



Sego Lily

Newsletter of the Utah Native Plant Society

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The flowers of Dwarf cryptanth (*Cryptantha humilis*) appear large in this photo, but are actually no more than 1/4 inch wide and barely longer than the bristly calyx tube. Each bloom has a ring of five raised yellow knobs (called fornices) that surround the opening to the corolla. Cryptanths with prominent fornices are sometimes given the common name “cat’s-eye”. Dwarf cryptanth is the most common and widespread of the 20 or so small-flowered perennial cryptanths in Utah. Species in this group are notoriously difficult to differentiate without mature fruits, and these are not readily visible without dissecting the inflated calyx. Taxonomists disagree on whether the perennial species should be placed in a separate genus (*Oreocarya*) based on differences in life history, floral morphology, and pollination biology. Photo by Steve Hegji.

Utah Native Plant Society



Utah Native Plant Society

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Website: For late-breaking news, the UNPS store, the *Sego Lily* archives, Chapter events, sources of native plants, the digital Utah Rare Plant Field Guide, and more, go to unps.org. **Many thanks to Xmission for sponsoring our website.**

Sego Lily Editor: Walter Fertig (waltola64@gmail.com). The deadline for the March 2014 *Sego Lily* is 25 February 2014.

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Utah Native Plant Society, PO Box 520041, Salt Lake City, UT, 84152-0041. Email: unps@unps.org

Unidentified Flowering Object

This month's UFO is a desert annual that can appear in profusion in a wet fall but is otherwise easily overlooked. Any guesses?

The November Unidentified Fruiting Object was Cutleaf anemone, *Anemone multifida*. Although its fruit appears to be a single, mace-like ball, it is actually an aggregate of numerous, individual achenes, each topped by a slightly curved style. In the related pasqueflower the styles are long and feathery, but in most anemones the style is smooth. Bill Gray took the photo in the mountains of northern Utah.

Have a UFO to share? Send it in! - W. Fertig



In Quotes: "Weeds are flowers too, once you get to know them." A.A. Milne

Bulletin Board

Salt Lake Chapter Meeting, February 5: Steve Hegi will deliver a talk on the “Milkvetch mystery of the San Francisco Mountains” at the February meeting of the Salt Lake chapter. The meeting will take place at 7 PM at REI on 3285 E and 3300 South in Salt Lake City.

Idaho Rare Plant meeting, February 26-27: The 26th Idaho Rare Plant Conference begins at 1 PM on Wednesday, February 26 and continues from 8:30 AM-5 PM on Thursday, February 27. The meeting will be held at the USDA-AG Research Station at 800 Park Blvd, Plaza IV, in Boise, Idaho. Discussion on Wednesday and Thursday morning will focus on updating the Idaho rare plant list, while on Thursday afternoon a variety of speakers will discuss research on rare plants and conservation issues. Register through the Idaho Native Plant Society website (www.idahonativeplants.org) or contact Beth Corbin (ecorbin@blm.gov) for more information.

Utah Rare Plant Meeting, March 4: The 2014 Utah Rare Plant meeting, sponsored by the Utah Native Plant Society and Red Butte Garden, will be held on Tuesday, March 14 from 9 AM to 4 PM at Red Butte Garden (300 Wakara Way, Salt Lake City, UT). Registration costs \$15 per person and includes a boxed lunch and break and snacks (and breakfast if you check in between 8:30 and 9 AM). To register, call Red Butte Garden at 801-581-8454 or go online at www.redbuttegarden.org/conservation_research. Abstracts for oral presentations or posters are being accepted through February 15. Contact Rita Reisor (rita.reisor@redbutte.utah.edu) or Jason Alexander (Alexanja@uvu.edu) for more information. The annual meeting is a good way to learn about rare plant research in Utah and to meet or reconnect with other botanists.

Great Basin Native Plant Project Annual Meeting, March 17-18: The annual get together of researchers and managers working in the Great Basin (sponsored by the Forest Service and Bureau of Land Management) will be held on March 17-18 at the Spring Hill Suites Boise Park Center (424 East Park Center Blvd) in Boise, Idaho. There is no fee to participate, but people are encouraged to register by February 24 by emailing coreylgucker@fs.fed.us. For more information on the meeting, consult the event website at www.fs.fed.us/rm/boise/research/shrub/greatbasin.

