

Newsletter of the Colorado Native Plant Society

Aquilegia



2015 Photo Contest Winners

**Workshops & Chapter Programs
Annual Conference Summary
Rare Plant Symposium Report
Biographies of Award Winners**

Volume 39 No. 4 Fall 2015

Second Place Photo Contest Winners



The winners on each page are identified clockwise from upper left:

Front Cover: First place winners (clockwise from upper left): Dave Elin (Native Plants) *Penstemon grahamii*, Rio Blanco County; Dave Elin (Native Plant Landscape) *Populus tremuloides*, San Juan Mountains; Audrey Boag (Artistic) Fern unfurling early in the morning; Lenore Mitchell (Native Plants and Wildlife) *Asclepias speciosa* & Bumblebee

This page: Second Place Winners (clockwise from upper left): Sally Guthart (Artistic) *Fallugia paradoxa*, Gardens on Spring Creek, Fort Collins; Tami Kochen (Native Plant) *Cirsium scopulorum*, La Plata Peak; Dave Elin (Native Plant & Wildlife) *Gaillardia aristata* and Sweat Bee, Reynolds Park; Nicole Ellison (Native Plant Landscape) Old man of the Ute Mountain, *Hymenoxys grandiflora*, Ute trail RMNP

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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AQUILEGIA: Newsletter of the Colorado Native Plant Society

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Aquilegia is the newsletter of the Colorado Native Plant Society. Members receive four regular issues per year (Spring, Summer, Fall, Winter) plus a special issue for the Society Annual Conference held in the Fall.

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 the author and attributed to *Aquilegia*.

The deadline for the Winter issue is January 10th. Announcements, news, articles, book reviews, poems, botanical illustrations, photographs, and other contributions should be sent to the editor.

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AQUILEGIA: Newsletter of the Colorado Native Plant Society



Inside this issue

News & Announcements.....	4
Board Meeting Summary.....	9
Workshops & Fall Programs.....	10
Articles	
Report on the 2015 Colorado Rare Plant Symposium.....	13
Summaries of the 2015 CoNPS Annual Conference Lectures..	16
Field Trip Photos.....	22
Award Winners Jack & Martha Carter.....	24
Award Winner Vickey Trammell.....	25
Award Winner Mo Ewing.....	26
Holiday Shopping at the CoNPS Bookstore.....	29
Calendar.....	Back Cover

Botanicum absurdum by Rob Pudim



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News & Announcements

2015 CoNPS Photo Contest Winners Selected by Vote at Annual Meeting

This year, the CoNPS photo contest took on a different form. Contestants submitted their photos as 8" x 10" prints that were posted on one of the walls of the Conference Room. The photos were numbered and the photographers' names were not included with the photos; the photographers' identities remained anonymous to eliminate bias.

Conference participants voted for their favorite photographs in four categories: Native Plant, Native Plant Landscape, Artistic, and Native Plants & Wildlife/Pollinators. First place winners were Dave Elin (Native Plants), Dave Elin (Native Plant Landscape), Audrey Boag (Artistic), and Lenore Mitchell (Native Plants and Wildlife). First place winners each received \$50 for their winning photos.

The winners are listed below by category.

Native Plants

- 1st place Dave Elin - *Penstemon grahamii*, Rio Blanco County
- 2nd place Tami Kochen - *Cirsium scopulorum*, La Plata Peak
- 3rd place - (3-way tie; all received the same number of votes):
- 3rd place Audrey Boag - *Tradescantia occidentalis*, Western spiderwort
- 3rd place Carla DeMasters - *Dyssodia aurea*, Pueblo, CO
- 3rd place Margarete Steinhauer - Oil Shale Columbine, *Aquilegia barnebyi*; Hanging Lake, Glenwood Canyon

Native Plant Landscape

- 1st place Dave Elin - *Populus tremuloides*, San Juan Mountains
- 2nd place Nicole Ellison - Old man of the Ute Mountain, *Hymenoxys grandiflora*, Ute trail, RMNP
- 3rd place Marlene Borneman - *Rydbergia grandiflora* featured, also *Polemonium viscosum* and *Trifolium dasyphyllum*

Artistic

- 1st place Audrey Boag - Fern unfurling early in the morning
- 2nd place Sally Guthart - *Fallugia paradoxa*, Gardens on Spring Creek, Fort Collins
- 3rd place Tami Kochen - *Frasera speciosa*, Maroon Bells-Snowmass Wilderness

Native Plants & Wildlife (including Pollinators)

- 1st place Lenore Mitchell - *Asclepias speciosa* & Bumblebee
- 2nd place Dave Elin - *Gaillardia aristata* and Sweat Bee, Reynolds Park, JCOS
- 3rd place Audrey Boag - *Bombus ternarius* foraging in *Astragalus drummondii*

Welcome New CoNPS Board Members!

Cecily Mui

Cecily Mui is the daughter of hardworking immigrant parents and grew up in the hustle and bustle of the California Bay Area. Fortunately, she was inspired on an elementary school field trip to an Audubon Center and Sanctuary where she looked through a scope and discovered that herons and egrets nested in trees. From that moment, it became clear to her that she would pursue that bond with nature and the outdoors for the rest of her life.

Upon high school graduation, Cecily left the Bay Area for the University of Wisconsin-Madison to obtain Bachelor degrees in both Wildlife Ecology and Agricultural Education. There she discovered a passion for restoration while taking classes and volunteering at the Arboretum where Aldo Leopold led an effort to re-establish native plant communities and introduced the concept of ecological restoration. After completing her Master's degree in Wildlife Biology at Colorado State University, she went on to environmental consulting, restoration projects, and natural areas land management. Currently, she is a Noxious Weed Specialist with the Colorado Department of Agriculture's Noxious Weed Program. Through service on the CoNPS Board, she hopes to promote dialogue and actions for responsible land management that enhances native plant communities and educate people on noxious weed management. Cecily comes with a passion for outreach and education because she wants to share with others the riches she has discovered in the outdoors.



Amy Yarger

Amy Yarger has worked in the public horticulture field since 1996. She received a bachelor's degree in ecology and evolutionary biology at the University of California, Irvine and then went on to study plant-animal interactions at the University of Michigan. Her master's thesis concerned the effects of noxious weeds on pollinator-plant relationships. Her work at Butterfly Pavilion, where she has been a horticulturist since 2000, touches on many of her passions: plants, insects and conservation. As Horticulture Director, a position she has held since 2006, she is responsible for leading local habitat restoration projects, citizen science projects and educational programs throughout the community.



Amy has been an active CoNPS member, serving on the Native Plant Gardening Guides committee. She has given a workshop on insects and was a speaker at the 2015 CoNPS Annual Conference.

Remembering Betty Timson



Betty Timson at Roxborough State Park



Betty Timson and Vickey Trammell
Photos by Angel Tobin

Betty Timson, Volunteer Naturalist at Roxborough State Park, was well-known by the volunteers and staff at the park and members of the Metro Denver Chapter of CoNPS as an enthusiastic and knowledgeable botanist and volunteer naturalist. She loved to hike Carpenter's Peak, even after two hip replacements, and she led many wildflower hikes at Roxborough. Betty was soft-spoken, kind, humble, and well-liked. She was always ready to join a friend on a wildflower hike. Betty passed away in May of 2014.

When Betty's friend, Vickey Trammell, received a Special Merit Award at the 2015 CoNPS Annual Conference, she read a poem that she composed in tribute to Betty, "Saying Goodbye".

Saying Goodbye by Vickey Trammell

How can I say goodbye to a special friend
Whose life has come to a peaceful end?
Shall I show my sorrow anger and fear;
Can I cry and scream that my time is near?
Maybe a day of celebration
With bands and dancing and funny imitations
And all sorts of goodies that aren't going to last.
So get your share and eat them fast!
My special friend knows what is needed.
She wants no fuss no cards no tears.
Loud calibration needs an invitation
And that is something she will not give.
With quiet wisdom she spreads her wings
And gathers us all in comfort and peace
She reached to the ground
And flowers gather around.
The flowers nod in the breeze and seem to say,
"Our most beautiful blossom has come home today"

Request for CoNPS Research Grant Proposals: The John W. Marr and Myrna P. Steinkamp Funds

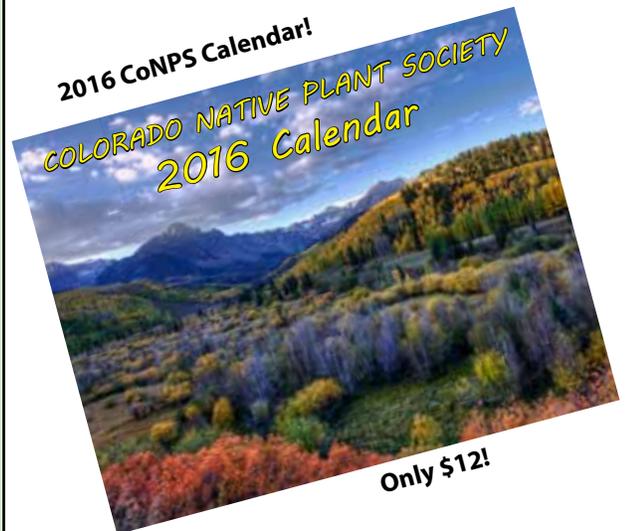


The Colorado Native Plant Society supports research projects in plant biology from the John W. Marr and Myrna P. Steinkamp funds. These separate funds honor the late Dr. John Marr, Professor at the University of Colorado and the first President of CoNPS, and Myrna Steinkamp, a founding member of CoNPS who worked on behalf of the Society for many years in a variety of capacities. Both funds were established to support research on the biology and natural history of Colorado native plants by means of small grants. The Steinkamp Fund targets rare species and those of conservation concern. Both field and laboratory studies are eligible for funding.

Thanks to the generous contributions of many members and supporters, a total of nearly \$4,000 is available, although individual awards will not exceed \$1,000. Recipients of the awards must agree to summarize their studies for publication in *Aquilegia* and on the CoNPS website.

The Board of Directors is now soliciting proposals for a February 15, 2016, deadline. Information on guidelines and requirements for proposals may be obtained on our web site at <http://conps.org/volunteer/research-grants/>. If additional information is needed, contact Board member Catherine Kleier at ckleier@regis.edu.

Go Holiday Shopping at the CoNPS Bookstore!



<http://conpsbookstore.org/store-2/other-merchandise-2/>

What a great gift! This gorgeous calendar is printed on sturdy card stock. Every month features a winning photo from the 2015 CoNPS Photo Contest. The calendar includes birthdays of famous biologists and Colorado botanists! **Order NOW!**

Happy 97th Birthday on November 16th, Bill Weber!

Dr. William A. ("Bill") Weber has to be the most youthful 97 year old in Colorado! Loraine Yeatts took a photo of him and you can see that his appearance has changed very little in the past 10 years. At lunch at an Italian restaurant with Ron Wittmann, a few friends and his daughter, Heather, Bill mentioned that he is writing articles for *Aquilegia* on women botanists who influenced him and women botanists who were his students. There will be an article in the Winter issue of *Aquilegia* by Barb Losoff, professor and librarian at Norlin Library at University of Colorado, Boulder, about Weber's life and work based on the exhibit, "The Naturalist," that is on display in the library. The Winter issue of *Aquilegia* will be published in January or February of 2016.

Don't forget to send birthday greetings to Bill on November 16th!
His email address is bill.weber@colorado.edu.



Dr. William A. Weber, Photo by Loraine Yeatts

Support Black Canyon Regional Land Trust

One of our collaborators on the western slope is the Black Canyon Regional Land Trust, a fellow non-profit with whom we have sponsored joint field trips and share many conservation goals. BCRLT holds conservation easement agreements on 291 properties, and has protected over 51,000 acres of natural habitats and agricultural lands (think pollinators!). Ongoing stewardship of these lands is a huge responsibility, involving site visits to each of 291 easements every year and ensuring that the terms of the conservation agreements are adhered to. BCRLT would like our support. A good way to start is to check out the website www.bcr.lt.org and become a member. Members receive regional conservation news, invitations to special events, and for those who give \$50 or more - free admission to the seasonal "Field Club" field trips.



Above: Peach Orchard Below: BCRLT Field Trip Photos by Alecia Phillips

If a donation is made on or before Colorado Gives Day - Tuesday December 8 - matching funds are available. Donations can be made at this url: <https://www.coloradogives.org/bandits2015>. Check it out!

Request for Any Milkweed Sightings

From Ashley Taylor, Regional Monarch and Pollinator Conservation Specialist, Joint Xerces Society and US Fish and Wildlife Service:

We are developing a western monarch habitat suitability model. We are collecting data across eleven states west of the Rockies (AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, and WY) and are realizing there are large gaps in data across the west, especially Colorado. If you've seen any more milkweed this summer and if you have the time to report those to us via the Xerces milkweed survey, <http://www.xerces.org/milkweedsurvey/> we'd really appreciate it!



