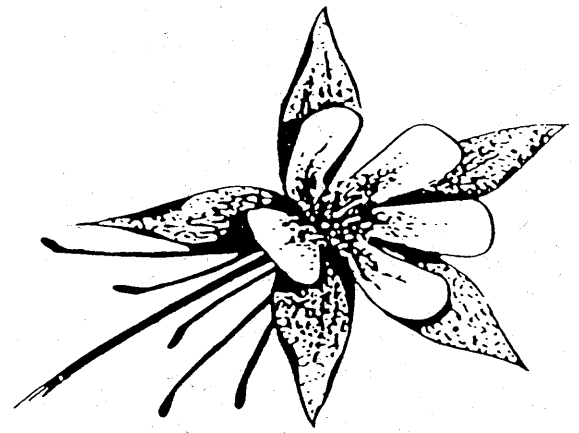


Aquilegia



Newsletter of the Colorado Native Plant Society

“... dedicated to the appreciation and conservation of the Colorado native flora”

Volume 26 Number 5

WORKSHOP EDITION

September - October 2002

2002 - 2003 COLORADO NATIVE PLANT SOCIETY WORKSHOP PROGRAM CoNPS Workshop Committee, Bill Jennings Chair

The Colorado Native Plant Society is proud to present the workshop schedule for workshops to be held on the East Slope, from October, 2002, through March, 2003. Gay Austin is organizing a suite of workshops to be held on the West Slope. Be sure to check elsewhere in *Aquilegia* for West Slope workshops and activities.

For 19 seasons, workshops have brought native plant lovers together with a well-informed instructor who may have herbarium specimens, live plants, photographs, keys, and other materials available for hands-on study. The opportunity to receive one-on-one instruction and informative lectures has made the workshop series one of the Society's most popular programs. Attendees need no special skills or background; a love of plants and a desire to learn are the only prerequisites. There are no exams, grades, or homework; and working together is encouraged. The goal is to demystify plant identification and to enhance in all of us our enjoyment and understanding of Colorado's native flora. All East Slope workshops described below are one-day only, usually from 9:00 AM to 3:00 PM. If multiple sessions have been scheduled, the same material will be presented each session for different groups of attendees.

To register for East Slope workshops — **registration begins September 30, 2002** — please call (303) 665-6903 and leave a voice message. You may also register by mail: write Bill Jennings, P.O. Box 952, Louisville, CO 80027. However you register, be sure to provide your name, address, and telephone number (including area code!), specifying which workshops you wish to attend. If multiple sessions are scheduled, be sure to indicate preference. Saturday sessions usually fill first. Receipt of your registration request will be acknowledged within a few days.

About 10 days prior to the workshop, registrants will receive notice by mail regarding location, time, lunch, references, and supplies, with a list of other registrants to encourage carpooling. The fee for each workshop is \$12 for CoNPS members and \$27 for non-members (\$12 workshop, \$15 to join the society). Members of the native plant societies of neighboring states are

considered members of CoNPS for purposes of workshop registration. Payment is made on the day of the workshop.

Workshops have been very popular in the past, with multiple sessions frequently scheduled to meet demand, or with long waiting lists for the available seats. However, with only so many seats in the classrooms and labs where these workshops are held, “no-shows” have been a problem. If you find that you CANNOT attend a workshop for which you are registered, please call and cancel your registration as soon as possible!

It takes considerable time and effort for the instructors to plan and develop workshops or field trips. Please let us know how you like the activities offered by CoNPS. We need your suggestions for future workshops and field trips. We appreciate feedback on whether you find them informative and exciting, or dull and uninteresting.

VEGETATIVE CHARACTERS FOR IDENTIFICATION

Leader: Dr. Miriam Denham

Location: Foothills Nature Center, Boulder

First session: Saturday, October 26, 2002

Second session: Sunday, October 27, 2002

Plants are not just the flowers! Learning about the vegetative characteristics of plants can help you identify plants with or without flowers. While most of us are familiar with leaf shapes, did you know that plant hairs, called trichomes, vary greatly according to the

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kind of plant? Have you ever wondered why plants have hairs at all? Have you ever considered that root arrangement and rhizome structure is quite varied according to the nature of the plant? Explore these and other questions (or bring your own) to this workshop that may change the way you look at plants. Chapters VI through X of Harrington's *How to Identify Plants* can provide a basis.

