ERIOGONUM SOCIETY NEWSLETTER

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Square-spotted blue, *Euphilotes battoides*, on wild buckwheat, San Gabriel Mountains, CA
Photographer: Steve Berardi http://upload.wikimedia.org/wikipedia/commons/d/d2/Square-Spotted_Blue_%28Euphilotes_battoides%29_2.jpg

The lives of the *Euphilotes* butterflies revolve around their specific buckwheat host plants. See the article about wild buckwheats of the Pacific Northwest and their butterflies in this issue of the Eriogonum Society Newsletter

Lodging during the Eriogonum Society/INPS Annual Meeting 2014

According to LaMar Orton, 2014 Meeting Arrangements Chair, the Magic Valley Airshow  occurs in Twin Falls the same weekend as our conference (June 20-22). **Members should make lodging reservations ASAP!** Complete information for the 2014 Meeting can be found in the January Newsletter: http://eriogonum.org/images/stories/newsletters/eriogonum20140122final3.pdf

Lodging Information

Motels:

Please make your own reservations. Below is a list of motels located near the College of Southern Idaho, the base site for the meeting. Represented are a range of quality and price. Feel free to visit the Twin Falls Chamber of Commerce website to view additional lodging options (http://members.twinfallschamber.com/list/category/hotels-motels-205).

Shilo Inn, 1586 Blue Lakes Blvd N, Twin Falls, ID 83301; ph. 208-733-7545.
Super 8, 1280 Blue Lakes Blvd N, Twin Falls, ID 83301; ph. 208-734-5801.
LaQuinta Inn, 539 Pole Line Rd, Twin Falls, ID 83301; ph. 208-736-9600.
Best Western, 1377 Blue Lakes Blvd N, Twin Falls, ID 83301; ph. 208-736-8000.
Motel 6, 1472 Blue Lakes Blvd N, Twin Falls, ID; ph. 208-734-3993.
Red Lion, 1357 Blue Lakes Blvd N, Twin Falls, ID; ph. 208-734-5000.

Campgrounds (for those with a preference for roughing it):

A block of 25 camp sites is being held at Anderson Camp, approximately 10 miles east of Twin Falls. *Please call and confirm reservations for your own campsite. Be sure to mention that you are with the INPS/Eriogonum Society to get the group rate. The campsites will be held until 6 Jun 2014, at which time they will be released to the public.*

- Contact information: 1188 E 990 S (off I-84), Eden, ID 83325; ph. 208-825-9800.
- See the Anderson Camp website (http://andersoncamp.com/) for maps and directions.
- Campsite rates: $ 25 (RV SITE), $ 18 (TENT SITE).
- This is a private campground with many amenities, including food, internet, laundry, swimming pool, mini-golf, and a water slide.

Other campgrounds are listed on the Twin Falls Chamber of Commerce website, at: (http://members.twinfallschamber.com/list/category/campgrounds-rv-parks-138

Wild Buckwheats and Their Butterflies in Washington and Oregon

For those interested in the relationships between wild buckwheat and butterflies, the Oregon Entomological Society (OES) 2011 Winter Bulletin included an article by David G. James on *Philotiella leona*, Leona's Little Blue Butterfly, the most restricted and endangered butterfly in the U.S. , restricted to the Antelope Desert of south-central Oregon and dependent upon Spurry's wild buckwheat, *Eriogonum spergulinum* var. *reddingianum*. (Read the 2011 Bulletin at: http://odonata.bogfoot.net/oes/OES_Bulletin_2011_Winter.pdf)

In addition to the above article, the same Bulletin reported on a workshop given by David Nunnallee, a Seattle-area naturalist, on Pacific Northwest buckwheats and their butterflies. More recently, Eleanor Ryan writes in the Spring 2014 Bulletin about a booklet entitled "A Butterfly Enthusiast's Guide to the Buckwheats of Oregon and Washington (http://odonata.bogfoot.net/oes/OES_Bulletin_2014_Spring.pdf). Her article provides links (e.g. http://www.parfaitimage.com/temp/) to an on-line booklet (or hard copy, if prefer) by the same title.

Following is a partial except of Dave Nunnallee's 2011 presentation as it appeared in the Winter 2011 OES Bulletin.

Dave Nunnallee—Buckwheats of the Pacific Northwest and Their Butterflies

Buckwheats, genus *Eriogonum*, are important nectar plants used by many kinds of butterflies. In addition, they are also very good larval host plants for a number of butterflies including some that are rather puzzling.

There are 253 species of *Eriogonum* in North America, mostly in the west (over 90%). *Eriogonum* is the fourth largest genus in North America, after *Carex*, *Astragalus* and *Penstemmon*. Currently, *Eriogonum* is divided into seven subgenera, four of which occur in Washington and Oregon (the other three only have a few species). Washington state has 21 species of buck wheats, Oregon has twice this number and down in California there are well over 100 species. Buckwheats are southern plants which reach their maximum northern extent in northern Washington and southern BC.

Buckwheats are divided into two groups (perennial and annual), each of which is composed of two subgenera. The perennial subgenera are the Oligogonum, the so-called showy buckwheats, and the Eucycla, somewhat less showy. Butterfly usage is much smaller among the annual subgenera, but there are a few species that are used. It is important to note that the various buckwheat species don't all bloom at the same time. There's a seasonal sequence that they follow and the sequence seems to be pretty much the same no matter where you are. The time of year is going to change, the length of bloom is going to change, but the sequence is generally pretty good.

