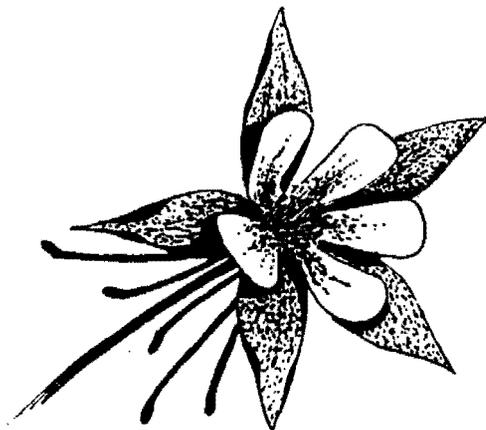


# Aquilegia



Newsletter of the Colorado Native Plant Society

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

Volume 13, Number 1

January/February 1989

## Instant Experts

Dr. William Weber in his article "Asperugo, the reluctant weed": [Vol. 12, No. 3] was correct in his assertion that even botanical amateurs can contribute important and valuable information to the ecology of almost any species.

The questions surrounding the pollination and seed dispersal mechanisms of *Leucocrinum montanum* (Sand Lily) have long gone unanswered. Burton O. Longyear, in his book *Rocky Mountain Wild Flower Studies*, asked the same questions regarding this species back in 1909. His studies revealed that perhaps the reason we know so little of the pollination of this plant is that its white blossoms suggest that the primary pollinators are night visitors, and few botanists are awake to observe them.

Seed dispersal from an ovary positioned several inches underground also poses questions, as Dr. Weber remarked. Longyear noted, however, that the stalked ovary rises through the soil as it ripens, leaving the mature seeds only a quarter inch or so beneath the soil surface during the remaining summer and throughout the winter. Upon spring regrowth, he also noted that the new buds aid the previous year's seeds by pushing the pods even closer to the surface or even completely out of the ground where climatic factors or animals can act as dispersal agents.

The lengthening of the ovary stalk upward through the soil presupposes rather remarkable physical and physiological abilities for plant tissues not generally associated with such phenomena. More common in members of the Lily Family is the ability of specialized roots to grow then contract, pulling the upper plant parts deeper into the soil. That Sand Lily also has this latter ability has been demonstrated in *ex situ* pot culture.

A large Sand Lily plant may be propagated by dividing the many crowns into separate entities and planting each in a small pot as one would any other plant division. Although the plant crown may be only shallowly covered, after

(continued, page 2)

## Calendar Overview

Additional information about calendar items will be found throughout this issue.

## Winter Workshop Schedule

### Jan. 14 Presettlement Vegetation

Leader: Dr. Dexter Hess

### Feb. 4 High-Altitude Grasses

Leader: Dr. Helen Zeiner

### Feb. 25 Keying Composites

Leader: Dr. JoAnn Flock

### March 18 Penstemons

Leader: Gwen Kelaidis

### April 15 Pollination Ecology

Leader: Dr. Boyce Drummond

## Special Field Trip

### June 20 - 23 Yampa River Trip

Leader: Tamara Naumann



## ANNOUNCEMENTS

### Natural History Grants

The Colorado Natural History Small Grants Program will have small grant funds available in 1989 to conduct research and inventory rare species and natural communities in Colorado. Applications may be submitted by anyone, and a standard research proposal format is acceptable. **Grant applications and project proposals must be submitted by February 1, 1989.** Grants will be awarded based on applicability and project cost and are typically in the \$1000 range, to cover field travel and expenses. Salaries may be considered for projects which target priority research needs.

Priority research projects include distributional study of selected rare plants of the Front Range, such as *Eustoma grandiflora* and *Hypoxis hirsuta*; floristic survey of the Collegiate Range, with emphasis on alpine areas; and distributional studies of rare plant species on the 1988 list of Colorado Plant Species of Special Concern.

Funding announcements will be made by March 1, 1989. For additional information and submission of proposals, contact:

David Kuntz, Director  
Colorado Natural Areas Program  
1313 Sherman St., Room 618  
Denver, CO 80203 Phone: 866-3437

### Sand Lily

continued from page 1

several months of growth it will be found several inches lower than when planted. The new roots pull the entire plant down into the pot. One imagines that the same phenomenon occurs in nature. Although I have no experience with propagating Sand Lily from seed, shallowly planted *Calochortus* (Sego Lily) seeds will germinate, grow and, after a year, produce a tiny bulb several inches deep in the soil.

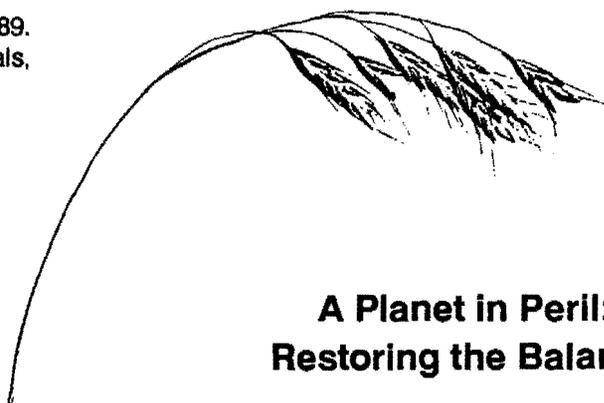
Many more mysteries of the Sand Lily must still be resolved. Who are the seekers of the nectar found several inches deep in the ground? Are they the same as the pollinators? How can a commercial grower handle a plant which constantly seeks the bottom of the pot, and propagate a plant which remains dormant during the usual growing season? Finding answers to any of these, and many more, questions can make the amateur seeker an instant expert in the field.