COLORADO CONIFERS

Leader: Vickey Trammell

Location: Lookout Mountain Nature Center

First session: Saturday, November 16, 2002

Second session: Sunday, November 17, 2002

Is a Douglas-fir tree a fir tree? Is Spruce Tree House at Mesa Verde National Park named because of the spruce trees growing there? Are there cedar trees in Colorado? Learning to recognize the native coniferous trees of Colorado will be the focus of this workshop. Participants will learn the field characteristics of the leaves (needles) and the cones that aid in tree identification. Weather permitting, we will walk the grounds of the nature center and examine those trees growing in the area. Every Coloradoan should have a working knowledge of our forest trees.

CASTILLEJA, PEDICULARIS, AND RELATED GENERA OF COLORADO

Leaders: Dina Clark, Bill Jennings, and Bob Powell

Location: Foothills Nature Center, Boulder

First session: Saturday, December 7, 2002

Second session: Sunday, December 8, 2002

Those genera in the Scrophulariaceae that are hemiparasitic are in the tribe Rhinanthae, or more casually referred to as the "Rhinanthoid scrophs." Analysis of both molecular and non-molecular data, including the partial parasitism, suggests that most of this group should be placed in the Broomrape family (Orobanchaceae). In Colorado, we have five genera in this group: *Castilleja*, *Pedicularis*, *Orthocarpus*, *Cordylanthus*, and *Rhinanthus*. The flowers are interesting, unusual, and, especially in *Castilleja*, often require dissection when floral characteristics are given in the key. The Indian paintbrushes (*Castilleja*) are the largest genus with 14 representatives, while the other four genera collectively have 14 species. Dina has been actively researching the paintbrushes, while Bill has been looking at the other genera. Bob has been collecting and photographing them (no small task, given the drought).

GRASSES: THE TRIBE AVENEAE

Leader: Dr. David L. Buckner

Location: Foothills Nature Center, Boulder

First session: Saturday, January 11, 2003

Second session: Sunday, January 12, 2003

Third session: Saturday January 25, 2003

What would a workshop season be without a Dave Buckner grass workshop? Dave continues his excursions into the various tribes of the grass family, this time with the tribe Aveneae. This is a group with a large number of genera and species in Colorado, including *Avena* (oats). There is a tendency to confuse this group with the Fustucaae. A review of the structure and names of the parts of the grass plant will be presented first. Then the characteristics

of the different tribes will be discussed before focusing on the Aveneae. Since Dave's workshops always fill up, we have scheduled three sessions this year.

BOTANICAL ART FOR BEGINNERS

Leader: Carolyn Crawford

Location: Foothills Nature Center, Boulder

First session: Saturday, February 1, 2003

Second session: Sunday, February 2, 2003

This is a much requested workshop topic. Well-known botanical artist Carolyn Crawford will present the techniques she uses for on-the-spot field illustration of plants and plant parts. In addition, she will reveal some of the "secrets" she has for in-the-studio illustration. There will be ample plant and flower material with which students may work. There is no better way to really see and know a flower than to draw it. Even if you never intend to illustrate commercially, drawing for enjoyment or for your own records is a good aid in flower identification.

COLORADO THISTLES — NATIVES AND NON-NATIVES

Leaders: Susan Spackman, Beverly Baker, Patricia Butler

Location: Colorado State University, Fort Collins

Zoology/Anatomy Building, room E-206

First session: Saturday, March 1, 2003

Second session: Sunday, March 2, 2003

Susan Spackman (Colorado Natural Heritage Program), Bev Baker (US Forest Service), and Pat Butler (USFS volunteer) will reprise their thistles workshop presented two years ago, with updates on information obtained since then. Their presentation will include the native *Cirsiums* (including several rare species and some plants that grow at the highest elevations in the state) and the non-native tenacious weeds (*Cirsium*, *Breca*, *Carduus*, and *Onopordium*). Not only do exotic thistles threaten native ecosystems, but native thistles are being harmed in the efforts to control exotics. For obvious reasons, even common thistles are seldom collected and our knowledge of their distribution and taxonomy is spotty. In this workshop, participants will learn about the native thistles, and how to distinguish them from non-natives.

