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NEW SPECIES OF *Gymnanthes* (Euphorbiaceae) FROM BOLIVIA AND COLOMBIA, AND TAXONOMIC NOTES ON THE GENUS IN VENEZUELA

HANS-JOACHIM ESSER

**Abstract:** New, locally endemic species of *Gymnanthes* are described from Bolivia (*G. microphylla*) and Colombia (*G. hirsuta*). Both species are characterized, among other features, by a specific indumentum different from each other and from related species. In addition, two species from Venezuela are discussed: *G. apiculata* is proposed as a synonym of *Actinostemon caribaeus*, and the name *G. hypoleuca* is lectotypified.

**Key words:** *Actinostemon*, Bolivia, Colombia, Euphorbiaceae, Guyana, Gymnanthes, lectotype, new species, Sebastiania, synonymy, taxonomy, typification, Venezuela

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**Introduction**

*Gymnanthes* Sw. (Euphorbiaceae) is a pantropical genus that is most common in dry tropical regions of South America, but also has a few species in wet tropical areas in the Neotropics and Palaeotropics, with many of them local and rare. Originally restricted to a few Neotropical species (Pax & Hoffmann 1912), the genus has recently been expanded to include species formerly classified in *Sebastiania* Spreng. (Esser 2001; Esser & al. 2010), and currently includes c. 45 known species (Esser 2001; Webster 2014).

In the course of ongoing taxonomic studies, two new species were found and are described here. In addition, a lectotype and new synonyms are contributed for species from Venezuela.

**New species**

*Gymnanthes hirsuta* Esser, sp. nov. – Fig. 1, 2. Holotype: Colombia, Valle, Mun. Roldanillo, Hacienda Churimal, km 68 carretera Panorama (desde glorieta de Riofrío), 04°22'09"N, 76°09'34"W, 975 m, fl., fr., 28 Mar 2009, P. Silverstone-Sopkin, M. E. Cardona & H. Sanint 10941 (CUVC 045050 image!; isotypes: COL, CUVC!, M 0243798!).

**Diagnosis** — This new species is unique in the genus because of the densely hirsute indumentum (0.5–0.6 mm long) of the branches, abaxial surface of the leaves, female flowers and fruits.

**Description** — Shrubs spinescent, 2–4 m tall, without
Fig. 1. Isotype of *Gymnanthes hirsuta* – Silverstone-Sopkin & al. 10941 (M 0243798).
visible latex, monoecious; lateral branches stiff, terminating in a spine-like, leafless tip, with erect, simple, pale hairs 0.5–0.6 mm long. Leaves alternate; stipules soon caducous and rarely seen, 2–3 × 1.2–1.5 mm, membranous, with scattered hairs, margin entire; petiole 3–7 mm long, hirsute, eglandular; leaf blade discolorous, distinctly glaucous-papillate abaxially, elliptic, 2–6.5 × 0.8–2.5 cm, 2.4–2.6 × as long as wide, subcoriaceous to coriaceous, base acute, margin subentire with indistinct teeth, apex rounded-subobtuse; densely to sparsely hirsute abaxially with hairs similar to branches, slightly longer on midrib, with scattered hairs adaxially, dense on midrib, a pair of marginal glands on margin near base, c. 0.35 mm in diam., 0–2 additional glands on each half, otherwise eglandular; lateral veins in 10–12 pairs, not triplinerved, veinlets reticulate, indistinct. Inflorescences axillary, unbranched, reddish in bud, later greenish. Pistillate flowers usually solitary; pedicel c. 4 mm long, hirsute; sepals 3, free, c. 0.25 × 0.25 mm; ovary with 3 carpels, smooth, hirsute; styles free, undivided, c. 2 × 0.25 mm. Staminate inflorescences yellowish, 4–7 × c. 1.5 cm; axis hirsute; floral bracts irregularly elliptic, c. 0.75 mm long, with scattered hairs, with a pair of flat, ellipsoid glands c. 0.25 mm long; cymules 3-flowered. Staminate flowers glabrous; pedicel 0.65–0.75 mm long; sepals 3, vestigial, free, 0.3–0.4 × c. 0.15 mm; stamens 3, free; filaments c. 0.2 mm long; anthers c. 0.3 mm long. Fruits usually solitary; pedicel 5–7 mm long, hirsute; capsule 6–7 × 8–9 mm, smooth, hirsute; remaining columella 3.5–4 mm long. Seeds not seen.

