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The Gesneriad Flora of the Los Cedros Biological Reserve, Northwest Ecuador, Part 1: Four New Species in *Gasteranthus* (*Gesneriaceae*)

By

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With 2 Figures

Keywords: *Gasteranthus* div. spec. novae, *Gesneriaceae*. – Taxonomy. – Flora of Ecuador.

Summary

FREIBERG M. 1996. The Gesneriad Flora of the Los Cedros Biological Reserve, Northwest Ecuador, part 1: Four new species in *Gasteranthus* (*Gesneriaceae*). – *Phyton* (Horn, Austria) 36 (2): 303–309, 2 figures. – English with German summary.

The Gesneriad Flora of the Los Cedros Biological Reserve in Northwest Ecuador has been investigated. The new species *Gasteranthus giganteus* M. FREIBERG, *G. imbaburensis* M. FREIBERG, *G. leopardus* M. FREIBERG and *G. trifoliatus* M. FREIBERG are described and illustrated. The complete list of all 35 species identified, additional descriptions of new species and a discussion will be given in Part 2.

Zusammenfassung

FREIBERG M. 1996. Die Gesneriaceen-Flora der Los Cedros Biological Reserve, Nordwest Ecuador, Teil 1: Vier neue Arten von *Gasteranthus*. – *Phyton* (Horn, Austria) 36 (2) 303–309, 2 Abbildungen. – Englisch mit deutscher Zusammenfassung.

Die Gesneriaceen-Flora der Los Cedros Biological Reserve in Nordwest Ecuador wurde untersucht. Die neuen Arten *Gasteranthus giganteus* M. FREIBERG, *G. imbaburensis* M. FREIBERG, *G. leopardus* M. FREIBERG und *G. trifoliatus* M. FREIBERG werden beschrieben und illustriert. Die vollständige Liste aller 35 identifizierten Arten, die Beschreibung weiterer neuer Arten sowie eine Diskussion wird in Teil 2 präsentiert.

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Introduction

South to the Cotacachi-Cayapas National Park in the Province of Imbabura, Northwest Ecuador, the Los Cedros Biological Reserve was established in 1989 and now consists of 6400 ha of mainly primary premontane wet tropical forest. The Station of the Reserve is located at 0° 18.74' N and 78° 46.94' W at 1460 m a.s.l. The altitude ranges between 1000 m a.s.l. and about 2400 m a.s.l. The topography is heavily ridged, dominated by 4 major systems. The wet climate throughout the year varies between 300 and 500 mm from January to April, 100 and 200 mm in May and June, 100 mm in the dry season from July to September, when most of the precipitation consists of mist, and between 100 and 250 mm from October to December. These data are taken from an unpublished information sheet of the Centro de Investigación de los Bosques Tropicales (CIBT) in Quito, whose staff is managing station and reserve.

Gasteranthus giganteus M. FREIBERG spec. nova (Fig. 1 A)

Diagnosis: *Gasterantho crispo* (MANSE.) WIEHLER similis, sed praesertim differt statura majore, lamina nitida, apice acuta, basi breve angustata, pedunculo longiore, floribus pluribus, corollae calcaris angustiore.