### Denver Chapter Activities

**January 25 7:30 PM** Chapter meeting at Denver Botanic Gardens. Bob Heapes, well-known wildflower photographer, will speak on: **In the Footsteps of Lewis and Clarke: Botanical Bedrock of Western America.**

**February 22 7:30 PM** Chapter meeting at Denver Botanic Gardens. Sally White will present a slide show on activities and projects of the Jefferson Co. Nature Association, especially tallgrass prairie identification, and preview plans for a nature center and dinosaur visitor center near Morrison.

Meetings for the Denver Chapter take place the 4th Wednesday of each month, unless otherwise indicated. They are located at the Denver Botanic Gardens. Contact Carol Dawson at 722-6758 for information.



### A Planet in Peril: Restoring the Balance

A conference about human impacts on planetary systems will be held at the University of Colorado February 3-5, 1989. The conference will address ways in which human-caused disruptions can be slowed enough to restore the healthy functioning of planetary systems; systems on which all life, including ourselves, depends.

Conference topics include: fossil fuel dependency, burgeoning population and consumption levels, the momentum of international economics and rising third world expectations as driving forces behind global change. Speakers will address a broad array of solutions, from energy conservation and sustainable technologies to economic incentives and international cooperation.

Sponsored by the CU Environmental Center, the conference will be held at the University of Colorado in Boulder, CO on February 3rd through 5th, 1989. The conference fee is \$18 (Saturday lunch, dinner and dance are extra). For more information, contact the CU Environmental Center, Campus Box 207, University of Colorado, Boulder, CO 80309; phone (303)492-8308.

## Floral Tributes

### Ann C. Cooper

As I write (December 4, 1988), we've had only one small snow fall this winter. Indian summer still lingers. *Astragalus tridactylus*, the three-fingered milk vetch, was in bloom on the shale outcrops north of here last weekend. The seasons are awry! I expect to see it in March or early April and link it in my mind with two other early favorites of the shale, *Townsendia hookeri*, the Easter daisy, and *Physaria bellii*, double bladder-pod.

These "big three" are my first reassurance that spring really will come, besides being among my best-loved plants. I'd lived here many years before I learned to look for them soon enough. The Easter daisy blooms as early as January. On a sunny day the two-inch white composite heads shine out above the mat of grey-green leaves. On a dull day the entire plant is quite overlookable. There are two likely candidates for early bloom in this area — *Townsendia hookeri* and *Townsendia exscapa*. They are told apart by several details. The first species has a tuft of tangled cilia at the apex of the linear phyllaries, and the 5 mm disc corollas are scarcely exceeded by the pappus. The second has narrowly lanceolate phyllaries with no cilia, and a longer pappus on the disc florets.

If, like me, you read this description with no faith that you could tell the plants apart, take heart! A note in *The Flora of the Great Plains* explains that *Townsendia* is "complicated by apomixis, where the plants produce viable seeds without cross fertilization". Plants of the next generation are identical with the parent and may be intermediate between



*Townsendia hookeri*

the expected normal species — especially in our area. I like to think this excuses my ineptitude!

The genus *Townsendia* is named for John Kirk Townsend. He was an ornithologist on the 1834 Wyeth expedition, which included Nuttall as the botanist. Townsend refers constantly to "Mr. N" in his journal and the following describes their arrival at Scotts Bluff:

"The road was very uneven and difficult, winding from amongst innumerable mounds ... of hard yellow clay, without a particle of rock of any kind, and along their bases ... flowers of every hue were growing. It was the most enchanting sight. Mr. N was here in his glory. He rode on ahead of the company, and cleared the passages with a trembling and eager hand, looking back at the approaching party as though he feared it would come ere he had finished, and tread his lovely prizes under foot."

In partnership with the Easter daisy I expect to find the three-fingered milk vetch. It is (usually!) not quite so early to bloom, but very eye-catching when it does, with its magenta pea-flowers emerging from a cushion of silvery grey. The species on "my" mesa is *Astragalus tridactylus*, but a related and quite similar species, *A. sericoleucus*, also occurs. I've found that one on the chalk cliffs near the Pawnee Grasslands in mid-May.

To complete my spring trio I add the double bladder-pod, *Physaria bellii*, a plant restricted to shales and mesas. The rosettes themselves are charming and distinctive. By April, rings of yellow blossoms have eased out from the rosettes to make vivid golden circles against the sparsely vegetated grey shales. Even botanizing at automobile speeds, you are likely to notice these plants. The genus is named from the Greek *physis*, meaning bellows or bladder. The species, my modest Latin suggests, should mean beautiful (and so it is!), but in fact it was named by author Gerald A. Mulligan "... after E. H. Bell of the Plant Research Institute, Ottawa, for the outstanding contributions he has made to field work that has been carried out by the staff of the Institute." (Thanks, Miriam Denham, for putting me right!)