Landscaping with Native Plants Conference

Date: Saturday, March 12

Location: The Ranch Events Complex, McKee Building, Loveland, Colorado

This conference is presented by a partnership of: Wild Ones - Front Range Chapter, Butterfly Pavilion, Colorado Native Plant Society, Colorado State University Extension, Denver Botanic Gardens, Front Range Sustainable Landscaping Coalition, and High Plains Environmental Center. Details will be coming.

Confused by Plant Families? Check Out Wonderful New Resource by Peggy Lyon!

Peggy Lyon has created a spreadsheet that compares the family names for western Colorado genera. The spreadsheet includes all the genera in Weber & Wittmann's *Colorado Flora: Western Slope* (3rd ed. or 4th ed.) with the family names used in Weber & Wittmann (both 3rd ed. & 4th ed.), Ackerfield, BONAP, and APG III. Thanks for the great tool, Peggy!

The Excel spreadsheet is posted on the CoNPS website on the main page at <http://conps.org> and is also listed under the Resources tab.

Seed Picking at Rocky Flats

The last event of the last year of the Jefferson County Nature Association's (JCNA) volunteer seed picking occurred October 31st in the Rocky Flats area between Golden and Boulder near SH93. There were about 20 volunteers.

The seed collection events concentrated on different locations in Rocky Flats. Colorado native grasses and forbs were collected and the most common in this area were big bluestem, little bluestem, mountain muhly, and side oats grama. Forbs included blazing star and gumweed.

Paul Kilburn of the JCNA was honored for his many years of making seed collecting possible in the Rocky Flats area.

Twenty years ago, CSU botanists inventoried the area and found limited species of native grasses. Pat Murphy, Christine Taraskiewicz 20 years later, inventoried the same area to find many more native plant species, including many more tall grass species. The theory that nature can adjust to severe conditions such as over-grazing and drought seems to hold true.

Christine Taraskiewicz, CoNPS Member, Representative for Terreplinish: Free Living Microbes for Plants <http://terreplinish.com/>



CoNPS Membership Survey

On the CoNPS Homepage (www.conps.org) is a link to a Membership Survey. Please fill this out to help us plan priorities for this year and future years. Understanding what YOU want can help us make CoNPS an organization that reflects your needs and priorities. Your feedback is important.

If you are not able to use Survey Monkey to fill out the survey online, please contact Linda Smith at 970-663-4085 or conpsoffice@aol.com to receive a print copy in the mail. You can then fill out the survey and return it by mail. A link to the survey button was also contained in the E-News Jen Boussetot emailed to members on Nov. 5. The Survey button was near the top of the email.



Peggy Lyon's Plant Lists on SEINet

Inspired by Melissa Islam's talk at the CoNPS annual meeting (see page 17), Peggy Lyon has discovered the wonders of SEINet (www.swbiodiversity.org), and decided to put species lists that she has accumulated over the years on that site, along with the ones already there from CoNPS and others. So far she has added 63, all west slope, and will continue to add more. Peggy is happy to have a way to preserve these, and she hopes they will be helpful to CoNPS members, management agencies and the public. She would welcome additions and corrections from our members. Perhaps some of you have similar data that ought to be saved. To access the lists, go to the [swbiodiversity](http://swbiodiversity.org) site and click on sitemap. They are listed by place names. Lists resulting from CoNPS field trips are preceded by "CoNPS:" Peggy.Lyon@colostate.edu

Jennifer Ackerfield's Website for Feedback on *Flora of Colorado*

From Jennifer Ackerfield: "I recently made a webpage so that users can offer comments, suggestions, or praise for the new *Flora of Colorado*! Check it out at: <http://floraofcolorado.weebly.com>. All comments will be used to edit the *Flora* and make the 2nd edition even better. Thank you."

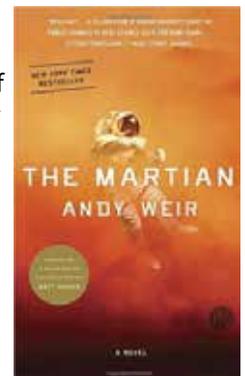
Correction: No credit was given for the head shot of Robert Thorne in the News & Announcements section of the Summer *Aquilegia*. The photographer was J. Travis Columbus.

Funding for Prairie Research

Prairie Biotic Research (PBR) is an all-volunteer, Wisconsin nonprofit established in 2000 to foster basic biotic research in prairies and savannas. One way this is done is through a competitive Small Grants Program that funds grants up to \$1000 to individuals for the study of any grassland taxon anywhere in the USA. PBR supports both natural history and experimental science. To apply for a grant, visit the website (prairiebioticresearch.org) to learn more, to find the proposal form, instructions, and a sample researcher agreement form that winners of this competition must sign. Your proposal must be received via email by December 20, 2015.

The Martian (the Motion Picture)

"I am the greatest botanist on the planet!" proclaims NASA botanist Tom Watney (played by Matt Damon), who was accidentally stranded alone on Mars when his crewmates left the planet, believing that Watney was dead. Using his knowledge of botany and other fields of science, Watney attempts to survive on the hostile planet until astronauts can be sent back to Mars to rescue him. His food, oxygen, and other supplies will run out before the others arrive. Check out the movie or the book (written by Andy Weir) to find out the fate of the first botanist on Mars. Charlie and I saw the movie and it was excellent. We haven't read the book yet but have heard that it is also outstanding. *Jan Loechell Turner*



Plant Ecologist Emily Mooney, PhD, Joins Biology Faculty at UCCS!

CoNPS is delighted to welcome a new plant ecologist to Colorado.

This fall, Dr. Emily Moody joined the Department of Biology at the University of Colorado at Colorado Springs, where she contributes teaching and research expertise in plant ecology and conservation biology. After spending field seasons at the Rocky Mountain Biological Laboratory, she is excited to call Colorado her new full-time home. Broadly speaking, Emily's research looks at plants and their consumers—from insect herbivores to human harvesters.



Emily holding Sang root



Aphids and ants on *Ligusticum porteri*.

Photos courtesy Emily Mooney



She has studied harvest in the much sought-after American ginseng (*Panax quinquefolius*) and herbivory by caterpillars on the eastern native spicebush (*Lindera benzoin*). Currently, she is interested in how mutualistic interactions with ants explain the abundance of aphids on oshá (*Ligusticum porteri*) in meadows. She is happy to be closer to her study system, and she is looking forward to bringing UCCS students to RMBL, too. Emily is a member of the Southeast Chapter of CoNPS.

Southern Rockies Seed Network Annual Meeting Dec. 3, 2015

When: December 3, 8 am – 4 pm

Where: The Ranch Events Complex, Loveland, CO

More info: www.synergy3.org

Register: <https://srsn2015.eventbrite.com>

Please join us for the 2nd annual meeting of the Southern Rockies Seed Network (SRSN). Stakeholders are invited to meet together to learn more about ongoing projects and how we can all pool knowledge and resources to continue the development of local, ecotypic seed for use in restoration.

Our geographic range extends north into Wyoming, east to the state line, and west to the Colorado Plateau, and south to Pueblo and La Junta. Please consider spreading the word and inviting colleagues, friends, and partners to join this meeting to learn more about the SRSN.

Attendees will include: seed and nursery industry representatives, land managers, non-profit organizations, academic staff, and any interested individual or group representatives.

AGENDA:

Morning session:

Andrew Bower (USFS, Region 6, Oregon): Provisional Seed Zones of the United States

Kristina Hufford (University of Wyoming): Agricultural Approaches to Seed Sourcing in Restoration: Pros and Cons

Randy Mandel (Golder Associates): Incorporating Pollinators into Revegetation Efforts

Rick Novak (Colorado Seed Growers Association): Certification Process for Ecotypic Plant Materials

Lunch on own—there are many fast food and sit down restaurants in the area.

Afternoon Session:

Annual Report (including a tracking system for remnant plant populations)

Pooled demand for ecotypic plant materials (concurrent sessions: flood-impacted areas; and prairies)

Technical challenges and solutions to plant materials production

Building the grower network

Venue:

The Ranch Events Complex on I-25 near Loveland is a large modern facility in a convenient central location to partner groups along the Front Range.

Habitat Hero Workshop

(Plan to visit the CoNPS booth!)

Saturday, January 23, 2016, 9 a.m.-1 p.m. at the Denver Botanic Gardens

Speakers: Doug Tallamy, Jim Tolstrop, Dave Leatherman

Northern Chapter Weed Committee

The CoNPS Northern Chapter is forming a noxious weed committee with the idea of adopting a native plant refuge. The committee hopes to select, evaluate and begin planning treatments for the site this fall/winter. Volunteers are needed to join the organizing committee or offer hands-on assistance next summer to remove noxious weeds. If interested, please contact Renee Galeano-Popp at mtnpoppies@aol.com.



Renee Galeano-Popp
Photo by Jen Boussetlot

Browns Canyon National Monument Bioblitz June 1-3, 2016

Browns Canyon National Monument was established by Presidential Proclamation on February 19, 2015. It encompasses approximately 21,586 acres, and is jointly administered by the Forest Service and Bureau of Land Management. It is located between Buena Vista (Nathrop) and Salida (Turret) from the Arkansas River to Aspen Ridge.

The Bureau of Land Management, Royal Gorge Field Office and the Forest Service, Salida Ranger District, Pike-San Isabel National Forest are looking for some help in finding out



what is in the Monument. We are planning a bio-blitz for June 1st to 3rd, and possibly a second blitz in late August. We will be meeting at the Ruby Mountain Recreation Site for the June event. From there teams will scatter towards the corners of the area to see what they can find, whether it's plants, birds, bugs, or anything else.

In August, water levels may be low enough to include floating the Arkansas River through Browns Canyon. More details will be coming later.

Geologically, this area is at the extreme northeast edge of the Rio Grande rift valley, which gives the area its distinctive cliffs and canyons.

Because of the arid conditions created by shallow soils and the rain shadow of the Sawatch Range, the monument contains large areas of pinyon-juniper woodlands, mixed conifer stands (including blue spruce, Douglas-fir, ponderosa pine, and limber pine), and quaking aspen. Narrowleaf cottonwood is found along some reaches of canyon streams. There are also areas of montane grasslands.



Photos by
Steve Olson

Colorado tansyaster is known on exposed limestone and shale breaks. Fendler's false cloak fern has been seen on cliffs in the canyons.

For more information contact:

Lara Duran: lduran@blm.gov

Steve Olson: solson01@fs.fed.us

Stephanie Shively: sshively@fs.fed.us

Take a Botanist to Lunch

We have a number of amazing members of CoNPS who no longer drive. We all know what cabin fever feels like. Treat yourself to a fascinating time by taking one of these people to lunch or coffee. You will be rewarded with an incredibly interesting experience. If you are a CoNPS member who does not drive or a CoNPS member who would like to take a botanist to lunch, please contact Jan Turner at JLTurner@regis.edu.

6th Natural History of the Gila Symposium, Feb. 25-27

Western New Mexico University, Silver City. For more information, see <http://www.gilasymposium.org>. Contact us at NaturalHistoryGilaSymposium@gmail.com or norrisw@wnmu.edu

FROM THE BOARD

There have been two Board meetings since the last issue of *Aquilegia* was published.

At the August 8, 2015 meeting, it was announced: Betsy Bultema resigned from the Board because she received an out-of-state job; the Board welcomed Jack and Martha Carter as honorary Board members; Jen Boussetol, who was hired as the Membership & Marketing Coordinator was introduced; new Metro Denver Chapter president, Samantha Smith and new Southeast Chapter president, Richard Bunn, were introduced.

The following motions were passed:

- Formalize our collaboration with the CSU Native Plant Master[®] Program. We will promote each other in our membership brochures and websites.
- Letter of support for High Plains Environmental Center to highlight the value of their new building, gardens, and programs.
- CoNPS Awards: 2015 - Last year the Board voted to give Jack & Martha Carter and Vickey Trammell awards; the Board voted to give an award to Jill Handwerk at the 2016 meeting.
- The Board voted to donate \$50 to the Southern Rockies Seed Network Annual Meeting.
- A Field Trip Standardization Committee was formed in preparation of the development of a plug-in for the website that will allow us to automate many membership and field trip sign up functions.

Jen Boussetol gave a presentation on the social media tools she is using as the Membership & Marketing Coordinator.

At the October 24 Board meeting, new At-Large Board members, Cecily Mui and Amy Yarger were introduced. Charlie Turner distributed the new membership brochure that has a number of color photos. Charlie discussed the plug-in for our WordPress website and stated that he and Mo Ewing would be testing the plug-in to determine whether it would work well for the CoNP website.

The Board voted to join over 70 other native plant societies, native plant conservation advocacy groups, and botanical gardens and sign the "Open Letter for Equal Protection for Plants under the Federal Endangered Species Act" through the Native Plant Conservation Campaign. "The long-term goals [of the NPCC] are to amend Federal Endangered Species Act (FESA), improve budgets, and change state species protection laws where necessary, to provide plants with the same protections and recovery opportunities that are currently provided to other listed species." (from <http://plantsocieties.cnps.org/index.php/equal-protection>).

