

REDISCOVERY OF *ERIOGONUM HEERMANNII* VAR. *ARGENSE* IN SOUTHEASTERN ARIZONA

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ABSTRACT

Eriogonum heermannii var. *argense* (M.E. Jones) Munz has been rediscovered in southeastern Arizona on limestone in the Empire Mountains. It is probably the same locality from which Marcus Jones collected the same entity in 1903.

At the end of August 1903, geologist and botanist Marcus E. Jones headed southward on horse and wagon from Oracle, Arizona, and travelled to Fort Huachuca, arriving roughly four days later, as indicated by dates on his collections (Jones 1965; SEINet 2020). On the last day of August, en route to Fort Huachuca, he collected approximately 50 specimens from a locality "8 miles south of Vail," according to specimen label data (SEINet 2020). Until now, the exact collection location has been unclear. However, looking at the list of collected plants, most are calciphiles with affinities to the Chihuahuan Desert. Several of the species (e.g., *Sageretia wrightii*, *Frangula californica*, *Anoda abutiloides*, *Mandevilla brachysiphon*) are uncommon in the Vail area but generally found further south in the Santa Rita and Empire Mountains.

Of particular note is his collection of *Eriogonum heermannii* var. *argense* (M.E. Jones) Munz (Jones s.n., 1903-08-31, DS, POM, US) — identified by Jones as *E. plumatella* but annotated by James Reveal in 1981 as *E. apache* (Figure 1). Reveal later (2005) incorporated *E. apache* into the variable and wide-ranging *E. heermannii* var. *argense*.

The Jones specimen has perplexed many botanists, as the given locality is long-disjunct from other populations. Disjuncts for numerous plant species have been well documented throughout Arizona, mostly occurring on limestone or limestone-derived soils (Tertiary lacustrine deposits) (Anderson 1996, 2011). A disjunct population of *E. heermannii* var. *argense* near Bylas, Arizona, occurs on lacustrine limestone deposits, and plants are found further north on the Verde Formation, another limestone-derived soil.

An annotation by Thomas Kearney (no date recorded) of the Jones specimen at US noted the following: "Is there not an error in locality? The plant is more likely to have come from northern Arizona." In the two published editions of the *Arizona Flora*, the Jones specimen was noted as "The locality as stated is almost certainly erroneous" (Kearney & Peebles 1951; Kearney et al. 1960). The disjunct plants found near Bylas and in the Verde Valley were not known at the time, and so Kearney's observation was not entirely unfounded.

In 1984, John Anderson apparently searched for Jones's collection site on the Pantano Formation, which outcrops east of Vail, there finding plants later described as *Eriogonum terrenatum* (Reveal 2004; Anderson 2007). However, additional species collected by Jones on the same day in 1903 indicate that the area where Anderson encountered *E. terrenatum* was not an appropriate area to search (and indeed is due east of Vail, not south), as many of those collected by Jones do not occur there (SEINet 2020).

In Reveal's FNA treatment for *Eriogonum heermannii* var. *argense* (2005), he wrote, "A population near Vail ... sampled by M.E. Jones in 1903 (DS, POM, US) has not been rediscovered, although the variety is known from Pueblo Canyon in the Sierra Ancha (Wagner 320, DUKE)."

