Eriogonum chrysops, Skull Creek, Oregon. Photo J.L. Reveal

ERIOGONUM SOCIETY NEWSLETTER

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NOTES ON ERIOGONUM

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Welcome to the second newsletter for the newly formed society for those interested in *Eriogonum* and its relatives. Over the next few issues, I will present background information on the genus, most notably its features and history, but also the current status of on-going research. Although most members of the Society are interested mainly in the cultivation of these plants, understanding something about their favorite species from a taxonomic point of view as well as appreciating the variation in those species can provide you with helpful information to determine where to search for precisely the right germ plasm for your garden.

In this issue we will introduce *Eriogonum* as traditionally defined, a genus of some 250 species confined to the North American continent with nearly 225 found in the United States and Canada. It is second only to *Penstemon*, composed of some 375 species, in being the largest, endemic genus confined to the continent, and fourth in terms of species of all genera found in North America, being exceeded only by *Carex* (some 480 species) and *Astragalus* (about 350 species).

A technical treatment of *Eriogonum* and its relatives is found in volume five of *Flora of North America* (Oxford University Press) and is online at http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=20605. It was published in 2005.

The genus *Eriogonum* is composed of plants assigned to the knotweed family, *Polygonaceae*, and forms a unique subgroup that is assigned the subfamily name of *Eriogonoideae*. Traditionally, this group is characterized as those members of the family that **lack a specialized stipule** (or ocrea), specifically a sheath that surrounds the stem wherever there are leaves. Additionally, all of the members of *Eriogonoideae* have their flower parts arranged in whorls of three or six. The outermost two whorls are petal-like sepals that are fused at the very base and are arranged in two whorls of three. These are termed **tepals** because both whorls are color and while they evolved from sepals, rather than petals, it is impossible to look at the flower and know whether the six segments—three in each whorl—are sepals or petals; thus the neutral term, tepals. There are usually nine stamens in two whorls of six inner stamens and three outer stamens. The filaments are attached at the base of the ovary on the lowest-most portion of the fused tepals. There is also a whorl of tiny nectarines in the same area. While *Eriogonum* itself always has **nine stamens**, other members of the subfamily may have six or even three stamens. The compound ovary is composed of three, fused carpels denoted by three small, capitates-tipped styles, but only one survives as the other two are aborted as soon as one is fertilized. The resulting fruit is then a one-seeded structure, termed an **achene**. The achenes of *Eriogonum* may be **trigonous** (3-sided) or **lenticular** (2-sided). The curved or straight **embryo** is embedded in an oil-rich "food" termed **endosperm**.

Eriogonum itself is defined as those members of the subfamily that have their numerous flowers clustered into a tube-like structure or **involucre** that protects the buds and immature flower. In this genus the **involucres lack spines, awns or short mucros**, features that characterize other genera. The number of flowers is mostly six to around 45 in each involucre, but there can be more than 200 in some species. Flowers are continuously produced inside the involucre so that while only a few may be exposed at one time from a single involucre, other flowers can be found inside the involucre as buds or immature, unopened flowers.

The plants of *Eriogonum* are typically **annuals** or **perennials**, but one species, *E. annuum*, can be a **biennial**. All of the annuals are **herbaceous** but several may persist, as dead dried individuals, for several years. The perennials may also be herbaceous, that is they die back each year to the root system, or they can be **subshrubs** or **shrubs** in which the lower portion of the stems (subshrubs) or the vast majority of the stems (shrubs) persist. Most of the shrubs are no more than a meter tall, but a coastal group found in California and Baja California, Mexico, can be large and robust being up to three meters tall. Most of the shrubs form rather straggly individuals, but some, like *E. corymbosum*, form large, densely branched, hemispheric mounds covered with brightly colored flowers.

The leaves of *Eriogonum* are both **basal** (especially in the annuals) and/or **cauline**. When cauline the leaves are arranged in an **alternate** pattern, but occasionally they can be in **whorls**. The leaves of some shrubby members are clustered into **fascicles** with several leaves arising from a single **node** on the stem. Occasionally one will find that the leaves **sheath up the lower part of the stem**, especially in annual species, rather than being merely basal. The leaf blades are **entire** although the edges may be **wavy**. The leaves of most annuals dry up and fall away so that photosynthesis is carried on by the stems and branches. This can be true of several of the herbaceous perennials if there is a well-established above-ground stem and branch system. Low, matted perennials, however, always retain their leaves, throughout the year. The more northern or high-elevation shrubs tend to lose their leaves in the winter, but those of warmer regions, and especially those with their leaves in fascicles, tend to retain the majority of their leaves throughout the year with new leaves produced early in the growing season.

