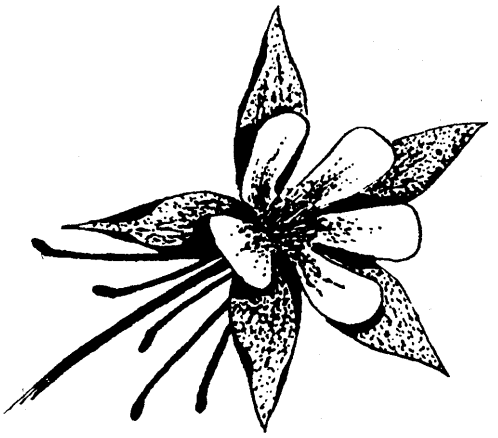
Aquilegia



Newsletter of the Colorado Native Plant Society

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

Volume 16 Number 4 July/August 1992

Colorado Peat Fens in Trouble

Jim Borland

Although horticultural experts have long known that mountain peat is an inferior product when compared to other organic materials, it is only recently that we have learned that the mining of this mountain peat is directly responsible for the disappearance of not only several very rare plants, but entire habitats upon which these and other plants depend.

The fate of these plants and their environment rests entirely in the hands of caretakers and providers of landscape plants as they continue to buy and use products such as mountain peat, mountain soil, mountain topsoil, sheep and peat, certain prepackaged soils and other products containing mountain peat.

The Origins of Mountain Peat

Peat naturally occurs as an accumulation of undecomposed organic matter in places where the soil remains saturated with water for very long periods. Unlike peat-producing bogs in other parts of the world, all the mountain peat produced in Colorado is the product of a unique habitat called a fen.

Fens in Colorado and other western states are found between elevations of 8,000' and 12,000' in low-lying drainage ways which are fed by mineral-rich ground and surface waters, in addition to rain and snow. In contrast to nutrient-poor bogs which support only acid tolerant plants, fens support a wide diversity of plant species consistent with the nutrient-rich chemistry of their water supply.

Peat found in these habitats is the result of thousands of years of accumulation of the undecomposed roots of sedges, grasses, willows and other wetland plants. Accumulating at a rate of only 8 to 11 inches per 1,000 years in these cold environments, peat found in Colorado varies in thickness from only a few inches to several feet deep.

Mountain peatlands and their associated plants are credited with the ability to clean water supplies of heavy metals entering from upstream sources and to trap, store and gradually release peak water flows. Thus peatlands abate downstream erosion problems while recharging ground water systems.

Although estimates are only approximate, it is believed that only three tenths of one percent of the lands in Colorado support the rich biological community found in peatlands. Undoubtedly because of their wet nature, peatlands are not thought of as

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Vice President's Report
Tina Jones

Set aside Saturday, October 3rd for the Colorado Native Plant Society Annual Meeting! The Denver Museum of Natural History is a co-sponsor again this year for the program, entitled **WET & WILD: A Colorado Wetlands Conference**.

Estimates of the number of Colorado wetlands that have been filled or drained since Euro-American settlement range as high as 50%. Explore the facets of this loss of our natural heritage with an exciting slate of speakers, including Dr. David Cooper, wetlands ecologist; Dr. Ron Ryder, Professor Emeritus of wildlife biology; Bill Jennings, wildflower photographer and orchid specialist; Janet Coles, ecologist with the Colorado Natural Areas Program; Dr. John Windell, CU professor and consultant in riparian and wetland restoration; Dr. Gene Reetz, chief of wetlands protection for the Denver office of the Environmental Protection Agency; and Mark Gershman, wetlands and wildlife coordinator for the City of Boulder Planning and Open Space Departments. A brochure containing an agenda and information about the speakers was mailed to CONPS members in early September. Contact a board member if you did not receive one.

The conference will be held in the Rickettson Auditorium at the Denver Museum of Natural History, 2001 Colorado Boulevard, from 8 a.m. to 3:30 p.m. Parking will be a problem for those arriving later in the morning due to unusually high visitation expected for the Aztec exhibit, featured at the Museum until February 1993. Instructions for alternative parking or shuttle service will be available in the parking ar on the day of the conference.

A variety of native plants and native plant publications will be available (usually at a substantial discount) on the day of the meeting, so bring money! If you did not sign up for a box lunch (order form was attached to the mailing to CONPS members), be sure to bring a lunch. You will have a difficult time finding a parking place in the afternoon, and you may encounter long lines in the museum cafeteria due to the expected popularity of the Aztec exhibit.

There is NO CHARGE for the annual meeting, and no preregistration is required. Just bring yourself and enjoy a WET and WILD day with your fellow native plant enthusiasts!

Aquilegia

Aquilegia is published six times a 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*.