Buckwheats appear to be used as larval host plants by only one group of butterflies, the Lycaenids—coppers, blues, hairstreaks and metalmarks. In Washington, there are at least 44 Lycaenid - buckwheat host relationships. For example:

- all 3 of our green hairstreaks use some combination of buckwheat hosts, not necessarily all of them as their primary host, but there is a combination of 5 different butterfly-plant host relationships there
- Blue Copper uses 7
- Gray Hairstreak uses a couple of species, maybe more
- the lupine/acmon complex uses at least 13 buckwheat species
- the buckwheat blues, Euphilotes, one of our really difficult genera, use at least 10 buckwheat hosts (the exact number of buckwheat blue species we have is uncertain)
- and the Morman Metalmark uses 7.

Including northern Oregon in this, we can easily add some additional host combinations.

Some of our most confusing butterflies rely on buckwheats as their larval host plants. Principal among these are Euphilotes, which use only buckwheats as their host plants and some of the Plebejus. Both Euphilotes and Plebejus are thought to include

new, undescribed species in both Washington and Oregon. Understanding the buckwheat plants that these butterflies use will help us understand quite a bit about where to divide these different groups of butterflies into species. The first step is to get the information together (partly by collecting the Euphilotes from the different host plants). If we have these groups of butterflies side by side then we can pick up differences in the various wing patterns and genitalia. Genetic analysis may help a lot in the future but at the moment we don't have adequate material.

In the *Euphilotes* we have two groups of buckwheat blues, the *battoides* group and the enoptes group (considered as species in most field guides). After Andy Warren's work in Oregon and Gordon Pratt's work in California and some other folks, we've come to understand these groups are actually complexes of species and we are just starting to understand how many species there are and how to divide them. The problem is that often there are many intermediates and they often kind of fuzz together. However, when you look at the genitalia, the two groups are very, very different.

Eriogonum heracleoides, the parsley buckwheat, in the subgenus Oligogonum, is one of the most widespread buckwheats in Washington. Our most common buckwheat blue uses these plants. When Andy Warren (2005) did his work in Oregon, he split this species apart from *Euphilotes battoides*, the Square-spotted Blue, but he didn't describe it or give it a name. So right now we are just calling it *Euphilotes* on *heracl oides*. (Steve Kohler and Andy Warren are working on a paper on *Euphilotes* and one of the things they are going to do is give this species a name.)

Eriogonum compositum, northern buckwheat, in the subgenus Oligogonum, is the plant that is used by our primary *enoptes* group, *Euphilotes columbia*, the Columbia Blue. This same butterfly is also believed to use *Eriogonum elatum*, tall buckwheat, in the subgenus Eucycla. Conventional wisdom says if two buckwheats are used as host plants, they will be closely related, meaning they will be in the same subgenus. However, Andy Warren did quite a lot of work on this in Oregon and was pretty well convinced that they are the same species. Dave showed two examples of specimens of the Columbia Blue collected from each of these host plants. In the first example, the specimens were collected in the same area, on the same day, but the elevation difference between the host plants was 1600 ft. This difference is equivalent to around 5–6 weeks of plant development time. So, even though they were collected the same day, these two groups of specimens were separated in time by quite a bit—the sequence of plants that the butterflies had to follow was pretty far apart.

In the second example, Dave showed another set of specimens, both supposedly the Columbia Blue, one group collected on *compositum*, the other on *elatum*, from the same location. In this case, the collection dates were six weeks apart. How does the butterfly accomplish that? Here again, we have this butterfly, that we are calling the Columbia Blue, on two host plants growing six weeks apart and the butterfly appears on both of these plants at the right time. This is a single brooded butterfly; they only live about two weeks, but these two populations are about 6 weeks apart. If these are the same species, the Columbia Blue has to have hatched twice at the same spot, eclose (that is, when Insects emerge from pupae) or hatch, in one case in late May, in the other case in early July. If these are the same species, we have to figure out how they are fitting into this pa tern of using these two different host plants essentially six weeks apart.

For the most part, the annual buckwheats are not terribly important as butterfly host plants, but one of these, *Eriogonum spergulinum*, is the host plant for Leona's Little Blue, *Philotiella leona*.

During this presentation, there was a good discussion afterwards during which Paul Hammond noted that there is one whole complex in the Noctuid genus *Drasteria* (these are the little underwing moths) that feeds on *Eriogonum* as well and the same type of taxonomic problems found with the *Euphilotes* blues seem to exist with these moths. It would be interesting to look at these moth larvae in relationship to the various species of *Eriogonum* too.

References

Warren, A.D. 2005. Lepidoptera of North America 6: Butterflies of Oregon Their Taxonomy, Distribution and Biology. Contributions of the C.P. Gillette Museum of Arthropod Diversity. Colorado State University, Fort Collins, CO. 408 pp.

Searching Colorado for Trophy Buckwheats

Stephen Love, University of Idaho, Aberdeen, Idaho

I was alone; unless you count as company my pickup truck equipped with a camper shell, an air mattress, a sleeping bag, a water jug, a single-burner propane stove, and a hand- held GPS unit. Time: 4 am, September 12, 2013. Weather forecast: rain, heavy thunderstorms, lightning, and devastating flash floods. Destination: the wild and scenic back-country of western Colorado. Purpose: secure seeds of wild buckwheats and other potentially valuable native plants. It looked like an appropriate start to an amazing trek.

