

**BATHYSANTHUS SINFOROSA (ASTERACEAE, ASTEREAE),
A NEW GENUS AND SPECIES
FROM SOUTHERN CHIHUAHUA**

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ABSTRACT

Bathysanthus sinforosa Nesom, **gen. et sp. nov.** (tribe Astereae), is known only from the type collection from along the Rio Verde at the bottom of Barranca de Sinforosa, part of the Barrancas del Cobre system in southern Chihuahua. It is a low, lignescent herb with eglandular, epunctate stems and leaves, linear-lanceolate leaves with entire margins, paniculate-corymboid clusters of small heads each with 8–12 hermaphroditic flowers and no ray flowers, oblong-obovate, 2(-4)-nerved achenes, and a 1-seriate pappus without a short outer series. Its evolutionary relationships are not clear but the most indicative similarities are to *Solidago* (involucre, disc corolla morphology, pappus). Habit and details of the new species are illustrated by photos.

Study at CAS-DS has brought to light a collection of tribe Astereae from southern Chihuahua that does match any known species and does not fit within any known genus from North America (Nesom 2000; Strother & Brouillet 2006; Nesom, in prep.) or Central America (Pruski 2018). Nor is there a match from South America, where all genera of the tribe are accounted for (Nesom & Robinson 2007; Brouillet et al. 2009) except for one (Robinson & Funk 2014). It is recognized here as a previously undescribed species and genus.

Bathysanthus sinforosa Nesom, **gen. et sp. nov.** **TYPE: MEXICO. Chihuahua.** [Mpio. Morelos]: Sierra Madre Occidental, Barranca de Sinforosa, S side of Rio Verde at vado [ford] approx. 1 km downstream from base of burro trail from Rancho San Rafael and 6-7 km upstream (E) from confluence with Rio de Los Loera, 26° 38' N, 107° 11' W, 900 m, occasional herb to 1 m tall, in upper sandy areas of floodwash zone, 7 Jan 1996, *G.F. Hrusa 12595* with W. Dougherty (holotype: CAS, Fig. 1). On Google Earth, this locality is at ca. 26° 45' N, 107° 38' W, at an elevation of ca. 1450 feet.

Distinct as a genus in its combination of eglandular, epunctate stems and leaves, sparsely puberulent with minute (<0.1 mm), white hairs usually sharply bent at the apex, linear-lanceolate leaves with entire margins, heads each with 8–12 fertile hermaphroditic flowers, on filiform ultimate pedicels in corymboid clusters, involucre tiny (1.5–2 mm wide, 2.5–3.5 mm high), ray flowers absent, achenes oblong-obovate, flattened, 2–4-nerved, short-strigose and eglandular, and pappus 1-seriate without a short outer series.

Herbs (as characterized by the collector; basal parts not seen, presumably perennial). **Stems** erect, to 1 m tall, lignescent, minutely puberulent with tiny (lens) white hairs <0.1 mm long and bent near the apex. **Leaves** 1–5 cm long, 1.5–5 mm wide, blades narrowly oblanceolate to narrowly elliptic, basally attenuate to a petiolar region 2–7 mm long, margins entire, flat, apex acute, venation brochidodromous, sometimes with 1–2 pairs of slightly more prominent secondary veins arching from the midvein, surfaces and margins eglandular, not punctate or resinous, minutely and sparsely puberulent with tiny (lens) white hairs <0.1 mm long and bent near the apex, hairs slightly longer along the abaxial midvein. **Heads** in loose, terminal, paniculate-corymboid clusters, ultimate pedicels filiform, 2–7 mm long, each pedicel usually with 1–2 minute bracts, each head with 8–12 hermaphroditic flowers; involucre 1.5–2 mm wide, 2.5–3.5 mm long; phyllaries in 2–3 graduate series, oblong to oblong-lanceolate, glabrous, apex rounded, margins hyaline, sometimes slightly

fimbriate, midzone green, gradually broadening distally but not to a distinct apical patch, midvein orange. **Corollas** glabrous, ca. 2 mm long, narrowly infundibular, tube 1 mm, limb 1 mm, cream? or white?, maturing purplish, abruptly broadened above the tube, lobe sinuses cut ca. 2/3 the length of the limb and of equal depth, lobes narrowly triangular, reflexing-coiling; style branches linear, ca. 0.5 mm long, collecting appendages ca. 1/2 the branch length, papillate, slightly widening distally but not clavate. **Achenes** ca. 1 mm long (immature), oblong-obovate, apparently flattened, 2(-4)-nerved, short-strigose, eglandular; pappus of ca. 20–25 fragile, terete bristles in 1 series about 4/5 the length of the floret, without a short outer series, bristle apex not dilated. Figures 1-6. Known only from the type collection.