I'm always surprised to see my "big three" flowering days, even weeks, earlier on the dark shales than on the lighter colored substrates. I speculate on the reasons. Darker shales absorb more sun-warmth. South-facing slopes are particularly poised for solar advantage. The drainage through the loose shale must prevent the dank, chill clag-giness that the clay in my garden exhibits this time of year. Or are there certain minerals present that favor the early spring "big three"?

As always, I sign off with more questions than answers.

## Among the Carices

### Workshop Report by Jeff Dawson

A workshop on sedges (the genus *Carex*) was held at the Colorado School of Mines on Saturday, December 10th. Dr. David Cooper, Assistant Research Professor at the School of Mines, conducted the workshop, assisted by Tom Cottrell. About 22 students of *Carex* and one very young observer were present.

The purpose of the workshop was to review the characteristic features of sedges, become familiar with some of the regionally important species, and learn to use the available botanical keys. This was a valuable exercise because sedges have a number of features which make them often difficult or unrewarding to identify. These features include: inconspicuous flower parts, unique taxonomic characteristics, presence of numerous and somewhat confusing species, and keys which are often difficult to use without prior familiarity with the species or the backup of an herbarium. All of these, Dr. Cooper helped us overcome. As a result of the workshop, Colorado now has a few more people willing and able to work with this genus.

We were first taught the terms and features used in differentiating sedges, such as "phyllopodic", "gynaecandrous" and "perigynium". We keyed out 19 species of sedges, using Weber's *Rocky Mountain Flora* and *Colorado Flora: Western Slope*. By keying the species we gained an understanding of the meaning of some of the more ambiguous couplets in these keys. In addition, we examined specimens of a number of other species, so that by the end of the day we had seen about 25 of the 75 or 80 sedges species in the Colorado flora. We learned that many species are easy to key, and that some can even be readily recognized in the field!

We also learned a number of interesting or important facts about sedges: Not all sedges have edges (only the larger species). The presence of tall sedges in Colorado nearly always means that you are in a wetland. The most common wetland sedge species in Colorado are *Carex nebrascensis* on the plains, *Carex utriculata* in the mountains, and *Carex aquatilis* on the west slope. Many sedges exhibit poor reproduction from seed, and most reproduction under current conditions appears to be by vegetative means. Many of the sedges in Colorado have circumpolar distributions, with their ranges extending down the Rockies into Colorado; thus floras from Alaska can be useful in identifying species here.

We appreciate Dr. Cooper's efforts to mitigate our ignorance of this important genus, and look forward to his promised workshop on *Juncus*!

## Joint Research Opportunity

### Dorothy Udall

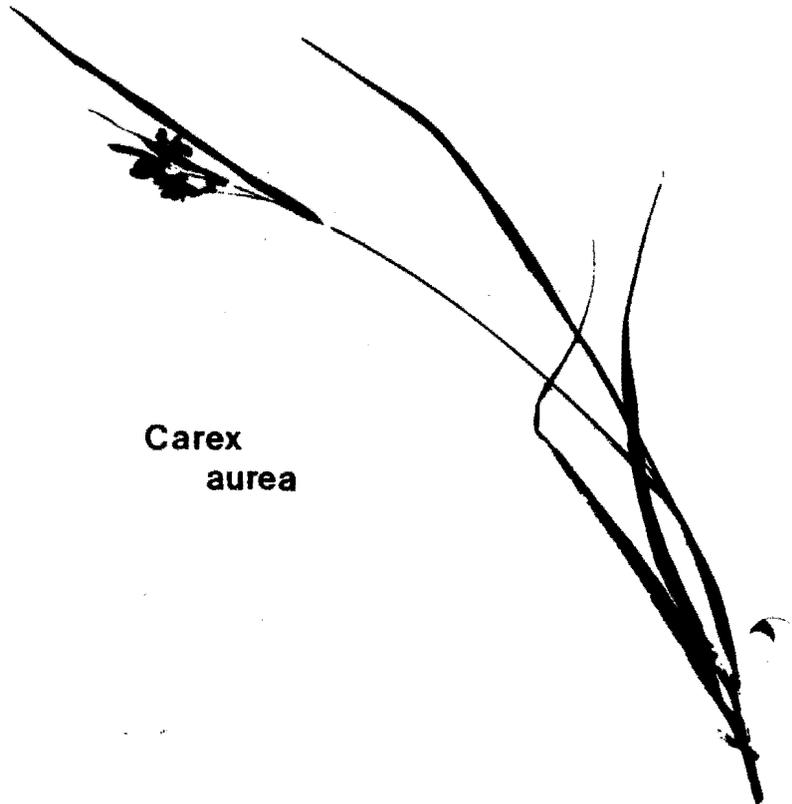
**Partners in Parks** is a nonprofit corporation recently formed to promote technical and scientific cooperation between the National Park Service and private organizations or individuals. **Partners in Parks** president, Sarah Bishop, was in Colorado recently, talking with Rocky Mountain National Park staff about some of their scientific objectives and about what sort of private sector partners might cooperate with them to their mutual advantage (see related article, page 6).