BASIC BOTANY: HOW TO KNOW THE FAMILIES

Leader: Dr. Thomas Ranker

Location: University of Colorado, Boulder

Ramaley Building, room C-231

First session: Saturday, March 15, 2003

Second session: Sunday, March 16, 2003

"How to Know the Families" is a much requested topic, particularly from new Society members. In this workshop, you will learn to recognize the major plant families that occur in Colorado, such as the daisy, mustard, and grass families. Topics include a discussion of the basic terminology necessary for botanical identification; how to tell the monocots from the dicots; and how to use a key for identification. Tom Ranker is Professor of Biology and Curator of the Herbarium at the University of Colorado - Boulder. He teaches this material to college freshmen and sophomores every year. If you are a beginner botanist, this workshop is for you.

Remember, registration for all workshops begins September 30!

COVERING NEW GROUND WITH NATIVES

Dan Johnson, Curator of Native Plants, Denver Botanic Gardens

"Just go all the way to the back of the garden and look for the large patch of bindweed."

This might have been the answer several years ago, had you asked where native plants could be found at Denver Botanic Gardens. Seemingly relegated to "the back forty," our native grasses, trees and wildflowers languished in relative obscurity. This was not always the case, however. At their inception some 20 years ago, the Laura Smith Porter Plains Garden and the Xeriscape Demonstration Garden (now known as the "Dryland Mesa") were gems on the cutting edge, featuring naturalistic plantings of species native to Colorado and the Southwest. They were the logical result of a rekindled environmental awareness and a focus on water conservation after the droughts of the late seventies.

A further benefit of these gardens was a bit more subtle, and indeed was lost on some of our guests. These gardens provided a "sense of place," standing in sharp contrast to our traditionally lush perennial borders and bedding plant extravaganzas. Still, it was common to overhear the wry comments of visitors proclaiming "I guess they haven't done anything with this area yet." The Western landscape, like similar steppe climates the world over, is all about simplicity and texture, drama and light, grass and wind and space. For those unfamiliar with its subtleties, it is often an acquired taste.

In recent years, great effort has been expended to restore integrity and diversity to our original native gardens. These are now acclaimed as a showcase for many of our native plants. These gardens persist and even thrive with no supplemental water, even in the drought of this season. As interest again rebounds, they provide new opportunities for education and are an indispensable asset for school groups and newcomers.

Still, in some respects their untamed style has not always addressed the needs of the gardening public who is looking for environmentally sound ideas that they can use in their home landscapes. This is especially the case for the many new residents who come from vastly different climates.

Recent immigrants have only limited knowledge about what it means to live and garden in Colorado. They are easily discouraged or led astray.

The booming economy of recent years, combined with a quarter century of above-average rainfall has made us complacent about our use of resources and our impact on the environment. Too often, the first step in creating a garden is to eliminate whatever Nature may have placed there. Landscapes more appropriate to the Midwest or the Coasts are "installed" and connected to life-support via costly irrigation systems. Now, in a time of severe drought, there is even more incentive to provide viable examples of drought-resistant garden options.

In the year 2000, three distinct gardens were created surrounding the highly visible heart of the Botanic Gardens — the Amphitheater. More than 20,000 square feet of annual beds were redesigned into naturalistic borders using only plants native to Colorado and adjacent states. The "Western Panoramas," offer sweeping vistas across the Amphitheater and spacious views not available in other parts of the Gardens, even framing distant Mt. Evans and the foothills of the Front Range. Rather than repeating old patterns, here we have taken the opportunity and the challenge to use our native plants with true garden artistry on a scale and in ways that we have not attempted before. Now well established, these are intended to mature with time into magnificent, permanent features of the Botanic Gardens' landscape. Due to their centrality and the openness of the site, these new gardens palpably affect the entire feeling of Denver Botanic Gardens. Throughout the year, this spot is the hub of dozens of community and Garden activities, family events, and concerts. We want people to know, as they enter this most prominent part of the Gardens, that they are indeed in Colorado.

To the west, a stylized prairie garden uses the best of our native prairie grasses and wildflowers. Rather than planting in a random mix, plants are arranged in sweeping drifts of texture and color. The grasses lend a sense of motion in this breezy open space, accented with flashes of color as wildflow-

ers bloom and fade with the seasons. All are planted in such a way as to show visitors how they can leave or create prairie gardens (needing little or no supplemental water or care for that matter) in spaces where they might otherwise put water intensive perennial borders or unnecessary turf. Drifts of Prairie Coneflowers, Evening Primrose, and Gayfeathers weave among the Blue Grama grass. Silver Beardgrass and Little Bluestem shift and sway in the breeze. This space is anchored by a grove of our native Cottonwoods. These stately trees meant survival for early settlers and still impart a sense of "oasis" to the broad landscape of the Great Plains. Over time their massive trunks and crowns will spread in silhouette against the distant mountain backdrop.

