

Newsletter of the Utah Native Plant Society

July 2007 Volume 30 Number 4

Cedar Breaks Wildflower Festival 30 June-22 July 2007

The second annual Cedar Breaks Wildflower Festival runs this year from June 30th through July 22nd. Events include one hour guided wildflower walks twice each day as well as longer, specialized workshops on topics ranging from plant communities, wildflower photography, nature journaling, and Junior Ranger programs for children. A complete schedule of events can be found at the Zion Natural History Association website (www.zionpark.org) or the Cedar Breaks National Monument website (www.nps.gov/cebr).

This year the Monument sponsored its first contest for artists and photographers to submit their work for the festival poster (grand prize was \$100). Artists and photographers should visit Cedar Breaks this year to find inspiration for next year's competition. – Doug N. Reynolds

Cover Photo: *Townsendia leptotes* is one of the earliest wildflowers to begin flowering at Cedar Breaks NM. Photo by Doug N. Reynolds. For more on Cedar Breaks, see the article on pages 4-5.



In this issue:

Chapter News and Events	2
President's Corner: Highlights from the Spring Meeting in Kanab	3
Plant Life of Cedar Breaks National Monument	4
Whats in a Name? <i>Linnaea</i>	6
Botanica: Carnivorous Plant Turns Vegetarian	7
What is Troubling our Oaks?	7
TNC Acquires First Portion of White Dome Preserve	8
Botanist's Bookshelf	
<i>Flora of North America</i> Reaches Halfway Mark	9
<i>Growing Native Plants of the Rocky Mountain Area</i>	9



Utah Native Plant Society

Officers

President: Bill Gray (Salt Lake Co)
Vice President: Bill King (Salt Lake Co)
Treasurer: Celeste Kennard (Utah Co)
Secretary: vacant
Board Chair: Mindy Wheeler (Summit Co)

UNPS Board: Walter Fertig (Kane Co), Robert Fitts (Utah Co), Jackie Freshwater (Box Elder Co), Susan Garvin (Utah Co), Marie Griffiths (Salt Lake Co), Ty Harrison (Salt Lake Co), Kipp Lee (Salt Lake Co), Margaret Malm (Washington Co), Larry Meyer (Salt Lake Co), Therese Meyer (Salt Lake Co), Jeff Mitchell (Utah Co), Dave Wallace (Cache Co), Winnie Washburn (Iron Co), Maggie Wolf (Salt Lake Co), Loreen Woolstenhulme (Utah Co).

Committees

Communications: Larry Meyer
Conservation: Bill King and Tony Frates
Education: Loreen Woolstenhulme
Horticulture: Maggie Wolf

Invasive Weeds: Susan Garvin
Rare Plants: Walter Fertig

Chapters and Chapter Presidents

Cache: Steve Ripple
Escalante (Garfield Co): Allysia Angus
Fremont (Richfield area): Rebecca Harms & Ron Parsons
Manzanita (Kane Co): Walter Fertig
Mountain (Summit Co): Mindy Wheeler
Price (Carbon Co): Mike Hubbard
Salt Lake: Kipp Lee
Southern (Washington Co): Margaret Malm
Utah Valley (Utah Co): Celeste Kennard

Sego Lily Editor: Walter Fertig (walt@kanab.net). News items, articles, photos, and illustrations from members are always welcome and encouraged. The deadline for the September 2007 Sego Lily is 15 August 2007.

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

For more information on UNPS:
Contact Bill King (582-0432) or Susan Garvin (356-5108), or write to UNPS, PO Box 520041, Salt Lake City, UT, 84152-0041 or email unps@unps.org

Chapter News

Escalante (Garfield County): The Escalante Chapter hosted a work meeting in May where we discussed compiling a local water-wise and native plant resource guide for the public (especially residents new to the area) who desire to use native plants and water-efficient techniques in their home landscapes. Members shared their ideas, lessons-learned, and suggestions of how to best approach the project.

Several members are staying busy helping to maintain the Escalante Main Street landscaping which features mostly native and drought-tolerant plantings from one end of town to the other.

The June meeting is the annual chapter potluck BBQ which was held on June 12 at the City Park.

The chapter will take a break for the month of July with no meeting scheduled and then meet every other month beginning in August.

Fremont (Richfield area): We had a booth at the natural resources fair. It was a big hit. We gave coloring books and wildflower posters provided by BLM.

We will have a campout on July 6-7 at Mt. Terrell Ranger Station on the Fishlake NF. We have volunteered to identify wildflower seed collecting sites to harvest seeds in the fall. This seed will be planted along the Gooseberry Road (currently being up-graded). We have been asked by Fremont Indian

State Park for advice on what natives to plant in area that they are restoring. – *Maria Ulloa*

Manzanita (Kane County): The Kanab chapter is offering two summer activities:

Saturday, June 30: Botanizing Cedar Breaks - In conjunction with the 2nd annual Cedar Breaks NM Wildflower Festival, we will be exploring some interesting botanical areas of Cedar Mountain. Our itinerary will include some hiking along the rim of Cedar Breaks Amphitheatre (with great views of the Claron limestone) searching for showy wildflowers and cushion plants, followed by a short excursion along the Rattlesnake/Ashdown trail through aspen and spruce forests, and if time and weather permit, exploring around Brian Head. Plan to meet at the Cedar Breaks NM visitor center parking area at 10 AM (the drive to Cedar Breaks from Kanab takes about 80 minutes depending on traffic).