Description: Terrestrial, erect, fleshy herb, to 1.5 m tall. Stems simple, subpilose, lower internodes 5–8, upper ones 2–3 cm long. Leaves opposite, isophyllous, crowded together on upper $\frac{1}{4}$ of stems; lamina obovate, 20–26 cm long, 6–11 cm wide, verdigris coloured above, shining, green below, younger leaves and veins below pilose; tip acute; base shortly narrowed, margin serrulate; 6–10 secondary veins per side; petiole 1 cm, pilose. Inflorescence a cyme of 2–10 flowers in upper leaf axils, peduncle tomentose, up to 14 cm long; pedicels 0.5–1.0 cm long. Calyx lobes green, membranous, ovate, inside glandular, outside subglabrous; margin entire; base of sepals connate for 2 mm, ventral lobes 8 mm long, 6 mm wide, lateral lobes 10 mm long, 7 mm wide; dorsal lobe 10 mm long, 7 mm wide. Corolla urceolate, rugose, glabrous, orange, towards the petal lobes more red; in total 3–4 cm long, tube 7 mm long, 5 mm wide, pouch 2.3 cm long, 1.2–1.4 cm wide, 2 cm tall; petal lobes subequal, the ventral 4 × 4 mm, the lateral 3 × 3 mm, the dorsal lobe 2.5 × 4 mm; corolla opening 3 mm wide, 5 mm tall, spur elliptical, 6 mm long. Filaments glabrous, 15 mm free, 5 mm attached to tube; anthers coherent, ca. 2.5 × 2 mm; staminode 3 mm; nectary dorsal, bilobed, glabrous, 2 mm tall, 5 mm wide. Ovary superior, flat, glabrous, 6 mm tall, 3 mm wide; style 8 mm long; both stigma lobes 2 mm. Fruit and seeds typical for *Gasteranthus*.

Gasteranthus giganteus grows in montane forests between 1400 and 1700 m a.s.l., especially at humid and shady areas close to creeks. Population clumps may reach more than one hundred stems.

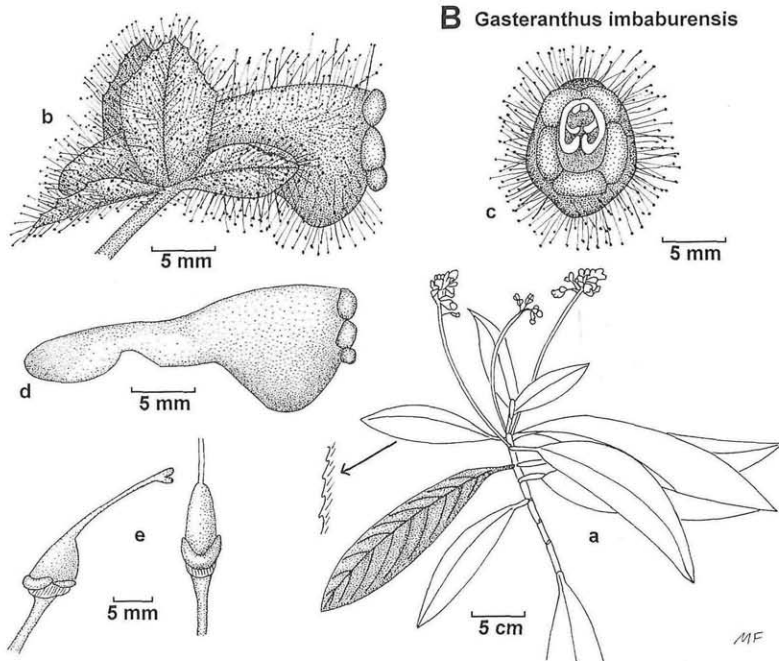
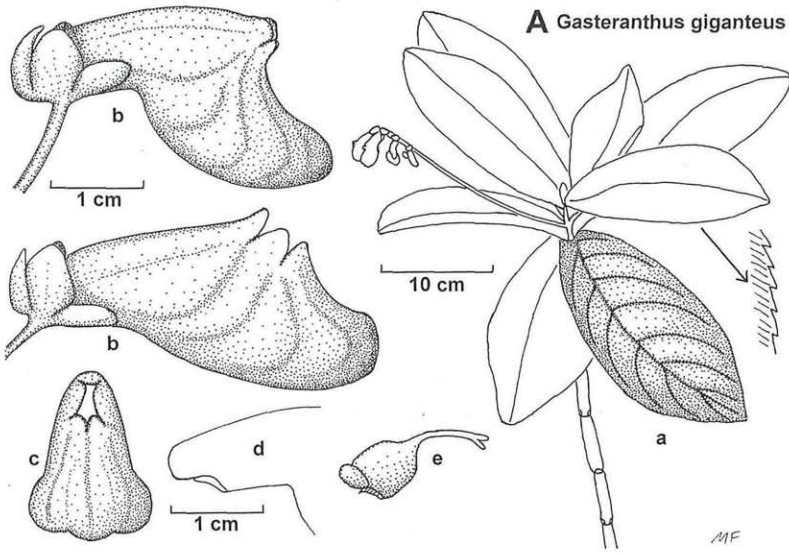


