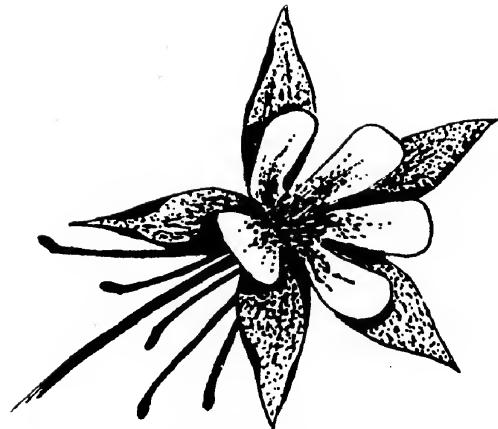


# Aquilegia



Newsletter of the Colorado Native Plant Society

"... dedicated to the appreciation and conservation of the Colorado native flora"

Volume 18 Number 3

May/June 1994

## The University of Northern Colorado Herbarium A Brief History

### Jody K. Nelson

Many people are unaware that the University of Northern Colorado (UNC) has a herbarium. While it is not a large research herbarium like those at CU-Boulder, CSU-Fort Collins, or UW-Laramie, the UNC herbarium contains a respectable collection of specimens that are used by students in plant taxonomy and other botany classes.

During the fall of 1993, an inventory of the herbarium was made by graduate students, Jody K. Nelson and Michelle Link, under the direction of Dr. William E. Harmon, Professor of Botany. The primary purpose of the inventory was to catalogue and reorganize the entire herbarium collection. The inventory included annotation of specimens for changes in nomenclature, cataloguing each specimen, recording data from specimen labels, organizing and refiling specimens in cabinets, and creation of a computer database containing information on the entire herbarium collection. During the course of this work, the history of much of the UNC collection was learned. A short, though not exhaustive, history of the UNC collection follows; special attention is given to some of the major contributors.

Botany courses have been part of the science curriculum at UNC since the beginning (c.a. 1890), when the school was called the

State Normal School of Colorado. A large portion of the herbarium collection at UNC dates to before the turn of the century. Some of the earliest collections were made by Arthur Eugene Beardsley, one of the school's first biology professors. A number of specimens collected near Ithaca, New York are credited to him, as well as a large number of ferns, collected between 1880 and 1899, from the Front Range of Colorado.

The herbarium collection of Edwin Lewis Byington, an educator and school superintendent who had an interest in botany, ferns, and microscopy, was donated posthumously to the school by his wife on March 1, 1897. His collection contained specimens from around the United States and also a large collection of European plants. Another substantial collection of

plant specimens from the eastern United States, dating from the 1890's, came from the State Normal School in Indiana, Pennsylvania.

Perhaps one of the most fascinating stories from the herbarium's history involved Colorado school teacher Earl Lynd Johnston. He collected extensively along the Front Range and northeastern plains around Greeley, from about 1905 to 1927. Many of his collections were numbered separately each year, with the best sets going to the University of Wyoming, and partial sets going to the Gray Herbarium, the Missouri Botanical Garden, and other herbaria. In 1917, he made a summer-long collecting trip through Colorado with George Grant Hedgecock, a plant pathologist with the U.S. Department of Agriculture. Based on

- continued on page 4

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## Notes From The Board of Directors

The Board of Directors of the Colorado Native Plant Society meets every other month, except during the summer, to conduct the business of the Society. Board meetings are always open to CONPS members who are interested in attending. Typically, meetings are held on a Saturday afternoon, beginning at 1:00 p.m. Contact the Secretary for schedule and location.

The Board took action on several items at the April meeting:

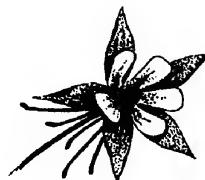
A \$500 grant from the John Marr Fund was awarded to Dina Clark, a graduate student at the University of Colorado. The funds will enable her to complete a floristic inventory of the Mesa de Maya region in southeastern Colorado. Tom Ranker, Curator of the CU Herbarium, is her advisor.

The Board voted to assist the Boulder Energy Conservation Center in the production of a *Native Plant Landscape Guide* for the Boulder area. Although the

*Guide* will be limited in its geographic scope, the Board hopes that providing \$200 toward this project will encourage and provide a model for other local efforts around the state. The project will promote the use of native plants in landscaping through education and example.

Finally, \$300 will be provided to reprint the purple loosestrife educational brochure. The first batch has already been distributed and we hear that it is making an impact! If you need one, or if you have suggestions about distribution, contact Nina Williams or Tamara Naumann (see below).

## Colorado Native Plant Society



The Colorado Native Plant Society is a non-profit organization dedicated to the appreciation and conservation of the Colorado native flora. Membership is open to all with an interest in our native plants, and is composed of plant enthusiasts both professional and non-professional.

Please join us in helping to encourage interest in enjoying and protecting Colorado's native plants. The Society sponsors field trips, workshops and other activities through local chapters and statewide. Contact the Society, a chapter representative, or committee chair for more information.

### Schedule of Membership Fees

Life .....	\$250
Supporting .....	\$ 50
Organization .....	\$ 30
Family or Dual .....	\$ 15
Individual .....	\$ 12
Student or Senior .....	\$ 8

### Membership Renewal/Information

Please direct all membership applications, renewals and address changes to the Membership Chairperson, Colorado Native Plant Society, P.O. Box 200, Fort Collins, CO 80522. Please direct all other inquiries regarding the Society to the Secretary at the same address.

## Aquilegia

*Aquilegia* is published four to six times per year by the Colorado Native Plant Society. This newsletter is available to members of the Society and to others with an interest in native plants. Contact the Society for subscription information.

Articles from *Aquilegia* may be used by other native plant societies or non-profit groups if fully cited to author and attributed to *Aquilegia*.

### Newsletter Contributions

Please direct all contributions to the newsletter to:

Tamara Naumann  
940 Quinn Street  
Boulder, CO 80303

Short items such as unusual information about a plant, a little known botanical term, etc. are especially welcome. Camera-ready line art or other illustrations are also solicited.

Please include author's name and address, although items will be printed anonymously if requested. Articles submitted on disks (IBM or Mac) are appreciated. Please indicate word processing software and version.