American Penstemon Society Annual Meeting, Zion NP and Southwest Utah, May 16-18:

Penstemaniacs rejoice! The 2014 American Penstemon Society rendezvous will be based out of Springdale, Utah, with a backdrop of Zion National Park. Those who attend will see a diversity of *Penstemon* species and other native wildflowers of southwestern Utah. Several hikes and auto trips are planned to explore *Penstemons* of southwest Utah. One loop will pass near Cedar City, Old Iron Town, Snow Canyon State Park, and the Beaver Dam Mountains to see *Penstemon franklinii*, *P. ambiguus*, *P. confusus*, and *P. petiolatus*. Trips in Zion National Park will focus on *Penstemon x jonesii*, *P. humilis* var. *obtusifolius*, *P. leiophyllus*, *P. higginsii*, and *P. laevis*. The meeting is being cosponsored by the Southwestern chapter of the Utah Native Plant Society. Evening activities will include a slide show on the wildflowers of the Zion area by Walter Fertig (Friday May 16) and a keynote address on *Penstemons* of the southwest by Noel Holmgren on Saturday, May 17. An optional Monday field trip will explore areas of the Grand Staircase-Escalante National Monument and Red Canyon areas for *Penstemon ammophilus* and *P. bracteatus*.

Participation in the rendezvous is limited to members of the American Penstemon Society or Utah Native Plant Society. Registration costs \$110.00 per person and includes the Friday and Saturday banquets, both being held at the Canyon Community Center (126 Lion Blvd, Springdale, UT). Participants will need to arrange their own lodging, transportation to Zion, and other meals. To register or learn more about the meeting (and to become an American Penstemon Society member for just \$15 per year), go to the APS website at <http://apsdev.org/aps/meetings.html>.

Have a botanical meeting or chapter event to publicize? Send announcements to the editor.

2013 UNPS Annual Meeting



The Utah Native Plant Society's annual members meeting was held on November 16, 2013 at Utah Valley University. At least 15 members were present to dine on the traditional New World potluck cuisine and listen to UNPS board member and UVU herbarium curator Jason Alexander describe his work on digital databasing and encouraging citizen science. Some of the participants even got to help mount some of the UVU backlog of specimens.

Thanks to all who helped organize the event and for those members who were able to attend.



Photos by Larry Meyer.

Grow This: Medium Perennial Forbs

By Robert Dorn (adapted from *Castilleja*, newsletter of the Wyoming Native Plant Society, October 2013)

Medium perennial forbs are used mostly between tall and short forbs in flower beds or sometimes in beds of their own. They can be propagated from rootstalk divisions, rhizome cuttings, or from seed. Some examples follow:

Gaillardia aristata (Common blanketflower) grows to about 2 feet tall and half as wide. It usually forms a clump with few to several stems. The leaves are entire to sometimes deeply lobed, to 6 inches long and about 1 inch wide. The flowers have a typical sunflower arrangement with brownish or purple-brown disk flowers at the center surrounded by yellow ray flowers which may have a reddish or purplish base. Blanketflower blooms for a relatively long period between June and September. Remove old flowers to prolong blooming.

The plants occur naturally in moist to dry open places of the Great Plains, basins, and mountains. *Gaillardia aristata* prefers full sun and well-drained soil and is heat and drought tolerant. They are easy to grow from seed or rootstalk division. Seed can be dried, refrigerated over winter, and sown 1/4 inch deep or less in spring after frost danger has passed. There are many cultivars in the nursery trade but many of these are short-lived and some may be hybrids.

Geranium viscosissimum (Sticky geranium) grows to about 2.5 feet tall and 1.5 feet wide with one to several stems per plant. The leaves are deeply lobed and to 5 inches long and wide. They turn red at first frost or sometimes before. The flowers are pink to lavender, up to 1.5 inches across, and



Above: Blue flax (*Linum lewisii*, or *L. perenne* ssp. *lewisii*) is a drought-hardy native plant adapted for high desert to mountain habitats in Utah and the west. The specific epithet honors Meriwether Lewis. Photo by W. Fertig from Cedar Breaks National Monument.

mostly paired in the upper leaf axils. Blooming is usually from June to August and may be sporadic throughout the summer. The plants occur naturally in open woods, meadows, and on slopes in the mountains. They prefer full sun to partial shade and moist, loamy soil. They can be grown from summer cuttings, spring divisions, or from seed. Sow seeds 0.5 inches deep or slightly less right after collection. Germination may be poor. Seed is also commercially available.

