

Newsletter of the Colorado Native Plant Society

Aquilegia



Volume 37 Issue 3 Summer 2013

Aquilegia: Newsletter of the Colorado Native Plant Society

Dedicated to furthering the knowledge, appreciation, and conservation of native plants and habitats of Colorado through education, stewardship, and advocacy

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Research Grant Report: Marr Fund Phylogeny of *Carex* Section *Scirpinae* by Michelle DePrenger-Levin

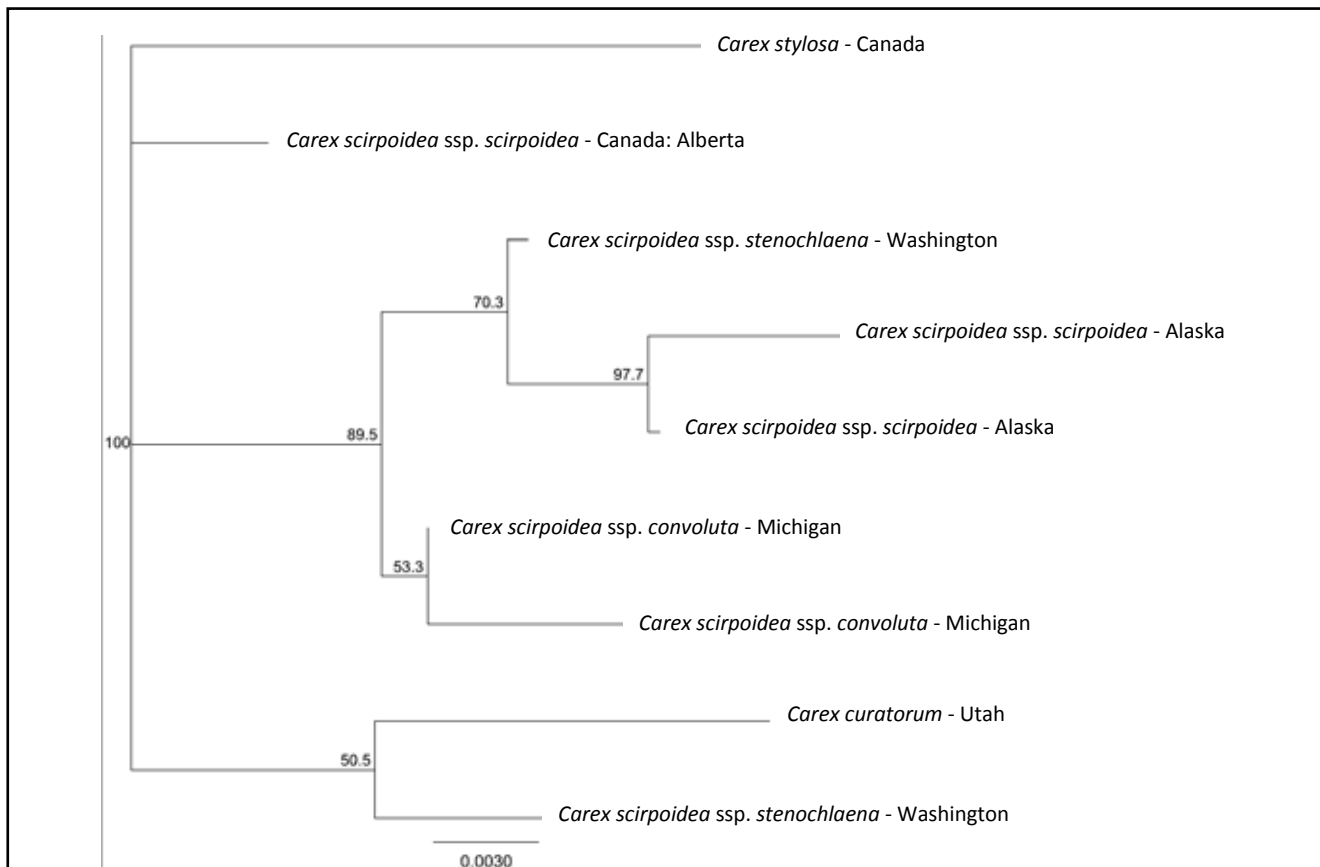
Photo by Michelle DePrenger-Levin

The genus *Carex* L., commonly referred to as the sedges, is one of the largest genera of plants, with as many as 2,000 species (Ball et al., 2002). Sedges are distributed worldwide and found in many different habitats, although they are generally associated with moist to wet habitats. Sedges can be dominant in the arctic tundra and common in grasslands and forests (Ball et al., 2002). All carices possess unisexual flowers, with the pistillate flower enclosed within a sac-like structure called a perigynium; this structure forms much of the basis for classification in this complex genus (Starr et al., 1999). *Carex* section *Scirpinae* is distributed across Northern North America, from Greenland west to Alaska, south into Northeastern United States and west to Oregon through the Rocky Mountains; it is also known from East Asia and Scandinavia (Dunlop, 1990).

As currently described, this section is composed of two species: *Carex scirpoidea* Michx. and *C. curatorum* Stacey. *Carex scirpoidea* is subdivided into four subspecies: *C. scirpoidea* Michx. ssp. *scirpoidea*, *C. scirpoidea* Michx. ssp. *pseudoscirpoidea* (Rydberg) Dunlop, *C. scirpoidea* ssp. *convoluta* (Kükenthal) Dunlop, and *C. scirpoidea* Michx. ssp. *stenochlaena* (Holm) Löve and Löve. Although the five taxa comprising *Carex* section *Scirpinae* are relatively well defined based upon vegetative and reproductive structures, distribution, and habitat, their phylogenetic relationships are poorly understood.



Cover photo: *Penstemon degeneri* with swallowtail butterfly © Dave Elin. See page 17 for related news item.



Most taxa in this section are found in unique or rare habitats within wet substrates and high levels of calcium. *Carex scirpoidea* is considered secure in its entire range (G5) but rare in several states and locally rare in the periphery of its range. *Carex scirpoidea* is on the sensitive species lists for the Bureau of Land Management and Forest Service in Colorado and is currently protected in designated Colorado Natural Areas. *Carex scirpoidea* ssp. *scirpoidea* is widespread in boreal populations but is disjunct in Colorado. This pattern is repeated for several rare species in Colorado fens. Yarbrough (2000) found that this biogeographical isolation appears to have resulted in lower genetic diversity in Colorado than would be expected in an average plant population or in other dioecious flowering plants. This could be explained by the isolation of this population from the rest of its range. High genetic diversity is a common measure to indicate the ability of a population to survive stochastic events.

A phylogeny of this section will lead to an understanding of the relationships among the rare and widespread taxa, evidence of the locations of glacial refugia, and suggest the direction of subsequent radiation and differentiation. The last glaciation ended around 13,000 years BP (Before Present). The locations of glacial refugia of this section are unknown. Populations of *C. scirpoidea* could have survived below the glacial maximum in the Eastern United States, refugia could be located in the Western United States, or unglaciated portions of Alaska. Understanding the post-glacial range expansion of this section can lead to an understanding of how the Colorado fen communities formed.

Creating phylogenetic trees from DNA sequencing assumes neutral evolution and the molecular clock: the steady accumulation of DNA base mutations. These random sequence changes can describe the amount and rate of divergence between two species. Coding and non-coding regions of chloroplast (cpDNA) and ribosomal DNA (rDNA) can provide information on relationships among families, genera, species, or populations (e.g., Roalson et al., 2001; Starr et al., 2003; Hendrichs et al., 2004).

Results from a phylogeny based on 6 parsimony informative characters from the external transcribed spacer (ETS) of nuclear ribosomal DNA reveal that of the taxa in this section, *C. curatorum*, the southernmost in range, and *C. scirpoidea* ssp. *scirpoidea* from Alberta, Canada are basal to taxa in Alaska. The last glacial maximum did not reach the southern populations of *C. curatorum*. *Carex scirpoidea* ssp. *scirpoidea* populations in Alaska are the most derived. From the tree, it appears that individuals of *C. scirpoidea* survived the last ice age in western regions of North America south of the ice and then radiated out to the north and east. The migratory patterns of birds could explain the movement of this taxon up the Pacific coast and east towards the Great Lakes Region.

This research was funded in part by a CoNPS Marr Fund Grant.