I oversee a unique and productive native plant domestication project at the University of Idaho. The guiding objectives are to identify, improve, and commercialize Intermountain West native plants for use in home and commercial landscapes. It is a hungry project - never satisfied - with a constant appetite for new and better plant materials. Western Colorado, with its unique and abundant flora, seemed a likely place to find a fresh buffet.

Home, sweet home during a week-long native plant seed collection trek into western Colorado

With the 2013 Eriogonum Society annual meeting scheduled for Farmington, New Mexico, the dream of exploring and sampling plants of Colorado moved rapidly towards reality. I swept clean my work schedule for the required two weeks. I studied maps and herbarium databases and marked desirable destinations. I put new tires on my truck, packed my bags, twice checked my list of essentials, and prepared to set off. My sweetheart, Monaquita, usually accompanies me on these odd treks to wherever we end up. This time other commitments kept her near home, meaning no company, no photographer, no navigator, considerably less common sense, and no one with which to share excitement and awe. Such was fate; so, I kissed her goodbye and set out alone.

Thursday, September 12, 2013: I left home early enough to complete the 8 hour trip to Moab, Utah, arriving just before noon. After stocking up on victuals, I set off toward the east to

Collecting along the high ridges of the Manti-Lasal Mountains in southeastern Utah.

ascend the Manti-Lasal Mountains. Quickly climbing in elevation to over 10,000 feet, I found the roads slippery, with a new coating of hail. Ignoring the conditions, I began my search for something in the plant kingdom that was unique and new (at least to me). Not finding much in the way of buckwheats, I still managed to collect several unidentified species of *Penstemon*, some *Arenaria lanuginosa,* a bit of what looked to be a very compact form of *Potentilla niveum*, and dried capsules of *Iris missouriensis* that were still holding an occasional seed.

Dropping off the majestic eastern slopes of the Manti-Lasal Mountains, I crossed the western border of Colorado and entered Paradox Valley. As the day waned, I made quick stops at likely-looking spots to collect *Mirabilis rotundifolia* and several species of fall-blooming asters (which seemed to abound in this uniquely fashioned dry valley). The end of this eventful day came in the dark as I traveled up the Dolores River, through Gateway, and happened upon a small picnic area on West Creek. I warmed up a can of beans and crawled into my camper shell for a short few hours of shut-eye. Exhaustion was trimmed with ornaments of success.

Friday, September 13, 2013: Woke up to a botanical wonderland on this beautiful morning. Having made camp after dark, I did not realize that I had spent the night across the highway from a steep slope containing a gold mine of interesting plants. I spent the first two hours of the day securing seed of a tall, floriferous form of the shrubby *Eriogonum clavellatum.* I also found the wayward *Penstemon moffatii,* and large plants of *Ageratina herbacea*.

A few miles up the road, I took time to explore Unaweep Seep, a botanically unique wetland slope in lower Unaweep Canyon. Not wishing to disturb the rare flora within the Seep, I searched the steep slopes above the wetland where I found good examples of *Mirabilis oxybaphoides* and a few plants of the intriguing few-flowered wirelettuce (*Stephanomeria pauciflora*). Driving north, I achieved success with a little 60 mph botanizing, managing a corner-of-the-eye discovery of a roadside population of pink-flowering *Eriogonum racemosum*.

Looking down on Unaweep Canyon from the escarpment at the edge of the Uncompahgre Plateau.

Continuing on through Unaweep Canyon, I took advantage of the first dirt-road opportunity to climb the eastern red-rock escarpment of the Canyon to explore a small section of the Uncompahgre Plateau. It quickly became apparent that I needed more than my planned week in Colorado to explore just this one entrancing area. In addition to a third four o' clock species, *Mirabilis linearis,* I stumbled upon a purple-headed form of *Bouteloua gracilis* and another lacy grass species that I suspect might be a species of *Muhlenbergia*. In addition, I managed to collect seed or cuttings of two species of *Oenothera*, and seed of an exceptionally dwarf and late-blooming form of the aster *Machaeranthera canescens*; plus I thoroughly sampled a dense population of the yellow-flowering, *flavescens* variety, of *Eriogonum jamesii.*

Land's End Road to the top of Grand Mesa, northeast of Grand Junction. Collection site of the unusual *Ribes woolfii* (top left).

Forcing myself to vacate the Uncompahgre Plateau was like pulling one of my own molars, but there was no choice as time was moving faster than was I. After a quick fuel stop in Grand Junction, I headed for another plant-collector's paradise - Grand Mesa. My specific goal in traveling over the Mesa was to find and collect seed of *Penstemon mensarum* (successful). But I quickly discovered a menagerie of intriguing botanical specimens, including *Penstemon*

barbatus, Penstemon watsonii, Ribes woolfii, Helianthella quinquenervis, Arenaria congesta, Gentiana parryi, and the less spectacular than interesting *Rudbeckia occidentalis.* As a cold night (at 10,500 feet, every night is cold) set in, I made a quick run off the northwest corner of the Mesa and spent a solitary night on a sagebrush flat west of De Beque. Another very long, but very fruitful day was in the books.