Linum lewisii (Blue flax) forms a many-stemmed plant up to 2.5 feet tall and 1 foot wide but usually much shorter. The leaves are very narrow and up to 1 inch long. The flowers are light to

deep blue with a whitish or yellowish base and up to 1.5 inches across. Each flower may last only one day, but new flowers open each day in the morning with many flowers per plant. Blooming is generally from April to August depending on elevation. The plants occur naturally in open, moist to dry areas of the plains, basins, and mountains. They prefer full sun to light shade and well-drained soil. They are drought tolerant. Flax can be grown from seed sown in fall on the soil surface and covered with a light sprinkling of soil. It is not easy to transplant. Several cultivars are available in the nursery trade (as well as the related flax of commerce, *Linum usitatissimum*) selected for their blue color.

Twisted Stalk

By Walter Fertig

To the non-botanist, scientific names of plants can sound silly, old-fashioned, or even a bit pretentious. Sometimes, however, the Latin name can be quite descriptive and even a bit mellifluous. One of my favorites to pronounce is *Streptopus amplexifolius*, also known by its less melodious common name as Twisted stalk. Technically derived from Greek, “*streptos*” is twisted and “*pous*” is footed, referring to the diagnostic 90 degree twist in the flower stalk after it emerges from the base of the upper leaves. To complete the etymology, “*amplexi*” means clasping and “*folius*” is leaf in reference to the upper leaves that snugly embrace the stem.

Streptopus amplexifolius is one of seven species in its genus that range across temperate areas of North America, northern Europe, and Asia. Carl Linnaeus himself named the species in his seminal work, *Species Plantarum*, though initially as a member of a similar genus in the lily family, *Uvularia*. Twisted stalk ranges across Canada and south to California, the Rocky Mountains, and over much of the eastern United States. It is typically found in moist, shady mountain forests and stream-sides.

Like other monocots, Twisted stalk has parallel-veined leaves with smooth margins. Flowers are relatively small and consist of six greenish-white tepals (sepals and petals that are of similar size, color, and texture). Only one flower occurs on each flower stalk and these hang downward, thanks to the distinctive “twist”. The flowers give rise to a single, elliptic, yellow or red berry which is edible. Wayne Phillips, retired Forest Service ecologist, author, and noted Lewis and Clark impersonator, reports that the green shoots are also edible and taste like cucumber when eaten raw. Populations tend to be small and the species can be mistaken for the poisonous *Veratrum*, so perhaps Twisted stalk is better left unsampled for others to observe rather than taste.



Above: Flowering stem of Twisted stalk, illustrating the sharply bent pedicel and the recurved tepals characteristic of this species. Below: The kinked pedicel is retained in fruit. Both photos by Al Schneider (www.swcoloradowildflowers.com)



Why are Plants Giving You a Buzz?

By Peter Lesica, adapted from *Kelsey*, Newsletter of the Montana Native Plant Society

Perhaps right now you're sitting at the kitchen table or your computer reading *Kelsey* and sipping a cup of coffee or tea. Often we love these drinks, as well as many soft drinks and chocolate, because of the caffeine they contain. Wikipedia says that 90% of all Americans consume caffeine daily and that it is the world's most widely consumed psychoactive drug. This common stimulant comes from plants: coffee (*Coffea arabica*), tea (*Camellia sinensis*) and cacao (*Theobroma cacao*).

We know what we get out of caffeine, but what are the plants that produce it getting? If you think plants are making caffeine so you can have your chocolate high or hot cup of joe, read on. In humans, caffeine produces a stimulating effect in the brain by counteracting the anti-stimulation properties of adenosine. But caffeine is an alkaloid, and many alkaloids are poisonous and function to defend plants against predators and herbivores.

Caffeine helps protect tea bushes from shot-hole borers. It does this not by poisoning the beetles directly but by limiting the growth of the fungus that young larvae feed on. As a result adult beetles are inhibited from depositing eggs on plants with higher levels of caffeine. Caffeine also inhibits the growth of the fungus that causes "witches' broom" in cacao plants.