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, 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:

Tamara Naumann
940 Quinn Street
Boulder, CO 80303

Deadlines for newsletter materials are February 15, April 15, June 15, August 15, October 15, and December 15.

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.

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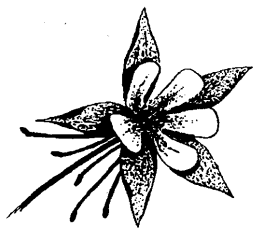
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Membership	Myrna Steinkamp	226-3371
Publicity	Julia Carlson	752-2738
Workshops	Bill Jennings	666-8348

ANNOUNCEMENTS

A great selection of publications will be available at the annual meeting!

Velma Richards has put together a selection of books and publications for sale at the annual meeting. Here is your chance to avoid postage costs! Bring money. Selections will include *Rare Plants of Colorado*, *The Prairie Garden* by Rick Brune, *Sagebrush Country* by Ronald Taylor, *How to Identify Plants* by H.D. Harrington, *Rocky Mountain Flower Finder* by Janet Wingate, and many others.

For more details on the annual meeting, read the Vice President's Report on page 2.



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Alpine plant lovers...

Field trip guides with knowledge of alpine plants are needed for the annual meeting of the American Rock Garden Society which will take place in Vail, June 24 - 25, 1993. Special mountain buses will take groups from Vail to various locations to view tundra and montane plants. Training sessions will be held at Denver Botanic Gardens throughout the year to help prepare the guides. This is a wonderful opportunity to increase your skills in identifying these exquisite, hardy specimens of native plant life, and to share your knowledge and enthusiasm with guests from all over the U.S. and abroad. For information, please call Sissy Gibson (333) 333-3744 or Shirley Nelson (303) 837-1410.

LETTERS to the EDITOR

PAWNEE GRASSLANDS

I am responding to the article written by Sally White in the May/June (Vol.16, no.3) of *Aquilegia* concerning the Pawnee Grasslands.

Generally, the article was very interesting and informative. There was one mistake, however. Grazing leases on public land are NOT a property right. Some ranchers claim they are, but a recent Federal District Court case in Nevada upheld efforts of the Forest Service to reduce grazing.

Ms. White's point here is that the Forest Service is not likely to reduce grazing to increase plant and animal diversity because the ranchers would be very upset. She is absolutely right about this.

One other problem I have with the article is that it does not express sufficient concern for the damage that oil and gas exploration and production could do to plover habitat and general biological diversity. Almost the entire Pawnee Grasslands is under lease for oil and gas, as are much of the surrounding and intermingled private lands. Production and exploration on the public land leases has been held up because of concern about the plover. Extensive oil and gas development could harm the plover by taking up land (for pumps, pipelines, roads and ancillary facilities) now used by the plover.

The oil and gas industry has been putting tremendous pressure on the Forest Service to open as much land as possible to oil and gas operations before the plover is listed under the Endangered Species Act. When and if that happens, recovery of this species will have to be the basis for management on the Pawnee. This might mean even more restrictions on oil and gas operations, and also on some recreational activities. It is my understanding that District Ranger Jeff Losche is very sympathetic to the oil and gas industry. Thus the plover, prairie dogs, burrowing owls and other species native to the Pawnee face an uncertain future.

On another subject, your readers will be pleased to know that the Forest Service has issued a new draft sensitive species list. The new list contains all but one of the plant species found by The Nature Conservancy's Heritage Task Force to be in some danger of eventually becoming threatened or endangered if current downward population trends are not reversed. There is no word on when (or even if) this list will become final. The last word from the Forest Service was that final issuance of the list was held up because of President Bush's moratorium on the issuance of new regulations that might negatively affect the economy. Also, a new Regional Forester, Elizabeth Estill, will be in office as of August 1. Perhaps she will act more favorably toward the concept of sensitive species that her predecessor, Gary Cargill, did.

Rocky Smith
Forest Management Coordinator
Colorado Environmental Coalition

Peat Fens, *continued from front page*

enjoyable places to spend an afternoon hunting plants and thus have become by default areas about which we know the least regarding their ecological characteristics.

In comparison with other drier, more easily researched areas of the state, research in peatlands is only now beginning to reveal their contents and some of their mysteries. With only a few of the estimated 183,000 acres of Colorado peatlands investigated, we know that several species of willow (*Salix myrtillifolia* and *Salix candida*), a primula (*Primula egaliksensis*), a senecio (*Packera pauciflora*), a blue-eyed grass (*Sisyrinchium pallidum*), and several species of grass, cotton-sedge, and other sedges are found in these places, and in the case of several, nowhere else in Colorado or the world.

The extraction of peat from these areas is an unusually destructive process typically involving first the construction of a series of drainage ditches in and around the area to be mined. This initial process dooms many plant species by altering forever the hydrologic features of the groundwater so necessary for their survival.