To the east, an open, gently rolling parkland of Ponderosa Pines recalling our foothills landscape is set among boulders and native grasses. The Ponderosa is one of our most drought-tolerant native conifers and a forest of them is at once majestic and alluring. Meandering paths invite exploration and provide a chance to relax among the sweet-scented pines. The best of our mountain wildflowers combine in drifts along the paths and under the trees, demonstrating again the best ways to use our rich montane flora in a garden setting. Indian Paintbrush, Blanket Flower, and Scarlet Gilia smolder among swaths of Mountain Muhly grass. Delicate, airy plumes of Pine Dropseed glitter against blue Lupines. This vantage point also provides views of the distant peaks of the Front Range, framed by the whispering evergreen boughs.

To the south, this forest transitions into a rocky outcrop dedicated to the most celebrated of our sub-alpine trees, the Bristlecone Pine. Long-lived and durable, these trees can survive for thousands of years under the harshest of mountain conditions. Bristlecone pines are classic Colorado. To many, they are the quintessential symbol of our wild and beautiful Rocky Mountains. Fortunately for us all, they can also thrive in our gardens, becoming small trees of great character with time. Their gnarled branches stand out in sharp relief against the garden wall to their south.

"Natives" continues on page 4

"Natives" continued from page 3

Among the boulders, native Columbine, Whipple's Penstemon, and Showy Fleabane bloom in the company of Idaho Fescue. Bluebells and Pussytoes creep through rock crevices. It is hoped that this enticing alpine vignette will inspire our guests with a renewed respect for fragile alpine environments.

To extend the grassy natural feel of this space, the adjacent pyramid known as Anna's Overview has been changed as well. Gone is the thirsty Bluegrass lawn. In its place a tapestry of Buffalo and Blue Grama grass now softens the steep slopes, with just a sprinkling of wildflowers. This area now thrives with no supplemental irrigation.

Near our Dryland Mesa, still another garden has taken shape. Wildflower Treasures hosts several hundred of the West's wildflower species, from those most cherished to little known gems. Trough gardens cluster in large groups on the stone terrace, each portraying a specific habitat or plant community found in Colorado. These miniature landscapes are truly a treasure all year, but are in their prime in Spring as diminutive cushion plants and cacti burst into bloom.

For the urban dweller, Denver Botanic Gardens is often the first or only exposure many people have to our rich pallet of native plants. A large proportion of the Botanic Gardens' cultivated space is now devoted to native plants — a significant achievement for a large urban garden. We believe it is imperative to demonstrate, in as many ways as we can, how to combine native plants effectively and how to capture something of the native essence of the West. These gardens prove that not only sophisticated, botanically oriented visitors respond to our native plants and landscapes, but that casual visitors find these gardens compelling: full of relevant information and beauty. It is hoped that using native plants in a relaxed garden style will inspire visitors to value our natural landscapes as a viable and essential inspiration for regional gardens.

BOTANICAL ILLUSTRATIONS ON EXHIBIT AT CU MUSEUM

The University of Colorado Museum of Natural History will be exhibiting Coloradoan Carolyn Crawford's Botanical Illustrations from October 1, 2002 - March 31, 2003.

Inspired by the beautifully intricate Plant Portraits of the late Ida Hrubesky Pemberton, Carolyn Crawford decided to begin a career as a botanical artist. Intrigued by the elegant detail of plant forms she focused on capturing the complexity of milkweed pollination in her work as well as illustrating the technical details of new plant species. She is also well-known for her numerous illustrations of Colorado's rare plant species, such as the Ute Ladies' tresses orchid, and her many images of popular garden plants for a Colorado-based seed company. Her work has been shown widely including selected exhibitions at the Denver Botanical Gardens, The Smithsonian Institution, in Washington D.C., and Royal Horticultural Society Westminster, in London, England.

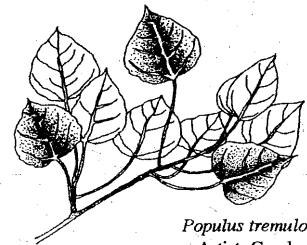
The CU Museum of Natural History will be hosting a variety of public programs to accompany this exhibition. Please call the Public Programs office at (303) 492-3396 for more information, or check out their website at www.colorado.edu/cumuseum/. The Museum is located at 15th and Broadway, in the Henderson building, on the CU-Boulder campus.