### Officers

President .....	Tom Ranker .....	492-5074
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Andrew Kratz (95) .....	Lakewood .....	238-6317
Tamara Naumann (95) ..	Boulder .....	440-8933
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Nina Williams (94) .....	Boulder .....	499-9858

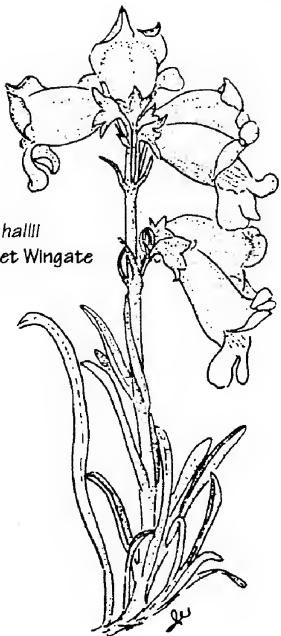
### Chapter Presidents

Boulder .....	Lynn Riedel .....	666-6687
Metro-Denver .....	Jeff Dawson .....	722-6758
Fort Collins .....	Mike Scott .....	490-1788
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Southwest .....	Sandy Friedley .....	884-9245
or .....	Leslie Stewart .....	882-7241

### Committees

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Editorial .....	Tamara Naumann ...	440-8933
.....	Nina Williams .....	499-9858
.....	William A. Weber ..	492-6171
Education .....	Andrew Kratz .....	238-6317
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.....	Ann Armstrong .....	494-0545
Legislative Affairs .....	Nina Williams .....	499-9858
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.....	Sue Martin .....	226-3371
Publicity .....	VACANT	
Workshops .....	Susan Eubank .....	277-9458
.....	Carol Dawson .....	722-6758
.....	Barbara Siems .....	838-6973

# ANNOUNCEMENTS



*Penstemon hallii*  
Artist: Janet Wingate

## LATE NEWSLETTER?

We received numerous complaints about late (or missing) March/April issues of *Aquilegia*. When this happens, be sure to contact your local post office; that's usually where the delay is. This time, however, the problem may have occurred at the Denver Terminal Annex (that's where we mail the newsletter). Denver members usually begin receiving newsletters within three days of mailing. Boulder members typically have to wait two weeks! We don't have any control over the newsletter once it is left at the Terminal Annex. Bulk mail is fraught with problems, but sometimes a phone call can help. This newsletter will probably be mailed on or about June 6. If yours is late (compared with other members in your area), give your local post office a call. If it doesn't show up within a few days of your call, contact Myrna Steinkamp (303) 226-3371 to request a replacement copy.

### A Reminder...

*Aquilegia* is considered third class mail. That means it won't be forwarded if you move. Keep Myrna informed of your whereabouts so your newsletter will get to you!



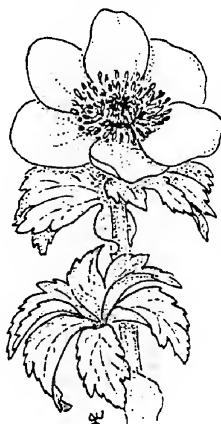
## In Memoriam PAULINE HAYES



We are sad to report the loss of a long-time CONPS member and supporter, Pauline Hayes of Fort Collins. Pauline and her husband Lloyd (a Past President of CONPS) have been active members of the Fort Collins Chapter and strong supporters of native plant conservation and wise horticultural use. Pauline held degrees in nursing and in interior design, and her love of people shone through all her activities. She delighted in growing beautiful plants in her garden, and shared them happily with all who stopped to admire. She also was a tireless preserver of the delicious fruits of the Hayes's garden and orchard—many can attest to her delicious chokecherry and raspberry syrups, for example!

As further evidence of her belief in the goals and activities of the Colorado Native Plant Society, Pauline asked that any memorial gifts in her memory be made to the Society's John Marr Research Fund. As a result, contributions have been received from many of the Hayes's friends and colleagues. We are most grateful for Pauline's thoughtful provision for the Society; she has given a gift that will continue through the years in helping to fund small research grants to increase our knowledge about the Colorado Flora.

We will miss Pauline's smiling face and gentle presence.



*Trollius albfiflorus*  
Artist: Janet Wingate

***Aquilegia***  
is printed on  
**100% recycled paper**

### DO YOU HAVE BOOKKEEPING SKILLS ?

After many years of diligent volunteer service, CONPS Treasurer Myrna Steinkamp is ready to retire so she can spend her time going on CONPS field trips. If you have bookkeeping skills and are looking for a way to make an important contribution, contact one of the Board members listed on page 2.

### TUNE IN TO NATIVE PLANTS!

Jim Borland is co-hosting the Gard'n-Wise Garden Talk Show with Keith Funk on KHOW radio (630 on the AM dial.) Jim is a past-president and active member of CONPS. Tune in on Saturday mornings at 8 a.m. to this one-hour show, sponsored by Gard'n-Wise. What a great opportunity to promote the use of native plants in Colorado landscapes! Listen for new ideas or share your ideas with others.

## UNC Herbarium, continued from front page

collection dates from herbarium specimens in the UNC collection, an itinerary of their collecting trip across the state was reconstructed (Figure 1).

Between June 14 and June 30, 1917, collections were made along a route that began at Raton Pass and included Morley, Trinidad, Stonewall, La Veta, Walsenburg, Gardner, Salida, Cañon City, Colorado Springs, Monument, Castle Rock, and parts in-between. In July, Johnston and Hedgecock continued collecting near Larkspur, Boulder, Golden, Coal Creek Canyon, Lyons, Allenspark, Fort Collins, and Cherokee Park, ending the month with collections from Fox Park, Wyoming, and Walden, Colorado on July 31. In August, they continued their trip from Walden to Steamboat Springs, McCoy, State Bridge, Hot Sulphur Springs, Frasier, Berthoud Pass, Georgetown, Golden, and Estes Park, ending on August 29, near

Ward, Colorado. All along the way, numerous collections of the flora they encountered were made. It would be interesting to know the mode of travel used by these ambitious collectors. Did they travel by Model T, train, horse, or a combination of means? It must certainly have been an adventure!

Another set of collections in the UNC herbarium dates from the 1920's; these collections, made by J. M. Grant, came from the vicinity of Marysville, Washington. Later, Arthur Leroy Hershey, Assistant Professor of Botany at what had become the Colorado State College of Education,

donated a large collection of specimens representing the flora of a variety of New Mexico ecosystems. Hershey had been a botany professor at New Mexico A & M from 1934 to 1948 and had made many collections from the New Mexico flora. Although he spent only one academic year at UNC, from 1948 to 1949, his donated specimens form a large portion of UNC's collection.

