



# Sego Lily

Newsletter of the Utah Native Plant Society

November 2012  
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Left: Monkshood (*Aconitum columbianum*) is a member of the buttercup family (Ranunculaceae) named for its distinctive flower shape that resembles the cowl of a Medieval clergyman. Unlike most flowers, the sepals of *Aconitum* are enlarged, colorful, and petal-like. Another common name for this species is wolfbane, a reference to its toxic roots that have been used as a poison since antiquity. Monkshood is one of the more than 900 plant species and varieties treated in Volume 2 Part A of the recently completed *Intermountain Flora* (reviewed on page 4). Photo by Steve Hegji.



## Utah Native Plant Society



## Utah Native Plant Society

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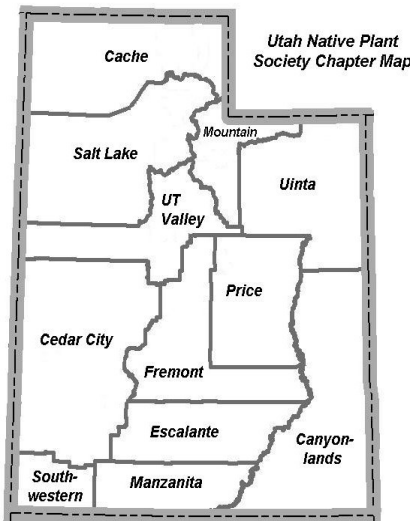
Website: For late-breaking news, the UNPS store, the *Sego Lily* archives, Chapter events, sources of native plants, the digital Utah Rare Plant Field Guide, and more, go to [unps.org](http://unps.org). **Many thanks to Xmission for sponsoring our website.**

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

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**In Quotes:** "You must not know too much or be too precise or scientific about birds and trees and flowers and watercraft; a certain free margin, or even vagueness—ignorance, credulity— helps your enjoyment of these things." Walt Whitman, *Specimen Days*.

## Bulletin Board

**New UNPS Life Members:** We are pleased to announce two new life members for the Utah Native Plant Society: Derrick Zobell of Salt Lake City and Douglas N. Reynolds of Pepperell, Massachusetts (but previously from Utah). Derrick is a wildflower photographer with a strong interest in documenting the species of Zion National Park (to which he has contributed several new species records in the last several years). Long-time *Sego Lily* readers will recognize Doug Reynolds' byline on several memorable articles about native plant restoration, Cedar Breaks National Monument, Bristlecone pine, and Sacred datura intoxicating its pollinators. Thanks Derrick and Doug!

**Cedar City Chapter needs a new leader:** After more than 3 years of service, Marguerite Smith has decided to step down as President of the Cedar City Chapter. If anyone in the Greater Iron County area would like to take over this role, please email Marguerite at [nls400@msn.com](mailto:nls400@msn.com) or Alice Maas at [alice.m@msn.com](mailto:alice.m@msn.com).

**2013 Utah Rare Plant Meeting:** The annual rare plant meeting sponsored by the Utah Native Plant Society and Red Butte Garden is scheduled for Tuesday, March 5, 2013 in the conference room at Red Butte Garden. The meeting will include 20 minute presentations by speakers working on various aspects of plant conservation biology in Utah. If you are one of these people—or know one— please consider submitting an abstract. We will have more details in the next issue.

## UNPS Annual Meeting Highlights

By Kipp Lee

The annual members meeting was graciously hosted by the Cache Chapter on Saturday, October 13 in the Cache County Annex Building in Logan. For those of us who commuted from down south, the drive through Sardine Canyon was spectacular as the abundant Bigtooth maples (*Acer grandidentatum*) were bright red against the golden hillsides.

Chapter President Michael Piep and his family and Cache Chapter members created a Festive Fall Motif in the conference room by decorating each table with various squashes and autumn leaves. The food was delicious and definitely New World as we were served Bison Salisbury Steaks, Turkey, various vegetable dishes, and an array of native berry preserves.

No official business or election of new BOD members was performed as we did not have a quorum. Fortunately this meant more time for socializing over dinner. Noel and Pat Holmgren were among the attendees and gave away stacks of plant-related



*Above: UNPS board chair Robert Fitts (far right) laments an empty plate, but receives little sympathy from other meeting attendees, including Noel Holmgren (to Robert's right) and Pat Holmgren (across the table from Noel). Photo by Kipp Lee.*

books and magazines from their personal collection.

