

Short note

New records and taxonomic novelties for the flora of Ecuador

Nelson ESPINOSA-ORTEGA

<https://orcid.org/0009-0002-7881-0305>

Herbario Reinaldo Espinosa (LOJA), Universidad Nacional de Loja, Ciudad Universitaria Guillermo Falconi, Loja 110150, Ecuador

Correspondence: neoaplab@gmail.com

Álvaro J. PÉREZ

<https://orcid.org/0000-0002-0644-9111>

Herbario QCA, Escuela de Ciencias Biológicas, Pontificia Universidad Católica del Ecuador, Apartado 17-01-2184, Quito 170150, Ecuador

Guillermo BENÍTEZ

<https://orcid.org/0000-0003-2928-7423>

Departamento de Botánica, Facultad de Farmacia, Universidad de Granada, Campus de Cartuja s/n, Granada 18071, Spain

Joel CALVO

<https://orcid.org/0000-0003-2340-7666>

Conservatoire et Jardin botaniques de Genève, ch. de l'Impératrice 1, C.P. 71, 1292 Chambésy, Switzerland

Abstract. As a result of intensive field work in remote areas of Carchi, Loja, Orellana, and Zamora-Chinchipe, as well as a revision of herbarium material and bibliography, seven new records for the flora of Ecuador are recorded: *Barnadesia corymbosa*, *Gynoxys callacallana*, *G. dilloniana*, *G. tetroici* (Compositae), *Byrsonima cardenasii* (Malpighiaceae), *Caperonia zaponzeta* (Euphorbiaceae), and *Gentianella setipes* (Gentianaceae). Moreover, the names *Bacasia corymbosa* ($\equiv$ *Barnadesia corymbosa*) and *Barnadesia venosa* are lectotypified and *Gynoxys cajamarcensis* is synonymized with *G. callacallana*. Taxonomic and morphological notes, pictures of living plants, and distribution maps are provided.

Keywords. Andes, Compositae, Euphorbiaceae, Gentianaceae, Malpighiaceae.

Resumen. Como resultado de un trabajo de campo extenso realizado en áreas remotas de Carchi, Loja, Orellana y Zamora-Chinchipe, así como de una revisión de material de herbario y bibliografía, se reportan siete nuevos registros para la flora del Ecuador: *Barnadesia corymbosa*, *Gynoxys callacallana*, *G. dilloniana*, *G. tetroici* (Compositae), *Byrsonima cardenasii* (Malpighiaceae), *Caperonia zaponzeta* (Euphorbiaceae) y *Gentianella setipes* (Gentianaceae). Además, se lectotipifican los nombres *Bacasia corymbosa* ($\equiv$ *Barnadesia corymbosa*) y *Barnadesia venosa* y *Gynoxys cajamarcensis* se sinonimiza a *G. callacallana*. Se incluyen notas taxonómicas y morfológicas, fotografías de las plantas en su hábitat y mapas de distribución.

Palabras clave. Andes, Compositae, Euphorbiaceae, Gentianaceae, Malpighiaceae.

How to cite this article: Espinosa-Ortega N., Pérez Á.J., Benítez G., Calvo J. 2025. New records and taxonomic novelties for the flora of Ecuador. *Anales del Jardín Botánico de Madrid* 82: e161. <https://doi.org/10.3989/ajbm.647>

Title in Spanish: Nuevos registros y novedades taxonómicas para la flora del Ecuador.

Associate editor: Rodrigo Cámara-Leret. Received: 22 November 2024; accepted: 15 April 2025; published online: 22 December 2025.

With about 124,993 species, 6,227 genera, and 355 families, the Americas harbor approximately 33% of the total plant species on Earth (Ulloa-Ulloa & al. 2017). However, it is well known that these numbers are far from being exact considering that the botanical knowledge of several regions of South America is still relatively scarce. The Catalogue of the Vascular Plants of Ecuador (Jørgensen & León-Yáñez 1999) included 16,087 species and 4,173 endemics. Since its publication, the additions to the Ecuadorian flora have been remarkable. New species and new records for the country have been published in almost all groups of plants. The last update registered 17,548 species and 5,480 endemics (Ulloa-Ulloa & al. 2017), which represents an increase of 8% in 18 years.

Here, we record seven species new to the flora of Ecuador. Thus far, *Barnadesia corymbosa* (Ruiz & Pav.) D.Don, *Gynoxys callacallana* Cuatrec., *G. dilloniana* Sagást. & Tellez, *G. tetroici* V.A.Funk & H.Rob. (Compositae), and *Gentianella setipes* (Gilg) J.S.Pringle (Gentianaceae) were treated as endemic to Peru, *Byrsonima cardenasii* W.R.Anderson (Malpighiaceae) endemic to Colombia, and *Caperonia zaponzeta* Mansf. (Euphorbiaceae) known from the Amazonian region of Brazil, Bolivia, and Peru. Taxonomic notes, pictures of living plants, and distribution maps are provided for each species.

This contribution is the result of an intensive fieldwork campaign in Ecuador and a comprehensive revision of herbarium specimens kept at CPUN, G, HOXA, HSP, HUT, HUTPL, LOJA, QCA and QCNE. Additionally, digital images of specimens from AAU, BM, BR, C, CM, COL, E, F, G, GH, K, MA, MO, NDG, NY, PH, RB, S, US, USM were also studied. Herbarium acronyms follow Thiers (2024). In herbarium specimens' citation, accession numbers bear a hyphen between herbarium acronym and number whereas this is lacking when it corresponds to a barcode.

Taxonomic treatment

1. *Barnadesia corymbosa* (Ruiz & Pav.) D.Don, Trans. Linn. Soc. London, Bot. 16: 278. 1833. *Bacasia corymbosa* Ruiz & Pav., Syst. Veg. Fl. Peruv. Chil. 1: 189. 1798. Type: PERU. Huánuco: from protologue “prope Muña vicum” [Pachitea, Chaglla, San Pedro de Muña, 9°50'S, 75°48'W, 2080 m], H. Ruiz & J. Pavón s.n. (lectotype, **designated here**: MA (MA816266) image!; isolectotypes: BM (BM000947854) image!, MA (MA816267, MA816268) image!, P (P00703626) image!).

Barnadesia venosa Rusby, Mem. Torrey Bot. Club 6: 69. 1896. Type: BOLIVIA. Cochabamba: Espirito Santo [“Espíritu”], Aug. 1891, M. Bang 1205 [printed as “1265” in the protologue] (first-step lectotype (designated by Chung 1965: 51); second-step lectotype, **designated here**: NY (NY00162491) image!; isolectotypes: BM (BM000947856) image!, BR (BR0000008504234) image!, C (C10007008) image!, CM (CM2707) image!, E (E00383981) image!, F (F0049750F) image!, G (G01094003)!, GH (GH00003564, GH00003565, GH00095609) image!, K (K000527865) image!, MO (MO2109006) image!, NDG (NDG63794) image!, NY (NY00162490) image!, PH (PH00004346, PH00004347) image!, S-R-636 image!, US (US01100612, US01100613, US00119609) image!). Remaining syntype: Peru, Huánuco, woods Muña, [9°50'S, 75°48'W], May 1863, R. Pearce 167 (BM (BM000947855) image!).

Distribution and habitat.—Ecuador (Zamora-Chinchipe), Peru (Cajamarca, Cusco, Huánuco, Puno, San Martín), Bolivia (Chuquisaca, Cochabamba, Santa Cruz). Fig. 1.