Saturday, August 18: Flora and Fire Ecology of the Kaibab Forest - Last June's Warm Fire scorched a large swath of the Kaibab National Forest on the north rim of the Grand Canyon and touched off local controversy over the role of fire in forest management. We will explore some areas that were lightly burned and others where the fire raged very hot to see how the vegetation has responded in one years time. Plan to meet at the parking lot of the Grand Staircase-Escalante NM visitor center (next to Walkers) at 8:30 AM to carpool or caravan to Jacob Lake and beyond. – *Walter Fertig*

President's Corner- Highlights from the Spring Meeting in Kanab

The Manzanita (Kane County) chapter hosted a meeting from May 18th to May 20th, which was a real treat for several of us who made the journey from around the state, plus Dick Hildreth who made it all the way from Tucson. Friday evening was given over to a talk by Doug Reynolds, who gave a very sobering account of how incredibly difficult it is to make meaningful restoration on land that has been badly damaged by overgrazing or invasive weeds. We hope that Doug will write an article for *Sego Lily* so that everyone can share his insights.

Saturday morning Walt Fertig led a group of about 20 people on a tour of several varied ecosystems in the Grand Staircase - Escalante National Monument (GSENM) where he has done extensive fieldwork. One site was a section of land that had been the subject of a restoration attempt by BLM: it was a sad illustration of the problems and difficulties that had been outlined in the previous night's talk. The other sites were much closer to native habitats, with varying soil types and microclimates giving rise to different plant communities.

Even more people showed up for Sunday's hike into Lick Wash, again ably led by Walt. This was a fascinating trip into a deep shaded canyon where the air is consistently much cooler than open countryside at the same elevation. This creates an "upside-down mountain" in which plants thrive at lower elevations than would normally be possible – large Ponderosa Pines grow in the canyon bottom! Near the mouth of the wash we visited a population of the very rare Paria Breadroot (*Pediomelum pariense*), a plant that was the subject of research by Ashley Egan, with funding from UNPS. Probably the favorite for most people was Lori's Columbine (*Aquilegia loriae*) which prefers almost inaccessible cracks in the canyon walls. It was discovered in 1995, and grows nowhere except Kane County.

On Saturday afternoon we held a short meeting for those members of the UNPS board who were present. In the evening there was a pot luck dinner and social hosted by Jana de Peyer at her home perched on the rim of Kanab Canyon. It was a wonderful event: thanks to Walt and Jana, and all the members of the Manzanita Chapter who worked to make it a success.

Although we didn't reach a quorum for the board meeting we had a very useful discussion of several issues that will be taken up by email discussion and at other meetings. One subject was funding a research proposal by Dorde Woodruff who has been studying Utah's cacti, especially *Sclerocactus*, for several decades. Dorde has also written some fine articles for *Sego Lily* in the past year, and given talks at chapter meetings. Subsequently the full board

voted to approve the award, which will enable her to travel to study sites around the state.

Another subject concerned UNPS's role in working actively on behalf of Utah's rarest plants, those in the federal "Threatened or Endangered" category. As several articles in *Sego Lily* have discussed, there have been strong efforts to remove federal protection from some of these species, most recently *Penstemon grahamii* and *Astragalus desereticus*. In these particular cases (though not in several others), we have joined in active opposition because we feel that the best available science is not being used to judge whether the plants are no longer in danger. In some cases there is a "Catch 22", in that federal funds are not always available to get the science done. I would like to see UNPS play a positive role in building up the scientific database on some of these plants. We have a great body of trained botanists among our members, and quite a few very knowledgeable amateurs. I propose that we establish a pool of UNPS volunteers who could assist with surveying for rare plants, and offer to work in conjunction with the agencies when appropriate. I shall be contacting many of you directly, but please get in touch with me if you would like to find out more. - Bill Gray (cyberflora@xmission.com)

Below: Relentless in pursuit of a rare plant photo op, UNPS President Gray stalks the wily Lori's columbine in Lick Wash. Photo by W. Fertig, inset of Lori's columbine by Bill Gray



Plant Life of Cedar Breaks National Monument

By Doug N. Reynolds

Because the growing season at Cedar Breaks is so short due to its high elevation and heavy snowfall, all species must flower and reproduce in just a few months rather than the typical six month growing season at lower elevations. This seasonal compression, along with protection from livestock grazing, ATV's, and other human disturbance leads to a spectacular flowering display during the short summer. The high elevation also allows many northern circumboreal species to flourish at or near their southernmost distribution.