Speaker Dr. Ralph Whitesides, Professor of Plant Science and Weed Science Extension Specialist at Utah State University, gave an informative presentation on the State listed invasive plant species. He outlined how invasives are spread, why they are successful, and what the counties and state are doing to fight them.



### Unidentified Flowering Object

This month's UFO is a fall-blooming desert annual from southern Utah characterized by bright yellowish-orange flowers and warty fruits. A native, this species is related to a notorious exotic weed with sharp, spiny fruit known to ruin bicycle tires. Any guesses?

The September UFO was *Plectritis macrocera*, an annual member of the Valerian family, photographed by Steve Hegji.

Do you have a UFO to share? Send it in! - *W. Fertig*

Left: UFO submitted by Ben Everitt (a.k.a the rock doc) of Ivins, UT. Technically, the photo was taken this fall on the Arizona Strip, but the species does occur in Washington County and Arches National Park. It is probably under-collected in Utah and additional reports are welcomed.



Botanist's Bookshelf:

## Two New Plant Guides (in time for holiday giving)

By Walter Fertig

Christmas came early this September when I received copies of two new books pertaining to flowering plants of the western United States. The first was the long-anticipated 8th and final volume of the *Intermountain Flora*, while the second was a new picture guide to common wildflowers of the mountains of the interior west. The two books are at opposite ends of the spectrum in terms of technical detail and are geared for different skill levels, but both fill a niche in the plant identification market. Plant and book lovers will find things to like in both.

***Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A. Volume Two. Part A. Subclasses Magnoliidae - Caryophyllidae.*** By Noel H. Holmgren, Patricia K. Holmgren, James L. Reveal, and collaborators. New York Botanical Garden, Bronx, NY. 731 pp. \$150.00.

The idea of a multi-volume, illustrated flora of the Intermountain west (that area of high desert and mountains from southeastern Oregon and extreme eastern California across southern Idaho, the northern 4/5 of Nevada, all of Utah, and the Arizona Strip) originated with Bassett Maguire while he was still curator of the Intermountain Herbarium at Utah State University in the 1940s. Unfortunately, other commitments kept the project from getting started for many years, and ultimately Maguire had to back out in favor of his two former students, Arthur Cronquist and Arthur Holmgren. The initial groundwork for the flora (compiling a draft species list, conducting field work to fill in distributional holes, writing keys and species descriptions, and compiling illustrations) began in the 1960s and brought in another generation of collaborators, including Noel Holmgren, Patricia Kern Holm-

gren, and James Reveal. The first of six planned volumes (the number would ultimately grow to eight) appeared in 1972 and addressed the ferns, lycophytes, and gymnosperms, and included background material on the vegetation, biogeography, and botanical history of the intermountain west. That volume set the standard of quality for the rest of the series and introduced the bright orange covers that make the *Intermountain Flora* stand out on the bookshelf.

Forty years later, Noel and Pat Holmgren, James Reveal, and their collaborators (including Richard Spellenberg, Daniel Atha, Donald Pinkava, Wendy Hodgson, Andrew Salywon, Marc Baker, and Charles Butterworth) have completed the final volume in the series. Volume 2, Part A (the volumes were not issued in strict chronological order) covers the three subclasses that are traditionally considered the most primitive and basal elements in the class Magnoliophyta (more commonly known as the "dicots"). Among the 31 families covered in the book are such important and species-rich groups as the buttercups (Ranunculaceae), oaks (Fagaceae), buckwheats (Polygonaceae), pinks (Caryophyllaceae), saltbushes (Chenopodiaceae), four-o'clocks (Nyctaginaceae), and cacti (Cactaceae). In all, 147 genera, 611 species, and 301 varieties are treated.

Volume 2A is a welcome addition, as many of the families it covers are taxonomically challenging. The availability of line drawings will benefit those who find keying amaranths, saltbushes, pinks, and other taxa difficult. As always, the images and layout are outstanding.

Readers should also appreciate the background information (in small print) at the end of each species account. These mini-essays in-

clude interesting life history facts and summaries of recent taxonomic research. Similar essays are included under each family description and discuss alternative taxonomic treatments that have been proposed by the Angiosperm Phylogeny Group and other researchers\*

Numerous taxonomic changes have been introduced in volume 2A (these are summarized on page 5). Those who prefer their plant names to remain forever unchanged will be disappointed to see new genera sliced out of polymorphic groups like *Eriogonum*, *Polygonum*, *Opuntia*, *Arenaria*, *Stellaria*, and *Ranunculus*. Other new combinations entail shifting varieties to full species or vice versa. Such changes are not arbitrary (well, mostly not) but reflect improvements in taxonomic knowledge or methods and is what makes taxonomy a science and not mere stamp-collecting.