BEAUTIFYING YOUR LANDSCAPE WITH NATIVE SHRUBS AND TREES

John Giordanengo

As I strolled along my favorite creek this summer and gazed upon the thicket of shrubs, I felt a great sense of peace. After soaking up the beautiful tapestry of rich green colors created by the chokecherry, currant, sumac, willow, and plum in the evening sunlight, I began to ponder their many societal and ecological benefits. Throughout American history, (pre- and post-Columbian) the berries from many of our native shrubs were used for food, dyes, medicines, and more. Our furry, feathery, and fluttery friends (bears, birds, butterflies, etc.) find food and shelter in these shrubs, as well. From the time Golden Currants display their brilliant yellow flowers in spring to the moment sumacs set the hills ablaze with their fiery fall foliage, shrubs make our landscape a magical place.

As the weather cools this fall and you feel motivated to work outside again, consider adding some native shrubs to your landscape. Fall, when shrubs begin to go



Populus tremuloides

Artist: Carolyn Crawford

dormant, is a great time to plant them. Here are a few tips on shrub planting and initial care to get you started. A general rule of thumb is to dig a hole that is about two times the diameter and two times the depth of the root ball. If your soil is high in clay, mix the removed fill with an equal amount of aged compost. Place enough soil in the bottom of the hole so that the surface of the potted shrub is at the ground surface. Firm the fill soil down around the sides of the root ball by pressing down with your hand or foot. This helps to create good soil to root contact.

Adequate watering is critical for recently planted shrubs. Watering these shrubs periodically over the winter, as necessary, can help to increase their survival in the first year. Shrubs should be watered as needed during the growing season for the first two to three years to help them become well established. To help cut down on watering needs, apply a two inch layer of mulch (e.g., wood chips) from the trunk of the shrub out to the drip line. Mulch also helps to maintain the soil surface in a condition that allows water to infiltrate easily. Creating a slight depression around the shrub will help to concentrate water below the drip line of the shrub. Once established (2-4 years), many of our native shrubs require very little care to maintain optimal health.

The Colorado State Forest Service provides helpful advice for installing shrubs and sells native shrubs in the spring through their Conservation Tree Planting Program. Visit them at <http://www.colostate.edu/Depts/CSFS/csfsnur.html> for more information. For a useful list of native shrubs, their characteristics and preferred environment refer to the CoNPS Native Plants for Horticultural Use in Northern Colorado guide at <http://www.conps.org>. At the same link, you can refer to the Colorado Plant Vendor List to locate a nursery near you that carries native plants. Enjoy the structure, color, and diversity of wildlife that native shrubs attract for many years to come.

MARR FUND: Report from Recipients

INSECT PREDATION ON *LUPINUS CRASSUS*, A MONTROSE COUNTY ENDEMIC

Thomas Grant, University of Colorado at Denver

One day while wandering out of the Tattered Cover I saw something unexpected, an illustration of *Oxyphabus rotundifolius* on the cover of the *Rare Plants of Colorado*; I purchased the book immediately. In the reading that followed, I become interested in several species and began to think about projects for my Masters at the University of Colorado at Denver. Soon I was visiting the 'nearby' locations of *Lupinus crassus* in the Paradox Valley of western Montrose County and designing an experiment to determine the effects of insect predation on reproduction in this rare species. The taxon had caught my attention and, fortunately, I received funding from the Marr fund of the Colorado Native Plant Society for travel and other expenses related to my research. Several years and about 9,000 miles later, the project is nearing completion, graduation is approaching, and data pertaining to the reproduction and population dynamics of *Lupinus crassus* have been gathered and analyzed.

The idea of studying plant-insect interactions arose from the following brief statement in the aforementioned book — "field observations suggest that the seed crop of *Lupinus crassus* suffers heavy predation by insect larvae." Therefore, I designed an experiment to test the effect of excluding insects from the inflorescences using mesh enclosures and differential timing of the treatment applications. The enclosures were applied to individual inflorescences after the plants had begun to flower, therefore permitting potential pollinator interaction. My hypothesis was simple — exclude seed predators and the rare species will produce more fruits and mature seeds. If the species is declining, a method to increase seed production could be an essential element in preventing the extinction of this rare species. Additionally, I wanted to monitor the species and, to date, have gathered three years of demographic data for two geographically diverse populations.

