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TWO NEW SPECIES OF *ERIOGONUM* (POLYGONACEAE)  
FROM CALIFORNIA AND ADJACENT STATES

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During field studies conducted in the summer of 1971, two new species of *Eriogonum* (Polygonaceae), section *Capitata* Torr. & Gray, were discovered. One, *E. beatleyae*, is newly found, this species being unknown to me until its discovery in the field. The second, *E. prociduum*, has been known for sometime and was reported previously (Reveal, 1969). Both are here proposed.

*Eriogonum beatleyae* Reveal, sp. nov.

*A Eriogono rosense* Nels. & Kenn. foliis late ellipticis, 5–16 mm latis, eglandulatis, plantis nec caespitosae, involucris et achaeniis longioribus differt. Plantae patulae perennes, nec caespitosae; *folia* late elliptica, laminis 1–2.5 cm longis, 5–16 mm latis, subtus albo-tomentosis, supra viridi-tomentosis, petiolis longis, 5–15 mm longis, tomentosis; *scapi* 3–8 cm longi, glandulosi; *inflorescentiae* capitatae; *bracteae* squamiformes, ternatae, 1–3 mm longae et 0.5–1 mm latae; *pedunculi* nulli; *involucra* congesta, 3–6, campanulata, 3–4 mm longa et lata, glandulosa, 5-lobatis, bracteolis linearis vel lineari-oblanco-latis, 1.5–2.5(–3) mm longis, pedicellis 3–4.5 mm longis, glabris; *flores* lutei, (2.5–) 3–4 mm longi, glandulosi, tepalis similaribus, oblongis; *stamina* exserta, 3–4.5 mm longa, filamentis ± glabris, antheris flavis, 0.5–0.6 mm longis; *achaeia* (2.5–)3–3.5 mm longa.

Low spreading herbaceous perennials with a highly branched, underground, spreading woody caudex forming a loose mat, a single plant system often 0.5 m across, this arising from a stout, woody taproot; *leaves* basal, persistent, the old leaf-blades and bases covering the upper 1–4 cm of the caudex branch, the leaf-blade broadly elliptic, 1–2.5 cm long, 5–16 mm wide, densely white-tomentose below, greenish-tomentose above, the tomentum more dense below than above, not glandular, the apex and base rounded to obtuse, the margin entire and plane or slightly rolled inward, the petiole long, 5–15 mm long, tomentose, the petiole-base elongate-triangular, membranaceous, 3–5(–8) mm long, 1–2.5(–3) mm wide, sparsely tomentose without, glabrous within; *flowering stems* scapose, erect, 3–8 cm long, glandular throughout with scattered, eglandular villous hairs; *inflorescences* capitate, the head 0.8–1.2(–1.5) cm across; *bracts* scale-like, ternate, linear to narrowly triangular, 1–3 mm long, 0.5–1 mm wide, sparsely floccose and glandular on the outer surface, essentially glabrous within,

connate at the base; *peduncles* lacking; *involucres* congested, 3–6 per head, campanulate, rigid, 3–4 mm long and wide, glandular without, often with some scattered villous hairs near the teeth, glabrous within, the 5 acute to triangular teeth 0.8–1.3 mm long, the bractlet linear to linear-oblongate, 1.5–2.5(–3) mm long, minutely fringed with gland-tipped cells, the pedicel 3–4.5 mm long, glabrous; *flowers* yellow with greenish yellow midribs and bases, becoming tinged with pink to red in some, the midribs often becoming reddish brown, (2.5–)3–4 mm long, glandular without, minutely glandular within especially along the midribs, the tepals essentially similar, oblong, the outer whorl of tepals 1.3–1.6 mm wide, the apex rounded to obtuse, the inner whorl 1–1.3 mm wide, the apex mostly acute, united about  $\frac{1}{4}$  the length of the flower; *stamens* slightly to long exerted 3–4.5 mm long, the filament essentially glabrous basally, infrequently with a few minute hair-like cells near the base, the anther yellow, 0.5–0.6 mm long, oblong; *achenes* light brown, (2.5–)3–3.5 mm long, the subglobose base tapering to a long, distinctly 3-angled beak.—Dry volcanic outcrops in pinyon-juniper woodlands, near Bodie, Mono Co., California, and east of Tonopah, Nye Co., Nevada. May–August.

*Type*.—About 0.9 mile north of U.S. Highway 6, this road junction being 5.3 miles west of Salisbury Wash Road and about 31 miles west of Warm Springs, about 18 miles east of Tonopah, on a low, multicolored volcanic hill just east of the dirt road leading to the Silver Leaf Mine area, associated with *Atriplex* and scattered *Juniperus osteosperma* (Torr.) Little, at 6400 ft elev., Nye Co., Nevada, 26 June, 1971, *Reveal, Holmgren, Holmgren, Beatley & Reveal* 2498. Holotype, US! 35 isotypes will be distributed from US.