The Sinforosa collection has rayless heads and the superficial aspect of a staminate plant of *Baccharis* or *Archibaccharis*, but the flowers have fertile ovaries (no dioecy), the achenes are flattened, and the pappus is of few and fragile bristles. It has the general habit of *Euthamia*, but *Euthamia* leaves are 3-nerved, punctate, and glabrous, the heads are radiate, phyllaries with a prominent green apical patch, achenes subterete, and the corolla lobes shorter. It is superficially similar to *Chrysothamnus* in its corymboid capitulescence, but *Chrysothamnus* leaves are punctate, involucre larger with indurate phyllaries, corolla lobe sinuses shallower, and pappus bristles in 2–3 series.

The flattened, 2-nerved achenes and 1-seriate pappus of the Sinforosa plant are similar to those of subtribe Conyzinae (Nesom 2006), but bracteate ultimate pedicels, phyllary morphology, and deeply cut corollas eliminate it from consideration there. It would be out of place in *Erigeron* sensu lato.

Within American Astereae, the combination in the Sinforosa plant of involucre morphology, corollas with deeply cut lobes, and 1-seriate pappus seems most suggestive of *Solidago*, but species there are characterized by leaf venation of small, angular-orthogonal areoles, radiate heads, non-purpling disc corollas, and subterete achenes. Even if the heads were radiate, it would not find a convincing fit within *Solidago* (Nesom 1993; Semple & Cook 2006; Semple 2017, 2018). The closely related, monotypic *Brintonia* E. Greene, of the southeastern USA, is eradiate, but morphological and molecular evidence place it outside of *Solidago* sensu stricto (Semple 2006).

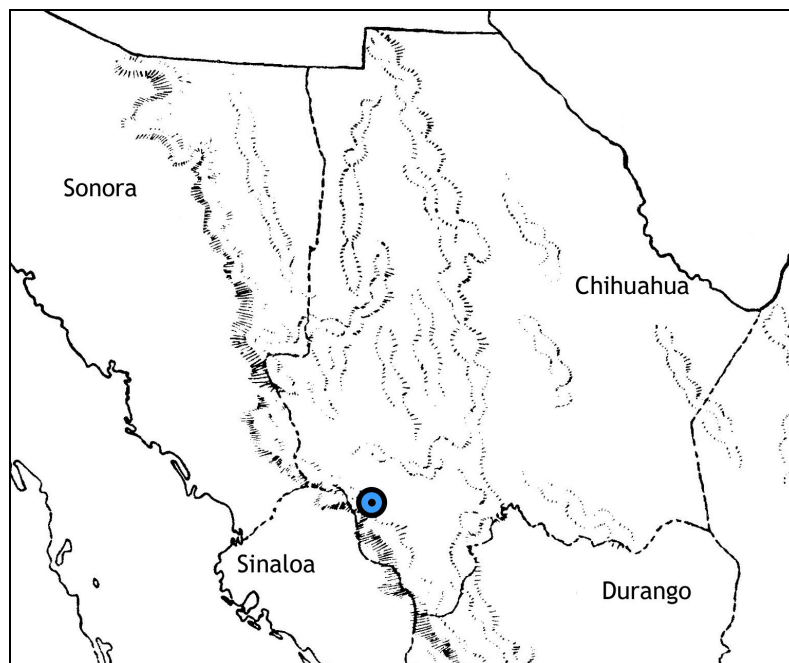


Figure 1. Distribution of *Bathysanthus sinforosa*.