**Distribution and ecology** — So far known only from the type locality. In very dry tropical forest (bosque muy seco tropical, or bms-t), on rocky substrate on bare soil, at elevations of 930–975 m. The Hacienda Churimal is located in the northernmost of two very dry forest enclaves in the Cauca Valley, 6 km S of the town of Roldanillo. Flowers and fruits were found in March and October.

**Remarks** — There are a few Neotropical species of *Gymnanthes* with distinctly pubescent fruits and leaves, such as *G. vestita* Müll. Arg. from Brazil (Esser & al. 2010).
None of these, however, is as densely hirsute as this new species on most surfaces (except for the only sparsely pubescent upper leaf surface and staminate flowers), and few are as distinctly sclerophyllous and scleromorphic, with the short, leafy side branches terminating in spiny tips. This last character is shared with Gymnanthes microphylla, described below from Bolivia, but the latter is otherwise sufficiently distinct.

Gymnanthes hirsuta is presumably the second species of Gymnanthes known from Colombia. Webster & al. (1999) cited Colombia in the distribution data of G. hypoleuca Benth., which was later included by Murillo (2004), but no specimen was cited and this record might therefore be doubtful. The World Checklist of Euphorbiaceae (Govaerts & al. 2000) did not mention Colombia.

Additional specimen studied (paratype) — COLOMBIA: VALLE: Mun. Roldanillo, Hacienda Churimal, km 68 via a Roldanillo (desde Glorieta de Ríofrío en carretera Panorama), valle geográfico del río Cauca, 04°22'11"N, 76°09'33"W, 975 m, fl., fr., 11 Oct 2009, S. Duque-López 25 (CUVC 042109).

Gymnanthes microphylla Esser, sp. nov. — Fig. 3, 4. Holotype: Bolivia, Cochabamba, Mizque, c. 10 km from Mizque on ascent along road to Arani, 17°00'05"S, 65°22'W, 2700 m, fl., fr., 8 Dec 2004, J. R. I. Wood 21102 (LPB 0004001!; isotypes: K!, M 0243797!).

Diagnosis — The new species is similar to Gymnanthes schottiana Müll. Arg., but differs in particular by branch-es and pedicels that are pubescent with very short hairs less than 0.1 mm long (but not glabrous), broadly elliptic leaves and pedicels that are pubescent with very short hairs 0.05 – 0.07 mm long. Leaves alternate; stipules soon caducous and rarely seen, c. 0.4 × 0.2 mm, membranous, glabrous, margin entire; petiole 2 – 2.5 mm long, pubescent similar to branch-es, eglandular; leaf blade discolorous, distinctly glaucous abaxially, broadly elliptic, 8 – 22 × 5 – 14 mm, 1.45 – 1.7(–2) × as long as wide, (membranous to) chartaceous, base rounded(-obtuse), margin subentire with indistinct teeth, apex rounded-subobtuse; surfaces glabrous, marginal glands 0 or 1(or 2) per side, c. 0.3 mm in diam., otherwise eglandular; lateral veins in 7 pairs, not trilinerved, veinlets reticulate, clearly visible to indistinct abaxially, indistinct adaxially, occasionally reddish. Inflorescences axillary, unbranched. Pistillate flowers usually solitary, axillary, not directly connected to staminate inflorescences; pedicel (3–)5–6 mm long, often pubescent similar to branches; sepals 3, vestigial, free, c. 0.75 × 0.25 mm, with irregular margins; ovary with 3 carpels, glabrous, usually with 3 pairs of distinct appendages c. 1 mm long; styles free, undivided, c. 2 × 0.25 mm. Staminate inflorescences rare, yellowish, 4 – 10 × 2 – 4 mm, glabrous; floral bracts 0.5 – 0.7 mm long, with a pair of cylindrical glands 0.2 – 0.4 × 0.1 – 0.2 mm; cymes 1-flowered. Staminate flowers glabrous; pedicel 0.5 – 1 mm long; sepals 3, vestigial, c. 0.5 × 0.3 mm; stamens 3, free; filaments 0.25 – 0.3 mm long; anthers 0.25 – 0.3 mm long. Fruits usually solitary; pedicel 3 – 15 mm long, often pubescent similar to branches; sepals quite persistent; schizocarps with 3 carpels, 5 – 7 × 6 – 8 mm, glabrous, only slightly sulcate, rarely smooth but more often muricate with 3 pairs of small appendages to c. 1.5 mm long; remaining columella c. 2.5 mm long, triolate. Seeds uniformly brown, c. 4.5 × 3.5 mm; caruncle distinct, c. 1.5 mm in diam.