Modern techniques of gene transplanting have also provided evidence for caffeine's ability to deter herbivores. Tobacco cutworms are one of the most serious pests of commercial tobacco, and these moth larvae are immune to tobacco's main alkaloid defense, nicotine. Geneticists have successfully transferred the genes that produce caffeine in coffee into tobacco plants. They found that leaves of these transgenic tobacco plants were repellant to cutworms and that this effect was due to the leaves' ability to produce caffeine. Furthermore, the transgenic plants were more resistant to tobacco mosaic

virus and *Pseudomonas* blight. In addition to having the poisonous effects of an alkaloid, caffeine also is a diuretic (it makes you have to pee more often). For those of us who drink tea or coffee this isn't a big deal and gives us an excuse to get away from the computer screen for a couple minutes. However, biologists have speculated that in arid environments caffeine can have a deleterious effect, causing animals to lose their single most precious commodity —water. So ingesting caffeine is to be avoided by animals that hope to survive when water is at a premium. This benefits any plants producing caffeine where it's dry.

So plants use caffeine to do dirt to their animal enemies. Are we the only animals that benefit from caffeine? It turns out that honeybees and perhaps other nectar-feeding insects derive a "buzz" similar to the one we experience, and although it might make them happy, it benefits the plants as well. Recently biologists have found that the nectar in coffee flowers contains a small amount of

caffeine. The caffeine reduces the anti-stimulation properties of adenosine in the insect brains just as in humans. The increased stimulation resulting from the caffeine was associated with a threefold increase in the bees' ability to remember the scent of the flowers and return to them repeatedly. By using a drug to enhance memories of reward, coffee plants secure pollinator fidelity and improve reproductive success.

So while tea bushes are using caffeine to chase away their enemies, coffee trees are using it to woo their pollinators. Next time you see a honeybee at the breakfast table offer her a cup of dark roast; she'll be sure to remember you.

References

- Kim, Y. and H. Sano. 2008. "Pathogen resistance of transgenic tobacco plants producing caffeine." *Phytochemistry* 69: 882-888.
Wright, G. A., D. D. Baker, M. J. Palmer et al. 2013. "Caffeine in floral nectar enhances a pollinator's memory of reward." *Science* 339:1202-1204.



The Conundrum of Common Names

By Walter Fertig

Canada thistle is a spiny weed of agricultural fields and riparian areas. By any name, it is the nemesis of gardeners and nature lovers. But Canada thistle is a misnomer—the plant is not from Canada at all, but is native to Japan. Yet no one calls it Japanese thistle.

To facilitate communication across geographic and language barriers, botanists employ standardized scientific or Latin names. Unfortunately, scientific names can be confusing too. Most people are no longer versed in Latin or are otherwise averse to polysyllabic words. Multiple names may also exist for the same species. Canada thistle is usually known as *Cirsium arvense*, but its original name (from Linnaeus, no less) was *Serratula arvensis*. No fewer than eight other Latin names have been applied to Canada thistle over the past 250 years. Most have been rejected because of technicalities or changes in taxonomic philosophy. *Cirsium arvense* and *Breea arvensis* are the only valid names remaining. *Cirsium* is available for taxonomic lumpers and *Breea* for splitters.

Despite the seeming chaos of synonymy, scientific names follow specific rules laid down and revised periodically by an international committee on taxonomic nomenclature. Any given species may still have two or more names (depending on whether specialists treat a taxon as a full species or a variety/subspecies, or treat genera broadly or narrowly), but to be accepted a name has to follow official guidelines and be the oldest, validly published name. New names may be proposed, but if



Above: Nearly everyone knows this plant as Canada thistle, even though the common name is a misnomer (it is not from Canada). Less agreement exists on the accepted scientific name (*Cirsium arvense*, *Breea arvensis*, *B. incana*, *Carduus arvensis*, *Cirsium setosum*, *Cirsium incanum*, *Serratula arvensis*, etc.). Drawing from Britton and Brown 1913. An Illustrated Flora of the northern United States, Canada, and the British Possessions.

they don't follow the rules they are officially rejected.

By contrast, there are no formal rules for applying common names to plants. Authors of field guides, floras, and checklists are free to compile common names from whatever sources are available. In the case of some common or widespread species, a bona fide vernacular name may already exist, such as Engelmann spruce for *Picea engelmannii*, Douglas-fir for *Pseudotsuga menziesii*, or Kentucky bluegrass* for *Poa pratensis*.