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Extraordinary Edith: Botanist Edith Clements (Part 1) by Sally L. White



"Chérie"
Chauffeur, photographer, secretary, mechanic,
and field assistant

"The CG [Commander General] was under the impression that the Chauffeur by reason of her sex was a parlor ornament. The Chauffeur, on the other hand, loves to burrow in the sand and fill grease cups and much prefers overalls to dinner gowns."

One of the unsung heroines of early Colorado botany was born Edith Gertrude Schwartz in 1874. She was a student of German at the University of Nebraska when she met and married Frederic Clements, a newly minted PhD and young instructor of botany and the developing science of ecology, in 1899. Under Frederic's influence, she obtained her PhD in botany in 1907 as the first female from that institution to do so. She then embarked on a "lifelong partnership" with her mentor and husband, continuing to support and promote their joint career even many years after his death in 1945. In 1960 she compiled *Adventures in Ecology: Half a Million Miles from Mud to Macadam*, a memoir based on her detailed diaries and letters documenting her travels with Frederic.

What travels they were! We forget, in these easier days, the challenges faced by early motorists on roads that were barely worthy of the name. Even the famed Lincoln Highway, Edith writes, was in 1917 characterized by "Ruts six to twelve inches deep, chuck holes that made Maisie and me cling fast with both hands... It was simply awful!" She considered Ray's [Maisie's husband Dr. Raymond Pool] driving that summer "erratic" and preferred to be the one behind the wheel.

And she usually was. As she and Frederic crisscrossed the country from Minnesota to Arizona and Kansas to California, with summers in Colorado, she navigated Billy Buick, Sallie Studebaker, and other cars that challenged drivers to take an active personal role, by necessity, in their maintenance. That she named the various vehicles seems appropriate. She called herself "the Chauffeur" and was on intimate terms with the car's inner workings; they were as indispensable a part of the numerous expeditions and adventures as the human participants.

Edith became the "trailing spouse"-- except that she never watched and supported Fred's career from afar. Instead she managed and abetted it, handling correspondence, finances, personalities, and logistics as well as participating in more intellectual ecological discussions. Her efforts freed him from many of life's demands. Yet Fred recognized her contributions, saying "Mrs. Clements would hold [a position near the top of the world's ecologists]... had she not devoted herself to furthering my career instead of winning recognition as an ecologist in her own right" (Slack, 1995).

Edith seems to be more personable, better with the human relations side of their work. Fred was free to become, as he is often noted to be, the most influential ecologist of his generation. Although his concepts have been supplanted, his name is still well known in ecological circles. Edith kept her constant presence in his career in the background. Letters over his signature bear the imprint of her voice, rather than his often dense linguistic phrasing. (Fred was well versed in philology and philosophy, fields he almost pursued.) She remained “Mrs. Clements” all his life, but took on her own “Dr.” title in her later publications; by then it had become acceptable.

Frederic’s Helpmate

“...after reading her breezy, often tongue-in-cheek account of their life together, Clements emerges as a competent, take-charge person with a bumbling and aloof, albeit brilliant, husband” wrote Marcia Myers Bonta in her 1995 book, as she excerpted one of Edith’s many incredible stories. Perhaps it was a harsh assessment of one of ecology’s early celebrities, but Edith had overcome the hurdles facing women in the field in those days by making herself indispensable, and poor Fred suffered in comparison. Her role was, by her own account, to “serve as chauffeur, typist, photographer, mechanic, commissary-general and second field assistant.” Fred rigged a platform in the front seat to hold his typewriter so he could work while she drove. Her other advantage as field assistant, Edith wrote, was economy: “a ‘mere wife’ would work just as hard for nothing!” (Clements, 1960)



When the young daughter of a friend admired Edith’s work as a field scientist, she outlined the studying required. “I believe I’d rather get married” the youngster said, to which Edith replied: “That’s the idea... it’s much easier to marry someone who knows it all and if you know some yourself, and can draw and paint and take photographs and drive the car, and typewrite and a few things like that, you can go along the way I do.”

Edith’s gift for illustration enhanced publications by both members of the team; Frederic’s collaborators benefited from her skill as well. In 1914, the couple jointly authored *Rocky Mountain Flowers* “from the standpoint of the experimental ecologist.” Its forty-seven plates featured line drawings or watercolors by Edith Clements, more than 500 illustrations in all. In addition to filling several books, her wildflower illustrations were published in two *National Geographic* articles (1927 and 1939); one included her creative “flower chart,” an outline of plant family relationships.

At times she managed other roles, such as caretaker and nursemaid. “Before I ‘humanized’ Frederic... he would forget to eat or sleep, sometimes to an extent that produced hallucinations. Someone had to remind him.” As Edith undertook that responsibility, a picture of absent-minded scientist emerges. In 1900, Fred fell off a bridge; in 1923, he suffered a lengthy and mysterious illness. At all times, he apparently took a goodly amount of care. According to colleague B.W. Allred, “Mrs. Clements ...was essentially a nurse to him for at least twenty-five years.” (Dritschilo, undated)

Connections: Colorado, Carnegie, and California

Fred and Edith first came to Colorado on an invitation to join a party of teachers at a resort on Pikes Peak in the summer of 1899 while they were still newlyweds. Two and a half miles up the cog railway, they ended the trip at “Minnehaha,” to stay at “Spruce Ridge” a rented summer home that became their home and laboratory for the next decades.

Ultimately the Alpine Laboratory grew from this original dream into a “world famous” field station, and became the base for the couple’s research as well as that of other noted ecologists over the years. Fred and Edith considered Colorado an ecologist’s paradise,” as have other ecologists before and since. “Everywhere were natural experiments showing the effects of shade or sunlight, dry or wet soils, of heat, cold and altitude.” (Clements, 1961)



(Part 2 will appear in the Fall 2013 Issue)

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- Sally L. White works for Denver Mountain Parks and is an author of *Denver Mountain Parks: 100 Years of the Magnificent Dream*.

Conservation Corner

by Mo Ewing

Articles for a column called "Conservation Corner" probably should be about some conservation issue like oil and gas development in the Pawnee Grasslands. But it is spring! Perhaps we will take on the Pawnee Grasslands in the next issue. But for now, as new spring buds are bursting around us, maybe we should stop and think about the spectacular wonder of the natural world around us.

Vera Evenson, Curator of the Sam Mitchel Herbarium of Fungi at Denver Botanic Gardens, recently gave me a wonderful book called *The Forest Unseen*. It was written by David George Haskell, a professor of biology at University of the South. In this book he spends a year observing the workings of nature in one square meter of earth on an old-growth forested slope in southeastern Tennessee. Haskell is not only a wonderful ecologist, he is also very much a poet who is enchanted by the wonders of his tiny piece of nature.

So, since it is spring, I'd like to share with you some of his observations about how plants live through the freezing temperatures of winter. I'll quote a bit to give you the flavor of his writing:

"The plants' resurrection after a full surrender is so far removed from human experience that it edges into scandal. The dead, especially the frozen dead, should not return....But, return they do. Plants survive in the same way that a sword swallower survives—with careful preparation and meticulous attention to sharp edges."

You see, when water freezes, ice crystals are the plant killers. The expanding crystals will destroy the "delicate inner architecture of the cells." So several weeks before the first killing frosts, plants move the most delicate parts, like DNA, to the center of their cells. Then they collect fats which make them fluid in cold temperatures, but also create a cushion. Next, cells pull lots of sugars into their interior, which lowers



their freezing point. At first, when the water outside of the cells begins to freeze, heat is released from the freezing and is absorbed by the cell. This heat-released-by-freezing is a well-known law of physics which farmers use in the citrus groves of Florida when they spray their trees with water during an onset of frost to protect the fruit from freezing.

When the water between the cells is completely frozen, no more heat is released to warm the cells, so the plant makes its cell membranes semi-permeable, and the remaining sugary water in the cell begins to leak out through the membrane. The sugars, which have big cells, cannot get through the membrane, so the concentration of the sugars gets higher, and its freezing point lower. "When temperatures are very low, cells pucker into balls of syrup, unfrozen repositories of life, surrounded by shards of ice."

"By reversing this cellular contraction, twigs, buds, and roots are able to revive in spring and carry on almost as if winter had not happened."

So, as the days warm, and the world greens around you, put your cell phones away, go outside and look closely.

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Mo Ewing is Chair of the CoNPS Conservation Committee. Photos of *Ribes aureum* in this article are by Mo Ewing.