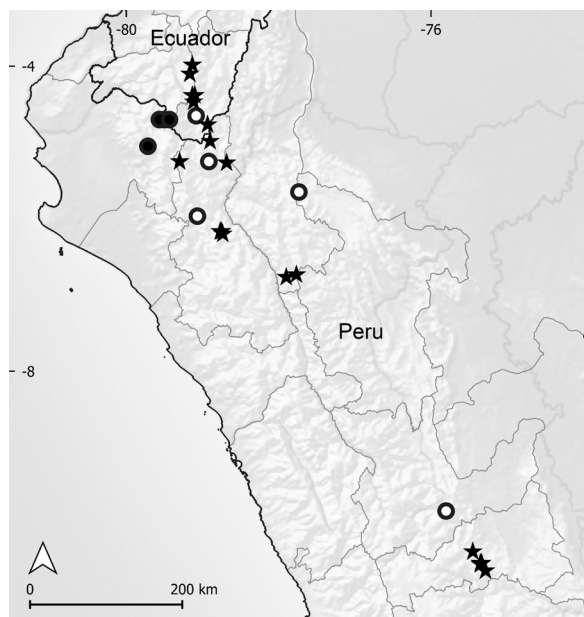


Fig. 1. Distribution map of *Barnadesia corymbosa* (Ruiz & Pav.) D.Don [open circles, restricted to Ecuador and northern Peruvian populations], *Gynoxys callacallana* Cuatrec. [stars], and *G. tetroici* V.A.Funk & H.Rob. [closed circles].



Fig. 2. *Barnadesia corymbosa* (Ruiz & Pav.) D. Don: **a**, flowering branch; **b**, capitula [Pérez & al. 12175 (QCA); photos by Á.J. Pérez].

Phenology.—Specimens in flower have been collected from June to October. Fig. 2.

Discussion.—This is one of the two species that form *Barnadesia* subgen. *Bacasia* (Ruiz & Pav.) Urtubey, which includes species with alternate, petiolate leaves, pedunculate capitula, a single disc floret with tubular corolla, and plumose pappus. The second species is *B. parviflora* Spruce ex Benth. & Hook.f., known from Colombia and northern Ecuador. They differ in involucre length (24–34 mm in *B. corymbosa* vs. 14–19 mm in *B. parviflora*) and stamen filaments of the peripheral florets (fused in *B. corymbosa* vs. free in *B. parviflora*).

Concerning the type of *Barnadesia corymbosa*, Chung (1965) only mentioned the specimen at BM as part of the type material but did not specify the status of the type as in other species of the same treatment (see under *B. parviflora*). Later, Ferreyra (1995) and Urtubey (1999) considered the material at MA as the holotype. There are three non-cross-referenced specimens kept at MA. Among them, MA816266 is the most complete and informative specimen, and therefore, selected here to serve as the lectotype.

In the protologue of *Barnadesia venosa* two collections were cited: “Bang 1265” (which should be Bang 1205) and “Pearce at Muña” (corresponding to Pearce 167); these collections represent syntypes. Chung (1965) indirectly designated Bang’s collection as the type of the name, and this action should be accepted as the first-step lectotype. We here narrow the lectotypification (second-step) to the specimen NY00162491, which is kept at NY where Henry H. Rusby worked and also bears an original label by its collector Miguel Bang.

Additional specimens examined.—ECUADOR. **Zamora-Chinchipe:** Palanda, parroquia Valladolid, reserva Tapichalaca, sector de Quebrada Honda–Las Palmeras, a lo largo del camino que va al río Numbala, 4°29′45″S, 79°03′14″W, 1450–1990 m, 10 Sep. 2024, Á.J. Pérez & al. 12175 (QCA251897); *ibid.*, 4°28′34″S, 79°06′35″W, 1825–1875 m, 16 Aug. 2002, V. Uday, O. Sánchez & Á. Ruilova 13 (LOJA s.n.). PERU. **Cajamarca:** San Ignacio, Chirinos, Pacasmayo, 5°15′S, 78°55′W, 1750 m, 22 Oct. 1997, J. Campos & Z. García 4498 (US01615869); Colasay, [5°58′S, 79°4′W], 2700 m, 18 Oct. 1961, F. Woytkowski 6955 (US01615879). **Huánuco:** Huallaga, Muña, [9°50′S, 75°48′W], 2500–2600

m, 1909/14, A. Weberbauer 6717 (F-628616, US01615746, US01615747). **San Martín:** Rioja, Bosque Protección Alto Mayo, ne puente Aguas Verdes, confluence of ríos Aguas Verdes and Serranoyacu, km 397 on hwy. 5N–carretera Fernando Belaunde Terry, 5°39'57"S, 77°44'54"W, 1170 m, 7 Jun. 2010, J.L. Clark & al. 11928 (US01325365).

2. *Byrsonima cardenasii* W.R.Anderson, Edinburgh J. Bot. 77(3): 508. 2020. Type: COLOMBIA. Antioquia: mpio. Frontino, correg. Nutibara, región Murri, carretera hacia La Blanquita, Finca Palmares, [6°46'N, 76°16'W], 1840 m, 15 Jul. 1986, P. Acevedo & al. 1342 (holotype: NY (2-part specimen, NY03228754, NY3228755) image!; isotypes: HUA n.v., MICH n.v.).

Distribution and habitat.—Ecuador (Carchi), Colombia (Antioquia, Nariño, Risaralda, Santander, Valle del Cauca). The species was found growing in a remnant of subtropical forest at the Reserva Cerro Oscuro, near the Chical community. Other species observed in the same habitat included: *Ficus caldasiana* Dugand (Moraceae), *Magnolia mindoensis* A.Vázquez, D.A.Neill & A.Dahua (Magnoliaceae), and *Pentagonia involucrata* C.M.Taylor (Rubiaceae). See Anderson & Anderson (2020: 510, fig. 11).

Phenology.—Flowering and fruiting from March to December. Fig. 3.

