FRIOGONUM SOCIETY NEWSLETTER



A RARE BUCKWHEAT SEEN AGAIN

Story and photographs by Teague Embrey

n 1998, Leila Shultz described a new species of buckwheat from western Utah and eastern Nevada, calling it *Eriogonum phoeniceum* (Shultz 1998). The type specimen used was collected in Millard County, Utah, at the northern end of the Wah Wah Mountains. In 2004, James Reveal downgraded the species, determining it a variety within the *E. microthecum* complex, and stated that it was "weakly defined" and "marginally distinct" from other varieties (Reveal 2004a, Reveal 2004b). So, it became *E. microthecum* var. *phoeniceum*. According to the Nevada Natural Heritage Program rare plant atlas, the last survey for this plant occurred in 1987; they recommended further surveys (NNHP 2001). Digital herbarium searches indicate that the most recent collections for *E. microthecum* var. *phoeniceum* in Nevada are from 1983, and 2008 in Utah (SEINet 2020, NY 2020). This is where things get interesting.

E. microthecum var. *phoeniceum* does not actually occur in Nevada. Two paratypes from Nevada cited by Shultz as being *E. phoeniceum* were later determined by Reveal to be two different varieties of *E. microthecum*: *arceuthinum* and *lapidicola* (Reveal 2004b, NY 2020).The last paratype cited by Shultz,

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collected by Carl Purpus in 1898, was then used by Reveal as the type for *E. microthecum* var. *arceuthinum* (Reveal 2004b). Reveal described *E. microthecum* var. *arceuthinum* as "narrowly restricted," known only from the Deer Lodge Canyon area in Lincoln County, Nevada (Reveal 2004b). Tightly revolute and glabrous, green leaves distinguish this variety from other varieties.

Arnold Tiehm also collected what he thought, at the time, was *E. phoeniceum* at Deer Lodge Canyon; these specimens were misplaced once they reached Leila Shultz, who was working on describing *E. phoeniceum*. Although the collections of *E. phoeniceum* by Tiehm were never examined by Reveal as they went missing, they are from the Deer Lodge Canyon area, and, following Reveal's determination of Shultz's collections from that area to be *E. microthecum* var. *arceuthinum*, it would follow that the Tiehm collections also belong to that variety (Reveal 2004b). In 2019, I discovered that these misplaced

specimens had been digitized and added



to the collections at Arizona State University and Utah State University, with the original locality data available after being missing for close to forty years. Earlier this year, with support of the Margaret Williams Research Grant from the Nevada Native Plant Society, I traveled



to the Deer Lodge Canyon area within the Mahogany Mountains to rediscover Tiehm's original collection locality and to search for additional populations. I am happy to report that this interesting buckwheat can still be found in this remote part of Nevada. I present here my findings and what are, as far as I know, the first photographs of this Nevada edaphic endemic.

Навітат

Eriogonum microthecum var. arceuthinum occupies barren, volcanic bedrock areas within pinyon-juniper forest (A. Tiehm, pers. comm.). Before heading out to the field, I used satellite imagery to identify several areas that appeared to be bedrock outcrops. Once in the field, I targeted these areas. This buckwheat was found growing exclusively on or directly adjacent to barren volcanic outcrops, except for a few sites where it was absent.

The geology of the Deer Lodge Canyon area is of volcanic origin, a result of eruptions and ash flows (Best 1992). The sites where *E. microthecum* var. *arceuthinum* occurs is mapped as Tertiary tuff (felsic volcanic rock) from the Miocene Epoch. However, within this unit, it was only at the barren areas where I encountered the target plant. It appears that *E. microthecum* var. *arceuthinum* has adapted to grow exclusively on these barren zones. Like other edaphic endemic buckwheats, their presence at a particular site is tied to – and indicative of – a certain geologic formation

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or substrate. Associated plants at these sites include *Purshia tridentata, Ericameria parryi* var. *nevadensis, Petradoria pumila*, and *Artemisia tridentata*, with the occasional stunted pinyon or juniper.

Although *Eriogonum microthecum* var. arceuthinum is part of a wide-ranging and morphologically varied expression of a single species (13 varieties to date), it can be further grouped within that taxon as a complex of varieties that occur as low subshrubs confined to the desert mountain ranges of eastern California. Nevada, and Utah; these plants are *E. microthecum* var. arceuthinum, E. mic. var. phoeniceum, and E. mic. var. lapidicola. Quite interestingly, these plants are morphologically similar to E. thornei, E. ericifolium, E. pulchrum, and E. terrenatum, species which are also fall-flowering and restricted to specific substrates in the desert mountains and valleys of California and Arizona (Reveal and Henrickson 1975, Shultz 1998,

Duncan and Reveal 2003, Reveal 2004b, Anderson 2007). With the exception of *E. microthecum* var. *lapidicola* and *E. pulchrum*, all of the above taxa are edaphic endemics and hyper localized — in an extreme example, *E. thornei* is confined to a small, copper-rich hilltop in the New York Mountains of California.

