Sego Lily

Newsletter of the Utah Native Plant Society

July 2012 (volume 35 number 4)

In this issue:

Left: Sticky geranium (*Geranium viscosissimum*) by Paul Zuckerman. Learn more about Dr. Zuckerman's wildflower photography and his current show at Red Butte Garden on pages 4-8.

The Geranium family (Geraniaceae) contains nearly 300 species found in temperate and tropical mountain areas across the world (including five native to Utah). The garden geranium belongs in this family, but is in a different genus (*Pelargonium*) and comes from Africa. Our wild geranium species are often called crane's-bills for the superficial resemblance of their erect, unripened fruit to the upright beak of a courting crane. At maturity the crane's-bill fruit splits from the bottom into 5 separate, 1-seeded segments (a schizocarp, or "split fruit", just as a schizophrenic is someone with a split personality). *Geranium* petals, such as those of Sticky geranium (above) have prominent veins which are even more obvious under UV light. These "nectar guides" help orient bees toward the center of the flower to receive a nectar reward (and a dose of pollen) —*W. Fertig*

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Utah Native Plant Society

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For more information on UNPS: Contact Bill King (801-582-0432) or Susan Fitts (801-756-6177), or write to UNPS, PO Box 520041, Salt Lake City, UT, 84152-0041 or email

Sego Lily Editor: Walter Fertig (walt@kanab.net). The deadline for the September 2012 *Sego Lily* is 15 August 2012.

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Chapter News

Summer is a great time to get out of doors and commune with Utah's native plants in their natural habitat. Check with your local chapter to see what activities may be on tap, or propose a plant walk, garden tour, or wildflower photo outing yourself!

Manzanita Chapter member Steve Dahl of Kanab provided the following photos from recent UNPS activities:

*Above: Purple torch cactus (*Echinocereus engelmannii*) at Toroweap Rim in Grand Canyon National Park, observed on a Manzanita Chapter field trip in April 2012. Left: Penstemaniacs below Bullion Falls (top right) on the June 9 field trip sponsored by the Fremont Chapter as part of the 2012 Penstemon festival.*

Bulletin Board

UNPS Grant Awarded: Dr. John Mull of Weber State University and Dr. Vince Tepedino, retired from the USDA Bee Lab in Logan, were awarded $1000 by the UNPS board for their research on pollination biology of the critically endangered Dwarf bearclaw poppy (*Arctomecon humilis*) in the St. George area. Grants like this are made possible by proceeds from the sale of UNPS merchandise and by generous contributions by society members. We look forward to learning the results of this study in a future issue of the *Sego Lily*, or the Society's new technical journal.

UNPS to Launch New Annual Scientific Journal: The state UNPS board recently agreed to establish a second Society publication that will focus on more technical scientific papers than are ordinarily published in the *Sego Lily*. Originally, the journal was to be entitled "*Calochortus*", but unfortunately, that name is already taken by a consortium of California herbaria! For now, the working title is "*Research Journal of the Utah Native Plant Society*" until someone comes up with a better name that is both symbolic of Utah botany and not already taken. The journal will be published annually and seeks previously unpublished manuscripts on topics relating to Utah botany. The goal of the journal is to provide a venue for papers that are of local interest, such as floristic checklists, seed propagation protocols, monitoring or status surveys of rare plants, or natural history studies that tend not to be published in more established journals. All papers will be peer-reviewed, and editorial content will be overseen by the UNPS board's new Publications Committee (formerly the Communications Committee). Submissions for the first issue, slated for winter 2013, will be accepted through October 31. For information on the journal, contact editor Walter Fertig (walt@kanab.net)

Cedar Breaks Wildflower Festival: The Seventh annual Cedar Breaks Wildflower Festival will be held at Cedar Breaks National Monument July 7-22. Each day volunteer naturalists will lead wildflower hikes at 10 AM and 1 PM. A brochure at the visitor center provides information for self-guided tours. There are also activities for young naturalists and a free photography workshop for amateurs of all ages and skill levels. Cedar Breaks National Monument charges a nominal admission fee, but it is well worth the expense to see a wide array of mountain wildflowers, many of which are restricted to the orange and white Claron limestone.

UNPS Digital Rare Plant Guide Updates: Tony Frates, UNPS webmaster, co-chair of the conservation committee, and keeper of the UNPS rare plant guide (the digital version of the 1991 'blue book' by Duane Atwood and others) continues to add new species descriptions, maps, drawings, and photos to the UNPS rare plant website. If you have not accessed the site in a while (or ever before), check it out for yourself at www.utahrareplants.org/rpg.html. Some recent changes include the addition of Cisco sego lily (*Calochortus ciscoensis*) and Ackerman's green gentian (*Frasera ackermaniae*) with original line drawings by Utah artist April Jensen.

Utah Natural Heritage Volunteers: Many UNPS members help the Utah Natural Heritage Program by sending in rare plant (and animal) locations. This is a great help to our organization. Now you can help even more by becoming an official volunteer! The BLM is offering matching funds through the Challenge Cost Share Program, and they will match with dollars for volunteer hours. There are plants throughout the state to look for. We can give suggestions to anyone wishing to look for plants. There are also opportunities to learn how to use GIS to map in our office, and gathering information from the college herbaria in Utah. Contact me at robertdrake.fitts @aggiemail.usu.edu or call 801-538-4742. - *Robert Fitts*

Zion Canyon Field Institute Offers $10 Discount on Selected 2012 Plant Classes for UNPS Members: As if you needed another reason to become a UNPS member, the Zion Canyon Field Institute (ZCFI) of the Zion Natural History Association is offering UNPS members $10 off on several botany classes in southwest Utah this year. Normally these classes cost $60 per person. Contact ZCFI director Michael Plyler (435-772-3264; plyler.zcfi@yahoo.com) or the ZCFI website (www.zionpark.org/zcfi_schedule_new_2008.php) to register and for more specific details. Classes include , Cedar Mountain wildflowers (July 9), and Fall wildflowers (Sept 15) by Walter Fertig and Ferns of Zion (October 13) by Steve McKee.