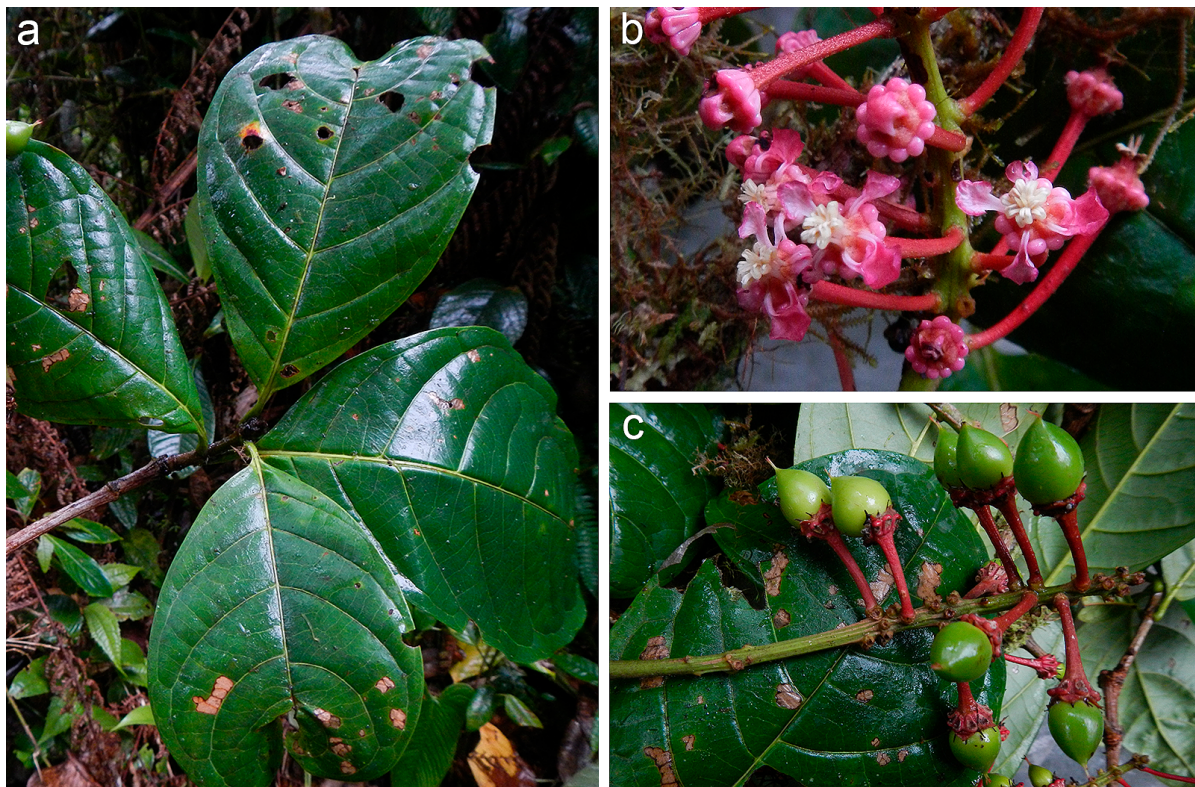


Fig. 3. *Byrsonima cardenasii* W.R.Anderson: **a**, leaves; **b**, flowers; **c**, fruits [Pérez & al. 9999 (QCA); photos by Á.J. Pérez].

Discussion.—*Byrsonima cardenasii* was recently described from Colombia and is similar to *B. nemoralis* Cuatrec., but differs in its glabrous anthers, the connective not exceeding the locules, the straight pedicels in bud and fruit, and in having leaves with distinct petioles and relatively thin laminas with evident reticulum (Anderson & Anderson 2020). In Ecuador, *B. cardenasii* is the only species with white to pink petals occurring in the northwestern Andean foothills; the other species that thrives in the Pacific side is *B. putumayensis* Cuatrec. but has yellow petals.

Additional specimens examined.—ECUADOR. **Carchi:** cantón Tulcán, parroquia Chical, sector Chical, Reserva Cerro Oscuro, desde la casa de la estación por el sendero hacia la cuchilla, 0°54'17"N, 78°11'32"W, 1250–1600 m, 30 Aug. 2016, Á.J. Pérez & al. 9999 (QCA251914). COLOMBIA. **Nariño:** Barbacoas, correg. Junín, sitio La Guarapería a 3 km de Junín, vía Junín–Tumaco, 1100 m, Mar. 1995, J.L. Fernández & al. 12543 (COL000133924).

3. *Caperonia zaponzeta* Mansf., Notizbl. Bot. Gart. Berlin-Dahlem 9: 265. 1925. Type: PERU. Ucayali: Yarina Cocha, [8°15'S, 74°39'W], 28 Nov. 1923, G. Tessmann 3386 (lectotype (designated by Külkamp & al. 2021: 91): G, G00434280!); isolectotypes: NY (NY00246312) image!, S-R-10609 image!). Holotype: (B†, photo F0BN005224!).

Distribution and habitat.—Bolivia (Beni), Brazil (Amazonas), Ecuador (Orellana), Peru (Loreto, Madre de Dios). The species was found along the riverside vegetation in the Yasuní river, Yasuní National Park, close to the Peruvian border. Some of the species observed in the same habitat were: *Astrocaryum jauari* Mart. (Arecaceae), *Cecropia* spp. (Urticaceae), and *Macrolobium acaciifolium* (Benth.) Benth. (Fabaceae). See Külkamp & al. (2021: 88, fig. 2).

Phenology.—Flowering and fruiting nearly all year round. Fig. 4.

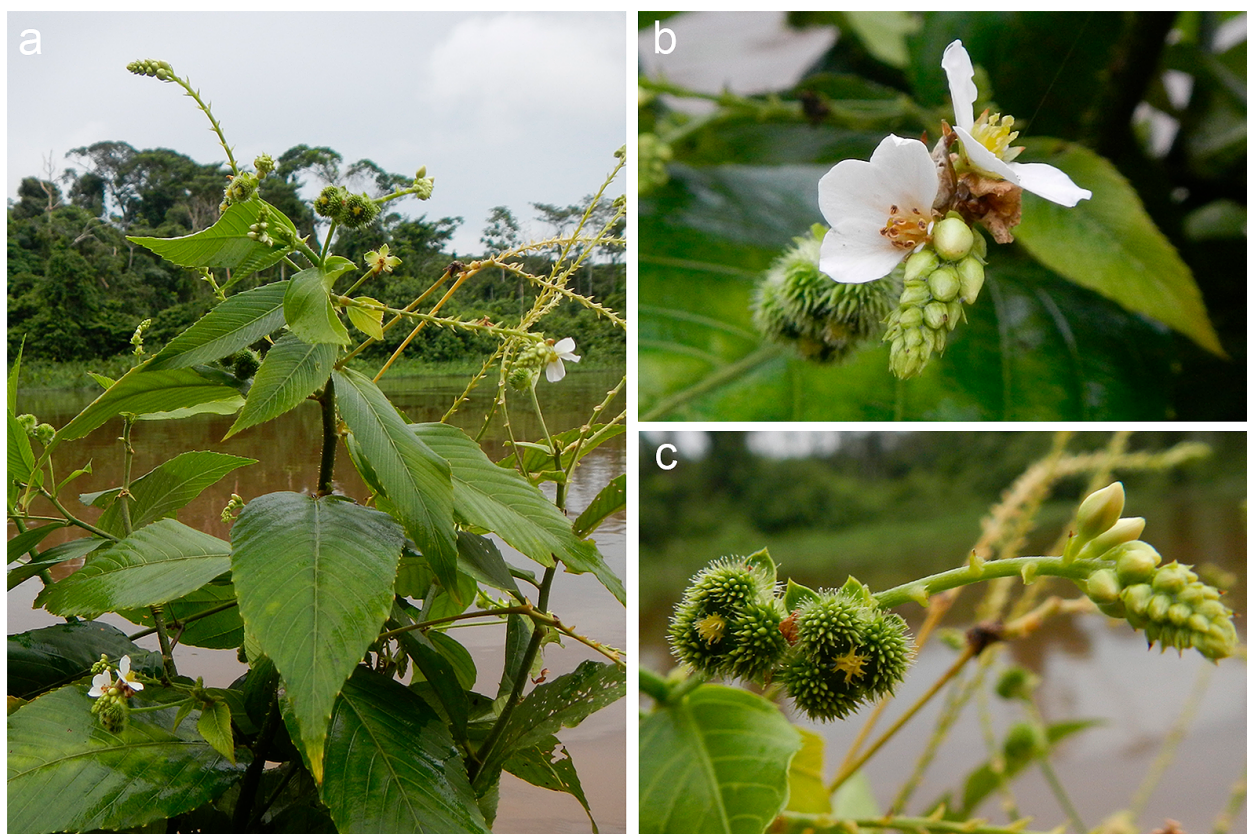


Fig. 4. *Caperonia zaponzeta* Mansf.: **a**, flowering branch; **b**, staminate flowers; **c**, fruits [Pérez & al. 10848 (QCA); photos by Á.J. Pérez].