The actual extraction process, although varied, usually entails the use of draglines and buckets which first scrape away all the living plant material and underlying layers of peat. This is then piled for drying and later removed by tracked earth movers and large dump trucks which transport the peat to, typically, metropolitan areas where it is used in the landscape, greenhouse and nursery industries. Peat deposits are generally scraped down to bedrock or until layers of rocks or gravel make the operation economically unfeasible, forcing the operator to move on to a new site. Every 8 to 11 inch layer of peat removed also removes 1,000 years of history; a history which began approximately at the same time the last glaciers left the region - 8,000 to 12,000 years ago. Most important, we now know that Colorado peat *is not a renewable resource.*

Although several revegetation methods have been applied to some of the scarred and denuded sites left by peat mining, none are known to even assist the natural vegetation in its ability to reclaim the site in some fashion akin to its original splendor. Efforts to get *anything* to grow at these sites have failed in many cases. Even if successful revegetation methods were known, there are no existing laws or regulations which mandate that these methods be used after peat is extracted.

Compounding the problems associated with these destructive mining methods is the effect that peat mining can have on water quality. Physically, it is immediately apparent that the ability of the peatlands to regulate stream flow and thereby reduce downstream erosion is impaired if not destroyed. Chemically, water flowing through the peatland system is altered from a relatively high pH status to low pH status. This low pH, or increased acidity, causes the release of metals into the very water supplies that ultimately you and I drink. At least some of these releases exceed the state standards of water quality and place peatland mines among other high country mine-types also known to detrimentally affect water quality.

Horticultural Quality of Mountain Peat

Should you somehow not be concerned about the ecological consequences brought about by mountain peat mining, then please give pause to consider the horticultural merits of mountain peat.

After careful investigation and long considered thought regarding the merits of mountain peat, I have concluded that the best thing that can be said for the product is that it is dark brown in color. Unfortunately and mistakenly, we have associated this dark brown color with positive horticultural attributes. Because peat is derived from several different mountain sources, each with its own set of unique physical and chemical characteristics, no uniform statement can be made regarding any of the individual qualities of the product.

Although one should be able to obtain from the purveyor of mountain peat information regarding the specific chemical and physical characteristics of the product, a marathon of phone calls to peat dealers throughout Colorado revealed that very few knew even one physical or chemical detail regarding their product. Of the few dealers who had details at hand, it was clear that the available analytical test did not necessarily reflect the qualities of the product currently on hand. At least one supplier has given up on testing peat due to the inconsistencies of test results which were directly related to the inconsistencies of the product that is mined.

It should be remembered that one man's mountain peat is not the same as another's mountain peat. The product is so inconsistent that it can vary greatly not only from one mine to the next but from different sections or from different depths of the same mine site.

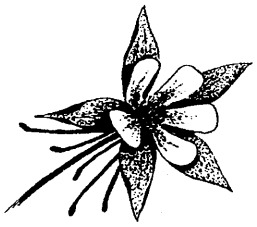
The one characteristic most important to horticulture is the organic matter content of the peat product. It is the organic matter content of soil amendments that help most in loosening the soil and as a result help provide adequate air supplies and water storage for the growth of plant roots. While the organic matter content of relatively expensive but popular sphagnum* peat moss is above 90 percent, peat mined in Colorado may contain as little as 21 percent organic matter. What this means is that when you buy mountain peat, you may be acquiring as much as 79 percent mineral matter (finely pulverized mountain rock).

Colorado mountain peat *is not* peat moss nor is it sphagnum peat. It contains neither significant quantities of any moss and, if

- *continued on page 8*

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* sphagnum: a specific genus (*Sphagnum*) of moss of which only a few species are horticulturally important. Most sphagnum peat moss is mined from bogs found in Canada and the upper mid-western region of the United States. The sphagnum is dried, pulverized, screened and compressed for sale, usually in bales, occasionally loose. Although often referred to as peat moss or moss peat, no regulations govern the use of these terms.



Field Trip Report

South Park: From Fen to Fellfield
lead by Alan Carpenter & Barbara Siems
Report by Ruth Carol Cushman

On the weekend of July 11-12, CONPS members saw rare plants and spectacular scenery at two unique areas in South Park: the High Creek Fen at about 9300 feet and Horseshoe Cirque above timberline. Alan Carpenter, who directs The Nature Conservancy's stewardship program, led the Fen trip, and Barbara Siems, who is writing her PhD dissertation on the subject of plant community composition in relation to soils, led the Horseshoe Cirque trip.

The Nature Conservancy (TNC) purchased High Creek Fen in 1990. Although most of the funding came from Department of Highway mitigation funds, $10,000 was raised by Deer Creek school children who collected pennies to see what one million looked like and then donated the one million pennies to TNC.