Distribution and ecology — The species is known from three departments of Bolivia (Chuquisaca, Cochabamba and Potosí). It is locally frequent on rocky slopes with sparse vegetation, on nearly bare, flat rocks, dry bushland, and dry, xerophytic forest (where often in more humid microclimate), at elevations of 1850 – 2850 m (3750 m probably recorded in error). Flowering plants were collected in December and January; fruiting ones from November to April.

Vernacular name — tikira.

Remarks — Most specimens of this species were collected in fruit. Staminate flowers are rarely collected, but these are very small and easy to miss. The type collection is the only one with abundant flowers and fruits.

The genus Gymnanthes has hitherto been known from three species in Bolivia (Esser 2014), all more widespread in dry vegetation in South America and rare in Bolivia (see also Oliveira & al. 2013). This new species is the first Bolivian endemic, locally frequent in dry vegetation types.

This new species is similar to Gymnanthes schottiana from Brazil, formerly known as Sebastiania schottiana (Müll. Arg.) Müll. Arg., with which it has sometimes been confused. Both species share comparatively small leaves, small, axillary staminate inflorescences of similar size, and solitary, axillary fruits on long pedicels; however, the leaves of G. microphylla are even smaller and are presumably the smallest in the genus. The unusual indumentum of the new species is unique, being always present at least on some parts but consisting of very short (less than 0.1 mm long) hairs that are barely visible without magnification.

Several of the specimens had previously been determined as Sebastiania haploclada Briq. However, the latter is endemic to Peru and, although a shrub with a similar spinescent habit and smaller leaves, it belongs to Sebastiania and differs by large and fleshy floral bracts c. 1 mm long, sessile staminate flowers, leaves elliptic-
Fig. 3. *Gymnanthes microphylla* – A: habit; B: staminate inflorescence; C: non-muricate fruit. – All from Wood 21187 (LPB). – Drawn by Carlos Maldonado.
Fig. 4. Isotype of Gymnanthes microphylla – Wood 21102 (M 0243797).
obovate, and in being completely glabrous on all parts. Fruits (usually very characteristic in *Sebastiania*, i.e. sessile and thin-walled) are not known.

Additional specimens studied (paratypes) — **BOLIVIA**

*Cochabamba* : prov. Mizque, Mizque, fl., 1980, S. G. Beck s.n. (LPB); prov. Mizque, Camino Chaguaroni–Mina Asientos, 1850 m, fl., fr., 23 Jan 1994, A. López & E. Sara via AL 134 (BOLV, USZ); prov. Mizque, ladera sobre rio Yunquillas, exposición oeste, 2300 m, fr., 8 Dec 1992, M. Atahuachi & al. MA 178 (LPB); Sierra de Aguas Blancas, fr., 5 Feb 1928, C. Trol 1242 (B); prov. Campero, 8 km de Peña Colorada a Pasorapa, cerca quebrada Quina Quina, 1900 m, sterile, 17 Jun 1987, S. Estenssoro 760 (BOLV); prov. Campero, alrededores de Pasorapa, 2050 m, fr., 29 Jan 1993, E. Saravia 648 (BOLV); prov. Campero, Pasorapa, bajada a Pararopa vinien te (LPB); prov. Campero, 2080 m, fr., 23 Nov 1999, A. Ante nazta 1323 (MO); prov. Campero, Pasorapa, bajada a Pararopa viniendo de Pasorapilla, 18°18.29’S, 64°38.12’W, 2257 m, fl., fr., 28 Dec 2004, J. R. I. Wood & al. 21287 (K, LPB, M); prov. Capinota, Irpa Irpa, 2510 m, fr., 4 Feb 1996, M. Merca do U. MM 1030 (BOLV); prov. Capinota, Comunidad de Apillapampa, 17°48.894’S, 66°12.278’W, 2840 m, fr., 2 Mar 1993, E. Thomas 288 (M); prov. Capinota, Atójac chaña–Capinota, c. 2500 m, sterile, Jan 1985, F. Pedrotti & al. 9 (LPB); prov. Quillacollo, Portaní, 1–2 km E of Pasorapilla, c. 0.5 km before La Cabaña on S side of river, 17°30.30’S, 67°40’W, 2500 m, fr., 7 Feb 2004, J. R. I. Wood 20176 (K, LPB, M). — **CHUQUISACA**: prov. Orópeza, km 31 on road from Sucre to Potosí (Yotala–Puente Mendez), 2500 m, fr., 10 Mar 1996, J. R. I. Wood 10821 (BOLV); prov. Orópeza, pasando por puen to Millares, subiendo hacia al E, 19°25.30’S, 65°10.27’W, 2437 m, fr., 21 Feb 2004, J. R. I. Wood & J. Gutiérrez 20223 (K, LPB, M); prov. Yamparape, en el camino Potosí–Sucre, 2620 m, fr., 28 Feb 1991, G. Navarro GN 247 (BOLV, LPB); prov. Zudañez, ladera oeste del río Pilcomayo, cerca Oronkota, 2100 m, sterile, 27 Aug 2004, R. Lopéz & al. 868 (LPB). — **Potosí**: prov. Chajnantor, 1.5 km W de Maragua, 3750 m (?), sterile, 14 Mar 2010, N. Mazí & Carlos F. (proyecto ZONISIG) 281 (LPB); prov. Saavedra, pasando Retiro, 2600 m, fl., 30 Mar 1993, G. Toro rico & al. 288 (BOLV, LPB, M); prov. Linares, valle de Oronkota, subiendo de Oronkota hacia Jatun Palmara, 2520 m, fr., 4 Apr. 1993, G. Torrico & C. Peça 316 (LPB).