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www.facebook.com

Want to find out the latest CoNPS news? Have news to share? Have a photo of a plant you need help identifying?

Want reminders about field trips or workshops that are coming up?

Sign in to Facebook and type in Colorado Native Plant Society. You can friend CoNPS (our main Facebook page) and the CoNPS Northern Chapter.



Wildflowers of Rabbit Mountain Field Study

by Megan Bowes



Ann Henson in the Field Photo by Tim Henson

Boulder County's Rabbit Mountain is located on a finger of mountain topography that extends the easternmost limit of the Rocky Mountain foothills out into the Western Great Plains. Two rare plant communities associated with this forest-grassland ecotone are well documented at Rabbit Mountain and are of both global and statewide significance: Mountain-mahogany - Skunkbush Sumac / Big Bluestem Shrublands and Ponderosa Pine / Mountain-mahogany / Big Bluestem Wooded Herbaceous Vegetation. And during a five year survey initiated in 2000, Ann Henson documented the presence and bloom times of 186 different vascular plant species along the Eagle Wind Trail.

The area, roughly five miles northwest of Longmont, was once used by the Arapaho Indians as a winter home as seven naturally-occurring springs and a variety of plants led to an abundance of game and edible vegetation. Christopher Columbus Weese later homesteaded an initial portion of the Dowe Flats and "Rabbit Hill" area around 1865. Weese and subsequent generations of his family (including Jack Moomaw, one of the first rangers in Rocky Mountain National Park) farmed and ranched the lands until the acquisition of the Rabbit Mountain property by Boulder County Parks and Open Space in 1984.

Ann's field study began as a personal project to discover the flora of Rabbit Mountain. As soon as the soil warmed in the spring, she went in search of flowers. Ann visited every other week during the growing season and she used of a dichotomous key to identify things she was unfamiliar with. Both of these actions ensured Ann learned many new plants she might not have otherwise noticed. Two species of particular note were pellitory (*Parietaria pensylvanica*) and tragia (*Tragia ramosa*). Pellitory is a small, green forb in the Urticaceae family—but unlike its better known cousin the nettle (*Urtica gracilis*), pellitory doesn't produce stinging hairs. Conversely, *Aquilegia* Volume 37, No. 3 Summer 2013

the much overlooked tragia (also referred to as "branched noseburn" by the USDA-NRCS PLANTS Database) is a stinging spurge!! The key in Weber and Wittmann's *East Slope Flora* even apologizes for this "bristly" characteristic that can cause short-term sensitivity. Ann also stated that Rabbit is a wonderful place to learn native grasses because the prairie and foothills species mingle.

Other interesting observations were made about the drought years of 2000 and 2002. During the 2000-2004 survey time frame, annual rainfall ranged between 7 and 14

inches, occasionally well below the previous ten-year average of 15.5 inches. (Note that this earlier time frame is often referred to as "the wet nineties"!)

In spite of these supposed set-backs, Ann made note of how the most common species grew and bloomed. Her data suggest that while the height and frequency of any one species may have been diminished during those drought years, many still maintained their presence over the short and longer terms. Ann recognized that our native flora has evolved in drought as well as "better" times, such that the wildflowers of Rabbit Mountain continue to bring us joy.

At the culmination of her five year study, Ann compiled a list of the most common plants and grouped them by flower color and approximate bloom chronology. She published this data as a wildflower checklist that can be obtained at the Colorado Native Plant Society's website (http://www.conps.org/pdf/Plant_Lists/Wildflowers%20Rabbit%20Mtn.pdf). This list details two-thirds of the complete list of 186 taxa identified. Ann then went on to become a Boulder County Parks and Open Space "weed warrior." After coming to know and love the area so well, she recognized the need to conserve the native plant communities that were threatened by weed populations. Her expertise in lichens is also well renowned.

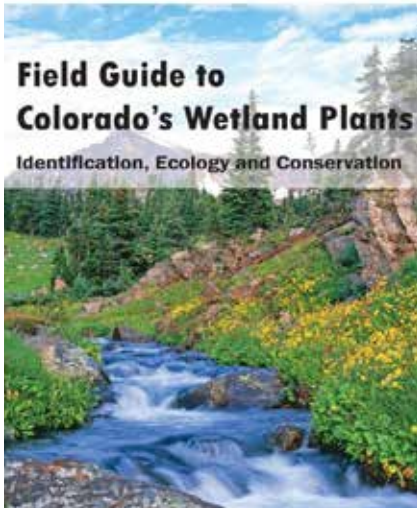
Ann has entered another chapter in her life and would like to reach out to someone to revisit her bloom survey. She recognizes that others can learn from this type of a phenological study in much the same way she did. In a brief forward to her checklist, Ann wrote, "All kinds come and go during the season. Only the frost of fall stops the show. Come and see."

For more information about Ann Henson's Rabbit Mountain Field Study and to find out how you can get involved in continuing the data collection, contact Megan Bowes at bowesm@bouldercolorado.gov or 303-561-4883.

BOOK & MEDIA REVIEWS

Field Guide to Colorado's Wetland Plants: Identification, Ecology, and Conservation

by Denise Culver & Joanna Lemly



Keys are important tools but without a good description and photos, the user of a key may be unsure of the identity of a plant. Culver and Lemley's book comes to the aid of amateur and professional botanists, helping them to determine the identification of wetland plant species with greater accuracy and confidence.

An amazing 20 percent of Colorado's flora is described and illustrated in this field guide. The book represents a tremendous amount of work and it consolidates information on almost 640 plants into one source.

An excellent feature of this book is that each page is devoted to only one plant. That means that there is room for a description, two color photos and often a black and white line drawing. Each page is full of useful information.

A typical entry provides the scientific and common names from the USDA-NRCS PLANTS (<http://plants.usda.gov>) database, synonyms, plant family, USDA PLANTS database alpha-numeric symbol, Integrated Taxonomic Information System (ITIS) Taxonomic Serial Number (TSN), Wetland Status, Native Status, Conservation Status (National Heritage Network ranking system of global and state rarity), Coefficient of Conservatism (C-Value), Duration (annual, biennial, perennial), and Elevation.

Key characteristics are in a bulleted list. They include the size of plant, habit, stems and roots, description of the leaves and their arrangement, the inflorescence, flower, and seeds. Similar species are described with distinguishing traits pointed out. Habitat and ecology are included and a comments section provides additional information such as wildlife and ethnobotanical uses. Distribution maps are by county. Icons indicate use of the plants by birds or other wildlife.

Plants are arranged in the following groups: aquatic herbs, ferns & fern allies, grasses, rushes, sedges, monocot herbs, dicot herbs, and woody plants. Within each section, plants are

arranged alphabetically by family and then by the scientific name of the species.

Preceding the plant entries is introductory material (which could be a small book in itself) that discusses Colorado's wetland types, wetland dependent wildlife, and the conservation and protection of wetlands. A list of references, glossary, and index are included. This book is highly recommended.



Authors Denise Culver (above) and Joanna Lemly (to right)



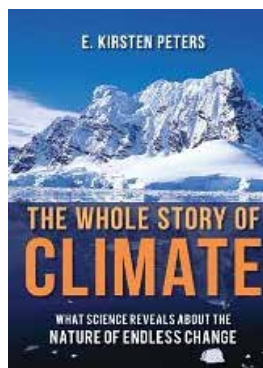
Photos courtesy of Denise Culver

Denise Culver and Joanna Lemly are ecologists with the Colorado Natural Heritage Program (CNHP). CNHP and CSU received an EPA grant to support the creation of this book and the Colorado Wetland Information System Website (<http://www.cnhp.colostate.edu/cwic>). CoNPS also provided some support.

Review by Jan Loechell Turner

The Whole Story of Climate: What Science Reveals about the Nature of Endless Change

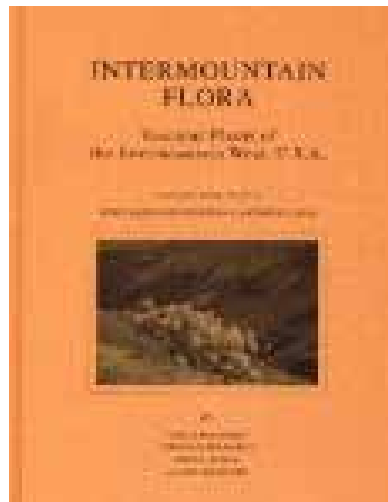
E. Kirsten Peters. Prometheus Books, 2012



In the review in the May 2013 issue of CHOICE, B. Ransom states, "This brilliant, engaging book will change the way one looks at the climate/global warming debate, climate change and climate science, human versus nonhuman drivers of climate change, and the implications of global warming/cooling for humans and societies."

Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A., Volume Two, Part A: Subclasses Magnoliidae-Caryophyllidae

by Noel H. Holmgren, Patricia K. Holmgren, James L. Reveal, and Collaborators



This is the final volume of the 8 volume set, *Intermountain Flora*. The *Flora* was envisioned by Bassett Maguire and begun by Arthur Cronquist, Arthur Holmgren, and Rupert Barneby more than 40 years ago.

This volume, which includes Cronquist's subclasses, Magnoliidae, Hamamelididae, and Caryophyllidae, achieves the high

quality displayed by previous volumes. The authors are Noel H. Holmgren, Patricia K. Holmgren, James L. Reveal (Polygonaceae), Daniel Atha (co-author of Persicaria), Richard Spellenberg (Nyctaginaceae), Arthur H. Holmgren (co-author of Montiaceae), and Wendy C. Hodgson, Andrew Salywon, Donald J. Pinkava, Charles Butterworth, and Marc A. Baker (Cactaceae). Included are 31 families, 147 genera, 611 species, and 301 varieties.

This volume qualifies (as do the other volumes) as a manual because it includes descriptions of each species, with references, in addition to keys. Excellent line drawings of the plants are integrated into the text at appropriate places. You will find that some of the classification is different from that in *Colorado Flora*.

This volume follows the same format as the other volumes of the *Flora*. Features of the orders, families, genera, and species are given. The book begins with the key to families. Within the families are keys to the genera, with the number of genera and species and the worldwide distribution indicated. Within the genera are the keys to species, and within species are keys to the varieties. The species descriptions are quite detailed and typical habitats are listed. Print and online references, glossary, and index are included.

This is another excellent volume, which is representative of the high-quality and scholarship demonstrated by the *Intermountain Flora*. This is a set I frequently consult when I am identifying plants. Next year a supplement, which will provide a cumulative key and index to the 8 volume set, will be published.

Review by Jan Turner

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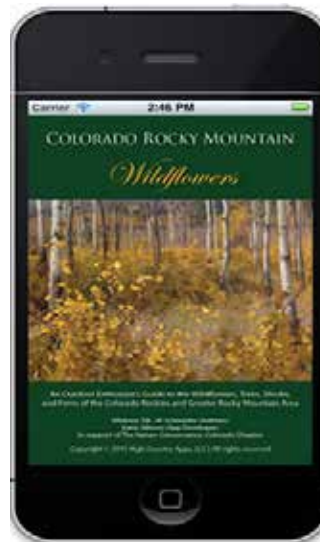
Families in Volume 2A

Nymphaeaceae	Cercidiphyllaceae	Caryophyllaceae
Saururaceae	Ulmaceae	Chenopodiaceae
Magnoliaceae	Cannabaceae	Amaranthaceae
Ceratophyllaceae	Moraceae	Aizoaceae
Papaveraceae	Urticaceae	Sarcobataceae
Fumariaceae	Fagaceae	Nyctaginaceae
Berberidaceae	Juglandaceae	Molluginaceae
Ranunculaceae	Betulaceae	Montiaceae
Platanaceae	Plumbaginaceae	Portulacaceae
Altingiaceae	Polygonaceae	Cactaceae
Hamamelidaceae		

Colorado Rocky Mountain Wildflowers

An app for Smart Phones, iPhones, and I pads

Al Schneider, creator of the popular website, *Southwest Colorado Wildflowers*, swcoloradowildflowers.com, has now created an app. He was asked to tell us something about the product.



I worked carefully to make the app appealing to a wide variety of users: those who want pretty flower photos, those who want to learn more about plant identification, and those who are knowledgeable botanists. I reworked all aspects of the app to make them flexible so, for instance, if you like viewing plants by their common family name or scientific genus name, etc., you can sort the plants that way and when you open the app next time, it will stay with your preferences until you decide to change them. Other great features are that the app gives you many photos of each plant,

range maps, line drawings, in depth descriptive information, interesting plant facts, similar species (with hot links), the meaning of the scientific name, and some information about the plant's uses, etc.

The "Search by Characteristics" feature makes identifying plants fun: On the touch screen you select icons indicating wildflower, shrub, tree, fern, etc. and from 12 rows of characteristics you continue selecting whatever you can observe: how tall is the plant; is it in the foothills, montane, alpine; what is the leaf shape, etc. Each time you select an icon, the number of possible plants (shown at the top) drops and at any time you can press "Show" to see the possible plants. You don't need to select characteristics that you don't know about or cannot observe, and you don't need a special vocabulary since the IDs are all done visually. The app also includes descriptions of families (and links to all the plants in each family); a glossary;

(App. continued on the bottom of page 10)

WORKSHOPS

New workshops for fall and winter 2013/2014 are being scheduled now. Please check future issues of *Aquilegia* and the Activities/Workshops tab on the website to see what's coming. If you have any workshop suggestions, or if you would like to teach a workshop, please contact CoNPS Workshop Coordinator Linda Hellow at conpsworkshops@gmail.com.

BIRDS, BEES, FLOWERS, AND FOOD: EXPLORING COLORADO'S POLLINATORS

One-Day Workshop – Choose Saturday, June 22, or Sunday June 23, 2013 - 9 a.m. to 3 p.m.

Boulder Open Space and Mountain Parks, Cherryvale Administrative Building, 66 S. Cherryvale Rd, Boulder, CO; we'll carpool to a nearby field site
Presenter: Megan Bowes Cost: \$25

Recently, a worldwide pollinator crisis has been prominent in news headlines, but it's not simply beekeepers and farmers who depend on the pollination services of the European honey bee and a whole suite of native pollinators. Pollinators are invaluable to the environment and to society, enabling the reproduction of native plants that maintain the basis of most food webs—as well as the production of one out of every three bites we humans consume at the dinner table. This workshop will describe the process of pollination, how to identify the reproductive parts of a plant, as well as the roles birds, bees and many other insects play in local pollination services. We will also learn about the practical steps we can all take to improve native pollinator populations on our lands. The second half of this workshop will be in the field; please dress appropriately and bring your *Colorado Flora: Eastern Slope* and hand lens.

Megan Bowes is a Plant Ecology Technician with the City of Boulder Open Space and Mountain Parks Department and the Chair of the CoNPS' Horticulture and Restoration Committee. She's been a CSU Extension Native Plant Master Instructor for 5 years and has had a passion for plant-insect interactions since first working in the garden industry 2 decades ago.

App. (Continued from page 9)

line drawings of plant parts; flower basics; thumbnails of all the plants; and succinct but vital instructions and user tips.

But I don't tell people, "This app makes identifying plants EASY". Plants are highly variable and even the most skilled botanists often struggle with plant identification. I can tell people that using this app will make them more knowledgeable about plants, and if people are diligent they will be able to ID many plants and come pretty darn close on others – and they will have fun working at the IDs.

DRABA ON BOREAS PASS

One-day Workshop
Sat., July 13, 2013,
9 am – 3 pm (FULL)
Location: South Park Ranger
Dist. Office, Fairplay, CO
Presenters: Sheila Lamb,
Steve Olson: Cost: \$25

This workshop is currently full but, as always, you can get on the wait list and you'll be called in order if someone cancels.

If you've never taken a close look at this tiny alpine genus, now is your chance. We'll look at specimens in the classroom before we hike up to find them in the wild. Sheila will share her local key and give us plenty of tricks to distinguishing the various hair types displayed by the taxa in this challenging genus. In the afternoon we'll hike to 11,000 feet on Boreas Pass and the hunt will begin! We will likely be treated to views of several rare species outside of the *Draba* clan, as well. Be sure to bring your hand lens, lunch and all-weather gear.

Steve Olson has been with the Forest Service for 21 years, presently as the Forest Botanist at the Pike-San Isabel National Forests and Cimarron-Comanche National Grasslands. His degree is in zoology and he'll look at most anything that doesn't get out of the way fast enough!

Sheila Lamb has worked for the USDA Forest Service at the South Park Ranger District for 20 years where she is the Natural Resource Specialist overseeing the range, botany, wildlife, and noxious weed programs. She has a botany degree and loves living in South Park amid one of the grandest botany displays on earth.