Unidentified Flowering Object**:** The May UFO was *Artemisia spinescens or Picrothamnus desertorum* by Steve Hegji, our only sagebrush species that flowers in the spring rather than the fall. This month's UFO (at right, submitted by Jim Case) comes from Cedar Canyon, east of Cedar City, but is also found commonly (in one variety or another) across the state in sagebrush or juniper habitats. Be sure to get the family right! See the September *Sego Lily* for the answer. Do you have a UFO to share? Send it in! - *W. Fertig*

UNPS Member Profile:

Paul Zuckerman's Wildflower Photos at Red Butte Garden

By Tony Frates

The natural beauty of a wildflower can capture the imagination, and the right photograph can open the eyes of the viewer to a different perspective. The detailed attention Paul Zuckerman, Ph.D. brings to his photographs of Wasatch wildflowers provides the viewer with such a new insight, and reflects a long time passion for photography and nature.

I first met Paul about five years ago at a Utah Native Plant Society (UNPS) Salt Lake Chapter meeting. At the meeting, he showed some of his incredibly high resolution wildflower pictures. Since we live in the same general neighborhood, I ran into him occasionally at the Post Office and local restaurants. Following a talk I gave for the Salt Lake Chapter a number of years ago relating to Utah native plant conservation, Paul became very interested in a Colorado rare plant book I brought with me that contained various botanical illustrations, and later contacted me about borrowing it. Through subsequent interactions I became aware of his extensive work involving macrophotography and the amazing wildflower display he had designed and constructed.

In the summer of 2011, Paul donated the display to the University of Utah's Red Butte Garden. When that happened, I told Paul that it should be the subject of a *Sego Lily* article, and he agreed to an interview. But I still had not actually seen the exhibit. I was finally able to view it recently at the Garden, and it was clear that the story behind the display needed to be told.

Above: Paul Zuckerman and his camera at the Utah State Fair. Photo by Laurie, photography by laurie.biz

The following are Paul's answers to my interview questions. What our conversation illustrates to me more than anything else is that one person's intense interest and vision can make a difference in raising the awareness of others in a unique way. Hopefully others will follow, and yet more eyes will be opened.

TF. What was your original motivation behind the creation of a Wasatch wildflower exhibit?

PZ. Building a large wildflower exhibit was more inadvertent than planned. My original objective was to bring awareness, recognition and identification of wildflowers to the families of the Salt Lake Valley. After watching visitors milling around the meadows at Albion Basin, and going on wildflower hikes in which the leaders could not identify the blossoms, I decided to put up a wildflower exhibit in the Gallery at the Cottonwood Country Club in Holladay. Each photograph on the exhibit was labeled with the common name and location of the plant. I was permitted to put up each picture by banging nails into the fiberboard backdrop. Someone from the State Fair saw it at the Club and suggested I put up the photographs at the Fair-

grounds. I agreed and accepted their stipulation that I not bang any nails or drill any holes in the barn walls. That's when I thought up the idea of building a background exhibit frame to hold the flower photographs. I made color drawings and building plans and solicited bids for construction, not including my photography. When the bids came back very high in cost I decided to build it myself.

I set up the exhibit at the Fair five times over a five year period, and each time put it back in storage until it occurred to me that there had to be a better way of getting the message out instead of just ten days a year at the Fair, and giving slide lectures to the garden clubs and at REI as I had been doing.

TF. How did the creation of that exhibit then lead to an exhibit for Red Butte Garden?

PZ. When I went to a Native Plant Society meeting at Red Butte Garden I realized it would be an excellent place for the exhibit. What could be better? A large exhibit on Wasatch wildflowers that would cover a wall in the gallery of a flower museum. Many of the pictures are of the same native wildflowers in the Red Butte Canyon, the adjoining foothills and mountain slopes, and in their enclosed natural area. I offered the exhibit with all the photographs as a permanent gift to the staff of Red Butte Garden and they felt it was a good idea because it was on a local subject, was professionally done, and would generate interest in the general population.

TF. You built the exhibit yourself?

PZ. Yes, and to facilitate this ambitious project I converted a sauna/whirlpool room behind my garage into a workshop, and picked up a table saw and drill press to supplement an adequate collection of small tools. With all the photographs already made it was only the woodwork that was left to complete the exhibit.

Above: Showy goldeneye (Viguiera multiflora) *found throughout Utah from the sagebrush and pinyon zones to aspen and spruce-fir forests. Photo by Paul Zuckerman.*

TF. So, you must have some significant carpentry skills? This is a very large and complex exhibit to build. How much time did that take?

