

GUTIERREZIA ELEGANS SP. NOV. (ASTERACEAE: ASTEREAE),  
A SHALE BARREN ENDEMIC OF SOUTHWESTERN COLORADO

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ABSTRACT

**Gutierrezia elegans** Al Schneider & P. Lyon, sp. nov., is described from outcrops of grayish, argillaceous Mancos Shale in southwestern Colorado. The new species is known only from several populations in and around the developing Lone Mesa State Park in Dolores County, where it is represented by at least 4000 plants. The plants are low, compact subshrubs with woody caudex branches and decumbent-ascending, evenly leafy stems, short-pedunculate heads in congested corymboid clusters, and short, 3-nerved leaves.

RESUMEN

Se describe **Gutierrezia elegans** Al Schneider & P. Lyon, sp. nov., de los afloramientos arcillosos grisáceos de Mancos Shale en el suroeste de Colorado. La nueva especie se conoce sólo de algunas poblaciones en el Lone Mesa State Park y sus alrededores, en el condado de Dolores, donde está representada por al menos 4000 plantas. Las plantas son subarborescentes bajas, compactas con ramas caulinarias leñosas, y tallos con hojas decumbente-ascendentes, cabezuelas cortamente pedunculadas en racimos corimboides congestos, y hojas cortas trinerviadas.

Biological exploration of the developing Lone Mesa State Park in Dolores County, Colorado, has brought to light a previously unknown species of *Gutierrezia*.

**Gutierrezia elegans** Al Schneider & P. Lyon, sp. nov. (**Figs. 1, 2**). TYPE: UNITED STATES. COLORADO. Dolores Co.: Lone Mesa State Park, S end of the park, ca. 23 mi N of the town of Dolores, T39N, R14 W, Section 35, ca. 108° 28'W, 37° 41'N, exposure of Mancos shale, ca. 2% slope, 7575 ft, with dominants *Helianthella microcephala*, *Tetraneuris acaulis*, and *Eriogonum lonchophyllum*, abundant *Gutierrezia elegans*, *Petradoria pumila*, *Astragalus missouriensis* var. *amphibolus*, and *Heterotheca villosa*, scattered *Calochortus nuttallii*, *Delphinium nuttallianum*, *Othocarpus purpureoalbus*, *Physaria pulvinata*, *Packera oodes*, *Solidago simplex*, and others, *Pinus ponderosa* with pinyon-juniper on nearby surrounding slopes, 23 Aug 2008, A. Schneider G-1, with members of the Colorado Native Plant Society (HOLOTYPE: COLO; ISOTYPES: ASC, ASU, BRY, KHD, MO, NMC, NY, RM, TEX, US, UNM, UVSC).

Differt a *Gutierrezia pomariensis* (S.L. Welsh) S.L. Welsh caulibus brevioribus decumbentibus vel ascendentibus, capitulis minoribus in inflorescentiis congestis dispositis, et foliis trinerviis.

**Subshrubs** from a woody taproot with short-branched woody caudex branches, plants growing vertically 7.5–12.5(–15) cm high. **Stems** decumbent-ascending, 8–15 cm long, moderately hirtellous. **Leaves** alternate, sessile, basal absent at flowering, cauline evenly distributed, blades linear-lanceolate to linear-oblong, mostly 10–16 mm × 2–3 mm, primarily 1-nerved but with a distinct pair of narrower lateral nerves, slightly or not all reduced in size distally, margins entire, surfaces and margins hirtellous. **Heads** borne mostly in congested corymboid clusters of 2–8, sometimes solitary, peduncles 1–6 mm or rarely to 20 mm from proximal branches of the capitulescence. **Involucre**s turbinate-campanulate, 3–4 mm long, 2.5–3 mm diam. **Phyllaries** lanceolate-oblong, proximal 4/5 white-indurate, apices triangular to ovate with acute to obtuse tips, green, thickened, gland-dotted. **Ray florets** 6–8, fertile, corollas yellow, 3–5 mm long, laminae coiling at maturity. **Disc florets** 6–9, yellow, fertile. **Cypselae** cylindric, 1–2 mm long, faces without oil cavities, sparsely short-strigose; pappus of 1–2 series of persistent, oblong-lanceolate scales 1–1.5 mm long. **Chromosome number** unknown.



FIG. 1. Growth habit and habitat of *Gutierrezia elegans* (photo by Al Schneider).

Flowering late July through early September. Bare Mancos shale outcrops and thin soil over shale, *Gutierrezia elegans* scattered to abundant in the barrens and also occurring with *Artemisia nova* and other species in sites with deeper soil over the shale, *Pinus ponderosa* and pinyon-juniper on surrounding slopes; 7575–7600 ft (ca. 2500–2550 m). Apparently endemic to southwestern Colorado.

Additional collections examined: Colorado. Dolores Co.: Lone Mesa State Park, type locality, 4 Aug 2008, Schneider and Lyon s.n. (TEX); Lone Mesa State Park, S end of the park, ca. 23 mi N of the town of Dolores, T39N, R14 W, Section 23, ca. 108° 28'W, 37° 42'N, sandy soil over shale, 80% vegetation cover, dominant *Artemisia nova* and *Astragalus haydenianus* with *Artemisia ludoviciana*, *Eriogonum alatum*, *Eriogonum racemosum*, *Penstemon caespitosus*, *Astragalus missouriensis* var. *amphibolus*, *Heterotheca villosa*, *Pascopyrum smithii*, and *Chrysothamnus depressus*, slopes 8%, SSE-facing, *Pinus ponderosa* on surrounding slopes, 7600 ft, 23 Aug 2008, Schneider G-2, with members of the Colorado Native Plant Society (COLO, TEX).

