



Aquilegia

RESEARCH ARTICLE: Coyotes and Columbines at RMBL in Gothic



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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2013 CoNPS Annual Meeting
September 27-29, Boulder, Colorado

2013 Photo Contest Winner

Plant Category: Benjamin Blonder - *Castilleja rhexifolia* (below)

See Back Cover for Landscape Category Winner



Cover photo: *Aquilegia coerulea* at Crested Butte, Colorado Photo by Charlie & Jan Turner

Marr Fund Research: *Coyotes and Columbines: Do Predators Deter Deer from Eating Colorado Native Wildflowers?*

by Mary Price, Nick Waser, Dan Blumstein, David Inouye, Principal Investigators and Betsabé Castro-Escobar and Richard Furman, Student Interns



Introduction

It was rare to see mule deer at the Rocky Mountain Biological Laboratory (RMBL) in Gothic, Colorado in the 1970s. When the first doe fawned in 1986, the blessed event made the “Gothic News.” Nowadays there are deer aplenty at RMBL; they nibble unconcernedly in the middle of town and instruct their fawns to hide right next to cabins.

Needless to say, researchers have not been pleased to see their study plants disappear into the mouths of hungry deer! There is growing concern that burgeoning deer populations are affecting plant communities in the Gothic area by decreasing the relative abundance of palatable species, as they have in forests of the Great Lakes region (Rooney and Waller 2003).

These concerns are warranted. More than half of the elongating flowering stalks of scarlet gilia, *Ipomopsis aggregata*, for example, are browsed by deer in Gothic (Sharaf & Price 2004). Although browsed plants compensate by sending out lateral shoots, Ms. Sharaf, our student intern at the time (funded by the National Science Foundation’s Research Experience for Undergraduates or REU program), documented that these “bushy” plants produce 85% fewer seeds than do undamaged plants. A long-term experiment later showed that reduced seed output leads to reduced seedling recruitment into populations (Price et al. 2008).

Another former REU student found that individuals of blue columbine (*Aquilegia coerulea*, the Colorado State Flower) exposed to deer browsing produced only 30% as many fruits as protected plants because deer eat the flowers (Arozqueta

2005). Our surveys in a subsequent summer demonstrate that this loss leads to reduced emergence of columbine seedlings near parent plants, again suggesting a population consequence. Ms. Arozqueta also showed that browsing of herbs is more intense in montane meadow than in aspen forest habitat, and that it varies across plant species.

Why have deer populations increased so dramatically in Gothic? One possibility is that the increase simply reflects a region-wide increase in deer densities. Deer are certainly more common overall than they were several decades ago, but Gothic residents have the impression that deer have increased disproportionately in Gothic itself. Perhaps does have learned that predators such as coyotes avoid Gothic during the busy summer season and the does prefer to drop their fawns near human activity. Elk have been shown to avoid areas frequented by wolves in Yellowstone and Banff National Parks (Beschta & Ripple 2009, Hebblewhite et al. 2005), and both deer and antelope moved into areas of Colorado and Utah where coyotes were being killed for livestock protection (Harrington & Conover 2007).

In 2010 we embarked on a collaborative experimental study of coyotes, deer, and plants. We started with four questions:

- 1) Are deer more common in the Gothic townsite than outside it? How many inhabit Gothic during the summer?
- 2) Are coyotes less active in the townsite than outside it?
- 3) Do mule deer avoid areas with high apparent coyote activity?
- 4) Do spatial gradients in deer activity produce gradients in herbivory on native herbs?

The Study System and Methods

The Rocky Mountain Biological Laboratory is an independent, non-profit high-altitude field station founded in 1928. It hosts field research by independent investigators (each of the principal investigators on this project has worked there for several decades) and field-oriented university-level classes. For over 20 years, RMBL has administered a National Science Foundation Research Experience for Undergraduates (REU) program in which RMBL scientists mentor undergraduate researchers. We involved two REU students in this collaborative project in 2010. We therefore could augment the grant funds from CoNPS with a small allocation from the REU grant, with which we purchased necessary supplies for marking deer and establishing coyote urine stations and plant transects. The REU program also paid for student housing and fees, and for a paintball gun.



To answer question 1 we established eight sites, one north of the Gothic townsite, one south of it, and three paired sites within the townsite. We recorded deer activity in each site for 9 weeks, using visual scan-sampling methods. To estimate the number of distinct individuals seen, we marked deer with oil-based paint delivered via paintball guns.

To answer question 2, we walked transects along trails and unpaved roads and recorded the GPS location of each coyote defecation site. We completed one sample early in the summer to clear the trails of overwinter scat accumulation. Before we could complete a follow-up sample to characterize the distribution of coyote summer activity, however, cattle trampled the trails, obscuring any fresh coyote scat. Hence we could not determine whether coyotes avoided the townsite during the summer season; they clearly used the townsite during the winter.

To answer question 3, we set up 3 paired stations in meadows within the RMBL townsite. In one station of each pair, chosen at random, we added coyote scent (urine), and in the other we added water as a control. The REU students recorded deer activity, behavior, and feeding rate as a function of distance from the scent or control stations, using both focal-individual and scan-sampling techniques.

To answer question 4, we characterized the fraction of plant shoots browsed along transects located in each of the 8 study sites. Browsing rates were scored both early and late in the summer.

Results

We marked 29 deer with paintballs. However, because individuals lost their marks when they molted and could have been remarked, this is an overestimate of the number of marked individuals. 22 distinct individuals were marked in the first two weeks of the study, before any marks were lost through molting. Since the RMBL townsite contains 0.66 km² of meadow habitat, this corresponds to about 33 deer per km² of meadow habitat (Pickens 2010). Because we did not succeed in marking all deer, actual deer density is higher than this figure.

Does were observed far more frequently than were bucks. In all, 156 (83%) of a total of 187 sightings during scan samples were of does. Fawns began to appear on 30 June.

Deer activity was higher within the townsite than outside of it. On average, 0.12 deer (0.0018 per ha) were seen in each visual scan of meadows outside of the townsite, whereas 0.54 deer (0.095 per ha) were seen in each scan of within-townsite meadows. This difference in deer activity density was highly significant statistically (Castro-Escobar 2010; $F_{1,30} = 40.6$, $P < 0.0001$). Deer activity was also higher in the central part of the townsite, which had the greatest human activity.

Deer did not avoid the coyote-scent stations and were not more vigilant near scent stations than near control stations. They did, however, stay close to the cover of willows – there was more activity at stations that were near to willow cover, and more activity near willows at the most open site. Bucks were more vigilant than does (Pickens 2010).

Deer browsed some plant species much more than others

(Castro-Escobar 2010). Highly preferred species included *Aquilegia coerulea* (21% of shoots browsed), *Helianthella quinquenervis* (20% of shoots browsed), *Valeriana edulis* (12%), and *V. occidentalis* (9%). Avoided species included *Dugaldia hoopsii* (2%), *Thalictrum fendleri* (1%), and *Erigeron speciosus* (0.4%). These rankings are consistent with Arozqueta's observations from 2005. Although browsing rates were positively related to deer activity density across sites, the relationship was not statistically significant.

Conclusions

We established that deer, particularly does, are more abundant near areas of high human activity. We also discovered that does prefer to stay close to willows. We cannot yet say, however, why does prefer to drop their fawns in the Gothic townsite. They did not respond to coyote urine, but this does not necessarily mean that their choice of fawning sites is unaffected by the distribution of predators: they may use multiple cues to assess predator abundance and may have learned quickly that coyote urine does not mean that coyotes are nearby. It also is possible that they perceive coyotes as less dangerous than other predators such as mountain lions, which also seem to avoid the townsite. Another possibility is that the Gothic townsite has particularly favorable willow or meadow habitat, and human or predator activity has little to do with choice of fawning sites. We intend to explore these possibilities with additional student interns in the future.

Our plant samples indicate that plants differ in their palatability to deer, and that deer can significantly affect the reproduction of preferred plant species. There is a suggestion that browsing intensity is correlated with deer density, but we will need larger sample sizes to be confident of this result. We also will continue this aspect of the study.



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Photos in this article by Mary Price

FROM OUR ARCHIVE (1977)

ILLUSIVE AND UNUSUAL COLORADO RESIDENTS
by Dr. Charles Feddema



SENECIO PORTERI. This ragwort, which could be christened Porter's senecio, has been included in the Fish and Wildlife Services proposed list of endangered plants. It belongs to the family of composites or Asteraceae, and has a cluster of small yellow flowers resembling a small dandelion.

It is a perennial, having underground stems or rhizomes from which upright flowering shoots arise forming clusters. The plant is completely hairless with one or two broad, purplish, basal leaves with very shallow teeth and rather long stalks or petioles. The upright stem, about 2 to 4 inches tall, has a few smaller, more rounded leaves and ends in a single bell-shaped head of yellow-orange flowers.

This senecio has been observed a few times in areas near Gothic in northern Gunnison County and perhaps once in southern Pitkin County. Some botanists also believe that a single plant once collected in northeastern Oregon should be considered the same species.

Much more needs to be known about this plants and perhaps a search will indicate that it is not as rare as thought to be.

Article from *Colorado Native Plant Society Newsletter*, Volume 1, Number 1, Jan.-Feb. 1977
<http://rudr.coalliance.org/fedora/repository/codr:2384>

The Next Generation Flora of Colorado

by Jennifer Ackerfield



Photo by Jenna McAleer

It is in our innate human nature to want to classify and identify the natural world around us. And who among us doesn't delight in keying out a plant, relishing in the victory when you have finally figured out what you are holding? The sense of accomplishment and pride achieved at

knowing that you, yes you, just keyed out a plant! It is with this approach in

mind that I embarked upon a task many years ago, writing *The Flora of Colorado*. Frustrated by incomplete and challenging keys, and discovering countless misidentifications based on these keys, I decided to write my own keys to the flora of Colorado. It is my goal that just about anyone can pick up the book, and using the keys and photographs included, properly key out a plant with confidence.

Colorado has a rich diversity of ecosystems and ranges from 3,500 ft. to over 14,000 ft. in elevation, supporting approximately 3,600 taxa. Presently, identifying a plant in Colorado can be quite challenging for students as well as amateur and professional botanists. The material available is either outdated (Harrington, 1954), incomplete for the state (Cronquist et al., 1977, 1984, 1994, 1997; Dorn, 2001; Welsh, 2003), or does not follow the current classification based on the Angiosperm Phylogeny Group III (Weber & Wittmann, 2012). In writing *The Flora of Colorado*, I have striven to use the most easily recognizable morphological characteristics to separate taxonomic groups, making a more user-friendly key.

In addition to the user-friendly keys, I have also included a short species description, the general distribution, elevation range, habit, and flowering time for each species. There will also be county distribution maps present next to each species description so that one can easily visualize where each species occurs in Colorado. I also plan to include color photographs of key morphological characteristics and color photographs of several species present across the state to aid in identification. Including photographs of the key morphological characteristics to compare against will greatly aid in plant identification. When one can compare specimens to a photograph of a verified, known identification, it makes it much easier to properly identify plants. These photographs also easily illustrate complex morphological characters that can be difficult to describe, but easy to see and compare. Imagine keying out a *Carex*, or sedge, and having photographs of the perigynia (the key diagnostic character separating these species) of *Carex* species in Colorado to cross-reference. Or, keying out a member of the Poaceae or grass family and having photographs of grass florets to compare your specimen against. This would make keying out a plant much faster, efficient, and confirmed with confidence. I have taken hundreds of photographs of key morphological characteristics

with the aid of a camera mounted onto a microscope. These photographs were done on verified herbarium specimens.

Including color photographs of plant species will enable someone to quickly identify the most common plants in the state. I have personally taken hundreds of photographs of the flora of Colorado, and with each plant photographed I have also taken a voucher specimen for preservation at the Colorado State University Herbarium. This ensures that each photograph is indeed identified correctly. The inclusion of color photographs will appeal to professional and amateur botanists alike, and make the book visually appealing as well. In addition, the color photographs will bridge the gap between a purely scientific, dichotomous key and a purely photograph-based book.

I have been sending drafts of *The Flora of Colorado* to botanists around the state of Colorado for many years, and have received very positive feedback. People generally have a much easier and faster experience keying out a plant using the keys I have written, even without the inclusion of the photographs! For example, when keying out an *Astragalus* (a large genus of over 120 species in the Fabaceae, or pea, family), one is presented with a challenging situation. I wrote the key to the genus *Astragalus* so that someone can key out a species whether it is in flower or in fruit. It makes for a longer key overall, but the success rate is much higher and identification time is much quicker. The Brassicaceae (mustard family) can also be a challenge to key out. Instead of relying solely on the fruiting characteristics in Brassicaceae, I use hair characteristics first to reach the major subgroups, and then use flowering and fruiting characters to reach the proper identification. Botanists have also aided in reviewing the dichotomous keys over a number of years, making the keys the most reliable and robust possible. The taxonomy of the flora generally follows the Angiosperm Phylogeny Group III (2013) guidelines, also providing a much needed update to family taxonomy for the Colorado flora and reflecting a modern systematic approach to the phylogenetic relationships at the family level.