Scientists have noticed that for every thousand feet you climb in our western mountains, temperatures drop three to four degrees Fahrenheit and the plant life changes as if you had traveled six hundred miles north. Thus, leaving Cedar City on the drive up to Cedar Breaks, you start out in the Great Basin Desert of sagebrush and saltbush at 6000 feet, pass through Pinyon-Juniper Forest, enter the Mixed Conifer Zone of Ponderosa pine, White and Douglas firs, and finally arrive at the CEBR visitor center at 10,350 feet in the Engelmann Spruce - Subalpine Fir Life Zone surrounded by forests similar to those found in Alaska.

Cedar Breaks National Monument itself only encompasses elevations from about 8000 to 10,500 feet and the upper two life zones. The accessible portions along the road and trails all lie within the Spruce-Fir Zone. But even within this one zone and its cool, moist climate and short growing season, there are four very different habitats for plants depending upon exposure, slope, soils, and drainage. Each of these habitats has a different group of plant species that are adapted to its special conditions.

The Rim of the Breaks

Here are some of the harshest conditions for plant life in the Monument. These areas are exposed to all of the elements: strong winds, intense sunlight, blowing snow, freeze-thaw cycles, and intense thunderstorms. Only tree species like the Bristlecone and Limber pines can eke out an existence here. But the most diverse group of plants are the non-woody plants showing the "cushion growth form". They grow low to the ground, out of the cold wind, where temperatures can be 10 degrees or more above air temperature. Most of their bodies lie underground in a root system that anchors them and stores their energy reserves in a protected environment. The exposed soils of the Claron Formation here are easily erodible and have an unusually high pH which affects the availability of nutrients for growth and makes it difficult for plants to establish. Because of these special soil conditions, there are a number of



Above: Rim of Cedar Breaks Amphitheatre showing white and red layers of the Claron Formation derived from an ancient lakebed. Photo by D.N. Reynolds.

species such as Cedar Breaks gilia (*Ipomopsis tri-dactyla*), Podunk groundsel (*Senecio malmstenii*), and Maguire campion (*Silene petersonii*) that grow almost nowhere else except on similar soils between Cedar Breaks and Bryce Canyon. Other common species found are Desert parsley (*Lomatium minimum*), Cushion phlox (*Phlox pulvinata*), Sulfur buckwheat (*Eriogonum umbellatum*), and Mountain locoweed (*Oxytropis oreophila*).

Spruce-Fir Forests

Where trees are able to establish at these high elevations, Engelmann spruce and Subalpine fir form the dominant forest type. Groves of Aspen may also be found in areas where there have been past disturbances although they are eventually replaced by the conifers. These forests trap snow, and the shade provided by the trees slows melting and lowers evaporation so that there is more moisture and less wind than out on the rims. As a result, the understory is much lusher and dominated by tall, upright, herbaceous plant species like Colorado columbine (*Aquilegia caerulea*), Southern ligusticum (*Ligusticum porteri*), and Aspen bluebells (*Mertensia arizonica*). While many visitors think that the death of Engelmann spruce trees from an epidemic of bark beetles is unfortunate, the gaps created by the dead trees allow in more light which benefits the understory plants and increases their growth and flowering.

Cedar Breaks Wildflower Photography: Zion Canyon Field Institute is offering a one-day workshop on wildflower photography at Cedar Breaks on Wednesday, July 11, hosted by professional photographer Michael Plyler. See the Zion Natural History Association website (www.zionpark.org/prod.php?id=30) for more information on this and other summer and fall programs.

Open, semi-moist meadows

Back from the rims where there is more protection from the wind, snow accumulates over the winter on the gentle slopes and protects the underlying plants. As the snow melts in the spring and provides a good water supply, we find the greatest diversity of species and the most spectacular wildflower displays in summer. Here the meadows are filled with such species as the endemic Markagunt penstemon (*Penstemon leiophyllus*), Elkweed (*Swertia radiata*), Little sunflower (*Helianthella uniflora*), and Scarlet paintbrush (*Castilleja miniata*).

Subalpine Marshy Meadows

Snow accumulates to the greatest depths during the winter along drainages and in depressions. These are the last areas to melt out in the spring and the soils remain wet for most of the summer. Trees cannot establish here but we find another set of herbaceous plants adapted to the wet soils and short growing season. Species such as Marsh marigold (*Caltha leptosepala*), Plantainleaf buttercup (*Ranunculus alismifolius*), Shootingstar (*Dodecatheon pulchellum*), and Elephanthead (*Pedicularis groenlandica*) are amongst the most colorful and showy species found.

Long after hot temperatures and drying soils have ended the wildflower season over much of Utah's lower elevations, Cedar Breaks provides a spectacular locale for those who enjoy wildflowers as well as the geologic formations and scenic vistas.



Above: Rydberg's penstemon (*Penstemon rydbergii*).
Below: a colorful carpet of lupines and sunflowers above the rim of Cedar Breaks. Photos by Doug Reynolds.