PZ. I would, in no way, consider myself to be a carpenter. However, I had a lot of experience designing, engineering and blueprinting exhibits as part of my business expertise, and had skilled carpenters to do the woodwork. This was to be the first time I ever carried out the actual building plans of an exhibit with my own blood, sweat and tears (mostly tears). I chose the best building materials such as grade A 1" x 4" select pine (no knots), two sides pressed- 4' x 8' masonite panels, and 3/4" particle board panels for the platforms. Lowe's cut the masonite sheets down to size for me. To avoid having nails showing in the front of the panels, I glued the framing to the back of the masonite with Gorilla glue and lots of wood clamps, about fifteen per panel.

Based on past experience I started working on the exhibit in April to be ready for the first showing in September. By giving myself lots of time I was able to correct my mistakes as I went along without worrying about the September deadline. The paint was just barely dry by opening day.

TF. How many different pieces to the exhibit are there, and did you move it around before finally installing it at Red Butte Garden?

*Above: Green gentian or elkweed (*Swertia radiata *or* Frasera speciosa*), common in the mountains of Utah. Photo by Paul Zuckerman.*

PZ. To facilitate moving the exhibit around and keeping down the weight, I constructed eleven 3' wide panels which were each 7' tall. With six pre-mounted photographs on each panel I was able to keep the weight of each finished panel to about 50 pounds.

I hired a moving company with a big truck and lots of cushy blankets to move it to the Fair and back to storage. They also moved it to Red Butte Garden and carried the individual panels up the stairs to the second floor gallery.

TF. So, when fully assembled, what is the overall dimension of the exhibit?

PZ. The exhibit is 33 feet long. The main exhibit construction, as it is set up at Red Butte Garden, is 20' long facing the room and has a ten foot section that continues around the corner. There is also a 3' section stored behind the exhibit with no more room to set it up.

TF. When was the installation at Red Butte Garden completed?

PZ. The exhibit was set up last July with the extraordinary help of the Red Butte Garden staff who did all the heavy lifting and assembly work while I sat in my directors chair and directed.

TF. So, Paul, where are you from, and what is your educational background?

PZ. My family home was in White Plains, New York. My interest was in becoming a biological illustrator. I enlisted in the Navy and was assigned to the Fleet Marines as a Pharmacist's Mate and studied Gray's Anatomy (4th edition, (1940) in Navy corpsman's school. The Marines have no medics, so as part of the Navy they assign Navy medics to the Marine infantry or air wings. I was with the Air Wing of the Fleet Marines. The woodcut plates in Gray's book were so impressive that I later enrolled at Syracuse University as a biology and fine arts major. Following graduation I attended the University of Rochester, NY Medical School and studied to become a medical/surgical illustrator. I then formed a pharmaceutical advertising company and became a consultant to the various pharmaceutical companies on their clinical studies based on new medicines. I also produced illustrated books for some of the medical book publishers. When psychotropic medicines were introduced I went back to Syracuse University and completed my doctorate in medical education by doing the medical studies at Columbia University Medical College in NY City. My area of major interest was in neuroscience and anatomical science as that applied to the current work I was doing.

TF. Why did you move to Utah?

PZ. I always had a special interest in skiing. Traveling around the country for my pharmaceutical clients to interview physicians and scientists working on the new medicines was a big part of my work. A lot of travel was out West, and on assignment to Salt Lake City I discovered Alta. With much of my business travel to the West coast I frequently stopped off here to ski Alta or hike the wildflower-covered trails in the Wasatch. Because of easy access

to the National Parks, I believed this would be a great place for my retirement.

TF. What sparked your interest in plants? In photography?

PZ. My introduction to wildflowers came with my interest in high altitude mountaineering in the Appalachian, Rocky Mountain and west coast mountain ranges from the Sierra Nevada and Cascades to Alaska. These included hiking to the summits of mounts Whitney, Shasta, Hood, Rainier, Adams and McKinley. My camera equipment was an important part of these trips. I give slide lectures on hiking to the summits of these peaks, hiking the canyons of the Southwest, high altitude mountain medicine and Rocky Mountain wildflowers. Oftentimes the approaches to the high peaks were across meadows of beautiful wildflowers. The Wasatch is no exception and living here provides me with the opportunity to study and photograph them more frequently.

My interest in professional level photography occurred when a Navy friend, a photographer's mate, let me use a 4 x 5 Crown Graphic camera. My first photos were of fighters taking off and landing and the activities on an aircraft carrier. After my discharge I worked in a new, very large cancer research center as a surgical illustrator and the director made me chief of medical communications including photography. I had a budget that enabled me to purchase state of the art photographic equipment. Among the many medical and surgical procedures I illustrated and photographed, close up photography interested me the most.

TF. What kind of equipment and photographic techniques did you use in shooting these incredibly detailed, gorgeous wildflower close ups?

PZ. I always brought a camera along on my business consulting trips, and for close up work, I used a highly sophisticated Hasselblad camera. I hooked on a bellows, 135mm macro lens and a ringlight flash, which encircles the lens and bathes the subject in bright light. I used 2 1/4" x 2 1/4" Velvia film (four times larger than 35mm film) and got 24-75 exposures on each roll of film. I also have a lighter weight Nikon D5100 digital camera, but prefer my film camera because of the large magnification and grain free images needed in the exhibit photographs. My Hasselblad is equal to between 20-25 megapixels on a digital camera.

My objective in producing a really attractive wildflower photograph is to create an image that is (1) in sharp focus all over, (2) has good color saturation, (3) a tidy, uniform background free of stems, leaves and dead debris that might detract from the beauty of the blossom, and (4) uniform, balanced lighting that prevents shadows, movement or blurs.