The goal of the app was not to show all of the 3,000+ plants in the region (all of Colorado and adjacent Rockies), but to give a very good representation from almost all families and many genera. I was careful to show common and rare plants from the foothills to the alpine zone and from wetlands, tundra, meadow, forest, north slopes, south slopes, east slope, west slope, etc. I think the app does a very good job of fulfilling these goals with its photographs and descriptive material.

There is a free demo available that is identical to the full pay version. The demo has 24 plants instead of 600. It is available at www.highcountryapps.com.



Draba alpina from: Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 2: 152. PLANTS database

FIELD TRIPS LISTED BY CHAPTERS

The Spring Issue listed field trips in detail. Check the CoNPS website for descriptions and details on how to sign up. Descriptions are included for new field trips that were not listed in the Spring issue. The Spring Issue can be found on CoNPS website under News.

Please sign up for trips early as there may be limits to the number of participants. If full, many trips will also have a waiting list; even if a trip is full now, get your name on the list and don't give up hope! Details on where and when to meet are available online on each chapter's web page, or by contacting field trip leaders. All trips are subject to CoNPS field trip policies that emphasize "treading lightly" and adhering to strict limitations on plant collecting. These policies and guidelines are posted online at www.CoNPS.org.

BOULDER CHAPTER

Descriptions in Spring issue and online

BUTTON ROCK PRESERVE EVENING STROLL/ PICNIC

June 13, Thursday, 6 pm to 8 pm

Leader: Rich Scully

CARIBOU RANCH—CONIFERS AND COLORFUL WILDFLOWERS GALORE

July 11, Thursday; 5:30 pm to twilight

Leader: Megan Bowes

SOUTH BOULDER CREEK RIPARIAN AND FLOODPLAIN RESTORATION

August 8, Thursday; 5:30 pm to twilight

Leader: Marianne Giolitto

FRONT RANGE WETLAND PLANTS AND DRAGONFLIES

August 10, Saturday; 9 am to 12 pm

Leaders: Megan Bowes and Ann Cooper

GORE RANGE CHAPTER

Descriptions in Spring issue and online

SYLVAN LAKE STATE PARK, EAGLE – FROM BUD TO SEED

Saturday, June 8, 9:00 am

Saturday, August 24, 9:00 am

Leader: Lynn Albers, Joanne Cermak, Nanette Kuich, Maggie Pedersen, Instructors, NPM Program

METRO-DENVER CHAPTER

Descriptions in Spring issue and online

ROXBOROUGH STATE PARK

May 18, Saturday, 8:30 am

Leader: Lenore Mitchell

PLAINS CONSERVATION CENTER –WILDFLOWERS OF WEST BIJOU

May 31, Friday, 2 pm to 7 pm

Leader: Susan Smith

WHAT'S GOING ON IN THESE FENS, ANYWAY?

June 2nd, Sunday, 7 am

Leader: Steve Yarbrough

GOLDEN GATE CANYON STATE PARK

June 8, 2013, Saturday, 9 am - 1 pm

Leader: Judy King

CHIEF MOUNTAIN

June 9, Sunday (Date is subject to change)

Leader: Jeanne Willson

STAUNTON STATE PARK MASON CREEK WILDFLOWERS

June 26, Wednesday, 6 pm

Leaders: Sue Schleuder & Deborah Darnell

DIAMOND LAKE AND THE FOURTH OF JULY TRAILHEAD

July 10, Wednesday (time to be announced)

Leader: Cheryl Ames

WOODPECKERS AND THE VEGETATION OF THE HAYMAN BURN AREA 11 YEARS AFTER

July 12, Friday (time to be announced)

Leaders: Paula Fornwalt and Chris Blakeslee

GRASSLANDS OF THE FRONT RANGE MONTANE

July 27, Saturday (Date is subject to change)

Leader: David Buckner

CASTLEWOOD CANYON STATE PARK

September (TBA) Leader: Jeanne Willson



Monarch Butterfly Caterpillar

Image courtesy of the Florida Center for Instructional Technology
fcit.usf.edu

NORTHERN CHAPTER

Sign up to receive the Northern Chapter Email Newsletter for up-to-date information on hikes by contacting Stacey Anderson at lichensonrock@gmail.com

INFORMAL HIKE SCHEDULE

- MAY: Pawnee Buttes (See description below)
JUNE: Lory State Park East Valley Trail
Indian Meadows, Poudre Canyon
High Plains Environmental Ctr., Loveland (joint trip with Boulder Chapter)
JULY: Zimmerman Lake
Horsetooth Mountain Park, Horsetooth Falls Trail
AUG: South Zimmerman Trail
Hewlett Gulch (post-fire recovery)
SEPT: Lory State Park Arthur's Rock Trail
Trap Lake, Poudre Canyon
Red Feather Lakes area



Photo by Mo Ewing

PAWNEE BUTTES NATIONAL GRASSLANDS (NEW)

Date: Sunday, May 26, 2013

Time: 8 AM - 4 PM (Includes travel time)

Facilitator: Don Hazlett and Hugh MacKay

Have a wonderful Sunday out in the grassland! Come prepared to be outside for 4 hours or more. Bring a lunch to carry with you, plenty of water, sunscreen, hat, and gear for possible cold or rainy weather. The hike could be about 4 miles on generally level terrain. Dr. Donald L. Hazlett has worked as an ecologist, botanist, ethnobotanist, and teacher in Latin America and in Colorado. He has specialized in the flora of the eastern plains since 1985 and is an adjunct researcher at the Denver Botanic Gardens.

Please email Connie Gray (cpowersgray@gmail.com) or call at (678) 230-3672 if you are going and if you plan to carpool or for more information.

GUIDED HIKE: THE SPLENDOR OF SHAMBHALA MOUNTAIN CENTER (formal hike - registration is required; \$7 for lunch) *Description in Spring issue and online*
June 29, 2013, 9:00 am – 3:00 pm

PLATEAU CHAPTER

Description in Spring issue and online

SKIFF MILKVETCH MONITORING

No set date, but likely June 21-23 or 28-30

SOUTHEAST CHAPTER (NEW TRIPS)

These field trips were not listed in the Spring issue so full descriptions are included

TENTATIVE FIELD TRIP SCHEDULE

Most of these trips will occur on the dates and at the locations shown. However, trip leaders have the flexibility to change their respective trip dates and locations to improve trip quality. Please confirm trip date and other information by checking the trip announcement. (The announcement is emailed about 10 days in advance of the trip date.) Please register directly with the trip leader. Registration deadline is two days before the date of the trip. All of our trip leaders have the discretion to limit the number of participants on their trips to facilitate teaching, avoid undue pressure on fragile habitats, etc. In these cases, the earlier registrants are given priority. Questions or comments? Email edwardrroland@gmail.com.

SQUIRREL CREEK TRAIL, Hwy. 165 TH

Saturday, May 25

Leader: Neal Osborn, Prof. Emeritus, CSU-Pueblo

Registration at: leaderneal@gmail.com

The Wet Mountain foothills have had plenty of moisture this Winter and Spring, so there should be plenty to see along this easy and interesting trail. This trip is rated "easy" since there's minimal elevation gain or loss.

NEWLIN CREEK TRAIL (NORTH OF WETMORE)

Saturday, June 8

Leader: Doris Drisgill

Registration at: leaderdoris@gmail.com

This will be an easy trip to a classic riparian ecosystem along shady and meandering Newlin Creek. Once you've botanized along Newlin Creek, you'll want to go back. The trail meanders as well, sometimes crossing the shallow creek.



Photo by Mo Ewing

BIRDS AND BOTANY

Saturday, June 22

Leader: Jeff Jones

Registration at: leaderjeff01@gmail.com

This is an exceptional trip to an exceptional area: the Trout Creek Riparian Corridor in Teller County. Jeff has led field tours in bird watching and botany across the U.S. and abroad for over 16 years. This is a real opportunity to broaden your perspective on the essential interdependence of species within a dynamic ecosystem. This trip is rated "moderate" for hiking distance and difficulty.

THE GRASS I.D. FIELD TRIP

Saturday, July 13

Leaders: Rich Rhoades and Kimberly Diller with the NRCS

Registration: TBA

This is a "location to be announced" trip. An area will be selected closer to the trip date based on available moisture and diversity of species.