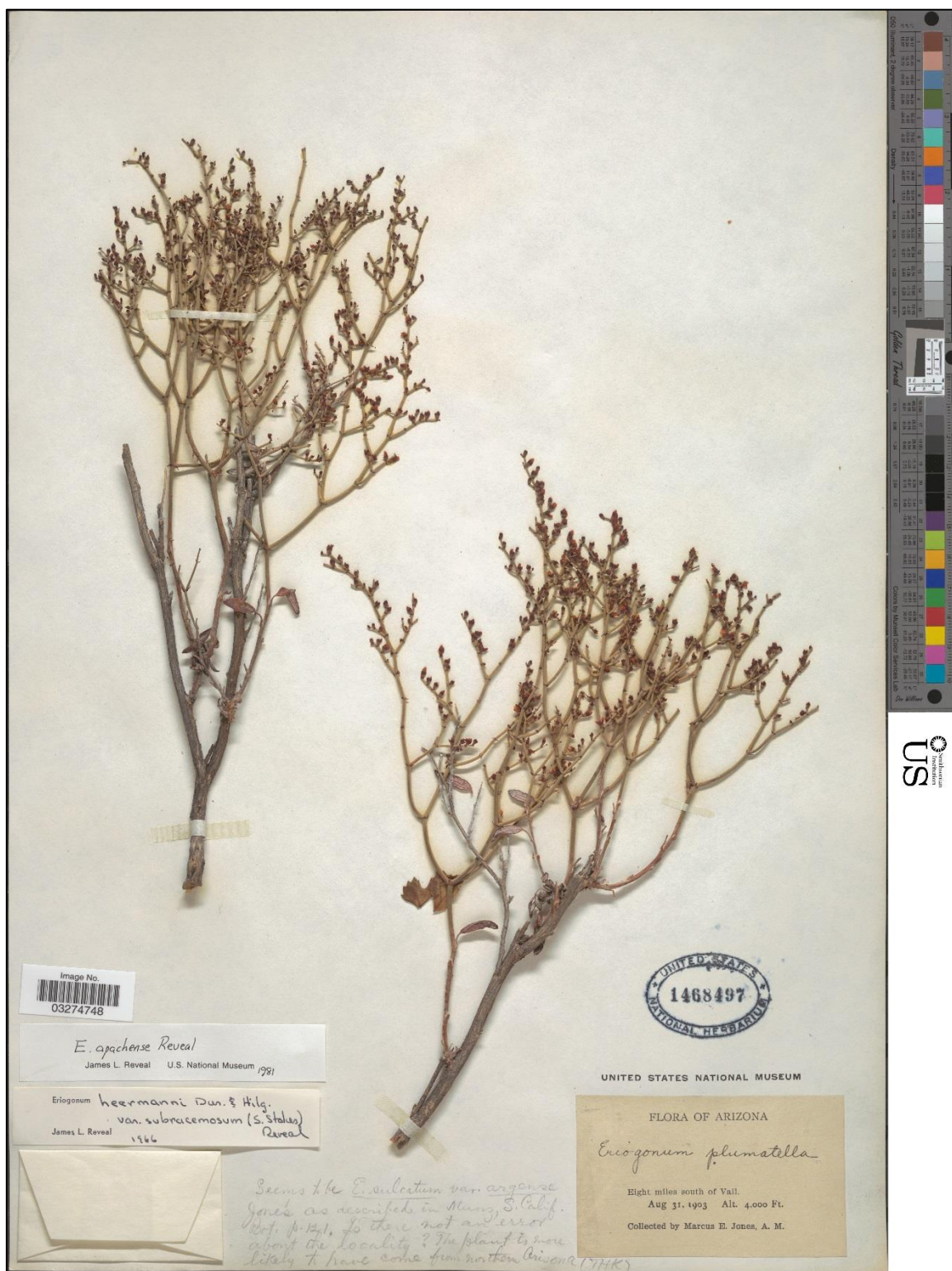


Figure 1. Specimen of *E. heermannii* var. *argense* collected by M.E. Jones in 1903. Note annotations by Kearney and Reveal. Image courtesy Smithsonian Institute.

Using the floristic and geologic affiliations for other specimens collected by Jones from the same location as his *Eriogonum heermannii* specimen (see Appendix) and a historical map from 1905, a few areas in the vicinity of Vail were selected and surveyed in late November and early December 2020 (Figure 2). A population of *E. heermannii* was found growing on the Paleozoic Concha Limestone (Ferguson et al. 2019). (Figs. 3-6). This population is now the southernmost locality known for the species and is disjunct from the Bylas plants by roughly 91 miles (146 km) to the southwest (Figure 7).

Voucher specimen. Arizona. Pima Co.: Low limestone hills on NW end of Empire Mountains, just E and above Davidson Wash, plants growing from crevices in limestone bedrock, Chihuahuan Desert scrub with *Fouquieria splendens*, *Larrea tridentata*, *Ayenia* sp., *Condalia warnockii*, *Dalea formosa*, 31.940251, -110.644889, 1176 m, 3 Dec 2020, Embrey 380 (ARIZ).