To enhance the attractiveness of the exhibit I chose a uniform black background behind each flower that would also make the blossom really pop. I fulfill these objectives because I don't want to make flimsy apologies in my writings, lectures or exhibitions for out of focus, color faded, deeply shadowed and messy photographs. Contemporary cameras have the flash mounted on the side or top. This oftentimes creates a bright spot on the near side of the flower and a dark area on the backside with distracting shadows. Sunlight, in a windless setting, can also create excellent results. The discouraging part of using the ringlite flash is the high cost. To achieve my teaching objectives of the exhibit, every flower photograph has to be clean and in sharp focus to achieve easy recognition and identification of the flowers in an aesthetic setting.

Aesthetics play an important role in photography. The best way to achieve a sound aesthetic sense, such as composition and camera angle, is to study the marvelous pictures in photo magazines and books. Taking classes in photography and joining photography clubs where one can learn, interact, and share ideas in an open forum is strongly advised.

TF. How many pictures are used in the exhibit and how did you decide which ones to include and how to arrange them?

PZ. I chose the 16" x 16" picture size as the most readable when standing in front of the exhibit. The limited exhibit space accommodated about 65-75 of the prints for display at any one time.

Since many of the wildflowers we see in the Wasatch are colorful, flamboyant in nature and easy to recognize by shape and color, I decided to go with the most photogenic ones that visitors to places like the Albion Basin meadows would be more likely to identify and remember.

TF. Why are there no scientific names on the identification labels?

PZ. My plan was to provide an educational exhibit for family viewers (adults and children) that would help them recognize and identify the flowers by the common names. In my opinion, when there are 65 photographs to see, adding the long Latin scientific

names would not be as viewer friendly as using the common flower name. I also thought it would be more useful to add the location instead of the Latin name because of the limitation of space on the identification card.

TF. Do you feel your objective with the donation to Red Butte Garden has been accomplished?

PZ. Yes. I have spent the past years of my retirement by providing community services to the residents of Salt Lake Valley and sharing my lifetime experiences with slide lectures and photographic exhibitions. It gives me great pleasure to have this gift accepted as a permanent display by Red Butte Garden.

TF. What are some of the lessons you learned in how children interact with a pubic exhibit like this?

PZ. Children accompanied by adults seem to get the most from the educational value of the exhibit. To prevent the exhibit from moving or tipping I ran bridge cables from the back wall of the gallery to the top back of the exhibit in ten foot intervals.

TF. Technology has changed at least some aspects of photography. You have been photographing wildflowers for several years. What are your thoughts about the digital revolution and its impact on photography?

PZ. I'm all for the use of digital photography. The average, low cost digital cameras do a good job. The professional high cost cameras are spectacular and the innovation in greater resolution each year improves picture quality. Many professional photographers still use film, as I did for my wildflower exhibit and disc. After my film is digitized and printed I mount it in glass slides and use it for projection at large magnification in my wildflower lectures. Since all my flower pictures are in sharp focus, the details are clear and bright on a big screen.

Above: Nootka rose (Rosa nutkana), *the large, often single-flowered rose of mountain forests over much of Utah. Photo by Paul Zuckerman.*

The mechanics of photographing wildflowers on the digital sensor or film plane have to be driven by aesthetic taste in the photographer's choice of composition, lighting, camera angle and the immediate environment surrounding the flower. The photographic equipment is the tool used to record the photographer's good judgment and directions.

TF. Macrophotography is not easy. What would your number one tip be for budding wildflower photographers?

PZ. Macrophotography provides the means of getting up close and filling the camera viewing screen or viewfinder with the image desired. The macro lenses available today can achieve this end at a reasonable cost and without adding much weight to the camera rig.

My number one tip to budding wildflower photographers is to first read about macrophotography, written by professional photographers, in photographic magazines such as *Popular Photography* and *Outdoor Photography* and develop an aesthetic taste of your own based on the objectives you set for the final print. After shooting the picture some photographers may want to use Photoshop to enhance the print to accommodate their particular aesthetic interests.

UNPS/Fremont Chapter

Highlights of the 2012 Penstemon Festival

On June 8, the Fremont Chapter, UNPS, Great Basin Natives, Wildland Nursery, Brooklyn Nursery, and other sponsors welcomed more than 70 wildflower enthusiasts to the third Utah Penstemon festival, held at the Sevier County Fairgrounds in Richfield. Participants were treated to a native plant sale (featuring local growers) and an array of speakers discussing waterwise gardening, landscape design, woody plants of Utah, and of course, Penstemons!

The afternoon session was kicked off by Dr. Stephen Love, horticulture specialist from the University of Idaho and President of the American *Penstemon* Society. Dr. Love described the valuable attributes of native species for landscaping and then gave an overview of *Penstemon* species that have been used in gardening or that he hopes to encourage in cultivation.

Dr. Heidi Kratsch of the University of Nevada Cooperative Extension Service followed with a discussion of the seven principles of water-efficient landscaping. While she did not focus on *Penstemons*, her tips on selecting waterwise species, amending soils, applying mulch, and efficient irrigation are all valuable to beardtongue gardeners.

Tim Clark and Allysia Angus, landscape designer/architects from southern Utah, described basic principles for laying out a native plant garden. Among their main pieces of advice were to understand plant species best suited for an area's climate, creating a site map for a garden space, and establishing a theme for the garden (such as attracting wildlife, being fire-wise, or being formal or informal). The theme, layout, and local conditions of each garden will help drive the species palette to be used.

