Atwood in Morgan County), we noted that the water was shallow and warmer than the rippled mainstream a hundred feet to the north.

Cattle were here first and the low water in this channel was rich with nutrients. Large numbers of algae probably accounted for the green water. In a backwater channel, the water rushed over rocks, yet stood still in another deeper pool of not-quite-stagnant water. It was a darker green here and we did not see any fish. Duckweed (Lemna) floated on the surface, making this a typical breeding ground for mosquito larvae. The sides of the pool were a mixture of clay, organic matter and sand--a good base for a mat of sedges and rushes.

Proceeding along the bank, which was overgrown with COCKLEBURS (Xanthium strumarium), we delighted in this display of Mother Natur's "Velcro". The cocklebur's fruit not only catches in an animal's fur (for transportation to another location), but also provides "lodging" for germination. Interestingly, of these two seeds, one will germinate the following growing season, while the other may lie dormant for many years.

Continuing on, we crossed to the center stream of this channel. In contrast to the serenity of the deep pool, the "tempo" of our new surroundings quickened. The clear water flowed faster. Busy insects were in noisy evidence: many small flies and more conspicuous dragon flies. We noticed a school of fingerlings which seemed disturbed by the vibrations our footsteps transmitted through the packed sand. Along the edges where the water moves more slowly, masses of filamentous algae were in abundance.

Suddenly, a different floating plant caught our attention. It is the first time we have seen the mosquito-fern, Azolla mexicana, outside of an aquarium!

We removed some of the plant in order to examine it with a hand lens. The tiny leaves resembled a delicate moss. We did not see any fruiting structures, but roots hung from the underside of the plant.

Although not visible at this magnification, we knew that in the chambers of these tiny leaves the symbiotic blue-green alga Anabaena azollae is found. The best-known function of this algae is its ability to fix atmospheric nitrogen, thus making it available to the little mosquito-fern.

While we still had the lens out, we examined some of the algae. We noticed little wigglers (mosquito larvae), minute round creatures resembling clams (ostracods), snails with round shells and snails with pointed shells. Indeed, here was a complete miniature ecosystem: plants, grazers and predators.

---Miriam Denham and Mary Ann Origer

REPORT FROM LEGISLATIVE COMMITTEE

Bad news on our bill to gain Colorado statutory protection for threatened and endangered plant species. Although many supporters spoke in favor of H.B. 1177 at the Feb. 16 hearing of the House Game, Fish and Parks Committee, the Committee voted 6 to 5 to "P.I." (Postpone Indefinitely). This means the bill will not be reported out of Committee and will not reach the floor of the House for a vote.

Opposition by Committee members centered around issues which could only have been cleared up by an intensive educational program: why some native plants are unique, whether cattle grazing would be prohibited, whether you would "need a license to shoot a plant" (!), why private groups don't just buy up land and protect the plants there, etc., etc. We also were caught in the cross-fire of general hostility toward the Division of Wildlife on the part of one Committee member. So - - - we will have to do all the educating we can and hope the bill can be put on the Governor's call for the 1980 General Assembly.

Thanks to all of you who helped support the bill. The following 4 Representatives gave us support in the Committee -- if you live in their district let them know you appreciate it: Lee Jones (Boulder), Jean Larson (Colorado Springs), Leo Lucero (Pueblo), and Dorothy Witherspoon (Lake-wood).

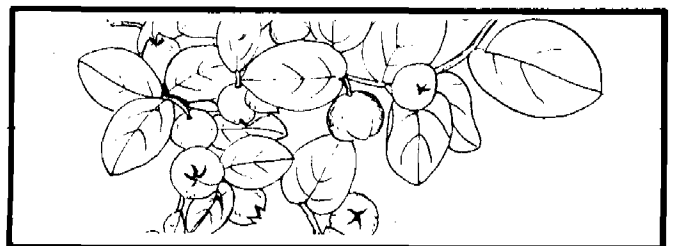
As individuals, your letters of support are needed on the following bills:

H.B. 1223, the Coal Mined Land Reclamation Bill. Support is needed for strong reclamation plan requirements!

H.B. 1280, which increases the amount that can be contributed to the nongame wildlife program from state income tax refunds. The CONPS supports placing the responsibility for threatened and endangered plant species within the Nongame Section of the Division of Wildlife, so if our bill passes next year, plants would also be covered by the money received from the check-off.

If you live in the Denver Metro phone area, you can call the Bill Room at 839-3055 to find out the status of a bill and the Chairman of the Committee to which it's assigned, then write to the Chairman. Otherwise you can write to your own Representative or Senator at the State Capitol, Denver 80203.