In the spring of 2000, I initiated this project involving 100 plants at sites near the towns of Naturita and Bedrock. The lupine grows in pinyon-juniper woodlands and sparsely vegetated washes and draws, which receive between 25-50 cm of precipitation per year and have a history of relatively frequent fires. Fortunately, favorable conditions existed in 2000 to facilitate the production of inflorescences, fruits, and some mature seeds. During the 2001 and 2002 growing seasons, the populations produced no seeds, few inflorescences, and little aboveground biomass. I believe the trend in production is related to the lack of sufficient moisture and I hope that the perennial plants are capable of maintaining dormancy during these dry years. This possible survival strategy will be documented as population monitoring continues.

The primary predatory insect is a long-nosed weevil in the Curculionidae. Insects oviposit on developing flowers and fruits, with larvae boring into the fruit and feeding upon the maturing ovules. Up to 23% of the fruits had insect damage in the form of boring holes from the weevils or from seed depredation, although this did not preclude formation of some mature seeds in damaged

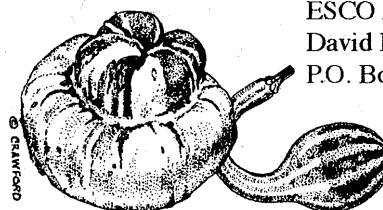
fruits. The weevils are not believed to effect or assist in pollination, with the primary pollinators thought to be bees.

The experimental component of this study documented statistically significant differences in the number of fruits produced within each treatment and revealed dramatic differences between sites. The Naturita site was much more productive than the Bedrock site for both the number of inflorescences and fruits produced per plant. Early season insect enclosures and wire-supported enclosures produced the highest number of fruits per inflorescence for both sites. Therefore, the insect exclusion treatments can be used to reduce predation by weevils and consequently increase seed production and potential recruitment. Enclosures applied later in the season were ineffective at preventing seed predation and may actually have increased the amount of predation due to the confinement of some adult weevils within the enclosure. Inspection of the fruits revealed that less than 10% of ovules become mature seeds, primarily due to lack of fertilization, then ovule abortion and predation. In general, the plant produces many flowers, few fruits, and a very small number of mature seeds. Reproductive output is reduced by insect predation and limited by resources, most likely water. The episodic production of fruits and possible dormancy are mechanisms that may facilitate survival in the variable and competitive environments of Paradox Valley. Overall, the project documented the population dynamics and plant-insect interactions in this rare species and augmented the knowledge necessary to actively manage these populations. I gratefully thank the Colorado Native Plant Society for supporting this project and welcome any questions or requests for additional information at (720) 865-3562 or grantt@botanicgardens.org.

PLANT ECOLOGIST SOUGHT FOR FULL-TIME POSITION

ESCO Associates, a small environmental consulting firm located in Boulder, Colorado is seeking to fill a full-time plant ecologist position. The qualifying candidate should be familiar with the Colorado flora, experienced with computer database/spreadsheet data manipulation, have a knowledge of parametric statistics, be physically compatible with outdoor work, have wetland experience, T & E surveys, and tolerant of frequent summer out-of-town field work. Minimum of two years consulting experience and Master's degree required. Please send cover letter, resume and references to:

ESCO Associates, Inc.
David Buckner/Mignon Macias
P.O. Box 18775, Boulder, CO 80308



Artist: Carolyn Crawford

CHAPTER NEWS

Boulder Chapter

The Boulder Chapter invites you to join us for a guest speaker, refreshments, book sales, and socializing at 7:00 PM on the second Thursday of the month from October through April. We now meet at the City of Boulder Open Space and Mountain Parks offices, 66 South Cherryvale Road. From South Boulder Road, go south on Cherryvale one-tenth of a mile and turn west onto a lane that leads back to the offices. We'll meet in the north building conference room. For more information, contact Chapter President Kathy Damas at (303) 543-1492.

Fort Collins Chapter

Monthly meetings are scheduled October through April at 7:00 PM in room E112 of the Anatomy/Zoology building on the CSU campus. Before each meeting, members are invited to join the speaker at 5:15 PM for dinner at Toy's Thai Cafe on Laurel Street between Mason St. and College Ave. in Fort Collins. For more information, contact Chapter President Annette Miller at (970) 482-3063 or almiller@lamar.colostate.edu.