Dr. Renee Van Buren of Utah Valley University presented a slide show on her new book *Woody Plants of Utah*. Her discussion included a subset of the state's *Penstemon* flora, all of which are at least woody at the base (sadly, space restrictions prevented all of the species from being included in the book).

The highlight of the day was the keynote address by David Salman, President and Chief Horticulturist of High Country Gardens in Santa Fe, New Mexico. Salman spoke on the topic of "Bringing *Penstemon* into the Garden". According to Salman, beardtongues "are the royalty of western wildflowers" but can grow under surprisingly depauperate conditions. If anything, gardeners tend to over-water their penstemons or grow them in sites where they are overcrowded. Salman suggested transplanting beardtongues as early in spring as possible (they tend to grow best in cooler months) in 1-2 inches of gravel mulch. Seeds re-quire a period of cold stratification and are best sown in the fall or right before a snowstorm. Plants need regular watering for the first two months, but after that can thrive with infrequent but deep watering. David Salman concluded his presentation with a slide show depicting various *Penstemon* species and hybrids that are well-suited for western gardens.

*Above: Lowest beardtongue (*Penstemon breviculus*) native to the Four Corners Region. Photo by Al Schneider from www.swcoloradowildflowers.com*

The following day festival attendees were able to take part in several field trips or a self-guided tour of home gardens in the greater Richfield area. I took part in the field trip to Bullion Falls west of Marysvale (see group picture on page 2). Though there were relatively few beardtongues in bloom, we did see Eaton's firecracker (*Penstemon eatonii*) and Low penstemon (*P. humilis*). After about a one mile hike we reached the base of the falls and observed dwarf monkeyflowers in bloom along with claret cup, fernbush, and mountain mahogany.

Thanks to all for helping make the festival a success, especially organizers Merrill Johnson, Janett Warner, and Marianne Orton, and all of the speakers. Each year the festival grows in size and enthusiasm. Which UNPS chapter would like to sponsor the 2013 festival? - *Walter Fertig*

Botanist's Bookshelf:

Summer Reading, Part II

By Walter Fertig

Now that it actually *is* summer, there can be no more excuses for not dusting off the hammock, cracking open a cold beverage, and kicking back with a good book, or for those who are truly adventurous, a spiffy new app for a smart phone, Kindle, or tablet. Some recent titles of interest include:

Phlox: A Natural History and Gardener's Guide. James H. Locklear, 2011. Timber Press, Portland, OR. 316 pp.

"There all the borders, trimmed with box, were filled with favourite flowers, with phlox" - J.R.R. Tolkien

It seems to be a universal truth that people seek novelty for their gardens, despite the best efforts of native plant societies to promote local species. North American gardeners aspire to plant species from the Orient, Mediterranean, Africa, or South America, and many of our weed species are stowaways from Europe. Likewise, European plant fanciers have long sought new species from the rest of the world, and indeed, much of the golden age of biological exploration was dedicated to finding new plants for the garden. Thus it might strike North Americans as ironic that one of the most popular garden plants in Europe is the genus *Phlox* (Polemoniaceae) which is almost entirely native to our continent. Of 61 named species (and numerous additional varieties and subspecies), all but the Siberian phlox (*P. sibirica* of central and NE Asia) are native to North America.

Of course phloxes are popular garden species here, too. The new book *Phlox: A Natural History and Gardener's Guide* traces the rich history of botanical interest in the genus, both from a strict botanical perspective and from the vantage point of the home gardener. Author Jim Locklear has worked in public horticulture (most recently as the director of the Nebraska Statewide Arboretum) for over 25 years and traveled widely across the west, exploring natural habitats for their native *Phlox* and other wildflowers.

Above: Desert phlox (Phlox austromontana) *by Steve Hegji.*

For the science-minded, Locklear includes formal descriptions of each species, a user-friendly key to all 61 taxa, and a discussion of taxonomic issues, geographic range, and habitat. For the more general audience, he provides delightful mini-essays on each species and 72 beautiful color plates of phloxes in their native environment. Gardeners will appreciate the section on cultivation for each species.

As an example, Locklear notes the habitat of Red Canyon phlox (*P. gladiformis*), a Utah-Nevada endemic with the following colorful and amusing prose: "Driving into Utah's Red Canyon for the first time is like crash landing onto another planet. You are suddenly surrounded by a dreamland geology of pinnacles, knobs, hoodoos and battlements, all carved out of a pinkish orange limestone named the Claron Formation. A comfortable mantle of conifers dominates north-facing sides of the canyon, but opposite slopes look to have been landscaped by Dr. Seuss …". Classic!

Colorado Flora: Western Slope. A Field Guide to the Vascular Plants, fourth edition. William A. Weber and Ronald C. Wittmann. 2012. University Press of Colorado, Boulder, Co. 532 pp.

Bill Weber is the dean of Colorado botany, and with his long-time collaborator Ronald Wittmann has just published the latest revision to his classic Colorado Flora (in two volumes, one for each slope of the Continental Divide). Botanists in states adjoining Colorado will find these guides useful for a second opinion on identifying species in their respective areas. All botanists can enjoy the books for the interesting factoids and humorous anecdotes in the family and genus descriptions that build on the many decades of experience by both authors.

Users of earlier editions of the western slope flora will notice that the new version is larger and has the rounded corners characteristic of Weber's long-out-of-print *Rocky Mountain Flora*. Gone are the color plates of earlier editions, though the line drawings remain. Otherwise, this version is similar to previous ones in style and layout.