Studying the flora of Colorado has been a passion of mine for more than 15 years, and during this time I have gained an extensive knowledge of the flora. I received a Master's degree in Botany in 2001 from Colorado State University, and I have been working as the assistant curator at the Colorado State University Herbarium for 14 years. During this time, I have traveled extensively across the state of Colorado documenting its rich floristic diversity, making field observations on species, and collecting and photographing the flora. I have used my extensive field observations in writing the keys to the flora. In preparing *The Flora of Colorado*, I have personally verified nearly every specimen at the CSU Herbarium. This has enabled me to directly test the dichotomous keys, and to see what characteristics work better than others. Sometimes, what appears to be a great taxonomic character for use in distinguishing species may be great on paper but nearly impossible to actually see. I have also written several taxonomic articles on various aspects of the flora of Colorado. Lastly, I teach a class at Colorado State University

entitled Plant Identification. The main focus of the class is teaching students how to make a plant collection, properly key out a plant, and learn the recognition characteristics for the major plant families in Colorado. I make my *Flora of Colorado* available for students to use during this class, and have received very positive feedback (as well as free editing!) from them as well.

I currently have completed the dichotomous keys for the entire *Flora of Colorado*, and have included a short introduction as well as a reference section, glossary, and index at the back of the book. I envision the *Flora* published in a 6 ½ x 9 ½ inch format, with a spiral binding. This would make it feasible to carry into the field, and the spiral binding would keep the pages intact in spite of heavy use.

At the end of this article, I have included a key to the Loasaceae, or stickleaf family in order to give an example of the flora. The Loasaceae is a particularly challenging family, and relies heavily on the morphological characteristics of the seeds. Therefore, I have also included a sample image of the seeds of several species of the Loasaceae family. I plan to have the *Flora* completed and published within the next year, so that everyone in Colorado can key out a plant and hopefully have a little fun doing it too!

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LOASACEAE Spreng. – STICKLEAF FAMILY

Herbs or sometimes shrubs, often covered with large, multicellular hairs; leaves alternate or opposite, simple, entire to sinuate, lobed, or dissected, exstipulate; flowers perfect, actinomorphic; sepals (4)-5, distinct, persistent in fruit; petals (4)-5 or 10 when petaloid staminodes are present, distinct, usually yellow, sometimes white, rarely orange or red; stamens 5 or 10-many, staminodes often present and sometimes petaloid; pistil 1; ovary inferior, unicarpellate or 2-5-carpellate; fruit a capsule.

MENTZELIA L. – BLAZINGSTAR

Annual, biennial, or perennial herbs, often with a woody base, glabrous or covered with large, multicellular hairs, outer bark white and exfoliating; leaves alternate; sepals 5; petals 5 or 10 (if counting petaloid stamens as petals); stamens 10-many, often petaloid staminodes present, some cuspidate apically. (Hill, 1976; Holmgren & Holmgren, 2002; Reveal, 2002)

The genus *Mentzelia* poses great difficulties in writing a key. There are several species which can only be properly determined based on seed characteristics. However, mature fruit is often not collected and thus proper determination to species can sometimes be almost impossible. It is important to note the exact color of the petals on the label as they soon fade to brown.

- 1a. Seeds with narrow, linear, curved grooves, pendulous in the capsule, wingless; capsules curved at the base, small and narrow, mostly 0.7-1.1 cm long and about 2 mm wide; leaves triangular-ovate, coarsely toothed or sometimes the basal leaves somewhat lobed; petals 5, 0.7-1 cm long; flowers orange or yellow-orange...***M. oligosperma***
- 1b. Seeds variously papillose, horizontal in the capsule and winged (this sometimes very thin) or pendulous in the capsule and unwinged; capsules erect, not curved at the base; leaves various but not triangular-ovate, entire or shallowly to deeply pinnately lobed; petals 5 or 10 (5 petals alternating with 5 petaloid stamens), 0.25-3 cm long; flowers yellow, cream, or white...2
- 2a. Petals 5, 0.25-0.7 cm long, glabrous; plants annual or winter annual; seeds angular, pendulous, not winged; capsule narrowly cylindrical, 1-4 mm wide...3
- 2b. Petals 5 or 10, 0.9-8 cm long (if 0.7 cm long, than pubescent on the back); plants biennial or perennial, rarely annual; seeds flattened and winged, horizontal in 1 or 2 rows; capsule usually thick-cylindric, bowl-shaped, or urceolate...5
- 3a. Leaves deeply pinnately lobed into slender segments, sometimes a few upper ones entire or nearly so; with a dense basal rosette at anthesis; flowers subtended by linear or narrowly lanceolate to narrowly ovate bracts; capsule 2-3 mm wide...***M. albicaulis***
- 3b. Leaves entire or shallowly toothed; usually without a dense basal rosette at anthesis; flowers subtended by oblanceolate or ovate to broadly ovate bracts; capsule 1-4 mm wide...4
- 4a. Capsules 1-1.6 (2) mm wide; seeds appearing smooth at 10X with less pronounced papillae, in 1 row, triangular-prismatic, sharply angled with a groove along each angle; stamens numerous...***M. dispersa***
- 4b. Capsules 2-3.5 (4) mm wide; seeds appearing rough at 10X with pronounced papillae, in more than 1 row, irregularly angled; stamens few...***M. thompsonii***
- 5a. Plants of the eastern slope...6
- 5b. Plants of the western slope...14
- 6a. Petals large, 4-8 cm long; calyx lobes 15-40 mm long; capsules 30-50 mm long...7
- 6b. Petals smaller, 0.7-3 cm long; calyx lobes 5-15 mm long; capsules 5-30 mm long...8
- 7a. Bracts adnate with the capsule; seed with a narrow wing, mostly 0.2-0.3 mm wide; capsule 3.4-4.5 cm long, 13-18 mm wide; petals 4-8 cm long and 12-26 mm wide; leaves 5-20 cm long and 1-3.5 cm wide; calyx lobes 2-3.5 cm long; plants 4-10 dm tall...***M. decapetala***
- 7b. Bracts free from the capsule; seed with a wide wing, 0.6-0.9 mm wide; capsule 2-3 cm long, 8-10 mm wide; petals 2-5 cm long and 3-10 mm wide; leaves 4-10 cm long and 1-2 cm wide; calyx lobes 1-2.5 cm long; plants to 10 dm tall...***M. nuda***
- 8a. Bracts subtending the flowers pinnately lobed; flowers white, cream, or pale yellow; plants tall, 5-12 dm in height...9
- 8b. Bracts subtending the flowers entire or nearly so; flowers white, cream, or pale to golden-yellow; plants usually 5 dm or less in height, sometimes to 10 dm...10

- 9a. Flowers white to cream or rarely pale yellow; petals 2-5 cm long; seeds smoother in appearance at 10X with less pronounced papillae...***M. nuda***
- 9b. Flowers pale yellow; petals 1.5-2.5 cm long; seeds rough in appearance at 10X with numerous pronounced papillae...***M. rusbyi***
- 10a. Plants branched from the base, the entire plant forming a rounded tuft; stem and branches white with the lower part of the stem strongly exfoliating, slender and flexuous; leaves narrowly linear-lanceolate, deeply pinnately lobed with rather widely spaced, short segments (mostly 1-3 mm long), and a narrow midrib (on most leaves 1-2 mm wide); capsule 13-15 mm long; petals 0.8-1.5 cm long, golden-yellow...***M. densa***
- 10b. Plants with solitary stems that are branched above or occasionally with a few branches at the base, not forming a rounded tuft; stem and branches white to yellowish and strongly exfoliating below or not, usually stouter; leaves with the midrib generally wider and the lobes usually longer; capsule 11-30 mm long; petals 1.2-3 cm long, pale to golden-yellow or white...11
- 11a. Seeds with a narrow wing (0.15-0.3 mm), the surface with numerous papillae, giving the seed a rough appearance at 10X; plants decumbent at the base with numerous old leaf bases; stem mostly unbranched with numerous, closely massed flowers; upper leaves shallowly dentate or sometimes almost entire...***M. chrysantha***
- 11b. Seeds with a wide wing (0.5-1 mm), the surface smooth or rough at 10X; plants erect or occasionally somewhat decumbent at the base, without numerous old leaf bases; leaves and stem various, the flowers closely massed or widely spaced...12
- 12a. Seeds rough in appearance at 10X with numerous pronounced papillae; flowers pale yellow, cream-colored, or occasionally white...***M. multiflora***
- 12b. Seeds smooth in appearance at 10X with less pronounced papillae; flowers bright yellow or rarely pale yellow...13
- 13a. Outer fertile stamens with a narrow filament; leaves (at least the upper) usually with a broad and more or less clasping base; plants generally tall, to 10 dm in height...***M. reverchonii***
- 13b. Outer fertile stamens with broad filaments, grading to inner stamens with narrow filaments; leaves usually without a broad and clasping base; plants generally shorter, 3-5 dm in height...***M. speciosa***
- 14a. Petals 5, rarely more, large (4-8 cm long), white or pale yellow outside and yellow inside except often lighter at the base of the petal; capsules 30-50 mm long...***M. laevicaulis***
- 14b. Petals 10 (5 petals alternating with 5 petaloid stamens) or sometimes 5, smaller (0.9-2 cm long), white, cream, or yellow, sometimes lighter at the base of the petal; capsules 5-28 mm long...15
- 15a. Petals pubescent on the back, at least below the middle; seeds narrowly winged (mostly 0.2-0.25 mm wide), densely papillose and appearing rough, the papillae arranged in more or less distinct lines...***M. marginata***
- 15b. Petals glabrous on the back or sometimes with a tuft of hairs just at the apex; seeds with a narrow or broad wing to 1.2 mm wide, smooth or densely papillose and rough, the papillae appearing scattered or rarely more or less in lines...16
- 16a. Leaves mostly entire, linear or lanceolate to narrowly elliptic, sometimes just a few leaves shallowly undulate-dentate with 2-4 lobes on each side or pinnately lobed; perennial from rhizomes or a branched caudex; stems freely branched and widely spreading...17
- 16b. Leaves mostly pinnately lobed, or sinuate-dentate to merely toothed, sometimes just a few of the uppermost leaves entire; biennial from taproot or perennial from woody caudex; stems various...18
- 17a. Plant from rhizomes; capsules (5) 6-9 mm wide...***M. rhizomata***
- 17b. Plant from a taproot and woody branching caudex; capsules 3.3-5 mm wide...***M. multicaulis***
- 18a. True perennial from a woody branching caudex, freely branched with numerous stems; at least some leaves deeply pinnatifid into linear segments about 2 mm wide with the midrib 4 mm wide or less, the tips of the segments rounded, the terminal segment usually elongate; capsule 5-9 mm long; seeds usually essentially wingless...***M. multicaulis***
- 18b. Biennials or short-lived perennials from a taproot, stems solitary or sometimes 2-3 from the crown; leaves usually with a wider midrib, not deeply pinnatifid into linear segments or if so then the terminal leaf segment tip acute and the capsule 15-20 mm long; capsules 7-30 mm long; seeds with a narrow to broad wing...19

- 19a. Bracts subtending the flowers lobed or pinnatifid; plants tall, 5-12 dm in height; flowers pale yellow; capsules (15) 20-30 mm long...***M. rusbyi***
- 19b. Bracts subtending the flowers entire (look for linear bracts just below the flower); plants generally shorter, mostly 1-4 dm tall; flowers pale yellow to golden yellow; capsules 10-25 mm long...20
- 20a. Leaves broadly oblanceolate to ovate, often rounded at the apex, very shallowly toothed; seeds 3.5-4.7 mm long, appearing smooth with less pronounced papillae at 10X, with a broad wing (0.7-1.3 mm wide); capsules bowl-shaped or rarely short-cylindric, 7-10 mm wide and 10-13 mm long...***M. pterosperma***
- 20b. Leaves linear to narrowly oblanceolate, usually regularly and sometimes even deeply pinnately lobed, seldom shallowly pinnatifid; capsules cylindrical or sometimes bowl-shaped, 4-8 mm wide and 7-25 mm long; seeds 2.3-3.5 mm long, winged but the wing often narrower, 0.15-1 mm wide;...21
- 21a. Seeds with a narrow wing (0.15-0.35 mm wide), rough or smooth in appearance at 10X; capsules cylindric...22
- 21b. Seeds with a broad wing (0.5-1 mm wide), rough in appearance at 10X with numerous pronounced papillae; capsules cylindric or bowl-shaped...23
- 22a. Seeds rough in appearance at 10X with numerous pronounced papillae; leaves usually deeply pinnately lobed nearly to the midrib with narrow lobes...***M. laciniata***
- 22b. Seeds smooth or somewhat roughened in appearance at 10X with less pronounced papillae; leaves not deeply lobed nearly to the midrib, usually shallowly toothed to pinnately lobed or sometimes nearly entire...***M. pumila***
- 23a. Capsules cylindric, (8) 11-25 mm long and 5-7 mm thick; petals 10-25 mm long; leaves quite variable, ranging from deeply pinnately lobed to shallowly toothed...***M. multiflora***
- 23b. Capsules bowl-shaped, 7-10 mm long and 4-6 mm thick; petals 7-15 mm long; leaves deeply pinnately lobed nearly to the midrib...***M. 'paradoxa'***

***Mentzelia albicaulis* (Dougl. ex Hook.) Dougl. ex Torr. & Gray**, WHITE-STEM BLAZINGSTAR. [*Acrolasia albicaulis* (Dougl. ex Hook.) Rydb.; *M. montana* (Davidson) Davidson]. Annual; stems 8-40 cm tall, white; leaves sessile, oblanceolate, lanceolate, or linear, 3-15 cm long, nearly entire to lobed or sinuate-pinnatifid; petals 5, 2-4 mm long, yellow; seeds irregularly angled, wingless. Common in a variety of soil types, often in dry or disturbed areas, scattered across the state, 4500-7500 ft. May-July. E/W.