--Libby Goodwin



THE ENDANGERED SPECIES SYMPOSIUM

A symposium sponsored jointly by Brigham Young University, the U.S. Forest Service, and the Bureau of Land Management was held in Provo, Utah on December 7 and 8, 1978, to consider the problem of endangered species. New theories and research data were presented concerning biology of, threats to, and strategies for preservation of rare plants and animals. Philosophical reasons for protecting rare species were discussed as well as the political realities of the Endangered Species Act. Highlights and commentary of the symposium proceedings, which may be of interest to Society members, are presented below.

Dr. Stanley Welsh, Dr. Arthur Holmgren, and Dr. G. Ledyard Stebbins, in separate presentations, characterized endangered and threatened plants as often being restricted to unique habitat types where edaphic features are exposed to the surface, such as rock cliffs, shale outcrops, etc. Under such harsh conditions where geological strata are not insulated by well-developed soil horizons, there is considerable selective pressure for the plant to adapt to the unique chemical and hydrological make-up of the substrate. Dr. Holmgren stated that, "When a widespread species becomes established in unusual edaphic situations, it will carry only a small part of the genetic variability of the original species. Inbreeding and randomization will tend to make this unusual population more uniform and still more different from the original stock as years of isolation continue."

Dr. Stebbins noted that sometimes the unique habitats of endangered and threatened plants are so clearly defined that they are essentially "ecological islands". In these habitats the substrate is so different from that on the surrounding land, it is as if the plants were on an oceanic island surrounded by a sea of unfavorable soil conditions.

The specialization of many endangered and threatened plant species to unusual edaphic situations is an advantage in the sense that they often occupy the habitat free from competition with other plants. However, the species may become so highly adapted to the unique habitat that it does not have the genetic ability to occupy new habitats. Consequently, the species may have a very restricted range, and may be doomed if small changes occur in the environment to which it is so highly adapted.

Dr. Welsh made the observation that the majority of Utah's endangered and threatened plants occur in low elevation areas, in plant communities which receive low average annual precipitation. In these arid communities, soils are scant or non-existent as a result of low rainfall and the associated lack of leaching of soluble salts. The basic ideas proposed by Dr. Welsh, Dr. Holmgren, and Dr. Stebbins seem to hold true for many of Colorado's sensitive, threatened, and endangered plants. In Southwestern Colorado alone, a number of such plants occur in harsh

habitats where edaphic control may be significant. Eight species occupy sparsely vegetated shale hills or outcroppings at 6,000 feet or below (Atriplex pleiantha, Astragalus wetherillii,

Cryptantha elata, Eriogonum pelinophilum, Penstemon retrorsus, Phacelia submutica, Sclerocactus glaucus, Sclerocactus mesa-verdae). Two occur only on vertical volcanic or metavolcanic cliffs (Gilia penstemonoides, Sullivantia purpusii). Mimulus eastwoodiae and Erigeron kachinensis are only found on sandstone cliffs or slopes where water seepage occurs (usually in shallow caverns). Astragalus deterior is limited to shallow pockets in sandstone slabs. Senecio porteri and Stellaria irrigua are restricted to talus slopes above timberline.

Because many endangered and threatened plants are highly specialized for a unique habitat type, it is important that their habitats be protected. Dr. Holmgren stated that "the ecological amplitude of threatened and endangered plants are very narrow, and thus transplantation to such alien sites as botanic gardens is not a solution".

In his discussion of the meaning of "rare and endangered" in the evolution of desert shrubs, Dr. Howard Stutz questioned the philosophy of preserving all rare species: "Maybe some rare species should not be preserved at all. If we are interpreting the evolutionary process correctly, this is the part of evolution which includes extinction. In order to provide opportunities for new and improved adaptive types to become manifested on Earth, it is essential that all (obsolete forms be removed. Let us permit them a dignified departure. How to tell which of the rare forms are coming and which are going requires intimate knowledge of their biology and genology."

Dr. Stutz felt that, if it is necessary to make a decision regarding preservation or extinction of a species based on a proposed project, we should make the decision based on human value judgements and in terms of the greatest value. Economic values (negative or positive) in relation to importance to livestock, wildlife, industry and recreation; biological values, in terms of genetic potential and place in the ecosystem; and aesthetic and academic values may be weighed in making the decision. Dr. Stutz suggested that in the absence of such decisions, "Let's quit imposing our preferences, but rather reduce our impacts and just maintain the ecosystems, allowing natural selection to make the choice."

Dr. Kimball Harper noted that in Utah many rare plants are cross-pollinated by specific insect vectors, particularly those with restricted access flowers, such as Mimulus, Penstemon, or Astragalus. The destruction of the insects by spraying programs may affect seed set, and consequently reproductive capability of the rare plants. Dr. Harper mentioned that the construction of dirt roads close to rare plant populations may also hamper reproductive capability. If the stigmas are covered with dirt particles, fertilization and seed set will not occur.