Now that it is complete, the entire *Intermountain Flora* series covers 146 families, 898 genera, and 3847 taxa in nearly 3900 pages of text. For a limited time, the New York Botanical Garden Press ([www.nybg.org](http://www.nybg.org)) is offering all 8 volumes for a discounted price of \$520 (a savings of \$120 from the list price). Noel and Pat Holmgren are currently working on a supplement that will include a key to all of the families, a cumulative index, and a brief summary of the Intermountain Flora project. Then it will be off to new projects or perhaps a well-deserved rest after 40 years of writing and research!

\*Volume 2A mostly follows Cronquist's classification scheme out of necessity, as this was the system used in the initial volumes and in some cases it is too late to make substitutions. A few family concepts have been altered (such as splitting out Sarcobataceae or Montiaceae), but other possible changes were not made, like combining Chenopodiaceae with Amaranthaceae.

Above: *Eriogonum corymbosum* along the Colorado River near Moab. Photo by Al Schneider (www.swcolorado wildflowers.com).



A Sampling of Some Taxonomic Changes and New Species in Vol. 2A of the *Intermountain Flora*

Papaveraceae: *Argemone parva* raised to a full species; Alpine Rocky Mountain poppy renamed *Papaver coloradense*.

Ranunculaceae: *Aquilegia loriae* and *A. grahamii* made varieties of *A. micrantha*; *Aquilegia atwoodii* synonymized under *A. fosteri*; *Consoldia* split out of *Delphinium*; *Delphinium parishii* recognized as distinct from *D. scaposum*; *Anemone cylindrica* and *Ranunculus uncinatus* newly reported for Utah; a new taxonomic combination made for *Ranunculus adoneus* var. *caespitosus* (found in Utah's Deep Creek Range and eastern NV); *Ranunculus testiculatus* transferred to the genus *Ceratocephala*.

Moraceae: *Fatoua* transferred from Urticaceae.

Urticaceae: *Boehmeria cylindrica* new to Utah.

Polygonaceae: *Rumex densiflorus* var. *pyncanthus* new to Utah; *Reynoutria*, *Fallopia*, *Persicaria*, and *Bistorta* split from *Polygonum*; *Eriogonum microthecum* var. *arceuthinum* and *E. domitum* new to Utah, *Eriogonum corymbosum* var. *nilesii* (a USFWS candidate) no longer recognized as occurring in Utah; *E. thompsoniae* var. *matthewsiae*, *E. lonchophyllum* var. *saurinum*, *E. brevicaulis* var. *huberi*, *E. racemosum* var.

*nobilis*, *E. jamesii* var. *higginsii*, *E. esmeraldense* var. *tayei*, and *E. cerinum* vars. *viminale* and *psammophilum* no longer considered taxonomically distinct; at least 15 *Eriogonum* taxa formerly considered varieties elevated to full species; at least 13 new varieties of *Eriogonum* recognized in 7 of the more variable species; *Stenogonum* and *Johanneshowellia* split from *Eriogonum*.

Caryophyllaceae: *Eremogone*, *Minuartia*, and *Moehringia* split out of *Arenaria*; *Pseudostellaria* split from *Stellaria*; *Lychnis* placed in *Silene*; *Eremogone capillaris* var. *americana* and *E. fendleri* vars. *brevicaulis*, *porteri*, and *plateauensis* new for Utah; *Eremogone loisiae* recognized as new species; *Silene conoidea* a new Utah exotic.

Chenopodiaceae: *Chenopodium subglabrum* new to Utah; *Dysphania* split from *Chenopodium*; *Micro-monolepis* split from *Monolepis*; *Proatriplex* and *Stutzia* split from *Atriplex*; *Neokochia* split from *Kochia*; *Atriplex argentea* var. *hillmanii* and *Suaeda linifolia* new to Utah.

Sarcobataceae: split from Chenopodiaceae.

Amaranthaceae: *Amaranthus tuberculatus* new to Utah; *Acanthochiton* lumped with *Amaranthus*.