Fig. 1. – A *Gasteranthus giganteus* M. FREIBERG. – B *G. imbaburensis* M. FREIBERG. – a: habit and detail of leaf margin. b: side view(s) of corolla and calyx. c: front view of corolla. d: base of corolla showing spur. e: view(s) on base of gynoecia (sepals and petals removed) showing nectaries.

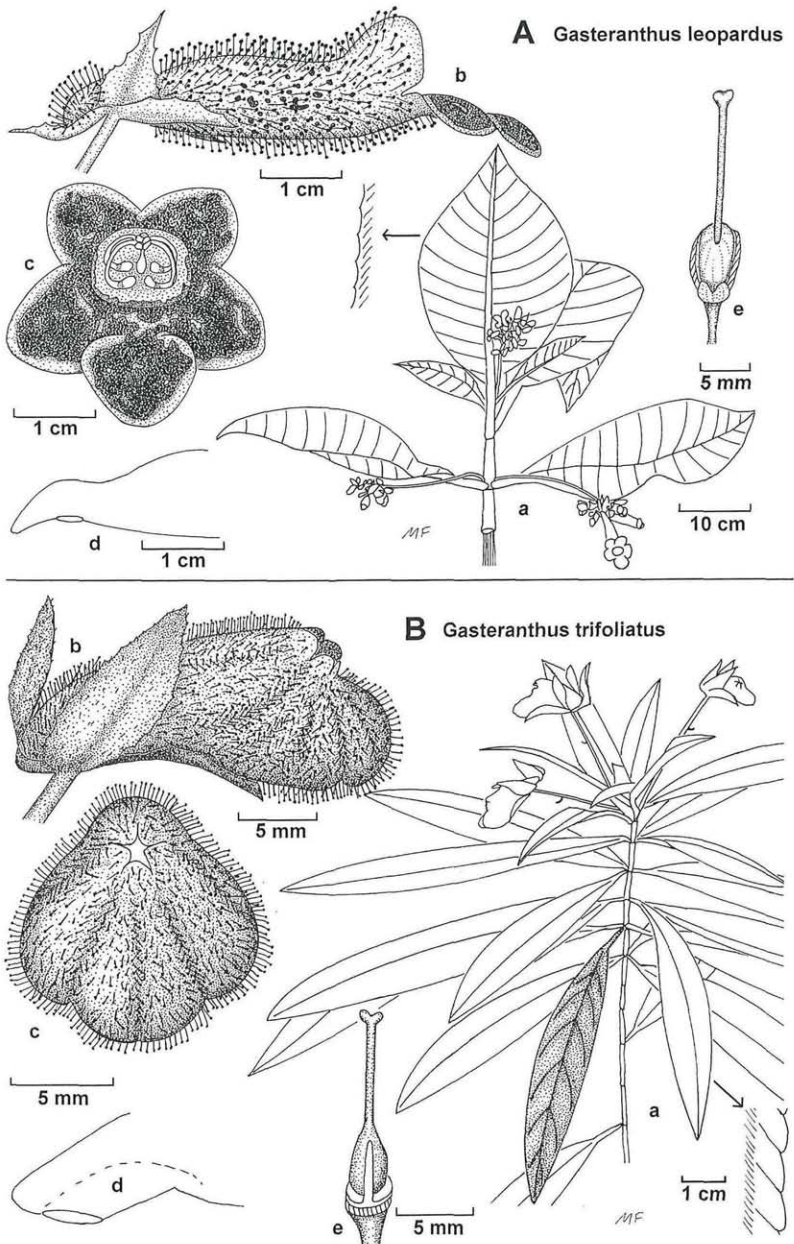


Fig. 2. – A *Gasteranthus leopardus* M. FREIBERG. – B *G. trifolius* M. FREIBERG. – a: habit and detail of leaf margin. b: side view of corolla and calyx. c: front view of corolla. d: base of corolla showing spur. e: view on base of gynoecia (sepals and petals removed) showing nectaries.