* Like Canada thistle, Kentucky bluegrass may not be native to Kentucky either!

But for the majority of plant species there is no single, accepted common name. Thus authors resort to creating names, usually by translating Latin or Greek genus names and specific epithets. Ordinarily the translations are pretty straight forward, such as Gambel's oak for *Quercus gambelii*, Yellow beeplant for *Cleome lutea*, or Utah beardtongue for *Penstemon utahensis*. Sometimes the translation hardly seems necessary, as in Kanab yucca (*Yucca kanabensis*) or Palmer's phacelia (*Phacelia palmeri*).

Unfortunately, there are instances where something gets lost in translation. *Koenigia islandica* is a tiny reddish annual of arctic and alpine wet gravels in the buckwheat family (Polygonaceae). The genus name commemorates J.G. König, a Danish botanist and contemporary of Linnaeus. "*Islandica*" is a Latinized name for Iceland, one of the places it occurs. Unfortunately, this has been incorrectly translated as "Island koenigia" in some books and databases.*

Gilia is a genus of annual or short-lived perennial herbs in the phlox family (Polemoniaceae) named for Spanish botanist Felipe Gil. The genus name is often used as part of the common name, such as Rock gilia (*Gilia scopulorum*) or Common gilia (*G. leptomeria*). But occasionally *Gilia* is translated to "Gily flower" which makes no sense whatsoever, unless Gily was Felipe's nickname.

Another controversial common name involves the cactus genus *Pediocactus*. These cacti are characterized by a short, barrel-like growth form with spines borne along parallel ribs. In Greek, *pedion* means flatland or plain, thus "plains cactus" would be a reasonable translation. Some writers, however, have interpreted "*pedio*" to mean foot (as in pedestrian), giving rise to the moniker "footcactus". Many *Pediocactus* species are threatened or endangered, though usually not by being kicked (by people's feet at least). More descriptive common names, such as pin-cushion cactus or ball cactus, are available for those offended by this translation.

William Weber, coauthor of the *Colorado Flora* does not mince words in his annoyance with common names. He takes particu-

lar offense at names with "fairy", "baby", or other dainty terminology, left over from an era when botany was "considered a subject for nice ladies." Aside from reinforcing unfortunate stereotypes, these words confer little meaning. Who can tell what a Fairy slipper is? (Answer: *Calypto bulbosa*, a native orchid named for the Greek sea nymph in Homer's *Odyssey*). Other names can be just as meaningless, such as Love in a mist (*Nigella damascena*), Evening snow (*Linanthus dichotomous*), or Old Man of the Mountain (*Hymenoxys grandiflora*).

Indeed, one of the advantages of scientific names is that they infer evolutionary relationships. Such is not the case with common names. A good example is the word "cedar" which is applied to a number of tree and shrub species with aromatic wood or scale-like foliage. Unfortunately, these characteristics are found across a number of different genera and families. Cedar is applied to at least a dozen species in the Cypress family (Cupressaceae) in such genera as *Juniperus*, *Chamaecyparis*, *Thuja*, *Calocedrus*, and *Callitropsis*. True cedars (like the Cedar of Lebanon) are in the genus *Cedrus* and belong to the Pine family (Pinaceae). Salt cedar (a.k.a. *Tamarix*) has cedar-like leaves but is not even a gymnosperm. And commercial "cedar" for cedar chests and closets comes from species in the mahogany family which, like *Tamarix*, are dicots.

Several attempts have been made over the past 90 years to standardize the common names of plants. Most of these efforts have been spearheaded by government agencies or professionals in the gardening and nursery

trades. Modern versions of such lists include the US Department of Agriculture's PLANTS database (<http://plants.usda.gov>), NatureServe Explorer (www.natureserve.org), and the Integrated Taxonomic Information System (ITIS) managed by the Smithsonian Institution (<http://www.itis.gov>). These and other websites compile useful information on the taxonomy, distribution, and status of native and introduced plants, but none have been successful at imposing a single, uniform system of common names analogous to the list of accepted bird names maintained by the American Ornithological Union. Given the large number of plant species (especially compared to birds) and the relatively few expert plant taxonomists, the realization of an AOU-like standard for plant common names will probably remain an unfulfilled dream.