Nyctaginaceae: *Selinocarpus* transferred to *Acleisianthes*; Several

names shuffled and new varieties recognized in *Mirabilis*; both *Abronia elliptica* and *A. fragrans* recognized as distinct in Utah; *Abronia argillosa* renamed *A. glabrifolia*.

Molluginaceae: split from Aizoaceae; *Mollugo verticillata* new for Utah.

Montiaceae: split from Portulacaceae, includes *Calyptidium*, *Claytonia*, *Lewisia*, *Montia*, and *PheMERANTHUS* (formerly *Talinum*); *Montia fontana* new to Utah; *Talinum thompsonii* submerged into *PheMERANTHUS validulus*.

Cactaceae: *Cylindropuntia* and *Gru-sonia* split out of *Opuntia*; *Cylindropuntia* x *viridiflora*, *C. x deserta*, *C. imbricata*, and *C. ramosissima* new for Utah; *Opuntia engelmannii* pulled out of *O. phaeacantha*; *O. aurea* recognized as a full species; *O. pinkavae* recognized as a new species; *O. erinacea* and *O. nichollii* made varieties of *O. polyacantha*; *O. basilaris* var. *longiareolata*, *O. erinacea* vars. *ursina* and *utahensis*, and *O. polyacantha* vars. *rufispina* and *trichophora* no longer recognized; *Echinocereus triglochidiatus* now called *E. coccineus*; *Echinocereus mojavenensis* elevated to a full species; *Sclerocactus blainei* new to Utah; *Sclerocactus brevispinus*, *parviflorus*, and *wetlandicus* pulled out of *S. whipplei*/*S. glaucus*; *Neolloydia* transferred to *Echinomastus*; *Coryphantha* not transferred to *Escobaria*.

***Wildflowers of the Mountain West.***

By Richard M. Anderson, JayDee Gunnell, and Jerry L. Goodspeed. Utah State University Press, Boulder CO. 302 pp. \$24.95.

The authors, all horticulturists affiliated with Utah State University's Botanical Center and extension services, had a brainstorm in the summer of 2009. While lugging heavy, technical floras on a mountain wildflower excursion they decided to create a compact, color guide to the common wildflowers they encountered that would appeal to nature lovers and others intimidated by botanical jargon. The result is a guide to 130 showy species in 99 genera that occur over much of the "Mountain West" (basically the same area covered by the *Intermountain Flora*, but extending farther into western Wyoming and Colorado and northern New Mexico).

*Wildflowers of the Mountain West* is organized by flower color. Each two-page species entry includes a brief description of the main features of the flower and leaves, a county-level range map, a short discussion (often with a photo) of a look-alike species, and two or more color photos showing a close-up of the flower and its growth form. Additional inset photos are often provided to depict more details. All of the photos are of outstanding quality. A brief but interesting factoid accompanies each species account.

A table at the back of the spiral-bound book is a "quick search key" that is organized by flower color, flower arrangement, and one other attribute (usually growth form or leaf characters). This is not a formal, dichotomous key, but does help organize the species.

This book will be useful to beginners and those interested mainly in the more common flowers. Readers with more practice or experience might be disappointed that a wider variety of species (such as shrubs, grasses, or sedges) were not included. All plant lovers will appreciate the beautiful photos, crisp layout, and informative maps.

**Which Flora or Guide is Right for Me?**

Dozens of wildflower guides, floras, computer keys, and mobile apps are available for Utah or western North America. Choosing the guide (or guides) that are best for you depends on your proficiency with technical terms, preference for photos or drawings, demand for portability, and desire to know all or just the most common or showy plants of an area. Unless you just buy every new plant identification book that comes along (like my wife claims I do), you might consider the following criteria in purchasing your next flora or field guide:

1. Technical difficulty and format. If you insist on learning all of the species of an area, it is difficult to avoid dichotomous keys or manuals that are chock full of very precise but often technical terms. Most floras come with a glossary to explain the terminology, but separate illustrated glossaries (such as those by Harris and Harris or Harrington) can be indispensable. Many computerized keys are more user-friendly and do the keying behind the scenes. Picture books tend to organize species by flower color or growth form rather than by taxonomic relationships and can be easier for beginners, but usually address just a subset of the plants of an area. Some picture guides include tables that compare selected morphological features that help the reader identify the correct species by process of elimination.