More recent collections include a large

the UNC herbarium. A recent addition of voucher specimens from the Neota Wilderness has greatly increased the number and diversity of alpine and subalpine species represented in the UNC collection. An inventory of the vascular flora of the Neota Wilderness was conducted in 1992 and 1993 by the author as a part of a Master's degree research project at UNC. Along with the vascular plants, a number of mosses, liverworts, and lichens were collected during the study and form a group of organisms new to the UNC herbarium collection.

The UNC herbarium also includes a number of specimens of foreign origin, including some from France, Great Britain, Canada Mexico, Guatemala, El Salvador, Nicaragua, Costa Rica, Honduras, and Venezuela. The oldest specimen in the collection is a specimen of *Geum rivale* L., which was collected in France in 1863. The UNC

herbarium contains approximately 12,000+ specimens representing 198 families. Although the UNC herbarium is not large, it serves well as a teaching herbarium with a unique history, and as an important contributor to our knowledge of the flora of Colorado.

Anyone interested in visiting or using the UNC herbarium is encouraged to do so. Please contact Dr. William E. Harmon, Professor of Botany, in Ross Hall Room 204, University of Northern Colorado, Greeley, Colorado 80639, or call (303) 351-2515.

number of specimens from D. B. Dunn, Professor Emeritus of Botany at the University of Missouri, Columbia. Many of these are from various western states and were collected from the 1940's through 1976. Some of the collections made from the 1950's through the 1970's include specimens collected by students in Plant Taxonomy courses at UNC. William E. Harmon, current Professor of Botany at UNC, has also contributed many specimens from Colorado, Missouri, and Central America.

The plains and foothills life zones of Larimer and Weld Counties are best represented in

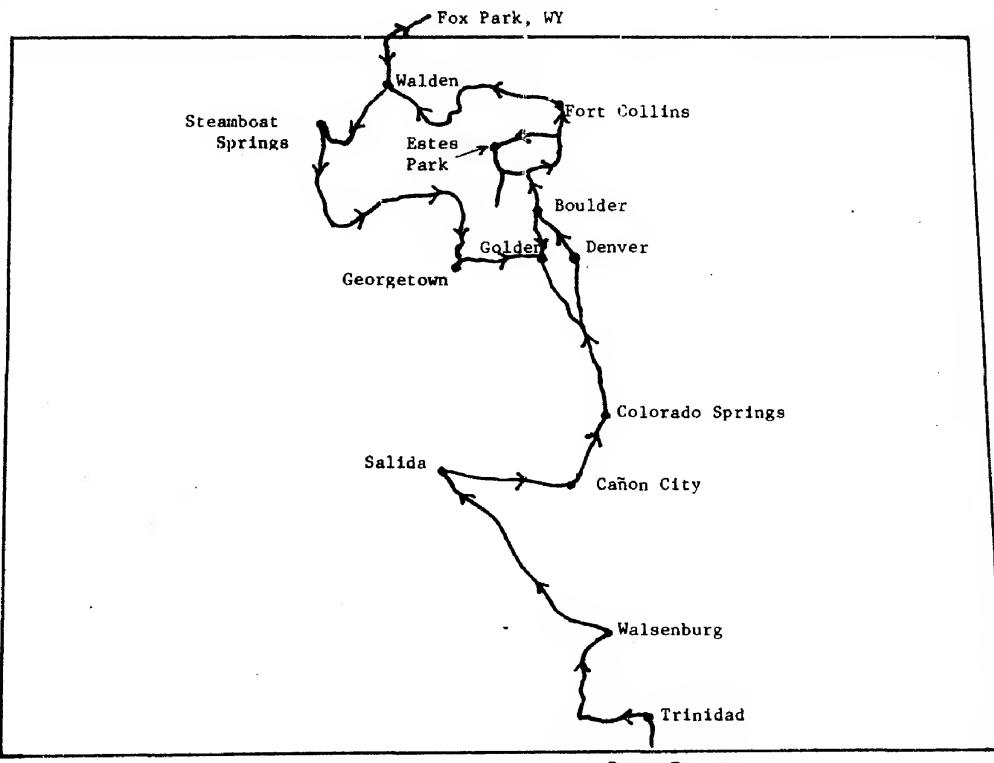


Figure 1. Route of botanical collecting trip taken by Earl L. Johnston and George G. Hedgecock through Colorado in 1917.



# Vascular Flora of the Neota Wilderness—Inventory Results and New Record For The Colorado Flora

**Jody K. Nelson and  
William E. Harmon  
University of Northern Colorado  
Herbarium**

During the summers of 1992 and 1993, Jody Nelson conducted an inventory of the vascular flora of the Neota Wilderness Area in the north-central Colorado mountains. This work was a thesis project for a Master's degree at the University of Northern Colorado in Greeley.

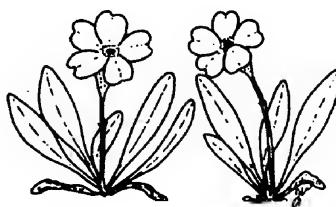
The Neota Wilderness Area is located between Cameron Pass and the northwest boundary of Rocky Mountain National Park. Although small in size by most wilderness standards (approximately 15.5 sq. mi.), the Neota, with its rugged and dense subalpine forests and alpine vistas, offers a true wilderness experience for the few who venture to explore it. Ranging in elevation



from 9,900 ft. to over 12,000 ft. in elevation, the topography is dominated by Iron Mountain and three alpine ridges radiating from its summit. Geologically, the Neota Wilderness Area is interesting because the Precambrian rock which comprises most of Colorado's Continental Divide is overlain in this area by deposits of volcanic rhyolite up to 1,000 ft. thick. The pyroclastic flows of volcanic material originated to the south of the Neota some 28 million years ago from sources near Specimen Mountain and parts of the Never Summer Range in Rocky Mountain National Park.

The Neota Wilderness contains both subalpine and alpine ecosystems, each containing diverse habitats and community types. During the course of the study, the

wilderness was extensively explored and plant specimens were collected throughout the area to provide baseline documentation of the flora. A special collecting permit from the U.S. Forest Service was required. Nearly 300 miles were hiked through



150,000 feet of elevation change in 52 days of collecting conducted over two field seasons.