***Mentzelia chrysantha* Engelm. ex Brandeg.**, GOLDEN BLAZINGSTAR. [*Nuttallia chrysantha* (Engelm. ex Brandeg.) Greene]. Biennial; stems 30-60 cm tall; leaves 5-15 cm long, lanceolate, nearly entire to shallowly dentate; petals 10, 15-20 mm long, yellow; seeds with a narrow wing 0.15-0.3 mm wide, the surface with numerous papillae, giving the seed a rough appearance at 10X. Uncommon on limestone outcroppings between Canon City and Pueblo (Fremont and Pueblo Cos.), 5100-5700 ft. July-Sept. E. Endemic.

***Mentzelia decapetala* (Pursh ex Sims) Urb. & Gilg ex Gilg**, TEN-PETAL BLAZINGSTAR. [*Nuttallia decapetala* (Pursh ex Sims) Greene]. Biennial or perennial; stems 40-100 cm tall; leaves lanceolate, sinuate-pinnatifid, 5-20 cm x 1-3.5 cm; petals 10, 4-8 cm long, white; seeds 3 mm long, with a thin wing 0.2-0.3 mm wide. Common on dry slopes and along roadsides, scattered across the eastern plains to the base of the foothills, 3500-7000 ft. July-Sept. E.

***Mentzelia densa* Greene**, ROYAL GORGE BLAZINGSTAR. [*Nuttallia densa* (Greene) Greene]. Perennial, much-branched from the base forming a hemispherical tuft; stems 20-50 cm tall; leaves narrowly linear-lanceolate, sinuate-pinnatifid into linear segments; petals 10, 10-20 mm long, golden-yellow; seeds 2.5-3.5 mm long, with a wing ca 0.5 mm wide. Uncommon in dry, rocky soil, known from the Arkansas River Canyon from Canon City to Salida (Chaffee and Fremont Cos.), 5800-7200 ft. July-Sept. E. Endemic.

***Mentzelia dispersa* S. Watson**, NEVADA BLAZINGSTAR. [*Acrolasia dispersa* (S. Watson) Davidson]. Annual; stems 10-40 cm tall, white, simple or branched, usually finely hispid; leaves oblanceolate to linear, 2-8 cm long, usually entire or sometimes lobed; petals 5, 1-3 (5) mm long, yellow; seeds prismatic, with grooved angles. Rather uncommon, found on dry slopes, sometimes in disturbed areas, scattered across the state except absent from the eastern plains, 4600-8300 ft. May-July. E/W.

***Mentzelia laciniata* (Rydb.) J. Darl.**, CUTLEAF BLAZINGSTAR. [*Nuttallia laciniata* (Rydb.) Woot. & Standl.]. Biennial or perennial; stems 30-50 cm tall, branched above; leaves lanceolate, deeply pinnatifid into narrow segments; petals 10, 15-20 mm long, yellow; seeds rough in appearance at 10X with numerous pronounced papillae, with a narrow wing 0.15-0.35 mm wide. Uncommon in dry, open places, known from the southwest part of the state (Archuleta, Montezuma Cos.), 6500-7500 ft. June-Aug. W.

***Mentzelia laevicaulis* (Hook.) Torr. & Gray**, SMOOTH-STEM BLAZINGSTAR. Perennial; stems 30-100 cm tall, simple or branched above; leaves 2-20 cm long, lanceolate to oblanceolate, sinuate-pinnatifid with shallow lobes; petals 5, 4-8 cm long, light yellow; seeds 4-4.5 mm long, with a broad wing. Reported for Colorado from near Slater in Moffat Co., but no specimens from Colorado have been seen; found in dry, open places, 7500-7800 ft. May-Sept. W.

***Mentzelia marginata* (Osterh.) H.J. Thoms. & Prigge**, COLORADO BLAZINGSTAR. [*Nuttallia marginata* Osterh.]. Perennial; stems 10-40 cm tall, erect, simple or branched; leaves lanceolate to oblanceolate, shallow to deeply lobed or dentate; petals 5, alternating with 5 petaloid stamens, 12-15 mm long, yellow, the outer ones hairy below; seeds 2.5-3 mm long, with a narrow wing 0.15-0.3 mm wide. Found on clay, shale, and sandy slopes in the western counties, 4500-6800 ft. May-Sept. W.

There are two varieties of *M. marginata* in Colorado:

- 1a. Petals 5, alternating with 5 petaloid stamens bearing anthers; leaves generally wider, to 25 mm wide, not deeply lobed and merely crenate-margined...**var. *marginata***, COLORADO BLAZINGSTAR. Uncommon on clay and shale slopes in the western counties (Delta, Garfield, Mesa, and Montrose Cos.), 4600-6500 ft. May-Aug. W.
- 1b. Petals 5, alternating with 5 petaloid stamens not bearing anthers; leaves generally narrower, to 15 mm wide, deeply pinnately lobed with lobes 2-10 mm long, or sometimes just the basal leaves merely crenate-margined...**var. *cronquistii* (H.J. Thoms. & Prigge) N.H. Holmgren & P.K. Holmgren**, CRONQUIST'S BLAZINGSTAR. [*Nuttallia cronquistii* (H.J. Thoms. & Prigge) N.H. Holmgren & P.K. Holmgren]. Found on shale, clay, and sandy slopes in the southwestern counties (Dolores, Mesa, Montezuma, Montrose, San Miguel), 4500-6800 ft. May-Sept. W.

***Mentzelia multicaulis* (Osterhout) A. Nels. ex J. Darl.**, MANYSTEM BLAZINGSTAR. [*Nuttallia multicaulis* Osterh.]. Perennial from a woody branching caudex; stems 20-40 cm tall, diffusely branched, white; leaves lanceolate, entire to deeply pinnately lobed into narrow segments; petals 5, yellow, 7-20 mm long; seeds 1.5-3.5 mm long, essentially wingless. Found on dry or shale slopes, 5000-8700 ft. June-Aug. W.

There are two varieties of *M. multicaulis* in Colorado:

- 1a. Petaloid stamens oblanceolate or narrowly spatulate, gradually tapering to the base; leaves mostly entire...**var. *multicaulis***. Found on shale slopes and sandy roadsides, known from Eagle, Garfield, Grand, and Summit Cos., 5000-8700 ft. June-Aug. W.
- 1b. Petaloid stamens obovate to rhomboidal, abruptly tapering at the base; leaves mostly pinnatifid...**var. *uintahensis* N. Holmgren & P. Holmgren**, UTAH BLAZINGSTAR. Found on shale and limestone slopes, known from Mesa, Moffat, and Rio Blanco Cos., 5900-7200 ft. June-July (Aug.). W.

***Mentzelia multiflora* (Nutt.) Gray**, ADONIS BLAZINGSTAR. [*Nuttallia multiflora* (Nutt.) Greene]. Perennial; stems 40-80 cm tall; leaves 2-12 cm long, lanceolate to oblanceolate, pinnatifid; petals 10, 9-15 (20) mm long, pale yellow, cream-colored, or occasionally white; seeds 3-3.5 mm long, with a broad wing 0.7-1 mm wide, rough in appearance at 10X with numerous pronounced papillae. Common in the middle counties from the high plains to mountains, scattered in the westernmost counties, usually in sandy soil, 5000-9600 ft. May-Sept. E/W.

***Mentzelia nuda* (Pursh) Torr. & Gray**, WHITE-FLOWERED BLAZINGSTAR. [*Nuttallia nuda* (Pursh) Greene]. Biennial or perennial; stems 15-50 cm tall, branched or simple; leaves 3-5 cm long, lanceolate to narrowly elliptic, shallowly pinnatifid; petals 10, 20-50 mm long, white to cream, subtended by pinnatifid bracts; seeds 3-4.2 mm long, with a broad wing 0.8-1 mm wide, smoother in appearance at 10X with less pronounced papillae. Common on the eastern plains, 3500-6500 ft. July-Sept. E.

***Mentzelia oligosperma* Nutt. ex Sims**, CHICKEN-THIEF. Perennial; stems 20-70 cm tall, much-branched, white; leaves 1-6 cm long, triangular-ovate, coarsely toothed or sometimes the basal leaves somewhat lobed; petals 5, 8-15 mm long, orange to yellow-orange; seeds pendulous in the capsule, wingless, narrow, linear, with curved grooves. Found on rocky outcroppings at the base of the Front Range in Larimer Co., and on rocky slopes and canyons in the southeastern counties (Baca, Fremont, Las Animas, Otero, and Pueblo), 4000-5700 ft. June-Aug. E.

Mentzelia paradoxica, PARADOX VALLEY BLAZINGSTAR (undescribed species). Biennial or perennial; stems 40-80 cm tall; leaves 2-12 cm long, lanceolate to oblanceolate, deeply pinnatifid nearly to the midrib into linear lobes; petals 10, 9-15 (20) mm long, pale yellow or cream-colored; seeds 3-3.5 mm long, with a broad wing 0.7-1 mm wide, rough in appearance at 10X with numerous pronounced papillae. Uncommon on gypsum or shale soil, known from Montrose Co., 5500-6000 ft. W.

There are quite possibly two species represented here. *Mentzelia paradoxica* from Paradox Valley on gypsum soil with deeply lobed leaves with long lobes (4-9 mm), and an elongate terminal lobe (8-12 mm) that is 2-3 times as long as the other lobes. The other species is *M.* 'undescribed' from just south of the Delta/Montrose county line off of Peach Valley Rd. on Mancos clay shale. It has regularly and evenly pinnatifid leaves with shorter lobes (1.5-3 mm) and a short terminal lobe (2-3 mm) that is not more elongated than the other lobes. The fruit from the specimen from Peach Valley Rd. was not mature, but the wing appeared about 0.5 mm wide and the surface was probably rough. In addition, although the specimens are both in Montrose Co. they are separated by the Uncompahgre Plateau and occur on different substrates.

Mentzelia pterosperma Eastw., WINGSEED BLAZINGSTAR. [*Nuttallia pterosperma* (Eastw.) Greene]. Biennial or perennial; stems 10-20 cm tall, divaricately branched from the base; leaves 3-7 cm long, broadly oblanceolate to ovate, shallowly pinnatifid to dentate; petals 10, 10-15 (20) mm long, golden-yellow; seeds 3.5-4.7 mm long, with a broad wing 0.7-1.3 mm wide, appearing smooth at 10X. Uncommon on dry or shale slopes, known from Delta, Garfield, Hinsdale, Mesa, Montrose, and San Miguel Cos., 4600-6500 ft. May-Aug. W.

Mentzelia pumila Nutt. ex Torr. & Gray, WYOMING STICKLEAF. Biennial or short-lived perennial; stems 20-60 cm tall, mostly branched above; leaves lanceolate to oblong, 9-15 (20) cm long, shallowly pinnatifid to sinuate-dentate; petals 10, 9-15 mm long, yellow; seeds 2.5-3.5 mm long, with a narrow wing 0.15-0.35 mm wide, smooth or somewhat roughened in appearance at 10X with less pronounced papillae. Uncommon in dry, open places in sandy soil, barely entering Colorado in northwestern Moffat Co., 5500-7900 ft. May-Aug. W.

Mentzelia reverchonii (Urb. & Gilg) H.J. Thomp. & Zavort., REVERCHON'S BLAZINGSTAR. [*Nuttallia reverchonii* (Urb. & Gilg) W.A. Weber]. Perennial; stems to 100 cm tall, white, branched above; leaves lanceolate to oblong, shallowly pinnatifid to dentate; petals 10 or more, 10-30 mm long, golden-yellow; seeds 3.5-5 mm long, with a broad wing ca 1 mm wide. Uncommon on the shortgrass prairie in the southeastern counties (Bent, Las Animas, Prowers), 3800-5500 ft. May-Aug. E.

Mentzelia rhizomata Reveal, ROAN CLIFFS BLAZINGSTAR. [Colorado specimens were previously misassigned to *M. argillosa* J. Darl.]. Perennial from rhizomes; stems 10-25 cm tall, widely spreading, freely branched, white; leaves 1.5-4.5 cm long, lanceolate to obovate, entire or shallowly sinuate-dentate; petals 5, alternating with 5 petaloid stamens, 9-15 mm long, yellow; seeds 2-3 mm long, with a narrow wing 0.2-0.3 mm wide, minutely papillate. Found on talus and shale slopes of the Green River Formation on the Roan Plateau (Garfield Co.), 5500-9100 ft. June-Aug. W. Endemic.

Mentzelia rusbyi Woot., RUSBY'S BLAZINGSTAR. [*Nuttallia rusbyi* (Woot.) Rydb.]. Biennial or short-lived perennial; stems 20-50 cm tall, white, branched above; leaves 5-25 cm long, oblanceolate to oblong, entire to shallowly sinuate-dentate; petals 5, 15-30 mm long, creamy yellow; seeds ca 4 mm long, with a broad wing 1-1.5 mm wide. Found in dry, open places, along roadsides, scattered in the intermontane basins across the state, absent from the eastern plains, 6000-9500 ft. June-Sept. E/W.

Mentzelia speciosa Osterh., JEWELLED BLAZINGSTAR. [*Nuttallia speciosa* (Osterh.) Greene]. Biennial or perennial; stems 30-50 dm, branched above; leaves 8-15 cm long, linear to oblong-lanceolate, shallowly sinuate-dentate to dentate-pinnatifid; petals 10, 15-20 mm long, yellow; seeds 3-3.5 mm long, with a broad wing 0.7-1 mm wide, smooth in appearance at 10X. Common along the Front Range and high plains on rocky slopes or in sandy soil, 5000-9000 ft. June-Aug. E.