Discussion.—*Caperonia zaponzeta* belongs to the recently circumscribed tribe Caperonieae (Külkamp & al. 2021, 2023), which is characterized by the following synapomorphies: presence of glandular trichomes, a muricate ovary surface, and parallel secondary veins. Currently, three *Caperonia* A.St.-Hil. species are recorded for Ecuador: *C. castaneifolia* (L.) A.St.-Hil. and *C. palustris* (L.) A.St.-Hil. occurring in the coastal provinces of Guayas and Los Ríos, plus *C. zaponzeta* in the Amazonian region. The latter can be easily differentiated from the other two species by the presence of prickles along the stem and by having ovate to elliptic leaves.

Additional specimens examined.—BOLIVIA. Data illegible [probably Rurrenabaque according to Külkamp & al. (2021)], 1922, O.E. White 2372 (NY03950222). BRAZIL. **Amazonas**: Erunepé, rio Juruá, Oct. 1946, R.L. Fróes 21626 (RB-42348). ECUADOR. **Orellana**: Aguarico, Nuevo Rocafuerte, Parque Nacional Yasuní, Río Yasuní, 0°59'35"S, 75°25'54"W, 180 m, 24 Mar. 2017, Á.J. Pérez & al. 10848 (QCA243031). PERU. **Loreto**: Requena, Pungal arriba de la boca del Caño Iricahua abajo de J. Herrera, margen izquierda del río Ucayali, 19 Nov. 1982, F. Encarnación 26045 (NY03950231); Maucallacta, Río Paranapura, 200 m, Jan. 1935, G. Klug 3954 (NY03950220). **Madre de Dios**: Tambopata, ca. 30 air km or 70–80 river km SSW Puerto Maldonado at effluence Río La Torre/Río Tambopata, 12°49'S,

69°17'W, 260 m, 21 Apr. 1980, P.J. Barbour 4907 (G s.n.); shore of Laguna Chica, Explorer's Inn, near confluence of Río Tambopata and Río La Torre, 39 km SW of Puerto Maldonado, 12°50'S, 69°20'W, 26 Sep. 1984, S.F. Smith 222 (NY03950221).

4. *Gentianella setipes* (Gilg) J.S.Pringle, Monogr. Syst. Bot. Missouri Bot. Gard. 45: 1256. 1993. *Gentiana setipes* Gilg, Bot. Jahrb. Syst. 54(2, Beibl. 118): 43. 1916. Type: PERU. Piura: Huancabamba, ca. 5° 10' s. Br., nord-westlich von Huancabamba auf der Cordillere Guamaní, [5°10'S, 79°33'W], 3200 m, s.d., A. Weberbauer 6322 (B†, photo F0BN010393!).

Distribution and habitat.—Ecuador (Loja), Peru (Cajamarca, Piura). The species was found growing in a remnant of montane forest near the highest part of the cerro Guachahurco at ca. 3062 m. Other species observed in the same habitat include: *Dendrophorbium pericaule* (Greenm.) B.Nord., *Gynoxys laurifolia* (Kunth) Cass., *Senecio patens* (Kunth) DC. (Compositae), *Geranium ayavacense* Kunth (Geraniaceae), and *Acaena ovalifolia* Ruiz & Pav. (Rosaceae). Fig. 5.

Phenology.—Flowering from July to September and in April. Fig. 6.

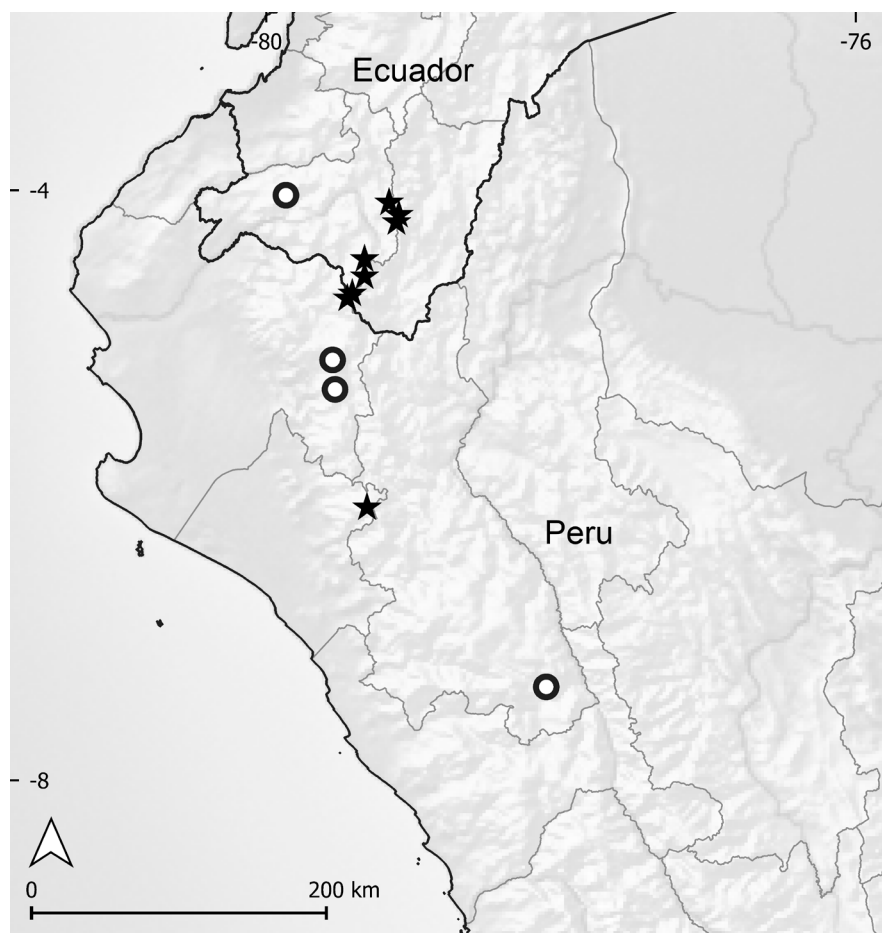


Fig. 5. Distribution map of *Gentianella setipes* (Gilg) J.S.Pringle [open circles] and *Gynoxys dilloniana* Sagást. & C.Téllez [stars].



Fig. 6. *Gentianella setipes* (Gilg) J.S.Pringle: **a**, flowering branches; **b**, flowers; **c**, cauline leaves; **d**, basal part of a plant [Espinosa-Ortega & al. 1037 (HUTPL); photos: **a**, **b** by G. Benítez; **c**, **d** by J. Calvo].

Discussion.—*Gentianella setipes* belongs to the group of species usually > 20 cm tall, having corollas > 1.3× as long as the calyx, without a corona of trichomes in the throat, leaves more than 3.5 cm long and/or more than 3 mm wide, inflorescences umbelliform, flowers ± erect, fewer than 30 per stem, pedicels less than 3 cm long, calyx lobes 1.5–3(–6)× as long as the tube, corollas 10–25(–28) mm, rose-violet, corolla lobes 1.2–1.6× as long as the tube (J.S. Pringle, comm. pers.). The morphologically closest species is *G. grantii* J.S. Pringle from Cusco, from which it differs in being perennial (not monocarpic), having leaves lanceolate to ovate (vs. linear to narrowly lanceolate), and leaf bases not connate-sheathing (vs. leaf bases connate-sheathing 1–4 mm).