October 8, 2002 Tuesday at 7:00 PM
Botanizing in the South Pacific: Field work in New Caledonia

Dr. Mark Simmons, (Biology, CSU), will discuss his fieldwork in New Caledonia and the South Pacific. Dr. Simmons is curator of the CSU herbarium and will also provide an update on the activities at the herbarium.

November 5, 2002 Tuesday at 7:00 PM
Locoweeds

Dr. Shana Carney (CSU) has interests in evolution, ecology and population genetics, which converge with respect to her studies of Colorado locoweed, sunflowers, and, more recently, phlox. She has been using her research to address conservation issues, especially in a project studying the genetics and possible hybridization of the Colorado endemic, Bell's twinpod. Her talk will focus on how pollinator movements among plants affect the frequency of hybridization between two species of locoweed (*Oxytropis*).

December 3, 2002 Tuesday at 7:00 PM
Physaria bellii

Linda Courter, graduate student at CSU, will report on her research addressing hybridization between *Physaria bellii* and *P. vitulifera*, both whether and where hybridization occurs. Linda will also characterize genetic variation in *Physaria bellii*, which is a front range endemic.

February 4, 2003 Tuesday at 7:00 PM
NREL update: projects and findings

Rick Shory, field botanist for the Natural Resources Ecology Lab at CSU, will give an NREL overview of current projects and findings. Rick has also experimented with several methods of buffalograss lawn establishment and will share practical tips for lawn conversion.

Metro-Denver Chapter

Monthly meetings are held from September through April at the Denver Botanic Garden. For exact location, which may vary, or for more information, please contact President Rita Berberian at (303) 513-0591 and rberberian@hotmail.com.

September 24, 2002 Tuesday at 6:00 PM
Native Gardens at Denver Botanic Garden

The 2002-03 Metro-Denver Chapter Program will "kick off" with a 6:00 PM tour of the native gardens at the Denver Botanic Garden. **Dan Johnson** (DBG) will lead this tour emphasizing Colorado native gardens, with a few other Western and Southwestern species thrown in for good measure. Specifically, we will be visiting the Plains garden, as well as the Gates Montane, Dryland Mesa, and new Western Panoramas. A light meal and an opportunity to renew acquaintances will follow in the Waring House.

October 29, 2002 Tuesday at 7:00 PM
Using plants for Environmental Cleanup

Dr. Elizabeth Pilon-Smits (Colorado State University) will discuss her research on phytoremediation, which involves the use of plants and their associated root microbes to clean up environmental pollution. Elizabeth, her colleagues, and students are trying to understand the mechanisms by which plants take up, metabolize, and accumulate pollutants (heavy metals,

selenium, and organic pollutants), with the goal of improving their capacity to remove these compounds from the environment. They study all aspects of phytoremediation, from the molecular level through the whole plant to the field. Additionally, they use genetic engineering to manipulate plant metabolism and a plant's capacity to remediate pollutants. It is hoped that knowledge gained from these studies will help improve the efficiency of phytoremediation. Prior to convening at the Waring House, members are invited to join the speaker at 5:30 PM for pizza at Angelo's located at 620 East 6th Avenue in Denver.

December 10, 2002 Tuesday at 7:00 PM
Insect Exclusion and Seed Predation on the Paradox Valley Lupine

Lupinus crassus (Fabaceae), the Paradox Valley Lupine, is an endemic restricted in distribution to Montrose County, Colorado. Since 2000, CoNPS Marr Fund recipient **Tom Grant** (CU-Denver, Denver Botanic Garden) has been conducting population studies and an insect exclusion experiment to determine the effects of insect predation on this rare plant. Low fruit production and fluctuating population sizes illustrate the need for additional study and proper management of the species. Prior to convening at the Waring House, members are invited to join the speaker at 5:30 PM for pizza at Angelo's.

Plateau Chapter

Chapter activities are scheduled throughout the year. For more information, contact Chapter President Jeanne Wenger at (970) 256-9227 and Bluecrow2u@aol.com or Program Chair Lori Brummer at (970) 641-3561 and lbrummer@gunnison.com.