Mentzelia speciosa and *M. sinuata* have traditionally been separated as distinct species based on the work of Hill (1976). However, these two species are extremely difficult to separate based on the characteristics provided by Hill (see key below). Specimens have been seen with a mixture of characteristics from each species, and it seems that assignments to either species are rather arbitrary based on which leaves on the plant one is examining. In addition, the ranges of the two species completely overlap and there are no discernable differences in seed characteristics. Leaf morphology in the genus *Mentzelia* is quite variable, and thus I am including *M. sinuata* as a variety of *M. speciosa*:

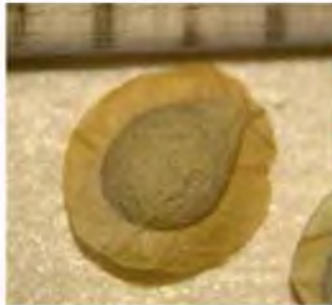
- 1a. Upper leaves linear to linear-lanceolate, much smaller than the lower leaves, the teeth usually acute...**var. speciosa**, JEWELLED BLAZINGSTAR. Common along the Front Range and high plains on rocky slopes or in sandy soil, 5000-9000 ft. June-Aug. E.
- 1b. Upper leaves wider, about the same size as the leaves below, the teeth usually obtuse or rounded...**var. sinuata (Rydb.) Ackerfield**, comb. nov., LEECHLEAF BLAZINGSTAR. [= *M. sinuata* (Rydb.) R.J. Hill; *Nuttallia sinuata* (Rydb.) Daniels]. Found in the northern Front Range and adjacent high plains (Boulder and Larimer Cos.), 5200-6900 ft. June-Aug. E.

Mentzelia thompsonii Glad, THOMPSON'S STICKLEAF. [*Acrolasia humilis* Osterhout]. Annual; stems 10-20 cm tall, simple or branched above; leaves lanceolate to ovate, to 7 cm long, entire or with a few shallow lobes; petals 5, 1-4 mm long, yellow; seeds irregularly angled, 1.5-2 mm long. Rather uncommon, found on dry, clay and shale slopes, 4900-8600 ft. May-June. W.

Sample figure for *Flora of Colorado*
Mentzelia seeds:



Mentzelia chrysantha seed



Mentzelia densa seed



Mentzelia dispersa seeds



Mentzelia laciniata seed



Mentzelia laevicaulis seed



Mentzelia multiflora seed
(rough in appearance)



Mentzelia oligosperma
seeds in capsule



Mentzelia pterasperma
seed



Mentzelia pumila seed



Mentzelia reverchonii
seed



Mentzelia rusbyi seed



Mentzelia speciosa seed
(smooth in appearance)

Conservation Corner: Oil, Gas, Native Plants and US

by Mo Ewing



"On March 2013, "Citing what he calls "overwhelming support", U.S. Sen. Michael Bennet introduced a bill seeking to limit oil and gas development in the 221,000-acre Thompson Divide area south of Glenwood Springs."¹ And then on June 25, 2013 in a different part of Colorado, "The La Plata County Commissioners voted 2-1 to send a letter to BLM's Helen Hankins, asking the agency to hold off on leasing the 12 parcels until it's completed

Photo by Gifford Ewing www.ewingphoto.com

a master leasing plan, which would cover where and how oil and gas development occurs in the area."¹ These are but two of many examples of the increasing number of conflicts occurring in Colorado around energy development.

In the case of La Plata County, in February 2013, Helen Hankins, the Colorado Director of the BLM, offered to lease 12,100 acres of BLM land to energy companies for oil and gas development. Some of the parcels were within eight miles as the crow flies from the entrance of Mesa Verde National Park. Because Mesa Verde National Park has over 4,000 archeological sites, the Forest Service and others in the area expressed concerns about oil and gas development so close to the park.²

The BLM withdrew the leases from the February sale according to BLM spokeswoman Vanessa Lacayo, and after addressing the concerns, resubmitted them for sale in November, saying that the parcels may have more conditions for development attached to them than they did in February. The resubmission of the parcels lead to the County Commissioners letter cited above.

The parcel sale was posted from August 16-30 during the "protest period" for public input.

The position taken by the La Plata County Commissioners makes very good sense. BLM lands are owned by all of us, and in that respect we all should have a right to help decide which of the lands that the BLM owns are appropriate for energy development (whether oil and gas or renewable energy like solar and wind) and which should be set aside to preserve other valuable biologic, geologic or archeological resources.

In the case of the Thompson Divide the situation was somewhat different. In 2003 the BLM sold 25 oil and gas leases to SG Interests and Ursa Resource Group for oil and gas development. Many of these leases were not considered to be very valuable as they were purchased for the minimal allowable bid of \$2.00 per acre. In the intervening years none of these leases were developed. Under normal circumstances oil and gas leases expire after ten years if they are not developed. However, both

companies wished to maintain their hold on the leases in case they wanted to develop them in the future so they asked the BLM to "suspend" the leases allowing them to hold them beyond their termination date. In May, the local BLM field office granted the suspension, allowing the companies to keep their leases for an additional year.

Wilderness Workshop, Pitkin County, the town of Carbondale and the city of Glenwood Springs filed appeals to the BLM to overturn the BLM field office's decision.³ This, and other actions by the local communities, led to Bennet's filing a bill in the US Senate to protect Thompson Divide from further oil and gas development. Thompson Divide, located just southwest of Carbondale, is an area that the local communities rely on for tourism. In addition, it contains excellent mid-level wildlife habitat, grazing lands for several ranches and roadless back-country territory. The Thompson Divide Coalition, a citizen's group opposed to oil and gas development, has even offered to buy the leases from the companies.



Photo by Gifford Ewing www.ewingphoto.com

Like the areas around Mesa Verde, areas such as the Thompson Divide should be part of a larger planning process that determines which areas of our state are appropriate for energy development and which areas should be preserved for other uses. In addition it is very important that the BLM steer a balanced approach in its decisions on land use and not overturn its own policies to favor energy development. In addition to the questionable lease suspensions, 82 of the leases originally sold on Thompson Divide did not take into consideration National Environmental Policy Act (NEPA) environmental analyses that were conducted in 1993 before the drafting of the 2003 leases.⁴ This may have been a violation of the law.

In her confirmation hearings this spring, Sally Jewell, the new Secretary of the Interior, said "that we would listen to people on the ground about what they want for the lands around their areas, what are the special places that they feel strongly should be conserved, what are the areas that have high potential for development."⁵ Let us hope that she follows up her words with action.

In the middle of this maelstrom of titanic forces, tourism, ranching, hunting, outdoor recreation, counties, cities and towns vs. oil and gas development sit our little native plants and plant

communities. The Colorado Native Plant Society is one of their main advocates but we are a pretty small voice in all of this. If we were to be more of a force we would need a lot more resources than we have.

For now, if we wish to comment on any oil and gas leases (the BLM offers scores of leases quarterly) we are told to be very specific and discuss particular plants and particular locations. To do that would require full-time staff with GIS capability. It would also require access to the Colorado Natural Heritage Program's GIS database of rare plant and plant community locations. But we only have volunteers and we only have free access to the Heritage Program's list of rare plants and plant communities by map quad. Detailed information will only be provided if we pay a \$250 base fee plus \$100 per species. This is clearly beyond our budget.

So we know that *Penstemon breviculus* lives within eight miles of the entrance to Mesa Verde National Park as do *Populus angustifolia/Alnus incana* woodlands. We know that *Platanthera sparsiflora* var. *ensifolia* (*Platanthera tescamnis*) lives somewhere up in the Thompson Divide as do *Abies lasiocarpa/Rubus parviflorus* (*Rubacer parviflorum*) forests, but we don't know exactly where they live. And even if we did, the Heritage program is unlikely to know all of the locations where these occurrences are found. It is no accident that so many rare plant and plant community locations are documented near roads and trails. There are lots of places in Colorado where we haven't even looked yet. That is why we need to protect large areas of contiguous ecosystems from any kind of development; and that's why we should step back and do some thoughtful planning about which areas should be left untouched for future generations to enjoy.



Penstemon breviculus
Photo © Al Schneider www.swcoloradowildflowers.com

Footnotes:

- 1 Dennis Webb. "Bennet offers Thompson Divide bill". *The Daily Sentinel*. 22 March 2013. Web. 6 July 2013. <<http://www.gjsentinel.com/breaking/articles/bennet-offers-thompson-divide-bill/>>.
- 2 Cathy Proctor. "Feds to re-offer oil and gas leases near Mesa Verde National Park". *Denver Business Journal; Energy Inc Newsletter*, 28 June 2013. Web. 6 July 2013. <http://www.bizjournals.com/denver/blog/earth_to_power/2013/06/feds-to-re-offer-land-near-colorados.html?page=all>
- 3 Scott Conden. "Appeals filed over Thompson Divide Plan". *AspenTimes*. 7 May 2003. Web. 8 July 2013. <<http://www.aspentimes.com/news/6417834-113/leases-gas-divide-thompson>>.
- 4 Tim Mutrie. "BLM: Problems exist with some Divide gas leases". *Aspen Daily News Online*. 10 June 2013. Web 8 July 2013. <<http://www.aspendailynews.com/section/home/158243>>.
- 5 Lee Davidson. "Visiting Utah, Interior Secretary urges balanced federal land use." *Salt Lake Tribune*. 28 June 2013. Web. 8 July 2013. <<http://www.sltrib.com/sltrib/politics/56528756-90/areas-balance-balanced-federal.html.csp>>

2013-2014 WORKSHOPS

The Colorado Native Plant Society workshops are exceptional learning experiences for professional and amateur botanists alike. Our speakers are experts on Colorado flora and are very generous in sharing their knowledge and time. They come with plant samples and hands-on exercises designed to expand your plant identification skills and ecological understanding.

Workshops are held at various locations, usually along the Front Range. The cost is \$25 for members. **To register, visit www.conps.org. Click on the Activities/Workshops page.** You can pay with Paypal or credit card, or send a check made payable to CoNPS to: CoNPS, c/o Linda Smith at 4057 Cottonwood Dr, Loveland, CO 80538.

Workshops begin at 9 a.m. and end between 2 and 3 p.m. We suggest participants bring a lunch and any other materials, as noted below, for each workshop. Each workshop has a limited number of seats -- usually between 12 and 20, depending on location. We encourage you to register early.

Workshops are organized by CoNPS Workshop Coordinator Linda Hellow with input from Workshop Committee Members: Steve Olson of Pueblo West; and Denise Wilson of Golden. If you have suggestions for future workshops or if you would like to join the committee, please contact Linda Hellow at

conpsworkshops@gmail.com. For any questions regarding registration, please contact Linda Smith at conpsoffice@aol.com. For questions about workshop content or locations, please contact Linda Hellow at conpsworkshops@gmail.com.

Please check the website periodically for updates and additional workshops.

Restoration Case Study

Saturday, October 5, 2013

9 am to 3 pm

Jefferson County Extension Office, Golden

Presenter: Andy Herb

Ecologist Andy Herb takes us on a tour of the 100-acre Harriman Reservoir site where he led Denver Water's effort to re-establish five acres of wetlands and three acres of riparian habitat after raising the water level in the lake three feet. The work involved the removal of invasive Russian olive; treatment of numerous other noxious weeds, extensive earthwork, the salvage and planting of almost 10,000 trees and shrubs, the planting of more than 6,500 wetland plants and 3,500 other shrubs, and seeding riparian and upland areas. On-going

Continued on page 16

2013-2014 CoNPS Workshop Schedule (cont. from page 15)



Photo by Andy Herb

Restoration Case Study

(cont. from page 15)

work involves noxious weed mapping and management, and vegetation monitoring to measure plant diversity and cover using both line-intercept and modified Daubenmire methods. In 2012, Andy identified 138 plant species at the site! We'll discuss the circumstances that created such diversity, and the construction and monitoring of this unique site. We will start the workshop in the classroom where Andy will provide an overview of the project. Then, we'll go to the nearby site to investigate the developing plant communities and discuss the successes and failures experienced so far.

Andy Herb has over 14 years of experience working as an ecologist in the Rocky Mountain Region and internationally. As the owner of *AlpineEco*, an ecological consulting firm, his work focuses on wetland, wildlife, and vegetation studies. He is the owner of the new *AlpineEco Nursery*, which provides wetland and riparian plants and installation services for restoration projects. He is the president of the Rocky Mountain Chapter of the Society of Wetland Scientists.

Sagebrush of Colorado

Saturday, November 2 or Sunday, November 3, 2013
Colorado Natural Heritage Program Office, Colorado State University, Ft. Collins

Presenters: Bernadette Kuhn and Pam Smith

The sagebrush of Colorado plays a significant role in the ecology of our landscape. Its management can be very important and the subspecies are crucial to diagnose because they deal with disturbance, fire and different management practices very differently. Spectacular wildflowers, including rare plants, and animals are found in sagebrush. Join us as we take you through some of the fascinating aspects of this group of plants and offer you some fun and easy tricks to identify, down to subspecies, some of the most common woody species of sagebrush in our state. You will receive a workbook and a variety of keys to take with you and we will provide you with the most current information on this aromatic group of plants. Bring your hand lens, lunch and prepare to fall in love with the sagebrush of Colorado!



Photo by Sally L. White

Bernadette Kuhn and **Pam Smith** are botanists with the Colorado Natural Heritage Program where they monitor more than 500 globally and/or state imperiled plants.