Saturday, September 14, 2013: Sleep was sporadic as rain thundered all night on the roof of my camper shell. I woke to a watery, misty, wonderland. The rain changed my plans as the dirt roads into Dry Fork Canyon west of De Beque were much too treacherous to traverse (slicker than the proverbial greased pig). So, I continued my alternate route toward Rifle. Much of the way, I followed snow plows pushing mud off the highway; the result of flash floods from the overnight deluge. Turning north toward Meeker, I successfully searched for the road down Piceance Creek. After leaving the highway, I almost immediately found two large roadcuts covered with sparsely-blooming plants that keyed out as *Penstemon scariosus*; a finding that could extend the range of this species a fair distance east and south of its documented habitat.

Wet morning at my camping site on a sagebrush flat west of De Beque.

In spite of torrential fall rains (in which I was finding myself an unwilling participant), the vegetation in Piceance Creek Canyon showed lingering evidence of the hot, unusually dry summer that haunted much of Colorado. In spite of these difficult conditions, further down the creek I found a few seeds on plants of a charming form of *Eriogonum lonchophyllum* with soft blue leaves and white flowers. Moving rapidly northwest, I drove through Rangely and on to Dinosaur to finish up the day exploring the hills south of Dinosaur National Monument. Among the intriguing finds at this site was a hillside covered with *Penstemon caespitosus* (unfortunately no seed) and a beautiful little buckwheat I have yet to identify; plants were about 10 inches tall, distinctly shrubby, with small linear leaves, and dark red flowers. Morphology showed many similarities to the several forms of *Eriogonum lonchophyllum* I saw

in the region, so it may be an atypical type of this variable species. Unfortunately, I neglected to take any photographs, so proper identification will have to wait until I grow out my precious few seeds. In spite of a day to dry out, the dirt roads going east toward Craig were treacherous and provided a few nervous moments, as this would be very isolated country for an unsuccessful mudding expedition. Gratefully, I arrived safely in Craig where I found a good meal and a hot shower, rare amenities on this trip.

Sunday, September 15, 2013: I slept in a little on this Sunday morning and took time to attend church in Craig. I entered the chapel a stranger and left with new friends. Before noon, I was again on the road, seeking other new friends - the ones with leaves. I first traveled south to Hamilton and then east into ever-increasingly isolated country. In the early part of the day, I found yellow-flowering *Eriogonum lonchophyllum*, distinct from the form I had previously discovered at Piceance Creek. As I moved eastward and wound my way along Flat Tops Scenic By-Way, I dodged heavy thunderstorms and took some striking photographs of nature's wild side. Plant collection stops were frequent during this stretch of the trip. During a short stop at the top of Dunckley Pass, I was lucky to stumble onto a red-flowering population of *Eriogonum umbellatum* (probably var. *umbellatum*) intermixed with plants of *Potentilla gracilis* that had extra-large dark red leaves. Old stalks of *Delphinium glaucum* were also waiting there, holding a sparse few leftover seeds for a weary traveler. I passed by all but a few of many patches of penstemon species common to this area, such as *P. strictus* and *P. glaber*, but could not get by them all without stopping for a few seeds. Temperatures began to drop as evening approached and I pulled into a roadside nook for the night in a high valley east of Yampa. After a cold shower from a water bag, and before turning in, I climbed a small rocky knoll and found some nice specimens of *Campanula parryi* and *Erigeron flagellaris.* All in all, a very good day, made better by my managing to stay dry from the ankles up.

Forces of nature at work as viewed from the top of Dunckley Pass.

Monday, September 16, 2013: I am fairly certain I didn't bring enough blankets. It was damp, cold, foggy, and drizzly. It took several morning hours for the sun to poke a hole through the fog. Something mesmerizing came with the moist air. A routine plant stop revealed the presence of myriad spider webs, each strand decorated with water droplets like pearls on a necklace. I could not pass up this once-in-a-lifetime photo op. Plant collection opportunities were somewhat less optimal through this stretch, but I did manage to collect cuttings from a population of *Geum triflorum* with an unusually lacy appearance to the foliage. Prior to lunch, my solo journey ended as I met up with Bob McFarlane at a predetermined rendezvous on the shores of Wolford Mountain Reservoir. After lunch, we spent the remainder of the day working our way southeastward toward the Front Range, stopping occasionally along the way to grab a few seeds at some of Bob's favorite penstemon collecting sites (*P. penlandii, P. cyathophorus, P. virens,* and *P. virgatus*). I raked out a few seeds from nice stands of *Cercocarpus montanus* along the way. We ended the day at Bob's home in Greenwood Village, just south of Denver. The first task after arrival was to spread damp seed collection bags around Bob's garage in hopes they would dry.

Morning mist spider webs decorating gravel and an ensnared seed of *Heterotheca villosa* near Gore Pass in Grand County.

Tuesday, September 17, 2013: Taking a little break away from the plant search, I spent the day sampling the hospitality of Bob and Phoebe McFarlane. Bob and I spent hours talking the language of plant aficionados, extolling the value of penstemons and buckwheats. I drooled over the exquisite native gardens Bob has constructed around his home. In the early afternoon, I took a few hours to visit the Denver Botanical Garden herbarium as a guest of Mike Kintgen. As I returned to Bob's house, seed collecting of a different sort commenced. Bob shared seeds of several dozen species from his extensive collection of penstemons (and I promised goodies from my collection of buckwheats, in return). For the average plant geek (can't tell you whether I am average or not), this was a day in heaven.