One major addition is a treatment of the complex genus *Botrychium* (moonworts and grapeferns), contributed by Donald Farrar of Iowa State University and Steve Popovich of the US Forest Service. For over a decade, Farrar and colleagues have been reporting many new taxa of *Botrychium* from across the west based on often subtle morphological and genetic differences. Until now, these new species had not been formally published. Several recently proposed taxa have been synonymized or changed to varietal rank (probably more accurately matching reality). The new key covers Colorado and other Rocky Mountain states and fills an important void. The *Botrychium* treatment includes diagrams and charts explaining much of the peculiar terminology specific to moonwort fronds.

It is interesting to note the change in the course of taxonomy over Bill Weber's long career. Over the past 30 years, Weber has developed a reputation as a "splitter" for recognizing many segregate genera and families. But based on the on-going changes proposed by the Angiosperm Phylogeny Group (also known as APG III), Weber's treatment is beginning to look downright conservative! For example, Weber and Wittmann continue to maintain Aceraceae, Hydrophyllaceae, Fumariaceae, and other families as distinct, when APG III has proposed subsuming them into related groups. Likewise, the Scrophulariaceae are maintained in their traditional sense, rather than being subdivided. Otherwise, many of the genus level splits adopted by Weber and Wittmann years ago are now being followed in recent treatments, such as the *Flora of North America*. Could Weber have been right all these years?

Colorado Flora stands out from other state or regional manuals and floras in that it can be read nearly cover to cover as a book. The ample introductory section covers a wide array of topics, ranging from the history of collecting in Colorado to a synopsis of Rocky Mountain biogeography, field ethics, and a list of books that all botanists should read. Weber has a wry sense of humor; I found myself laughing out loud on many occasions.

Colorado Rocky Mountain Wildflowers. Al Schneider and Whitney Tilt (authors), Katie Gibson (software developer). 2011. High Country Apps, LLC. App for iPhone, iPad, and Kindle Fire. $9.99

Flora of the Wasatch. Steve Hegji and Whitney Tilt (authors), Katie Gibson (software developer). 2012. High Country Apps, LLC. App for iPhone, iPad, and Kindle Fire. $7.99

As a confirmed bibliophile and borderline luddite, I'm apprehensive about diving into new technology, such as iPhones, iPads, Kindles, and the like. But the world marches on, and I realize it may be time to see what all the hubbub is about. With new apps, such as *Colorado Rocky Mountain Wildflowers* and *Flora of the Wasatch* by FOSLs* Al Schneider and Steve Hegji, my transition from bulky paper field guides to mobile form will be a lot easier (though without the vicarious thrill of the potential paper cut)

Both applications are essentially portable digital field guides that can be carried into the wild on a variety of modern handheld devices. The apps contain all the features one expects in a field guide: lots of high quality color photos, full descriptions, range maps, habitat data, and a glossary. The advantage of the app format is portability & searchability. Users can search for species by family or use the clever built-in "keys" to narrow the pool of potential taxa when identifying an unknown plant. The key is really a set of 12 questions, in which the user is asked to select attributes such as flower color, leaf type, flowering period, elevation range, habitat type, and the like. The program systematically winnows down the potential choices until a small subset of species remains. These can then be viewed on the screen to help make a final determination. All photos can be enlarged. Both Schneider and Hegji are skilled photographers and the photos are both diagnostic and beautiful. Additional information "tidbits" are provided (in the case of the Colorado Rockies flora from Al Schneider's terrific SW Colorado wildflowers website).

The Colorado Rockies app covers nearly 600 of the more common or showy wildflowers, trees, shrubs, and ferns of Colorado and adjacent states. Steve Hegji's Wasatch app (derived in part from his book on Wasatch Wildflowers) covers over 300 species. Free samples of each app are available for exploration on the High Country Apps website (www.highcountryapps.com). Additional apps are available for the floras of Yellowstone and Glacier National Parks.

*Above: Colorado blue columbine (*Aquilegia coerulea*) by Al Schneider from www.swcoloradowildflowers.com*

* Friends of *Sego Lily*

Noteworthy Discoveries:

Kelsey's milkvetch

By Beth Corbin

Let me introduce you to Utah's most recently recognized plant, Kelsey's milkvetch, and how it came to be named.

I first found this plant in May 2009, while working for the Uinta-Wasatch-Cache National Forest (I'm now in Idaho). Hiking in the Wasatch Mountains foothills above Ogden, I saw a pretty white-flowered plant with large fruits, and thought "Hmm, I don't have that *Astragalus* on my Uinta-Wasatch-Cache checklist." After looking around to make sure there were at least ten plants (my rule of thumb for collecting), I picked a small piece and brought it back to key out. It didn't key out in *A Utah Flora, Intermountain Flora* Volume 3B, or any other of my references.

Hmm, a new species? I sent the pressed collection to Dr. Stanley Welsh at BYU, who eventually verified that it was an undescribed species and provided lots of helpful information. I went back to the same location in 2010 and collected four herbarium sheets of material for the type specimen. I visited several herbaria to see if they happened to have collections filed under another name (no luck), and corresponded with other botanists, like Jason Alexander from Utah Valley University, who also agreed that it appeared to be a new species. I found someone to draw an illustration (funded by the Forest Service, thanks to Teresa Prendusi), wrote up an article describing and naming the plant, and submitted it to *Madroño,* the journal of the California Botanical Society. After peer review and subsequent revision, the article officially naming *Astragalus kelseyae* was published on March 28, 2012 in *Madroño* Vol 58(3): 185-189, (2011).