The rest of the meeting was taken up with discussion of goals for CoNPS, its chapters and committees. There will be a wrap-up of the discussion at the Board meeting on December 5 at the Regis University Library in the Tracy Room from 9:30 a.m.-12:30 p.m. Meetings are open to all members.

WORKSHOPS & CHAPTER MEETINGS

WORKSHOPS

Workshops are \$30 for members and \$35 for non-members and are held from 9 am to 3 pm unless indicated otherwise. Contact Linda Smith (conpsoffice@aol.com) to sign up. On-line sign-up might be available later this year. For questions, contact Workshop Coordinator, Ronda Koski at ronda.koski@colostate.edu.

Introduction to the Parsley Family

Date: Sat., Dec. 5 OR

Sun., Dec. 6, 2015

Time: 9:00 am – 3:00 pm

Presenter: Rich Scully

Location: CSU Extension/ NRCS Building, 9595 Nelson Road, Longmont

Cost: \$30 members, \$35 non-member

This workshop will present an overview of the Apiaceae plant family in Colorado, particularly the descriptive terminology and morphological characteristics. The class will practice how to identify typical species. Registrants can choose to attend either the Saturday session or the Sunday session. A week before the workshop we will send an email with a list of items for participants to bring to the workshop.

Rich Scully enjoys the study of Colorado plant families and sharing his work with others.



Lomatium orientale. 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. 2: 631.

Tour of the CSU Herbarium AND Basic Plant Identification for Beginners

Date: Sat., Jan. 23 OR Sun. Jan. 24, 2016

Time: 9:00 am – 3:30 pm

Presenter: Jennifer Ackerfield, Collections Manager, CSU Herbarium and author of *Flora of Colorado*

Location: CSU Herbarium (Room 114) in the Anatomy/ Zoology Bldg, Colorado State University, Fort Collins, CO

Cost: \$30 members, \$35 non-members

Registrants can choose to attend either the Saturday session or the Sunday session.



Jen Ackerfield

Photo by Jan Turner

Colorado Willows:

Identification

Dates: Sun., Jan. 10 OR Sat., Feb. 13, 2016, 9:00 am – 3:00 pm

Presenter: Gwen Kittel

Location: Boulder (exact location TBD)

Cost: \$30 member, \$35 non-member



Salix exigua. USDA-NRCS PLANTS Database

Tour of the University of Colorado Herbarium and Beginner's Lichenology Workshop

Instructor: Erin Tripp

Date: Sat., Jan. 30, 2016, 9:00 am - 3:00 pm

Location: University of Colorado Herbarium (Herbarium COLO) in the University of Colorado Museum of Natural History, Henderson Building, 15th and Broadway, Boulder, CO 80309.

Cost: \$30 members, \$35 non-members



Erin Tripp

Seeds!

Saturday, February 20, 2016, 9:00 am – 3:30 pm

Presenters: Annette Miller and Stephanie Green, USDA/ARS NCGRP

Location: USDA/ARS NCGRP (National Center for Genetic Resources Preservation), 1111 South Mason St., Fort Collins, CO

Cost: \$30 members, \$35 non-members

This workshop covers all aspects of seeds and seed development, and also includes a tour of the NCGRP Facility. Topics discussed will be:

- Fruits, Seeds and Embryos: types and families, with a hands-on seed anatomy exercise.
- Seed germination: Types of seedlings (monocots, dicots, gymnosperms, small, med, large), and readily germinable species.
- Why doesn't this seed germinate? A discussion about maturity, longevity, disease, mechanical damage, insect damage.
- Dormancy: physical, physiological, compound
- What do seed labs/seed analysts do, and how to read a seed tag.



Milkweed coma

Photo by Rick Brune

Landscaping with Native Plants Conference

Date: Saturday, March 12

Location: The Ranch Events Complex, McKee Building, Loveland, Colorado. Watch website for details. \$90 includes lunch.

(cont. on next page)

This conference is presented by a partnership of: Wild Ones - Front Range Chapter, Butterfly Pavilion, Colorado Native Plant Society, Colorado State University Extension, Denver Botanic Gardens, Front Range Sustainable Landscaping Coalition, and High Plains Environmental Center

Colorado Cacti

Date: Saturday, March 26, 2016

Time: 9:00 am - 3:00 pm

Instructor: Scotty Smith

Location: Rocky Mountain Arsenal National Wildlife Refuge, Contact Station, Commerce City, CO



Photo: by Claire Postmus

Colorado Ferns and Fern Allies

Date: Saturday, April 2, 2016

Time: 9:00 am - 3:00 pm

Instructor: Scotty Smith

Location: Rocky Mountain Arsenal National Wildlife Refuge, Contact Station, Commerce City, CO

Colorado Orchids

Date: Saturday, April 9, 2016

Time: 9:00 am - 3:00 pm

Instructor: Scotty Smith

Location: Rocky Mountain Arsenal National Wildlife Refuge, Contact Station, Commerce City, CO

Colorado Conifers

(Western Slope)

Date: Saturday, April 23, 2016

Time: 9:00 am - 3:00 pm

Instructor: Jeanne Willson

Location: TBD, Grand Junction, Colorado



Spotted Coralroot

Photo by Clair Postmus

Paleobotany Workshop

Date: Sat., (date TBD)

Time: 9:00 am - 3:00 pm

Presenter: Ian Miller

Location: Denver Museum of Nature & Science, Denver

Cost: \$40 for members of CoNPS and /or DMNS, and \$55 for non-members

This workshop will be offered jointly by DMNS and CoNPS. Watch CoNPS website for details.

Colorado Penstemons

Classroom Session Dates: Sat. May 7 AND Sun. May 8, 2016

Location: Auraria Higher Education Center, Denver, CO

Field Session Dates: Sat. June 25, 2016 AND/OR Sat. July 30, 2016

Instructor: Carol English

Aquilegia Volume 39, No. 4 Fall 2015

Note: This is a multi-day workshop, consisting of a 2-day classroom session and 2 field sessions.

Time: All sessions will begin at 9:00 am

Cost: \$60 for the 2-day classroom session and \$25 for each field session.

Individuals who attended the classroom session will have priority for field session registration. This workshop is limited to 20 people.

CoNPS will provide beverages and snacks for the classroom sessions, and only beverages for the field sessions.

Carpooling will be encouraged for all sessions, especially for the field sessions.



Photo by Dave Elin

Other workshops are currently being planned for 2016 or 2017. They will be posted on the CoNPS website:

- Tour of Herbarium at Fort Lewis College. Durango (Western Slope)
- Tour of Herbarium at University of Northern Colorado, Greeley
- GPS for Mapping and Locating Native Plants
- Photographing Wildflowers
- Erigerons of the Foothills
- How to Collect Native Plants
- Plants of the Sagebrush Habitat

CHAPTER PROGRAMS

Check the CoNPS website for additional chapter programs. Go to About Us - Chapters (www.conps.org)

BOULDER CHAPTER

A Region of Astonishing Beauty—the Early Botanical Exploration of the Rocky Mountains - Megan Bowes

Dec 10th, 6:30-8pm

OSMP Annex Building, 7315 Red Deer Drive, Boulder, CO

Follow the trail of some nineteenth-century botanical figures who risked life and limb to interpret the natural history of the American West. Beginning with Meriwether Lewis and his discovery of the bitterroot, the goal of most explorers was not merely to find an adequate route to the Pacific, but also to comment on the state of the region's ecology and its suitability for agriculture—and, of course, to collect plant specimens! Learn how these who botanized the



Meriwether Lewis. Courtesy The Florida Center for Instructional Technology, fcit.usf.edu

Rocky Mountains became increasingly convinced by the end of the nineteenth century that the flora of the American West was indeed distinctive.

Megan Bowes is a plant ecologist with Boulder Open Space and Mountain Parks and a volunteer with the Maria Rogers Oral History Program at the Carnegie Library for Local History.

METRO DENVER CHAPTER

Metro Denver Chapter meetings are held at Englewood Public Library, 1000 Englewood Pkwy, Englewood, CO (near Santa Fe & 285) from 7:00 - 8:30 p.m.

Why Do I Have to Rake My Yard? - Tyler Johnson

Tues., Dec. 1, 2015, 7-8:30 p.m.

Location: Englewood Public Library

Tyler Johnson, the new Regional Botanist for the Rocky Mountain Region of the USFS, will discuss how plants allocate resources. He will show beautiful photos of foliage.

Stewardship of Rare Plants by the Colorado State Land Board - Mindy Gottsegen

Tues., Jan. 26, 2016, 7-8:30 p.m. Englewood Public Library

Mindy Gottsegen is the Conservation Services Manager for the Colorado State Land Board which owns 2.88 million acres of state trust land throughout Colorado.

The Natural Heritage of the Denver Area: Surprises in our Backyard - Dave Anderson

Tues., Feb. 23, 2016, 7-8:30 p.m. Englewood Public Library

Most people living in our city don't realize that they are a short drive away from places that are critically important for biodiversity conservation, that support populations of extremely rare species and that there are even rare plants within the city limits! Dave will talk about some of the nifty things living in our midst, unbeknownst to most of us- including the Denver area's valuable wetland resources and nearby rare species. Dave Anderson, Executive Director of the Colorado Natural Heritage Program, will discuss the mission of the CNHP and the rare plants of Colorado. Dave Anderson is Executive Director of the Colorado Natural Heritage Program.

From September 2015

Plant Sale at High Plains Environmental Center



Seed Swap at Butterfly Pavilion



NORTHERN CHAPTER

Reminiscing the 2015 Wildflower Season ... A Member Photo Share

January 7, 2016, 7-9 p.m.

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

Northern Chapter CoNPS members are encouraged to share their photos of the wildflowers they observed during 2015 at the Northern Chapter CoNPS meeting! The winter months provide lots of time to file all those photos taken the previous spring, summer, and fall. As you file your photos taken during the great wildflower season of 2015, consider sharing them with other members of CoNPS! Put your favorite photos on a thumb drive and bring them to the January 7 meeting. Your photos can include plants in full bloom or other phases of development, CoNPS field trips, rare plants, plant communities new to you, weed-infested areas of concern, pollinators, even species you can't yet identify, or just the artistic shot you want to show off.

Propagation of Native Plants: The Front Range and Beyond - Ann Grant

Thurs. Feb. 4, 2016, 7 pm - 9 pm

Location: Gardens on Spring Creek, 2145 Centre Ave, Ft. Collins

You are out on a wildflower walk late in the season. You come across a field of wildflowers gone to seed. Because you have gone on many hikes and taken some courses, you recognize the plants as very attractive in bloom and always wanted them for your garden or naturalized field. You think, "What if I collected a few seed and grew some plants? I wonder how I could do that?" Or maybe you've been tempted to dig up something on the roadside and take it home. This talk will cover collecting dos and don'ts and what to do with your native plant material to maximize your success. (You can collect seeds and cuttings on forest land and private property with permission for your personal use. Never dig up a plant.)



Arnica cordifolia "Taking Note"
Photo by Stacey Anderson

Ann Grant, along with her husband owned and operated East Vine Farms which was in business for 13 years in Fort Collins. Ann's passion is growing plants! She has grown many Colorado and Western natives from seed and cuttings for the wholesale and retail trade and for personal enjoyment.

In addition to Ann's program, there will be a talk by Heather Young about the wonderful little field guide, *Wildflowers and Other Plants of the Larimer County Foothills Region*.

Heather Young is the Education Program Coordinator for Larimer County Natural Resources. CoNPS contributed some funding for the field guide.

Aquilegia Volume 39, No. 4 Fall 2015

2015 CoNPS Annual Conference & Colorado Rare Plant Symposium

The 2015 CoNPS Annual Conference and Colorado Rare Plant Symposium were held from September 11-13 at the Colorado Mountaineering Center in Golden, Colorado. This year's CoNPS Conference, with a focus on native plants and pollinators was exciting and large, with 182 attendees, exhibits of organizations and products, the silent auction, and the giant book sale (over \$8,000 of books were purchased). The Rare Plant Symposium (described below), was held Friday, September 11th, and reviewed a number of plants around the state that are endangered. The symposium was followed by the Pizza and Beer Social Friday evening. We enjoyed a variety of pizzas (including gluten-free and dairy-free) from Lil Ricci's and had a chance to visit with friends while a crew led by Pat Murphy prepared for the book sale. Jessica Smith and Carol English worked at the check-in desk at the Pizza Social.

Report on the 2015 Colorado Rare Plant Symposium

by Pam Smith, Bernadette Kuhn, and Jill Handwerk



Photos from L to R, top row: Peggy Lyon, Jill Handwerk, Tim Hogan, Keith Schultz, Jessica Smith, Jen Kesler; Bottom Row: Judy King, Richard Bunn, Pat Murphy, Audience listening to talks, Dave Anderson and Mitchell McGlaughlin, Becky Hufft, Bernadette Kuhn, Pam Smith. Photos by Mo Ewing and Jan Turner

Botanists, members of the Colorado Rare Plant Technical Committee (RPTC) and other interested and interesting people were among the group of more than 80 people gathered in Golden, CO to attend the 12th Annual Colorado Rare Plant Symposium. The symposium is the event that precedes the kick-off of the Colorado Native Plant Society's (CoNPS) Annual Conference. The Rare Plant Symposium is hosted jointly by Colorado State University Colorado Natural Heritage Program (CNHP) and the Denver Botanic Gardens (DBG).