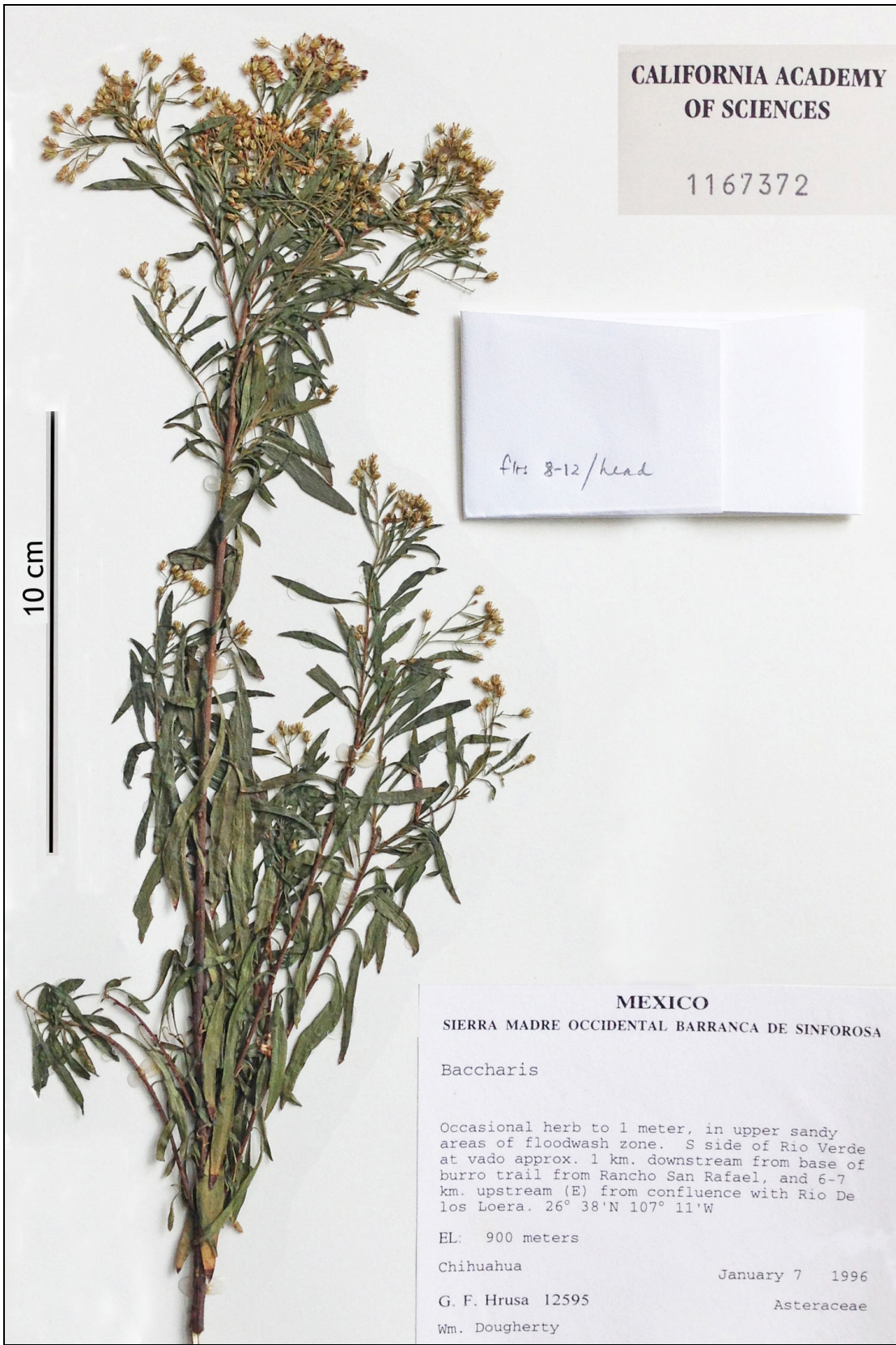


Figure 1. *Bathysanthus sinforosa*, holotype. Labels rearranged but to the same scale as the specimen as on the herbarium sheet.



Figure 2. *Bathysanthus sinforosa*, leaves slightly thickened, neither punctate nor resinous. The distinctive arching-downturned petioles perhaps reflect a partial wilt before pressing, but this feature shows most strongly only on the proximal leaves.