Lichen Biology -- Exploring a Remarkable Symbiosis

Saturday, December 7 or Sunday, December 8
9 am to 3 pm at CU Boulder Campus, Boulder
Presenter: Erin Tripp, PhD

Unlike other forms of life, lichens have capacity to colonize nearly all terrestrial habitats on Earth. They are prominent constituents of tropical to arctic, and alpine to desert environments, and of regions where plant and vertebrate life are lacking altogether. Lichens and the microcosms they support contribute crucially to ecosystem function. Their roles in biogeochemical cycling and environmental health monitoring (as bioindicators) have been particularly well studied. In this workshop, we will learn basic lichen biology, taxonomy, and ecology. Bring lunch, a hand lens, and the field guide *Common Rocky Mountain Lichens* (by Larry St. Clair) if you have it (CoNPS sells it and it will be available at the workshop), or any other lichen books you have on hand. Come prepared to explore this fascinating microcosm through a microscope.

Erin Tripp is the Curator of Botany (COLO Herbarium) of the CU Museum of Natural History as well as Assistant Professor of Ecology & Evolutionary Biology (EBIO). Her research focuses on the diversity and evolution of flowering plants (particularly Acanthaceae). Additionally, she is keenly interested in the North American lichen biota.

Continued on next page

Introduction to Asteraceae Identification

January or February 2014
Denver Metro Location
Presenter: Lindsey Brandt

One of the largest of plant families, the Asteraceae can be confusing to the beginning botanist due to family-specific terminology (what is a pappus, anyway?) and the presence of compound flower heads. This workshop will help to familiarize participants with the terms frequently found in aster keys and provide some hands-on samples for examination. While many species are easily recognizable as members of the Aster family, we will also review some species that might not, at first look, seem like they belong to the Asteraceae.

Lindsey Brandt is an environmental consultant who specializes in vegetation. She has been practicing her botany skills in Colorado for more than 10 years. If she ever forms a band, she would like to call it "Grasses and Asters."



Loraine Yeatts of DBG collecting plants Photo by Charlie & Jan Turner

Introduction to the Buckwheat Family

January 2014
CSU Extension, NRCS Building in Longmont
Presenter: Rich Scully

This workshop will present an overview of the Polygonaceae plant family in Colorado. The family includes the buckwheats, docks, knotweeds, smartweeds, and more. We will study the terminology and morphological characteristics used to describe and separate the genera and species, using representative plants, mainly from the Front Range.

Rich Scully enjoys the study of Front Range species and sharing his work with others. This will be his seventh workshop for CoNPS.

The Wonderful World of Cyperaceae

February 2014
CSU Boulder Extension Office, Longmont
Presenters: Denise Culver and Pam Smith

Does the word perigynia scare you? What is a stylopodium? If these and other terms make you want to run, we promise this workshop will give you what you need to navigate the Cyperaceae key with confidence. We'll enter into the amazing world of sedges, spikerushes, cottongrasses, and bulrushes. Bring your *Colorado Flora*, *Field Guide to Colorado's Wetland Plants*, hand lens and be ready to have fun and laugh with our "achene" sense of humor. (Both books will be available for sale at the workshop.)

Denise Culver has been a botanist/ecologist for more than 20 years and is an ecologist for the Colorado Natural Heritage Program. She has recently published the *Field Guide to Colorado's Wetland Plants: Identification, Ecology and Conservation*. **Pam Smith** is a botanist for the Colorado Natural Heritage Program where she monitors more than 500 globally and/or state imperiled plants and studies biodiversity.

How to Collect Native Plants

March or April 2014
Ft. Collins and Denver Metro Area
Presenters: Steve Popovich, Melissa Islam and Pam Regensberg

Collecting our native flora is necessary for scientific study. But how can it be done without harming our sometimes fragile populations? When and where is it legal to collect? This workshop will cover how to acquire the proper permits, determine land ownership, and avoid collecting sensitive species. We'll also walk you through the process of collecting scientific specimens, including how to take field notes. This workshop is perfect for those conducting workshops, field trips or field studies.

Steve Popovich is the Acting Regional Botanist for the Rocky Mountain Region, and Forest Botanist/Rare Plant & Invasive Species Program Manager for Arapaho & Roosevelt National Forests and Pawnee National Grassland. He has 25 years in natural resource management of public lands, primarily focusing on the conservation and management of rare plants and plant communities in the West.

Melissa Islam, PhD, is the Associate Director of Research & Head Curator at the Kathryn Kalmbach Herbarium at Denver Botanic Gardens. Her research explores questions about the diversity and ancestry of plants in the Southern Rocky Mountain region and similar regions around the world. **Pam Regensberg**, MS, is the Curatorial Assistant at the Kathryn Kalmbach Herbarium at Denver Botanic Gardens. Her research focuses on understanding and conserving biodiversity.

Beardtongues of Colorado: A Primer on Penstemon

March or April 2014
Location to be determined
Presenter: Craig Freeman

Penstemon (Plantaginaceae) is the third largest genus of flowering plants in North America north of Mexico; only *Carex* and *Astragalus* contain more species. Admired for their showy flowers and often dazzling displays, many species are distinguished by

Continued on page 18



Penstemon griffinii Photo by Dave Elin

subtle characters that challenge even veteran botanists. Colorado boasts nearly one-quarter of the 238 North American species. Following an introduction to the morphology and taxonomy of the genus, we will explore the major sections and many of the species represented in Colorado. Samples of many species will be available for close examination by hand lens and dissecting scope. A basic knowledge of plant morphology and descriptive terminology is essential.

Craig Freeman is Curator in the R.L. McGregor Herbarium and Senior Scientist in the Kansas Biological Survey, both at the University of Kansas. He is the author of the treatment for *Penstemon*, which will be published in Volume 17 of the Flora of North America.

Meet Linda Hellow CoNPS Workshop Coordinator

Many of you have met Linda Hellow because, as the workshop coordinator, she attends all of the CoNPS workshops. Linda has dazzled people with her organizational skills and the variety of workshops she has made available to CoNPS members. She was asked to tell a bit about herself:



Photo by Eric Schwarzweiler

I've been a member of CoNPS for several years -- after I took the Native Plant Master courses. I almost went into horticulture in college but decided I was better suited in the arts rather than sciences. I do love plants and gardening though. I've met some lovely people in CoNPS and enjoying sponging off of everyone's knowledge.

Prior to motherhood, I worked as an editor for a magazine publisher and for a non-profit. For the last 15 plus years I've been a freelance writer. It has been a great way to still work while the kids are growing up. Most of my clients are non-profits and small businesses who need website copy or brochures and things.

Chapter Programs

METRO-DENVER CHAPTER

Left-Field Secret-Ninja Planting Techniques for Colorado Natives

Tuesday, September 24, 2013, 7 pm

Location: Englewood Public Library, Altenbach Room

Speaker: Kenton J. Seth

This may be the single most important horticultural lesson or technique that the instructor has ever learned. It essentially has revolutionized and made possible his current agenda.

We are all aware that native plants are promoted in gardens for being ideally suited to the local climate, but new native plants often fail for gardeners more often than traditional nursery plants. Why? Those botanical features that make a plant rugged in its natural setting may make it difficult to grow or plant in an urban setting. This lecture and demonstration seek to provide an alternative method specifically developed in our climate that improve survival and speed of establishment of new plants to a truly shocking degree.

Drawing from the conservation sector and from results (success and total failure) from the planting of hundreds of natives in dry landscape settings, this suite of planting techniques will include but not be limited to the bare root or near-bare root planting, infrequent establishment-waterings, use of sun shades, timing, pruning, and more.

Kenton J. Seth is a gardener and landscaper in Grand Junction, CO, who almost exclusively plants natives there and in Denver. He specializes in unwatered landscapes and rock-gardens. He has worked for Timberline Gardens in Arvada, Chelsea Native Plant Nursery in Clifton (Grand Junction), and the Western Colorado Botanical Gardens leading up to this current experimental endeavor. Its trials, hopes, and errors are documented at kentonjseth.blogspot.com

Tuesday, October 22, 2013, 7 pm – Details to follow

Alpine Plant Ecology of New Zealand – Similarities and Differences with Colorado

December 3rd, 2013, 7 pm

Location: Englewood Public Library, Altenbach Room

Speaker: Catherine Kleier, PhD.

New Zealand and Colorado both have mountain chains with alpine regions. However, despite the similarities in biomes, the flora is very different. From January to June, Catherine had the opportunity to teach and work in New Zealand on the South Island at the University of Otago. Her main focus was three plants of the New Zealand endemic genus *Raoulia* [Asteraceae]. These plants are commonly known as “vegetable sheep” both for the softness of the leaves, due to heavy pubescence, and because from a distance, these plants might look like sheep grazing on the

mountainside. Catherine will make some general comparisons between Colorado and New Zealand plant communities in general, then in the flora specifically, and finally, she will discuss her research with the vegetable sheep.

Catherine Kleier has been a CoNPS member since first moving back to Colorado after completing her Ph.D. at UCLA, in 2001, under Dr. Phil Rundel. She completed her undergraduate degree at the University of Colorado –Boulder and her M.S. degree at Oregon State University. Catherine has been on the faculty at Regis University since 2006, where she teaches Ecology and a variety of other courses. The work she will discuss resulted from a Fulbright that she was awarded in 2013 for travel to New Zealand as part of her sabbatical. Catherine's Colorado research focuses on environmental monitoring in Breckenridge and collaborative monitoring of alpine restoration projects with the Colorado Fourteeners Initiative.

Tuesday, January 28, 2014, 7p.m. – Details to follow

Tuesday, February 25, 2014, 7p.m. – Details to follow

Tuesday, March 25, 2014, 7p.m. – Details to follow

Tuesday, April 29, 2014, 7p.m. – Details to follow

NORTHERN CHAPTER



Zimmerman Lake Field Trip Photo by Connie Gray

The Northern Chapter is exploring new ground, so to speak: beginning with our initial fall meeting on Thursday, October 3, we will be alternating the meeting location between the Gardens on Spring Creek in Fort Collins (where we have been meeting for some time) and High Plains Environmental Center in Loveland (located in the Centerra development near I-25). So please make sure you check our monthly e-newsletter and/or the website before you come to make sure you are heading to the right location! We will continue to meet on the first Thursday of each month (with some exceptions depending on holidays and such). Please be sure to check the monthly chapter e-newsletter or the CoNPS website (<http://www.conps.org/Chapters/northern.shtml>) for updates and more detailed information before the event. If you would like to be added to the chapter's e-newsletter

distribution list, contact Connie Gray at cpowersgray@gmail.com

NoCo Natural Festival, Fossil Creek Open Space

Date: Saturday, September 21, 9 a.m. - 3 p.m.

CoNPS will have a booth at the NoCo Nature Festival (the new expanded version of the NoCo Birding Fair). We have been asked to provide an activity, so we will have an assortment of flowers, fruits, and other plant parts and various types of magnifiers so we can get people looking at plants up close and personal! I really need some assistance! I would like commitments of 2-3 hours, but any time you can give would be a great help. Please contact me (cpowersgray@gmail.com; 678-230-3672) For more information about the Festival: http://www.larimer.org/naturalresources/nature_festival.htm

Fall Meeting Season Kick-off!

Thursday, October 3, 2013, 5:30 p.m. for social and snacks; 7 p.m. for beginning of meeting

Location: High Plains Environmental Center, 1854 Piney River Dr., Loveland, CO 80538

Speaker: Connie will facilitate, but you are all invited to be presenters!

We continue the tradition of starting off the meeting season with a casual and participatory gathering. Bring your summer photos and/or stories to share with the rest of us. Please load photos or other media on a USB drive.

Watershed Restoration after High Park Fire: Dozens of Lessons Learned After One Growing Season, Miraculous Natives, and More

Thursday, November 7, 2013, 7 p.m.

Location: The Gardens on Spring Creek, 2145 Centre Ave. Fort Collins, CO 80526

Speaker: John Giordanengo

The title speaks for itself! This will be a great opportunity to learn about the trials and tribulations involved in Emergency Watershed Restoration efforts after a natural disaster that was way too close for comfort for most of us. Besides the nuts and bolts of standard post-fire restoration efforts, the botanical/ecological trade-offs between natural post-fire succession and active restoration will be explored. Hot-off-the-press post-fire restoration research findings will also be shared.

Set upon a life-long path in conservation, John Giordanengo became waylaid by a plant systematics class in San Diego, a cupid of sorts, making him fall in love with Earth's photosynthetic wildlife. And then it struck like lightning, when, as a volunteer on the Green River in Washington State, John discovered how to make a solid move on his love affair with plants, and keep a foot in the conservation game to boot. Ecological Restoration! Back to school in 2000, John completed an MS in Ecological Restoration at CSU, fell to his knees before the flora of Colorado (literally, clipping blue grama and buffalo grass on the plains), and was fortunate enough to assume restoration roles with the City of Boulder, Colorado Fourteeners Initiative (more hands and knees on the ground), and finally Wildlands Restoration Volunteers where he serves as Northern Regional Director (www.wlrv.org). Throughout this decades-

long affair with plants, John has been a member of the Colorado Native Plant Society, serving as a Board Member for three years, and currently serves on the High Altitude Revegetation Workshop committee. Yes, plants are a passion. And working to preserve their rightful place in the world? A treat. And once in a great while, John still finds time to grab a lens and, for the pure joy of it, gazes at the intricate beauty of the flower of a monument plant.

Landscape Design and Successful Cultivation of Rocky Mountain Native Plants

Thursday, December 5, 2013, 7 p.m.