As a result, depending upon what is desired in the garden, by carefully selecting species of *Eriogonum* one can have attractive plants throughout the year, or ones that essentially die back significantly. Unfortunately, the majority of herbaceous perennials of *Eriogonum* tend to be—well, frankly—unattractive in the winter months.

Next time we will review stems, inflorescences and involucres, with the features associated with flowers and fruits to follow. See http://www.eriogonum.org/ for images that explain the terms mentioned here.

P. compositum, var. compositum. Gunsight Ridge, Yreka, CA. photo J.L. Reveal

WILD BUCKWHEATS ALONG THE TRAIL TO MT. ROSE, NEVADA

Steve Caicco
Great Basin Field Biologist, U.S. Fish and Wildlife Service

If you are in the Lake Tahoe area in the summer, there is no better place to see a wide range of *Eriogonum* species than along the trail to the summit of Mt. Rose at the northeast end of the lake. At 10,775 feet, Mt. Rose is the highest peak in the northern Carson Range, a spur off of the main Sierra Nevada, and towers over the lake by more than a mile of elevation. The height of Mt. Rose, and the mix of granitic and volcanic rocks in the area, combine to provide habitats for a diverse array of Sierra Nevada and Great Basin plants.

The trail begins along the north side Nevada Highway 431 at the pass (somewhat confusingly called Mt. Rose Summit) between the Lake Tahoe Basin and the next valley to the east known as the Truckee Meadows, home to the City of Reno. There is a visitor center at the pass with outdoor displays, restrooms, and ample parking. The trail begins behind the restrooms at an elevation of almost 9,000 feet, so the summit of Mt. Rose is less than 2,000 feet above, at the end of the 5.3 mile trail.

The first section of the trail passes through open meadows dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and antelope bitterbrush (*Purshia tridentata*) with scattered whitebark pine (*Pinus albicaulis*). The combination of high elevation, a dry south-west exposure, and sandy granitic soils interact to keep these shrubs no more than shin-high along this windy ridgeline. The sulphur flower (*Eriogonum umbellatum*) is common in this community; this is var. *nevadense*, the most widespread of at least 12 varieties of this species that occur in Nevada. This low shrub with compact umbels of bright yellow flowers is commonly offered in the mail-order nursery trade or easily grown from seed and is an excellent choice for the dry garden. Also occurring along this slope is the dioecious (male and female flowers on separate plants) marum-leaf wild buckwheat (*E. marifolium*). The female plants have larger, brighter flowers than the male plants, but the main attraction to the gardener is the loose mats that can spread to 12 inches. The careful observer may also spot the naked wild buckwheat (*E. nudum*), its clusters of small white flowers borne on upright leafless stems that arise from a basal rosette of ovate leaves. I do not know of either of these latter two species being available in commercial trade.

The trail passes over the ridge crest to a more-sheltered northeast-facing slope densely forested with a mixture of mostly whitebark and lodgepole pine (*Pinus contorta* ssp. *murrayana*); among the other tree species

that also occur, perhaps of most interest are the mountain hemlock (*Tsuga mertensiana*) and the occasional Sierra juniper (*Juniperus occidentalis* var. *australis*). Wild buckwheats are not common in the understory of these forests, but keep an eye out for the closely related Shasta knotweed (*Polygonum shastense*), a prostrate subshrub with clusters of attractive white to pink flowers that would be at home in any rock garden though you would likely have to grow it from seed.

At about the halfway point you reach a wet meadow complex with a small waterfall. The trail thus far has been relatively easy which, unfortunately, means that most of the elevation to be gained lies ahead. A short distance past the waterfall there is a trail junction. The trail coming in from the left will lead you back to the trailhead along a dirt road if you do not want to continue on to the peak and wish to return by a different route. Otherwise continue straight along the trail climbing at first steeply into a small canyon. There are many plants of interest to be seen along the way but the only new wild buckwheat you may encounter is the Redding's wild buckwheat (*Eriogonum spergulinum* var. *reddingianum*), a small, spreading annual. At the head of the canyon, you will reach another trail junction and the boundary of the Mt. Rose Wilderness Area. The trail to the summit leads to the right following a narrow forested ridgeline. You can cross over the crest at various places and find Lobb's wild buckwheat (*Eriogonum lobbii*) growing on steep shales and ledges of the underlying volcanic rocks. This is one of my favorite high mountain wild buckwheat with its dense mat of silvery round leaves and large lax clusters of white to pale yellow flowers, that age to a beautiful rose in late summer. This delightful plant is infrequent but widespread in the mountains of northern California but is restricted in Nevada to the mountains along its western border.