2. Type of illustration. Everyone – professional and amateur alike – appreciates good illustrations to supplement keys or written descriptions of species. Many people prefer color photographs because they depict flowers as they should appear in nature. The accuracy of colors can vary, however, depending on the quality of printing. Popular guides often use closeup photos that may not depict important features critical for identification (such as leaves, fruits, or involucre bracts). Line drawings can vary in

quality, too, depending on the skills of the artist, but tend to do a better job than photos of emphasizing critical characters. Usually line drawings are printed in black and white, though occasionally (as in some of the Peterson field guides) they are printed in color or based on paintings. Color accuracy can be an issue for these renderings, too.

3. Completeness: Books like *A Utah Flora* or the *Intermountain Flora* cover all of the species of a particular area (whether native, introduced, or even cultivated). By contrast, picture guides tend to focus on subsets of species, such as showy wildflowers, trees, shrubs, grasses, mountain plants, or desert plants. Usually, only the most common, showy, or interesting species are depicted in these books. For beginners, the coverage of picture guides is usually sufficient for identifying the most common species in their immediate area. Once a person's skills increase, however, the likelihood of encountering rare and unusual species also increases, and the need for more complete guides.

4. Supplemental information. When it comes to identifying a mystery plant, the more information the better. Especially useful are range maps, full species descriptions, discussion of look-alike species, and photos or descriptions of plant habitat. Additional information on natural history and lore can improve one's appreciation of nature and make plant identification even more fun.

5. Portability. Of course the more supplemental information provided, the larger the guide book or flora becomes. Some of the most thorough books, such as the *Intermountain Flora*, *Utah Flora*, and *Flora of North America* are exceptionally bulky or come in too many volumes to practically fit in a daypack or pocket. Smaller guides must make a tradeoff between level of detail, amount of additional information, and the number of species to be covered. Computer keys and apps for mobile devices can be the best of both worlds in combining portability with almost unlimited content—provided you can read the small screen, the battery doesn't wear out, or you don't drop the device in a lake! - *W. Fertig*



## Grow This: Rubber rabbitbrush and Smooth Sumac

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

A question I commonly get from readers is “what native plants should I grow in my yard.” As I’m not much of a gardener myself (I prefer to let wild plants come into my yard on their own, and then try not to kill them), I’m pleased to introduce a new series on native western plants suitable for home use. The author, Robert Dorn, is a Wyoming botanist who recently co-authored (with wife Jane) an excellent guide: *Growing Native Plants of the Rocky Mountain Area* (reviewed in the July 2007 *Sego Lily*)—W. Fertig.

Medium size shrubs are used mostly for their attractive foliage, flowers, or fruits, or for fall leaf color. The following are two examples:

Rubber rabbitbrush (*Ericameria nauseosa* or *Chrysothamnus nauseosus*) is grown for its yellow flowers which appear in late summer and well into the fall. The branches remain a light yellow-green through the winter. Its odor is not very pleasant for some people, which is why it received its name “nauseosa.” It



Above: Smooth sumac in fall color from Albany County, WY. Below: Rubber rabbitbrush from Goshen County, WY. Photos by Robert Dorn.

grows to 6 feet high and wide. It occurs naturally in dry, open, well-drained places from the plains and basins into the mountains and is drought tolerant. It is easily grown from fresh seed or can be propagated from soft-

wood cuttings treated with rooting hormone and placed in a moist medium. Small plants transplant easily. Rubber rabbitbrush is also in the nursery trade. There are many varieties, so if you propagate your own, choose the variety that meets your needs.

Smooth sumac (*Rhus glabra*) is grown for its compound leaves which turn bright red in the fall, but they do not persist for long after turning. The reddish terminal clusters of fruits tend to persist into the winter. It can reach 10 feet high or more but is usually less than 6 feet. It spreads aggressively by rhizomes to form large colonies. It occurs naturally mostly on the Great Plains, but extends into northern Utah and canyons on the Colorado Plateau, Smooth sumac prefers a warm, well-drained, moist to dry area in full sun and is drought tolerant. It is easiest to grow from rhizome cuttings and is in the nursery trade.





## Gierisch's globemallow Proposed for Listing

By Tony Frates

On August 17, 2012, the U.S. Fish & Wildlife Service proposed that Gierisch's globemallow (*Sphaeraclea gierischii*) be listed under the Endangered Species Act with a designation of critical habitat. The Utah Native Plant Society's board formally approved supporting the proposal in September, and comments were accordingly submitted by the deadline for response.