Above: Kelsey's milkvetch (Astragalus kesleyi) *in flower by Teresa Prendusi. Below: The namesake of Kelsey's milkvetch, with her eponymous plant, by Beth Corbin.*

The name Kelsey milkvetch is in honor of my dear friend Ann Kelsey, plant collection manager at the University of Utah and everyone's favorite native plant champion, with whom I've spent many pleasant field days in Utah's mountains and deserts, bowing to especially worthy plant friends. I'm very pleased to be able to recognize her with this appropriately pretty plant.

Besides being pretty, Kelsey's milkvetch is quite distinctive because of its unique combination of characteristics, which made it readily apparent that it doesn't fit in existing plant keys. It has unusual dolabriform hairs – attached to the plant at the center, thus with two free ends, unlike the more typical basifixed (attached at the base with one free end) hairs in this genus. It has large, inflated, two-chambered, firm-textured fruit, without a stipe (narrowing at the base of the fruit

Above: Kelsey's milkvetch in fruit. Photo by Beth Corbin.

above the sepals). It has relatively large white flowers, with only a few flowers per inflorescence. Its leaves are fairly short, with few, rounded leaflets, and the stems, leaves, flowers, and fruit all are nearly flat against the ground. This combination of characteristics is so unusual that Dr. Welsh has tentatively designated a new section within *Astragalus* to contain this species, section *Kelseyani*.

Kelsey's milkvetch is currently known from only one location, covering about one quarter- acre, and about 150-200 plants were estimated in 2010 and 2011. That's a very small population!

The habitat at the known location is a west-southwest-facing talus slope opening within the Gambel oak and bigtooth maple shrublands (commonly called oakbrush) at about 5,430 feet elevation. There's not a lot of plant cover on the talus slope, but plant associates include narrowleaf skullcap, spider milkweed, spreading dogbane, Garrett's firechalice, and a few others. The loose talus habitat is made up of shale that, based on the geologic map, appears to be Ophir Shale, a Paleozoic era sedimentary deposit. I think it interesting that the occurrence is above the old shoreline of the Pleistocene Lake Bonneville. There are scattered patches of Ophir Shale and other similar talus across the Wasatch Front, so it appears that there is additional potential habitat waiting to be explored.

One reason for wanting to get this new plant named so quickly (although almost three years may not seem fast, in getting names published it's pretty quick) is so that it can be officially recognized and added to the Utah Native Plant Society's rare plant list, the Forest Service Sensitive Plant List, and perhaps listed as Threatened or Endangered under the Endangered Species Act (if necessary). If it's named and listed, it can be managed and hopefully protected. This small occurrence faces several imminent threats, including a popular hiking trail right through it and several noxious and invasive weeds nearby.

The Uinta-Wasatch-Cache National Forest will be surveying for additional populations as available funding and personnel allow. If in your travels across the Wasatch Front you see a milkvetch that seems to fit the description, please take some photos, record the GPS coordinates, and let the Forest Service know so they can check it out.

Noteworthy Discoveries:

Field Madder: A New Utah Weed

By Dr. Ty Harrison

On June 6, 2012 when visiting the graves of some family ancestors in Salt Lake City's municipal cemetery, I found a number of European weeds in flower.

I remember visiting the Salt Lake Cemetery at approximately this same time in the spring of 1963 with Dr. Seville Flowers' 'Spring Flora of the Wasatch' class as a botany student at the University of Utah. I distinctly remember seeing the English Lawn Daisy blooming in the cemetery, together with the other native spring wildflowers which we observed on the steep hillside north of Eleventh Avenue. This warm, south-facing slope is still a place where Wasatch foothill spring wildflowers can be found blooming in Salt Lake City; a fact which Dr. Flowers clearly appreciated as a place he could take his botany students.

I still have the identification manual which we used for the course, *Handbook of the Vascular Plants of the Northern Wasatch* by Arthur H. Homgren, (Second Edition, 1959). This was the book with which I began my botanical career, and I remember memorizing the Latin names of all the plants and families which Dr. Flowers showed us on weekly field trips. This book still resides on a reference shelf over my desk. I checked the index for *Bellis perennis* , and there on page 175 was a hand written note: "SLC Cemetery 5-16-63" where Dr. Flowers introduced the class to the English Lawn Daisy. Art Holmgren's brief description stated: "Occasionally growing in lawns in our area". So I had seen this plant 49 years ago, and still remember it being in that very cemetery. I took a digital picture of the old acquaintance to record the event.

In addition to the daisy I found a variety of old weed friends and one which I had never seed before. When botanizing like this I always consider finding a new plant which I have never seen the highlight of the day.

Using the keys of Welsh et al.'s *Utah Flora*, I found that the mystery plant did not fit any of the species in the Rubiaceae, a family in which it clearly belonged, due to its square stem, whorled leaves and tiny flowers with four petals, 4 stamens, and an inferior ovary. That evening, at a chapter meeting of the Utah Native Plant Society in Salt Lake City, I showed the wilted specimen to several people including Bill Gray, but no one could provide an identification. The next day I revisited the cemetery to get a voucher specimen and a more complete estimate of abundance. The grassy sward had a profusion of short, colorful, weedy flowers, just coming into bloom after the Memorial Day mowing. I counted fifteen species (and there were probably a few more), including the following: European Daisy (*Bellis perennis* L.), White Clover (*Trifolium repens* L.), Bindweed (*Convolvulus arvensis* L.), Black Medic (*Medicago lupulina* L.), Narrowleaf Plaintain (*Plantago lanceolata* L.), Broadleaf Plantain (*P. major* L.), Yarrow (*Achillea millefolium* L.), Creeping Buttercup (*Ranunculus repens* L.), Heal-all (*Prunella vulgaris* L.), Oxeye Daisy (*Chrysanthemum leucanthemum* L.), Creeping Wood Sorrel (*Oxalis corniculata* L.), Thyme-leaf Speedwell (*Veronica serpyllifolia* L.), Sweet Violet (*Viola odorata* L.), Dandelion (*Taraxacum officionale* Weber), and the unknown Rubiaceae.