Rich and Kimberly are very patient leaders who enjoy teaching, and there will be plenty of mentoring from other participants to go around. So, even if you don't know your ligules from your spikelets, please join us. Trip rating TBA. Note: Janet Wingate's inexpensive booklet, *Illustrated Keys to the Grasses of Colorado* is highly recommended for this trip. If you don't have a copy, you have plenty of time to order one from the bookstore at www.CoNPS.org.

GREENHORN PEAK

Saturday, July 20

Leader: Dr. Neal Osborn; Registration at: leaderneal@gmail.com

Greenhorn Peak is one of the most accessible and scenic alpine environments in Colorado. Join Dr. Neal Osborn for an exceptional native plant expedition. And, on the way up, you can view the Sangres descending to the floor of the Wet Mountain Valley. Although the trail is only 1.5 gently graded miles to the top, this trip is rated "moderate" due to the 12,000 ft. plus elevation.

MASON GULCH

Saturday, August 3

Leader: Steve Olson

Registration at: leadersteve01@gmail.com

This trip explores the variation of burn intensity on native plant recovery after the Mason Gulch fire that burned nearly 12,000 acres several years ago. You'll see firsthand that fire is much more than just a destructive force. We'll also check out the influence of the plains on the flora and grasses in adjoining woodland and "open" habitats. Rated "moderate."

SAN JUAN/FOUR CORNERS NATIVE PLANT SOCIETY

For descriptions and more information go to www.swcoloradowildflowers.com. Call trip leader for information and to register for trip.

WILDFLOWERS AND FERNS

Saturday, June 8

Leaders: John Bregar (970-385-1814) for info

Location: Vallecito Creek Trail in the Weminuche Wilderness just east of Durango

WILDFLOWER WALK IN MESA VERDE NAT. PARK

Saturday, June 22

Leader: Linda Martin or Al Schneider (970-882-4647)

Location: Prater Ridge Trail

FLOWERS OF ECHO BASIN

Saturday, June 29

Leaders: Bob Powell & Al Schneider (970-882-4647)

Location: San Juan National Forest east of Mancos

WETLANDS OF THE SAN JUANS

Sunday, July 7

Leaders: Jim Wakeley and Bob Powell (970-385-8949)

Location: Andrews Lake Wetlands, San Juan



Image courtesy of The Florida Center for Instructional Technology
fcit.usf.edu

ANNUAL PILGRIMAGE TO WORSHIP THE WILDFLOWERS

Wednesday, July 16
Leader: Travis Ward (970-247-1310)
Location: Pass Creek Trail, 30 miles north of Durango

ALPINE WILDFLOWERS

Saturday, July 20
Leader: John Bregar
Location: 20 minutes north of Silverton

WILDFLOWERS OF BRIDAL VEIL CREEK

Thursday, July 25
Leader: Al Schneider (970-882-4647)
Location: Immediately east of Telluride

PLANT ECOLOGY AT EL MALPAIS VOLCANIC FIELDS

Sat. - Sun., August 17-18
Leader: Bob Powell (970-385-8949)
Location: El Malpais National Monument and Conservation Area, Grants, New Mexico
We will visit sites Saturday and return to El Malpais on Sunday to study other sites.

WILD MUSHROOM HUNTING

Monday, August 26
Leader: John Sir Jesse (970-728-0639)
Location: In the mountains south of Telluride

Field Studies

Several interesting field studies are planned for this year and they will be posted on the field studies tab of the CoNPS web site.

The Colorado Native Plant Society annually collaborates with various agencies, academic institutions, and other partners in research to promote the conservation and management of Colorado's rare plants and communities.

You are invited to participate in conducting field research, such as plant inventories, monitoring rare plants, or assisting Master's or PhD students in collecting field data about plants they study.

Steve Popovich, Chair, Field Studies Committee

2013 CoNPS Annual Photo Contest!

Contest runs April 1 - August 10, 2013

1st Place Prize for Colorado Native Plant Landscapes/Habitats = \$50

1st Place Prize for Colorado Native Plants = \$50

Check CoNPS website (www.conps.org) for details



2012 Photo Contest Winner
Queen's Crown by Bernadi Liem

News & Announcements

Results of CoNPS Board Election

Congratulations to new Board members Steve Olson, Lynelle Rubright, Betsy Harbor, and Andrea Cummins. Their terms will begin in November. Leo Bruederle accepted another volunteer commitment so he will not be on the Board.

Thank You Bob Henry!



Bob Henry

Photo by Jan Henry

Bob is retiring after 4 years as Editor of *Aquilegia*. Bob not only served as Editor of *Aquilegia* but was also responsible for the layout and design, bringing to the newsletter a sleek, contemporary look and also bringing color to our newsletter.

Bob no longer has time for the job as editor because he received a Lola Homsher Grant from the Wyoming State Historical Society to perform historical research on dry farmers at Rawhide Butte, Wyoming. Around a dozen families moved there from Clarion, Iowa, to take up dry farming in the early 1900s. The results of the research will be a history tentatively titled *Farmer Hughes and Grandpa Thorp: Dry Farming in Wyoming, 1910-1920*. It is in the context of World War I, the Spanish flu epidemic, and increased mechanization.

Bob Henry is a Pennsylvania native and is retired from the Federal civil service after 25 years with the Interior Department (Bureau of Mines and BLM) and 7 years with the Executive Office of the President (Office of Management and Budget). He has been a Volunteer Master Naturalist with the City of Fort Collins, editor of *Aquilegia*, and a long-time student of Henry David Thoreau.

Bob has done an excellent job as editor and brought enthusiasm, talent, an interest in the history of the Society, and great ideas to the job. We will miss him very much and we hope that he will return to the *Aquilegia* staff in some capacity once he has completed his book.

New Herbarium Curator

Dr. Erin Tripp is the new Curator of Botany at the University of Colorado Museum of Natural History (COLO Herbarium). Erin spent her childhood years among the prairies and rolling hills of southern Illinois, eastern Nebraska, and northern Alabama. She attended the University of North Carolina at Asheville, where she earned a B.A. in Biology in 2002. After an internship at the Academy Of Natural Sciences and the Morris Arboretum in Philadelphia, PA, she enrolled in graduate school at Duke University (Durham, NC) in 2003 and earned a Ph.D. in Ecology and Evolutionary Biology in 2008. Erin was a postdoctoral research scientist at Rancho Santa Ana Botanic Garden in southern California for four years and in early 2013 began a new position as faculty and curator at the University of Colorado.



Erin's research interests include the diversity and evolution of flowering plants and lichens. Her plant work emphasizes the large and mostly tropical family Acanthaceae (> 4,000 species), for which she has traveled extensively to international field sites to collect plants and collaborate with colleagues. Her recent research on Acanthaceae earned her the 2011 George R. Cooley Award for best systematics paper presented by a young scientist at the annual American Botany Conference (St. Louis, MO). Erin has also contributed to primary documentation of the highly endemic, geographically inaccessible tepui flora of Northern South America, in collaboration with The Biological Diversity of the Guianas Program, based out of the Smithsonian. She is keenly interested in discovery, documentation, and conservation of the North American lichen biota, , in particular, of "her favorite place on Earth" – the Southern Appalachians and what will soon be her other 'favorite place on Earth' – the Southern Rockies!

Congratulations!

Webmaster **Yongli Zhou** and her husband, Shawn Davidson, had a son Raylan Davidson on January 12, 2013. Yongli is Digital Repository Librarian at the Colorado State University Library and is also a photographer whose excellent native plant photos can be viewed on her website, www.coloradowildflowers.org

Plateau Chapter President **Stephen Stern** and his wife, Rebecca Ely, had a son, Henry Atwood Stern on March 31st. Stephen received a PhD from University of Utah. He is Assistant Professor of Biology and is Director of the herbarium at Colorado Mesa University.

From the Editor

Greetings! I am Jan Loechell Turner, the new editor of *Aquilegia*. Since 2004, I've been a member of the CoNPS Board of Directors and Chair of the Research Grants Committee. I recently retired from Regis University as a Reference Librarian, Assistant Professor, and Affiliate in the Biology Department.



Bob Henry set the bar high as *Aquilegia* Editor and I will strive to keep up the high quality that Bob and the preceding editors and layout and design staff achieved.