Wednesday, September 18, 2013: With intent to continue our collection activities, Bob, Phoebe, and I left Greenwood Village early and headed west, back into the mountains looming above the Front Range. As we climbed the first steep grades, a stop in Bailey for a hearty breakfast was followed by stops to collect seeds of a fuzzy-leaved form of *Erigeron speciosus,* compact *Geranium fremontii,* the infrequently encountered *Viburnum edule,* and a very attractive form of *Holodiscus discolor*. After climbing over Kenosha Pass and dropping into South Park, we stopped near Fairplay to take a few cuttings from mats of the magnificent *Potentilla concinna*. It was an unexpected bonus to find this plant at such a low elevation (only 9,000 feet).

At Poncha Springs, we turned west on US Highway 50. As we dropped off the west side of Monarch Pass, we stopped to find *Penstemon teucrioides*; the search successful but the plants devoid of seeds. In late afternoon, as we neared Montrose, I parted ways with Bob and Phoebe for a few hours to conduct a search for the elusive *Penstemon retrorsus*; a rare species consigned mostly to the white clay hills north of Montrose. The search was successful (resulting in a few stem cuttings that have since been successfully rooted) but only after an arduous slog over a long, slippery, rutted, washed-out back road. I rejoined Bob and Phoebe at Ridgway State Park, enjoyed a pleasant meal in even more pleasant company, and spent another rainy night in the confines of my camper shell.

Beautiful morning view of Red Mountain near Ouray, Colorado.

Thursday, September 19, 2013: With only a half day remaining before the start of the Eriogonum Society Meeting in Farmington, time for plant scouting activities was limited. As the sun threatened to peek over the peaks, I left Bob and Phoebe at the campground to get a head start, and almost immediately found success. On the hills above Ouray, I found *Erigeron divergens* and *Geranium caespitosum.* Further up the canyon came samples of an unknown penstemon and *Minuartia obtusiloba*. On Red Mountain Pass, I found a large population of *Penstemon whippleanus.* After cruising through Silverton and on to the down side of Molas Pass, I couldn't help but stop to

collect seed from a large-flowered form of *Dasiphora fruticosa*, an unknown species of grass with bright red panicles, and a number of other especially juicy morsels. Then it was down to Durango and on into New Mexico.

The trek through Colorado was wet, wild, and wonderful – and riotously successful. Over 160 collections of unique, potentially valuable plant materials were obtained for future research. Most of the collections were made as seed, but a significant number were made as stem cuttings. Nearly all (about 85%) of the cuttings were successfully rooted after the return trip to Aberdeen. I would consider this degree of rooting success to be remarkable if conditions were ideal, but given that many of the cuttings spent two weeks in the bottom of a cooler, the results were astonishing.

Eriogonum leptophyllum in the Chuska Mountains of New Mexico.

By reading between the lines, it should be obvious that not all of the 160 stem and seed collections acquired during my trek were made in Colorado. If you know me, you have already realized that collecting activities started the moment I left home, continued through the Eriogonum Society meeting, and likely (absolutely) did not stop until I drove up my driveway in Aberdeen. During the Eriogonum Society meeting, a number of interesting buckwheats were collected (with permission of our guide) on tribal lands in New Mexico and southern Utah, including *E. leptophyllum, E. racemosum,* and *E. leptocladon.* Other captivating species collected during the meeting included *Penstemon linarioides, Penstemon ophianthus, Machaeranthera bigelovii, Monarda pectinaceae, Epilobium multiflorum,* and the ever-endearing *Artemisia pygmea*.

In retrospect, the western Colorado plant scouting trip of 2013 provided tremendous personal satisfaction and will always be remembered with fondness and wonder. I was blessed to see one of the great natural areas remaining in the world. I discovered new plants (new to me, which in this case is the only thing that matters). I collected native plant materials that have potential to add to my life's work and to benefit other people into the future. I couldn't have asked for more. The time I spent alone in the by-ways of Montrose, Mesa, Rio Blanco, Garfield, Routt, and Moffat Counties allowed personal reflection and brought peace to my soul. The time I spent with old and new friends was priceless. Thank you, Colorado!

Research article review: "Chilling requirements for seed germination of 10 Utah species of perennial wild buckwheat," by Susan E. Meyer and Alisa Paulsen (2000), Native Plant Journal Vol. 1 (1): 18-24.

Stratification is the term used to simulate natural conditions that a seed typically undergoes to germinate. Chilling is one of those potential requirements that some seed need to overcome dormancy. Wikipedia notes (http://en.wikipedia.org/wiki/Stratification_(botany)) that In its most basic form, when the stratification process is controlled, the pretreatment amounts to nothing more than subjecting the seeds to storage in a cool (ideally +1° to +3°C; not freezing) and moist environment for a period found to be sufficient for the species in question. This period of time may vary from one to three months.

In this research, Meyer and Paulsen tested seed gathered from 10 Utah species of wild buckwheat. They found that, generally, seeds collected from low elevations had shorter chilling requirements (0 to 8 weeks) than those from higher elevations (12 to 24 weeks of chilling). They then used their data to test a germination model that they had developed for other genera. The model used collection site elevation as a rough indicator of severity of winter climate, and thus as a potential predictor of chilling requirement.

