
Euphorbia rayturneri (Euphorbiaceae), a New Species from Southwestern New Mexico, United States

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ABSTRACT. *Euphorbia rayturneri* V. W. Steinm. & Jercinovic (Euphorbiaceae), a new species endemic to southwestern New Mexico, United States, is described and illustrated. This summer annual occurs in desert grassland and is known from three collections made in Grant, Hidalgo, and Luna counties at elevations of 1400–1700 m. Given its limited distribution and small population size, we propose that the species is best considered as CR, or Critically Endangered, according to IUCN Red List criteria. The new species belongs to *Euphorbia* L. sect. *Anisophyllum* Roep. on the basis of possessing interpetiolar stipules and opposite leaves that are asymmetrical at the base. It is characterized by being a pubescent, prostrate herb with serrulate leaves that often have a red blotch in the center and an ovary with undivided styles.

Key words: *Euphorbia*, Euphorbiaceae, IUCN Red List, New Mexico, United States.

Despite the flora of the southwest United States having been relatively well studied, our basic knowledge of the plants in the region is still far from complete, and new species continue to be encountered and described at a constant rate (Ertter, 2000). New Mexico ranks fourth among the 48 continental United States in terms of plant diversity (Legler, 2010). In the past decade at least 10 new species of vascular plants have been described from the state, and 350 new records have been reported (Kelly Allred, pers. comm., 2010). With at least 43 native species, the genus *Euphorbia* L. (Euphorbiaceae) is one of the most speciose genera in New Mexico (Allred, 2012). It is therefore not surprising that recent field exploration and the study of existing collections have resulted in the discovery of a distinctive annual species of *Euphorbia* that does not correspond to any known member of the genus. This new species is described here, and information is provided about its habitat, distribution, conservation status, and taxonomic affinities.

Euphorbia rayturneri V. W. Steinm. & Jercinovic, sp. nov. TYPE: U.S.A. New Mexico: Grant Co., Pitchfork Ranch, 32°25.072'N, 108°21.169'W, 1605 m, 23 Sep. 2008, *E. Jercinovic* 827 (holotype, NMC; isotypes, IEB, KSC, MICH, MO, UNM). Figures 1, 2.

Haec species inter congeneros *Euphorbiae* L. sect. *Anisophylli* Roep. quoad plantam prostratam annuam etiam folia serrulata saepe ad medium rubromaculata *Euphorbiae maculatae* L. similis, sed ab ea stylo indiviso atque seminibus leviter majoribus distinguitur.

Herb annual, prostrate, mat-forming with various primary stems extending radially from a slender taproot. Stems to 8 cm, terete, strigulose with white, recurved hairs 0.1–0.2 mm, pubescence distributed uniformly around the circumference of the stem; internodes 0.6–2.2 cm. Stipules interpetiolar, separate, filiform, 0.6–0.9 mm, pilose or strigulose; leaves opposite; blades ovate to elliptic, often slightly falcate, 0.5–1.1 × 0.2–0.5 cm, apex acute, margin sharply serrulate, base asymmetrical, one side cordate, the other round to attenuate, upper surface glabrescent with scattered hairs, often with a red spot toward the center, lower surface strigulose, only the midvein evident; petiole 0.5–0.9 mm. Cyathia solitary; peduncles 0.5–1.6 mm. Involucre obconical, 0.9–1.2 × 0.8–1.2 mm, outer surface strigulose, inner surface sparsely pilose, lobes subulate, 0.2–0.4 mm, pilose; glands 4, circular to transversely oblong, 0.2 × 0.2–0.3 mm, green, yellow, or light pink, convex; appendages absent or if present reduced to a narrow margin flanking the outer portion of the gland, less than 0.1 × 0.2–0.3 mm, entire, white to pink. Staminate flowers 5 to 8. Gynophore glabrous, exserted from the involucre 1.4–1.8 mm; ovary 3-lobed, strigulose to canescent; styles undivided, 0.3–0.4 mm, tapering to the stigmatic tips, pink to red, glabrous. Capsules oblate, 3-lobed, 1.7–2 × 2.2–2.7 mm, strigulose; columella 1.5–1.9 mm. Seeds not carunculate, broadly ovoid, nearly triangular in cross