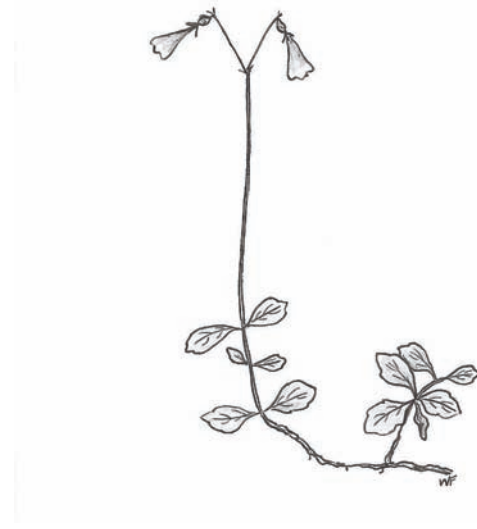
What's in a Name?

Linnaea

The genus *Linnaea* consists of a single species, *L. borealis*, distributed widely across the boreal forests or taiga of Northern Europe, Siberia, Alaska, and Canada, and south through the Sierra Nevada, Rocky Mountains, and Appalachians. The species is commonly known as Twinflower in recognition of its pair of nodding, pinkish-white tubular flowers at the tip of a short, Y-shaped stalk. Twinflower is an evergreen subshrub that spreads by trailing branches which form loose mats over shady conifer forest floors. Taxonomists recognize two varieties – the typical form with rounded leaves and short floral tubes found in Eurasia and western Alaska, and var. *longiflora* with more elliptic, toothy leaves and longer corollas from North America.

The name *Linnaea* commemorates Carl Linnaeus (1707-1778), the Swedish botanist from Uppsala University who invented and popularized the system of naming plants and other organisms used by taxonomists since the mid 1700s. Prior to Linnaeus, plant and animal names were not standardized, nor were the conventions for naming species. Plant names typically consisted of long descriptive phrases, or polynomials, such as *Conyza foliis ovalibus integerimus scabris subtus hirsutus* (roughly translated as “Horseweed with oval leaves covered with rough and stiff hairs”). Linnaeus’ chief innovation was developing a unique two-word name (or binomial) for each species (such as *Conyza hirsuta* for the Hairy horseweed). The generic name (i.e. *Conyza*) was the equivalent of a family surname and was used by Linnaeus to group species of similar appearance. The specific epithet (i.e. *hirsuta*) was analogous to a person’s first name and was used as an adjective to identify and briefly describe each unique member of a genus. This relatively simple concept, first published by Linnaeus in *Species Plantarum* in 1753, revolutionized the study of natural history by allowing researchers to better communicate among themselves and to name the vast number of new species being documented around the world during the Age of Discovery.

Linnaeus also devised an early system for classifying the world’s plant diversity based on the number of stamens and pistils in a plant’s flower. This “sexual system” was widely regarded as artificial even in its day (including Linnaeus himself), but was useful for bringing some order to an otherwise chaotic mishmash of plant taxa. The sexual system was also considered somewhat scandalous in the mid 1700s for its racy terminology that implied various numbers of wives (pistils) and husbands (stamens) within the same bed (flower). Johann Siegsbeck, a botanist who oversaw the czar’s botanical garden in St. Petersburg, was particularly offended by the sexual system and banned Linnaeus’ papers from



Above: *Linnaea borealis* reaches the southern edge of its range in the Rocky Mountains of Utah, occurring sporadically from the Uinta and Wasatch ranges south through the Wasatch Plateau to the Tushars. Illustration by W. Fertig

Russia. Linnaeus, whose intellect was coupled with a streak of vanity and pettiness, had his revenge by naming a small genus of unattractive sunflowers *Siegsbeckia* in “honor” of his critic. The sexual system quickly fell out of favor for more legitimate, scientific reasons as botanical scholars such as Adanson, de Jussieu, and de Candolle began critically studying fresh and herbarium material from across the globe to identify more natural features to depict relationships among genera.

According to legend, Twinflower was one of Linnaeus’ favorite wildflowers and became his official floral emblem when he was granted nobility by the Swedish crown in 1761 (becoming Carl von Linne). Twinflower was originally thought to be a *Campanula* (harebell), but was renamed *Linnaea borealis* by J.F. Gronovius, a Dutch botanist and early mentor of Linnaeus. In a bit of uncharacteristic self-mocking, Linnaeus noted in *Species Plantarum* “*Linnaea* was named by the celebrated Gronovius and is a plant of Lapland, lowly, insignificant and disregarded, flowering but for a brief space - from Linnaeus who resembles it.” The International Code of Botanical Nomenclature recognizes Linnaeus’ 1753 publication as the starting date for all valid plant names, and so *Linnaea borealis* is now attributed to Linnaeus as the author, giving the false impression that Linnaeus named the genus and species for himself (a serious error in taxonomic etiquette, and one that is avoidable by getting grad students or peers to do such naming for you!).

The name Linnaeus also commemorates another plant group. Linnaeus' father, Nils (son of Inge-mar), adopted the surname Linnaeus out of necessity when he entered University in the late 1600s. The name is derived from the Swedish word lind or linden (*Tilia cordata*), perhaps better known in North America as basswood.