Colorado Native Plant Society had been suggested as a likely partner. A few CONPS Board members and Rehabilitation Committee members met with Ms. Bishop and Richard Keigley, Rocky Mtn. Park ecologist, to explore a possible joint effort relating to a research program to find ways to restore disturbed sites in the park so that the plant communities are ecologically appropriate to the site. **Partners in Parks** would assist in establishing a cooperative venture and would seek funding sources.

A joint venture between CONPS and the National Park Service could lead to other opportunities for CONPS expertise to influence management decisions in other areas of the state. If this cooperative venture appeals to you and you would like to be kept informed about developments, drop a line to:

Dorothy Udall, Horticulture/Rehabilitation Chairman  
4300 West County Road 50  
Fort Collins, CO 80521

*Carex*  
*aurea*



## Highway Construction and Rare Plants

### Kathy See

Because I am a part-time assistant to the Colorado Dept. of Highways (CDOH) landscape architect, Jim Borland's article on *Physaria bellii* prompted me to write and explain the highway project development process, CDOH organization and to encourage other CONPS members to share their special knowledge with the highway department.

Jim Borland has been in touch with the landscape architect's office both this summer and last summer about different populations of *Physaria bellii*. Although the solution to the C-470 population eluded our combined knowledge, last year we put Jim in touch with CDOH District Environmental Manager (DEM) for Boulder Co. to see if some kind of mitigation could be arranged. The DEM set up a new mining plan on the borrow pit where some *Physaria bellii* had been found in order to save as many plants as possible, and also wrote a letter to the US Fish and Wildlife Service to inform them of the plant's presence.

The difficulty in many situations is that rare plants are discovered during highway construction when it may be too late to save them. Although highway construction is the visible part of a project, it is the last phase of the long process from perceived need to final product. Briefly, it takes from 18 to 24 months to design major projects. During the course of design, numerous office meetings and field visits are held to anticipate and prevent later problems. The job plans are then advertised for bids as very little construction is done by CDOH. Most construction and paving is done by private contractors who have gone through a complicated bidding process to win the job. Naturally, these contractors are interested in getting the job built, as designed, on time and under budget.

Because of the visibility of construction, this is often when public awareness is triggered and potential problems are raised. Once construction has started, it is often too late to make changes because it is time- and cost-prohibitive.

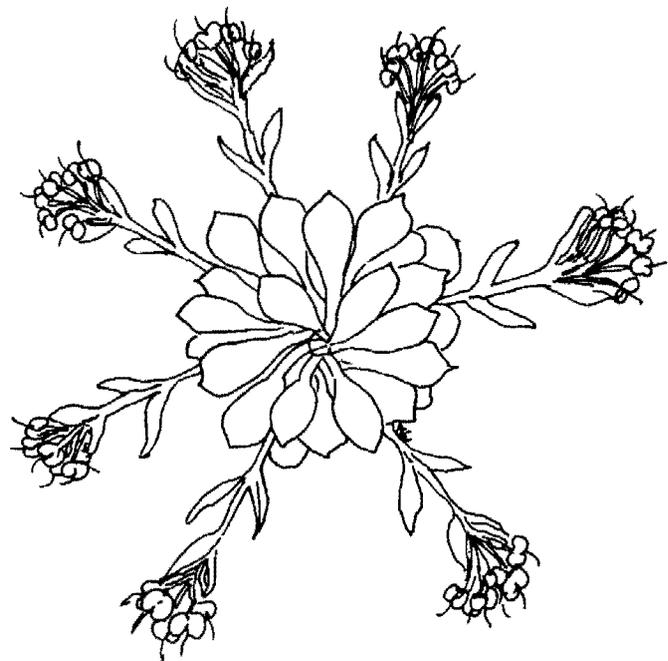
Although CDOH is a complex organization, certain sections are directly concerned with highway design and construction. There are about 40 people who coordinate the environmental issues affecting highway property and construction, including wetlands, hazardous materials, regulations and permitting. In the design section, there are approximately 600 engineers and technical people to design roadways and bridges.

There are two landscape architects who work directly with the engineers to produce seed mixes, landscaping plans or wetland designs

which are incorporated into the final plans. These two people translate onto paper many of the environmental requirements for each project. One of these landscape architects is based in Grand Junction and is responsible for the northwest corner of the state, including Glenwood Canyon with its myriad of ecological issues. The Denver-based landscape architect, my boss, is responsible for all projects in the other 75% of Colorado. Each year there are about 225 highway projects and obviously many potential gaps in statewide information.

Drawing attention to a problem whether by identifying a sensitive population or by requesting the addition of species X to the revegetation plan is more effective early in the design process than when the bulldozers arrive. As always the volunteer public has to help fill the gaps. It is not enough to simply point out a problem. Volunteer legwork, with which the CONPS is very familiar, is often necessary, whether it is seed collecting, planting hours or site monitoring. There are many formats for communication. A budget map of proposed projects is printed each year. The highway planning process is responsive to the public which is encouraged to attend public meetings concerning highway projects. Also, each of the state's six districts has a District Environmental Manager who is responsible for

[next page]



*Physaria bellii*

**Highway, cont.**

these issues. There is also the CDOH Hotline (1-800-999-4997) which you can call to express your concerns.