*Additional collections*.—CALIFORNIA. Mono Co.: Along the dirt road south of road to Bodie from U.S. Highway 395 toward Bridgeport Canyon, about 1 mile south of Bodie road at Mormon Meadow, on dark red clay volcanic soils associated with *Juniperus*, T.3N., R.26E., sec. 5, at 7600 ft elev., 21 Aug., 1971, *Reveal, et al.* 2767 (US). NEVADA. Nye Co.: topotypes: 7 May, 1971, *Beatley & Reveal* 12605 (NTS, NY, US); 18 July, 1971, *Reveal & Reveal* 2529 (US); Southern Hot Creek Range, 5 airline miles northwest of Warm Springs, T.5N., R.50E., sec. 31, at 6450 ft elev., 27 June, 1971, *Holmgren & Holmgren* 5241 (NY, US).

The Beatley Buckwheat, *Eriogonum beatleyae*, was first discovered by Dr. Janice C. Beatley, Research Associate, University of California, Los Angeles, and I in the type area in early May just as the species was coming into flower. The site was later revisited and a large collection made which serves as the type. On the very next day just northwest of Warm Springs, Drs. Noel and Patricia Holmgren found the new species, some 30 miles east of the type location. In late August, this same species was found in Mono Co., California, much to my surprise. In both the Nevada sites and that in California, *E. beatleyae* is found on slopes adjacent to mine talus where old gold mines once existed. The soil color and texture are similar and the general aspect of the ecological niche is similar as well. In both cases, the buckwheat was found essentially in undisturbed sites close to the mine.

*Eriogonum beatleyae* is most closely related to *E. rosense* Nels. & Kenn. (= *E. anemophilum* Greene in Reveal & Munz [1968], see Reveal [1970]) of the Sierra Nevada and *E. anemophilum* Greene, an endemic found only in the West Humboldt Mountains of Pershing Co., Nevada. In general, the new species can be differentiated from all other members of section *Capitata* by its spreading, loosely matted habit due to the highly branched, under-ground woody caudex system. This habit, however, is approached by some collections of *E. rosense*. From *E. rosense*, *E. beatleyae* may be distinguished by its broad, elliptical leaves, nonglandular leaf tomentum, longer involucre and achenes, and lower elevational gradient. From the endemic entity, *E. anemophilum*, the new species differs in its glandular stems and involucre, yellowish flowers and glabrous filaments. It can be reported that *E. anemophilum*, known only from its type collection made by E. L. Greene in 1894, was rediscovered in 1971 in the same general area on the West Humboldt Mountains.

It is a pleasure to name this plant for Dr. Beatley, a plant ecologist who has devoted much of her time and effort to the vascular flora of southern Nevada.

*Eriogonum prociduum* Reveal, sp. nov.

A *Eriogono chrysops* Rydb. scapis glabris, foliis brevioribus, laminis 4-8(-10) mm longis et 2-3(-4) mm latis, involucris campanulatis, (2.5-)3-4 mm longis et 3-3.5(-4) mm latis differt; *E. cusickii* M. E. Jones affinis sed inflorescentiis capitatis nec cymoso-umbellatis; *E. ochrocephala* S. Wats. affinis sed foliis et scapis brevioribus, floribus 2-2.5(-3) mm longis, involucris latoribus. Plantae caespitosae perennes; *folia* spatulata vel oblanceolata, laminis 4-8(-10) mm longis et 2-3(-4) mm latis, albotomentosis, petiolis brevibus, 3-8 mm longis, tomentosis; *scapi* 2-8 cm longi, glabri; *inflorescentiae* capitatae; *bractee* squamiformes, ternatae, 1-3 mm longae et 0.5-1 mm latae; *pedunculi* nulli; *involucra* congesta, 4-6, campanulata, (2.5-)3-4 mm longa et 3-3.5(-4) mm lata, glabra vel parce floccosa, 5-lobatis, bracteolis linearis, 2-3 mm longis, pedicellis 2.5-4 mm longis, glabris; *flores* lutei, 2-2.5(-3) mm longi, glabri, tepalis similaribus, oblongis vel oblongo-obovatis; *stamina* exserta, 2.5-3.5 mm longa, filamentis sparsis basi pilosis, antheris flavis, 0.5-0.6 mm longis; *achaeia* 2-2.5 mm longa.

Low, matted, caespitose herbaceous perennials with a highly branched, above-ground woody caudex forming a mat 1-3 dm across, this arising from a stout, woody taproot; *leaves* basal, persistent, the old leaf-blades and bases covering the upper 3-10 cm of the caudex branch, the leaf-blade oblanceolate to spatulate, 4-8(-10) mm long, 2-3(-4) mm wide, densely white-tomentose on both surfaces, only slightly less densely so above in some, not glandular, the apex mostly rounded to slightly acute, the base cuneate, the margin entire and plane but slightly thickened, the petiole short, 3-8 mm long, tomentose, the petiole-base elongate-triangular, 2-4 mm long, 1-2 mm wide, tomentose without, sparsely tomentose to glabrous within; *flowering stems* scapose, weakly erect, 2-8 cm long, glabrous; *inflorescences* capitate, the head 1-1.5 cm across; *bracts* scale-like, ternate, linear to narrowly triangular, 1-3 mm long, 0.5-1 mm wide, glabrous or sparsely floccose on the outer surface, floccose within, connate at the base; *peduncles* lacking; *in-*