Their results showed that collections from habitats with long, snowy winters are likely to have proportionately long chilling requirements, while collections from dry desert habitats are likely to be nondormant or to have short chilling requirements. You can read the full text of article and view the table of species and chilling periods at: http://npj.uwpress.org/content/1/1/18.full.pdf+html

Achenes of Coast Buckwheat (Eriogonum latifolium); Photographer: Michael Dumont

Rare Wild Buckwheat found during citizen-science Treasure Hunt

According to the California Native Plant Society (CNPS) website at (https://www.cnps.org/cnps/rareplants/treasurehunt/ , the Rare Plant Treasure Hunt (RPTH) is a citizen-science program started by CNPS in 2010 with the goal of getting up-to-date information on many of the state's rare plants, while engaging chapter members and other volunteers in rare plant conservation. Many of California's rare plant populations have not been seen in decades and some parts of the state have seen little to no botanical exploration to date. This program helps conserve California's rare flora by providing valuable data to the CNPS Rare Plant Program and the California Department of Fish and Wildlife. Treasure Hunters can join an organized rare plant search or learn how to plan their own trips by attending one of our training events scheduled for 2014; those who already have botanical experience can start leading their own trips! You can also sign up for the mailing list to be notified of upcoming events by sending an email to: treasurehunt@cnps.org. See following article from the Chico Enterprise-Record about relocating Ahart's wild buckwheat! Any wild buckwheats in need of a Treasure Hunt?

Native Plant Society gets third place for six rare plant finds

By LAURIE KAVENAUGH Chico Enterprise-Record
Posted:

OROVILLE — Chasing down an elusive plant in the countryside seems like it might be a lot of work, but for Ron Coley, it's all about research, following old maps and carrying a camera.

Coley, 67, and retired from Butte County Public Works as a bridge maintenance supervisor, serves as rare plant chairman for Mount Lassen chapter of California Native Plant Society.

This past summer, the chapter took third place in the society's state rare plant treasure hunt, finding six rare plants during five field trips.

"I had a good year," said Coley, a soft spoken man who photographs his finds in colorful, close-up detail. He talked about this past summer's field trips while clicking through hundreds of plant photos he has taken and stored on his home laptop.

The treasure hunts were started by the state organization in 2010, asking members and others to head to the hills using existing survey information to update the CNPS Rare Plant Program. The inventory has been in use by scientists, conservationists and urban planners for some 35 years, but with the evolving landscapes of progress, new plant numbers are vital to keeping tabs on endangered or threatened species.

As rare plant chair, Coley has been leading treasure hunts for three years. He credits years on the job at bridge locations for his love of plants. "I tend to find a plant blooming anywhere, and I got into it because I wanted to find out what that plant was," he said.

Armed with research from the California Natural Diversity Database on the California Department of Fish and Wildlife website and a couple of downloaded pictures, Coley heads out on his own, maybe takes a plant society member or two, or recruits his brother, Bob Coley of Oroville.

He uses driving directions from prior surveys, sometimes learning roads have been changed or fields have been built up. Newer rare plant sightings are now documented with GPS coordinates, he said.

It can be easy as in the case of the golden-antlered clarkia, one of the six rare finds. He drove up to Fall River Crossing above Feather Falls, parked his pickup and found the plant as soon as he stepped out his door.

"I drove right to it," he smiled.

Others may take some sleuthing. Most of the old maps suggest plants may be found within a 1-mile radius of an original find, so walking is involved. Often, he said, he has to decode old- school directions like "go three-quarters of a mile past the oak tree."

Rare plants are ranked by the Native Plant Society depending on their status: presumed extinct, or disappeared from the state; have declined from their range; are gone from the state but thought to be growing elsewhere; those that lack information, and plants that are found infrequently within a known area.

Others spotted on this year's treasure hunts are the adobe-lily, found at Dye Creek Nature Preserve, near Los Molinos; the hogwallow starfish, spotted on the Vina Plains; the Brandegees clarkia, found along the Feather River near the diversion pool; Mildred's clarkia, found near Feather Falls, and Ahart's buckwheat on Lumpkin Ridge Road in Oroville.

Ahart's wild buckwheat, Eriogonum umbellatum var. ahartii; Photographer: Ron Coley

Coley doesn't refer to his subject matter using the Latin names. "I don't go with the scientific names. I started with the common names and I'm sticking with them," he said.

It was Coley's picture of the bright yellow blooms of Ahart's wild buckwheat that also won him third place in the California

Native Plant Society's 2013 photo contest. The rare plant that grows only in Butte, Yuba, and Plumas Counties is named for Lowell Ahart of Oroville, a respected plant collector and rancher who has had a number of plants named in his honor.

The six rare plant finds bring a $50 prize to the chapter and Coley's photo earned him a $25 certificate to spend at the CNPS store.

The following article by Jennifer Jewell is reprinted from a 2013 article: http://www.pacifichorticulture.org/articles/beneficial-buckwheats/. Note the objectives of the Society.

Beneficial Buckwheats

These tenacious native dryland plants thrive in exposed locations on slim soils.

By: Jennifer Jewell

Keying out the differences between buckwheat species that closely resemble one another can come down to very technical differences - this could be one of several similar species of buckwheat in summer bloom in the Three Sisters Wilderness of central Oregon's Willamette National Forest. Photo: Jennifer Jewell

This winter, my garden in the north central Sacramento Valley reached a low temperature of 21º F. My big blue oaks were leafless; the frosty nights, grey wet storm patterns, and long nights settled in for the season. In summer, I can count on not having a drop of natural precipitation for four to six months and temperatures will top 110º F on a regular basis.