UNIQUENESS

Though similar to both *Eriogonum microthecum* var. *lapidicola* and var. *phoeniceum*, var. *arceuthinum* is morphologically more distinct from either of those varieties than *lapidicola* is from *phoeniceum*. Compact subshrubs — some of the older plants appearing bonsai-like — with dark green, glabrous or nearly glabrous revolute leaves. Flowering stems are glabrous, of variable length, sometimes far exceeding the leaf height. The particular varietal epiphet,







This column, top: *Eriogonum ericifolium* Middle: *Eriogonum pulchrum*, photo by Hallie Larson Bottom: *Eriogonum terrenatum* Previous page: *Eriogonum thornei*







Examples of the morphology of *E. microthecum* var. *arceuthinum*. Older plants become compact subshrubs (top). Glabrous flower stems (middle) sometimes exceed the leaf height (bottom).



arceuthinum, means 'of juniper,' as Purpus' label denoted his 1898 collection site the 'Juniper Mountains' — what we now know as the Mahogany Mountains. After seeing these plants in the field, this name is particularly fitting; like the common juniper, *Juniperus communis*, the leaves of *E. mic.* var. *arceuthinum* are linear and taper to a needlelike tip, further distinguishing it from congeners.

ACKNOWLEDGEMENTS

wish to thank the Nevada Native Plant Society for funding this venture. Arnold Tiehm helped sort out the confusing taxonomic history and provided detailed locality information aided in finding this plant in situ. Leila Shultz also provided locality information and taxonomic commentary.

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THE CONSERVATION STATUS OF TIEHM'S WILD BUCKWHEAT

Story by Ben Grady Photographs by Jim Morefield

As many of you have likely heard, a Controversy has heated up the Silver Peak Range in Esmeralda County, Nevada. Tiehm's wild buckwheat (*Eriogonum tiehmii*), a state and globally rare endemic species (S1, G1) suffered a dramatic population decline within the past few months due to mammal herbivory. Additionally, a proposed lithium mine would put much of the remaining plants and habitat at risk. The United States Fish and Wildlife Service is currently deliberating to determine if Tiehm's wild buckwheat is worthy of protection under the Endangered Species Act.

Tiehm's wild buckwheat has been known to science since the mid 1980's when it was first collected by the prolific Nevada botanist Jerry Tiehm. James Reveal described the new find as a distinct species in 1985. This unique species of *Eriogonum* has capitate inflorescences with floccose scapes and cream colored tepals covered in glandular hairs. This narrow endemic is isolated and limited to clay shales, forming basic soils



with an unusual elemental composition. The entire range of Tiehm's wild buckwheat covers no more than 10 acres, divided up into six or so subpopulations. Estimates of the global population have varied over time, with estimated numbers of individuals ranging from 17,000 in the earlier 1990's to about 44,000 in June 2020. Regardless of these fluctuating population estimates, it seems very clear that the extent of the range is well understood.

A proposed lithium mine and some active mammals have altered these population numbers and the future of Tiehm's wild buckwheat. The proposed mine, a potential source of lithium and boric acid, is scheduled to begin production in the middle of 2023. The initial quarry area would impact about two thirds of the global population of Tiehm's wild buckwheat. Additionally, a disheartening discovery was made in September 2020, when researchers and conservationists found widespread damage to thousands of Tiehm's wild buckwheat plants. After the dust settled, it appeared that either whitetailed antelope ground squirrels or pocket gophers were responsible for the damage to about 60% of the global population of this already rare species. It is hypothesized that the mammalian culprit was drawn to the roots of the wild buckwheat after a particularly dry and stressful summer.

Currently the US Fish and Wildlife Service is assessing the conservation status of *Eriogonum tiehmii*, with a decision forthcoming. Either way, Tiehm's wild buckwheat faces a very uncertain future.

The Eriogonum Society Annual Meeting 2021 June 24-27 Elko, Nevada



Eriogonum lewisii - Lewis' wild buckwheat



Eriogonum kingii - Ruby Mountains wild buckwheat



Eriogonum douglasii var. elkoense - Sunflower Flat wild buckwheat

The Eriogonum Society was founded to promote the conservation and appreciation of our wild buckwheats both in the garden and in the wild. This year we will be exploring the wild buckwheats of Elko County, including rare and endemic species.

Membership in the Eriogonum Society also includes access to our seeds exchange, our buckwheat packed newsletter, and supports the Dr. James Reveal Memorial Grant to advance research on our favorite genus.

2021 Meeting Agenda

Thursday - Board Meeting and evening reception at the Northeastern Nevada Museum

Saturday - Eriogonum identification workshop and short field trip near Elko Friday - Driving tour of rare buckwheats in the Mountain City area, north of Elko

Sunday - Driving tour of Ruby Valley and Ruby Mountains, including Lamoille Canyon

Registration includes workshop, field trips led by local botanists, evening presentations, and dinner on Friday and Saturday nights. One-day and no-meals options available.

Full Registration before April 30th - \$135 Full Registration after April 30th - \$150

Visit **Eriogonum.org** for more information and to register for the meeting.

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Bill Hoyer and Bill Hoyer at Craters of the Moon photographing *Eriogonum ovalifolium* var. *focarium*.

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