Location: High Plains Environmental Center,
1854 Piney River Dr., Loveland, CO 80538

Speaker: Jim Tolstrup

Many of our chapter members have expressed interest in programs about landscaping/gardening with native plants. In this workshop, CoNPS member Jim Tolstrup will draw on his extensive experience designing with native plants in Larimer County since 1998.

Successful garden design requires knowledge of plants, soils, and water requirements, as well as the timing, color, height and other considerations in order to pair plants effectively. Gardeners, even those focusing primarily on native plants, can benefit greatly from traditional landscape design practices considering the overall form and structure of the garden, as well as detailed plant associations.

In this presentation, we will explore site design step by step and identify zones in your landscape based on hydrology, soil type, existing plants and other conditions in order to develop a garden plan. We will investigate seed preparation, seeding and transplanting various types of native plants, after-care during the establishment period, and long-term garden maintenance, as well as some of the environmental benefits derived from utilizing native plants.

For those who would like to plant wildflowers at home, Jim also will share native plant seeds that HPEC has collected for propagation.

Jim Tolstrup is Executive Director of the High Plains Environmental Center, a unique model for preserving native biodiversity in the midst of development, in Loveland, CO. As the State Outreach Chair for the Colorado Native Plant Society, Jim works to promote the conservation, restoration, and landscape use of native plants.

Scoping on the Trail – Plant Close-ups on the Hike and Back Home

Thursday, January 9, 2014 (NOTE THAT THIS IS 2ND THURSDAY IN JANUARY!)

Location: The Gardens on Spring Creek

Speaker: Cindy Henk

A great new technology seems to have been made for hiking botanists! The Proscope Mobile is a digital wireless handheld microscope that can transmit magnified live images instantly to up to 254 iPods, iPhones, or iPads on the trail – no wifi, G3, or G4 necessary! Well-lighted and focused images of microscopic

features – grass flowers, anthers, leaf hairs - can be observed and saved on your “devices” for on-site examination and discussion, and later documentation or publication. Cindy will provide a scope demonstration and hands-on opportunities. Bring a sample to scope! (Got an iDevice? Bring that, too!)

Cindy Henk has had a 40-year career as a biologist/microscopist at the University of Georgia and Louisiana State University and is now gleefully discovering Colorado’s many tiny treasures. At LSU she oversaw science education outreach programs for K-12 students and teachers, undergrads, graduate students, and faculty using various types of microscopy from her research service lab. In 1992 she began helping to develop a handheld microscope for educational applications, and since then has never been without a handy scope or two. And you can borrow them! You can contact Cindy at cindy.henk@gmail.com for more information.

PLATEAU CHAPTER

Asteraceae Lab

Saturday, October 19, 2013

Location: Colorado Mesa University Herbarium

Speaker: Stephen Stern

As the field season draws to a close we will have a classroom-based study of the Asteraceae (Sunflower or Daisy family). This large, daunting group is an important component of our fall flora and species are actually quite fun to identify! We will meet at Colorado Mesa University for a brief discussion of this family followed by time to work on identifying species of Asteraceae using your flora, dissecting microscopes, and the herbarium. We will also meet to discuss field trips for 2014. If interested, contact Stephen Stern at stern.r.stephen@gmail.com.



Gaillardia aristata

USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. 3 vols. Charles Scribner's Sons, New York. Vol. 3: 512.

BOOKS & MEDIA

Meet the Natives Through Walter Pesman

by April Miller

Meet the Natives by M. Walter Pesman is a unique reference manual that is not only a handy field guide to Rocky Mountain plants, but a source of information on incorporating these native plants into our gardens and landscapes. Highlights of the current iteration (revised and expanded by Denver Botanic Gardens Curator of Native Plants Dan Johnson) include beautiful photographs of each plant described, organization of herbaceous flowering plants by color to speed identification, information on common and useful native grasses, and discussion of imported and rare plants. Have you ever reflected, however, on the origins of this publication (now in its 11th printing) and why pioneering botanist and landscape architect M. Walter Pesman decided to create such a reference?

Who was M. Walter Pesman?

A native Dutchman, M. Walter Pesman was born Michiel Pesman in Groningen, the Netherlands, on May 28, 1887. After finishing high school, he suffered a bout of tuberculosis and followed the recommendation of his physician to relocate to a drier climate, which brought him to the United States and Colorado. Here he adopted the middle name of Walter (to forestall mispronunciation of his given name by his new American community) and was officially naturalized as M. Walter Pesman. He attended Colorado Agricultural College, now known as Colorado State University, and majored in botany. Graduating in 1910, he remained at the school for a time to teach botany and horticulture to others.

Pursuing aspirations to use his education toward more creative endeavors, Pesman decided to take work with the Chamberlain Landscaping Company in Denver, beginning his career as a landscape architect--and becoming known early on as an advocate for native plants and working with natural landscapes. In 1917, he joined like-minded (and fellow Netherlander) S.R. DeBoer for a time, collaborating on park planning and private projects. When they parted ways in 1924, Pesman directed his focus on landscape planning for the public schools of Denver, becoming their first "landscaper".

The Great Depression eventually shut down landscape work for the schools, but Pesman transferred his efforts to revegetating eroding highway slopes and creating highway parks for the state and federal governments, always continuing his endeavors to promote conservation. According to close colleague George Kelly, "At first he had difficulties in getting plans approved in Washington that have native plants in them, for they were unknown back there. Later when the survival lists were checked, nothing but natives would be approved."

Pesman tirelessly worked to advocate the importance of conserving natural environments and of utilizing indigenous beauty. In 1943 he became president of the Colorado Forestry Association and was instrumental in the consolidation of forestry, horticulture, gardening, and landscaping interests to form the Colorado Forestry and Horticulture Association--and was then influential in the merging of this organization with the Denver Botanic Gardens. He also educated through published articles and papers, and by presenting talks internationally about Rocky Mountain natives. He was an early proponent of introducing Rocky Mountain plants to compatible zones in Europe (related work to conserve alpine and steppe plants throughout the world is continued by Denver Botanic Gardens staff today in South Africa, Patagonia, and Mongolia). One particular paper he presented at the Fifteenth International Horticultural Congress in Nice, France, in 1958 was titled "Little Known Ornamentals from the Land of the Rockies."

Throughout his years in Colorado, Pesman endlessly studied and documented the native plants of his adopted home near the Rocky Mountains. According to Wes Woodward (in a 1972 *Green Thumb* article titled "M. Walter Pesman"):

...Mrs. Pesman drove the car, stopped when Walter sighted a plant he hadn't recorded, waited while he examined it, and then



From left to right: Kathryn Kalmbach (in hat), Ruth Nelson, Unidentified person sitting in the back, Aven Nelson, Walter Pesman

Photo courtesy of the Helen Fowler Library and Archives

made notes while he described it. Back in Denver Orland Maxxon drew a picture from Walter's description and the dried remains of the plant.

The compilation of these notes and drawings was the genesis of *Meet the Natives*. Self-published in 1942 (Pesman sold copies directly from his home office at 372 South Humboldt Street) and consisting of plant descriptions organized by zones, color coding, and illustrated by drawings, it was instantly an essential reference for local plant enthusiasts and amateur botanists alike. With the aim of educating a wide audience on our region's native plants and how to use them in the horticultural landscape, the book was not intended as a complicated key or academic treatise. In fact, Pesman began the introduction of his book with the following, "Just between you and me – don't buy this book if you know too much. It is not a book for botanists..."

The list of M. Walter Pesman's contributions to horticulture, native plant conservation, and to the Rocky Mountain region are too numerous to recount in this article. With *Meet the Natives*, however, we can hold in our hands evidence of what he was trying to teach us and can see that his work continues with every new edition. Each of our landscapes planted with Rocky Mountain penstemon, Colorado blue spruce, and little bluestem grass is a tribute to his life's work. Perhaps this article is best closed with the words cast on the bronze plaque that stands at the head of the Mt. Goliath trail dedicated to M. Walter Pesman by the U.S. Forest Service and Denver Botanic Gardens shortly before he passed away in 1962:

M. WALTER PESMAN ALPINE TRAIL
DEDICATED AUGUST 1962
HE MADE NATIVE PLANTS OUR FRIENDS

April Miller has been Head Librarian and Archivist at the Helen Fowler Library, Denver Botanic Gardens for four years. Working as a librarian for more than ten years now, April began her career in Charleston, SC, where she obtained a B.A. in Biology and an M.L.I.S. (Masters in Library and Information Science) from the University of South Carolina

Meet the Natives: A Field Guide to Rocky Mountain Wildflowers, Trees and Shrubs

by M. Walter Pesman;
Revised and expanded by Dan Johnson

Meet the Natives is a guide to the identification of 500 plants (primarily native) that grow in Colorado. Native plants are defined as those that were in this area prior to settlement by Europeans. The 11th edition of Walter Pesman's classic book has been updated and expanded by Dan Johnson, Curator of Native Plants at the Denver Botanic Gardens. It is a significant departure from the previous editions because the line illustrations have been replaced by color photographs, the plants are arranged by color rather than life zone, and 100 plants



have been added. The names used in the current edition are from the U.S.D.A. (www.plants.usda.gov).

Comparing the 11th edition with my old, tattered 8th edition (1988), I found that the new edition of the book is 1/2 inch shorter and narrower and has 91 more pages. The 8th edition was updated by a committee representing the Kathryn Kalmbach Herbarium, and the line drawings are by Janet L. Wingate, Ph.D., based on Mrs. Emma A. Ervin's original paintings of the plant. Many of M. Walter Pesman's drawings were also included.

The 11th edition has more than 200 pages of color photos with 3 plants (3 entries) per page. The photographs are primarily those of well-known photographer/botanist/author, Loraine Yeatts, and by Dan Johnson, although some photos are by other photographers. Each entry includes one photo of a plant with the common and scientific name of the species, a brief description based on Pesman's original work, bloom time, life zone, and a place to write the date and where the plant was seen. Some entries provide tidbits about garden use.

Included in this book are a description of life zones in the Colorado Rockies, derived and modified from earlier editions, and descriptions of plant family characteristics of the more common families found in the area. The plants are grouped into categories: Ferns, horsetails, and spikemosses; grasses and grass-like plants; and trees and shrubs. These groups have green bars along the side of the page. Herbaceous flowering plants, vines, and cacti are combined in another section, which is arranged by flower color with the corresponding color bars on the side of the page. Within each color section, the plants are arranged alphabetically by family (common name) and species (scientific name).

A plant reference chart in the back of the book is also arranged alphabetically by family (common name) and species (scientific name) and indicates the location of the species (East and/or West Slope), if the plant is uncommon, preference for sun or shade, and whether it is found in riparian areas, moist meadows, or wetlands. Flower color and ease of cultivation are also noted.

Other features include an alphabetical list of some Latin or Greek terms used in plant names and their meanings (for example, *cereum* means waxy.) The book also contains a list of elevations of Colorado towns, peaks, passes and parks. The list of references and list of websites are useful for further research, and there is an illustrated glossary and index.

This book provides a good introduction to the native plants of Colorado. It contains photos and descriptions of plants that are likely to be encountered. If the plants in this book whet your appetite for growing native plants, a number of good books on native plant gardening are available: Busco and Morin's *Native Plants for High-Elevation Western Gardens* (2nd ed., 2010) published locally by Fulcrum, Robert Nold's *High and Dry: Gardening with Cold-Hardy Dryland Plants*, and Dorn & Dorn's *Growing Native Plants of the Rocky Mountain Area*. *Meet the Natives* and these gardening books may be purchased from the CoNPS Bookstore and will be for sale at the CoNPS Annual Meeting. For a complete list of books available from CoNPS, see the Book Order form (pp. 28-29). If you plan to purchase books at the Annual Meeting, please bring cash or a check. Charge cards are not accepted.

About the Author and Photographer:

Dan Johnson has been gardening for as long as he can remember, and has worked in the horticulture industry for more than 30 years. His broad experience and formal training now include sixteen years with Denver Botanic Gardens Horticulture Department, where he designs and maintains numerous native and xeric gardens, currently as Curator of Native Plant Collections and Associate Director of Horticulture.



Photo © Vickie Danielson

Dan's latest venture has been the revision and expansion of the wildflower guide *Meet the Natives*. Long a regional favorite first published in 1942 by M. Walter Pesman, this eleventh edition features full color photos for the first time, with a new color-searchable format. This expanded edition also includes over one hundred additional wildflowers, grasses and cactus. Rare plants as well as invasive plants are included. Gardening tips are included for native plants that thrive in the garden.

Loraine Yeatts combines botanical expertise with a life-long interest in nature and macro photography. Years of volunteer work in the Kathryn Kalmbach Herbarium at Denver Botanic Gardens and floristic surveys of Rocky Mountain National Park and other Colorado wildlands have nurtured a love affair with the Colorado flora and a deep concern for disappearing habitat. Most recently she, with others, recognized and described a new plant species, *Packera mancosana*, discovered in Dolores, Colorado.

With Janet Wingate she coauthored *Alpine Flower Finder*, a compact but relatively comprehensive field key to alpine plants of the Rocky Mountain region. The latest edition of *Meet the Natives* includes many of her photographs. It is her hope that these plant portraits will inspire you to study, appreciate and help preserve Colorado's native plants. Not surprisingly, Loraine is a long time member of CoNPS and the recipient, with her husband, Dick, of an Honorary Life Membership in 2000.

Review by Jan L. Turner



Photo © Bob Skowron

New Books by CoNPS Members

CoNPS members seem to produce a large number of books. Loving plants and loving books often seem to go together. In the past several months, two books by CoNPS members have been published, *Denver Mountain Parks* and *Wildflowers of Bandelier*.