The best solution to the conundrum of common names may be to train people to use scientific names. After all, these names follow formal rules and are applied universally. With practice, scientific names are no more difficult to pronounce than many commonly used words. Indeed, Latin names, such as *Chrysanthemum*, *Philodendron*, and *Asparagus*, are regularly used by gardeners and plant lovers with little notice. If children can regularly master tongue-twisting names of dinosaurs, then adults really have no excuse.

So stand up for science - and impress your friends - by forsaking common names for the REAL names of plants. No more bad translations of Latin and Greek! Now if we can all just agree on what constitutes a different species and whether genera should be split or lumped, everything will be fine!

*One could argue, I suppose, that technically Iceland is an island.

Botanist's Bookshelf

Flora of the Four Corners Region

By Al Schneider, President of the San Juan/Four Corners Native Plant Society
(www.swcoloradowildflowers.com)

Heil, K.D., S.L. O'Kane Jr., L.M. Reeves, and A. Clifford. 2013. *Flora of the Four Corners Region: Vascular Plants of the San Juan River Drainage, Arizona, Colorado, New Mexico, and Utah. Monographs in Systematic Botany from the Missouri Botanical Garden Vol 124:1-1098.*

Let's cut to the chase: BUY THIS BOOK! Whether you live in, near, or far from the Four Corners, and whether you are a book collector, a casual observer of wildflower beauty, a budding amateur botanist, or a professional working in the field, you will more than enjoy owning this masterfully created book.

Facts: The book was 15 years in the making after the scheme was hatched over lunch at the Elk Ridge Café in Blanding in 1996. Major collectors were Ken Heil, Steve O'Kane, Arnold Clifford, and Wayne Mietty, with considerable assistance from Rich Fleming, Cyndie Holmes, Dave Jamieson, Les Lundquist, Lynn Moore, J. Mark Porter, Tim Reeves, and Glenn Rink. The 60+ list of major contributors (especially those writing the individual keys and descriptions) reads like a who's who of botany. The highly respected botanist, Peter Raven, lately of decades at the Missouri Botanical Garden (which published the *Flora*), praises the book in his "Foreword": This is an "outstanding flora.... I congratulate the authors, illustrators, and editors on a job exceedingly well done".

The 4 pound *Flora* covers the Four Corners region drained by the San Juan River from its head waters at the Continental Divide at 4,292 meters to its confluence with the Colorado River at 1,130 meters, an area of 65,382 square kilometers -- the size of West Virginia. The *Flora* covers this region in 1,098 pages cataloging 120 families and 2,355 taxa (41 endemics). There is a Glossary of 32 pages



Above: Mancos milkvetch (Astragalus humillimus), one of over 40 plant species endemic to the Four Corners area of Utah, Colorado, Arizona, and New Mexico. This species was "missing" for nearly a century after its initial discovery in the 1870s. Though not yet known from SE Utah, botanists armed with the new Flora of the Four Corners should look out for it. Photo by Al Schneider (www.swcoloradowildflowers.com).

and over 23 pages of Literature Cited. The heavy stock pages are graced with 118 of Steve O'Kane's superb photographs splendidly reproduced; 200 lovely and valuable line drawings, almost all by Linda Reeves; eleven mesmerizing color botanical illustrations (some full-page) by Carolyn Crawford; a most unusual and ethereal set of fifteen Glenn Vandre landscape watercolors of the vegetation associations and life zones covered by the *Flora*; and inside the front and back covers are full-sized political, topographic, and river maps of the area covered. The type face is large and easy on the eyes. All of this is wrapped in a very handsome dust cover with a picture of sandstone on the front and an exciting full-color collage of the area's flora and terrain on the back.

From what I have told you so far, you already should be writing your check, but wait, let me tell you much more. The introductory material very nicely contains the expected scope of the project, methodology, geology, climate, plant communities, etc. But we also get an unexpected number of other pieces of very thoughtful and welcomed information: a two page list of historical collectors in the San Juan area, a list of endemics, 1 ½ pages defining "weed", plant migration routes, and definitions of measurements, such as, Flower length = Point of insertion of the pedicel to the apex of the longest petal.

Because the *Flora* just came on the scene in September, 2013, I have not had much time to work with its heart and soul, the keys and descriptions, but those I have used and examined are compact, accurate, and helpful.

For example, plant keys often require discriminating between annual and perennial plants, but how are we to do that? Certainly most of us can tell a perennial tree from a *Gilia* but how about a *Gilia* from an *Ipomopsis*?