Everybody attending the symposium, whether a professional or an amateur, had common interests in Colorado rare plants and their conservation. Many of the attendees have been involved for years working to advance rare plant conservation and have new information from field observations of rare plant species, genetic studies, or information related to policy surrounding conservation issues. This forum offers the opportunity for people to come together to share these observations, see herbarium specimens, have discussions and learn about the newest information on Colorado's rarest plants conservation status, threats and new discoveries. Here are some highlights from the 2015 Symposium.

2015 Updates on Rare Plant Species:

New populations of rare plants reported in 2015 included populations of: skiff milkvetch (*Astragalus microcymbus*); Sleeping Ute milkvetch (*Astragalus tortipes*); Kremmling beardtongue (*Penstemon penlandii*); Graham's beardtongue (*Penstemon grahamii*); Troublesome phacelia (*Phacelia gina-glenneae*), North Park phacelia (*Phacelia formosula*); White River beardtongue (*Penstemon scariosus* var. *albifluvis*); Gypsum Valley cat-eye (*Oreocarya revealii*); slender spiderflower (*Peritoma (Cleome) multicaulis*); Arkansas Canyon stickleaf (*Nuttallia densa*); Arkansas Valley evening primrose (*Oenothera harringtonii*); rockcress draba (*Draba globosa*); Colorado Divide whitlow-grass (*Draba streptobrachia*); and Arizona willow (*Salix arizonica*).

Potential population losses reported for 2015 include: violet milkvetch (*Astragalus iodopetalus*); Kremmling milkvetch (*Astragalus osterhoutii*); Pikes Peak spring parsley (*Oreoxis humilis*); Rocky Mountain cinquefoil (*Potentilla ambigens*); and Dudley Bluffs bladderpod (*Physaria congesta*).

Additionally, a number of species were mentioned that did not have a good year in 2015: DeBeque phacelia (*Phacelia submutica*); dwarf milkweed (*Asclepias uncialis*); Ute Lady's tresses (*Spiranthes diluvialis*); and Colorado butterfly plant (*Oenothera coloradensis* subsp. *coloradensis*).

2015 Botanical Observations and Discoveries:

Schmoll's milkvetch (*Astragalus schmolliae*) has a new common name: Chapin Mesa milkvetch.

A new study finds that higher winter precipitation appears to be an important factor correlating to higher numbers of individuals.

There is potential to protect properties with Pagosa skyrocket (*Ipomopsis polyantha*) populations with a Colorado Natural Areas Program and Colorado Parks and Wildlife property purchase.



Asclepias uncialis Photo by Charlie Turner

A concern by many who monitor rare plants is to try to come up with assessments that do not damage the habitat or the plants while monitoring (especially those on steep slopes like Parachute penstemon (*Penstemon debilis*)).

Jeweled blazingstar (*Nuttallia sinuata*) and wavy-leaf stickleaf (*N. speciosa*) will likely be combined into a single species.

Thinleaf cottonsedge (*Eriophorum viridicarinatum*), a high altitude fen species is known from Colorado in the literature and was recently documented with a voucher specimen submitted to the University of New Mexico.

New genetics information and/or seed propagation protocols are available or studies are underway for the following species: *Phacelia formosula*, *Penstemon penlandii*, *Ipomopsis polyantha*, *Phacelia submutica*, *Botrychium lineare*, *Sclerocactus* spp., *Corispermum navicula*, and *Oreocarya revealii*.

A biocontrol agent release in Canada to control houndstongue (*Cynoglossum officinale*) has been found to impact native members of the Boraginaceae and could be heading to the United States.

Staunton State Park is a designated State Natural Area which will help conserve one of Colorado's rarest plant species, budding monkeyflower (*Mimulus gemmiparus*).

The newly completed Colorado State Wildlife Action Plan adopted in September 2015 now includes plant species for the first time.

Some of the biggest threats to rare plant conservation in 2015 were discussed. They include: global warming, flooding, oil and gas development; recreation and trail development; overgrazing (mountain goats, sheep, cattle, wild horses), alpine summit house expansion, lack of awareness and/or interest by decision makers and the public

Three presentations were given at the symposia and are described briefly below:



L to R: Judy von Ahlefeldt, Gwen Kittel, Tyler Johnson Photos by Mo Ewing

Judy von Ahlefeldt (CoNPS) discussed a Pineries Open Space BioBlitz in the Black Forest where seven species of rare and uncommon plants with nearly 4,000 individuals were mapped in a proposed post fire clearcut area. This area had been burned in 2013 and potential recovery efforts include logging in these sensitive areas. It is anticipated that these results will reduce proposed logging in this area.

Gwen Kittel (NatureServe Ecologist) presented information on *Salix arizonica* described in 1975 by Bob Dorn and known from only one occurrence in Colorado. Gwen found more plants this year, expanding the boundaries of the known population in southern Colorado. She also provided valuable information on morphological differences to tell this species apart from a similar species, *Salix boothii*.

Tyler Johnson (USFS Region 2 Botanist) explained the definitions of "USFS Sensitive Species" vs.

"Species of Conservation Concern" as they relate to the new planning rule of 2012 which changes how USFS implements the Nation Forest Management Act (NFMA). All units within the region have to update their management plans over the next 18 years to comply with the new 2012 rules.

Updates on the Rare Plant Conservation Initiative and the Rare Plant Guide

Susan Panjabi, CNHP Botanist, has been working on the newest edition of the *Rare Plant Guide*. She noted that there is new artwork and photographs available for some of our rare plant species. Many of these new images and drawings are provided by the Rocky Mountain Society of Botanical Artists, who are now



Susan Panjabi Photo by Mo Ewing

touring Colorado with their new exhibit: RARE II. Each species profile included in the Guide also has information about research activities and summary notes from the annual Rare Plant Symposium.

To see these latest additions, please visit the *Colorado Rare Plant Guide*, hosted on the Colorado Natural Heritage Program website: <http://www.cnhp.colostate.edu/rareplants/>. If you have additional photos or artwork that could be included, contact Susan at: susan.panjabi@colostate.edu.

The Rare Plant Guide is just one example of the activities encouraged by the Colorado Rare Plant Conservation Initiative (RPCI). The guiding document for this Initiative is the *Colorado Rare Plant Conservation Strategy*, also available through the CNHP website here: <http://www.cnhp.colostate.edu/teams/botany.asp#initiative>

The RPCI is currently an unfunded initiative, but the Strategy articulates the most important steps and objectives for ensuring the long term conservation of Colorado's most imperiled plant species. Several Conservation Action Plans and Best Management Plan documents are also available on the RPCI and CNHP websites. Input and comments are welcome.

About the Authors:

The authors work for the Colorado Natural Heritage Program (CNHP). Pam Smith and Bernadette Kuhn are botanists with CNHP and Jill Handwerk is the team leader and botanist.

Humorous Tidbit

There was a brief discussion on the name change of *Cleome multicaulis* to *Peritoma multicaulis*. Dave Anderson, CNHP Director, who named one of his daughters Cleome (after this particular species) mentioned that he would likely not be changing his daughter's name to Peritoma to follow the update, as he was certain she would not approve.

Friday Night Pizza & Beer Social: Food, Fun, & Friends!



CoNPS 2015 Annual Conference Photo Album



Reports on the 2015 CoNPS Annual Conference

PowerPoints of the Conference presentations are available on the CoNPS Website at <http://conps.org/below-are-the-annual-conference-speakers-presentation/>

Native Plant and Pollinator Conservation: Carol Kearns

Report by Jessica Smith

Dr. Kearns first discussed the importance of pollinators and their decline. One hundred and fifty US food crops depend on pollination. A decline in the number of pollinators has been noted since the 1990s with great concern about the plight of honeybees.



Carol Kearns Photo by Mo Ewing

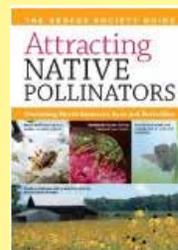
Worldwide, there are 100,000 species of invertebrates and 1,000 species of vertebrates that serve as pollinators. Twenty billion dollars worth of crops alone in the U.S. are pollinated by honeybees. Honeybees are convenient pollinators in that they can be transported around and shut away when pesticides are being applied.

In Colorado, 90% of our native plants require pollination services, without which fruit and seed production stops. There are 946 species of bees in Colorado. Honeybees are not native to North America; they were brought here in the 1600s to provide wax for colonists. Bees are the most important group of pollinators. Eighty-five percent of bees are solitary dwellers. Honeybees are generalists and can pollinate many plants, but not all native plants. For example, death camas, *Toxicoscordion venenosum*, has toxic nectar and honeybees won't visit it, but some native bees will and one in particular is a specialist. In some instances, a bee has to vibrate at a certain frequency to release the pollen. This is called buzz pollination. Elephant's head, *Pedicularis groenlandica*, requires this type of pollination. Bumblebees are able to thermoregulate, and therefore can tolerate conditions of the alpine. There are 23 species of bumblebees in CO.

Flies are the second largest group of pollinators. They become more important as altitude increases. They don't need to take anything back to the nest, and therefore can visit more flowers. Flies from 86 different families visit flowers of over 1,100 plant species. Syrphid flies mimic bees, and many of these species are able to buzz pollinate flowers. They also have long tongues. Mosquitos can also carry pollen from orchids.

Conservation threats to pollinators include pesticides, pathogens, and loss of natural habitat. According to Doug Tallamy, 41% of the lower 48 states is dedicated to agriculture and, as it becomes more mechanized, we lose hedgerows which previously supplemented pollinators. Invasive species also decrease habitat. One hundred million acres in southwest U.S. have been taken over by cheatgrass, which has nothing to offer pollinators. Exotic thistles can support pollinators but, if they reduce plant species diversity, they reduce the diversity of pol-

linator that the plant community can support. The public can help by increasing pollinator habitat. Pollinators need sticks, twigs, compost and messy things in the yard. Cultivate wildflowers and native species to build up the habitat they need. Consider joining the Xerces Society, the Sierra Club, and the North American Pollinator Protection Campaign.



\$27



\$14.50

Recommended books
from the CoNPS
Bookstore

<http://conpsbookstore.org/store-2/books/>

Don't miss these books!

Two of our favorites!

How to Make a Flower Color: Do Red Flowers Use Red Pigments? Julienne Ng

Report by Jessica Smith

Flower color is very important to a plant. It can help with defense from being eaten, thermoregulation, and pollinator attraction. This talk discussed the evolution of red flowers and how different pigments contribute to flower color. The research asked, did the trait of red flower color in different species arise from the same strategy or different strategies?



Julienne Ng Photo by Mo Ewing

The research focused on one family, the Solanaceae (Potato or Nightshade family). Most of the species in this family are from Central and South America, and 34 species produce red flowers. Looking at the phylogenetic tree, Dr. Ng showed that red flower color has evolved multiple times. They were able to determine which pigments determined flower color by looking at petal cells under the microscope. Pigments in a vacuole were anthocyanins; pigments in the chromoplasts were carotenoids. Some petals had both. Research determined that different species developed red color using different strategies. They then investigated if all red flowers look the same. They used reflectance to measure this. Flowers with anthocyanin and both anthocyanin and carotenoids make flowers that look the same, but flowers with just carotenoids have a significantly different reflectance. Different anthocyanins are used when carotenoids are present. There are three types of anthocyanins, and they are produced by flavonoid biosynthetic pathways. Future research questions may ask why red flowers are rare. Only 1% of the species in Solanaceae have red flowers. Do other flower colors more readily undergo speciation or could red flowers go extinct over time?

A Century's Worth of Climate Change:

Anna Sher

Report by Audrey Boag

Most of us who spend time outdoors have noticed some changes, but Plant Ecologist Anna Sher's presentation of how Colorado flora is responding to climate change gave a sobering look at the reality of warming temperatures.



Anna Sher Photo by Jan Turner

Using herbarium specimens as proxies to measure changes in flowering time over the past 100 years, Dr. Sher asked whether Colorado's native plants are responding to temperature changes over time, and what the implications are for pollinators. Because most herbarium specimens include the reproductive parts necessary for plant identification, they show whether a plant was flowering or not on a particular date.

In order to separate normal fluctuations from changes induced by temperature alone, Dr. Sher analyzed long-term climate data and geographical variabilities such as altitude. She considered when each collection was made relative to its flowering window, and whether the collector's notes were accurate. Non-flowering plants such as ferns were evaluated and excluded from the data.

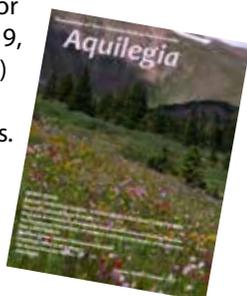
She found that the common species analyzed are flowering about 15 days earlier than a century ago. Rare plants are even more affected at 35 days, with the greatest changes occurring in sagebrush and mountain habitats. Some species, such as the Gunnison milkvetch (*Astragalus anisus*), are flowering an astonishing 45 days earlier.