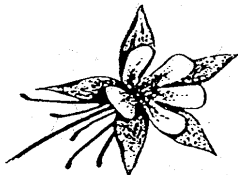
Southeast Chapter

Activities for the Southeast Chapter are scheduled throughout the year. For more information, contact President Dan Fosha at (719) 572-6972 or danfosha@aol.com.

Southwest Chapter

For more information regarding news and activities, please contact Chapter President Sandy Friedley at (970) 884-9245 or by e-mail at friedley@frontier.net.

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 or Corporate	\$30
Family or Dual	\$20
Individual	\$15
Student or Senior	\$8

Membership Renewal/Information

Please direct all membership applications, renewals, and address changes to the Eric Lane (Chair of Membership), 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 or more 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. Articles for *Aquilegia* may be used by other native plant societies or non-profit groups, if fully cited to author and attributed to *Aquilegia*.

Articles not exceeding 2000 words in length and shorter items fewer than 500 words in length, such as unusual information about a plant, are especially welcome. Previously published articles submitted for reprinting require permission. Camera-ready line art or other illustrations are also solicited. Please include author's name and address, although anonymity may be requested. Articles submitted via e-mail or on disks (MAC preferably, or IBM) are appreciated. Please indicate word processing software and version; if possible, submit as an RTF (rich text format) file.

Please direct all contributions to the newsletter to:

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Biology, Campus Box 171
University of Colorado at Denver
P.O. Box 173364
Denver, CO 80217-3364
E-Mail: lbruederle@earthlink.net

Officers

President	Jill Handwerk ..	970-491-5857
Vice-President ..	David Anderson ..	970-484-0774
Secretary	Alice Guthrie ..	303-651-3127
Treasurer	Georgia Doyle ..	970-491-6477

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Workshop: East ..	Bill Jennings ..	303-666-8348
West	Gay Austin	970-641-6264

MEMBERSHIP APPLICATION AND RENEWAL FORM

Name(s) _____

Address _____

(Address) _____

City _____ State _____ Zip _____

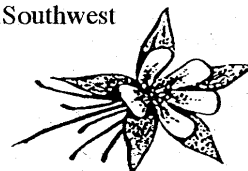
Phone () _____ E-mail _____

Chapter: Boulder Fort Collins Metro Denver Plateau Southeast Southwest

MEMBERSHIP CLASS:

- Dues cover one calendar year.
- Individual, \$15.00
 - Family/dual, \$20.00
 - Senior, \$8.00
 - Student, \$8.00
 - Corporate, \$30.00
 - Supporting, \$50.00
 - Lifetime, \$250.00

In addition to my membership, I have included \$_____ as a contribution to the John Marr Fund (endowment in support of small grants-in-aid of research), \$_____ as a contribution to the Myrna P. Steinkamp Memorial Fund (endowment in support of small grants-in-aid of research), or \$_____ as a general contribution to the Society.



CoNPS IS A NON-PROFIT ORGANIZATION — DUES AND CONTRIBUTIONS ARE TAX-DEDUCTIBLE

CALENDAR

CHAPTER EVENTS

- Fort Collins Chapter**
- October 8 **Botanizing in the South Pacific**
- November 5 **Locoweeds**
- December 3 ***Physaria bellii***
- February 4 **NREL Update**
- March 4 **Plants and Selenium**
- April 1 **New Computerized Plant Keys**
- Metro-Denver Chapter**
- September 24 **Native Gardens at Denver Botanic Garden (6:00 PM)**
- October 29 **Using Plants for Environmental Clean-up**
- December 10 **Insect Exclusion and Seed Predation on the Paradox Valley Lupine**
- January 28 **So Many Weeds, So Little Time**
- February 25 **Smooth Brome - An Overlooked Invasive Species?**
- March 25 **Botanizing in the South Pacific: Fieldwork in New Caledonia**

SOCIETY EVENTS

- Annual Meeting**
Sept 20 - 22 **Glenwood Springs, CO**

WORKSHOPS

- October 26, 27 **Vegetative Characters for Identification**
- November 16, 17 **Colorado Conifers**
- December 7, 8 ***Castilleja, Pedicularis, and Related Genera of Colorado***
- January 11, 12, **Grasses: The Tribe Aveneae**
or 25
- February 1, 2 **Botanical Art for Beginners**
- March 1, 2 **Colorado Thistles**
- March 15, 16 **Basic Botany**



Colorado Native Plant Society
P.O. Box 200
Fort Collins, Colorado 80522
<http://www.conps.org>

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