Traditionally, *Linnaea borealis* has been placed in the honeysuckle family (Caprifoliaceae). It is somewhat anomalous within this family in having only 4 stamens and in its bristly, indehiscent fruits. Recent genetic and morphological analysis of the Caprifoliaceae has suggested that the group is artificial and should be subdivided. In 1998, Swedish botanist Anders Backlund and his Belgian collaborator Nancy Pyck proposed a new family, Linnaeaceae, for the twinflower. Perhaps it should be no surprise that Dr. Backlund hails from Uppsala University – long time academic home of Carl Linnaeus.

- Walter Fertig

Botanica (Or Odds and Ends from the Botanical World)

Carnivorous Plant Turns Vegetarian

Because of their peculiar habit of trapping and consuming insects and other small animals for nourishment, carnivorous plants are among the most intriguing species in nature. The carnivorous habit has evolved independently among several groups of plants, including the Venus flytrap (Dionaeaceae), sundews (Droseraceae), bladderworts (Lentibulariaceae), and pitcher plants (Sarracenaceae and Nepenthaceae). Most insectivorous plants occur in nitrogen-poor soils where consumption of animal protein gives them an advantage over more traditional, solely photosynthetic plants.

But one carnivorous plant in southeast Asia and New Guinea has apparently had a change of heart. *Nepenthes ampullaria* is one of 80 some species of carnivorous vines and climbers in the genus *Nepenthes* found in tropical areas of Asia, Indonesia, and northern Australia. Most *Nepenthes* species have jug-like structures at the tips of their leaves (actually modified tendrils) capped by a small leafy awning to capture insects. The jug is filled with weakly acidic fluid (about the same acidity as soda pop) that is used to slowly dissolve the nutritious tissues of trapped prey. The rim and upper lining of the jug is smooth and slippery, causing visiting insects to fall into the caustic pool below and preventing their escape.

N. ampullaria has the jug-like leaf tips of typical *Nepenthes*, but instead of climbing over other vegetation grows at ground level. It also lacks the leafy cap and slick inner-lining of the jug. Instead of trapping insects, *N. ampullaria* has evolved to catch and



Above: Modified leaf tip of *Nepenthes bicalcarata*, a pitcher plant from Indonesia. Most *Nepenthes* species have their leaf tips modified into an urn-like pitcher filled with liquid that dissolves arthropods unfortunate enough to get trapped inside. Illustration by W. Fertig.

consume falling leaves. This vegetarian pitcher plant captures nutrient-rich leaf debris that would otherwise land on the ground, ensuring a meal for itself rather than soil bacteria and fungi.

All of this begs the question: does eating leaves make a plant a cannibal? – Walter Fertig

What is Troubling Our Oaks?

Reports are coming in from all along the Wasatch Front this spring of sickly looking Gambel's oaks (*Quercus gambelii*). For the most part the trees began the season in good health and produced a normal complement of leaves and shoots. But then in early June the leaves became withered, stunted, and brown. Concerned plant lovers began to worry – was it pollution, global warming, or disease?

There is some justification for worrying about oaks these days. Several diseases have played havoc with the oak forests of northern California and southern Oregon over the past decade. Sudden Oak Death, a disease caused by a fungal pathogen related to the Potato Blight, has killed an estimated 100,000 Tan, Black, and Coast live oaks in California by attacking bark, wood, and leaves. Oak Wilt, caused by a different fungus, has also claimed a large number of trees by clogging their vascular tissue. Foresters are concerned that these and other oak diseases could spread to new areas where oaks are abundant.



Above: Wilted leaves of Gambel's oak by Dave Wallace, June 2007.

Fortunately, the explanation for the poor vigor of our Wasatch oaks is probably more benign. The cold snap in early June (which resulted in heavy, late spring snow at higher elevations) appears to be the culprit. Although oaks are generally adapted to avoid frosts by leafing out later than many other trees, they can still be tricked by an unusually late cold spell. Young trees and seedlings are especially sensitive to frost, which helps explain the absence of Gambel's oak much above 9000 feet and their striking rarity across the state line in Wyoming. Hopefully a fresh crop of leaves (held in reserve in unopened buds) should emerge shortly to replace those lost to the cold. – *Walter Fertig*

TNC Acquires First Portion of White Dome Preserve

By Elaine York, TNC

The Nature Conservancy has announced its purchase of 55 acres of habitat in St. George. The purchase is the first step in an ambitious plan to create a new 800-acre preserve that will benefit several globally rare and federally-listed species in Washington County. Located in the fast-developing "South Block" in south St. George, the preserve will provide an oasis for plants, animals and people—with plans in the works for public nature trails and educational signage.

Working with a diverse range of partners, including the School and Institutional Trust Lands Administration (SITLA), the Bureau of Land Management (BLM), the Utah Department of Transportation (UDOT), the U.S. Fish and Wildlife Service (FWS) and the City of St. George, The Nature Conservancy has laid out plans for the creation of the

"White Dome Nature Preserve," which would protect habitat for several at-risk species, including the harbor some of last remaining populations of the Threatened Siler pincushion cactus, zebra-tailed lizard and loggerhead shrike, as well as extremely rare native wildflowers. The Preserve will harbor some of last remaining populations of the Threatened Siler pincushion cactus, *Pediocactus sileri*, and the Endangered dwarf bear poppy, *Arctomecon humilis*—which is found in Washington County and nowhere else on Earth.