At Regis University, a dyslexic student told me of her struggles over the years with reading and she said that sans-serif fonts were much more readable for people with dyslexia than the traditional Times New Roman font. Bob Henry had already transitioned to sans-serif fonts and I'll continue this practice.

We are fortunate to have writer-photographer Mo Ewing, Chair of the Conservation Committee, as an ongoing contributor to Conservation Corner. Administrative Assistant Linda Smith, who plays many important roles in CoNPS, will continue as a proofreader. It is exciting that cartoonist-artist Rob Pudim will be contributing cartoons and that Sally White and John Vickery will be contributing articles and helping proofread. We are

grateful for the photography of Dave Elin, whose photograph is on the cover of this issue.

Starting with this issue, the print version has color front and back covers and insides of the covers. Inside the back cover you will find plant profiles. My husband, Charlie, and I contributed the plant profiles this month but I would like to encourage you to send in plant profiles that we can use in future issues.

If you would like to write articles, write book reviews, profile a plant, or contribute art, news, or photography to the newsletter, please contact me at JLTurner@regis.edu.

Meet the Cartoonist: Rob Pudim

CoNPS member Rob Pudim has a background in chemistry, mathematics, and biology. While he was a student at the University of Colorado, Rob drew editorial cartoons for the *Colorado Daily* and illustrated articles for the *National Hazards Observer*. He currently draws editorial cartoons for a number of newspapers, still illustrates the *NHO* and newsletters, does covers for mystery novels and magazines, and writes articles for *On the Range*. Rob's cartoon below was inspired by a lichens field trip led by Ann Henson.



Pollinators

Photographer and fire fighter Dave Elin of Morrison, Colorado, specializes in the photography of native plants and their pollinators. Dave often accompanies his wife, botanist Carol English, on her plant surveys and documents the plants and pollinators that they encounter. Dave's photo is featured on the cover of this issue.



Like Dave, many CoNPS members have an interest in pollinators of native plants. In response to this interest, CoNPS provides educational opportunities for members. Recently, Amy Yarger of the Butterfly Pavilion offered an excellent workshop on plants and pollinators. On both June 22 and June 23, Megan Bowes, Chair of the Horticulture & Restoration Committee, will be offering a workshop, Birds, Bees, Flowers, and Food: Exploring Colorado's Pollinators. Spaces are available. See p. 10.

Native Plant Master Classes

The award-winning Native Plant Master Program of the Colorado State University Extension is again offering Native Plant Master classes. Learn plant and weed identification outdoors. For a complete list of Denver/Gilpin/Jeffco classes, see <http://npm.eventbrite.com>. See www.conativeplantmaster.org for offerings in other counties in the state.

Discount on Journal Access

Amateur Botanist membership in the Botanical Society of America is only \$25 and provides online access to the *American Journal of Botany* (including almost 100 years of archives) and the *Plant Science Bulletin*. www.botany.org

JSTOR (www.jstor.org), a database of academic journals, is offering a free online subscription "for independent researchers. All you have to do is register, and you get online (non printable) access to three articles (excluding the most current) every two weeks." (from *Marilandica*, Spring 2013)

Native Plant Website and Blog

Christina MacLeod has announced the launch of her newest website and blog at Rockymountainnativescapes.com. Christina will be leading hikes at the Crested Butte Wildflower Festival, which will take place in July. For information see www.crestedbuttewildflowerfestival.com

Newsletter by Email

The email version is in full-color and you will receive it as a PDF file attachment that you can read on your computer, save, or print off. Not only does the newsletter arrive a week earlier than the print issue does by mail, but you save CoNPS the cost of postage and printing.

Now, when you renew your membership, you will automatically receive the email version unless you check the box to receive the print version.

Help! Volunteers needed to run the Silent Auction at the Annual Meeting Donation of items also needed

Please contact Danielle Cassidy Levine to volunteer at
d.cassidy.levine@gmail.com

Advertising

Advertising that is compatible with the CoNPS mission is now being accepted. Contact JLTurner@regis.edu to determine your eligibility and for rates.

Wanted! Photographers Writers Artists Book Reviewers

Want to be a contributor to *Aquilegia*?

Contact Jan Loechell Turner at
JLTurner@regis.edu
to volunteer

Corrections to Spring 2013 Issue

The photo of *Arrhenia lobata* on page 4 attributed to Mo Ewing was actually by Linnea Gillman.

Ruby Marr was a donor to the John Marr Fund.



Next Issue: Annual Meeting Issue

Colorado Native Plant Society



The Colorado Native Plant Society is dedicated to furthering the knowledge, appreciation and conservation of native plants and habitats of Colorado through education, stewardship and advocacy.

Membership is open to all with an interest in our native plants and is composed of plant enthusiasts, both professional and non-professional.

OFFICERS

President	Crystal Strouse	csnativeplants@gmail.com
Vice President	Bernadette Kuhn	bernadettekuhnCoNPS@gmail.com
Treasurer	Mo Ewing	moewing@q.com
Secretary	Denise Wilson	denise@denisecwilson.com
Admin. Asst.	Linda Smith	CoNPSoffice@aol.com

CHAPTER PRESIDENTS

Boulder	Danielle Levine	boulderconps@gmail.com
Gore Range	Nanette Kuich	kix@vail.net
Northern	Connie Gray	cpowersgray@gmail.com
Metro-Denver	Jannette Wesley Jeanne Willson	metrodenverCoNPS@gmail.com riversong@centurylink.net
Plateau	Stephen Stern	stern.r.stephen@gmail.com
Southeast	Ed Roland	edwardrroland@gmail.com

BOARD OF DIRECTORS

Brian Kurzel ('13)	brian.kurzel@gmail.com
Jenny Neale ('13)	nealejr@gmail.com
Robert Powell ('11)	robertlpowell@durango.net
Jan L. Turner ('12)	JLTurner@regis.edu
Charlie Turner ('11)	conpscturner@gmail.com
Steve Yarbrough ('11)	steve.yarbrough@tetrattech.com

STANDING COMMITTEES

Conservation	Mo Ewing	moewing@q.com
Education & Outreach	Jim Tolstrup	jim@suborbitat.org
Field Studies	Steve Popovich	stevepopovich@hotmail.com
Horticulture & Restoration	Megan Bowes	bowesm@bouldercolorado.gov
Media	Jan L. Turner	JLTurner@regis.edu
Membership	Linda Smith	conpsoffice@aol.com
Research Grants	Jan L. Turner	JLTurner@regis.edu
Sales	Linda Smith	conpsoffice@aol.com
Workshops	Linda Hellow	conpsworkshops@gmail.com
Editor, <i>Aquilegia</i>	Jan L. Turner	JLTurner@regis.edu
Webmasters	Yongli Zhou Aaron Davenport	shallopcc@yahoo.com davenport.aaron@gmail.com
Website Editor	Linda Smith	conpsoffice@aol.com

AQUILEGIA

Newsletter of the Colorado Native Plant Society

Aquilegia is the newsletter of the Colorado Native Plant Society and is available to members of the Society and to others with an interest in native plants. Four regular issues are published each year plus a special issue for the annual Society meeting held in the Fall.

Announcements, news, articles, book reviews, poems, botanical illustrations, photographs and other contributions should be sent to Jan Loechell Turner at JLTurner@regis.edu.

All contributions are subject to editing for brevity, grammar, and consistency, with final approval of substantive changes by the author.