Such dramatic changes have potential implications for reproduction. Frost is a serious concern, because earlier spring warmth does not mean an earlier last freeze. And, depending on how pollinators are cued, there may be disconnects between individual species and their host plants.

Dr. Sher encouraged conference participants to become involved in data collection and conservation planning through the National Phenology Network and Project Budburst.

For more information, please visit <https://www.usanpn.org/> and <http://budburst.org/>

See the Summer 2015 issue of *Aquilegia* for articles (Ewing, p. 19, and Goshorn, p. 21) on Citizen Science phenology projects.



Aquilegia Volume 39, No. 4 Fall 2015

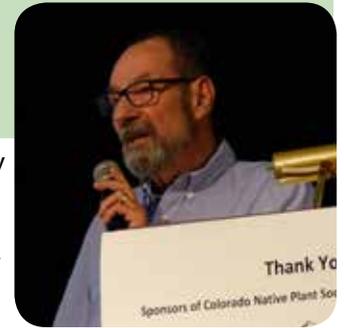
Butterfly Use and Pollination of Colorado

***Eriogonum* Species:**

Paul Opler

Report by Audrey Boag

The Colorado Native Plant Society 2015 Conference on Plants and Pollinators wouldn't have been complete without renowned butterfly expert and conservationist, Dr. Paul Opler. Dedicating his talk to the late botanist James Reveal, (see tribute to Reveal in *Aquilegia*, Vol. 39, issue 1, Spring 2015, p. 3-5) he explained the importance of *Eriogonums* (buckwheats) to butterflies in Colorado.



Paul Opler Photo by Jan Turner

Dr. Opler described how five genera of butterflies rely on buckwheats, with some so specialized that the availability of certain plants and the timing of adult emergence is critical to survival. For example, the larvae of butterflies commonly known as Blues feed exclusively on the flowers and developing seeds of their host plants, so anything amiss in flowering means trouble for the butterflies. He noted that the larvae of some species are tended by ants in exchange for the honeydew that the caterpillar derives from nectar.

Describing some of the reproductive systems employed by buckwheats, Opler suggested a need for controlled experiments to determine whether and how they might be pollinated by the many different species of butterflies that visit them.



Lycaena heteronea (Blue Copper butterfly) nectaring on *Eriogonum umbellatum* (Sulphur-flower) Photo © Audrey Boag

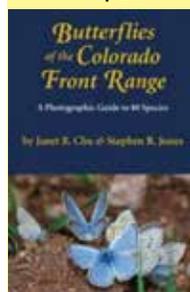
Interested in Taking a Class Taught by Opler?

Paul and Evi's 2016 butterfly classes with the Rocky Mountain Conservancy will be July 30, 2016 for the east side of Rocky Mountain National Park and August 13, 2016 for the west side of the park. Here are the descriptions from the 2015 catalog: <http://rmconservancy.org/wp-content/uploads/2014/12/2015-catalog-sm.pdf> There may also be a moth class.

The dates for their California workshop and class at the San Francisco State University Sierra Nevada Field Campus haven't been set yet, but one may see the 2015 information at www.sfsu.edu/~sierra. They'll probably be in late June-early July.

CoNPS Bookstore

\$10



Accessing CoNPS Field Trip Records on SEINet Biodiversity Portal: Melissa Islam

Report by Rick Brune

Melissa Islam, Director of Research and Head Curator of the Kathryn Kalmbach Herbarium, gave a very interesting overview of the SEINet data portal. Her presentation opens a window into a powerful tool for viewing botanical data with an emphasis on the southwestern United States. Melissa and the herbarium staff at the Denver Botanic Gardens are making data from CoNPS field trips and other regional floristic surveys available through this portal.



Melissa Islam Photo by Jan Turner

The SEINet data portal is designed to disseminate and share botanical information with the environmental community and researchers. It contains tools for data retrieval, mapping, plant identification, creating checklists, and creating repositories of information that anyone can use. It is designed around the use of verified voucher specimens but lists of unvouchered species can also be created. SEINet, based at Arizona State University, brings together information from different herbaria around the southwest and agencies such as National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), and Bureau of Land Management (BLM). Many other sources are also accessed.

My admiration and thanks to Melissa and the Denver Botanic Gardens herbarium staff for all of the effort they have put into this project.

This portal is a great source of information. Go explore it.

Rick Brune's Excellent Adventure with SEINet

Rick Brune experimented with searches in SEINet, explaining step-by-step how he performed the search and pointing out the strengths and weaknesses of the system. To view Rick's search, go to <http://conps.org/> and scroll down. Thanks, Rick!

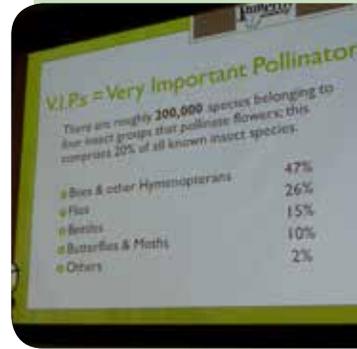
To Find Plant Lists from CoNPS Field Trips

- From SEINet (<http://swbiodiversity.org/portal/index.php>), click on "Intermountain Regional Herbarium Network."
- Under Flora Projects, click on "Colorado Flora"
- Click on our first list, "CoNPS: Boreas Pass *Draba* spp. Field Trip 2013", and **you get a photo species list of the *Draba* field trip in 2013.**

For more on SEINet, see Ed Gilbert's article, "SEINet: Using Herbarium Specimens to Enhance Biocollaborative Efforts," *Aquilegia*, Winter 2013, Vol 37 (6), pgs. 3-5.

Gardening for Pollinators: Amy Yarger

Report by Rick Brune



Right: Amy Yarger Photo by Mo Ewing



Amy Yarger, Horticulture Director at the Butterfly Pavilion, presented a fascinating and fact-filled presentation about gardening for pollinators. She also included information about pollinators and their varied interactions with the plants they pollinate. There was a tremendous amount of information that I only fractionally was able to scribble into my notes.

One interesting point was comparing the efficiency of different methods of pollination and pollinators. For example, wind pollination is very inefficient because so much of the pollen is wasted. On the other hand, animals are very efficient and 60-80% of plants rely on them for pollination.

Beetles dominate insects in terms of species numbers. They are one of the earliest pollinators in evolutionary terms. Beetles are inefficient when compared to bees because they feed on pollen, not nectar. Pollen transfer by beetles that results in pollination is accidental.

Pollinators in Colorado generally appear from late March to mid April and remain into October. To promote their well being and attract them into our yards, Amy discussed a number of things we could do to improve our backyard habitats to support as many pollinators as possible. They are the same things that are being done at the Butterfly Pavilion.

Here are only a few: Create a wide diversity of habitats of different heights and materials including ground covers. Don't ignore the importance of litter on the ground and water or muddy areas for drinking and nest building. Include shrubs, forbs, and grasses. Holes drilled into blocks of wood will be used by some bees and wasps. Habitats that provide shelter from the wind make foraging easier and reduce the energy needs of pollinators. Planting in clumps of the same species reduces the energy needs of pollinators that are not generalists, that is, the energy needs of those are seeking out plants of a single genus or species.

When you visit the Butterfly Pavilion you will find an indoor tropical rainforest full of butterflies. Outdoors, plantings attract a wide variety of butterflies and other insects during the warmer parts of the year. A nature trail provides opportunities to wander and observe. Indoors, in addition to butterflies, you

will find a diverse collection of other living invertebrates, terrestrial and aquatic, in re-creations of their natural habitats.

The Butterfly Pavilion recently became one of only two invertebrate zoos to receive accreditation by the Association of Zoos and Aquariums (AZA). That means they rank up there with other accredited zoos throughout the country. Plan a visit now! You may even get to meet Rosie, the tarantula.

Choosy Plants: Do More Chromosomes Mean More Bees? Rob LaPort

Report by Jessica Smith

Interactions between species are important for structuring biodiversity, which brings up the question, Why so many different flowers? Why do flowers that are closely related diverge so much in flower characteristics? Dr. LaPort discussed polyploidy, which is whole genome duplication. This process is common in plants in temperate and formerly glaciated areas. Fifteen percent of speciation events are the result of polyploidy. This type of speciation provides ecological adaptations, strong reproductive barriers, and morphological ambiguity.



Rob LaPort Photo by Mo Ewing

This research sought to answer the question of the contribution of polyploidy to pollinator visits. This research has implications for restoration. Fireweed, *Chamerion angustifolium*, has diploid and tetraploid individuals. Research in Wyoming and Montana found that bees preferred diploid fireweed. Dr. LaPort has been studying creosote bush. This is a long-lived desert keystone species. It is a profuse flowering plant, with diploids, tetraploids, and hexaploids. The research used flow cytometry, the fluorescent analysis of DNA, to determine the genomic content. Once they determined which sites had species of different polyploid levels, they were able to study different traits. Tetraploids produced more flowers, larger flowers, and flowers with sweeter nectar and larger pollen. Bee assemblages were the same on diploid and tetraploid species, so it became a question of individuals bees foraging. Which polyploidy level do they prefer? Honeybees showed no preference for diploid or tetraploid plants. Native bees, on the other hand, strongly preferred the diploids. Ninety percent of native bees sampled had only diploid pollen, and none were observed taking mixed loads. In summary, there were more bees on tetraploids, but natives used the diploids.

Southern Rockies Seed Network: John Giordanengo

John Giordanengo, Executive Director of Synergy Ecological Restoration, discussed the Southern Rockies Seed Network. The goal of the network is to help support the selection and development of well-adapted and ecologically appropriate plant materials for restoration and reclamation. It can be *Aquilegia* Volume 39, No. 4 Fall 2015



John Giordanengo

Photo by Mo Ewing

community.

John stated that source-identified propagating materials are seed, seedlings or other propagating materials collected from natural stands, seed production areas or seed fields where no selection or testing of the parent population has been made. The governing authority for seed growers is the Colorado Seed Growers Association's *Colorado Seed Certification Standards, 2012*.

The partners in the network are agencies, companies, and non-profits whose missions support use of ecotypic seed and assist in marketing, networking, and growing the network. Others provide revenue or in-kind services/products. Partners also include those who grow seed, distribute/sell seed, using their existing business operation to support the collection, production, storage, and distribution of seed.

Two basic products are workhorse species (ecotypic version of existing cultivars) and new species for restoration that are not currently available in the marketplace.

Economically priced seed typically have high seed yield and are easy to propagate, grow, harvest, and clean using normal harvesting equipment. *Penstemon strictus*, *Ratibida columnifera*, Lewis Flax, *Dalea purpurea*, and *Helianthus annuus* fall into this category. Higher cost seeds are complicated or difficult to propagate, grow, harvest and/or clean. They have low seed yield. Examples include *Machaeranthera tanacetifolia*, *Berlandiera lyrata*, and *Liatis punctata*.

The Southern Rockies Seed Network is an innovative program that is needed in the state to ensure that areas are reclaimed with local native plants. Please support this effort by contributing money to this cause. You are encouraged to attend their Annual Meeting on December 3, 8 - 4 at the Ranch Events Complex in Loveland. Please remember to pay the suggested donation of \$50 per person. See page 8 or www.synergy3.org for more details. Sign up at <https://srsn2015.eventbrite.com>

Wild for Monarchs: Susan Crick Smith Report by Kelly Ambler

Susan Crick Smith (president of the local chapter of Wild Ones) gave an interesting talk on monarch butterfly biology. In addition, she gave a brief overview of the Monarch Joint Venture program (<http://www.monarchjointventure.org>) in which the Wild Ones are participating. This project is a partnership of

challenging for organizations and agencies charged with reclamation to obtain the appropriate, ecotypic seeds and plants needed to revegetate an area after fire, flood, or other disturbances. It is important to use local native seeds to reclaim areas for biological diversity, to fill niches that weeds would, and for resilience of a restored plant community.

Ecotypic Seed: Seeds from a genetically distinct geographic population within a species adapted to specific environmental conditions.

various government agencies and non-governmental organizations working together to protect monarch migration across the lower 48 United States. The North American population of monarchs are genetically similar to other monarchs around the world but are unique in their migratory behavior. The United States has two populations of monarchs: a western population that



Monarch on *Asclepias speciosa*
Photo by Charlie Turner



Susan Smith Photo by Mo Ewing

summers west of the Rocky Mountains and winters on the California coast and an eastern population that winters in Mexico. In the spring, the latter group flies from Mexico to the southern US, where the first generation of eggs are laid. Upon maturation, the newly emerged monarchs continue flying north, repeating the pattern for an additional 3-4 generations. Juvenile hormone ceases to be expressed in the last generation (usually in the northern US, occasionally into southern Canada),

triggering these butterflies to fly to Mexico for the winter, a place they have never seen. In spring, the pattern will be repeated. This unique migratory event is in jeopardy due to loss of habitat in Mexico and a decrease in milkweed prevalence in the US. Monarchs are completely dependent upon milkweeds for reproduction. Ms. Smith ended her talk by imploring us to become active in improving monarch habitat in our own yards as well as increasing public awareness for monarchs.