The purchase was funded through private donations from Conservancy supporters and funding from FWS. The purchase marks the first phase of acquisition in a plan that was initiated in 2005 when SITLA signed an agreement to make 800 acres in the South Block available for sale to the Conservancy and UDOT with the intention of establishing a nature preserve with public-access hiking trails.

Additional land acquisitions in the South Block by the Conservancy and UDOT will take place in 2007-2008, with a goal of piecing together all 800 acres of the White Dome Nature Preserve. The Nature Conservancy is seeking additional private funds from individuals and companies for future White Dome acquisitions. Every little bit helps, so please contribute if you can. For more information contact Alice Storm at (801) 238-2337 or astorm@tnc.org.



Above: Dwarf bear poppy (*Arctomecon humilis*), quite possibly THE most charismatic and endangered plant in Utah, will receive a boost with the protection and fencing of habitat on White Dome, just south of St. George. Photo by W. Fertig.

Botanist's Bookshelf

Flora of North America Reaches Halfway Mark

By Nancy Morin

More than 900 botanists, working as part of the Flora of North America project, have now cataloged over half of the genera of higher plants native or naturalized in North America north of Mexico and hope to finish by 2011. This is the first comprehensive and scientifically authoritative publication treating the 20,000+ species of plants in U.S. and Canada together.

Thirteen volumes have been published (including an introductory volume), one is being printed, and publication of two more is expected this year, out of a total of 30. The second volume of grasses (Poaceae, Volume 24) came out in early 2007, completing the monocotyledonous plants. The first of three volumes on mosses, liverworts, and hornworts is in press. Especially exciting was the publication of all three volumes on the sunflower family (Asteraceae, Vols. 19, 20, 21) last year. The treatments include identification keys, nomenclatural information, common names, descriptions, distributions (including maps), and discussions. Every genus and 1/3 to 1/6 of the species is illustrated.

FNA makes many lifetimes of study, and the best knowledge from regional floras, available in print and electronically. Editorial centers are located at Missouri Botanical Garden, the Hunt Institute for Botanical Documentation, Université de Montréal, and University of Kansas. Authors base their work on knowledge of plants in the field, herbarium specimens, and review of the literature. The project also has a network of regional reviewers. Authors and editors work as volunteers; grants and donations support technical editors and botanical illustrators. The books are published by Oxford University Press--US and currently are on sale at the discounted price of \$76/volume (available at www.oup.com/us/fnaserie with promo code 25316). More information on Flora of North America and treatments from published volumes are available at www.fna.org.

For more information contact Nancy R. Morin, FNA Business Office, P. O. Box 716, Point Arena, California, 707/882-2528, nancy.morin@nau.edu.

Growing Native Plants of the Rocky Mountain Area

By Robert D. Dorn and Jane L. Dorn. 2007. 252 pages. Book version: \$82.94 plus postage, available at www.lulu.com/content/768231. CD-rom version: \$7.50 plus postage, available at www.lulu.com/content/787924.

Review by Walter Fertig

Perhaps unique among all animals, humans have an innate need to garden. The earliest gardeners (dating back 14,000 years) were driven primarily by a need for food and fiber. Besides cereal grains, some of the earliest edible crops grown by people included showy flowers such as dahlias, sacred lotus, violets, and primroses. These latter species eventually fell out of favor as new edible species were brought into cultivation, yet they continued to be grown into modern times. Though we may never know if our Neolithic ancestors had an aesthetic sense, is it so far-fetched to assume that they didn't also enjoy the beauty of the crop flowers that they grew?

Nearly as ingrained as the need to garden is the desire to grow new and unusual plant species. Since the 15th Century, European explorers and traders have scoured the Earth for previously unknown plants to name, categorize, and introduce into horticulture. While many introduced species have been beneficial, others have escaped to become serious pests, disrupting natural habitats, displacing vulnerable native plants, and competing with more desirable crop species for space and nutrients.