Restoration of the fen began in 1991. The earthmoving portion of the restoration will be completed this year, and reseeding and planting of cuttings native to the fen will be finished by the end of next year. TNC plans to set up groundwater monitoring wells and is looking for a graduate student to do a groundwater study. Monitoring of the project will continue for five years. "It will be interesting to come out in three to five years and see what it looks like then," says Alan.

What Alan would really like to know is what it looked like before 1850 when bison grazed here instead of cattle and fires were not suppressed. He thinks cattle grazing may have destroyed tall grasses that once could have grown here and would like someone to do a pollen study to establish a pre-settlement vegetation profile of the area.

Underlying the fen is a layer of peat that is 8000 years old and two feet deep, some of which was mined in the 1970s and 80s. However, with time and protection, the fen should be able to re"peat" itself.

In addition to a variety of sedges that Alan delighted in keying, some of the plants seen on the trip were *Sisyrinchium pallidum*, the only globally rare plant in the fen; *Salix candida,* known from only two other Colorado locations; *Salix myrtillifolia; Primula egaliksensis*, rare in Colorado; *Habenaria hyperborea*, a small bog orchid which smells like carnations; *Chondrophylla aquatica*, a tiny white gentian; and *Pedicularis hallii*, which painted the South Park meadows a vivid magenta.

High Creek Fen is open to the public and is located 8.3 miles south of Fairplay. Turn south off US 285 onto an unmarked gravel road just east of milepost 174.

Horseshoe Cirque, 13 miles up Fourmile Creek Valley, is the site where Barbara Siems is comparing plant communities that grow on two substrates: sedimentary and igneous. She says that only recently have scientists in the U.S. recognized that bedrock chemistry influences the growth of some plant species. Soils overlying limestone are more alkaline (pH value of 6.5 to 8) than soils over non-calcareous bedrock (pH between 5 and 6.5.).

In an informative handout and plant list given to trip participants, Barbara gave several reasons for the apparent control of plant communities by the underlying bedrock: "...differences in chemistry and therefore availability of nutrients to the plants, differences in pH (which controls, among other processes, the ability of legumes to form nodules), differences in temperature associated with different reflectivities of the rocks, differences in availability of moisture because of different soil permeabilities, and differences in stability of substrates because of different types of weathering."

Although many species thrive in soils overlying either sedimentary or igneous rocks, other species seem to be restricted. For instance, in the alpine, legumes (except for clovers) are associated with calcareous substrates. *Oxytropis viscida*, which is restricted to limestone, is plentiful in the basin. Other limestone-loving species seen on the field trip included *Physaria alpina* (double bladderpod), which is an indicator species for limestone, and the rare *Braya humilis*. Barbara says that before she discovered one particularly good stand of double bladderpod, she parked her car over it. However, it likes disturbed areas and thrived in the tire tracks.

Barbara also pointed out differing microclimates in the alpine. A little hill, a fellfield, or a stand of willow or krummholz creates a different plant community.

The weekend's wet weather was brightened by Velma Richards' rain slicker that read: "Slippery When Wet."

Workshops - Fall 1992

The Colorado Native Plant Society workshop series was established in 1985 with the objective of having something to do during the winter when field trips are impossible. CONPS members have attended more than 70 workshops over the years. Workshops bring plant lovers together with a well-informed instructor who may have photographs, herbarium specimens, live plants, or other materials for hands-on study. The opportunity to receive one-on-one instruction and informative lectures has made the workshop series one of the most popular Native Plant Society programs. Attendees need no special skills or background; a love of plants and a desire to learn are the only prerequisites. The goal is to demystify plant identification and to enhance in all of us our enjoyment and understanding of Colorado's native flora.

Please register promptly, as workshops tend to fill up quickly. The fee for each full-day workshop is $10 for CONPS members and $22 for non-members. Payment is made on the day of the workshop. About two weeks prior to the workshop, registrants will receive information by mail about location, time, lunch, and suggested references or materials to bring to the workshop. Drop a postcard or letter to Bill Jennings, P.O. Box 952, Louisville, CO 80027 indicating the workshops for which you would like to register. Be sure to include your name, address, and telephone numeber. You may also register by calling Bill at 303-666-8348.

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 activities offered by CONPS. We need your suggestions for future workshops and trips. We also appreciate feedback on whether you find them informative and exciting or dull and uninteresting. We'd like your opinion on how well we are serving you, our membership.