Gentianella setipes was described based on a specimen collected near Huancabamba (NE Piura) and known only from a few collections from northern Peru. The new record extends its distribution area northward to Loja Province in Ecuador.

Additional specimens examined.—ECUADOR. **Loja**: Paltas, Guachanamá, cerro Guachahurco, parte alta cercana a las antenas, 4°02'10"S, 79°52'20"W, 3062 m, 22 Jul. 2023, N. Espinosa-Ortega, J. Calvo & G. Benítez NJEO-1037 (HUTPL-15115). PERU. **Cajamarca**: San Marcos, comunidad de Llanupacha, al E de Ichocán, [7°22'S, 78°06'W], 2920 m, 9 Apr. 1991, I. Sánchez Vega, W. Flores & S. Leiva 5446 (CPUN-2865, US03237903). **Piura**: Huancabamba, cuello del Indio (ruta Huancabamba), [5°21'S, 79°32'W], 2800 m, 13 Sep. 1981, A. López & al. 8875 (HUT-16632, MO2946951).

5. *Gynoxys callacallana* Cuatrec., Ciencia (Mexico) 23: 146. 1964. Type: PERU. Amazonas: Chachapoyas, middle eastern Calla-Calla slopes, near kms. 411–416 of Leimebamba–Balsas road, [6°46'S, 77°54'W], 3100–3250 m, 11 Jul. 1962, J.J. Wurdack 1324 (holotype: US (US00323999) image!; isotypes: GH (GH00008574) image!, NY (NY00178792) image!, US (US00811165) image!, USM-34181!).

Gynoxys cajamarcensis (H. Rob. & Cuatrec.) B. Escobari & N. Kilian, PhytoKeys 234: 85. 2023. ["cajamarcense"], **syn. nov.**; *Aequatorium cajamarcense* H. Rob. & Cuatrec., Novon 2: 411. 1992.; *Nordenstamia cajamarcensis* (H. Rob. & Cuatrec.) B. Nord., Compositae Newslett. 44: 20. 2006. Type: PERU. Cajamarca: Cutervo, San Andrés de Cutervo, Parque Nacional de Cutervo, caserío "Pajonal", camino hacia Jaén (Chorro Blanco), [6°10'S, 78°45'W], 2600 m, 10 Aug. 1987, C. Díaz & H. Osorio 2585 (holotype: US (US00409567) image!; isotypes: F (F0043642F) image!, MO n.v.).

Distribution and habitat.—Ecuador (Loja, Morona-Santiago, Zamora-Chinchi), Peru (Amazonas, Cajamarca, Pasco). The species thrives in montane forests between 2400–3250 m. In the population we found in the province of Loja on the road to Cerro Toledo, some other Compositae species growing in the same habitat included: *Dendrophorbium scytophyllum* (Kunth) C. Jeffrey, *Gynoxys azuayensis* Cuatrec., *G. reinaldi* Cuatrec., *Llerasia* sp., *Pentacalia millei* (Greenm.) Cuatrec., *P. oronocensis* (DC.) Cuatrec., and *P. theifolia* (Benth.) Cuatrec. Fig. 1.

Phenology.—Specimens in flower have been collected in July–November and January–February.

Discussion.—*Gynoxys cajamarcensis* was originally described from northern Peru in *Aequatorium* B. Nord. as a member of the former *Aequatorium* subgen. *Praegynoxys* (Cuatrec.) B. Nord., which was subsequently elevated to generic rank as *Nordenstamia* Lundin and recently placed in *Gynoxys* gr. *Praegynoxys* (Escobari & al. 2023). This group contains species characterized by having leaves and stems covered with stellate, sub-stellate, T-shaped, or irregularly-branched trichomes, 3–5 yellow ray florets, and green or ferruginous, pubescent or glabrescent, narrowly campanulate involucre.

Gynoxys cajamarcensis has been treated as an accepted species (Beltrán & Robinson, 2005; Beltrán & al. 2006, sub *Aequatorium*; Beltrán & Calvo, 2020; POWO, 2024, both sub *Nordenstamia*) but not compared with potential similar species described within *Gynoxys* Cass. In the framework of a taxonomic revision of the Ecuadorian and northernmost Peruvian species of *Gynoxys* by the first author, we realized that no characters exist for differentiating *G. cajamarcensis* from *G. callacallana*. This latter species was described based on material from the Calla Calla range in Amazonas, ca. 115 km SE of the locus classicus of *G. cajamarcensis*. Some herbarium specimens have also interchangeably been identified with both names (e.g., Vásquez & al. 28378). It is quite surprising that Escobari & al. (2023) treated these two species as distinct and placed them in two different groups. The single accession of *G. cajamarcensis* included in their molecular analyses is *Castillo & Monteagudo 460*, which has recently been identified as *G. callacallana* by I. Revilla (in sched.). Some specimens from Oxapampa (Pasco), which represent the southern limit of its distribution (e.g., Castillo & al. 247), have denser indumentum on the synflorescence branches and abaxial leaf surfaces, but this is interpreted as part of the variability of the species. We have therefore synonymized *G. cajamarcensis* with *G. callacallana*, which has priority, and record it for the first time in southern Ecuador. Fig. 7.