SuperMo (cont. from page 26)

I joined the Society in 2004 and upon retirement, became treasurer in 2010. As treasurer I moved our endowment funds from CDs which were not earning any income, into Vanguard mutual funds to generate more income. When CoNPS was unable to find volunteers to run our workshops program, I developed a program to share workshop profits to attract staff as independent contractors, resulting in the successful recruitment of Linda Hellow.



In 2012, I became chairman of the Conservation Committee. In this capacity, I wrote quarterly articles for the "Conservation Corner" column in *Aquilegia*, set up joint on-the-ground conservation projects at Summit Lake, Mt. Evans and other conservation programs jointly with other conservation organizations. I have also built the conservation committee membership to about 26 volunteers.

In 2015, I rebuilt the CoNPS website and am recruiting volunteers to share the responsibility of running the site.

I do not consider volunteering in these different capacities in CoNPS as work, but as interesting and enjoyable.

National Wildlife Federation's Gardening for Wildlife Programs: Brian Kurzel

Report by Kelly Ambler

Brian Kurzel, Executive Director of the Rocky Mountain Regional Center for the National Wildlife Federation, asked us "What can we do to improve habitat for wildlife?" NWF has promoted the idea of using a community approach to protecting wildlife. Large numbers of individual backyard or schoolyard wildlife



Brian Kurzel Photo by Mo Ewing

gardens lead to an accumulated increase in habitat acreage. Gardens enrolled in the NWF certified wildlife habitats also count towards the Million Pollinator Garden Challenge. A successful garden wildlife habitat has five components: food (e.g., nectar plants, berries), cover (shrubs, brushpiles), water (birdbaths, ponds, streams), places to raise young (birdhouses, beehouses, hollows), and sustainability (little or no pesticide use, decreased water consumption, native plants). Individuals can also increase community involvement by creating schoolyard wildlife gardens. These gardens provide a direct connection between children and nature - "more green time and less screen time". In addition to individual gardens, NWF also has a Community Wildlife Habitat program. This program certifies that the entire community is committed to providing habitat for wildlife. Mr. Kurzel ended his talk with a challenge for us to create Colorado's first certified Community Wildlife Habitat.

Sex in the Field & Garden: Irene Shonle



Irene Shonle Photo by Mo Ewing

In a humorous take-off on Dr. Ruth, "plant sex-therapist", Dr. Irene Shonle fielded questions from the audience regarding pollination strategies. Delivering a presentation developed by Mary Ann Bonnell, Visitor Services Supervisor of Jefferson County Open Space, Irene imparted knowledge in a very entertaining fashion. You can see the amused reaction of the audience below in the photo by Audrey Boag.



Rare Plants and Pollinators:

Dave Anderson

Report by Audrey Boag

In the presentation at the 2015 CoNPS Annual Conference, Colorado Natural Heritage Program (CNHP) Director David Anderson shared the collective knowledge surrounding the reproduction of Colorado's key rare plant genera. CNHP monitors and ranks Colorado's rare and threatened species and is central to Colorado's biological conservation efforts.



Dave Anderson Photo by Jan Turner

David discussed whether the species tracked by CNHP are dependent on insects, birds, or wind for fertilization or reproduce asexually. He pointed out some of the clever mechanisms employed by individual species to ensure reproduction, including the orchids that so captivated Charles Darwin and the *Eriogonums* illuminated by the late James Reveal and others. He explained that white, blue and purple penstemons are pollinated by bees and one species of wasp, while red penstemons rely on hummingbirds.

Bringing the talk full circle, David said, "More introspection is needed to understand what we need to do for rare plants and pollinators" and he outlined examples of some of the current efforts, from research to public outreach. He addressed concerns over the use of neonicotinoids, saying that the effect on bees remains poorly understood. Also of concern but better understood, is the magnitude of landscape disturbance due to development and agriculture. Rich in content, David's presentation was sprinkled with humor and affection for his subject. It was a comprehensive presentation that inspired the audience to stay engaged with important issues.

National Strategy to Promote the Health of Honey Bees and Other Pollinators:

Tyler Johnson

Report by John Vickery

Tyler Johnson, Regional Botanist of the Rocky Mountain Region of the U.S. Forest Service (FS), gave an overview of the National Strategy, giving emphasis to the components relevant to FS-administered lands and native plant communities. Last May, the White House's



Tyler Johnson Photo by Jan Turner

Pollinator Health Task Force issued the 'National Strategy'. The National Strategy has three main goal areas: honey bees, monarch butterflies, and pollinator habitat acreage, with the last being the focus of this presentation. One of the goals is to restore or enhance 7 million acres of land for pollinators over the next five years; the FS is responsible for 300,000 acres. The main components of the Strategy

are: the Pollinator Research Action Plan; the Partnership Action Plan; pollinators action plans for each agency; plans for education and outreach; Best Management Practices (BMPs); identification of priority pollinator plants for grow out; and a National Seed Strategy. With implementation in late 2015 through 2016, the FS, in cooperation with the Department of the Interior, will characterize existing efforts and resources for native plant seed increase and identify needs and funding sources.

The speaker noted a particular contradiction in that FS dogma considers bare ground to be undesirable, yet the majority of native bees are ground nesting and require or prefer bare ground. What will the FS's pollinator BMPs be like? First, they will develop and implement BMPs for six common habitats: forests, roadsides, shrublands, grasslands, riparian areas, and wildlife openings. Second, to protect pollinators, they will implement BMPs concerning common vegetation or land management practices such as the use of pesticides, prescribed burning, livestock grazing, and mowing. Lastly, they will develop and implement BMPs specific to particular pollinator species. Despite the high-level mandate, the public, including the CoNPS membership, is encouraged to let the FS know that it cares about pollinators, that it wants the USFS to prioritize pollinator conservation, and to implement BMPs. For information on where to write, see page 23.

About the Reporters and Photographers

Kelly Ambler has a Ph.D. in Biology with an emphasis on molecular pharmacology. Understanding native ecosystems has been a long-standing passion of hers.

Audrey Boag is a lifelong child of the woods with a passion for the behaviors, sounds and images that add to our understanding of the natural world. You can see some of her photographs at www.woodpeckeralley.com.

Jan Boussetot, the CoNPS Membership & Marketing Coordinator, has a PhD in Horticulture from CSU, and teaches horticulture at CSU. She is responsible for the CoNPS E-News.

Rick Brune has been surveying and mapping vegetation for 25 years. He also has created a 0.2 acre prairie garden in his yard with species from short, mid, and tallgrass prairies. His publication, *The Prairie Garden: A Step-by-Step Guide to Creating a Shortgrass Prairie Garden*, is available from the CoNPS book store.

Mo Ewing is the Chair of the Conservation Committee, Chair of the Finance Committee, and webmaster at CoNPS. Mo has a masters in conservation biology and was the land stewardship director of Colorado Open Lands before he retired.

Jessica Smith holds a master's degree in environmental science, Ecology concentration, from the University of Maryland. She has been involved in the field of plant ecology for 13 years, and has assessed plant communities and populations in a variety of ecosystems across the country. Currently she is employed as a field technician with the Colorado Natural Areas Program.

Jan Turner is Co-President of CoNPS and editor of *Aquilegia*. She is professor emerita of library science at Regis University and has an MS in biological sciences from Arizona State University.

John Vickery is a biologist, experienced in land conservation and stewardship, and specializing in vegetation management. He has served on CoNPS Education & Outreach Committee since 2008.

Notes and Photos from Some Annual Meeting Field Trips

Aquatic Plants Field Trip Report by Cecily Mui

Mari Majack led a highly enlightening trip to study aquatic plants at Red Rock Lake in the USFS Brainard Lake Recreation Area. Participants, equipped with rubber boots, waders, tennis shoes, and a kayak, enjoyed childhood memories as we searched the mountain lake for aquatic plants.

Mari shared with us creative tips on how to collect aquatic plants and tools she devised to help us bring up specimens from the deeper areas of the lake bottom without having to dive underwater. We observed aquatic species that are normally expected: *Nuphar lutea* (Rocky Mountain pond-lily), *Sparganium angustifolium* (narrowleaf bur-reed), *Potamogeton alpinus* (alpine pondweed), and *Ranunculus aquatilis* (white water crowfoot, which is often mistaken for invasive watermilfoil and *Cabomba*). We also learned that we needed to be ready for unexpected plants that are more typically found on the edges of aquatic habitat, but can also be found submerged and have physical characteristics different from their terrestrial form, such as: *Eleocharis parvula* (dwarf spikerush) and *Ranunculus flammula* (greater creeping spearwort).



Mari Majack Photo by Cecily Mui

Mari capped off the trip with a demonstration of techniques and clever tricks used to make pressed specimens of aquatic plants.



Ranunculus aquatilis
Photos by Cecily Mui



Keying Grasses & Other Plants at Green Mountain Field Trip Report by Kelly Ambler

Loraine Yeatts led a wonderfully informative field trip on Green Mountain. The main focus of the field trip was the identification of grasses through the use of dichotomous keys, but we also identified several other types of plants that were still blooming. Loraine very patiently took us through several different grasses, carefully showing us how to correctly use the descriptions of the key characteristics of each grass. For example, I now have a much better understanding of how to distinguish between a hairy and membranous ligule! Dick Yeatts, Loraine's husband, also gave us a short introduction to the geological forces shaping the area, thereby influencing the plant communities. It was a small, but enthusiastic, group. We were the last field class to return!



Loraine Yeatts describing the characteristics of a grass
Photos by Kelly Ambler

Tour of Denver Botanic Gardens at Chatfield

Report by Jen Boussetol

The Denver Botanic Gardens at Chatfield features a series of mesic prairie native plant beds around the Earl J. Sinnamon Visitor's Center.

These three year old beds have the additional function of rain gardens to capture stormwater runoff from



Photo by Jen Boussetol

the visitor center parking lot. Larry Vickerman, Director at the Denver Botanic Gardens at Chatfield, led the tour. Larry indicated that all 365 of the plant species are listed on the Denver Botanic Gardens Navigator website at: <http://navigate.botanicgardens.org>. The species that particularly captured the attention of the group included *Liatrix ligulistylis*, *Mirabilis multiflora*, *Oenothera caespitosa*, *Schizachyrium scoparium*, *Scutellaria incana*, and *Shepherdia argentea*.

After the first hour touring the gardens and lavender trials around the visitor's center, the group was treated to a stop in the butterfly house where we were able to observe the chrysalises and adult butterflies of four Colorado native butterfly species. We even had the rare opportunity to go inside the historic 1860's Hildebrand Ranch farmhouse. The tour finished up by winding around the cool, shady riparian area with views of the Community Supporting Agriculture (CSA) farm, perennial garden beds, a children's play area and several popular wedding locations.

Red Rocks Park Field Trip: Jen Ackerfield and Jan & Charlie Turner



Jen Ackerfield leading field trip Photo by Mo Ewing

Jennifer Ackerfield's field trip was extremely popular. Charlie and Jan Turner took a second group down a different trail and they met with Jen half way through the session and traded groups so everyone would get to spend time with Jen. After the hike, Jen signed copies of *Flora of Colorado* for participants.

Chatfield Bee Watch Field Trip Report by Audrey Boag

On a beautiful September morning at the Chatfield Botanic Gardens, biologists Carol Kearns and Diana Oliveras armed field trip participants with nets and bottles so that we could learn to capture and study live bees in-hand. Over the next few hours we found over 16 species in a relatively small area.

Each bee was temporarily chilled to give us an opportunity to learn about its unique characteristics and ecology. We learned to recognize differences between the males and females of some families, and how to tell wasp-like pollinators from true wasp predators. From the lumbering *Bombus* to the diminutive *Agapostomen*, learning about the amazing adaptations employed by each species left us even more aware of the importance of protecting them.



Agapostomen angelicus

Photos by Audrey Boag

Along the way we found a spider with honeybee prey and bee-like beetles on goldenrod. We ended the morning with a fun visit to the Butterfly House to marvel at another world of pollinators. It was an all-smiles day with wonderful teachers and participants, including the bees!



BugGuide.net is a good resource for more information on bees and bugs of all kinds.

Your Comments Can Help Native Plants & Pollinators

Message from Tyler Johnson: As a public service agency, the Forest Service (FS) needs and values comments from the public that we serve about projects occurring on public land. If you are interested in the FS prioritizing pollinator conservation or rare plant conservation when taking actions, commenting on *specific projects* will inform the decision maker about the public's concern. For something to count as a comment (which then requires a response from the FS) commenters *must ask the FS to do something specific and provide a reason why it should be done*. The more specific the better. Asking the FS to do things like including native wildflowers in seed mixes or following the draft pollinator BMPs or making sure we survey for and protect rare plants and providing a reason why would help the FS make better informed decisions and provide protection for all the species that need it. To comment on a project and make your voice heard, go to the Schedule of Proposed Actions (SOPA) at www.fs.fed.us/sopa/. If you click on Colorado on the map, you will get a map of all the National Forests in Colorado. Clicking on a National Forest or National Grassland will take you to that unit's SOPA page. There is a link at the top for the current SOPA for that unit. Once you click on the current SOPA, each project is listed by district and most projects will have a description of the project along with a web link. This link is where the opportunity to comment will be along with all the pertinent details as they are available along with a contact.