Lloydia serotina
Artist: Janet Wingate



Minuartia obtusiloba
Artist: Janet Wingate

THE CARYOPHYLLACEAE

leader: Dr. Ronald L. Hartman
Rocky Mountain Herbarium, University of Wyoming, Laramie
Saturday, September 26, 1992

Dr. Hartman will explain identification of plants in the problem genera of the Caryophyllaceae (including the Alsinaceae). Genera to be covered include *Silene, Paronychia, Cerastium, Sagina, Stellaria, Arenaria,* and *Minuartia* in Colorado and Wyoming. Dr. Hartman is an excellent teacher and this workshop also provides an opportunity to see the facilities of the Rocky Mountain Herbarium, the largest herbarium between the Missouri Botanic Gardens (St. Louis) and University of California at Berkeley.



Paronychia pulvinata
Artist: Janet Wingate

THE MILKWEEDS (ASCLEPIADACEAE)

leader: Carolyn Crawford
Foothills Nature Center, Boulder
First Session: Saturday, October 24, 1992
Second Session: Sunday, October 25, 1992

There are nineteen species in two genera in this family in Colorado. In addition, some species that almost reach Colorado will be covered and the related family, Apocynaceae, will be discussed (two species in one genus). Carolyn has been researching and drawing plants in this family for several years and in the past year has taken pains to collect as many species as possible. In addition to the usual pressed specimens, Carolyn has preserved whole flowers in alcohol, so that participants can dissect the flowers and study the structure and unique pollination mechanism.

SHOWY MONOCOTS I

leader: Bill Jennings
Denver Botanic Gardens Herbarium
First Session: Saturday, November 14, 1992
Second Session: Sunday, November 15, 1992

In addition to his interest in the Orchidaceae, Bill also likes the lilies and closely related families. There are too many species to cover conveniently in one workshop, so half will be deferred to 1993. This year, we will cover the following genera: *Lilium, Erythronium, Fritillaria, Leucocrinum, Lloydia, Maianthemum (Smilacina), Calochortus, Anticlea (Zygadenus), Toxicoscordion (Zygadenus), Veratrum, Disporum, Streptopus, Hypoxis,* and *Smilax*. In addition, a few species that approach Colorado will also be covered. Most of these genera have only one species representative in Colorado, thus identification is usually straightforward. This will be a fun and easy workshop. For a big challenge, wait till next year when we go through the onions (*Allium*).

MONTANE & SUBALPINE GRASSES

Foothills Nature Center, Boulder
First Session: Saturday December 5, 1992 - leader: Dr. Alan Carpenter
Second Session: Sunday, December 6, 1992 - leader: Dr. David Buckner

Drs. Carpenter and Buckner will take us through the fascinating and confusing world of the grasses of the mountains. After covering the terminology necessary to study the grasses, they will distribute numerous specimens for us to dissect and identify. This will be an unique and rewarding workshop, continuing our series on identification of this important group. Every Colorado botanist should have a working knowledge of the grasses.

Chapter News

Boulder Chapter

October 13: Organizational Potluck
Bring your ideas for future meeting topics, projects and/or speakers to Betsy Neely's house along with a dish to share. If you have 5 or 10 slides from your summer plant-hunting season, bring those to share over dessert! Betsy has lined up some speakers for the winter months and wants our help in planning the rest. We'll have fun getting reacquainted and organized for the coming year.

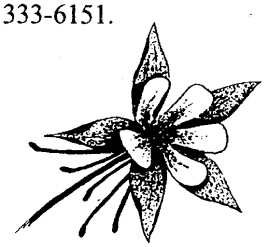
When: 6:30 p.m.
Where: 2941 20th Street, Boulder
Phone: 443-8094

Denver Chapter

October 28: Colorado Wetlands
Bob Powell will present a pictorial tour of Colorado wetlands. It's time for election of Denver Chapter officers, so be there to cast your vote! The meeting will be held at 7:30 p.m. in Classroom C at the Denver Botanic Gardens.

December 9: Colorado Riparian Areas
Gwen Kittel, riparian ecologist with The Nature Conservancy, will present her work on classification and modeling of Colorado's riparian plant communities. Note: this combined November/December meeting will be held on the 2nd Wednesday of December in the Morrison Center at the Denver Botanic Gardens.

Monthly meetings are held from September through May on the 4th Wednesday of the month 7:30 p.m. at the **Denver Botanic Gardens,** 909 York Street, unless otherwise noted. For more information, call Ron Abbott at 333-6151.



FIELD NOTES

A handwritten note from Jim Locklear arrived in the mail early in the field season. Jim's search for *Asclepias uncialis* is partially funded by the Colorado Native Plant Society (see *Aquilegia* Vol.15 No.2 for a report on Jim's earlier work with this rare native milkweed). The Colorado Native Plant Society plays an important role in encouraging inventory and research on native flora.