*Sphaeralcea gierischii* was named for the late Ralph K. Gierisch who made the first collection of the species in May, 1978 in the Black Knolls area of Mohave County, Arizona. The species is an Arizona strip/St. George endemic with an extremely limited distribution. Occurring on less than 500 acres, it mostly occurs in scattered populations in Arizona with less than 5% of its occupied habitat located within southwestern Utah south of St. George.

The species was first named in 2002 by Drs. Duane Atwood and Stanley Welsh. Atwood enthusiastically recommended it for inclusion in the Utah rare plant guide and on the Utah BLM Sensitive Species list at annual rare plant meetings co-hosted by Red Butte Garden and the Utah Native Plant Society between 2003 and 2005. As a result, several UNPS board members (who accidentally ran into each other after a board meeting held in St. George in April 2005) made a successful attempt to locate the Utah population based in part on information provided by Dr. Atwood, and were subsequently able to get the species on the radar of Utah Natural Heritage Program. That in turn led to its inclusion on NatureServe (the national website for the consortium



*Above: Dr. Matt Bowker of Northern Arizona University inspects the flowers of Gierisch's globemallow at a site just north of the Arizona state line in Washington County, Utah. This population occurs along a roadcut through gypsiferous clay soils and is affected by vehicles and competing annual weeds. Photo by W. Fertig,*

of US and Canadian heritage programs) later that same year.

The species appears to be restricted to the Harrisburg Member of the Kaibab Formation, and may have always been rare. The plants are somewhat difficult to observe even when in flower, and therefore are a challenge to survey since they have a tendency to blend into the background. Though tall, the plants are wispy and the orange flowers are fairly small.

As a result of a petition, the species was formally published

as a candidate species by the US Fish and Wildlife Service on December 10, 2008. Gierisch's globemallow has a number of threats including gypsum mining, cattle grazing, habitat disturbance from off-road vehicle use, trash dumping, and target shooting, and competition from invasive species (particularly cheatgrass, red brome and *Malcomia africana*). Continued human encroachment of its habitat in Utah is of particular concern. Accordingly, UNPS recommended an Area of Critical Environmental Concern (ACEC)



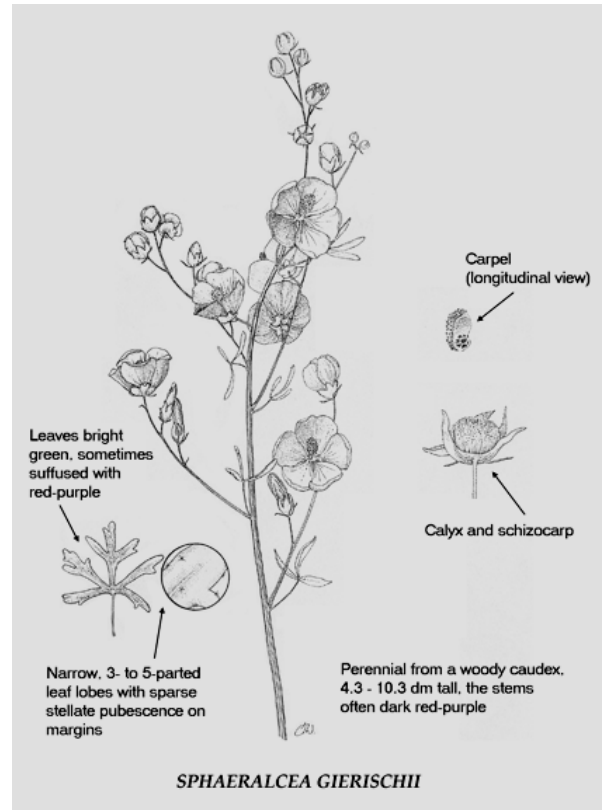
on July 19, 2010 to the BLM's St. George Field Office to help protect the Utah population. No action has yet been taken with respect to that recommendation.

Coincidental with its proposal for listing, Rita Reisor of Red Butte Garden has been actively establishing research plots this year in connection with a FWS funded project to determine to what extent the species can grow in historical habitats that have already been destroyed by mining operations in Arizona.

Listing of this Endangered Species Act does appear to be required to avoid its extinction.

For more information, see <http://www.utahrareplants.org>.

Right: Line drawing of *Gierisch's globemallow* (*Sphaeralcea gierischii*) from the digital version of the Utah Rare Plant Field Guide ([www.utahrareplants.org](http://www.utahrareplants.org)). Illustration by Shannon Workman.