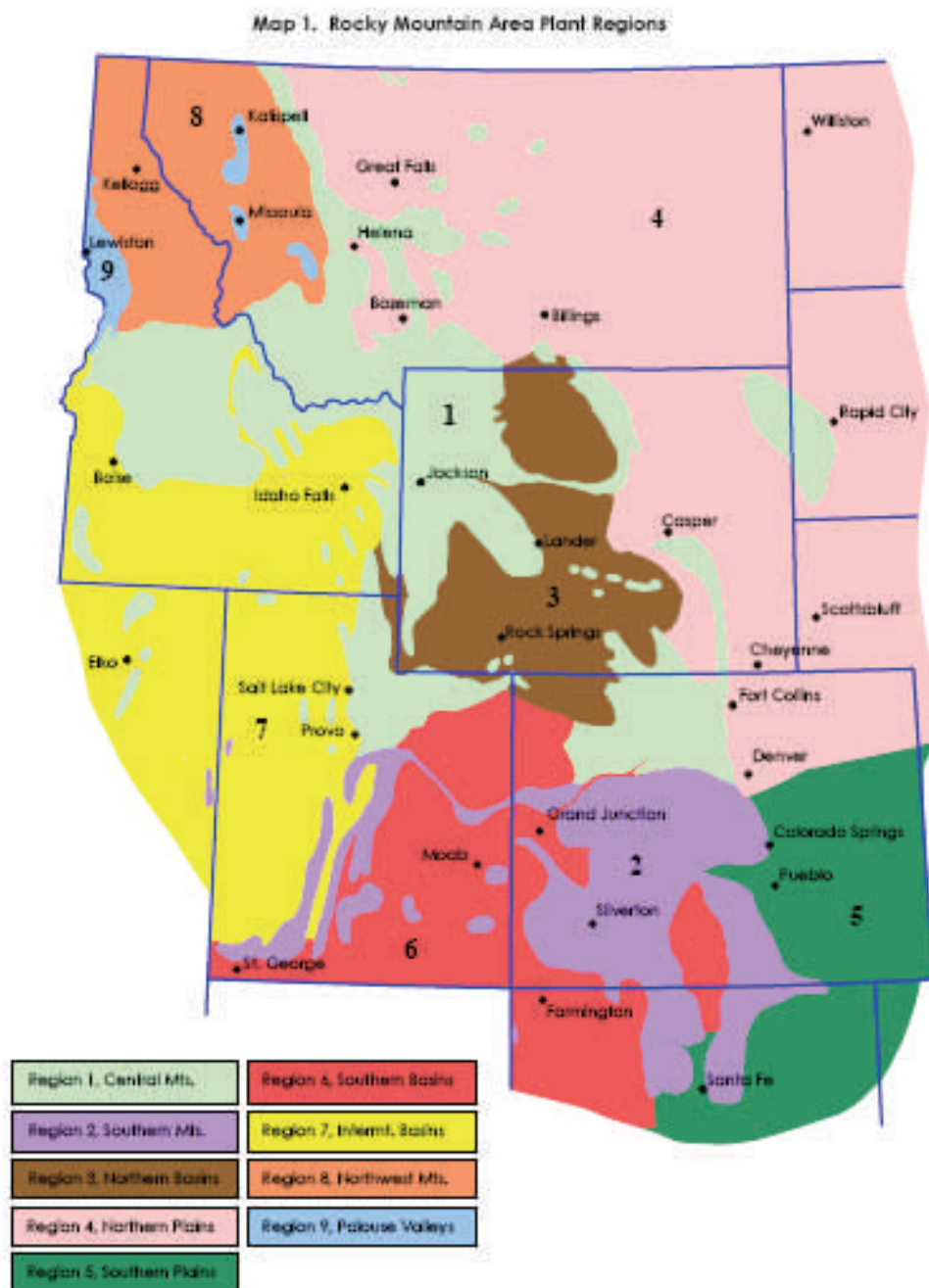
The invasive species crisis has contributed to a renewed interest in using native plants in gardens and public landscaping. Natives are increasing in popularity due to their adaptability to local soils and climates and because they usually require less water and less care once established. Gardeners are also learning that native species are just as attractive as introduced species. With rising demand, natives are becoming more readily available commercially.

The surge in popularity of native plants is reflected in the growing number of books devoted to native plant cultivation and garden design. A new entry into this field is *Growing Native Plants of the Rocky Mountain Area*, self-published by Robert and Jane Dorn. The Dorns are among the best known botanists and naturalists of Wyoming, having written the state's most comprehensive plant identification manual and a popular guide to Wyoming birds and birding areas. This foray into horticulture may seem like a new direction, but actually the Dorns are long-time amateur native plant gardeners in eastern Wyoming. Their 30 plus years of experience growing Rocky Mountain native plants, coupled with their intimate knowledge of the regional flora, is captured in this new book.

Unlike many other native gardening books on the market, *Growing Native Plants of the Rocky Mountain Area* is geared specifically for the demanding growing conditions of the Rocky Mountain states (defined by the Dorns as all of Montana, Idaho, Wyoming, Utah, and Colorado, the NE corner of Nevada, northern New Mexico, and the western quarter of the Dakotas and Nebraska). Dorn and Dorn have recognized that the conventional USDA hardiness zone criteria (based on the average lowest winter temperature of an area) are inadequate in predicting how well many native and non-native plants will adjust to the Rocky Mountain climate where temperature extremes (as great as 140 degrees F between

summer highs to winter lows) truly dictate which plants will persist. In place of the familiar USDA system, the Dorns have developed a more appropriate, ecologically-based system for classifying the 9 major plant regions of the Rocky Mountains. Each plant region has a characteristic flora shaped by differences in soils, topography, and the timing and quantity of

Below: Map of 9 major plant regions of the Rocky Mountain states from Dorn and Dorn (2007), reprinted with permission.



precipitation. By recognizing the needs of a particular species according to its preferred plant region, the home gardener has a better chance of identifying plants that will be suited for their particular garden. Homeowners can also make better decisions about what specific microsites are best suited for a particular plant (such as warm, south-facing slopes for drought-hardy species), or whether they will need to ameliorate their growing conditions through seasonal irrigation or soil treatments. For example, New Mexico locust (*Robinia neomexicana*), a common flowering shrub from the Southern Mountains Region of south-central Colorado, the Utah High Plateaus, and northern New Mexico, is adapted to the high summer precipitation of this region. Thus, it may not thrive in otherwise similar mountainous areas that lack a monsoon unless supplemental moisture is provided. This kind of Rocky Mountain-specific gardening information is often lacking in other guides that are geared for more general, widespread audiences, or assume everyone has great loamy soil, adequate water, and plenty of frost free days (ok for California maybe, but not perhaps for Panguitch, or Ogden, or where you actually live).