Dr. Thomas Lovejoy, president of the World Wildlife Fund, spoke on the current status of the endangered species program. He expressed concern over the new amendments to the Endangered Species Act, by which critical habitat of a species in conflict with a federal project may be legally destroyed, after a complex series of evaluations and rulings. Some of Dr. Lovejoy's comments follow: "The new amendment was the first indication in the body of law that we are not going to save or try to save the full array of species in the biota. An extinct species is one about which we can learn little, either about its specific biology or role in nature. Many species will disappear without a mention of their existence in the chronicles of time."

According to Lovejoy, the major area of biotic extinction is in the non-temperate zones, because of destruction of tropical rain forests. He said, "In 1978 the last virgin rain forest was cut over in Bali. Tropical forest destruction occurs in the world at an estimated 50 acres per minute. These forests are a biological treasure; the number of endangered species are in many orders of magnitude greater than in the temperate regions."

Dr. Lovejoy continued: "The impoverishment of the total array of biota represents a reduction in the planet's carrying capacity to support man--too often we focus on an individual species. Scientists must articulate the true meaning of endangered species as indicators of stressed ecosystems, and as yet another sign of erosion of the basic quality of life. It is not always easy to deduce the complete meaning to society of any particular endangered species; but it will always be generally true that it reflects the deterioration of some biological system."

John Spinks, Chief of the Office of Endangered Species in the Fish and Wildlife Service, discussed perspectives of the endangered species program. He stated that, historically, endangered vertebrates have been given more protection with funds and legislation than invertebrates and plants. "If it had big brown eyes, and was cuddly, or in some way looked noble--if we had a tendency to love it, we were (more) concerned that it would disappear."

The large amount of congressional and public sentiment against stopping the Tellico Dam over the snail darter was mentioned by Mr. Spinks. He pointed out that this case was not typical since the Fish and Wildlife Service has conducted 5,000 formal and informal consultations regarding T & E species and all of these were mitigated except three, which resulted in litigation.

Mr. Spinks attempted to gauge the value of an endangered species: "(I am asked), what good are endangered or threatened species? Tell us in a very tangible fashion, what good is a snail darter? There is not any answer to that type of question. (However,) the first sign of an intelligent people is that you don't throw away any of the parts. Our (the Office of Endangered

Species) concern is for the survival of species. It is also for the survival of mankind. It is our posture that until we (man) can clearly know the consequences of our actions by making a species extinct, then it is very, very foolish to do so. That may be the part we need to make the clock run for another century or so.

--Jim Ratzloff

PINYON IN THE COLORADO FRONT RANGE

The outlier of *Pinus edulis* at Owl Canyon, about 25 km north of Fort Collins, is well known. In 1961, W. A. Weber reported 2 pinyons in Rist Canyon, some 19 km south of Owl Canyon (T. 8 N., R. 70 W., Sections 28 and 29). Since then, five other pinyon localities have been found in Larimer County: two additional areas in Rist Canyon (T. 8 N., R. 70 W., Sections 30 and 32), north fork of the Poudre River (T. 9N., R. 70 W., Sec. 15), Hewlett Gulch (T. 9 N., R 71 W., Sec. 27), and Poudre Canyon near Fort Collins Mountain Park (T. 9 N., R. 72 W., Sec. 4). The latter area is about 26 km WSW of the Owl Canyon Grove. In all these localities, only one or a few trees are present and they probably are a result of spread by jays from the main Owl Canyon Grove.

The northernmost locality of the main population of pinyon along the Front Range seems to be in southern Douglas County. Pinyon was recently collected on the west side of the Rampart Range in Missouri Gulch (T. 10 S., R. 69 W., Sec. 35), about 16 km north of Woodland Park.

The northernmost locality on the east side of the Rampart Range seems to be Douglas Creek, 5 km north of Garden-of-the-Gods, El Paso County. E. L. Little (Atlas of United States Trees. Vol. 1. Conifers and Important Hardwoods, U.S. Dept. Agric., 1971) shows a location in southern Douglas County on the east side of the Rampart Range, but this has not been confirmed.

Pinyon has also been collected in Boulder County: Boulder Canyon, 14 miles west of Boulder. Dr. Weber says that only a single tree was found (which was subsequently removed) and it was probably not native. Little shows a pinyon location in central Jefferson County, but I have not been able to confirm this report.

Any further information on the natural distribution of pinyon in the Colorado Front Range would be appreciated. Frank Hawksworth, U.S. Forest Service, Rocky Mountain Station, 240 W. Prospect St., Fort Collins, Colorado 80526.

NATIVE GRASSES IN COLORADO LAWNS

This is a brief report on a series of experimental grass plots established on the Otero Junior College campus under the direction of the CSU Extension Irrigation Engineer, Don Miles. CSU maintains an experiment station in near-by Rocky Ford. The research was designed by Mr. Miles and is unique in its design.