Sensitive populations can be preserved only if there is a timely sharing of information. As a state agency, our process is open to the public. As concerned plant people, you need to find the best vehicle for communicating.

**Ed. Note:** *Kathy has provided considerable perspective on this important concern, but it would also be useful to know whether any rare plant populations were identified during the environmental impact assessment process, which in the case of C-470 was extensive. If not, why? And how can the Society help make pre-construction evaluation more effective in identifying and resolving plant-related effects?*

## Park Partnership

**Sarah G. Bishop**  
President, Partners in Parks

I have just recently become acquainted with the Colorado Native Plant Society and some of your members. I am impressed with both who you are and what your goals are. Conserving native flora — how important that is to our increasingly urbanized society. Our manufactured world excludes the original natural and native fabric of our environment. Those who are wise recognize the need to preserve and promote the growth of what little we have left. Small enclaves, like national parks, are ideal preserves of the native fabric as well as unique laboratories in which we can learn the essentials of how to maintain our natural heritage.

**Partners in Parks** promotes technical and scientific collaboration between national parks and organizations like the Colorado Native Plant Society. Rocky Mountain National Park has a major goal of restoring native vegetation to areas disturbed by human use. This tremendous goal raises research and management questions I think may be of great interest to you. How do you encourage natural succession on a steep slope? How do you add nutrients to the soil? Once something takes hold or is planted, how do you keep it alive? What propagation techniques are appropriate in a national park?

The park has needs: you have interests. Surely there is a great deal of overlap. What exciting projects would you like to undertake in the park? What ideas do you have that might help the park scientists and managers conduct effective research and make good decisions? I look forward to having Partners in Parks work with you and the park staff to explore areas of mutual interest and build a partnership among colleagues who share a vision and can see the benefits of working together to reach it.



*Astragalus tridactylus*

## Wheat Ridge Greenbelt

**Peter Root**

Jim Borland's recent article on hybrid birches along Clear Creek prompted me to revisit the Wheat Ridge greenbelt. This recovering riparian area lies along Clear Creek between Kipling and Youngfield Streets south of 44th Avenue. The best way to enter it is through Prospect Park. It offers a wide variety of habitats including cottonwood forest, open fields, and shrubby wetlands. There are also three gravel pit ponds and cattail marshes.

When I visited, an early frost had withered many of the plants. The cottonwood leaves had turned yellow but there was still a wonderful display of New England asters. I had not realized that there were so many of them, but this is a place for plant surprises. Perhaps the most unusual find here has been a lady's tresses orchid (*Spiranthes diluvialis*) which was described only a few years ago. It grows with a blue lobelia (*L. siphilitica*) in some areas along the creek. Other plants which can be observed here are two or three species of scouring rushes (*Equisetum*) and their hybrids, and both broad- and narrow- leaved cattails and their hybrid.

The ponds are often used by waterfowl and the cottonwoods and shrub thickets are well known as a resting place for other migratory birds. In the spring and fall this is a good place to see warblers; during the winter, raptors are often here.

The greenbelt is used for many forms of recreation, ranging from fishing to dog walking. Most of these are compatible but the increasing uncontrolled use by bicyclists is disturbing. Having a bicycle pass within inches of you without warning on the trails can be quite an experience. Bicycle tracks are now often found off the trails and this type of riding will have an effect on the vegetation. The managers of this area will be faced with many contrasting demands as the surrounding community develops. It is hoped that they can preserve the natural features while providing a good source of varied recreation.

## Book Review

*Trees and Shrubs of Colorado* by Jack L. Carter; illustrated by Marjorie C. Leggitt. Johnson Books, Boulder, CO. \$11.95.

The trouble with books titled "Flora of ..." or "Trees and Shrubs of ..." is that the potential reader must first read the introductory material or already know the plants of the region covered to determine whether the book title should have "All of" or "Some of" placed before it.

"Some of the Trees and Shrubs of Colorado" would have been a more appropriate title for this book which reportedly covers both the native and introduced trees and shrubs of Colorado in a 150-mile radius of Pikes Peak. Preparation for publishing this manual took over eleven years as Mr. Carter continually refined the dichotomous keys through the toughest means known to man — student use.

Although one will learn little of familial relationships through the use of the diagnostic keys which are based almost entirely on leaf characteristics, the book's intended user group undoubtedly will find it easier to use than will college botany students who must learn and often memorize complicated floral structures.

Because the intended audience is not the serious student of plants, it is somewhat difficult to seriously fault the contents. However, as the manual's intent is to describe native, naturalized and cultivated woody plants, the consistent use of the terms 'native' or 'introduced' would have added to the book's value.

Ranges of cover based loosely on mile radius figures are often fraught with problems of how to handle the edges. Several of the listed native species generally fall outside the described radius and several found within this radius are omitted (e.g. *Ceratoides lanata*, *Eriogonum* sp., *Forsythesia planitierum*, *Mimosa borealis*, *Artemisia nova*, *Amorpha canescens*, *Opuntia imbricata*, *Betula papyrifera*). The

inclusion of only a few cultivated species only muddies the waters, and at least one (*Acer negundo*) is noted as being both native and escaped without explanation.