Continuing the ascent, you will pass through the upper treeline of krummholz whitebark pine into alpine fellfields. Here you will find the final two species of the sevenx species of wild buckwheat to be seen along this trail, Sierran cushion wild buckwheat (*Eriogonum ovalifolium* var. *nivale)* and the Mt. Rose wild buckwheat (*E. rosense)*. The first, well known to rock gardeners, is widespread through the mountains of the Pacific Coast, ranging as far north as British Columbia and east in the desert mountains of the Great Basin to western Utah. At Mt. Rose, it forms tight cushions often taking on the shape of the rocks from among which it grows. It is one of 11 varieties of the species. Four other varieties of cushion wild buckwheat occur in western Nevada, include the low elevation varieties *ovalifolium* and *purpureum*, with yellow and white flowers, respectively; the Slide Mountain buckwheat, *E. o*. var. *eximium*, endemic to the Carson Range but reaching the northern limit of its range at Slide Mountain, the prominent peak immediately south of Mt. Rose; and the federally endangered Steamboat wild buckwheat, *E. o.* var. *williamsiae*, known only from a geothermal area at the base of Mt. Rose.

Eriogonum rosense var. *rosense*, the Mt. Rose wild buckwheat, is common throughout its range in the mountains of the central Sierra Nevada of western Nevada and California and the higher desert ranges to the east. Its large, bright yellow to reddish yellow capitate inflorescences are the equal of any wild buckwheat in beauty making it an excellent addition to the rock garden. It is replaced by the rare var. *beatleyae* in the desert ranges to the east. The two are said to intergrade in the Sweetwater Mountains along the Nevada-California border east of Bridgeport, California.

The trail to the summit of Mt. Rose is of moderate difficulty although the first half, including the loop trail noted above, is easy. The best time to see the wild buckwheats in all their glory is during August, when the skies are typically cloudless. As in any high mountain area, however, be prepared and carry plenty of water as none is available along the second half of the trail. Of course, you'll need a purifier if you expect to drink from any mountain stream. For a wildflower reference, I highly recommend *Plants of the Tahoe Basin* by Michael Graf, readily available over the internet and at local bookstores in the Lake Tahoe-Reno area. To see photos taken along the trail, including most of the wild buckwheats mentioned above as well as other wildflowers, please visit my website, www.planetplants.net. You'll find links to Mt. Rose as well as other mountain and desert areas of botanical interest in western North America. And drop me a note (slcaicco@sbcglobal.net) if you plan to go - I might be interested in going along!

Eriogonum ovalifolium, var. ovalifolium. Cobre Well, Elko County, NV
photo J.L. Reveal

PROPAGATION OF THE GENUS ERIOGONUM

Graham Nicholls
Author of "Alpine Plants of North America" and respected British nurseryman
specializing in growing alpine plants of North America.

I have been growing eriogonums for some 20 years now, some are in pots, others are in sand beds or raised beds. Some die after a year and others like E. umbellatum varieties grow to 3 foot across and have been flowering for years. Of course if you want to start growing them from scratch or want to start a new species you have to think about propagation.

I favour growing from seed every time. There are seed lists nowadays that can supply seed for a large number of species. I have just picked one at random and counted 16 species or sub species on the list including some classic species like E. soredium, E. schockleyi & E. villiflorum. There is no need to collect seed unless you really want to do so but be warned it is a tedious business.

I have done this on a number of occasions and always swore I wouldn't do it again. First of all you have to wait until the flower head has turned not just the autumn colours like most do but until the complete head is brown and beginning to fall apart. Get yourself a sheet of white paper, collect the complete dead head (chaff), squeeze it between your thumb and forefinger in a rubbing action and drop it onto the paper. Do this as many times as you want but each time closely examine the paper for a very small solid object shaped like a tear (those you cry). This is a seed.

Occasionally if you are really lucky the small seed which is sharply pointed at one end will give you a painful jab in the thumb or finger and save you the job of hunting for it. Continue to rub and throw the seed chaff onto the paper until you are satisfied there are no seeds left (or there weren't any there in the first place) and start on the next dead head. This can go on for some time so if there is nothing on the TV now is the time to hunt for seed. In my early years I used to think that the dust like particles that fell from the husks were seed but after sowing them and experiencing no germination I realized I had been doing something wrong. Do not be fooled as I was. So you can see it is probably less time consuming and more rewarding to buy seed from a professional list.