18 May 1992

Dear Tamara,

Just a quick report on my search for Asclepias uncialis last week. I spent five days searching for it along the forks of the Republican River and near Julesburg. In all that searching I located only one population along the South Fork of the Republican north of Bethune. This was in the general area of a collection made by Merritt Cary in 1909. I found a total of 14 plants in an area about one square yard in size. I collected one specimen which I will deposit at COLO. The plants were in fruit and probably had finished blooming by early May.

I also found a couple of new localities for Cryptantha cana and Astragalus hyalinus south of Flagler. Other than that, not much else to report.

I'll begin a formal write-up of my field work in the near future.

Thanks again for the opportunity to do some additional work in Colorado.

Sincerely,
Jim

Peat Fens, *continued from page 4*

present at all, the moss *is not* sphagnum moss. The individual particles of organic matter present in Colorado mountain peat are typically so small that they can act as glue and actually hinder soil drainage and aeration rather that improve it.

Unlike sphagnum peats which are typically low in pH and calcium, mountain peats are generally relatively high in pH (as high as 8.5) and usually heavily laden with calcium. Neither high pH nor high concentrations of calcium favor the use of mountain peat as a soil amendment for soils typical to the lower elevations along the base of the Rocky Mountains.

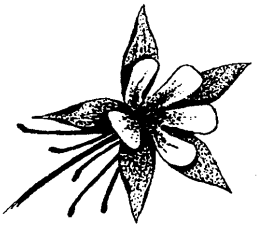
Not surprising, considering the physical attributes of mountain peat, a study conducted at Colorado State University found that greenhouse potting soils containing mountain peat produced inferior plants when compared to other soil mixes. Most growers of greenhouse plants have since learned of the dubious quality of mountain peat and have switched to products which help them produce superior plants.

Nursery growers, on the other hand, continue to use huge quantities even though other organic materials are available for their use.

Even larger quantities of mountain peat are incorporated into the soils of landscape sites in the mistaken belief that it improves soil conditions and thus the performance of subsequently planted turfgrass and ornamental plants.

Another major use of mountain peat which generally goes undetected is through the

- *continued on page 9*



Peat Fens, *continued from page 8*

sales of pre-packaged potting soils. Individual garden centers, nurseries and greenhouses often mix mountain peat with other ingredients, package and tag these mixes with their own brand name and sell them for use as potting soils for a variety of plants. The sale of two widely available pre-packaged soils, Hyponex™ and Permagreen™, may be responsible for as much as 40% or more of all the mountain peat mined in Colorado. In fairness to these two brands, it should be noted that their respective producers do not include mountain peat in all of their products. Unfortunately, the gardener cannot always determine which of these products contain mountain peat by reading the label. There are no laws or regulations regarding the labeling of ingredients in pre-packaged soil mixes.

Informed gardeners who have respect for their environment, even as it extends to wild mountain places, and who are concerned for the health and well-being of their own plants will select materials other than mountain peat for their gardening purposes. Although local supplies may vary considerably in availability, composted materials such as manures of all types, municipal leaves and grass clippings, mushroom compost and mixtures of these with such woody products as bark, sawdust, conifer cones, wood chips, ground up Christmas trees and others give the gardener a wealth of materials from which to make an environmentally sound selection.

There is really no reason to continue the mass destruction of our natural heritage and irreplaceable treasures for the sake of growing petunias or any other landscape or garden plant.

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Note:

This article first appeared in the fall 1991 issue of *Rocky Mountain Gardener* Vol.1, No.4, pages 6-7, and is reprinted here with permission of the author. Jim Borland is a past president of CONPS.