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

Deadlines: Submissions to *Aquilegia* are accepted throughout the year, although the usual deadlines for publication are:

February 15 (Spring issue, sent out mid to late March)

April 15 (Summer issue, sent out mid to late May)

June 15 (Annual Meeting issue, sent out mid to late July)

July 15 (Fall issue, sent out mid to late August)

October 15 (Winter issue, sent out mid to late November)

Editor: Jan Loechell Turner JLTurner@regis.edu

Aquilegia Staff & Contributors: Charlie Turner, Sally L White, Linda Smith, Mo Ewing, and John Vickery

Aquilegia Volume 37, No. 3 Summer 2013

COLORADO NATIVE PLANT SOCIETY MAIL ORDER FORM	May 2, 2013		
<i>Please email or phone to check on availability before placing an order: consoffice@aol.com 970-663-4085</i>	Author	Sales Price	Ship/Handling
Agaves, Yuccas, and Related Plants	Irish & Irish	\$27.00	\$3.25
Alpine Flower Finder	Wingate & Yeatts	\$6.00	\$2.25
Alpine Plants of North America: An Encyclopedia of Mountain Flowers	Nicholls, G.	\$38.00	\$3.25
American Cockerell, The	Weber, W.A.	\$20.00	\$3.25
Attracting Native Pollinators; Protecting North America's Bees and Butterflies	Xerces Society Guide	\$23.00	\$3.50
Botanical Latin	Stearn, W.T.	\$23.00	\$3.25
Botany in a Day	Elpel, T.J.	\$24.50	\$2.75
Bringing Nature Home; How You Can Sustain Wildlife with Native Plants	Tallamy, D	\$14.50	\$2.75
Bryophytes of Colorado	Weber & Wittmann	\$25.00	\$2.75
Cacti: The Illustrated Dictionary	Preston-Mafham	\$22.00	\$2.75
Calochortus: Mariposa Lilies and their Relatives	Gerritson, M & Parsons, R	\$23.00	\$2.75
Colorado Flora, Eastern Slope, 4th Edition	Weber & Wittmann	\$23.00	\$3.00
Colorado Flora, Western Slope, 4th Edition	Weber & Wittmann	\$23.00	\$3.00
Colorado's Best Wildflower Hikes - Volume 1 - Front Range	Irwin, P.D.	\$16.00	\$2.75
Colorado's Best Wildflower Hikes - Volume 3 - San Juans	Irwin, P.D.	\$16.00	\$2.75
Colorado's Newest and Best Wildflower Hikes	Irwin, P.D.	\$16.00	\$2.75
Columbines: Aquilegia, Paraquilegia, and Semiaquilegia	Nold, R.	\$22.00	\$2.75
Common Rocky Mountain Lichens, A Color Guidebook to	St. Clair, L.	\$18.50	\$3.50
Common Southwestern Native Plants, an Identification Guide	Carter, Carter & Stevens	\$15.50	\$2.75
Curious World of Carnivorous Plants	Barthlott et al.	\$30.00	\$3.25
Dictionary of Word Roots	Borror, D.J.	\$23.75	\$1.25
Drawing and Painting Plants	Brodie, C.	\$23.00	\$2.75
Field Guide to Colorado's Wetland Plants: Identification, Ecology and Conservation	Culver & Lemly	\$35.00	\$4.00
Field Guide to the North American Prairie (Peterson)	Jones & Cushman	\$17.50	\$2.75
Flora ID CO - Interactive Plant Key with color photos (cd)	Barnes, Bruce	\$75.00	\$1.25
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Membership in CoNPS entitles you to:

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- Conservation and Restoration Activities
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You are free to affiliate with any chapter you choose and to attend the meetings of any chapter. Chapters do not have drawn map boundaries.

- Boulder Gore Range Metro-Denver Northern Plateau Southeast Unaffiliated

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\$ _____ General Fund

Endowments in support of small grants-in-aid of research:

\$ _____ John Marr Fund: research on the biology and natural history of Colorado native plants

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Mail to: CoNPS Office, P.O. Box 200, Fort Collins, CO 80522.

Please make checks payable to "Colorado Native Plant Society." Dues and contributions are tax-deductible.

CONPS 2013 CALENDAR

MAY

May 25 Squirrel Creek Trail (SE)
 May 26 Pawnee Buttes Nat. Grasslands (N)
 May 31 Plains Conserv Center – W Bijou (DM)

JUNE

June 2 What's Going On in These Fens (DM)
 June 8 Golden Gate Canyon State Park (DM)
 June 8 Sylvan Lake State Park, Eagle (GR)
 June 8 Wildflowers and Ferns (SJ)
 June 8 Newlin Creek Trail (Wetmore) (SE)
 June 8 Golden Gate Canyon State Park (DM)
 June 9 Chief Mountain (DM)
 June 13 Button Rock Preserve PM Picnic (B)
 June 15 Elk Park (SE)
 June 22 Birds and Botany (SE)
 June 22 Wildflowers in Mesa Verde Nat. Park (SJ)
 June 22 Workshop: Colorado's Pollinators
 June 23 Workshop: Colorado's Pollinators
 June 26 Staunton State Park (DM)
 June 29 Flowers of Echo Basin (SJ)
 June 29 Wildflowers of Shambala Mtn Cntr (N)
 TBA Lory State Park East Valley Trail (N)
 TBA Indian Meadows, Poudre Canyon (N)
 TBA High Plains Environmental Cntr (N,B)
 TBA Skiff Milkvetch Monitoring (P)

JULY

July 7 Wetlands of the San Juans (SJ)
 July 10 Diamond Lake/Fourth of July (DM)
 July 11 Caribou Ranch (B)
 July 12 Hayman Burn Area (DM)
 July 13 The Grass I.D. Field Trip (SE)
 July 13 Workshop: Draba on Boreas Pass
 July 16 Annual Pilgrimage (Durango) (SJ)
 July 20 Alpine Wildflowers (Silverton) (SJ)
 July 20 Greenhorn Peak (SE)
 July 25 Bridal Veil Creek (Telluride) (SJ)
 July 27 Grasslands of Front Range Montane (DM)
 TBA Zimmerman Lake (N)
 TBA Horsetooth Mountain Park (N)

AUGUST

Aug 3 Mason Gulch (SE)
 Aug 8 South Boulder Creek Restoration (B)
 Aug 10 Front Range Wetland Dragonflies (B)
 Aug 17-18 Plant Ecology at El Malpais, NM (SJ)
 Aug 24 Sylvan Lake State Park, Eagle (GR)
 Aug 26 Wild Mushrooms (Telluride) (SJ)
 TBA South Zimmerman Trail (N)
 TBA Hewlett Gulch (post-fire) (N)

SEPTEMBER

Sept 27 **Rare Plant Symposium**
 Sept 28-29 **CoNPS Annual Meeting (Boulder)**
 Sept 28 CoNPS Board Meeting
 TBA Castlewood Canyon State Park (DM)
 TBA Lory State Pk Arthur's Rock Trail (N)
 TBA Trap Lake, Poudre Canyon (N)
 TBA Red Feather Lakes area (N)

Would you like to do the Plant Profiles for the next issue of *Aquilegia*?

Please submit your Plant Profiles (text and photos) to Jan L. Turner at JLTurner@regis.edu.

Mark Your Calendar!

September 27-29, 2013

University of Colorado Boulder

**CoNPS Annual Meeting
& Rare Plant Symposium**

Theme: Global Climate Change

KEY

B Boulder Chapter
 GR Gore Range Chapter
 MD Metro-Denver Chapter
 N Northern Chapter
 P Plateau Chapter
 SE Southeast Chapter
 SJ San Juan/Four Corners Native Plant Society

PLANT PROFILES

GROUND-PLUM

Astragalus crassicaarpus Pea Family

CLUES: low plant with divided leaves; white pea flowers with purple-tipped keel petal; plum-like pods; 2 - 4" tall

The name of this plant comes from the appearance of its fruit. Ground-plum is a milkvetch with pea flowers and pinnate leaves with paired leaflets that are smooth on top and hairy on the bottom. In the Red Rocks area, the ½ inch long flowers of ground-plum are white with a purple-tipped keel petal; in other locations, the flowers may be purple, blue, or pink. The round, fleshy fruit is around 1 inch in diameter and turns from green to reddish as it matures.

The Lakota and Montana Indians ate the fruit and the Chippewas used a compound decoction of the root as a stimulant. Ground-plum is a desirable garden plant that blooms in April and May.



Photos and text from *Wildflowers of Red Rocks Park* © Jan Loechell Turner and Charles A. Turner 2009

GOLDENEYE

Heliomeris multiflora

Sunflower Family

From 1 to 3 feet in height, this slender, graceful plant is covered with many small, yellow flower heads, 1½ inches across. Although it has dark green, long, narrow, opposite, lance-shaped leaves on the lower part of the plant, the upper leaves are alternate. The disk flowers (in the center) are gold and the 10 to 14 ray flowers (the outer flowers that look like petals) are yellow. Goldeneye provides good forage for sheep and deer, and birds enjoy the seeds. It produces mild, golden honey and is considered a witchcraft plant by the Ramah Navajo. Blooms late summer.



Opposite Leaves



Photos and text from *Wildflowers of Mesa Verde* © Jan Loechell Turner and Charles A. Turner 2007



Colorado Native Plant Society

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HAYDEN'S GILIA *Aliciella haydenii* Phlox Family © Charlie & Jan Turner