Aquilegia Volume 37, No. 5 Fall 2013

Denver Mountain Parks: 100 Years of the Magnificent Dream

by Wendy Rex-Atzet, Sally L. White, and Erika D. Walker, with photography by John Fielder

Published in 2013, this book is a "must read" for anyone with an interest in the history of open spaces and mountain parks in Colorado. Readers will feel even more strongly about protecting the Denver Mountain Parks after learning the fascinating history presented in *Denver Mountain Parks: 100 Years of the Magnificent Dream*. I had known bits and pieces of the story, but this book brought the information together as a coherent whole, making a stronger impact. The architects/architecture and landscape architect/architectural history filled in some gaps for me. M. Walter Pesman's friend and associate, Saco DeBoer, played a role in the planning of the parks.



Creating and maintaining this system of mountain parks is something that Denver can be proud of. Talk about innovative and forward looking! The book is well written and researched. Fielder's photography and the striking and beautiful format will bring it to the attention of readers. It is a great book! It is available from the CoNPS Bookstore and will be sold at the CoNPS Annual Meeting.

Author Sally L. White is a contributor and proofreader for *Aquilegia* and is also a former editor of the newsletter. Sally has an M.S. in botany from Arizona State University and is employed by the Denver Mountain Parks. She is a writer with a passion for natural history and cultural history.

Review by J.L. Turner

Wildflowers of Bandelier

by Jan Loechell Turner and Charles A. Turner

The 4th in a series of wildflower guides focusing on specific parks and monuments, *Wildflowers of Bandelier* is a photographic guide to the more common plants found along the trails of Bandelier National Monument, located northwest of Santa Fe, New Mexico, and south of Los Alamos, NM. Plants are arranged by flower color with plants that might be confused located next to each other. Multiple photos of each plant are included to show the entire plant and diagnostic features such as flowers, leaf shape or arrangement, and fruit. "Clues" point out distinguishing traits. Published in September 2013, this book will be available at the CONPS Annual Meeting and through the Bookstore.



Jan and Charlie Turner are past presidents of CoNPS and are on the CoNPS Board of Directors. Jan is the editor of *Aquilegia* and Charlie is on the *Aquilegia* team, providing outstanding tech support. Their books include *Wildflowers of Canyon de Chelly*, *Wildflowers of Mesa Verde*, and *Wildflowers of Red Rocks Park (Colorado)*.

News & Announcements

Temporary Boulder President

While Danielle Cassidy Levine is on maternity leave, from September through December 2013, Chris Prah will serve as Boulder Chapter President. Chris can be contacted at boulderconps@gmail.com.

2013 Photo Contest Winners

Congratulations to Benjamin Blonder and Marlene Borneman, winners of the 2013 CoNPS Photo Contest. Benjamin won the Plant Category with his photo of *Castilleja rhexifolia* (see inside of front cover) and Marlene won the Landscape Category with her Monkey Flower Landscape (on the back cover).

Native Plant Master Program Impacts

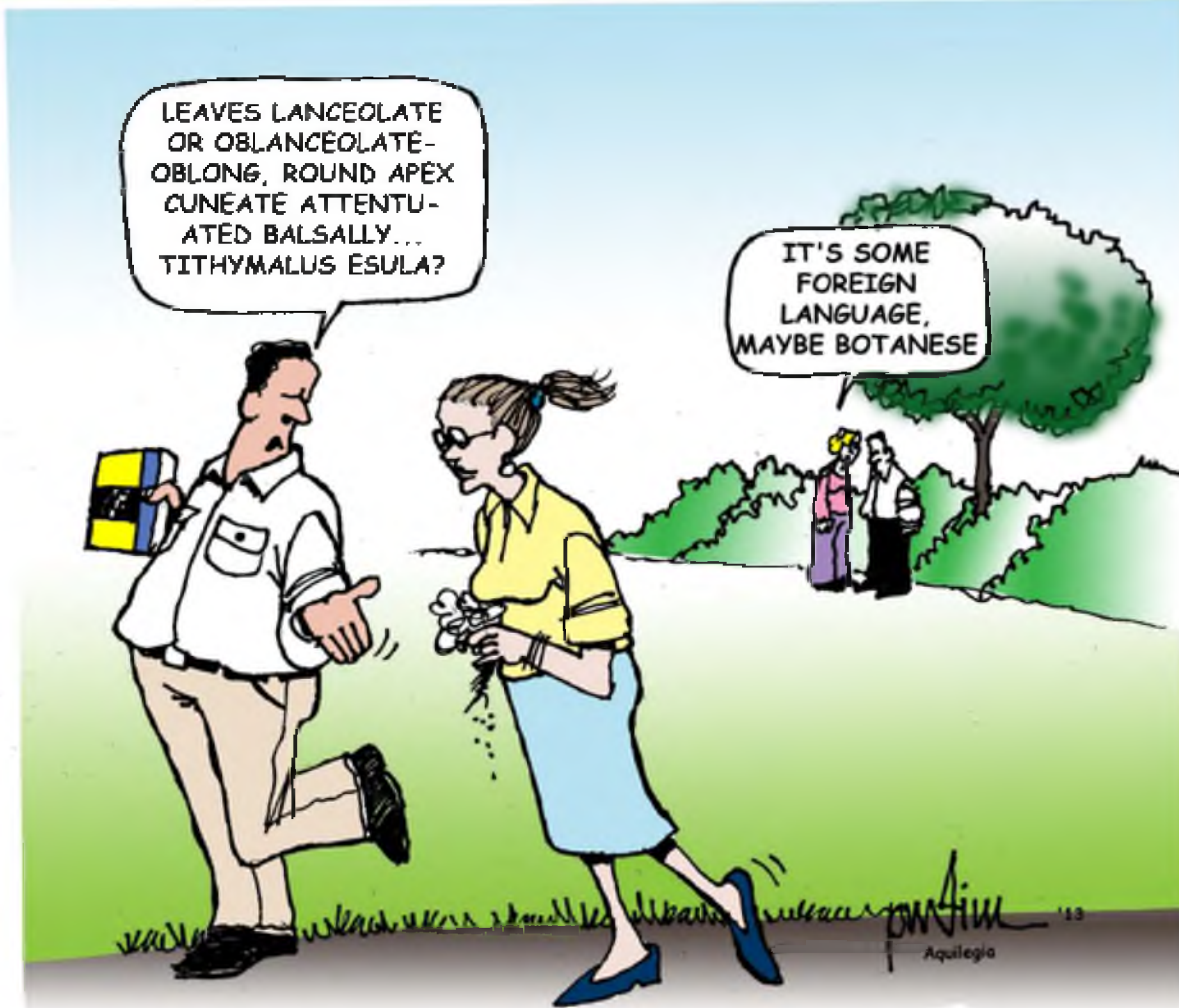
The Native Plant Master program was developed by Barbara Fahey as a program of the CSU Extension in Jefferson County and has expanded to all counties in Colorado. The program has

had a considerable educational effect on the citizens of Colorado and provides people with the opportunity to learn about native plants in the field as well as to recognize weeds and their effect on the environment. Information about the program can be found at <http://www.extension.colostate.edu/jefferson/npm/npm.shtml>

Impacts of the Native Plant Master Program in 2012:

1. 444,842 acres of sustainable landscaping or alien invasive weed control
2. \$157,398 statewide economic benefit due to reduced landscaping inputs and increased land productivity
3. 15,810 educational contacts
4. 814 program participants
5. 594 volunteers contributed 4,086 hours
6. 91% of participants increased awareness of 1) the use of natives for sustainable landscaping and 2) the impact of alien weeds
7. 88% educated others using information from the program
8. Cost/benefit in Jefferson County: \$1 budget investment = \$11.42 in economic benefit reported by participants

Botanicum absurdum by Rob Pudim



Rare Plant Monitoring



Michelle DePrenger-Levin instructs students Photo by Jan & C.A. Turner

On June 8, 2013, Brian Kurzel (Colorado Natural Areas Program) and Michelle DePrenger-Levin (Denver Botanic Gardens Research Department) taught a new group of Rare Plant Monitoring Stewards. The class began with a classroom session at the Denver Botanic Gardens followed by an afternoon field session led by Michelle, where students received hands on experience collecting data on a rare plant by monitoring transects.

Alpine Flower Finder

The Alpine Flower Finder by Janet Wingate and Loraine Yeatts is now available spiral-bound from the CoNPS Bookstore.

Impacts of Energy Development on Rare *Physaria*

The Colorado Natural Areas Program, BLM, and US Fish and Wildlife Service helped fund research performed by Utah State University, Logan, UT, which resulted in a masters thesis by Sarah L. Clark, "Reproductive Biology and Impacts of Energy Development on *Physaria congesta* and *P. obcordata* (Brassicaceae), Two Rare and Threatened Plants in the Piceance Basin, Colorado" (2012). Clark concluded that "Through the research, no detectable effects on plant reproduction or pollinator community around developed sites were identified. This lack of detection may be attributed to a small number of pollinators collected through this study. We may not have gathered a large enough sample to detect impacts that are occurring. This research also found that there are only a few bee species that pollinate these rare plants efficiently, so these species must be conserved in order to maintain rare plant reproduction." (p. vii of thesis).

Aquilegia Volume 37, No. 5 Fall 2013

Help Restore High Park Fire Area

As you may know, Wildlands Restoration Volunteers has been working closely with a broad range of partners to restore areas burned severely by the 2012 High Park Fire. The photo below shows a restored site that volunteers treated just last fall. Obviously, the green area is the area that volunteers treated with native grass seeds and mulch.

The treatments are working wonderfully, but there is just one problem. Scale. We have seven more projects scheduled over the coming two months, and hundreds more hands are needed help with this work. As the federal Emergency Watershed Protection program funds have become available for helicopter mulching of burned areas (beginning in early September), we need to get hundreds of volunteers out very quickly, spreading seed and installing erosion control structures before the helicopters arrive.

We can use your help and the help of your colleagues and peers to inspire the public to get their hands dirty this fall and achieve



Photo by John Giordanengo

the impacts witnessed in the photo. If you would like more information about this program or would like to volunteer, please contact John Giordanengo, Colorado Northern Regional Director, Wildlands Restoration Volunteers, Fort Collins, CO, john@wlr.org, 970-493-2075. Please spread the word to others who may be interested in volunteering.

Biographies by Dr. Bill Weber

Did you realize that Dr. William A. Weber writes biographies as well as floras? One of these, *The American Cockerell: A Naturalists Life, 1866-1948* is available through the CoNPS Bookstore.

Correction

The drawing of the mushroom on page 14 of the Summer 2013 issue of *Aquilegia* is an *Amanita*, not *Agaricus*.



Courtesy FCIT

Wildflower App

The *Colorado Rocky Mountain Wildflowers* app. reviewed in the Summer 2013 issue of *Aquilegia* (p. 9) is available for tablets and Kindles in addition to Smart Phones, iPhones, and iPads.

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
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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	edwardroland@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@suburbitat.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	shallopccq@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 Society Annual 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)

November 15 (Winter issue, sent out mid December)

Editor: Jan Loechell Turner JLTurner@regis.edu

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

Join the Colorado Native Plant Society



Membership in CoNPS entitles you to:

- Subscription to CoNPS newsletter, *Aquilegia*
- Field Trips to see wildflowers
- Educational Workshops by expert botanists
- Annual Conference
- Conservation and Restoration Activities
- Camaraderie of Plant Lovers from Colorado
- Local Chapter Educational Programs & Email Updates

MEMBER APPLICATION FORM

Name(s).....

Address

City.....State.....Zip

Phone ____ - ____ - ____ E-mail

MEMBERSHIP CLASS

Dues cover a 12-month period.

- Individual (\$20)
- Family / dual (\$30)
- Senior (65+) (\$12)
- Student (\$12)
- Organization (\$30)
- Supporting (\$50)
- Lifetime (\$300)

CHAPTERS

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

Send information about **volunteer opportunities**

OPTIONAL PRINT DELIVERY OF AQUILEGIA NEWSLETTER

Most members prefer to receive the newsletter electronically via e-mail (pdf file), and this saves the Society considerable printing and postage expense. If you would like to receive a print copy of the newsletter instead, check this box. Please note that print copies usually arrive about a week later than the electronic version. Please deliver a printed copy of *Aquilegia* by mail.

DONATION

\$ _____ 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

\$ _____ Myrna P. Steinkamp Memorial Fund: research and other activities to benefit the rare plants of Colorado

\$ _____ **TOTAL**

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.