## Mike Treshow VI (1926-2012)

By Dorde Woodruff

Mike Treshow first taught at Brigham Young University and worked as an air pollution consultant to Geneva Steel. He later moved to East Mill Creek and taught at the University of Utah as a professor of botany for the rest of his career. Mike was one of the "go-to" guys for botany students (along with Kim Harper and Bill McNulty): knowledgeable and helpful.

We learned about problems with air pollution, acid rain, and depletion of the ozone layer from Mike's early work on these subjects. But nobody in charge would listen.

Tony Frates says, "He was an inspiration to many of us and not just in connection with botanical matters. I personally will never forget his Human Ecology class that I took without then having any idea as to who he was."

Mike was a prolific author. He was the first author, with Glen Moore and Stan Welsh, for *Guide to the Woody Plants of Utah* in 1963, the first such for our Utah flora. Treshow, Moore, and Welsh also wrote the *Guide to the Woody Plants of the Mountain States* in 1970. With Welsh and Moore again, Treshow coauthored the *Guide to Common Utah Plants*, a precursor to *A Utah Flora*, in 1964. In 1975, he wrote *Wildflowers of the Western Rockies: emphasizing the plants of the Wasatch and Uinta mountain ranges*. He also wrote or co-authored several books on air pollution, as well as a number of journal articles.

He was not only a teacher to me, but a fellow researcher, who enabled me to spend several summer months being paid to inhabit Huntington Canyon and adjacent Gentry

and East Mountains. This was a high point of my life, in the course of a background study of the vegetation for the Huntington power plant. He was a fellow devotee of Utah's mountains, a longtime fellow member of the Wasatch Mountain Club (Mike and his wife Jean Frances wrote a history of the Wasatch Mountain Club called *Onward and Upward: 75 Years and Counting*) — and just plain friend.

Our lives diverged when I got out of graduate school into the recession of 1973-1975, and jobs in botany were vanishingly few in Utah. But I was glad Mike was still around, and would run into him from time to time. It was cruel that an accident intruded into Mike's still-active life, and took him from us. I'm sad that I will never get to talk to Mike again.

## What Good Are Awns?

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

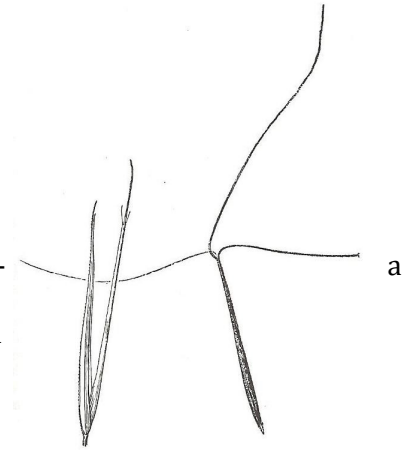
It's the middle of winter, and I'm still picking grass seeds out of my favorite wool socks. I'll bet they're cheatgrass (*Bromus tectorum*) which has those long, needle-like awns that project out from the grass flowers. Cheatgrass is an introduced weed, but many of our native grasses also have those annoying awns. These include needle grasses (*Stipa* spp.), bromes (*Bromus* spp.), three-awn (*Aristida purpurea*), wheatgrasses (*Agropyron* and *Elymus* spp.), and fescues (*Festuca* spp.) among others. Ranchers really have a problem with all these grasses. Although they are palatable early in the season, the awned seeds get lodged in the mouths and noses of their livestock. They get into dogs too. It's hard to imagine that grass awns evolved in so many species just to annoy us.

It is believed that awns evolved as a mechanism to disperse seeds, and they do this in three ways. The first way is obvious to a guy with grass seeds in his socks. The awns get attached to the fur of animals, bird feathers, or your clothes. If the wind is strong enough, awns may also help seeds become airborne and travel from the parent plant. Finally, awns have been shown to allow the grass seed to move along the ground and find a suitable place to germinate. This can happen because grass awns are hygroscopic, they twist and untwist in response to changes in the humidity of the air.

During the day it's hot and dry, and the awn curls up and becomes shorter. At night when the temperature drops and relative humidity increases, the awn expands, and the seed is pushed forward. Many grass seeds have backward-pointing hairs, allowing them to move forward with ease but preventing backward movement. The cells that make up an awn are constructed of two types of material. Most of the cell expands when it absorbs water and contracts when it dries. However, little fibers inside the cell are stiff and do not change with humidity. These fibers cause the awn to twist and bend when it dries. The grass seed is harnessing energy from the sun to move along the ground. Although awns have been shown to cause grass seed to move along the ground, researchers have been unable to show that a longer awn is associated with greater dispersal distance. So why do some plants have really long awns?