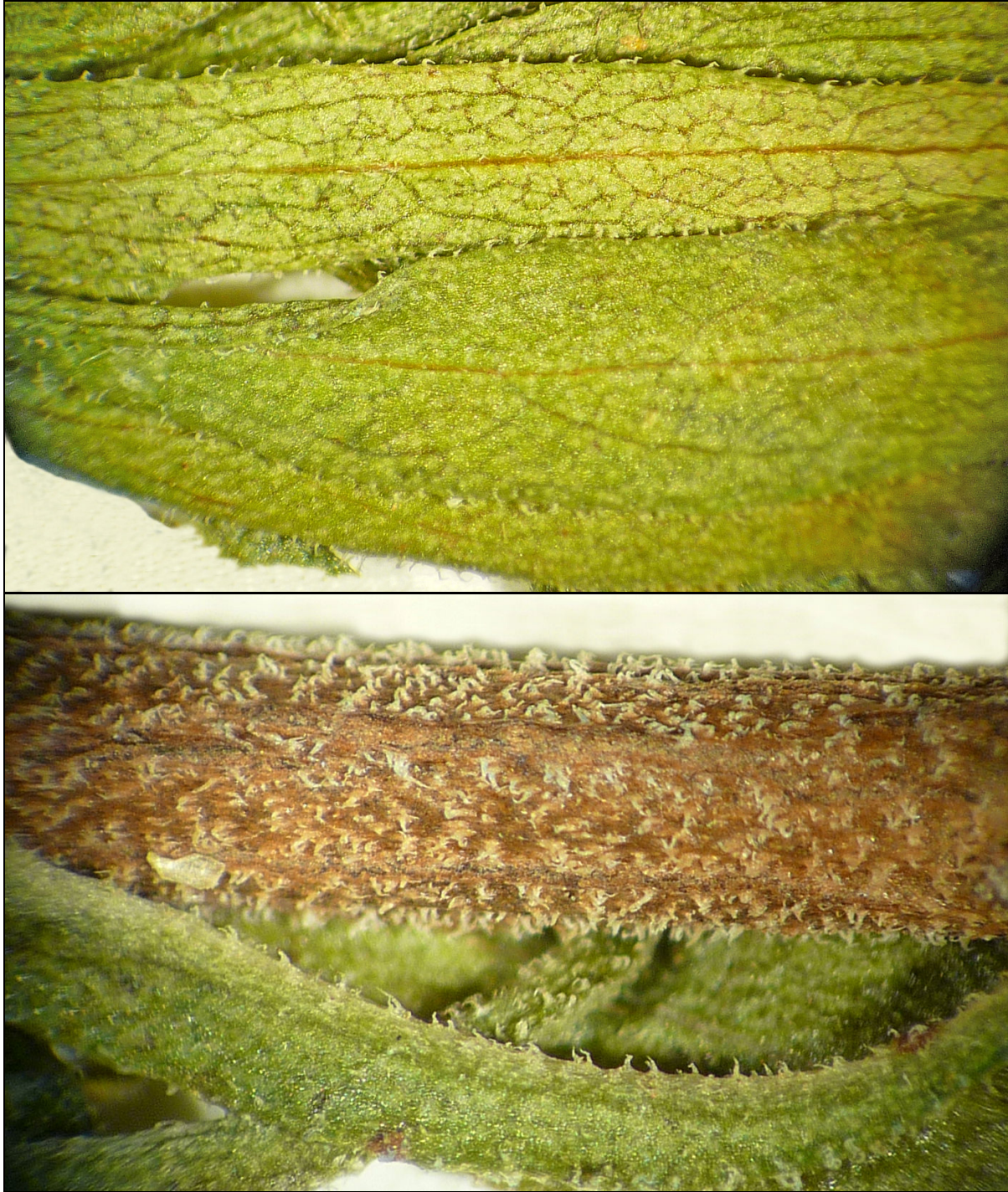


Figure 3. *Bathysanthus sinforosa*, detail of stems and leaves. Top: abaxial and adaxial surfaces with marginal cilia; brochidodromous venation evident, without typical *Solidago* areolation. Bottom: Stem vestiture.



Figure 4. *Bathysanthus sinforosa*, close views of capitulescence. The portion pointed to by the arrow also is shown in Fig. 5. Involucre is 2.5–3.5 mm long.



Figure 5. *Bathysanthus sinforosa*, close view of portion of capitulescence (see Fig. 4).



Figure 6. *Bathysanthus sinforosa*. Top: florets, maturing achenes. Bottom: involucre and florets. Florets become purplish with maturity, the fresh color not certain. Each head has 8–12 flowers; some buds do not open or else they may open progressively. Involucre is 2.5–3.5 mm long.

Barranca de Sinforosa is one of six distinct canyons along the western side of the Sierra Tarahumara that comprise the Barrancas del Cobre (Copper Canyon) system. At the site where the new species was collected, high points on the north and sides of Rio Verde are between 2900 and 4400 feet elevation. Videos and many photos of Barranca de Sinforosa can be found online.

The genus name is derived from Greek *bathys* (deep) and *anthus* (flower), alluding to its canyon bottom habitat. Saint Symphorosa (Italian and Spanish "Sinforosa") is a saint of the Catholic Church — the name used here in apposition in reference to the collection locality.

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