There is some confusion about the types of *Gymnanthes hypoleuca* in the literature. Bentham (1854) cited two collections from different localities, but he did not mention collecting numbers. Both syntype collections are in fact numbered 2806, *Spruce* 3780 (sometimes considered a syntype, as seen in several herbaria and by Gillespie 1993) was collected only after the description of the species (Brazil, Amazonas, insula secus ostia fl. Maraúia, Dec 1854) and cannot therefore be a type for the name, but is instead the type gathering of *G. hypoleuca* var. *angustifolia* Müll. Arg. The lectotype designated here was chosen because it has the larger number of duplicates.

**Gymnanthes hypoleuca** Benth. in Hooker’s J. Bot. Kew Gard. Misc. 6: 325. 1854 = *Sebastiania hypoleuca* (Benth.) Müll. Arg. in Candolle, Prodr. 15(2): 1184. 1866 = *Ateramnus hypoleuca* (Benth.) Rothm. in Feddes Rep. Spec. Nov. Regni Veg. 53: 5. 1944. — *Lectotype (designated here):* Venezuela, Amazonas, Río Negro above Sao Joaquim, prope San Carlos, Mar 1853, *R. Spruce* 2806 (K 000253578!; isolecotypes: BM!, BR!, E!, G-DC!, GH!, GOET!, K!, LD image!, NY!, OXF!, P!, RB image!, TCD!, W!). Remaining syntype: Brazil, Amazonas, ad ripas fl. Uaupés, Jan 1853, *R. Spruce* 2806 (K!). — *Actinostemon ayangannae* Jablonski, in sched., nom. nud. — Voucher: Guyana, Mt Ayanganna, NE side, 750–900 m, fl., 17 Aug 1960, S. S. Tillett, C. L. Tillett & R. Boyan 45668 (COL!, F, GH!, K!, P!, S!, U!, W!).

Taxonomic update for two taxa from Venezuela

**Actinostemon caribaeus** Griseb. in Abh. Königl. Ges. Wiss. Göttingen 7: 168. 1857 = *Actinostemon concolor* var. *caribaeus* (Griseb.) Müll. Arg. in Candolle, Prodr. 15(2): 1193. 1866. – Holotype: Guadeloupe, fr., s. dat., E. P. Duchaising s.n. (GOET 006426 image!).
and this particular sheet bears an original Spruce label more detailed than those of the duplicates.

Gymnanthes hypoleuca occurs from the West Indies through the Guianas to Brazil, but is obviously quite rare outside of the West Indies; only a single collection each is known from French Guiana (Melinon 33, P, Guyana (Tillett & al. 45686, see above) and Venezuela (the type). Perhaps this rarity led Spruce to re-collect this species under the same number, which is very unusual for his collections.

The single Guyanan collection has been labelled with the unpublished name “Actinostemon ayangannae” by Jablonski. This specimen differs from typical Gymnanthes hypoleuca by slightly smaller and cuspidate (not acute-subacuminate) leaves, smaller floral bracts, and the sepals of the staminate flowers even more reduced and quite invisible; none of these features seems sufficient to separate the two. Pistillate flowers are quite rare in this species.

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