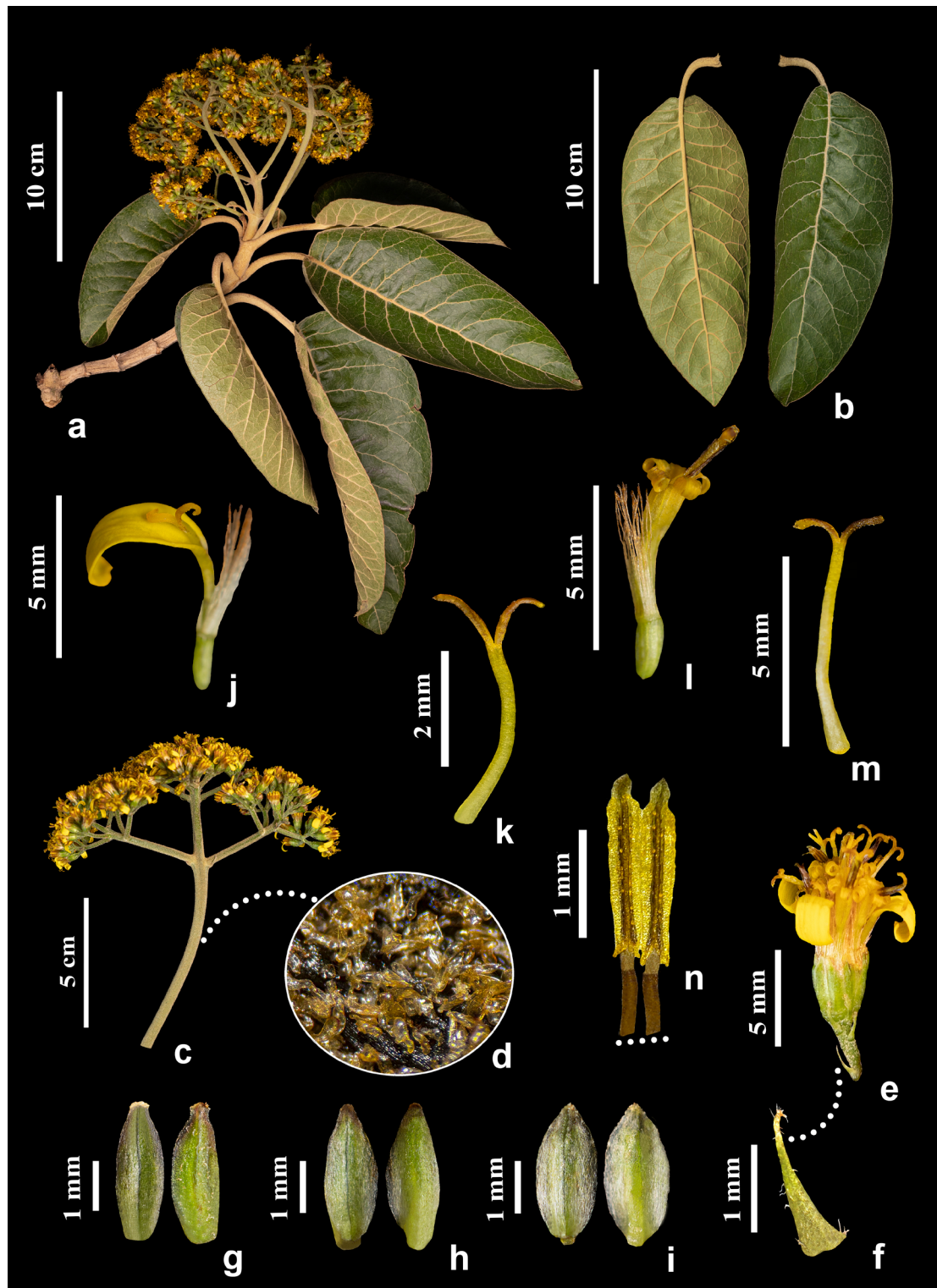


Fig. 7. *Gynoxys callacallana* Cuatrec.: **a**, flowering branch; **b**, leaf (abaxial surface, left; adaxial surface, right); **c**, synflorescence; **d**, detail of the indumentum of the synflorescence branches; **e**, capitulum; **f**, bracteole; **g**, **h**, **i**, phyllaries: internal, medial, external (abaxial surface, left; adaxial surface, right); **j**, ray floret; **k**, style of ray floret; **l**, disc floret; **m**, style of disc floret; **n**, anthers. [Espinosa-Ortega & al. 1170 (LOJA); photos by N. Espinosa-Ortega].

This species has been confused with *Gynoxys congestiflora* Sagást. & Dillon from Huánuco (Peru), but this latter species differs in having remarkably congested synflorescences. Apart from the type material (Dillon 2608), we located a second collection from the same locality (Salinas & Chocce 628) that does not display synflorescences as congested as those of the type. This specimen is hardly differentiable from the aforementioned specimens of *G. callacallana* from Pasco with denser indumentum. Further collections of *G. congestiflora* are needed to understand its variability and firmly establish the differences with *G. callacallana*.

Additional specimens examined.—ECUADOR. **Loja:** Yangana, cerro Toledo, parte media, 4°23'13"S, 79°08'41"W, 2580 m, 20 Jul. 2023, J. Calvo, G. Benítez & N. Espinosa-Ortega 8511 (LOJA s.n., HUTPL-15087); *ibid.*, 2 Aug. 2024, N. Espinosa-Ortega & N. Espinosa-Godoy NJEO-1170 (LOJA s.n.); carretera Yangana–cerro Toledo, aprox. 5 km ESE de Yangana, [4°23'S, 79°08'W], 2650 m, 4 Sep. 1985, B.B. Larsen & B. Dall 214 (QCA237371); parroquia Loja, sector PNP Cajanuma, 4°06'57"S, 79°10'11"W, 2869 m, 14 Mar. 2018, J.P. Suárez TRF071 (HUTPL-13788). **Morona-Santiago:** San Juan Bosco, Cordillera del Cóndor, comunidad Shuar Numpatkaim, sendero que conduce hacia la cima del cerro más alto de la Cordillera del Cóndor, [3°16'S, 78°19'W], [2790 m], [22 Jul. 2005], C. Morales & T. Embrey 1357 (LOJA s.n., MO n.v., QCNE-194051). **Zamora-Chinchipe:** carretera Yangana–Valladolid, cuesta carrizal, bajando del cerro Cruz Grande, enfrente del refugio de Quebrada Honda, 4°28'59"S, 79°07'31"W, 2470 m, 9 Oct. 1995, A. Garmendia & G. Paredes 641 (LOJA s.n., QCA156435); cantón Chinchipe, parroquia Chito, Nuevos Horizontes, sector San Pedro de Yaramunos, camino al Sol Naciente, 4°46'15"S, 78°56'40"W, 2518 m, 6 Aug. 2024, N. Jaramillo & al. 2381 (LOJA s.n.); Parque Nacional Podocarpus “El Tiro”, 3°59'58"S, 79°08'38"W, 2900 m, 9 Jan. 2002 (ster.), P. Lozano & al. E-49 (LOJA s.n.); Zamora, Parque Nacional Podocarpus, camino paralelo a quebrada Flor Amarilla, 4°23'S, 79°06'W, 3200 m, Jan. 1995, W. Palacios & M. Tirado 13133 (MO n.v., QCNE-99770, US01826756); sector El Tiro, [3°59'S, 79°08'W], 2850 m, 6 Oct. 2003, F. Tinitana & C. Macas s.n. (HUTPL-198). PERU. **Amazonas:** Chachapoyas, Leymebamba, ruta a laguna de Los Cóndores, alrededores de Toronjil, 6°44'S, 77°46'W, 3230 m, 14 Aug. 1998, V. Quipuscoa & al. 1178 (CPUN-17085). **Cajamarca:** San Ignacio, Tabaconas, Santuario Nacional Tabaconas–Namballe, quebrada Chichilapa Grande, 5°15'S, 79°18'W, 2600–2800 m, 12 Nov. 1998, J. Campos & al. 5656 (HUT-43774); San José de Lourdes, base del cerro Picorana, 4°59'25"S, 78°54'15"W, 2100–2500 m, 28 Aug. 1999, C. Díaz & al. 10854 (US03066450); Cutervo, distrito Santo Tomás, P.N. Cutervo, sector Santa Rosa, 6°10'46"S, 78°46'02"W, 2700 m, 26 Nov. 2020, R. Fernández-Hilario, L. Pillaca & F. Collante 2091 (HOXA-77819); Cutervo, distrito San Andrés de Cutervo, P.N. Cutervo, sector Las Grutas, 6°12'08"S, 78°44'23"W, 2420 m, 24 Jun. 2022, R. Fernández-Hilario & al. 2288 (HOXA-80725); Chorro Blanco, Cutervo National Park, ca. 15 km N of San Andrés, 6°10'S, 78°45'W, 2410 m, 14 Sep. 1991, A. Gentry, C. Díaz & R. Ortiz 74803 (MO2940606, US04173939); San Ignacio, distrito Huarango, Cordillera Huarango, El Romerillo, 5°16'10"S, 78°41'09"W, 2370 m, 18 Jul. 2005, E. Rodríguez, E. Alvi-
tez & S. Arroyo 2891 (NY04242390), 2900 (MA-01-00916039). **Pasco:** Oxapampa, P.N. Yanachaga Chemillén, sector San Alberto, a aprox. 6 km SE del refugio El Cedro, 10°32'54"S, 75°21'33"W, 2637 m, 14 Aug. 2006, G. Castillo, L. Cárdenas & R. Francis 247 (HOXA-29383, MO2940607); Oxapampa, P.N. Yanachaga Chemillén, sector San Alberto, abra Esperanza, a aprox. 30 min. en dirección al valle del Palcazú, 10°31'56"S, 75°20'54"W, 2720 m, 15 Oct. 2006, G. Castillo & A. Monteagudo 460 (HOXA-28844, MO2940516); Oxapampa, sector Chacos, entre el poblado de Chacos y la antenna, 10°37'10"S, 75°17'16"W, 2700 m, 16 Aug. 2007, G. Castillo & al. 863 (HOXA-28733); Oxapampa, P.N. Yanachaga Chemillén, camino al abra La Esperanza, 10°32'S, 75°21'W, 2720 m, 25 Aug. 2002, A. Monteagudo, C. Mateo & G. Ortiz 3780 (HOXA-2088, MO840467); *ibid.*, 10°31'51"S, 75°21'07"W, 2816 m, 18 Aug. 2015 (ster.), A. Monteagudo & al. 27401 (HOXA-72047); Oxapampa, Parque Nacional Yanachaga–Chemillén, abra Yanachaga, 10°22'46"S, 75°27'43"W, 2900 m, 1 Aug. 2003, R. Vásquez & al. 28378 (HOXA-3569, MO2940605, NY04242392).