**Common name.**—Lone Mesa Snakeweed.

**Etymology.**—We have chosen the specific epithet “elegans” because it summarizes so many of the most obvious visual characteristics of this new species. *Gutierrezia elegans* is delicate with masses of brilliant yellow flowers topping gracefully arching stems that form into a low, domed symmetry. In short, the plant is elegant.

*Gutierrezia elegans* is highly distinctive among all its congeners (Lane 1985), especially in its low, subshrubby habit with decumbent-ascending, evenly leafy stems, short-pedunculate heads in congested corymboid clusters, and short, 3-nerved leaves. It presumably may be most closely related to the group of species with a subshrubby habit, deciduous basal leaves, and heads mostly pedunculate and in relatively open arrays (vs. the subshrubby *G. sarothrae* (Pursh) Britt. & Rusby and *G. microcephala* (DC.) A. Gray, which have heads mostly sessile or subsessile, in glomerules, often in broad, dense, flat-topped arrays). Additional color pho-





Fig. 2. Cluster of heads, *Gutierrezia elegans* (photo by Al Schneider).

tos of the new species and its habitat are posted on Southwest Colorado Wildflowers, Ferns, & Trees (Schneider 2008). The following key, which identifies *G. elegans* in the context of similar species, is adapted from the FNANM treatment of *Gutierrezia* (Nesom 2006).

- 1. Perennial herbs; basal leaves persistent; ray corollas 5–8(–10) mm; disc florets 15–23; Utah \_\_\_\_\_ ***Gutierrezia petradoria*** (Welsh & Goodrich) S.L. Welsh
- 1. Subshrubs; basal leaves not persistent; ray corollas 2–7 mm; disc florets 5–15(–17); Arizona, Colorado, Utah, California.
  - 2. Phyllary apices thickened; cypselae strigose; Colorado and Utah.
    - 3. Stems 8–15 cm long, decumbent-ascending; heads mostly in congested corymboid clusters of 2–8, sometimes solitary, peduncles 1–6 mm or rarely to 20 mm from proximal branches of the inflorescence; leaves mostly 10–16 mm long, 3-nerved; involucre 3–4 mm long; Colorado \_\_\_\_\_ ***Gutierrezia elegans*** Al Schneider & P. Lyon
    - 3. Stems mostly 20–50 cm long, erect to ascending-erect; heads in open corymbs, peduncles mostly 10–40 mm long; leaves mostly 20–40(–60) mm long, 1-nerved; involucre 5–8 mm long; Utah. \_\_\_\_\_ ***Gutierrezia pomariensis*** (S.L. Welsh) S.L. Welsh
  - 2. Phyllary apices not thickened; cypselae densely strigose-sericeous; Arizona and California.
    - 4. Stems glabrous; involucre campanulate (as long as wide); cypselae 1–1.2 mm; Arizona \_\_\_\_\_ ***Gutierrezia serotina*** Greene
    - 4. Stems glabrous or minutely hispidulous; involucre turbinate to cylindric-turbinate (longer than wide); cypselae 2–2.8 mm; California \_\_\_\_\_ ***Gutierrezia californica*** (DC.) Torrey & A. Gray

Lone Mesa State Park is situated in the Dolores River drainage, immediately north of the San Juan River drainage and thus was not included in the Four Corners Flora (Heil et al. 2008), although large areas of the

Mancos Shale also occur in the San Juan drainage. *Gutierrezia sarothrae* and *G. microcephala* are the only species of the genus treated in the Four Corners flora (Nesom 2008), and they also are the only two of the genus previously known from Colorado.

*Gutierrezia elegans* is known from five separate populations in and around Lone Mesa State Park, all within a radius of about three miles. It occurs on San Juan National Forest and Bureau of Land Management land adjacent to the state park. Among its known populations, we estimate that *G. elegans* is represented by a total of over 4000 plants. Plants of the new species at the type locality occur as well-separated individuals on very sparsely vegetated flats (slopes ca. 2%) and sides of shallow washes. They grow along cracks in the bare shale and in thin gravelly soil over the shale. Where the shale is not directly exposed, the new species is easily seen to grow in the “crack-lines” of the underlying rock. *Gutierrezia elegans* is among the more abundant species in this habitat. *Pinus ponderosa* occurs on nearby slopes.

At other localities, the soil is deeper and more sandy and *Gutierrezia elegans* occurs less commonly among other species in a more densely vegetated community dominated by *Artemisia nova*. *Gutierrezia elegans* is most abundant at the interface of the barren shale and surrounding sagebrush dominated areas, forming a rim around the barren patches. Also abundant here are *Artemisia ludoviciana*, *Heterotheca villosa*, *Achillea lanulosa*, *Eriogonum racemosum*, *Astragalus haydenianus* and various grasses, with *Pinus ponderosa* on surrounding slopes. This site is at 7800 feet elevation and has slopes of 6–8%.

The rare and recently discovered *Physaria pulvinata* (O’Kane & Reveal 2006) grows with *Gutierrezia elegans* on the shale outcrops within Lone Mesa State Park. The two species are similar in their many-branched caudex and caespitose, mound-forming habit. *Physaria pulvinata* also is known from similar shale barrens in the Miramonte State Wildlife Area of San Miguel Co., about 23 miles north of the Lone Mesa State Park. In addition to these two species, other endemics have been described from Mancos Shale habitats closely clustered in the Four Corners area: *Abronia bolackii* Atwood, Welsh, & Heil, *Proatriplex pleiantha* (W. Weber) Stutz & Chu, *Sclerocactus mesae-verdae* (Boissevain & Davidson) L.D. Benson, and *Xanthisma paradoxum* (Turner & Hartman) Nesom & Turner (New Mexico Rare Plant Technical Council 1999; Nesom & Turner 2007).

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