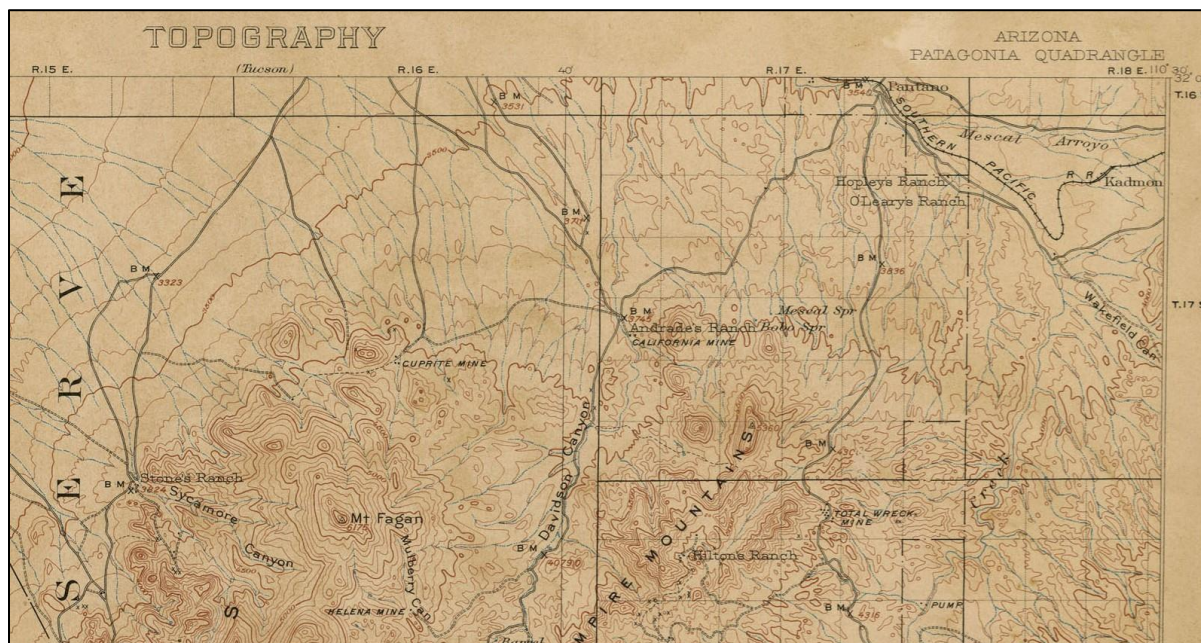


Figure 2. Detail of historical map from 1905 showing roads leading south from Vail (Vail located just north-northwest of the map boundary). As part of this effort, the areas of Stone's Ranch and the historic Total Wreck Mine were also surveyed.



Figure 3. Location of rediscovered *Eriogonum heermannii* var. *argense*. From Vail, it is roughly 8 miles via the Old Sonoita Highway.