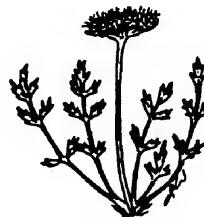
As a result of this inventory, the vascular flora of the Neota Wilderness, representing both alpine (above treeline) and subalpine zones, is known to contain plants in 54 families, 169 genera, and 301 species. The alpine component of this flora consists of 203 species in 118 genera and 39 families. Families contributing the largest number of species include the Asteraceae (40), Poaceae (31), Cyperaceae (27), Brassicaceae (18), Scrophulariaceae (16), Rosaceae (16), and Saxifragaceae (14). Proportionally, the numbers are somewhat similar for the alpine component of the flora: Asteraceae (37), Cyperaceae (15), Poaceae (14), Brassicaceae (13), Scrophulariaceae (12), Rosaceae (12), and Saxifragaceae (12).

Seven species collected in the Neota Wilderness are considered endemic to Colorado. These include: *Paronychia pulvinata* Gray, *Ligularia holmii* (Greene) Weber, *Ligularia soldanella* (Gray) Weber, *Ligularia taraxacoides* (Gray) Weber, *Aquilegia saximontana* Rydberg, *Primula angustifolia* Torrey, and *Oreoxis alpina* subsp. *puberulenta* Weber. Although no endangered species were found in the area, three species of special concern to the Colorado Natural Areas Program are reported; these are *Draba fladnizensis* Wulfen, *Draba streptobrachia* Price, and

*Aquilegia saximontana* Rydberg.

A new state record for the flora of Colorado was discovered growing on the muddy bottom of a small subalpine lake in the wilderness. *Subularia aquatica* L., a small aquatic member of the Brassicaceae (mustard) family, was found growing abundantly in association with *Isoetes bolanderii* Engelmann and *Sparganium angustifolium* Michaux. Commonly called awlwort, the term *subula*, from the Latin, refers to the awl-shaped leaves of the plant. Prior to development of its flowering stalk, *Subularia* looks very much like *Isoetes*. *Subularia*'s tiny white flowers develop and open underwater.

The discovery of awlwort in Colorado significantly increases the known range of the species. Although it is widely distributed across the northern latitudes, its known range in the Rocky Mountains was previously limited to a few sites in northwestern Wyoming and a single site in northeastern Utah. Its discovery in the Neota Wilderness increased the known range approximately 280 miles to the southeast of the Wyoming sites and 220 miles to the east of the Utah site.



A range extension is also reported for *Azaleastrum albiflorum* (Hooker) Rydberg, known previously from the Park Range in Jackson and Routt Counties in Colorado. The discovery of a small population in the Neota Wilderness represents the first record

- continued on page 7

## Rare Plants of Colorado — Second Edition Coming!

They're at it again! The Rare Plant Monograph Committee is working on a second edition of the popular Society publication, *Rare Plants of Colorado*. The first edition is essentially sold out, although a few copies remain available at bookstores and in the possession of the Society.

Eleanor Von Bargen chairs the committee, which includes Janet Coles, Miriam Denham, William F. Jennings, Sue Martin, Velma Richards, and Myrna Steinkamp. The group considered but rejected publishing a minor revision of the first edition, and instead has begun a major revision. For *Rare Plants of Colorado, 2nd Edition* ("RPC II"), it is estimated that about one-third of the species included will be new to this edition; hold on to your first editions, though, as there are a number of species described and illustrated there that will not be repeated.

RPC II will follow the same general format as the first edition: approximately 100 species will be included, grouped by the broad habitat type in which they occur. Each will be illustrated by one or more

photographs or a detailed line drawing, and accompanied by a dot map illustrating its general location in the state. Also, each plant will be described in a paragraph of interesting facts such as the source of its name; its botany, ecology, and habitat requirements; and the threats to its continued existence. As with the first edition, Bill Jennings will serve as chief writer, so you can expect more of his vivid plant descriptions in RPC II!

Currently, the committee has a working list of 139 species being considered for RPC II. If you have information or a publication-quality photograph of any of these species, it would be welcomed. Also, good photographs are needed to head each habitat section (Alpine Tundra, Barrens, Cliffs and Canyons, Forests, Grasslands, Shrublands, Wetlands, Woodlands). It is essential that habitat photographs show ONLY the habitat intended (for example, a photo illustrating the tundra should not include subalpine forest; a shrubland photo should not include trees; a forest shot should not include riparian vegetation). Vertical format is strongly

preferred for habitat shots.

The committee also will be commissioning line drawings of species selected for the book, but lacking a suitable photograph. The committee is seeking anyone who might be interested in doing such art work, for which a small honorarium will be paid. Please let Eleanor Von Bargen or any committee member know of your interest. The ability to draw with technical accuracy from photographs (provided by the committee) or pressed plant specimens in herbaria (information provided) is essential.

There will be opportunities on 1994 CONPS field trips to photograph some of the plants under consideration for RPM II. The committee asks everyone to help obtain the needed slides. Try to photograph the whole plant, plus (if your camera permits) close-ups of flowers, fruit, or other important details. Please submit your photographs (color slides), clearly marked with your name and the name of the plant (or habitat) to: RPM II Photos, Colorado Native Plant Society, PO Box 200, Fort Collins CO 80522.

Here's the list of plants for possible inclusion in RPM II...let's get busy finding and photographing them!

*Agastache foeniculum*  
*Aletes humilis*  
*Ambrosia linearis*  
*Amorpha nana*  
*Aquilegia chrysanthra* var. *rydbergii*  
*Aquilegia saximontana*  
*Arabis vivariensis*  
*Aristida basiramea*  
*Armeria scabra* ssp. *sibirica*  
*Asclepias uncialis*  
*Asplenium adiantum-nigrum*  
*Astragalus brandegeei*  
*Astragalus cronicostii*  
*Astragalus deterior*  
*Astragalus humillimus*  
*Astragalus linifolius*  
*Astragalus microcymbus*  
*Astragalus molybdenus*  
*Astragalus nelsonianus*  
*Astragalus osterhoutii*  
*Astragalus piscator*  
*Astragalus ripleyi*  
*Astragalus schmolliae*

*Astragalus tortipes*  
*Bolophytum alpina*  
*Bolophytum tetraneuris*  
*Botrychium campestre*  
*Braya glabella*  
*Braya humilis*  
*Carex concinna*  
*C. lasiocarpa*  
*C. leptalea*  
*C. livida*  
*C. sychnocephala*  
*Centunculus (Anagallis) minimus*  
*Chenopodium cycloides*  
*Chionophila jamesii*  
*Cirsium ownbeyi*  
*Cleome multicaulis*  
*Cryptantha aperta*  
*Cryptantha breviflora*  
*Cryptantha cana*  
*Cryptantha paradoxa*  
*Cypripedium calceolus* var. *pubescens*  
*Cypripedium fasciculatum*  
*Draba* (sp. to be named)  
*Draba smithii*  
*Drosera rotundifolia*  
*Dryopteris expansa*  
*Echinocereus triglochidiatus* forma *inermis*  
*Epipactis gigantea*