Etymology: “*giganteus*” refers to the impressive strong habit of this species as well as to its considerable large population size.

Holotype: QCA M. FREIBERG 96022, 22. 03. 1996 (Isotypes ULM, QCNE)

Gasteranthus imbaburensis M. FREIBERG spec. nova (Fig. 1 B)

Diagnosis: *Gasterantho carinato* WIEHLER similis, sed ramis altioribus pubescentibus, inflorescentia cymosa aperta, calycibus lobis serratis aeruginosis, corolla cinnabarina sine carina, glandulosa, calcari perspicuo differt.

Description: Terrestrial, few branched, perennial subshrub up to 2.5 m tall. Stems adpressed pubescent; internodes 3–4 cm, the terminal ones shorter. Leaves opposite, isophyllous, crowded together on upper parts of stem; lamina lanceolate, 15–20 cm × 4–7 cm, above verdigris-green, pubescent, below green, veins dark green and densely pubescent; tip acute, base narrowed, margin serrate; 7–9 secondary veins per side; petiole 2–3 cm long, pubescent. Inflorescence a cyme composed of 8 to 15 flowers in upper leaf axils, peduncle pubescent, 15–20 cm long; pedicels 0.5–2.0 cm long. Calyx lobes verdigris coloured, subequal, ovate, densely glandular; margin serrate; sepal base connate for 2 mm, ventral lobes 12 mm long, 7 mm wide at base; lateral lobes 10 mm long, 6 mm wide; dorsal lobe 11 mm long, 7 mm wide, in open flowers curved downwards. Corolla urceolate, vermilion coloured, densely glandular, hairs 3 mm long; corolla 2.6 cm; tube 10 mm long, 4 mm wide; pouch 1 cm long, 0.8 cm wide, 1 cm tall; petal lobes subequal, recurved, central part 2 mm wide; corolla opening 3 mm wide, 6 mm tall; spur elliptical, 7–8 mm long. Filaments subtomentose, 8 mm free, 4 mm attached to tube where broadened, 1 mm elongated towards spur; anthers coherent, 3.5 × 2 mm; staminode 3.5 mm; nectary dorsal, half ring-shaped, glabrous, 1 mm tall, 3 mm wide. Ovary superior, flat, glabrous, 6 mm long, 8 mm tall; style 9 mm long; stigma subbilobed. Fruit and seeds not seen.

Gasteranthus imbaburensis was only found in the higher parts of the area above 1700 m a.s.l. as single plants scattered around in the shrub layer.

Etymology: “*imbaburensis*” is derived from Imbabura province of Ecuador, where this species is found for the first time.

Holotype: QCA M. FREIBERG 96238, 04. 07. 1996 (Isotypes ULM, QCNE)

Gasteranthus leopardus M. FREIBERG spec. nova (Fig. 2 A)

Diagnosis: Differt a *Gasterantho wendlandiano* (HANST) WIEHLER pedunculo longiore et deflexo sub lamina, corolla longiore, extra intraque flava cum punctis vel maculis brunneo-porphyreis, pellis leopardis similis.