Once I have the seed I usually sow it in two lots one in fall and one in spring as we are not sure to have a good frost in the fall/winter and sometimes have monsoons instead! I sow the seed on the top of a compost filled pot and then cover with about a quarter to a half inch of grit. The pot always goes outside until germination has taken place. Once germinated the seedlings grow fast and have a long root system so should always be pricked out fairly early or else the roots become tangled around one another making the separation very difficult.

You may want to propagate these plants vegetatively especially if you have a favorite. My success with cuttings has been very limited, many dying in the cutting frame before any sign of rooting. I have tried several different rooting mediums but always go back to my fine silver sand in which I root most other plant cuttings. Cuttings are taken in the normal way with a 2”-3” stem either in spring or fall. Insert it into your rooting medium & fit the cover. As I said cuttings taken this way have had limited success but one method that I found worked with two other difficult plants has worked with this one. Phlox hendersonsii and Convovulus boissieri gave me a lot of trouble taking ages to root and having a number of failures. However I found with these two that if they were lowered in the pot in late summer and all the stems were covered almost to the top with a mixture of compost and grit as if they were being layered, rooting took place on most of the stems by spring. This I have done with eriogonums whether in a pot or in the garden and I successfully root far more than I ever did before

.

I hope you have found this useful.

Eriogonum ovalifolium, var. purpureum. Sweetwater County, WY. photo J.L. Reveal

ERIOGONUM PHOTOS ON THE WEB

Bob McFarlane

A great source of eriogonum photographs can be found on the web at, **www.plantsystematics.org/reveal/pbio/RevealSlides/slideindexEriogonum.html,** and **www.plantsystematics.org/reveal/pbio/digitalimages/digslideindexEriogonum.html**. There are over 5000 photographs on these two sites, all taken by Dr. James Reveal over his many years of studying and researching these plants.

Most of them are of very high quality and show different aspects of a great many species. Several are shown in this issue of the newsletter for your enjoyment. Dr. Reveal has graciously allowed us to download these to help populate our photo gallery on our website at eriogonum.org. You will enjoy spending time on these websites to see the different species and finding out where you can go to see them in the wild. Most photographs have detailed information on the location of the plant.

E. kingii, Angel Lake, Elko County, NV

E. shockleyi, Notum Road, Wayne County, Utah

E. bicolor, Capitol Reef National Park, Utah

E. caespitosum, Angel Lake, Elko County, NV

DESIGN AND USE OF ERIOGONUM.ORG

Hugh Mac Millan

First, welcome to the newest plant society in America. We are excited and happy to have a growing membership. One of the features we bring to you is a website at http://eriogonum.org.

Features include,

Photo Gallery – We have several Albums envisioned for the photo gallery. One will be images of eriogonum in nature, another will feature eriogonum in the garden, and in addition we hope to have the members send pictures of themselves if they so choose so that we can populate a membership picture album.

'Members Only' area – The website is built with community in mind. We have built a Forum that becomes visible to members once they login. The forum is set so that all members will be able to create posts as well as comment on other posts.

Key to the Species – We have embedded a key in the website. Plans are to update the key in the very near future.

Species identification pages – This is a work in progress; we will have detailed information for most if not all of the species.

Glossary – This will be available later this month.

Links – Includes links to sources for plants and seeds as well as other websites of interest to eriogophiles (perhaps a new term?).

Our website is a work in progress. We plan also to have an area dedicated to the propagation and cultivation of eriogonum.

Visit the website often, it is changing daily!

MEMBERSHIP

Our membership is currently at 18 and growing. Please help recruit new members to join us. Print a copy of the newsletter and pass it to a friend. Talk it over with your gardening and wildflower enthusiast acquaintances. Perhaps take a copy of the newsletter and post it in your local nursery. We are excited about having a society to study and learn more about these fabulous plants.

MEMBERSHIP APPLICATION FORM

Name_____

Address_____

E-mail Address_____

Phone_____

Vote for Location of First Annual Meeting (Select one)

- ☐ **Rancho Santa Ana, CA**
- ☐ **Bishop, CA**
- ☐ **Reno, NV**
- ☐ **Vernal, UT**

Please send annual dues (January 1 thru December 31) of $10. to Bob McFarlane at 5609 S. Locust St., Greenwood Village, CO 80111.