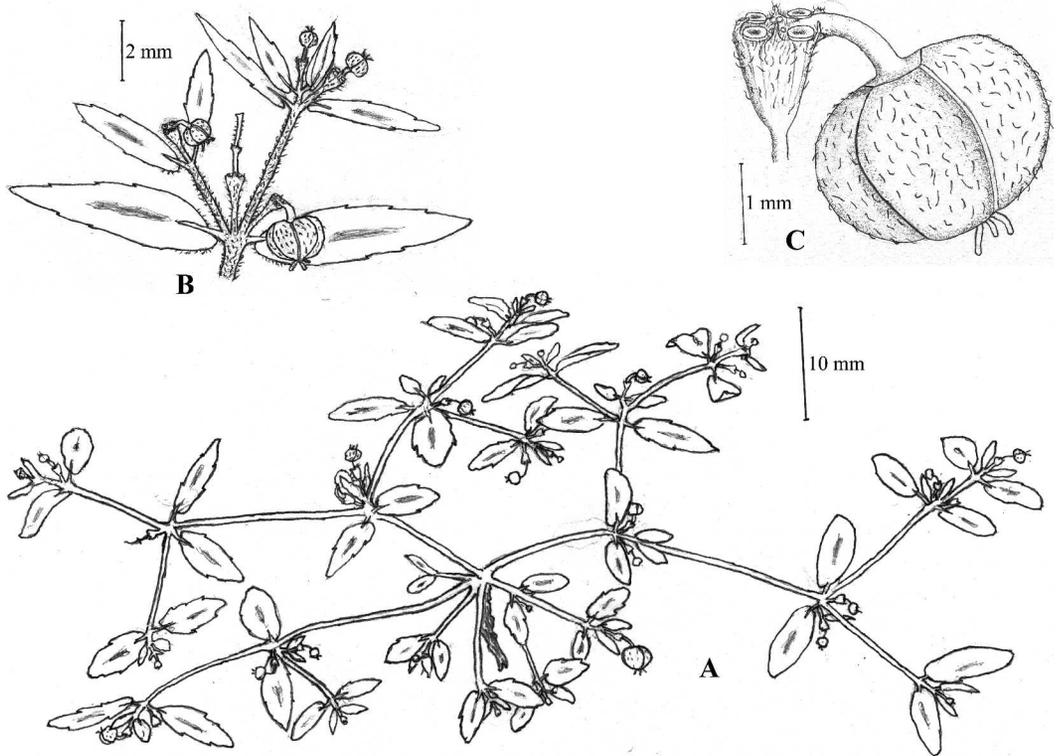


Figure 1. *Euphorbia rayturneri* V. W. Steinm. & Jercinovic. —A. Fertile habit. —B. Flowering branch. —C. Cyathium. A–C taken from the holotype, *E. Jercinovic* 827 (NMC).

section, $1.2\text{--}1.4 \times 1.0\text{--}1.1$ mm, tan to light gray when immature, becoming brown to blackish brown, apex a low, blunt point, base truncate, dorsal keel prominent, with 2 well-defined transverse ridges that do not pass through the dorsal keel.

Distribution and habitat. *Euphorbia rayturneri* is known only from southwestern New Mexico, United States, where it occurs in Grant, Hidalgo, and Luna

counties at elevations of 1400–1700 m. Given the close proximity of the Gray Ranch to the Mexican border (less than 10 km at its southernmost limit), *E. rayturneri* may also occur in the adjacent state of Chihuahua. The type locality, the Pitchfork Ranch, is located about 17 miles north of Interstate 10 along Separ Road. The ranch property consists of roughly 12,000 acres just west of the Continental Divide. It includes several miles of the Burro Cienaga, which

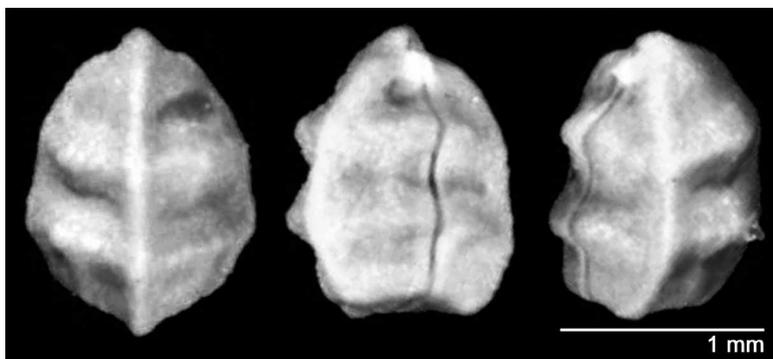


Figure 2. *Euphorbia rayturneri* V. W. Steinm. & Jercinovic. Seeds. Taken from the isotype, *E. Jercinovic* 827 (MICH).