The introductory chapters describe specific environmental factors affecting plant distribution and survival (such as soils, moisture availability, topography, light, temperature, and snow cover), how these factors affect how a garden should be laid out to mimic natural habitats, treating weeds, plant pests, and how to attract birds. Scattered among these chapters are seven “principles” that pithily summarize the take-home lessons of gardening with native plants in the Rockies. These principles all seem straightforward (e.g. principle 5: “the major enemies of plant seedlings are not enough water, too much water, molds, animal consumers, and competition from other plants”), but all provide a succinct summary of the typical errors novice gardeners make when trying to grow new plants. There are books that go into greater detail on all of these topics, but the Dorns have done a nice job of condensing these concepts into one easy to comprehend reference appropriate to our local conditions.

Most of *Growing Native Plants* is devoted to a full color section describing over 400 native tree, shrub, grass, and wildflower species suited for garden use in the Rocky Mountain region. The species accounts include information on which of the nine regions of the Rockies the plant is best suited for, along with a brief description of its growth habit and appearance, habitat, cultivation, and means for propagation. The photos accompanying the descriptions are of high quality and large size (one of my pet peeves with many horticulture books is how tiny and grainy the photos are) and show just how beautiful our native

Aconitum columbianum

ack-oh-nite-um ko-lum-bee-an-um

Common Name: Monks-hood



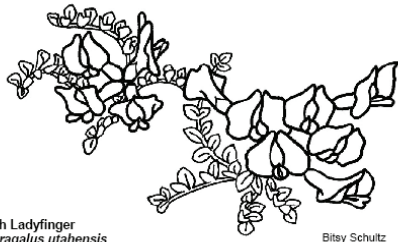
Above: Sample from Dorn and Dorn (2007).

plants can be. For those who are not swayed by appeals to reduce global homogenization, save water, or lessen demands for fertilizer, the photos alone are perhaps the best promotion for going native.

Plant descriptions are arranged alphabetically by scientific name. This may prove a challenge for those who are squeamish about taxonomic names (especially since the nomenclature follows more recent treatments and uses some unfamiliar names for asters, ricegrass, and others). Fortunately the index is cross-referenced by widely used common names and taxonomic synonyms. Besides, if a gardener can learn to recognize “common” names like Chrysanthemum, Forsythia, and Geranium (all Latin genus names too), they can expand their vocabulary with a few more native scientific names! The book concludes with several appendices depicting sample precipitation tables, examples of designing plant beds, and tables comparing various attributes of the species described previously.

Growing Native Plants of the Rocky Mountain Area is currently available in printed form for conventional bibliophiles, or as a cd-rom for the techno-savvy or bargain-hunter. Me, I’ll stick with the printed version and read it in the comfort of a hammock and enjoy the solitude of being away from the computer while I’m planning for my native garden-in-progress.

Note: For a limited time, individuals interested in purchasing the book version of *Growing Natives* can do so directly from the Dorns for \$50 (postage included) through Mountain West Environmental Services (contact Bob Dorn at lingbird@yahoo.com for details).



Utah Ladyfinger
Astragalus utahensis

Bitsy Schultz

Non-Profit Org.
U.S. Postage
PAID
Salt Lake City,
Utah PERMIT No.
327

Utah Native Plant Society

PO Box 520041

Salt Lake City, UT 84152-0041

Return Service Requested

Want to see the *Sego Lily* in color? Or read late breaking UNPS news and find links to other botanical websites? Or buy wildflower posters, cds, and other neat stuff at the UNPS store? Go to unps.org!

Utah Native Plant Society Membership

- ☐ New Member
☐ Renewal
☐ Gift Membership

Membership Category

- | | |
|--|----------|
| ☐ Student | \$9.00 |
| ☐ Senior | \$12.00 |
| ☐ Individual | \$15.00 |
| ☐ Household | \$25.00 |
| ☐ Sustaining | \$40.00 |
| ☐ Supporting Organization | \$55.00 |
| ☐ Corporate | \$500.00 |
| ☐ Lifetime | \$250.00 |

Mailing

- ☐ US Mail
☐ Electronic

Name _____
Street _____
City _____ State _____
Zip _____
Email _____

Chapter _____

☐ Please send a complimentary copy of the *Sego Lily* to the above individual.

Please enclose a check, payable to Utah Native Plant Society and send to:

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

Join or renew on-line at unps.org