A few specific difficulties with this book: Although the key states that the included broad-leaved plants are rarely evergreen, at least 18 such species representing 13 genera are listed, several without any notation regarding their perennial leaves. Under *Viburnum* it is wrongly stated that three species are native; yet none described are noted for owning this title. Although I would not seriously fault Mr. Carter in stating that the berries of *Shepherdia canadensis* are inedible, they are in fact otherwise, albeit unpalatable to my taste. Even with 6- to 12- foot specimens of *Artemisia tridentata* aside, this species and its varieties are definitely woodier than *A. bigelovii* as stated. Spelling errors are few, but my personal pet peeve "Artemesia" for *Artemisia* occurs much too frequently.

It is always interesting to observe the constantly changing philosophies regarding the naming of species. For instance, *Juniperus monosperma* has become *J. mexicana* var. *monosperma* and, apparently, *Pyracantha* has become *Cotoneaster*.

Regardless of the faults one may find in the body of this book, one cannot find fault with Mr. Carter's desire to see that every college student graduate from a course in botany. It is with the understanding gained from such courses that people "will understand limits to growth and vote for alternatives to the growthmania sweeping Colorado."

Last, but certainly not least, the illustrations by Ms. Leggitt are some of the finest to be found in a popular plant manual.

Reviewed by Jim Borland

Gambel  
Oak

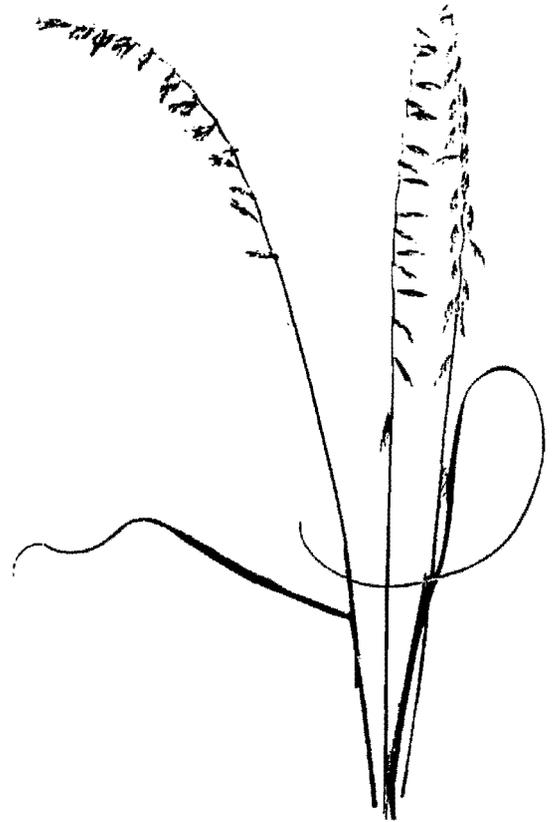


## About CONPS Workshops

### Bill Jennings

The Colorado Native Plant Society workshop series was established with the objective of having something to do during the winter when field trips are impossible. Since the first workshop in January 1985, twenty-seven have been held.

Our concept of a workshop for plant identification means bringing together plant lovers and a well-informed instructor who has photographs, herbarium specimens and live plants for the attendees to study hands-on, with opportunities for one-on-one interaction with the instructor as well as lectures to the group as a whole. No special skills or requirements, other than a love of plants and a desire to learn, are necessary for attending a workshop. Even though the descriptions may make these workshops sound highly technical, the case is exactly the opposite. The objective is to demystify plant identification and to allow the confused but sincere plant lover to better enjoy and understand native plants.



### Sideoats Grama

*Bouteloua curtipendula*

## Registration for Workshops

Enrollment in workshops is always limited, usually due to room constraints, so you must register in advance. Contact CONPS workshop coordinator for registration and workshop information: **Bill Jennings, 360 Martin Dr., Boulder, 80303, 494-5159**. Be sure to include your mailing address and phone number if you mail in your registration. Registrants will be notified by mail about two weeks prior to the workshop regarding final location, time, lunch, suggested references, etc. Please register promptly, as workshops tend to fill up fast. However, cancellations sometimes create openings, so you might want to check with Bill up to the night before the workshop if you want to try to register at the last minute.

Unless otherwise noted, the fee for **each** full-day workshop is \$8 for members and \$16 for non-members. If you plan to attend more than one workshop per year as a non-member, it is cheaper to join CONPS as an individual member (\$8 per year) and come to workshops as a member. Please hold payments until the day of the workshop.

It takes considerable time and effort for the instructors to plan and develop workshops and field trips. Please let us know how you like the workshops and field trips offered by CONPS. We need your suggestions for other workshops and trips, as well as your feedback on whether you found them informative and exciting or dull and uninteresting. We need to know whether we are serving you, our members, the way you wish.

## CONPS Workshops Winter, 1988-1989

### High-Altitude Grasses

Saturday, February 4, 1989

Dr. Helen M. Zelner Fee: \$5 (\$10, nonmembers)

Grasses are considered by many to be difficult to identify or understand because of the lack of big, showy flowers and because of the specialized terminology necessary for describing the plant parts. At this workshop, Dr. Zeiner will focus on the recognition of the grasses to be found at high altitudes in Colorado, with special emphasis on the Gunnison National Forest area of the western slope, where she has studied the plant life for many years. This half-day workshop (9AM to 12:30PM) will be held at the herbarium, Denver Botanic Gardens.