CoNPS Award Winners

Jack & Martha Carter

by Jan Turner

Jack and Martha Carter were recipients of a Special Merit Award for their many contributions to the botany and conservation of our region. Most of us know botanist Jack Carter as Professor Emeritus at Colorado College and author of *Trees & Shrubs of Colorado*. We know Martha as his wife and co-author of *Common Southwestern Native Plants: An Identification Guide*. You may not be aware of the role they have played in science education and conservation. If you have taken a biology class that used a BSCS (Biology Sciences Curriculum Studies) book, you have been influenced by the work of Jack Carter.

Carter, a Kansas native, was inspired in his love for biology by his high school science teacher, Arnold Voth, who made sure Carter completed his homework and gave him a battered copy of Darwin's *On the Origin of Species*. "That book really challenged me," Carter recalled. "I took it to Sunday school at the Baptist church and said, 'I want to talk about some of these ideas.'" Not surprisingly, that did not go over well with his Sunday School teacher (*BSCS Newsletter*).

Anyone who has met the Carters know they are humble and approachable people who wish to impart their love of learning and science to others. At Colorado College, Jack loved to teach the class, "Biology for Science-Haters." Jack observed that a number of students feared biology because of bad experiences with certain high school biology teachers. Jack's answer was to make learning about biology fun.

Jack was a veteran of the Korean War, which meant he was able to attend graduate school on the GI Bill. He received a BS and MS in biological sciences and physical sciences from Emporia State University in Emporia, Kansas, and was awarded a PhD in botany from the University of Iowa in 1960. He studied under the renowned plant taxonomist, Robert Thorne (see obituary, p. 7, *Aquilegia*, Summer 2015), who he selected based on Thorne's personality rather than his area of research.

Jack taught biology at community colleges and universities and, during the summers from 1961-1966, he directed summer institutes for teachers at the University of Colorado, Boulder, funded by the National Science Foundation (NSF) through the Biology Sciences Curriculum Studies (BSCS) program. BSCS was formed as part of the response to concerns that the United States was falling behind the Soviet Union in science and technology after the Soviets beat the Americans to space with the successful launch of the Sputnik satellite in 1957. Biology curricula were reviewed and new approaches to teaching were developed. The BSCS website explains:

When BSCS set out in 1960 to create new biology programs—three experimental versions of a high school biology course, stressing concepts rather than facts and investigations rather than lectures—it tackled the task with a novel approach. Writers and their families moved into a University of Colorado dormitory for the summer, with rooms on the top floor serving as offices. A high school teacher and a university professor were paired in each office as a team and were assigned to write a chapter



Martha and Jack Carter Photo by Mo Ewing

or laboratory exercise. After each chapter or exercise was completed, it immediately was mimeographed and distributed to the rest of the writers, who were charged with dissecting the work and finding mistakes. Each team prepared a student textbook, teacher's guide, and student laboratory book—in about six weeks." (From . <http://www.bsos.org/history>)

In 1966, the Carters and their three children moved to Boulder, where Jack served as the Associate Director of BSCS. After several years, Jack left BSCS to accept a position teaching biology at Colorado College in Colorado Springs. He was still involved in BSCS projects, was the editor of *The American Biology Teacher*, served as a science-education consultant in Thailand and India during his sabbaticals, and chaired the Biology Department at Colorado College from 1975-79. When the BSCS Director retired, Jack was urged to replace him. At the time, federal funding for BSCS had been eliminated, but under Jack's leadership as Director of BSCS, through cost cutting measures, grant funding, and good investments, Jack was able to keep BSCS afloat. In 1983, the political climate changed and there was again government funding. While Jack taught at Colorado College, he actively built the herbarium and when he retired the herbarium at Colorado College was named after him.

In his final column in the BSCS newsletter (April 1985), Carter stated, "Educated people know that committing to memory the structure and function of the typical flowering plant is of no consequence, unless the evolution of endosperm is related to the evolution of primates, and the role of the grasses in feeding the people of the world is understood."

What about Martha Carter? What was her role?

Martha, an energetic and intelligent woman, has always been a busy and helpful partner for Jack as well as an educator in her own right. While Jack was teaching at Simpson College in Iowa, Martha typed plant labels, took botany, and worked on a degree in elementary education. Throughout their moves, Martha continued working on her degree and graduated from Colorado College with a degree in education. She was hired by the Widefield School District in Colorado Springs and taught many different grades (1st, 2nd, 4th, 5th, and 6th) and also taught in a combination classroom, where different grade levels were combined. When Jack would go on sabbatical, Martha would go with him and when they returned to the U.S., Martha would never know which grade the school would assign her to teach.

(Cont. of page 26)

CoNPS Award Winner

Vickey Trammell

by Jan Turner



Vickey Trammell was honored with a Special Merit Award at the CoNPS 2016 Annual Conference for her many contributions to Colorado botany and CoNPS. From her study of plant ecology as one of John Marr's students, her career teaching biology to students at Arapahoe Community College, her time as a naturalist and scientist at Roxborough State Park, and her detective work in botanical forensics through Necrosearch, Vickey Trammell has been a presence in the Colorado botanical community for decades. During much of this time, she has been an active member of CoNPS, leading field trips and serving as president of the Metro Denver Chapter.

Originally from Canton, Ohio, Vickey Trammell attended Cottey College, a woman's college in Nevada, Missouri, where, she said with a twinkle in her eyes, she learned she was smart. She then transferred to Baldwin Wallace College (now called Baldwin Wallace University) in Berea, Ohio, where she met the man who was to become her husband, Jim Trammell. They decided to become botanists because of their excellent botany professor, Dr. Dean. Jim and Vickey did graduate studies at Ohio University in Athens, Ohio but the university did not offer a doctorate in botany so, in 1964, they left for University of Colorado in Boulder in their green '58 Chevy pulling a U-Haul trailer. Jim had been in the Army so he was able to go to graduate school on the GI Bill, working on a doctorate in plant ecology as one of John Marr's students while Vickey taught Junior High science half-time in Lafayette for 2 years. She quit when she became pregnant; women were not allowed to teach when they were pregnant in the 1960's. After three months of bedrest to avoid a miscarriage, she gave birth to identical twins, Jimmy and Scotty. She started working on a masters in plant ecology under John Marr; she commented that he wasn't the best lecturer, jumping from topic to topic, but he was great teaching in the field. In Marr's class, the students learned to identify Colorado conifers using only one needle from the tree. That was useful to Vickey later in her forensic botany work. Marr became good friends with the Trammells and Vickey would be requested to bring her guitar and play at the Marr's Christmas parties. David Buckner was another of Marr's students as was Sandy, David's future wife.

The Trammell family continued to grow with the addition of their third son, David. In 1971, Jim was offered a job as head of the Biology Department at Arapahoe Community College (ACC)

so the Trammells moved to Littleton. The twins, Jimmy and Scotty, had started kindergarten and David was a baby, three years younger than the twins, when Jim hired Vickey to teach non-majors at Arapahoe Community College. Although Vickey and Jim were both plant ecologists, they taught everything offered in the Biology Department at ACC. Always a musician (she played violin in the local orchestra), Vickey would sing lessons to the students at ACC to help them remember biological terminology. She loves to write poetry and has written and illustrated children's books and poems. She is a woman of many talents.

In 1975, the land for Roxborough State Park was purchased and in 1977 Vickey surveyed the plants, animals, and topography of Roxborough. She performed phenology studies until 1982. When Roxborough State Park was preparing to open, Susie Trumble was the first ranger at Roxborough and, when she started a volunteer naturalist group in 1982, she recruited Vickey, who taught the classes for the volunteer naturalists. The Roxborough State Park Visitor Center was built in 1984 and the park was opened to the public in 1985. At the opening ceremony, Native Americans danced an eagle dance, while to everyone's amazement, eagles circled overhead. Vickey shared her feeling that Roxborough is a spiritual place. Vickey was hired as a paid ranger in charge of environmental education and led flower hikes for all ages - two in the spring, 2 in the summer, and 2 in fall. She recalled fondly that one winter she had to cross-country ski into the park to go to work. She returned to ACC because she missed teaching at the college.

The volunteers made a difference for the park. When U.S. Homes decided to develop the lands near Roxborough, the volunteer naturalists protested and U.S. Homes donated the land to Roxborough. The Park was originally 500 acres and grew to 3,000 acres. Angel Tobin is now in charge of environmental education at Roxborough and there are 100 volunteer naturalists.

When Roxborough received a grant for fuel mitigation, some places were left alone. Volunteers located species of concern on topo map but an over-zealous fuel mitigation worker leveled two acres with a bull-dozer, destroying all of the plants in that section. Although troubled by the destruction, Vickey saw it as an opportunity for a citizen science project, recruiting 25 volunteers to measure soil temperature, soil moisture, and percent coverage. They monitored the return of the plants in fifty one-meter square plots. The oaks returned first. In 1978, Vickey produced a list of species in the aspen grove at Roxborough. At that time, the ground cover was bracken fern. In 1988, she received a grant to perform a vegetative analysis of all plant communities in Roxborough. The aspen grove ground cover was then native grasses and flowers. In 2008, using the same techniques, equipment, and volunteers, they found that poison ivy and Canada thistle had taken over as the ground cover in the aspen grove. The number of aspen were about the same as in 1988 but, in 1988, there were many saplings in the grove and by 2008 there were no saplings. The canopy was gone. There used to be two aspen groves but one has disappeared. Vickey would like to see another survey of the area. She can't get to the aspen grove but would like to supervise the project.

In 1986, Vickey became involved in NecroSearch International, a team of law enforcement officers and scientists who combine their expertise to locate clandestine graves of murder victims. Dr. Jane Bock, Professor Emerita, Dept. of EPOB at CU Boulder, was the first botanist to be involved in NecroSearch investigations. Vickey Trammell, known for skills as a naturalist as well as a botanist, was recruited to participate in Project PIG to help solve the mystery of how and why bones disappear from graves. Four pigs were buried. When the graves were checked shortly after the burial, three pigs were missing. Vickey recruited her friend, Cecilia Travis, a naturalist, to work with her on the project. There were no footprints. The women found pig hair in coyote feces but other than that, little evidence was found. Only a single bone from a pig was found. This demonstrated how difficult it could be to find the scavenged remains of a murder victim. Vickey has been training others to carry on her work in botanical forensics. They include Pam Smith, botanist with Colorado Natural Heritage Program and former president of the CoNPS Northern Chapter, and Crystal Strouse, botanist with Fort Collins Natural Areas and former CoNPS president. More about NecroSearch and Vickey's involvement in the organization can be found in Steve Jackson's book, *No Stone Unturned: The True Story of NecroSearch International, the World's Premier Forensic Investigators*. NY: Kensington Publishing, 2002.

Since 2000, Vickey has suffered from Parkinson's Disease and, in recent years, it has affected her mobility, but her mind is still sharp and she is still passionate about botany and ecology. Ironically, Vickey's professor, plant ecologist John Marr, was also afflicted by Parkinson's. Vickey has been a great mentor to many Colorado botanists. She is an inspiration and a wonderful role model.

Jack & Martha Carter (cont. from p. 24)

In 1990, when Jack Carter retired from Colorado College, Martha Carter retired from teaching in the Widefield School District and they relocated to Silver City, New Mexico, where the Gila National Forest and the Chihuahuan Desert meet, presenting them with an interesting variety of floristic communities and ecosystems. They purchased 12 acres of land that had been grazed but still had some native grasses and trees. They had a solar house, grew a native plant garden, and had their own herbarium! In Silver City, the Carters were very active in the Gila Native Plant Society, serving as officers, and oversaw its incorporation into the Native Plant Society of New Mexico as the Gila Chapter. They were active in the Native Plant Society of New Mexico, established the Jack and Martha Carter Conservation Fund, wrote for their newsletter, taught classes, and volunteered for many activities. They also worked on books. With their friend, Donna Stevens, they produced the popular book, *Common Native Plants of the Southwest: An Identification Guide*. Martha did the layout and design of the book and took many of the photographs. They produced a second edition of the book and Jack completed 2nd editions of *Trees and Shrubs of Colorado* and *Trees and Shrubs of New Mexico*. Jack credits Martha as "the driving force" behind his publications.

The Carters are passionate about education and especially botanical and environmental education. They donated free copies of Jack's book, *Trees and Shrubs of Colorado* to

Colorado school systems and *Trees and Shrubs of New Mexico* to school systems in New Mexico.