COLORADO NATIVE PLANT SOCIETY MAIL ORDER FORM	September 3, 2013		
<i>Please email or phone to check on availability before placing an order: conpsoffice@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 Flower Finder (spiral-bound)	Wingate & Yeatts	\$9.50	\$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
Aspen Dreams	Gelhorn, J.	\$14.75	\$3.00
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
Denver Mountain Parks	Fielder & White	\$31.00	\$3.50
Dictionary of Word Roots	Borrer, D.J.	\$23.75	\$1.25
Edible Native Plants of the Rocky Mountains	Harrington, H.D.	\$28.50	\$3.00
Edible Wild Plants of the Prairie	Kindscher, K.	\$12.50	\$3.00
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
Flora of the San Juans	Komarek, S.	\$15.50	\$2.25
Garden Smart Colorado: A Guide to Non-Invasive Plants for your Garden	CO Weed Mgmt Assn, etc.	\$1.25	\$0.75
Gathering Moss: A Natural and Cultural History of Mosses	Kimmerer, R.W.	\$15.00	\$2.25
Grasses of Colorado (paperback)	Shaw, R.	\$27.50	\$3.25
Grow Native: Landscaping with Native and Apt Plants of the RM	Huddleston & Hussey	\$13.50	\$2.25
Growing Native Plants of Rocky Mountain Area (CD)	Dorn, R.	\$10.00	\$1.25
Guide to Plant Poisoning of Animals in North America	Knight, A	\$65.00	\$3.50
Handbook of Edible/Poisonous Plants of Western North America	Elliott, Brian	\$20.00	\$2.75
High and Dry, Gardening with Cold-Hardy Dryland Plants	Nold, R.	\$27.00	\$3.50
How to ID Grasses & Grasslike Plants	Harrington, H.D.	\$10.00	\$2.25
How to Identify Plants	Harrington et al.	\$10.00	\$2.25
How to Know the Mosses and Liverworts; Pictured Key Nature Series	Conrad & Redfearn	\$58.00	\$2.75
Illustrated Keys to Early Spring Wildflowers: Front Range	Wingate, J.L.	\$1.25	\$1.25
Illustrated Keys to the Grasses of Colorado	Wingate, J.L.	\$7.00	\$1.25
Intermountain Flora - Volume 2A - Subclasses Magnoliidae-Caryophyllidae	Holmgren, Holmgren, Reveal, et al	\$130.00	\$6.00
Intermountain Flora - Volume 2B - Subclass Dilleniidae	Cronquist et al.	\$91.50	\$4.25
Intermountain Flora - Volume 3A - Subclass Rosidae (except Fabales)	Cronquist et al.	\$69.00	\$3.75
Intermountain Flora - Volume 3B - Fabales	Barneby, R. C.	\$54.00	\$4.25
Intermountain Flora - Volume 4 - Subclass Asteridae (except Asteraceae)	Cronquist et al.	\$69.00	\$4.25
Intermountain Flora - Volume 5 - Asterales	Cronquist, A.	\$69.00	\$4.25
Intermountain Flora - Volume 6 - Monocots	Cronquist et al.	\$60.00	\$4.75
Island of Grass	Wohl, E.	\$20.00	\$3.00
Kingdom Fungi, The; Biology of Mushrooms, Molds and Lichens	Stephenson, S.	\$27.00	\$3.50
Land above the Trees	Zwinger, A.	\$13.00	\$2.75
Last Prairie, The: A Sandhills Journal	Jones, S.	\$18.00	\$2.75
Manual of the Plants of Colorado (CD version)	Harrington, H.D.	\$15.00	\$2.75
Medicinal Plants of the Desert & Canyon West	Moore, M	\$14.00	\$2.75
Medicinal Plants of the Mountain West	Moore, M	\$20.75	\$3.00
Medicinal Wild Plants of the Prairie	Kinscher, K.	\$12.50	\$3.00
Meet the Natives, A Field Guide to Rocky Mountain WF, Trees/Shrubs (Updated 2012)	Pesman/Johnson	\$19.00	\$3.50
Mountain Blooms, Wildflowers of the Rockies	Miller, M.	\$6.00	\$1.00
Mountain Wildflowers of the Southern Rockies	Dodson & Dunmire	\$14.50	\$2.25
Native Plants for High Elevation Gardens	Busco, J.	\$23.00	\$3.50
Natural History of the New World, A; Ecology & Evolution of Plants in the Americas	Graham, Alan	\$34.00	\$3.00
Northern Colorado Plants	Gadd, Alix	\$16.00	\$2.25
Plant Identification Terminology	Harris, J. et al.	\$17.00	\$2.75

COLORADO NATIVE PLANT SOCIETY MAIL ORDER FORM		September 3, 2013		
<i>Please email or phone to check on availability before placing an order: conpsoffice@aol.com 970-663-4085</i>		Author	Sales Price	Ship/Handling
Prairie Garden	Brune, R.	\$6.00	\$1.25	
Prairie Thunder	Showalter, Dave	\$16.00	\$2.25	
Rocky Mountain Flower Finder	Wingate, J.L.	\$5.75	\$1.25	
Rocky Mountain Mushrooms, Edible and Poisonous	Miller, M. & Nelson, C.	\$6.00	\$1.25	
Rocky Mountain Tree Finder	Watts., T.	\$3.50	\$1.25	
Rocky Mountain Wildflowers: Colorado Mountain Club Pack Guide	Ells, J. & Borneman, M.	\$10.50	\$2.50	
Rocky Mountain Wildflowers: Photos, Descriptions & Early Explorer Insights	Pavia, Jerry	\$14.95	\$3.00	
Simplified Guide to Common Colorado Grasses, A	Wingate, J.L.	\$3.25	\$1.25	
Song of the Alpine: Rocky Mtn Tundra through the Seasons	Gellhorn, J.	\$15.00	\$2.75	
Soil Science Simplified	Kohnke & Franzmeier	\$12.00	\$2.25	
Song of the Alpine: Rocky Mtn Tundra through the Seasons	Gellhorn, J.	\$15.00	\$2.75	
Southern Rocky Mountain Wildflowers	Freeman & Schofield	\$14.00	\$2.25	
Those Elusive Native Orchids of Colorado	Smith, Scott	\$35.00	\$3.00	
Tour of the Flowering Plants, A (with CD)	Spears, P.	\$43.00	\$3.25	
Trees and Shrubs of Colorado (revised and expanded-2006)	Carter, J.	\$23.00	\$2.75	
Trees and Shrubs of New Mexico, revised and expanded - 2012	Carter, J.	\$24.00	\$4.00	
Utah Flora, A 3rd edition 2003	Welsh, Atwood, et al	\$77.75	\$6.00	
Vascular Plants of Wyoming	Dorn, R.	\$17.50	\$3.00	
Weeds of the West	Western Society of Weed Science	\$29.50	\$3.50	
Wild about Wildflowers	Darrow, K.	\$22.00	\$2.75	
Wild at Heart: A Guide to Plants, Birds & Mammals of CO Mountain Towns	Huggins, J.L.	\$27.50	\$3.25	
Wild Plants and Native Peoples of the Four Corners	Dunmire & Tierney	\$18.00	\$2.25	
Wildflowers of Bandelier	Turner & Turner	\$10.00	\$1.25	
Wildflowers of Canyon de Chelly	Turner & Turner	\$10.00	\$1.25	
Wildflowers of Mesa Verde	Turner & Turner	\$10.00	\$1.25	
Wildflowers of the Mountain West	Anderson, Gunnell & Goodspeed	\$20.00	\$3.50	
Wildflowers of Red Rocks Park	Turner & Turner	\$12.50	\$1.25	
Merchandise				
Rare, Imperiled Plants of Colorado Note Cards - 9 different cards in each set	Rocky Mtn Soc. of Botanical Artists			
Central Arkansas Valley Note Card Set		\$15.00	\$2.00	
Central Mountains Note Card Set		\$15.00	\$2.00	
Central Front Range Note Card Set		\$15.00	\$2.00	
Four Corners/Western Slope Note Card Set		\$15.00	\$2.00	
North and Middle Parks Note Card Set		\$15.00	\$2.00	
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If the purchasing entity is tax exempt, please provide the tax id number.		Book Total:		
Please add the following taxes where applicable:		Sales Tax:		
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All other Boulder County 4.9%		ORDER TOTAL:		
City and County of Denver 7.72%				
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CONPS 2013-2014 CALENDAR

SEPTEMBER 2013

Sept. 19.....Eriogonum Society Annual Meeting, Farmington, NM
Sept 24.....Left-Field Secret-Ninja Planting Techniques for Colorado Natives Program, 7 p.m. (MD)
Sept 27**Rare Plant Symposium**
Sept 28-29..**CoNPS Annual Meeting (Boulder)**
Sept 28.....CoNPS Board Meeting
Sept 21.....NoCo Natural Festival, Fossil Creek Open Space Field Trip (N)

OCTOBER 2013

Oct 3.....Fall Meeting Season Kick-off! 5:30 p.m. Social, Program 7 p.m. (N)
Oct 5Restoration Case Study Workshop, Golden
Oct 6.....Castlewood Canyon State Park (DM)
Oct 19.....Asteraceae Identification Lab (P)
Oct 22Chapter Program, 7 p.m. (MD)

NOVEMBER 2013

Nov 2.....Sagebrush of Colorado Workshop, Ft. Collins
Nov 3.....Sagebrush of Colorado Workshop, Ft. Collins
Nov. 7.....Watershed Restoration after High Park Fire, 7 p.m. (N)

DECEMBER 2013

Dec. 3.....Alpine Plant Ecology of New Zealand Program, 7 p.m. (MD)
Dec 5.....Landscape Design and Cultivation of Rocky Mountain Native Plants, 7 p.m. (N)
Dec 7.....Lichen Biology Workshop, Boulder
Dec 8.....Lichen Biology Workshop, Boulder

JANUARY 2014

Jan 9.....Scoping on the Trail Program, (N)
Jan 28.....Metro-Denver Chapter Program TBA, 7 p.m. (MD)
TBA.....Intro to Asteraceae Identification, Denver
TBA.....Intro to the Buckwheat Family Workshop, Longmont

FEBRUARY 2014

Feb 25.... Metro-Denver Chapter Program TBA, 7 p.m. (MD)
TBA.....Intro to Asteraceae Identification, Denver
TBA.....Wonderful World of Cyperaceae, Longmont

MARCH 2014

Mar 25... Metro-Denver Chapter Program TBA, 7 p.m. (MD)
TBA.....How to Collect Native Plants Workshop, Ft. Collins/ Denver
TBA.....Beardtongues of Colorado Workshop

APRIL 2014

April 29... Metro-Denver Chapter Program TBA, 7 p.m. (MD)
TBA.....How to Collect Native Plants Workshop, Ft. Collins/ Denver
TBA.....Beardtongues of Colorado Workshop

**Sign up for the
2013 CoNPS Annual Meeting!
September 27-29
Boulder, Colorado
Vital Signs of the Planet:
Colorado's Flora in a Shifting Climate
<http://www.conps.org/>**

**Friday, Sept. 27
Colorado Rare Plant Symposium 8:30 a.m. - 4 p.m.
Reception for CoNPS Members 6:30 - 8:30 p.m.**

**Saturday, Sept. 28
Annual Meeting 8:30 a.m. - 3:45 p.m.
Board Meeting 4:30 - 6:00 p.m.**

**Sunday, Sept. 29
Field Trips 9 a.m. - 2 p.m.**

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

Wildflower Art Contest

The Crested Butte Wildflower Festival is requesting submissions for the 2014 Poster Contest. The winning entry receives \$500. Artists may submit up to four pieces, and artwork should incorporate recognizable native wildflowers found in the Crested Butte area. The deadline for submissions is Monday, October 7th. Submissions may be mailed to PO Box 216, Crested Butte, CO 81224; emailed to info@cbwildflower.com; or delivered to the Festival Office at 409 Second Street. Call 970-349-2571 for info.

Plant Profiles

Photos & Text by Christina MacLeod



Nipple Cactus
Coryphantha vivipara
Family: Cactus (Cactaceae)

More often than not, this stout, fleshy inconspicuous plant will be totally overlooked by the casual observer. Its ball-shaped mound is covered with knobby projections called tubercles; each sport 12-16 spines 12 mm. in length (some bi-colored) emanating radially from a



central areole.

Striking magenta flowers, often 4 cm. across and lasting for only one day, bloom between May and July. Within the deep corolla are numerous dark yellow stamens and a central style divided into six upper filaments.



Greek koryphe and anthos refer to the location of the flower buds at the crown of the plant. Vivipara comes from Latin and means self-propagating by the production of plantlets. *Coryphantha vivipara* commonly ranges in the dry prairie montane grasslands and high deserts of the Great Plains from Canada to south of the Mexican border into the Chihuahuan Desert, up to elevations of 8,000 ft or more. This cold-hardy cactus can be successfully grown in a garden desertscape or trough and is available at nurseries. It is considered by some to be threatened.



SAND-VERBENA (Smallflower Sandverbena)
Tripteroalyx micranthus
Family: Four O'Clock (Nyctaginaceae)

Found at ground level along dirt roads and sandy benches, with low, branching and trailing stems, is the native annual Sand-verbena, *Tripteroalyx micranthus*.

Tiny white tubular flowers extend from a central node in umbel-like attachments along the stem. More eye-catching than its flowers are the clusters of winged, salmon-colored fruiting bodies. Each three-winged, paper-thin seed pod holds one seed inside. The pod structure turns a transparent brown as it matures.



Ovate leaves with entire, loosely wavy margins are oppositely positioned along the stem. The upper surface is glabrous while the underside appears roughly patterned. This forb ranges throughout the plains states of the Rockies from northern to southern borders, along sandy mesas and dry streambed montane landscapes, and blooms in mid-summer with little seasonal moisture.

Christina MacLeod (L.Ac., M.A., MPH, NPM) is a passionate teacher, speaker, and writer, promoting Earth ecology and conservation awareness, and has been an interpretive trail guide for over 20 years. She is a botanical consultant for the San Isabel Land Trust, and a former trainer for the CSU Native Plant Program. She teaches annually at the week-long Crested Butte Wildflower Festival. Christina is a practicing acupuncturist and medical herbalist in Westcliffe, CO. She is the author of the Rocky Mountain Nativescapes blog, <http://rockymountainnativescapes.com>, and can be contacted at skyedarter@gmail.com.



Colorado Native Plant Society

P.O. Box 200

Fort Collins, Colorado 80522

<http://www.conps.org>

2013 Photo Contest Winner

Landscape Category: Marlene Borneman - Monkey Flower Landscape