Dispersal is not the only service an awn provides. As the grass seed moves along the ground it may eventually happen

upon a depression - a safe site for germination. The seed becomes stuck in the depression, so now the expanding and contracting of



the awn literally drills the seed into the hole. No help from gardeners needed. At least two studies have shown that seeds with longer awns become buried deeper and are more likely to germinate. Furthermore, some grasses, like *Aristida* (above), have seeds with three awns, and removing even one of the awns makes it less likely that the seed will bury itself (by the way, a self-burying seed is termed trypanospermic). So awned grass seeds are just like worms: they can crawl along the ground and dig into a good spot.

Understanding trypanospermic behavior is important as well as being a great natural history story. Many of our native grasses with awns are important for restoring degraded grasslands. These include bluebunch wheatgrass (*Elymus spicatus*), green needlegrass (*Stipa viridula*), mountain brome (*Bromus carinatus*), and needle-and-thread (*Stipa comata*). Unfortunately, awned seeds get tangled up with each other, making it more difficult to broadcast them evenly across a restoration site. Some restorationists remove grass awns before broadcasting the seed. However, studies have shown that this practice may reduce the germination and survival of awned grass species.

### References:

- Elbaum, R., S. Gorb, and P. Fratzl. 2008. Structures in the cell wall that enable hygroscopic movement of wheat awns. *Journal of Structural Biology* 164:101-107.
- Molano-Flores, B., C.A. Danderson, and K. Patel. 2010. Seed self-burial, germination, and seedling survival for a species with hygroscopic awns (Illinois). *Ecological Restoration* 28:126-129.
- Peart, M.H. 1979. Experiments on the biological significance of the morphology of seed dispersal units in grasses. *Journal of Ecology* 67:843-863.



## Noteworthy Discoveries

*Spiranthes diluvialis* new to Cache Valley. Several new populations of the federally Threatened Ute ladies-tresses orchid (*Spiranthes diluvialis*) have been documented in Utah in the past year, including new sites in the Salt Lake Valley and a first record for Cache Valley. Leila Shultz of Utah State University submitted the photo (at right) of the new Cache Valley occurrence, which extends the known range of the species into far northern Utah. Field botanists and consultants have been busily expanding the range of this species (originally thought to be only eastern Colorado, north-central Utah, and eastern Nevada) for 20 years, and it is now known from nearly 60 occurrences in 8 western states and southern Canada.



### Spanish needles new to Utah:

In September, a group of Zion National Park botanists, weed specialists, and fire effects researchers descended on the park's greenhouse for a training session on plant identification. Weed specialist Brian Black suggested a side trip to examine some new exotic species for the park in the adjacent campground and visitor center. While tramping about from one new exotic plant to another, our group encountered a showy, white-rayed annual composite with opposite, palmately compound leaves growing in the median between two campsites. I recognized the plant as something new to the Zion flora and probably the whole state. The most diagnostic feature was the pair of sharp-tipped, bristly awns on each of the achenes in the flower head. This trait suggested the mystery plant was some sort of *Bidens*

*Above: Ute ladies-tresses from the Cache Valley, with the Wellsville Mountains in the background. *Spiranthes diluvialis* can be distinguished from the more common *S. romanzoffiana* by its more tubular and less congested flowers.*

(a name that translates as 'two-toothed' and not for a certain vice-president), a genus in the sunflower family (Asteraceae). But all of the *Bidens* species in Utah have relatively small, yellow rayed flowers!

With permission of the park, I collected a specimen and once dry used the key in the *Flora of North America* to make a preliminary diagnosis of *Bidens pilosa*, a.k.a. Spanish needles or

Cobbler's pegs. Unfortunately, the FNA volume included no illustration, so a quick internet query brought forth a number of photos that matched the Zion material.

*Bidens pilosa* is a variable taxon that is sometimes split into 2-3 additional species. The Zion specimens most closely match one of these segregates, *B. alba*, in size and number of ray flowers. Spanish needles (named for the needle-like shape of the fruits) is native to the Old World but has become widely established across the globe, including California, southern Arizona, Mexico, and the southeastern US. In Africa, the shoots and tender leaves are eaten as a vegetable. - *W. Fertig*

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