6. *Gynoxys dilloniana* Sagást. & C.Téllez, Brittonia 39: 432. 1987. Type: PERU. Lambayeque: Ferreñafe, distrito Incahuasi, Laguna Tembladera–Cerro Negro, [6°09'S, 79°19'W], 3300 m, 12 Sep. 1985, A. Sagástegui & al. 12835 (holotype: HUT-21146!; isotypes: F (F0043636F) image!, HUT-21152!, MO n.v., NY n.v.).

Distribution and habitat.—Ecuador (Loja, Zamora-Chinchipe), Peru (Lambayeque, Piura). The species thrives in grassy paramos and steep rocky soils, between 3000–3570 m, within the territory of the Podocarpus and Yacuri National Parks (Ecuador) and the Peruvian areas of Laguna Tembladera–Cerro Negro (Lambayeque) and Laguna Prieta (Piura). In this latter locality we observed other Compositae species such as *Chuquiraga jussieui* J.F.Gmel., *Dendrophorbium elatum* (Kunth) Pruski, *Diplostephium* sp., *Gynoxys calyculisolvens* Hieron., *Hypochaeris sessiliflora* Kunth, *Oritrophium crocifolium* (Kunth) Cuatrec., and *O. repens* (Kunth) Cuatrec. Likewise, in Yacuri National Park the following species were

identified: *Gynoxys calyculisolvens* Hieron, *G. parvifolia* Cuatrec., *G. reinaldi* Cuatrec., and *Oritrophium yacuriense* Arnelas & J.Calvo. Fig. 5.

Phenology.—Specimens in flower have been collected in September–October and March–April.

Discussion.—*Gynoxys dilloniana* is morphologically similar to *G. tomentosissima* Cuatrec. from Amazonas and Cajamarca, from which it differs in being a shrub up to 1.5 m tall (vs. up to 3 m in *G. tomentosissima*), and in having leaves sessile or subsessile (vs. petioles 10–40 mm long) with laminas $2\text{--}5 \times 1.8\text{--}3.5$ cm (vs. $6\text{--}20 \times 4\text{--}13$ cm), glabrous, lustrous, and remarkably reticulate adaxially (vs. hispid-pubescent, matte, barely reticulate). The capitula have pedicels 10–15 mm long (vs. 2–7 mm), and 3–5 ray florets (vs. 8–12)). Another similar species is the putative Ecuadorian endemic *G. chingualensis* H.Rob & Cuatrec., known only from the paramo Cerro Mirador, south of Chingual River headwaters in the northeastern Ecuadorian province of Sucumbíos. This species, however, mainly differs in being a shrub up to 4 m tall and in having velutinous, corymbiform synflorescences (vs. adpressed tomentose-lanate, compound cymose synflorescences); the indumentum of the leaf abaxial surfaces is composed of long sinuous unbranched trichomes intermixed with T-shaped trichomes (vs. short unbranched trichomes); the capitula have 12 disc florets (vs. 18–20), and ray florets with limbs 11 mm long (vs. 5–6 mm).

Gynoxys dilloniana was described based on a collection from around Laguna Tembladera, near the village of Incahuasi (NE Lambayeque). Recently, this species has been found in Laguna Prieta (NE Piura; Revilla & Espinosa-Ortega IRP-4965). Its presence in Ecuador is supported by several collections that have been misidentified or overlooked until now (see list below). Fig. 8.



Fig. 8. *Gynoxys dilloniana* Sagást. & C.Téllez: **a**, habit; **b**, synflorescence [Ecuador, Loja, Podocarpus N.P., 13 Dec 2017, not collected; photos by J. Calvo].

Additional specimens examined.—ECUADOR. **Loja:** Cajanuma, Parque Nacional Podocarpus, rotundamente “El Mirador”, [4°05’S, 79°10’W], 3000 m, s.d., R. Bussmann & S. Lange s.n. (HUTPL-11535); Cordillera de Sabanilla, cerca de la carretera Jimbura–Zumba, páramo arriba de la Laguna Negra, [4°42’S, 79°25’W], 3300–3500 m, 23 Oct. 1996, R. Bussmann & S. Lange s.n. (HUTPL-11534); Espíndola, parroquia El ingenio, Cerro Collingora, [4°28’S, 79°20’W],

3500 m, Sep. 1975 (ster.), A. Macey 141 (LOJA s.n.); parroquia San Pedro de Vilcabamba, Banderillas, 4°13'49"S, 79°07'33"W, 3400 m, 21 Mar. 2002, B. Merino & al. E-1137 (HUTPL-245, LOJA s.n.); Espíndola, muletrack Amaluza–Palanda, western slope near the pass at Lagunas Arrebiatadas Pilares, 4°35'S, 79°20'W, 3350–3450 m, 22 Sep. 1976, B. Øllgaard & H. Balslev 9675 (AAU); Espíndola, parroquia Jimbura, colecciones a lo largo del sendero Romerillos entre las Lagunas Negras y Laguna de los Patos, 4°42'56"S, 79°25'14"W, 3300–3450 m, 23 Apr. 2015, Á.J. Pérez & al. 8744 (QCA234944). **Loja/Zamora-Chinchi**: Lagunas del Compadre, Parque Nacional Podocarpus, 4°10'22"S, 79°06'59"W, 3290 m, 11 Oct. 1999, O. Cabrera & al. 555 (LOJA s.n.). PERU. **Piura**: Ayabaca, 7.5 km SE de Huamba, alrededor de la Laguna Prieta, 4°44'35"S, 79°27'20"W, 3570 m, 10 Sep. 2024 (ster.), I. Revilla & N. Espinosa-Ortega IRP-4965 (HSP s.n.).

7. *Gynoxys tetioici* V.A.Funk & H.Rob., Revista Acad. Colomb. Ci. Exact. 17: 243. 1989. Type: PERU. Piura: Ayabaca, bosque de Huamba, [4°42'S, 79°30'W], 2950 m, 20 Sep. 1987, J.I. Valencia 1991 (holotype: US (US00169692) image!; isotype: USM n.v.).

Distribution and habitat.—Ecuador (Loja), Peru (Piura). The species thrives in montane forests between 2800–3200 m. In the population we found in the province of Loja at Yacuri National Park some species growing in the same habitat are: *Gynoxys calyculisolvans* Hieron., *G. laurifolia* (Kunth) Cass., *G. reinaldi* Cuatrec. (Compositae), *Lysimachia andina* Sandwith (Primulaceae), and *Centropogon* spp. (Campanulaceae). Fig. 1.