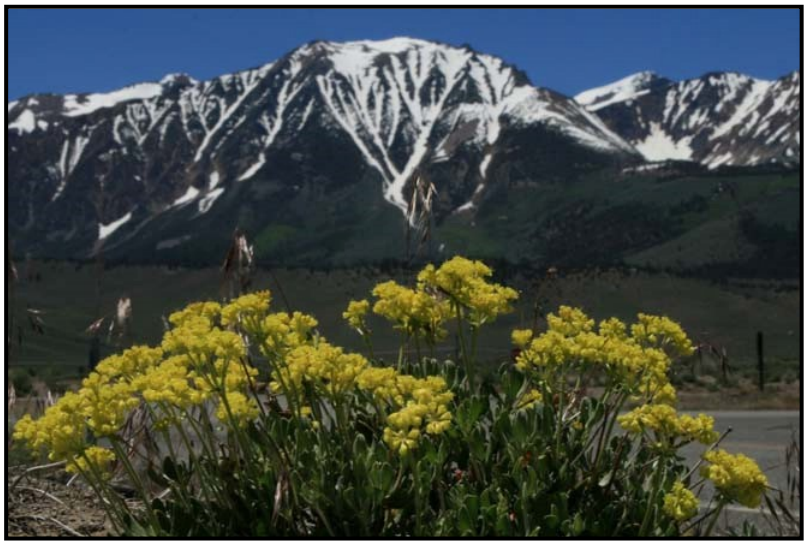
As an avid gardener, I want a lovely, lively garden, but I don't want to pretend I live in another place with a different climate. So I must be resourceful and expand my knowledge of good garden plants. Judiciously chosen native and climate-appropriate plants can and do make all the difference. For dramatic color and the durability to thrive in my garden, the wild native buckwheats are among my favorites.

The natural range of colors in wild buckwheat is wide. Here a wild *eriogonum* sporting rich orange-red blooms in the Three Sisters Wilderness of central Oregon's Willamette National Forest. Photo: Jennifer Jewell

Wild buckwheats are eye-catching, sometimes acid yellow, fuchsia pink, or creamy white, low-lying clouds of bloom that you might see on drives, hikes, and in gardens from June through October across the American West. Tenacious native dryland plants, buckwheats thrive in exposed

locations on slim soils. They dot high plains and mountain meadows, desert roadsides and rocky slopes, all the while looking bright and appealing in foliage, flower, or gone to seed.

Wild native yellow sulphur buckwheat (*Eriogonum umbellatum*), beautifully paired by mother nature with coyote mint (*Monardella* sp.) on Monitor Pass in the eastern Sierra Nevada. Photo: John Whittlesey



Even at an elevation of 4200 feet, the electric yellow flowers of wild sulphur buckwheat (*Eriogonum umbellatum*) hold their own at the base of the majestic White Mountains of the eastern Sierra Nevada. Photo: Jennifer Jewell

A tiny fly forages on the architectural, unopened buds of *Eriogonum fasiculatum*. Photo: Jennifer Jewell

Among the many benefits of buckwheats, these enthusiastic plants are important food sources for pollinators, especially in the late summer months when other flowering plants have retreated to dormancy in the dry heat. Buckwheats reliably attract a whole symphony of pollinators including native bees, wasps, flies, butterflies, beetles, and birds.

Besides being a pleasure to meet on the trail, with good sun and not too much water many buckwheats adapt easily to large or small garden settings.

The silver mat of cushion buckwheat (*Eriogonum ovalifolium*) is striking against the black cinder fields at Craters of the Moon National Monument in Idaho. While the flowers are sweet white to pink to burnt red puffballs, the evergreen silver foliage of cushion buckwheat provides year-round interest. Photo: Jennifer Jewell

Botany

Botanists seem to have as strong an affinity for *eriogonum* as gardeners and native plant enthusiasts. The genus offers rich diversity, complex botanical characteristics and a history of "rapid evolution in arid regions of western North America," according to Dr. James Reveal, an international *eriogonum* expert.

Dr. Reveal writes that, "As a native North American genus, *Eriogonum* is second only to *Penstemon*. Ecologically, species of *Eriogonum* occur from the seashore to the highest mountains in the United States. They are among the last plants seen atop the Sierra Nevada and on the 'outskirts' of Badwater in Death Valley. The United States Department of the Interior currently lists some as endangered or threatened species. Some species tend to be weedy, and some of the annual species are aggressively so."

Even before its showy pinkish-white flowers come into bloom, St. Catherine's lace buckwheat (*Eriogonum giganteum*) is attractive. A nicely shaped, four-and-a-half-feet tall and wide shrub, it is covered in pleasing blooms (fresh and creamy, followed by dried and rust-colored) from mid-summer through late fall. Photo: Jennifer Jewel

The genus *Eriogonum* belongs to the so-called "knotweed" family, Polygonaceae. Edible buckwheat (*Fagopyrum esculentum*) is an important

food crop in the same family. While species of *eriogonum* do occur elsewhere, the genus is strongly associated with the West. The Jepson Manual: Higher Plants of California says that around 250 species occur in California.