Above: Field madder (Sherardia arvensis) *from Britton and Brown (1913)* An Illustrated Flora of the Northern United States and Canada.

It is noteworthy that most of the above species were named by Linnaeus as noted by the capital letter L. following the Latin binomial, and they are all immigrants from somewhere in Europe, probably from England, like my ancestors who are buried here. In addition to the immigrant flowers are the immigrant grasses such as Orchard Grass, Canada Bluegrass, Kentucky Bluegrass and Bermuda Grass.

But back to the story of the unknown and unrecognized species, the last one on the above list. Since the plant was clearly not listed in the Utah Flora, I wondered how to identify it, not having any other regional references handy. I checked the on-line North

American Flora (http://www.efloras.org/index. aspx) and found the Rubiaceae family missing!

Wondering what to do next, I remembered a small book which I bought in St. Andrews, Scotland over 10 years ago. This wonderful book with beautiful wood engravings was called "*Illustrations of the British Flora*" and was published in 1949. The frontispiece explained that the book was "an illustrated companion to Bentham's *Handbook of the British Flora* and other Floras". This book contains 1315 diagnostic illustrations of plants growing in Great Britain from where my ancestors emigrated in 1853. Turning to the members of the Rubiaceae, I found an illustration which perfectly matched the plant I had discovered the day before. It was Field Madder (*Sherardia arvensis* L.) and was named by Linnaeus. This is the first time it has been collected in Utah.

Now that I had the Latin binomial I could do a Google search for additional information and images. Of course the first to pop up was the Wikipedia description as well as the USDA Plants Database entry. According to these sites:

"Sherardia is a monotypic genus containing a single species, *Sherardia arvensis* (or Field Madder), which is a flowering plant in the Rubiaceae family. It is native to Europe, northern Africa and southwest Asia. *Sheardia arvensis* is closely related to the bedstraws (genus *Galium*). It is mainly noted as a weed but has sometimes found use as a dye plant".

"It is an annual with trailing and upright stems growing up to 40 cm long, having a square cross-section. The rough pointed bristly leaves of about 1 cm in length are in whorls of 4-6 (normally 6 at the ends of the shoots, but 4 nearer the root)".

"The tiny pale lilac or pink flowers are ca 3 mm in diameter and have a long tube, with only the end part of the four petals free. The flowers grow in "heads" of 2 or 3 together in an involucral structure formed out of a ring of six bracts. The fruit are dry and about 3mm long with two lobes giving rise to the two seeds (nutlets)".

"The four-angled stems with whorls of bristly leaves and tiny flowers are reminiscent of the Bedstraws and other related Rubiaceae, but *Sherardia* is distinguished by its mauve/pink flowers which have a long tube, and which only in this case are in heads".

"The species and genus were described by Linnaeus in *Hortus Cliffortianus* in 1736 and also appeared in his masterwork *Species Plantarum* in 1753. The genus was named in memory of the prominent English botanist William Sherard (1659–1728). The Latin epithet *arvensis* means that it is found in fields. It is called Field Madder because of its resemblance to Madder (*Rubia tinctorum*), which is a better known dye plant of the same botanical tribe".

A few thoughts in conclusion: It was wonderful to see the diversity of flowers and grasses all growing together in this old cemetery. Unlike more "modern" cemeteries, herbicides have not been used here, and simple mowing maintains a more interesting diversity of species. It is rumored that Salt Lake City Parks (including the city cemetery) are trying to minimize toxic herbicide use in its public access areas. Would that other municipalities and residents be so enlightened.

The Funny Pages

More of Les

By Don Les.
Reprinted from *Menziesia*, the newsletter of the British Columbia Native Plant Society, Fall 2006

Ever wonder …
* Is the transfer of so many species from *Aster* to *Symphyotrichum* a form of dis-aster?
* Are *Boykinia*s always male?
* Is a *Kalmia* that tolerates British Columbia winters both laurel and hardy?
* Are all *Ribes* with spiral phyllotaxy alternating currants?
* What's the ERA of a pitcher plant (*Sarracenia*)?
* Is marginal shield-fern (*Dryopteris marginalis*) a shield fern or not?
* If you cross snapdragon (*Antirrhinum*) with turtle-head (*Chelone*) do you get a snapping turtle?
* If you cross water-parsnip (*Berula*) with monkey-flower (*Mimulus*) do you get a *Berula* monkeys?
* If you cross Scotch broom (*Cytisus*) with soda apple (*Solanum aculeastrum*) do you get a scotch and soda?
* If you cross anything with a windflower will it be a friend or *Anemone*?
* If you cross rue (*Ruta*) with dayflower (*Commelina*) and birthwort (*Aristolochia*) will it rue the day it was born?

Says Les: "Incidentally, I always wanted to study the morphology of arrow-grass (*Triglochin*), but what would be the point?

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