drains the southeastern flank of the Big Burro Mountains. The area shows influences of several floristic regions: the Chihuahuan Desert to the southeast, the Sonoran Desert to the southwest, and the vast Gila Wilderness forest to the north. It occurs in desert grassland habitats, and among the associated taxa are *Gutierrezia* Lag., *Isocoma tenuisecta* Greene, and *Xanthisma gracile* (Nutt.) D. R. Morgan & R. L. Hartm. (Asteraceae); *Cylindropuntia spinosior* (Engelm.) F. M. Knuth (Cactaceae); *Juniperus coahuilensis* (Martínez) Gausson var. *arizonica* R. P. Adams (Cupressaceae); *Euphorbia davidii* Subils, *E. indivisa* (Engelm.) Tidestr., and *E. serpyllifolia* Pers. (Euphorbiaceae); *Prosopis glandulosa* Torr. (Fabaceae); *Mollugo verticillata* L. (Molluginaceae); *Aristida ternipes* Cav., *Bouteloua barbata* Lag., and *Setaria leucopila* (Scribn. & Merr.) K. Schum. (Poaceae); and *Fallugia* Endl. (Rosaceae).

IUCN Red List category. *Euphorbia rayturneri* is known only from three localities in New Mexico. Turner collected three plants in September 1996, and despite attempts in the late 1990s to relocate the species, he was unable to find additional individuals in its original area. Spellenberg found the species in 1981, but numerous visits to his collection site in the summer and fall of 2009 also failed to turn up any additional specimens. At this time, the only known location with a viable population is the type locality on the Pitchfork Ranch. However, the population is highly localized, and an informal survey of approximately 30 minutes' duration in September 2009 revealed only 10 to 12 plants contained in an area of ca. 2500 m². Although a careful assessment would be beneficial, we believe that, following IUCN Red List criteria (IUCN, 2001), the species is best considered as CR, or Critically Endangered, owing to the small extent of occurrence, limited area of occupancy, reduced size of its known populations, severely fragmented distribution with only three known localities, and the possibility that it has been extirpated at two of these localities.

Etymology. It is a pleasure to name *Euphorbia rayturneri* after the botanist Ray M. Turner (1927–), author of numerous publications on the plants and vegetation of the southwest United States and northwest Mexico. Among his most noteworthy contributions are *The Changing Mile* (Hastings & Turner, 1965) and *Sonoran Desert Plants: An Ecological Atlas* (Turner et al., 1995). He collected the new taxon in 1996, and although not the first to encounter the species, he was the first to recognize its distinctiveness and bring it to our attention.

Phenology. *Euphorbia rayturneri* is an annual that responds to summer monsoonal rains. It has been collected with flowers and fruits in August and September but likely is reproductive until at least October.

Taxonomic discussion. Based on the possession of interpetiolar stipules and opposite leaves that are asymmetrical at the base, *Euphorbia rayturneri* belongs to *Euphorbia* sect. *Anisophyllum* Roep., as defined by Yang et al. (2012). During the past 70 years, this section has been recognized as either the segregate genus *Chamaesyce* Gray (e.g., Webster, 1967; Mayfield, 1993; Jercinovic, 2007) or *Euphorbia* subg. *Chamaesyce* Raf. (e.g., Wheeler, 1941; Johnston, 1975; Steinmann & Felger, 1997). Bruyns et al. (2006) greatly expanded the concept of *Euphorbia* subg. *Chamaesyce* to include a large assemblage of species that had previously been placed in various subgenera of *Euphorbia*. Following this modification, *Euphorbia* sect. *Anisophyllum* is the oldest legitimate name at the rank of section that corresponds to *Chamaesyce* or *Euphorbia* subg. *Chamaesyce* as previously recognized. The New Mexican species of *Euphorbia* sect. *Anisophyllum* were recently treated by Jercinovic (2007), and the discovery of this new species brings to 28 the number of species now known for *Euphorbia* sect. *Anisophyllum* from New Mexico.

The first gathering of *Euphorbia rayturneri* was determined to be *E. supina* Raf. (a synonym of *E. maculata* L.), and the two taxa are likely closely related and are similar in being pubescent, prostrate annuals with serrulate leaves that often have a red blotch in the center. However, *E. rayturneri* is distinct from *E. maculata* by the possession of undivided styles and slightly larger seeds (1.2–1.4 × 1–1.2 mm vs. 1–1.2 × 0.6–0.9 mm). Entire styles are an otherwise uncommon feature within *Euphorbia* sect. *Anisophyllum*.

Paratypes. U.S.A. **New Mexico:** Luna Co., rocky arroyo crossing NM 61, 7.2 mi. E of NM 180, 24 Aug. 1981, R. Spellenberg 6217 (NMC); Hidalgo Co., S of Animas, Gray Ranch, Sep. 1996, R. M. Turner 96-19 (ARIZ); same as the type locality, 22 Sep. 2009, E. Jercinovic 925 (MO, NMC).

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