The purpose is to test the survival ability of nine grasses and to demonstrate their turf quality under different regimes of irrigation. The regional water is highly saline and alkaline and adversely affects the more salt sensitive commercial turf grasses. Two of the grasses being tested are varieties which have been selected from native populations: FULTS ALKALIE GRASS (*Puccinellia*) and BUFFALO GRASS (*Buchloe*). Other species being tested are MEYER ZOYSIA (*Zoysia*), BERMUDA (*Cynodon*), ALTA TALL FESCUE (*Festuca*), LINCOLN SMOOTH BROME (*Bromus*), FAIRWAY CRESTED WHEATGRASS (*Agropyron*), MANHATTAN PERENNIAL RYE GRASS (*Lolium*), and MERION KENTUCKY BLUEGRASS (*Poa*).

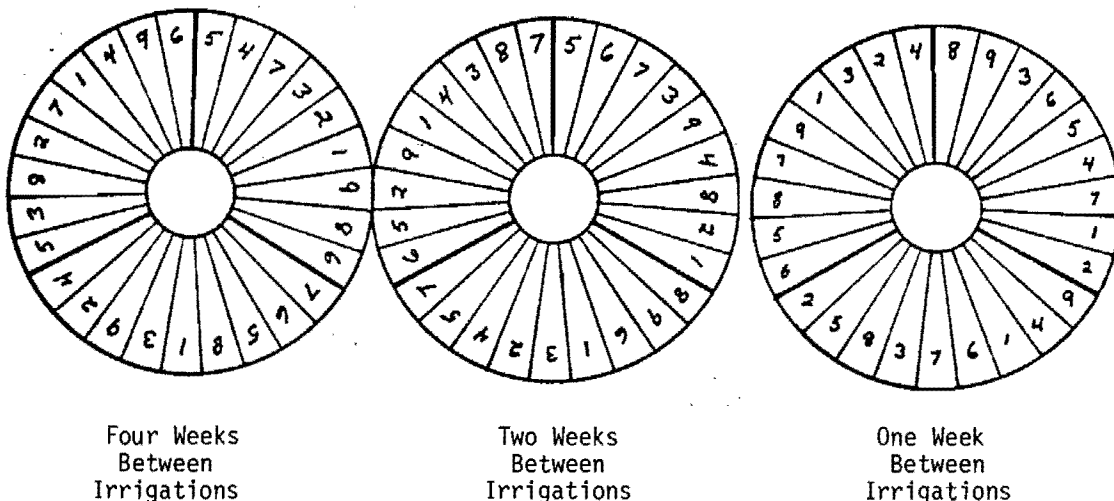
The nine grasses are replicated three times in each of three circular plots. Each plot will receive irrigation at a different time interval and within each plot the amount of water will be varied from center to edge. The amount applied at the center of the circle will be somewhat more than necessary to refill the root zone. As the edge of the circle is approached, the grasses will receive progressively less water until a drought condition is achieved.

The local residents are particularly interested in the outcome of this demonstration. Residential water rates are scheduled to rise 600% next season, certainly a financial incentive to conserve water. Another factor, less appreciated by many, is the poor quality of La Junta water. On the Otero campus improper watering schedules and overwatering over a period of just a few years has led to the disappearance of large areas of lawn with only barren soil remaining or areas of RUSSIAN THISTLE (*Salsola*) and *Kochia*. The saline/alkaline water used on our heavy clay soils has resulted in a build-up of salts which adversely affects many of the common commercial turf varieties.

Although a switch to native grasses sounds both practical and ideal, caution must be exercised and the home owner must learn new management techniques. BUFFALO GRASS (*Buchloe*) makes an excellent lawn on the heavy clays of this region and there are several such lawns in the area. However, this species is very susceptible to disease if overwatered. No one grass variety is perfect for all uses; each has its own good and bad features. Availability and quality of water, soil type and use to which a lawn is to be put, all have a bearing on the type of grass to be chosen. Even in my own small yard of less than 100' x 100', conditions are different enough that I have maintained BERMUDA in the front of the house and a combination of BLUEGRASS and BENT GRASS in the back of the house.

Many areas of the college campus have patches of another native grass worth mentioning: SALT GRASS (*Distichlis*), a very successful invader on alkaline and seepy soils where nothing else will grow.

---Dexter Hess



The grasses in the above diagrams are coded by the following numbers:

- | | |
|-----------------------|---------------------------------|
| 1. MEYER ZOYSIA | 6. LINCOLN SMOOTH BROME |
| 2. BERMUDA | 7. FAIRWAY CRESTED WHEATGRASS |
| 3. ALTA TALL FESCUE | 8. MANHATTAN PERENNIAL RYEGRASS |
| 4. FULTS ALKALI GRASS | 9. MERION KENTUCKY BLUEGRASS |
| 5. BUFFALO | |