*Erigeron humilis*  
*Erigeron kachinensis*  
*Erigeron lanatus*  
*Erigeron wilkenii*  
*Eriogonum brandegeei*  
*E. clavellatum*  
*E. pelinophilum*  
*E. contortum*  
*Eriophorum altaicum* var. *neogaeum*  
*Eustoma grandiflorum*  
*Eutrema penlandii*  
*Frasera coloradensis*  
*Gaura neomexicana* ssp. *coloradensis*  
*Gentianella tortuosa*  
*Gilia penstemonoides*  
*Gilia stenothyrsa*  
*Habenaria zothecina*  
*Hackelia gracilenta*  
*Herrickia horrida*  
*Heuchera richardsonii*  
*Hypoxis hirsuta*  
*Ipomopsis congesta* ssp. *crebrifolia*  
*Ipomopsis globularis*  
*Ipomopsis polyantha* var. *polyantha*  
*Juncus vaseyi*  
*Koenigia islandica*  
*Lesquerella congesta*  
*Lesquerella parviflora*

*Lesquerella pruinosa*  
*Lilium philadelphicum*  
*Lomatium concinnum*  
*Lomatium latilobum*  
*Lupinus crassus*  
*Lygodesmia doloresensis*  
*Malaxis brachypoda*  
*Mentzelia argillosa*  
*Mentzelia chrysanthia*  
*Mentzelia densa*  
*Mimulus eastwoodiae*  
*Mimulus gemmiparus*  
*Muhlenbergia glomerata*  
*Musineon (Aletes) tenuifolia*  
*Neoparrya (Aletes) lithophila*  
*Oenothera acutissima*  
*Onoclea sensibilis*  
*Oxybaphus rotundifolius*  
*Parnassia kotzebuei*  
*Pediocactus knowltonii*  
*Pediomelum hypogaeum*  
*Pediomelum megalanthum*  
*Penstemon albifluvis*  
*Penstemon cyathophorus*  
*Penstemon debilis*  
*Penstemon degeneri*  
*Penstemon gibbensii*  
*Penstemon grahamii*  
*Penstemon harringtonii*  
*Penstemon parviflorus*  
*Penstemon penlandii*  
*Penstemon retrorsus*  
*Phacelia formosula*  
*Phacelia submutica*  
*Phippia algida*  
*Phlox caryophylla*  
*Physaria bellii*  
*Physaria obcordata*  
*Potentilla ambigens*  
*Primula egaliksensis*  
*Proatriplex pleiantha*  
*Ptilagrostis porteri*  
*Pyrola picta*  
*Rhododendron (Azaleastrum) albiflorum*  
*Rorippa coloradensis*  
*Rubus arcticus ssp. acaulis*  
*Salix candida*  
*Salix lanata ssp. calcicola*  
*Salix serissima*  
*Saussurea weberi*  
*Scirpus (Trichophorum) pumilus*  
*Sclerocactus glaucus*  
*Sclerocactus mesae-verdae*  
*Selaginella selaginoides*  
*Sisyrinchium pallidum*  
*Solidago ptarmicoides*  
*Spiranthes diluvialis*  
*Sullivantia hapemanii var. purpusii*  
*Thalictrum heliophilum*  
*Thamnosma texana*  
*Thellungiella salsuginea*  
*Townsendia strigosa*  
*Trillium ovatum*  
*Zigadenus vaginatus*

### Neota Wilderness, continued from page 5

of the species for Larimer County, and the first record for an area east of North Park, a range extension of approximately 25-40 miles. The population was growing on a north-facing slope in subalpine forest, east of Cameron Pass.

For those who are interested, the range extensions reported here for both *Subularia aquatica* and *Azaleastrum albiflorum* suggest that searches may be warranted in the nearby Never Summer, Rawah, and Rabbit Ears Ranges which form the southern and eastern boundaries of North Park. If you are planning any hiking and/or botanizing trips to these areas, keep on the look out! The best time to find *S. aquatica* is in late summer when it has produced its flowering stalk. Early in the season, the plant can easily be mistaken for a young *Isoetes* because the leaves are very similar.

Floristic comparisons are often made between floras of different localities to evaluate the degree of similarity in species composition between areas. Comparisons of the Neota Wilderness flora with other subalpine floras in Colorado show a general similarity (53-68% similarity). Phytogeographically, the largest proportion of species found in the Neota Wilderness have a western North American distribution, from the Rocky Mountains westward to the Pacific Ocean. The second largest proportion of species are circumpolar in their distribution.

The Neota Wilderness is a beautiful location for a day hike or a short backpack trip. It provides an excellent example of Colorado subalpine and alpine ecosystems and their associated floras. I recommend it to anyone interested in doing some exploration in a wilderness setting.