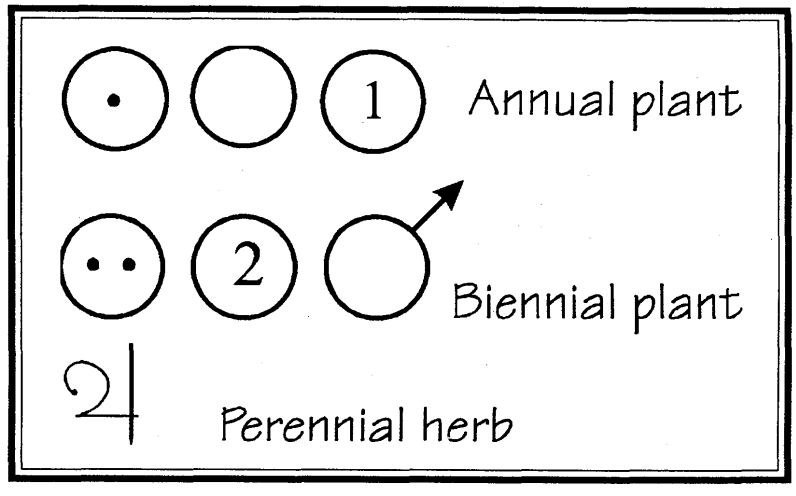
What You Can Do

1. Stop using mountain peat, mountain soil, and mixtures containing mountain peat.
2. Stop using all Permagreen™ and Hyponex™ products not labeled with ingredients and their sources.
3. Stop buying nursery and greenhouse plants grown in soils containing mountain peat.
4. Write or call the following people or agencies and request a stop to all mountain peat mining activities.
   a. your state representative or senator,
   b. Colorado State Land Board
      1313 Sherman Street
      Denver, Colorado 80203-2273
      (some state owned peatlands are leased for peat mining),
   c. Colorado Mined Land Reclamation Division
      Department of Natural Resources
      1313 Sherman Street
      Denver, Colorado 80203-2273,
   d. County Commissioners of the following counties:
      Archuleta, Boulder, Gilpin, Jefferson, Larimer, Mesa, Park, & Teller,
5. Ask The Nature Conservancy how you can help them protect High Creek Fen, one of the biologically richest fens in Colorado.

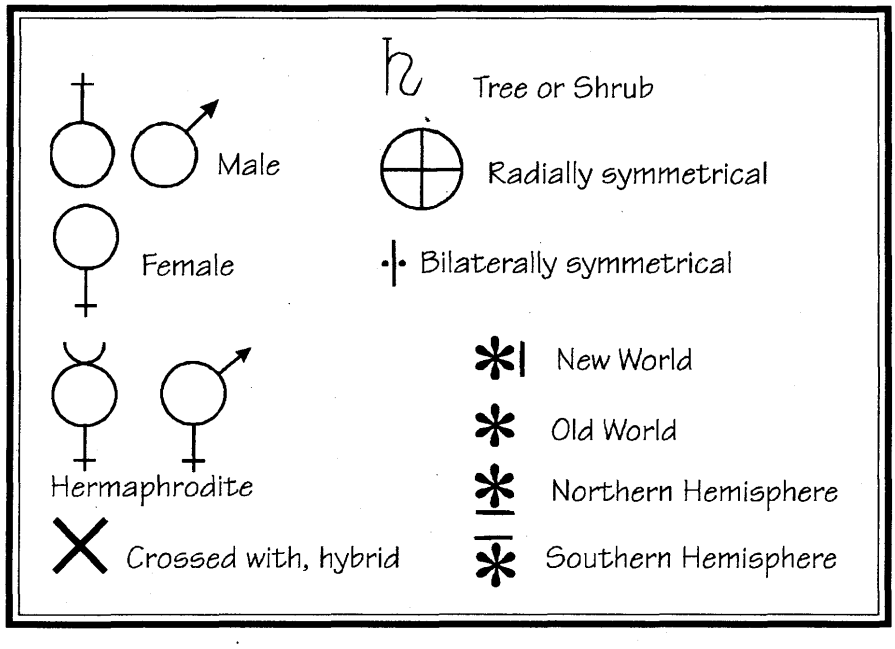
   The Nature Conservancy
   1244 Pine Street
   Boulder, Colorado 80302

Celestial Symbols in Botanical Books

Mark Gershman
Wetlands & Wildlife Coordinator
City of Boulder



Grasses have never been easy for me to identify, and yet they are of extraordinary importance to any biologist working in the Front Range. Fortunately, I have had a number of patient teachers and I am at the point where I can at least find a key to confirm my best guess with a description and an illustration. In eastern Colorado, this is usually A.S. Hitchcock's *A Manual of the Grasses of North America*. While working with this worthy volume, I stumbled onto a symbol that I little expected to see in a botanical work--the astronomical symbol for the planet Jupiter. And then, as I looked further, I found the symbol for the sun. Was Hitchcock suggesting with these symbols that western wheatgrass was not a native of the Earth, but rather was endemic to Jupiter? And was I to understand that cheatgrass was to be found growing on the surface of the sun? I didnt think so, but the introduction, preface, appendices gave no further clue. I had picked up a copy of B.D. Jackson's 1905 *A Glossary of Botanic Terms*, but found no help there either. It was late evening, I was perplexed so I called a few friends--the sort of people who might know and wouldn't mind the asking--still nothing conclusive. I surmised that whatever the symbols for Jupiter and the sun meant, they were once so commonplace, that they warranted no special definition. Fortunately, my dictionary saved me the disgrace of having to ask someone who knew. Jupiter, it seems, is the symbol for a perennial herb, while the symbol for the sun (or an empty circle, or a circle with the number 1 within-- see figure) indicates an annual herb. The symbol for a biennial is either a circle with two dots, or the number 2 or the male symbol which also happens to stand for Mars. Although I haven't seen them in use, the symbols in the figure to the left are also listed in my dictionary as biological symbols. Saturn means shrub or tree. I would be interested in speaking with anyone who knows how such symbols became associated with their meanings.