### Keying Composites

Saturday, February 25, 1989

Dr. Jo Ann Flock

At last, our first workshop on the daisy family! After attending this workshop, you can finally identify that scraggly yellow composite you found growing at roadside last summer. In this workshop, the use of Dr. William A. Weber's extensive keys to the composites in both the **West Slope Flora** and **Rocky Mountain Flora** will be demonstrated. Usually, only a few features of the composites need be carefully examined to properly identify the plant. What to look for and what these features are called in the keys will be explained. To be held at Foothills Nature Center, Boulder.



### Penstemons

Saturday, March 18, 1989

Gwen Kelaidis

The intermountain region is a major center for *Penstemon* species. Though beautiful and often highly prized for horticultural purposes, the many species of Penstemons represented make identification difficult. The primary purpose of this workshop is to enable the botanist to identify the different sections within genus *Penstemon*. Once the characteristics differentiating the sections are understood, keying from there to species is usually straightforward. Location to be announced.



### Pollination Ecology

Saturday, April 15, 1989

Dr. Boyce Drummond

Through the use of slides, sketches, plant specimens, and probably some arm-waving, Boyce will cover three basic areas vital to understanding the ways plants reproduce themselves: (1) the structure of the flower and the function of the parts in terms of pollination requirements; (2) the breeding system of plants or modes of pollination (i.e., wind, water, animal); and (3) the evolutionary interaction of plant and pollinator. To be held in Colorado Springs at Warner Center on the Colorado College campus.

## Riparian Ecosystems Symposium

### Report by Sally White

The Rocky Mountain Chapter of the Society of Wetland Scientists sponsored a major symposium on **Restoration, Creation and Management of Riparian Ecosystems in the American West** in mid-November. Excellent organization of the three-day session provided a broad review of riparian and wetland issues: from restoration theory and practical application to legal aspects and regulatory implications. This balanced approach provided plant people the opportunity to learn about stream hydrology and dynamics, and the physical scientists to encounter the intricacy of working with living materials; toward a realization by all that streams are living systems in which physical and biological factors are delicately entangled.

One concept that echoed throughout the symposium was David Rosgen's "if we fight the system, the system will win". Refreshing in a group devoted to manipulation of natural systems (albeit with intent to restore rather than exploit), the priority of "the system" was reflected in widespread recognition of how little we know about natural function in riparian systems. Even so, there was much to be learned from the talks — the necessity of choosing between concurrent sessions was at times frustrating. Fortunately, a wrap-up session chaired by Lyndon Lee (US EPA, Washington) pulled all the threads together in a summary of the relevant administrative and functional paradigms revealed during the symposium.

A highlight of the week was a review by Ralph Dix (Colorado State University) of the mythology of science and the difficulties created by the Newtonian world view. He contrasted reclamation ("if we can't clean it up, we can hide it under crested wheatgrass and smooth brome") and restoration ecology (using landscape architecture to emulate nature) with his suggestion of a new "restitution ecology", an approach based on respect for natural systems with the goal of bringing the disturbed area into balance with what it originally was.

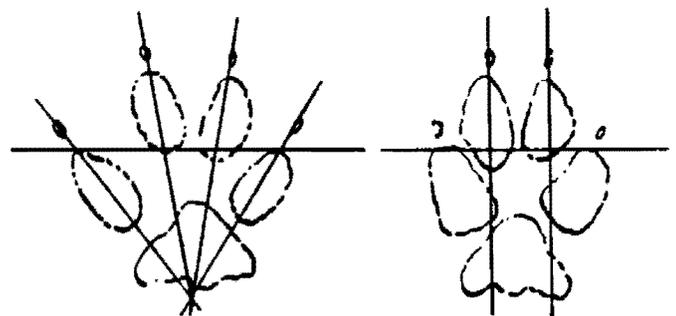
Encouraging trends on the management front included wetland banking, identification of priority wetlands as "just say no" areas, importance of developing native seed and plant sources for stream restoration projects, importance of wetlands for water pollution treatment, and recognition of long-term stability and self-maintenance as restoration goals.

Overlap with interests of Colorado Native Plant Society members is evident in the areas of preservation and restoration of native communities. Perhaps CONPS can participate in restoration projects, or assist in promoting the use and developing sources of native wetland plants. Certainly the loss of riparian areas and wetlands has had extensive effects on the native flora we are working to conserve, and several plant species of special concern are found in riparian areas.

### Nature Calendar Available

For those who have always wanted to know how to reset their sundials, or when to look for spring beauty or how to distinguish dog from coyote tracks, the Boulder County Nature Association has the answers. The newly released 1989 Boulder County Nature Calendar works elsewhere in the metro area as well, and is well illustrated and full of seasonal nature facts you won't find anywhere else.

Calendars are available (\$4 BCNA members, \$5 non-members) from Jim Knopf (494-8766), Mike Figgs (447-1899) or Lynn Garner (652-3314) while supplies last.