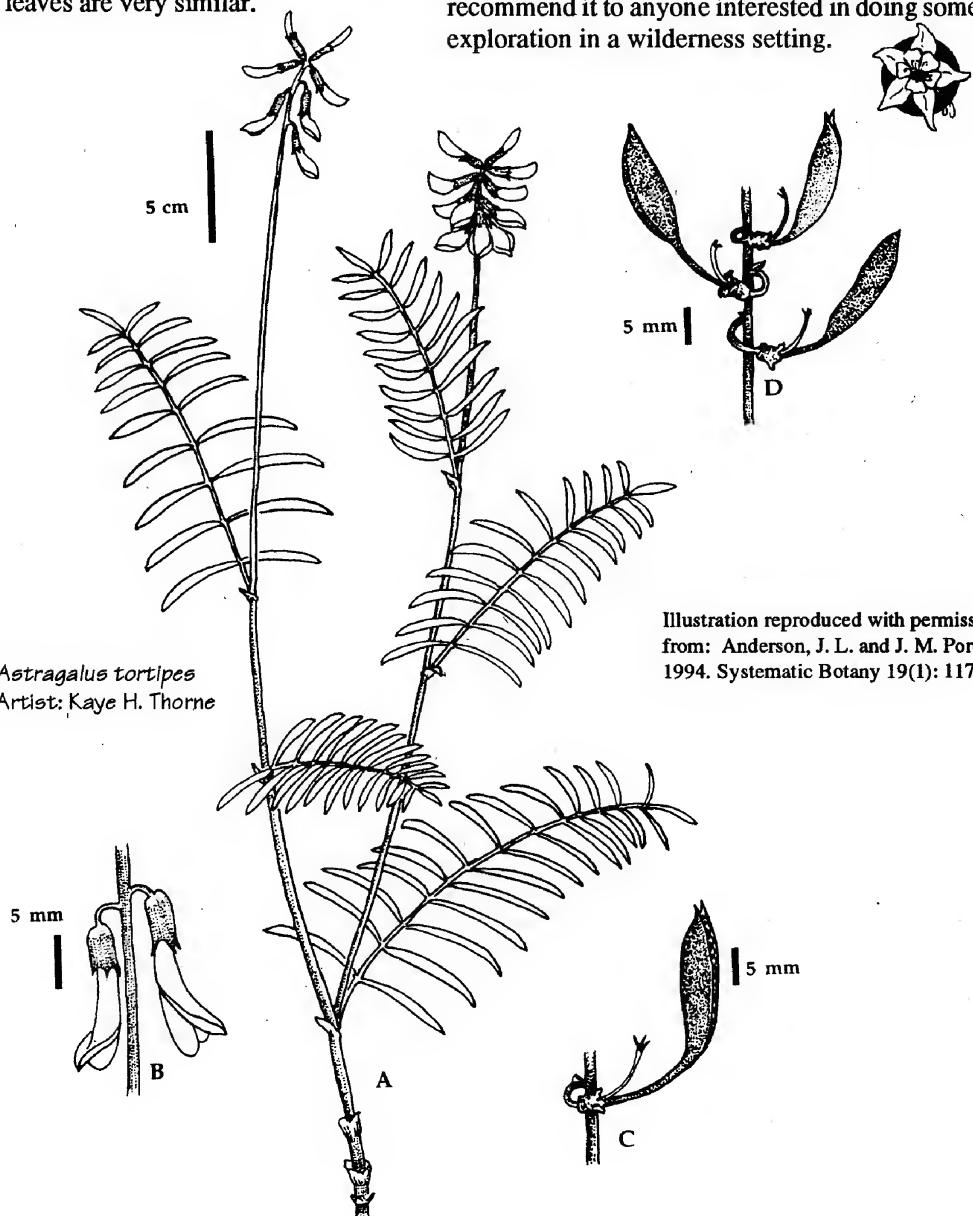


Illustration reproduced with permission from: Anderson, J. L. and J. M. Porter. 1994. Systematic Botany 19(1): 117.

# The Forest Service and Ecosystem Management: Are Sensitive Plants Falling Through The Cracks?

**Rocky Smith**  
**Colorado Environmental Coalition**

With considerable fanfare, the U. S. Forest Service announced two years ago a new policy of "ecosystem management," which includes consideration of the interactions of all natural resources with each other and with humans. This new focus on ecosystem level interactions was to have moved the Forest Service away from the commodities-based management that resulted in wood fiber production quotas, for example.

Unfortunately, the agency's actions so far do not match its rhetoric. The U. S. Forest Service appears very reluctant to focus on the most imperiled parts of ecosystems found on National Forest lands, i.e., threatened, endangered, candidate, and sensitive species of animals and plants. If these species disappear from National Forest lands, key ecosystem functions may be lost. Thus, "ecosystem management" is becoming a fancy new name for the same old way of doing business.

As each National Forest within Colorado has set about revising its management plan (see related article in *Aquilegia* Vol. 18 No. 2, page 11), the Colorado Environmental Coalition (CEC), along with its member groups and supporters, has been composing Citizen Management Alternatives (CMAs). The goal of each CMA is to provide for maintenance of biological diversity and ecosystem integrity. This includes, but is not limited to, maintenance of all native plant and animal species in viable (non-imperiled) populations across their natural range of distribution. To do this, we recommend establishing a core reserve system designed to maintain populations of rare species and to allow for their recovery to fully viable populations.

Over the last three years, we have completed CMAs for the Arapaho-Roosevelt, Routt, and Rio Grande National Forests. This summer, we will be working on CMAs for the White River and San Juan National

Forests. The knowledge and interest of CONPS members would be very helpful in designing these citizens' plans. If you are interested in helping, please call me at the CEC office (303) 837-8704.

Meanwhile, Region 2 of the U. S. Forest Service (Colorado, portions of Wyoming, Nebraska, and Kansas, and the Black Hills of South Dakota) has revised its sensitive species list. A sensitive species is one that is declining in range or population size, and which requires protection or special management to stop or reverse such declines. The intent is to institute such measures before the species reaches the point of requiring protection under the Endangered Species Act (ESA).

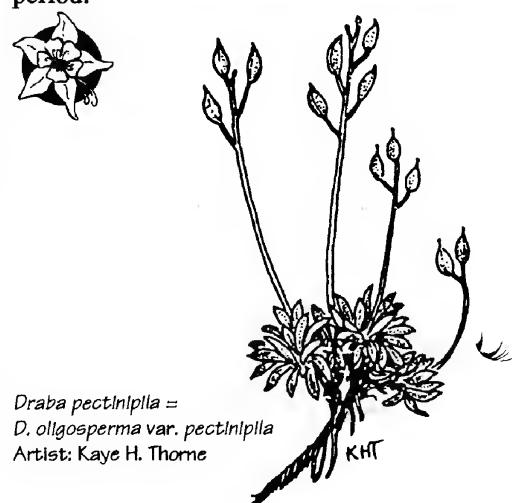
The animal species on the list did not change from the previous sensitive species list issued in March of 1993. Numerous changes occurred in the plant list, however. Removed from the list were *Braya humilis* (alpine rockcress), *Draba pectinipila* (comb-hair whitlow-grass), and *Penstemon mensarum* (tiger beardtongue).

According to Forest Service policy, species are removed from the sensitive species list if any of the following criteria are met: 1) recovery is sufficient enough that the species no longer requires protection or special management, 2) persuasive evidence of extinction is presented, 3) the species is listed under the Endangered Species Act, or 4) the species is proposed for federal listing. The latter criterion is inappropriate because a species that has been proposed for federal ESA listing has no formal protection under the Endangered Species Act, and is therefore vulnerable if it occurs on neither list. A sensitive species that has been proposed for ESA listing should not be removed from the sensitive list until a final decision has been made about the ESA listing.