With weediness of some species in mind, home gardeners are advised to be careful when choosing eriogonums in order to avoid accidentally releasing a weed into surrounding wildlands or corrupting the genetics of native eriogonum populations in your area.

The Eriogonum Society

In 2008, two Colorado-based home gardeners and *eriogonum* enthusiasts, Hugh MacMillan and Bob McFarlane, formed the Eriogonum Society. The group's objectives are:

1. Enjoying and promoting the use of these plants in the garden,

2. Enjoying and evaluating *eriogonums* in the wild,

3. Assembling, developing, and sharing information on the propagation, cultivation, identification, and distribution of the *eriogonum* species,

4. Providing a seed exchange to distribute *eriogonum* seed for use in gardens,

5. Protecting rare and endangered species of *eriogonums*, and

6. Advancing the overall understanding of *eriogonum* from a scientific perspective.

The group will host its third annual meeting and conference weekend in Farmington, New Mexico, in September 2013. (Editors note: it will now be hosting its fourth annual meeting in Twin Falls, Idaho!) Attendees can expect expert presentations on *eriogonum*, field trips to see plants in the wild, and seed and plant exchanges. The seed exchange (open to society members only) is the best source for good garden selections, because so few species or varieties are available in the nursery trade.

Sulphur buckwheat (*Eriogonum umbellatum*) infuses bright yellow into a dryland wildflower border at the Denver Botanic Gardens. Buckwheats partner well in the garden and in nature with *penstemons*, *salvias* and grasses. Photo: Jennifer Jewell

Pink buckwheat (*Eriogonum grande rubescens*) is among the author's favorites. Hailing from the Channel Islands off the coast of California, pink buckwheat is hardy to about 15 degrees, but can take the hot dry sun of long California summers. Delicate-looking spikes of flowers are in fact tough, colorful and lon-lasting floral sculpture in the garden or as cut flowers. Photo: Jennifer Jewell

Care and Cultivation

Hugh MacMillan lives near Sedalia, Colorado, at elevation 6,350 feet. Bob McFarlane lives at elevation 5,400 feet in a Denver suburb. MacMillan says he almost never feeds *eriogonum*, does not prune them, and waters his plants approximately three to five times in summer. McFarlane feeds his with a small dose of all- purpose fertilizer in spring, waters his along with the rest of his garden once a week, and cuts his back as needed for shape.

As illustrated by their native habitats, *eriogonums* are at their best in lean, well-draining soil and full sun. Dryland plant experts often recommend mulching buckwheats with gravel or mixing gravel in the top few inches of soil around their crowns. They resent being overwatered, especially around their crowns.

Northern California plantsman and garden designer, John Whittlesey, of Canyon Creek Nursery and Design in Oroville, California, recommends pairing buckwheats with "plants they might be found with in the wild, or those that will enjoy similar conditions: coyote mint (*Monardella* spp.), penstemon, lupine, nepeta, achillea, teucrium, dwarf English lavenders, asters, and native bunch grasses."

Good species of *eriogonum* for gardens include mid-size and striking yellow *Eriogonum umbellatum* var. *dumosum* 'Shasta Sulphur'; strongly vertical with needle-like foliage and creamy white-blossoms *E. fasciculatum* (California buckwheat); *E. giganteum* (St. Catherine's lace) which is a large (up to six feet by six feet) specimen with silver-white foliage and much broader, white flower heads; and *E. grande* var. *rubescens*, a low variety with silvery foliage and warm pink flowers.

Further resources

The Eriogonum Society
www.eriogonum.org

Floral Native Nursery, Chico, California,
www.floralnativenursery.com

Sunscapes Rare Plant Nursery, Pueblo, Colorado
www.sunscapes.net

Las Pilitas Nursery, Escondido and Santa Margarita, California,
www.laspilitas.com

Rebecca Lance, GraniteGardens Rare Plants, Sonora, California

Submissions to the newsletter

Do you have a favorite *Eriogonum* you would like to write about and submit to the **Eriogonum Society Newsletter?** Or would you like to write an essay on topic you'd like to share? Do you have corrections to a past newsletter, or have a letter to the editor you'd like published? Please send your article to the newsletter editor, whose email address is below.

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Articles for the Newsletter: If you are interested in writing or submitting an article to future newsletters, please notify one of the above contacts. Thank you!

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Membership Renewal

The Eriogonum Society (www.eriogonum.org/) has attracted over 100 people who love Eriogonums and are interested in learning more about them. A number of our members had a great time at our first annual meeting in Reno, the second one in the White Mountains of California, and the third one at the Malheur Field Station, and the most recent one in Farmington, NM, in the Four Corners area. Our dues include qualification to register for our annual meetings, as well as an on-line newsletter, annual seed exchange and access to the members section of our website.

Dues run on a calendar basis, renewed at the first of each year. Dues for all except students are $10. Dues for students are $5. Life Membership is $150. In addition, members may pay two years in advance and receive the third year free. Please do not send cash.

You may pay either by check or by PayPal on our website at http://eriogonum.org. Make checks payable to Eriogonum Society. Mail a completed form and check to:

Bob Pennington, Membership

1409 Agua Fria, Santa Fe, NM 87505-0907

Please update any current info with new phone numbers or e-mail addresses. Thanks for your enthusiastic support of the Society!

Name-_____

Address-_____

_____

Phone #-_____E-Mail-_____

We do not sell, share or distribute member data in any manner.