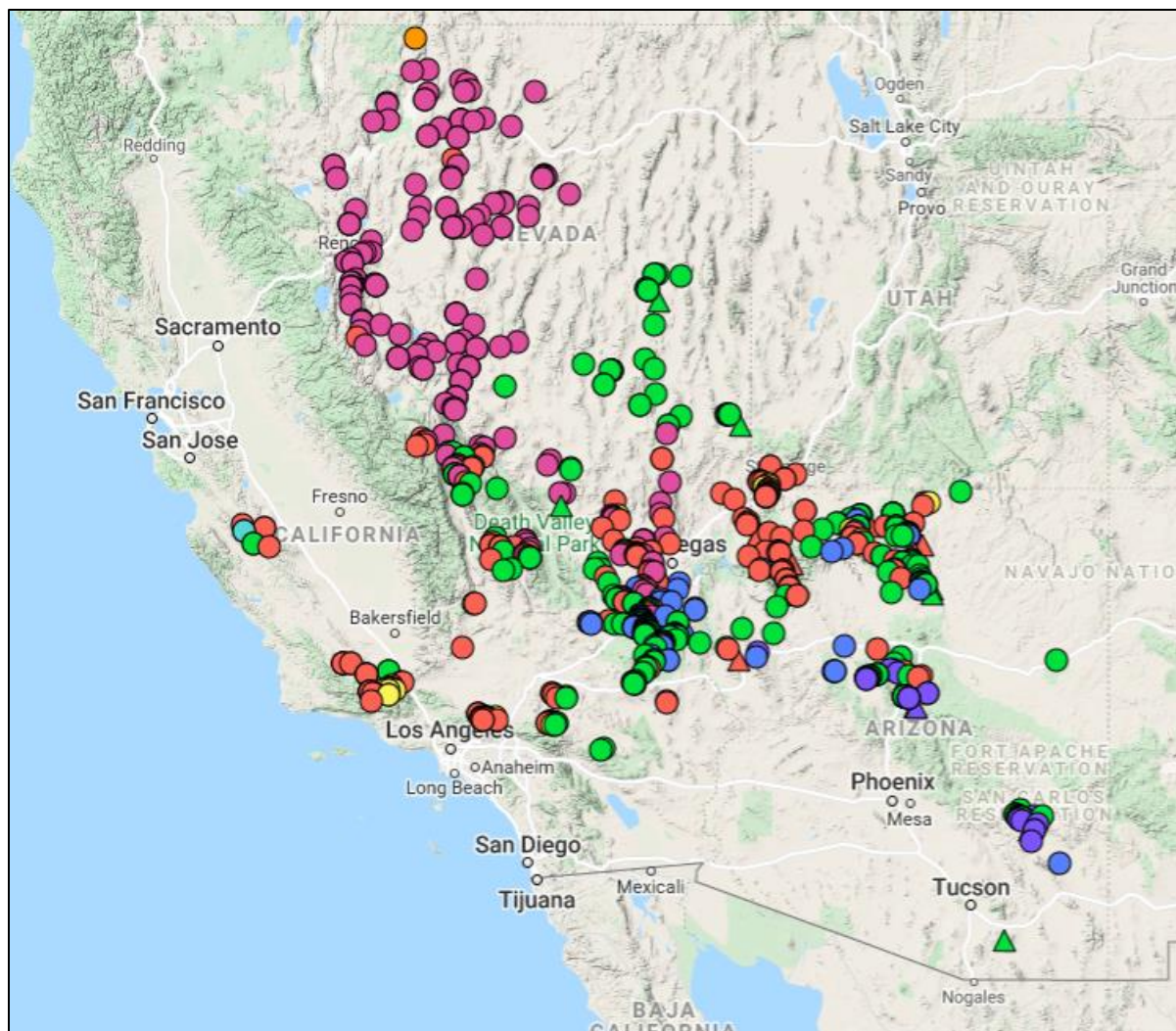


Figure 7. Current known distribution of *Eriogonum heermannii* (includes all varieties). Green triangle denotes rediscovered locality.



Figure 4. *Eriogonum heermannii* var. *argense*. Mount Fagan (Santa Rita Mountains) is seen in the background.



Figure 5. Habitat of *Eriogonum heermannii* var. *argense* (plant in the foreground).



Figure 6. Close-up of *Eriogonum heermannii* var. *argense* inflorescences.

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Appendix

The following collections by M.E. Jones on 31 Aug 1903 probably are from the Empire Mountains locality noted above for *Eriogonum heermannii*.

Lippia wrightii RSA0111747
Helianthus petiolaris subsp. *petiolaris* RSA
Tetradlea coulteri RSA0061861
Hedyotis sp. RSA0096153
Euphorbia pediculifera RSA0046313
Boerhavia scandens RSA0064725
Menodora scabra RSA0109466
Echinopepon wrightii RSA0045738
Talinum sp. RSA0111245
Croton sp. RSA0002665
Notholaena cochisensis RSA0109757
Thamnosma texana RSA0101971
Acacia constricta RSA0048962

Apodanthera undulata RSA0045713
Euphorbia florida RSA0046344
Clematis drummondii RSA0082355
Apodanthera undulata RSA0045709
Hedeoma nana RSA0061614
Echinopepon wrightii RSA0045735
Chamaesaracha sordida RSA0111497
Euphorbia pediculifera RSA0046319
Eriogonum abertianum RSA0069026
Boerhavia purpurascens RSA0064783
Condalia warnockii RSA0086105
Boerhavia erecta RSA0064771
Thamnosma texana RSA0101996
Ipomoea leptotoma RSA0043839
Verbena neomexicana RSA0111565
Ipomoea leptotoma RSA0043837
Anoda abutiloides RSA0062122
Apodanthera undulata RSA0045716
Dalea albiflora RSA0053181
Ditaxis neomexicana RSA0048809
Dalea pogonathera RSA0053221
Ipomopsis longiflora subsp. australis RSA0069147
Rivina humilis RSA0086220
Abutilon parvulum RSA0062180
Manihot angustiloba RSA0046485
Abutilon mollicomum RSA0062253
Cissus trifoliata RSA0071329
Sageretia wrightii RSA0086168
Eriogonum deflexum RSA0071675
Polanisia trachysperma RSA0041059
Dalea formosa RSA0053240
Dalea wrightii RSA0053153
Condalia warnockii RSA0086104
Rhamnus californica subsp. ursina RSA0086169
Eriogonum apachense RSA0075290
Croton corymbulosus UTC00175559
Telosiphonia brachysiphon ARIZ
Euphorbia pediculifera ARIZ84421
Bouteloua eriopoda MO2497418
Erioneuron avenaceum var. *avenaceum* MO2564190
Talinum aurantiacum NY01268779
Croton sp. RM113409
Dalea formosa HUH01885470
Dalea pogonathera HUH01921219