The following species were added to the sensitive species list: *Agoseris lackschewitzii* (pink agoseris), *Ambrosia linearis* (streaked ragweed), *Botrychium lineare* (narrow-leaved moonwort),

*Cypripedium fasciculatum* (clustered lady's slipper), *Eriogonum brandegeei* (Brandegee wild buckwheat), *Gaura neomexicana* ssp. *coloradoensis* (Colorado butterfly plant), *Ipomopsis polyantha* (Pagosa skyrocket), *Ipomopsis spicata* ssp. *robruthii* (Kirkpatrick ipomopsis), *Lesquerella fremontii* (Fremont's bladderpod), *Malaxis brachypoda* (adder's mouth), *Penstemon caryi* (Cary beardtongue), *Potentilla effusa* var. *rupinicola* (Front Range cinquefoil), *Pyrrocoma carthamoides* var. *subsquarrosum* (Absaroka goldenweed), and *Sphaeromeria simplex* (Laramie false sagebrush). A complete list of Region 2 sensitive plant species is available from CEC, 777 Grant Street, Suite 606, Denver CO 80203-3518 or from the U. S. Forest Service Region 2 office (address below).

If you know of additional species found on National Forest lands that you believe are in need of protection, write to: Elizabeth Estill, U.S.D.A. Forest Service, P.O. Box 25127, Lakewood, CO 80225. Provide the name of the species and any evidence you have of rapid decline in distribution or population size. Indicate your concern for species that have been proposed for ESA listing and ask that such species remain on the Forest Service sensitive species list until a final ruling has been made on the ESA listing. Ask her to ensure that the Forest Service will provide adequate protection and management (by keeping the species on the sensitive species list) during the interim period.



## American Floral Meadow Society—Now In Its Second Year

CONPS members may be interested in a new organization. The American Floral Meadow Society (AFMS) has recently been formed. The AFMS is "a professional organization dedicated to the development and improvement of wildflower-grass groundcover plantings for ornamental and low-maintenance uses." Members of The AFMS share an interest in research involving evaluation and selection of wildflower and grass species, seed mix formulation, meadow establishment methods, mowing and burning techniques, soil fertility, pest control, and related issues.

*The News of the American Floral Meadow Society*, the quarterly news journal of the society, made its debut in March, 1993. The

First Annual Meeting was convened January 14-15, 1994. The *Proceedings* of the meeting were published in February. Individual membership is currently \$35 per year; \$120 for organizations.

All those with an interest in new developments and improvements in the use of wildflower-grass mixes for roadsides, right-of-ways, golf courses, parks, home landscapes, and other low-maintenance sites are invited and encouraged to apply for membership.

First among the goals of The AFMS is to improve both the quality and quantity of published research in this relatively new field. All members of The AFMS will enjoy

the opportunity to contribute technical reports, news items, and other materials of interest for publication in *The News*, as well as to interact with those engaged in current wildflower research projects across the United States.

To apply for membership in The AFMS, complete the application form below. Make checks payable to AFMS, and return to:

The American Floral Meadow Society  
c/o John M. Krouse  
University of Maryland  
Cherry Hill Turf Research Facility  
3120 Gracefield Road  
Silver Spring MD 20904

### AMERICAN FLORAL MEADOW SOCIETY 3120 GRACEFIELD ROAD SILVER SPRING MD 20904

#### MEMBERSHIP APPLICATION

Membership Category

INDIVIDUAL (\$35/yr)  
 ORGANIZATION (\$120/yr)

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_ MI: \_\_\_\_\_

Title: \_\_\_\_\_

Organization or  
Research Institution: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Daytime phone: \_\_\_\_\_ Other phone: \_\_\_\_\_

#### YOUR INTERESTS (please check all that apply):

- flower selection
- grass selection
- seed production
- seed mix development
- nursery plant production
- mix and plant competition
- soil fertility

- water use
- landscape design
- beautification
- native species
- prairie restoration
- wetlands restoration
- establishment techniques

- pest control techniques
- mowing techniques
- burning techniques
- erosion control
- regulatory compliance
- other \_\_\_\_\_

Please make checks payable to AFMS and return to the address shown above.

## NEW BOOK ↓

## FOR YOUR LIBRARY →

Most people who are learning to identify plants are overwhelmed by the extensive vocabulary required to use a typical plant identification key. The glossaries provided with these keys are often of limited value because a verbal description may be inadequate to convey the essence of a complex botanical term. Identifying even one plant specimen may become a very tedious and frustrating experience. Frequently, however, all that is required to quickly convey the meaning of a botanical term is a simple illustration.

If this sounds familiar, you may be interested in a new publication:

**Plant Identification Terminology: An Illustrated Glossary.** 1994. *James G. Harris and Melinda Woolf Harris.* Spring Lake Publishing, Payson, UT. 198 pages. softcover. \$17.95.

This comprehensive, illustrated guide to the vocabulary of plant description and identification defines more than 2,400 taxonomic terms and provides over 1,700 illustrations.

Spring Lake Publishing is offering a special price to Colorado Native Plant Society members. Although the book retails for \$17.95, you can purchase it for \$15.95, postage paid, simply by indicating your affiliation with CONPS. The publishers do not accept credit cards or telephone orders, but will gladly accept a personal check. Their address is:

Spring Lake Publishing  
Box 266  
Payson UT 84651  
phone: (801) 465-0867.

If you would like to review the book for *Aquilegia*, a complementary copy may be yours! Contact Tamara Naumann (303) 440-8933 for details.

*Note: A helpful and less expensive alternative is Harrington's How To Identify Plants (\$8.00). For ordering information, see page 11.*



CONPS is pleased to provide a selection of books to members at discount prices. If you are interested in any of the publications listed on the following page, contact:

Velma Richards  
3125 W. Monmouth  
Englewood, CO 80110  
(303) 794-5432



*Sibbaldia procumbens*  
Artist: Janet Wingate

Make checks payable to CONPS. Postage costs are additional for books received by mail. If you want to save the postage charges, you can pick the books up yourself in Denver from Velma Richards, in Boulder from Tamara Naumann, in Fort Collins from Myrna Steinkamp, and in Meeker from Reed Kelley.

## CHAPTER NEWS

## Boulder Chapter

## June 18: Plant Identification For Beginners

Miriam Denham will share her extraordinary talents and advice with folks struggling to learn how to identify plants. This Saturday morning class will be held at the Boulder County Open Space shelter at the junction of Neva Rd. and Foothills Highway (north of town), from 9 a.m. to noon. Bring a copy of Weber's *Colorado Flora: Eastern Slope* (if you have one), a single edge blade or scalpel, and two or three flowers to identify. For more information, call 442-1020.