The opening of the *Lupinus* key gives us assistance with that genus by asking us about its cotyledons:

1. Plants annual, the cotyledons commonly persistent

1' Plants perennial, the cotyledons not present at flowering

And let's have a standing ovation for the *Salix* keys, yes, plural "keys": vegetative, pistillate, and staminate keys.

The complete plant descriptions make it easy for the reader to focus in on specific plant parts by capitalizing and bolding key words (**STEMS**, **LEAVES**, etc.). Descriptions also include, I am glad to say, the etymology of the specific epithet, synonyms, habitat, associated plant communities, a list of all the counties in the Four Corners area where the plant has been found (really amazing!), elevation range, flowering time, entire U.S. range, unusual characteristics, and Native American uses.

Nothing is perfect; what are some of the problems in the *Flora*? Any reference book published today should provide a web address for comments and corrections to be posted. Weber and Wittmann's new *Colorado Flora* does not provide a web address, Allred's new *Flora Neomexicana III* does not, and following in this unfortunate pattern, Heil *et al*'s *Flora of the Four Corners Region* does not. How are we to know of mistakes in these books, such as those I point out below and the ones that you will find?*

In some ways the large number of contributors that I mentioned above is good: we get the top experts in each family writing the descriptions. But in other ways confusion can re-

sult – and does. For example, the Angiosperm Phylogeny Group (APG) recommendations are followed by some contributors (for Scrophulariaceae) but not others (for Chenopodiaceae). Be prepared to be flexible and speak several botanical languages. *Colorado Flora* very nicely indicates where its treatment of a family, genus, or species is in conflict with the treatment in the monumental *Flora of North America*. That same contrast and comparison definitely should have been carried over in the *Flora of the Four Corners Region*.

I find it very unfortunate that the keys do not provide a way for you to backtrack when you make a mistake in keying. If, for instance, you arrive at choice #27 in a key and you realize that you are in the wrong place, there is no indication about what number you were at before #27. You cannot easily retrace your steps. Look at Weber and Welsh's floras; they both provide this thoughtful and time and frustration-saving numbering in brackets [].

The etymology of *Botrychium* provided by the *Flora* really causes a head-spin and chuckle: from the Latin '*botry*', meaning a 'bunch of grapes', + '*oides*' meaning 'like'. There obviously is no "*oides*" in the word "*Botrychium*". The ending

"*ium*" is from the Latin "*ion*", a diminutive, thus the meaning is "a bunch of small grapes".

The problems I have pointed out are the inevitable cost of being human; we make mistakes. The excellence of *Flora of the Four Corners Region* enormously outweighs the few errors, but the inevitability of these errors just confirms to me the need for a web site that would correct the mistakes.

Ok, I have convinced you to buy the *Flora*, but how much is such a fabulous work of science going to cost you and where should you buy it? The Missouri Botanical Garden price is only \$72. However, check out www.exoticplantbooks.com (go to the "new/specials" link) and you will find it for \$57.60 plus only \$2.45 for postage.

After approximately 20,000 miles of walking, 150 miles of horse riding, and 150,000 miles of driving to, from, and on field trips to collect over 23,000 specimens (including 1,700 county records, 42 state records, and 17 new species), Ken and Steve deserve a great thank you from us and a long rest for themselves. The former they have been receiving; the latter they have not taken, for they immediately began work on a flora of New Mexico, and if all goes well we can expect that in the next few years.



Above: Sand lily (*Eremocrinum albomarginatum*) was discovered by Marcus Jones Near Green River, Utah and is known only from SE Utah and northern Arizona, mostly within the Four Corners region. No other species belong to this genus. Photo by Al Schneider (www.swcoloradowildflowers.com).

*I am pleased to say that a web page has now been established. Please make a note in your copy of the *Flora*: send your corrections to coloradowildflowers@yahoo.com and these corrections will be posted as www.swcoloradowildflowers.com/floraofthefourcornersregion.htm

Utah Native Plant Society



Utah Native Plant Society
PO Box 520041
Salt Lake City, UT 84152-0041

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If you have a smart phone you can now access the UNPS website via the QR at left. At the UNPS website you can access the *Sego Lily* in living color, download previous issues, read late breaking UNPS news, renew your membership, or buy wildflower posters, cds, and other neat stuff at the UNPS store.

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