Description: Terrestrial, erect, perennial herb up to 1.2 m tall. Stems unbranched, tomentose; internodes 7–10 cm long, bark with narrow stripes, bases thickened. Leaves opposite, isophyllous; lamina oblong, (30–) 35 × 12 cm, tip acute, margin serrate, base shortly narrowed, above greenish, glabrous and shining, below yellow-green, tomentose, especially on veins, ca. 20 secondary veins per side; petiole 4 cm long, tomentose. Inflorescence a cyme of 15–20 flowers in upper leaf axils, peduncle up to 14 cm, bended down under the blade it emerged, protecting the fragile flowers, pleasant smelling; pedicels 1.0–1.5 cm long. Calyx lobes subequal, almost circular to ovate, tomentose-glandular, leather-coloured, margin serrate; base connate for 2 mm, ventral lobes 11 mm long, 6 mm wide; lateral lobes oblique, 10 mm long, 5 mm wide; dorsal lobe revolute, 8 mm long, 6 mm wide. Corolla 6 cm long, infundibulate, glandular, tube 30–35 mm long, 10 mm in diam., outside yellow with purple-brownish spots; petal lobes fragile, 11 mm long, 14 mm wide, outside yellow, inside yellow with large, black-purple blotches like the fur of a leopard; corolla throat glandular, 13 mm wide, 10 mm tall, spur narrowed, yellow, slightly bended downwards, 8–10 mm long. Filaments sparsely pilose at the base, 20 mm free, 8 mm attached to tube; anthers coherent, 3 × 1.5 mm; staminode 4 mm; nectary dorsal, bilobed, tomentose, 2.5 mm tall, 5 mm wide. Ovary superior globose, pilose, 5 mm long, 5 mm tall; style 15 mm long, sparsely pilose. Fruit and seeds not seen.

Gasteranthus leopardus was only found between 1500 and 1600 m a.s.l. in troops of less than 5 individuals.

Etymology: “*leopardus*” refers to the coloration pattern of the corolla, especially nicely seen in the front view, resembling the fur of leopards.

Holotype: QCA M. FREIBERG 960214, 29. 06. 1996 (Isotypes ULM, QCNE)

Gasteranthus trifoliatus M. FREIBERG spec. nova (Fig. 2 B)

Diagnosis: Differt a *Gasterantho pansamalano* (DONN. SMITH) WIEHLER laminis lanceolatis angustioribus, foliis ternatis, calycibus angustioribus, corollis brevioribus.

Description: Terrestrial, slightly branched shrub up to 2 m tall. Stems pilose, internodes 3–5 cm long. Nodes trifoliate, lamina lanceolate, (10–) 12 × 1.5 (–2) cm, above verdigris coloured, glabrous, below olive coloured, pilose, tip acute, base narrowed, margin crenulate, 10 secondary veins per side, petiole 0.5–1 cm long, pilose. Inflorescence a reduced cyme with rarely more than 1 flower in upper leaf axils; peduncles up to 6 cm long, nodes typically with 3 inflorescences; pedicels 0.5–1 cm long. Calyx lobes subequal, subpilose, ovate, acute, 1.2 × 0.6 cm, green with more or less dull red parts, margin entire, bases connate, dorsal sepal curved backwards

by spur. Corolla 2.0–2.2 cm long, reddening, pouch 1.2 cm wide, petal lobes 0.2 cm long, obtuse, glandular; spur globose, 2–3 mm; corolla opening ca. 3 mm in diam. Filaments glabrous, 5–7 mm free, 7 mm attached to the tube; anthers coherent, ca. 1×2 mm; staminode 5 mm; nectary dorsal, half ring-shaped, 1 mm tall. Ovary superior, flat, glabrous, 5×2 mm; style 6 mm long, stigma bilobed. Fruit a succulent, two valved capsule; seeds tuberculate, 0.4×0.2 mm.

Gasteranthus trifoliatus is a common shrub in the area, but was not seen above 1600 m a.s.l. and below 1000 m a.s.l.

Etymology: "*trifoliatus*" is derived from the typically three-foliated nodes, often in combination with three flowers per nodes as well.

Holotype: QCA M. FREIBERG 96006, 17. 03. 1996 (Isotypes ULM, QCNE)

Acknowledgements

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