## July 9: Wetlands of Boulder Open Space

Join Mark Gershman, City of Boulder Wetlands and Wildlife Coordinator, for a wetlands tour in the floodplain of South Boulder Creek on Saturday morning at 8:30 a.m. Meet at the Open Space Maintenance Shop trailhead (1405 South Foothills Highway—two miles south of the intersection of Broadway and Table Mesa Drive). Visit a wide variety of natural wetland types and see a variety of interesting and uncommon plants. Be prepared to walk in wet places.

## July 23: Boulder Butterflies

Come search for many of the butterflies common to the foothills around Boulder on a leisurely hike in upper Gregory Canyon. Steve Armstead, Ranger with Boulder Mountain Parks, has photographed and studied butterflies common to the Mountain Parks for several years. Meet at Realization Point (3.3 miles up Flagstaff Road—where the road turns north to the Flagstaff summit) at 9:00 a.m. Bring water and binoculars.

Monthly meetings are held from September through April on the 2nd Tuesday of the month at 7:30 p.m. at the Foothills Nature Center, 4201 North Broadway, unless otherwise noted. Summer get-togethers are less formal (see above). For more information call Lynn Riedel (666-6687) or Elaine Hill (494-7873). Bring a friend!

**COLORADO NATIVE PLANT SOCIETY — DISCOUNTED PUBLICATIONS ORDER FORM**

Title	Author	Price Each	Postage Each	Book Total	Postage Total
<i>Alpine Wildflowers of the Rocky Mountains</i>	J. F. Duft & R. K. Moseley	\$ 9.50	\$ 2.00		
<i>Catalogue of the Colorado Flora: a Biodiversity Baseline</i>	W. A. Weber & R. C. Witmann	\$ 32.00	\$ 2.00		
<i>Colorado Flora: Eastern Slope</i>	W. A. Weber	\$ 21.00	\$ 2.00		
<i>Colorado Flora: Western Slope</i>	W. A. Weber	\$ 21.00	\$ 2.00		
<i>Colorado's Wetland Ecosystems</i>	CONPS	\$ .40	\$ .60		
<i>Edible Wild Plants of the Prairie</i>	K. Kindscher	\$ 10.50	\$ 2.00		
<i>Flora of North America - Volume 1</i>	Flora of North America Editorial Committee	\$ 68.00	\$ 3.00		
<i>Flora of North America - Volume 2</i>	Flora of North America Editorial Committee	\$ 68.00	\$ 3.00		
<i>Flora of the Great Plains</i>	Great Plains Flora Association	\$ 40.00	\$ 3.50		
<i>Flora of the Pacific Northwest</i>	C. L. Hitchcock & A. Cronquist	\$ 42.00	\$ 3.00		
<i>Handbook of Rocky Mountain Plants</i>	R. A. Nelson (revised by R. Williams)	\$ 16.00	\$ 2.00		
<i>How to Identify Plants</i>	H. D. Harrington & L.W. Durrell	\$ 8.00	\$ 2.00		
<i>Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A.</i> by A. Cronquist, et al.					
Volume One: Geological and Botanical History of the Region, Its Plant Geography and a Glossary. The Vascular Cryptogams and the Gymnosperms		\$ 30.25	\$ 2.00		
Volume Three, Part B: Fabales	R. C. Barneby	\$ 53.60	\$ 2.00		
Volume Four: Subclass Asteridae (except Asterales)		\$ 69.00	\$ 3.50		
Volume Six: The Monocotyledons		\$ 36.00	\$ 3.50		
<i>Jepson Manual (Higher Plants of California)</i>		\$ 59.50	\$ 4.00		
<i>Life In An Aspen Grove</i> (VIDEO)	CONPS	\$ 20.00	\$ 3.50		
<i>Life In An Aspen Grove</i> (SLIDE/TAPE)	CONPS	\$ 42.00	\$ 3.50		
<i>Medicinal Wild Plants of the Prairie</i>	K. Kindscher	\$ 10.50	\$ 2.00		
<i>Meet the Natives, Ninth Edition</i>	M. W. Pesman	\$ 10.50	\$ 2.00		
<i>Northwest Weeds</i>	R. J. Taylor	\$ 9.50	\$ 2.00		
<i>The Prairie Garden: a Guide to Creating a Shortgrass Prairie Garden</i>	R. Brune	\$ 3.00	\$ 1.00		
<i>Rare Plants of Colorado</i>	CONPS	\$ 8.00	\$ 2.00		
<i>Roadside Wildflowers of the Southern Great Plains</i>	C. C. Freeman & E. K. Schofield	\$ 14.00	\$ 2.00		
<i>Rocky Mountain Flower Finder</i>	J. L. Wingate	\$ 3.00	\$ 1.00		
<i>Sagebrush Country: a Wildflower Sanctuary</i>	R. J. Taylor	\$ 9.50	\$ 2.00		
<i>A Utah Flora</i>	S. L. Welsh, N. D. Atwood, L. C. Higgins, & S. Goodrich	\$ 68.00	\$ 3.00		
<i>Weeds of the West</i>	T. D. Whitson, Editor	\$ 18.00	\$ 3.00		
<i>The Gardener's Guide to Plant Conservation</i>	Nina T. Marshall (Published by World Wildlife Fund & The Garden Club of America)	\$ 10.00	\$ 2.00		
<i>Wildflowers of the Western Plains</i>	Z. M. Kirkpatrick	\$ 12.00	\$ 2.00		
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# CALENDAR OVERVIEW

## Field Trips

- Jul 9      **Blue River Quaking Fens**  
with Jonathan Friedman & Mike Scott
- Jul 27     **Hoosier Ridge**  
with Robin Bingham
- Jul 23     **Lilies, Lakes, and Lore**  
with Betsy Baldwin

## Work Days

- Jul 9      ***Astragalus microcymbus* and  
*Astragalus anisus* Inventory**  
with BLM staff from the Gunnison  
Resource Area

## Chapter Meetings

- Boulder Chapter**
- Jun 18     Plant Identification For Beginners
- Jul 9       Wetlands of Boulder Open Space
- Jul 23     Boulder Butterflies



Cerastium beeringianum  
Artist: Janet Wingate



Colorado Native Plant Society  
P.O. Box 200  
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