**Domestic Dog**  
Pads radiate outward

**Coyote**  
Outside claws do not always show.

## Natives in the Garden

### *Ribes aureum*

Jim Borland

Ignoring the problems that the scientific community has in assigning the *Ribes* to either the Saxifrage or Gooseberry family, the horticultural community blithely continues to use the various members for both food and aesthetic value.

Native to a large portion of the western US, golden currant is usually found growing with a multitude of other native shrubs and trees from the plains into the mountains. Although it is more common to river and creekside habitats, it has proven adaptable to drier sites and poorer soils. Its native soils generally are coarse to medium in texture, shallow to deep, well-drained, fertile and with a pH of 6.5 to 7.0. Garden soils either more acid or basic than this generally result in excellent growth as well. Plants tolerate some shade, but full sun locations produce more compact growth and more numerous flowers. In these locations, burnished yellows, reds and oranges can be expected for fall color.

The shrub propagates itself through underground suckers which generally presents no serious problems. Through observation of its natural growth habits one will see that the best manner of pruning is one which periodically removes entire canes to the plant's base.

Nursery propagation can be accomplished by subjecting the seed to moist and cold (41° F) conditions for 60 to 90 days and then germinating these treated seeds at 70° F. Sixty to 90% germination can be expected from sound seed which averages between 200,000 and 285,000 per pound. Both nursery and landscape growth are considered rapid.

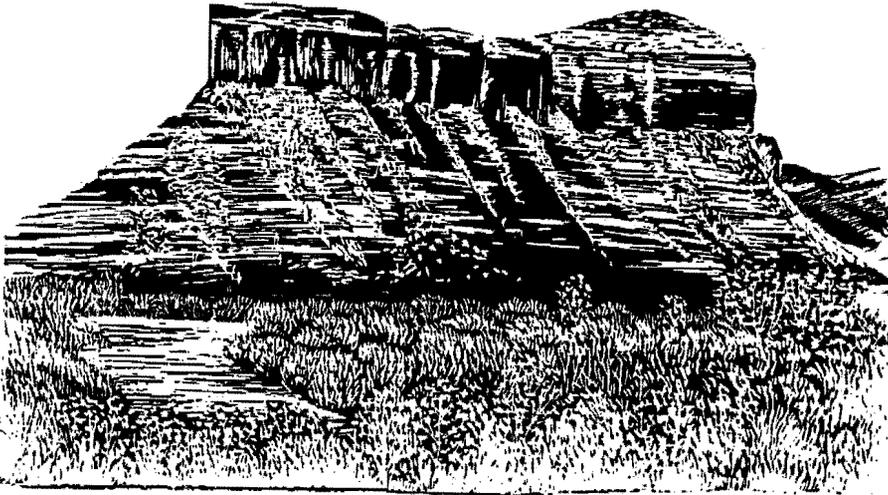
The root suckering habit of golden currant indicates that additional plants can be propagated through division and the planting of root pieces. Similar to other *Ribes*, both softwood and hardwood cuttings taken nearly anytime of the year will root through mist or outdoor bed propagation techniques.

This species should prove cold-hardy anywhere in Colorado, unless one lives above timberline. Due to its affinity to moist habitats, it is difficult to assign a definitive moisture requirement to golden currant. However, 15 to 20 inches of annual precipitation should ensure good growth anywhere in the state. In full sun, additional moisture usually results in a larger and faster-growing shrub not becoming unduly top-heavy. Aphid infestations, among other common gooseberry maladies, have been noted, but do not seem to produce serious consequences in the wild.

*Ribes aureum*, variously known as Golden ... Buffalo ... Missouri ... Flowering ... Fragrant ... or Slender Golden ... Currant as well as Clove Bush, is perhaps the only Colorado native gooseberry used to any extent for landscaping. Its numerous common names neatly describe some of its favorable features which have assisted its acceptance by the general landscape populace.

Most of these names refer to the many flowered racemes of golden yellow, red-tipped tubular flowers which emit a wonderful clove or spicy odor. These May-produced flowers are coupled with bright green 2-inch wide leaves typical of the gooseberry family, and attractively displayed on a 3- to 9-foot upright branching spineless shrub. A similar species, *Ribes odoratum*, native to points east of the range for golden currant, is often separated because of its larger and longer petals.

Fruit is unusually large for a wild currant, up to 0.5 inch in diameter. Its Danish-derived namesake 'Ribes' means 'red', but berries can also be yellow or black. Eaten out of hand, mixed with dried buffalo meat to make pemmican, or otherwise used in cooking, the berries are excellent for man or beast. Even the blossoms are edible.



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Please direct all membership applications, renewals and address changes to the MEMBERSHIP chairperson, in care of the Society's mailing address.

Please direct all other inquiries regarding the Society to the SECRETARY in care of the Society's mailing address.

### Newsletter Contributions

Please direct all contributions to the newsletter to:

**Peter Root**  
**4915 West 31st Avenue**  
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Deadlines for newsletter materials are February 15, April 15, June 15, August 15, October 15 and December 15.

There is a special need for short items such as unusual information about a plant, a little known botanical term, etc. Please include author's name and address, although items will be printed anonymously if requested.

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