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BOOK REVIEW

Jim Borland

Seeds of Woody Plants of North America: revised and enlarged edition. 1992. *James A. Young and Cheryl G. Young. Dioscorides Press, Portland. 407 pages. cloth. $49.95.*

First, came *Woody Plant Seed Manual* followed in 1974 by the 883 page tome, *Seeds of Woody Plants in the United States*, Agriculture Handbook No. 450, which many consider the "Bible" of seed information and propagation. This new version, with a slight change in title and based strongly on the former edition, adds almost 200 species, mostly exotic to the continent, and over 1000 new literature citations that reflect scientific advances and increasing interest in the subject during the 18 years.

Readers and users of the 1974 version know it is probably the most complete manual on seed propagation ever published in the English language. It includes a separate section of 166 pages on fruit and seed development, ripeness and dispersal, dormancy, germination, genetic improvement, seed orchards, pollen handling, harvesting, processing, storage and all-important presowing treatments. Important too is the germination information for each species, often described in detail with individual trials, successes and failures.

All this information was deleted from the current edition. Deleted too are all literature references used to construct the 1974 edition except those few that the author thought worthy of mention, even though the information from the earlier edition was included, most often in consolidated form. This means that many researchers do not get credit for their work, including the editor of the 1974 edition, C. S. Schropmeyer. The deletions further include any credit for the illustrations, all of which have been copied from the 1974 edition. Also deleted are many of the extensive tables that in this edition are "streamlined" and "standardized", eliminating, in my opinion, a good deal of the information on variability to be expected when working with seed.

This edition, like the earlier editions, is arranged alphabetically by genus. Readers will note that under a general genus name, only one species is discussed; under a species name, several species may be discussed. Nativity, included for most species, is omitted for some. Exasperating to all but the authors, I am sure, is the intermixing of botanical and common names throughout the text.

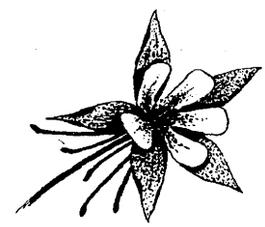
Surprising perhaps, considering that the senior author is a range scientist employed by the U.S.D.A., is that several publications by the Forest Service apparently were not reviewed for this work. Including information from available works would have greatly expanded the sections on *Artemisia, Ceanothus*, and *Chrysothamnus*, or added sections on *Linnaea* and *Sarcobatus*, to mention only a few. Still more information could have been added, had the authors included in their review such popular or classic works as Jill Nokes' *How to Grow Native Plants of Texas*, E. Belcher's *Handbook on Seeds of Browse-Shrubs and Forbs, Native Shrub Production Project* by the Surface Environment and Mining Program, or any number of California plant publications authored by Dara Emery.

Colorado readers may be surprised to learn that there is little or no information on many woody Colorado plants, although many are readily available (e.g., *Amelanchier utahensis, Artemisia arbuscula, A. cana, A. filifolia, A. frigida, A. pygmaea, A. spinescens, Berberis fendleri, Ceanothus martinii, Cercocarpus intricatus, Chimaphila, Ephedra torreyana, Fendlera, Fendlerella, Forsellesia, Frankenia, Fraxinus, Grayia brandegei, Jamsia, Lycium pallidum, Nolina, Ostrya, Paxistima, Philadelphus, Physocarpus monogynus, Quercus gambelii, Rhamnus*, many *Ribes* species, *Salicornia, Sarcobatus, Sorbus* and *Vitis*).

There is an intimation in this edition that the 1974 edition of *Seeds of Woody Plants in the United States*, Agriculture Handbook No. 450; is no longer available. In fact, it was unavailable for several years. The U.S. Government Printing Office reprinted it in 1989, however, and offers it for $41.00.

For my money, I would much rather have a version with **only** the new information, leaving the old information alone. In many ways I find the 1974 edition much more valuable that the current edition.

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Calendar Overview

1992 Annual Meeting

Oct 3 — **WET and WILD!**
A Colorado Wetlands Conference
Denver Museum of Natural History

Chapter Meetings

Boulder Chapter

Oct 13 — Organizational Potluck

Denver Chapter

Oct 28 — Colorado Wetlands
Dec 9 — Colorado Riparian Areas

1992 Fall Workshops

Sept 26 — **The Caryophyllaceae**
with Ron Hartman

Oct 24-25 — **The Milkweeds**
with Carolyn Crawford

Nov 14-15 — **Showy Monocots I**
with Bill Jennings

Dec 5-6 — **Montane & Subalpine Grasses**
with Alan Carpenter (Dec 5)
or David Buckner (Dec 6)

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