Now that they are in their 80's, the Carters decided it was time to locate closer to better healthcare facilities and their daughters and recently moved to Denver. They are not sitting still. Martha is busy volunteering in their community and especially enjoys working with children. They are also invaluable advisors to CoNPS and are unofficial members of the Board. Jack will be volunteering at the CoNPS Table at the Association of Colorado Science Teachers Conference in November with Tom Zeisner and supplying free copies of his book, *Trees & Shrubs of Colorado*, to interested teachers attending the conference. We at CoNPS are grateful that the Carters have joined our community.

Award Winner: Mo Ewing



Mo Ewing received the SuperMo Award at the CoNPS Annual Conference. Mo is the Treasurer on the CoNPS Board of Directors. He chairs the Conservation Committee and Finance Committee, writes the "Conservation Corner" column of *Aquilegia*, and created a whole new website for CoNPS, serving as webmaster.

Mo was asked to tell us how he became interested in botany and how he came to CoNPS. Here are his answers:

When I was in 9th grade, I remember going on a field trip in my biology class and identifying shrubs and trees by the shape of their leaves. I remember thinking, "How dumb is this?" Even though I lived on a farm in Rhode Island at the time, it never occurred to me to try to identify native plants.

Fast-forward to the 1990s when I was in my 50s, I owned a travel company, and in spite of the fact that they were not very profitable, I ran some bus trips to natural areas for garden clubs around New England. I remember on one trip suddenly asking myself, "I wonder what plant that is?" And so, late in life, botany started. I began taking field botany courses at the New England Wildflower Society, and when I sold my travel agency in 1997 I went to the Wildflower Society, which I had fallen in love with, and said, "I want to work here."

"We have no job openings".

"Put me to work anyway", I said, and they did. Two weeks later a fellowship opened up, which I filled. I organized 150 volunteers to monitor rare plants all over New England.



SuperMo by artist/cartoonist Rob Pudim.
Mo received the original watercolor with his award.

"If you want to do this for a living", my boss, Chris Mattrick, said one day, "you should get a masters degree."

"You're crazy", I replied. "I am 54 years old and am too old to go back to school". But after a Jack Daniels that night, I thought, "Why not, it might be fun." So in 1999, off to Antioch New England I went to get a masters degree in conservation biology. It was more than fun, it was wonderful!

Before the end of my degree, I was offered a two-year seasonal job in the White Mountain National Forest in New Hampshire, training 50 volunteers to inventory and map invasive plant communities. In 2002, I was almost finished with my degree. All I had to do was to take one more course, one internship and finish my thesis which was a study of an old growth forest in Massachusetts.

I decided to come to Colorado to finish up the loose ends while staying with my brother in Denver. And then, rather than go back to New England, I fell in love with a beautiful blond and stayed in Denver. Being 58 at the time, I didn't really want a full-time desk job, but wanted to do projects in the field.

One day my brother said to me, "there is a great job at Colorado Open Lands, a land trust in Lakewood that has conservation easements all over Colorado. They are looking for a Land Stewardship Director.

"I don't want to apply," I said, "It is a full-time job".

"Just go and interview. What do you have to lose?"

It was a very strange interview. I was totally outrageous, cracking jokes and not really trying to get the job at all. Incredibly, Dan Pike and his staff liked my antics and hired me, and I worked there for six very happy years, traveling all over Colorado monitoring gorgeous ranches and other properties.

In the end, there was more making sure that easements were being followed and less botanical things that I wanted to do so, right on the dot of 65, I retired to do botanical things, volunteering for the research department at Denver Botanic Gardens, volunteering at the Colorado Natural Areas Program and doing all manner of fun things with the Colorado Native Plant Society.

(SuperMo article continued on page 20)

Annual Conference Planning Committee

Thanks to the Annual Planning Committee and volunteers for their many hours of hard work.

Chair: Jan Loechell Turner

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Thank You Donors & Sponsors

Thank you to the people and organizations who donated items for the Silent Auction: Selma Kristel, Dr. Warren Hern, Patricia Butler, Cheryl Ames, Lenore Mitchell, Charlie Turner, Donald Hazlett, Mosquito Range Heritage Initiative (Ginni Greer), Table Mountain Inn, Grappa's, Harlequin's Gardens, Great Outdoors Colorado, CSU Ext. Native Plant Master Program (Barbara Fahey), Denver Botanic Gardens, Woody's Pizza, King Soopers, Safeway, Goozel's Yogurt.

Thank you to our sponsors/vendors: High Plains Environmental Center, California Botanical Society, Publication Designs, Inc. (PDI), CSU Extension Native Plant Master Program, Harlequin's Gardens, Regis University Environmental Biology Program (Cath Kleier), University of Colorado Herbarium (COLO), Jan and Charlie Turner, Boulder County Nature Association, Butterfly Pavilion, City of Boulder Open Space & Mountain Parks, Denver Botanic Gardens, Feed Earth/Terreplenish, Golden Solar, National Wildlife Federation, PlantSelect, Table Mountain Inn, U.S. Forest Service, Colorado Natural Heritage Program, Horticultural Arts Society of Colorado Springs, Plan Jeffco, Xerces Society, GOC, Whole Foods, Nature Conservancy.

Thank You !

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Prices listed below do not include shipping charges or taxes.

The Colorado Native Plant Society 2016 Calendar

is made of heavy card stock and includes the winning photos from the 2015 CoNPS Photo Contest. Gorgeous photos AND the birthdays of famous botanists/naturalists and prominent Colorado botanists are included on the calendar. **Only \$12!**

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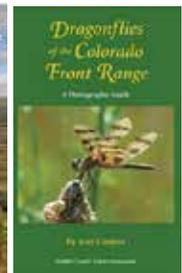
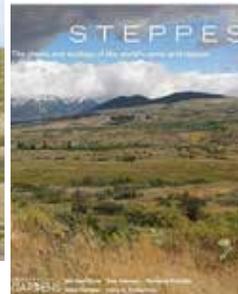
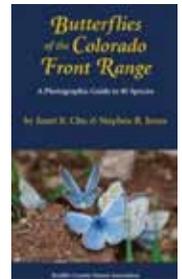
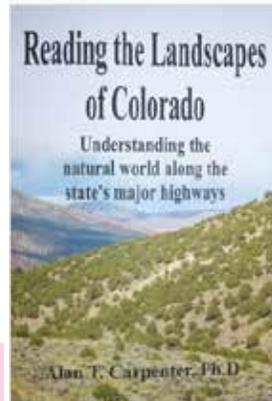
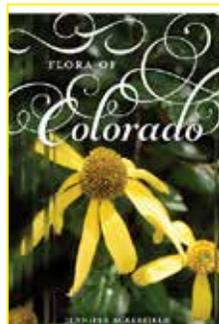
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4	5	6	7
11	12	13	14
18	19	20	21
25	26		

January

Mon	Tue	Wed
4	5 Thomas Nuttall's Birthday	6
11 Aldo Leopold's Birthday	12	13
18 Martin Luther King	19 Alice Eastwood's Birthday	20



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Most members receive the *Aquilegia* newsletter electronically.

Check the box if you would like to receive the printed copy of *Aquilegia*.

Please make check payable to: Colorado Native Plant Society

Save the Date! The 2016 Colorado Plateau Native Plant Program Annual Meeting

The meeting will be in Page, Arizona, March 22 & 23, 2016, at the Courtyard Page at Lake Powell Hotel. It has been a busy year for native plant materials! New Federal strategies such as the National Native Seed Strategy and National Strategy to Promote the Health of Honeybees and Other Pollinators, as well as events like the National Native Seed Conference, have underscored the importance of regional programs like the CPNPP. Therefore I hope that everyone who has anything to do with native plant materials in our region will be able to join us in Page!

CPNPP invites your: 1. Proposals for Sessions. Due December 15, 2015; 2. Abstract submissions. 500 word limit. Due January 15, 2016 3. Requests for Partner or Vendor Exhibit space (limited); 4. Sponsorships for refreshments during breaks or evening social. Please send all inquiries and submissions to: Adrienne Pilmanis, CPNPP Coordinator, apilmani@blm.gov; 801-539-4076

We expect detailed Program and Agenda information, including any evening socials or field trips, will be announced in February. For examples of past CPNPP meeting Programs, see the CPNPP website: <http://www.blm.gov/ut/st/en/prog/more/CPNPP.html>

Give to CoNPS through Amazon Smile (smile.amazon.com) Every time you purchase something from Amazon.com, if you go through Amazon smile, Amazon will donate 5% of the purchase price to CoNPS. First, select CoNPS as your charity.

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

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Send completed form and full remittance to:
CoNPS Office
PO Box 200
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Check box to receive information on volunteer opportunities

Charlie Turner's Bee Block Houses Big Success at CoNPS Silent Auction



Loraine Yeatts and her zucchini saguaro cactus & toothpick spines

There were many bids at the Silent Auction for the bee block houses made by CoNPS President Charlie Turner. He followed the instructions, "How to Construct a Wooden Nest Block," on page 141 of the Xerces Society Guide, *Attracting Native Pollinators: Protecting North America's Bees and Butterflies*. The book is available through the CoNPS Bookstore at http://conps-bookstore.org/?page_id=10 and would make a great gift for a family member or friend.

Third Place Photo Contest Winners



Audrey Boag (Native Plants)- *Tradescantia occidentalis*,



Carla DeMasters (Native Plants)- *Dyssodia aurea*



Margarete Steinhauer (Native Plants)-*Aquilegia barnebyi*



Marlene Borneman (Native Plant Landscape)-*Rydbergia grandiflora*



Tami Kochen (Artistic)- *Frasera speciosa*



Audrey Boag (Native Plants & Wildlife)-*Bombus ternarius*
foraging in *Astragalus drummondii*



CoNPS 2015-2016 CALENDAR

DECEMBER 2015

Dec. 1, Tues. Why Do I Have to Rake My Yard? 7-8:30 p.m. (MD)
 Dec. 3, Thurs. Southern Rockies Seed Network 2015 Annual Meeting, Loveland
 Dec. 5, Sat. CoNPS Board Meeting, Regis U., 9:30 a.m.-12:30
 Dec. 5, Sat., Intro. to the Parsley Family Workshop, 9-3 pm, Longmont
 Dec. 6, Sun., Intro. to the Parsley Family Workshop, 9-3 pm, Longmont
 Dec. 10 A Region of Astonishing Beauty—the Early Botanical Exploration of the Rocky Mountains, 6:30-8pm (B)

JANUARY 2016

Jan. 7, Thurs. Reminiscing the 2015 Wildflower Season ... A Member Photo Share, 7-9 p.m. (N)
 Jan. 10, Sun. Colorado Willows Workshop, Boulder, 9 am-3 pm
 Jan. 23, Sat. CSU Herbarium Tour/Plant ID Workshop, Fort Collins, 9 am-3:30 pm
 Jan. 23, Sat. Habitat Hero with Doug Tallamy, DBG
 Jan. 24, Sun. CSU Herbarium Tour/Plant ID Workshop, Fort Collins, 9-3:30
 Jan. 26 Tues. Stewardship of Rare Plants: SLB. 7-8:30 p.m. (MD)
 Jan. 30, Sat. CU Herbarium Tour/Lichen Workshop, Boulder

FEBRUARY 2016

Feb. 4, Thurs. Propagation of Native Plants: The Front Range and Beyond, 7-9 p.m. (N)
 Feb. 13, Sat. Colorado Willows Workshop, Boulder, 9 am-3 pm
 Feb. 20 Sat., Seeds Workshop, Fort Collins, 9:00 am – 3:30 pm
 Feb. 23, Tues. Natural Heritage of Denver, 7-8:30 p.m. (MD)
 Feb. 25-27 Nat. History of the Gila Symposium(Silver City, NM)

MARCH 2016

March 3, Thurs. Northern Chapter Program, TBD, 7-9 p.m. (N)
 March 12, Sat. Landscaping with Colorado Native Plants Conference, Loveland
 March 22-23 CO Plateau Native Plant Program Mtg, Page, AZ
 March 26, Sat. Colorado Cacti Workshop, Commerce City

APRIL 2016

Apr. 2, Sat. Colorado Ferns and Fern Allies Workshop, Commerce City, 9 a.m. - 3 p.m.
 Apr. 7, Thurs. Northern Chapter Program, TBD, 7-9 p.m. (N)
 April 9, Sat. Colorado Orchids Workshop, Commerce City
 April 23, Sat. Colorado Conifers Workshop, Grand Junction

MAY 2016

May 5, Thurs. Northern Chapter Program, TBD, 7-9 p.m. (N)
 May 7 Sat. Colorado Penstemons Workshop, Denver
 May 8 Sun. Colorado Penstemons Workshop, Denver

JUNE 2016

June 1-3 Browns Canyon Bioblitz
 June 24-27 Amer. Penstemon Society Annual Meeting, MT
 June 25 Sat. CO Penstemons Field Session
 July 30 Sat. CO Penstemons Field Session

KEY

B	Boulder Chapter
GR	Gore Range Chapter
MD	Metro-Denver Chapter
N	Northern Chapter
P	Plateau Chapter
SE	Southeast Chapter