Phenology.—Specimens in flower have been collected in May and June. Fig. 9.



Fig. 9. *Gynoxys tetioici* V.A.Funk & H.Rob.: leaves and remnants of synflorescences [Espinosa-Ortega 1255 (LOJA); photo by N. Espinosa-Ortega].

Discussion.— *Gynoxys tetioici* belongs to the group of species characterized by having opposite petiolate leaves and cylindrical involucres composed of strictly five phyllaries. This species is morphologically similar to the Peruvian putative

endemic *G. tabaconasensis* H. Beltrán & Baldeón, known only from the Lagunas Arrebiatadas at the Tabaconas-Namballe National Sanctuary (NW Cajamarca), from which it differs in lamina size ($10\text{--}15 \times 4\text{--}10$ cm vs. $13\text{--}23 \times 7\text{--}16$ cm in *G. tabaconasensis*), indumentum of the abaxial leaf surface (pubescent vs. densely lanate-tomentose in *G. tabaconasensis*), phyllary length (4 mm vs. 7 mm in *G. tabaconasensis*), disc floret number (5–6 vs. 3–4 in *G. tabaconasensis*).

Gynoxys tetroici was described based on a single collection from the Huamba forest (NE Piura). The new record expands its distribution northward to the Ecuadorian province of Loja.

Additional specimens examined.—ECUADOR. **Loja**: Espindola, parroquia Jimbura, Parque Nacional Yacuri, carretera Jimbura–San Andrés, $4^{\circ}42'29''\text{S}$, $79^{\circ}26'35''\text{W}$, 3200 m, 9 Nov. 2024, N. Espinosa-Ortega NJEO-1255 (LOJA s.n.). PERU. **Piura**: Ayabaca, cerro de Aypate, alrededores de ruinas incaicas, $4^{\circ}42'09''\text{S}$, $79^{\circ}34'25''\text{W}$, 2800–2880 m, 23 May 1996, V. Quipuscoa & al. 599 (HUT-31937); Morropón, distrito Chalaco, abajo de Vista Alegre, entrando por el camino que comienza en el vivero, $5^{\circ}03'36''\text{S}$, $79^{\circ}43'16''\text{W}$, 2975 m, 8 Jun. 2003, I. Sánchez Vega & al. 12038 (CPUN-17216); Ayabaca, bosque de Huamba, sendero hacia la Laguna Prieta, $4^{\circ}43'03''\text{S}$, $79^{\circ}29'21''\text{W}$, 2940 m, 10 Sep. 2024, I. Revilla & N. Espinosa-Ortega IRP-4948 (HSP s.n.).

ACKNOWLEDGMENTS

We are very grateful to the late James S. Pringle (HAM) for kindly identifying the *Gentianella* and providing useful information to discuss the species, and to Italo Revilla (HSP-IMOD) for their valuable information and observations regarding the genus *Gynoxys*. Carlos Aedo (MA) identified the species of *Geranium* cited in the text. Special thanks to Jorge Armijos (HUTPL), Karen Hidalgo, Nelson Jaramillo (LOJA), Juan Montoya (CPUN), Eric Rodríguez (HUT) for their assistance with tasks related to herbarium labors and fieldwork. Two anonymous reviewers are thanked for their valuable comments. ÁJP thanks Fundación Jocotoco for funding the expedition to Quebrada Honda (Zamora-Chinchipe) and to the Secretaría de Educación Superior, Ciencia, Tecnología e Innovación de la República del Ecuador for financial support (SENESCYT, Arca de Noé Initiative, S. R. Ron and O. Torres-Carvajal, Principal Investigators) to explore Carchi and Orellana provinces. This work has partially been funded by Conservatoire et Jardin botaniques de Genève.

AUTHORSHIP CONTRIBUTION STATEMENT

Nelson ESPINOSA-ORTEGA: Conceptualization, Data curation, Investigation, Methodology, Writing original draft, Writing – review & editing. Álvaro J. PÉREZ: Investigation, Data curation, Writing original draft. Guillermo BENÍTEZ: Conceptualization, Investigation, Methodology, Writing original draft. Joel CALVO: Conceptualization, Data curation, Investigation, Methodology, Supervision, Writing original draft, Writing – review & editing.

REFERENCES

- Anderson W.R. & Anderson C. 2020. Novelties in Malpighiaceae from South America. *Edinburgh Journal of Botany* 77: 491–518.
- Beltrán H. & Calvo J. 2020. A new species of *Nordenstamia* (Compositae, Senecioneae) from central Peru. *Phytotaxa* 474: 293–297.
- Beltrán H. & Robinson H. 2005. A new species of *Aequatorium* (Asteraceae: Senecioneae) from Peru. *Compositae Newsletter* 42: 5–7.
- Beltrán H., Granda A., León B., Sagástegui A., Sánchez I. & Zapata M. 2006. Asteraceae endémicas del Perú. *Revista Peruana de Biología* [Número especial] 13: 64–164.
- Chung I.-C. 1965. *Revision of Barnadesia (Compositae-Mutisieae)*. In: Cho Chung, Chicago.
- Escobari B., Borsch T. & Kilian N. 2023. Generic concepts and species diversity within the Gynoxyoid clade (Senecioneae, Compositae). *Phytokeys* 234: 61–106.
- Ferreira R. 1995. Family Asteraceae: Part VI. In: Macbride J.F. & collaborators (eds.), Flora of Peru. *Fieldiana, Botany* 35: 1–101.
- Jørgensen P.M. & León-Yáñez S. (eds.). 1999. Catalogue of the vascular plants of Ecuador. *Monographs in Systematic Botany from the Missouri Botanical Garden* 75: 1–1181.
- Külkamp J., Iganci J.R.V., Cordeiro I. & Baumgratz J.F.A. 2021. New species and occurrences of *Caperonia* (Euphorbiaceae) for South America. *Phytotaxa* 529: 86–92.
- Külkamp J., Riina R., Ramírez-Amezcuza Y., Iganci J.R.V., Cordeiro I., González-Páramo R., Lara-Cabrera S.I. & Baumgratz J.F.A. 2023. Systematics of Ditaxinae and related lineages within the subfamily Acalyphoideae (Euphorbiaceae) based on molecular phylogenetics. *Biology* 12: 173.

- POWO. 2024 [continuously updated]. Plants of the World Online. Royal Botanic Gardens, Kew. <https://powo.science.kew.org/> [accessed: 6 Nov. 2024]
- Thiers B. 2024 [continuously updated]. Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden. <http://sweetgum.nybg.org/> [accessed: 6 Nov. 2024]
- Ulloa-Ulloa C., Acevedo-Rodríguez P., Beck S., Belgrano M.J., Bernal R., Berry P.E., Brako L., Celis M., Davidse G., Forzza R.C., Gradstein S.R., Hokche O., León B., León-Yáñez S., Magill R.E., Neill D.A., Nee M., Raven P.H., Stimmel H., Strong M.T., Villaseñor J.L., Zarucchi J.L., Zuloaga F.O. & Jørgensen P.M. 2017. An integrated assessment of the vascular plant species of the Americas. *Science* 358: 1614–1617.
- Urtubey E. 1999. Revisión del género *Barnadesia* (Asteraceae: Barnadesioideae, Barnadesieae). *Annals of the Missouri Botanical Garden* 86: 57–117.