*volucres* congested, 4–6 per head, campanulate, rigid, (2.5–)3–4 mm long, 3–3.5(–4) mm wide, glabrous within and without or more frequently floccose on the teeth without, the 5 triangular teeth 0.8–1.4 mm long, often membranous-margined, the bractlet linear, 2–3 mm long, minutely fringed with capitate, gland-tipped cells, the pedicel 2.5–4 mm long, glabrous; *flowers* yellow with reddish brown midribs and bases, 2–2.5(–3) mm long, glabrous within and without except for minute glands along the midribs within, the tepals essentially similar, oblong to oblong-obovate, the outer whorl of tepals 1.3–1.7 mm wide, the apex rounded to retuse, the inner whorl 1.1–1.4 mm wide, the apex rounded, united about 1/5 the length of the flower; *stamens* slightly exerted, 2.5–3.5 mm long, the filament sparsely pilose basally, the anther yellow, 0.5–0.6 mm long, oblong; *achenes* light brown, 2–2.5 mm long, the subglobose base tapering to a long, 3-angled beak.—Dry rocky volcanic slopes and hills in pine woodlands, Modoc Co., California, and adjacent Lake Co., Oregon. Late May to early July.

*Type*.—Along dark, rocky lava slopes north of the North Canal, about 2 miles east of Drews Reservoir, 0.8 mile east of Jess Roberts ranch house, across Drews Creek north of U.S. Forest Service Road 4017, associated with scattered *Artemisia*, *Juniperus* and *Pinus*, T.40S., R.18E., sec. 4, at 4950 ft elev., Lake Co., Oregon, 22 June, 1971, *Reveal 2458*. Holotype, US! 35 isotypes will be distributed from US.

*Additional collections*.—CALIFORNIA: Modoc Co.: Willow Creek Valley, June, 1894, *Austin s.n.* (BM, ND-G, NY, P, UC); Along U.S. Highway 395, 3.5 miles north of the junction of 395 and California Highway 299, 1.2 miles north of the Chimney Rock turnoff, on barren, white lava outcrops, at 4600 ft elev., 22 June, 1971, *Reveal 2462* (US, duplicates to be distributed). OREGON: Lake Co.: Drews Valley, 5 Aug., 1897, *Austin 1774* (US).

This new species has been known for several years from the Austin collections, but unnamed. The plants were first characterized by me (Reveal & Munz, 1968) under the name *Eriogonum chrysoops* for California, but that species has proved to be quite a different plant in the desert ranges of southeastern Oregon where it is apparently restricted. *Eriogonum prociduum* occurs in widely scattered sites in Lake Co., Oregon, and adjacent Modoc Co., California, mainly on bare volcanic outcrops where the plants are locally common. The limited number of available collections is puzzling as the plants tend to stand out against the black or white soil they are found on.

The Prostrate Buckwheat, *Eriogonum prociduum*, is likely most closely related to *E. cusickii* M. E. Jones which it resembles in leaf shape, color of the tomentum, nature of the involucre and flower, and the color of the flowers. In addition the prostrate habit is strikingly similar as both arise from a single, woody taproot with the rest of the plant not rooting at the nodes of the caudex as it so typical of the species in this section. The Cusick Buckwheat occurs to the north of *E. prociduum* and the two occupy somewhat different ecological niches, as the former species is more restricted to open, exposed flats while the latter is on hills and slopes usually in pine

woodlands. The two differ in their inflorescences, with that of *E. prociduum* being capitate and that of *E. cusickii* open. From *E. chrysops*, *E. prociduum* differs in its glabrous stems (not floccose or glandular), shorter leaves (4-8[-10] mm vs. 10-20 mm), and longer involucre. In the field, *E. chrysops* also occurs on volcanic slopes, but generally at a slightly higher elevation.

For the California flora, the key in Reveal and Munz (1968) may be modified as follows:

Page 39, first line:

- LL. Flowering stems less than 1 dm tall, glabrous or glandular; lf.-blades 4-20(-25) mm long.
- M. Stems and invols. glabrous or invols. merely floccose above; lf.-blades 2-3(-4) mm wide. Below 6000 ft., Modoc Co. north to Lake Co., Ore. *E. prociduum*
- MM. Stems and involucre glandular.
- N. Lf.-blade 2.5-5 mm wide, with glandular hairs; invol. 3-3.5 mm long, 6-8 lobed; fls. 2-3 mm long. Sierra Nevada, 9,000-12,000 ft. Inyo and Fresno cos. north to Placer Co. *E. rosense*
- NN. Lf.-blade 5-16 mm wide, eglandular; invol. 3-4 mm long, 5-lobed; fls. (2.5-)3-4 mm long. E. Mono Co., east to Nev. *E. beatleyae*

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