

DRYMONIA ATROPURPUREA (GESNERIACEAE),  
A NEW SPECIES FROM NORTHWESTERN SOUTH AMERICA

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ABSTRACT

Recent expeditions to the western Andean slopes of Colombia and Ecuador and preliminary work on a revision of *Drymonia* (Gesneriaceae) have resulted in the discovery of a new species. The new species, ***Drymonia atropurpurea*** Clavijo & J.L. Clark, is distinguished from other congeners by large (up to 46 cm long) elliptic to oblong leaves, dark purple bullate calyces, and angulate (bent) corolla tubes.

RESUMEN

Expediciones recientes a la vertiente occidental de los Andes colombianos y ecuatorianos, y el trabajo preliminar de revisión del género *Drymonia* (Gesneriaceae) han permitido descubrir una nueva especie: ***Drymonia atropurpurea*** Clavijo & J.L. Clark, que se distingue de otras especies del género por sus hojas grandes (hasta 46 cm de largo), de elípticas a oblongas; por el cáliz púrpura oscuro y bullado, y por el tubo de la corola angulado (geniculado).

KEY WORDS: Gesneriaceae, *Drymonia*, taxonomy, Ecuador, Colombia

INTRODUCTION

The flowering plant family Gesneriaceae is a member of the order Lamiales (APG III 2009) and is primarily pantropical with extensions into the subtropics and temperate regions (Weber 2004; Skog & Boggan 2006). The family contains ca. 150 genera and ca. 3500 species and is classified into four major groups (Weber 2004). In the Neotropics the highest concentration of species diversity for the family is found in Colombia with 32 genera and more than 400 species (Kvist et al. 1998), followed by Ecuador with 29 genera and 240 species (Skog & Kvist 1997), Brazil with 28 genera and 207 species (Forzza et al. 2010), and Peru with 28 genera and 150 species (Kvist et al. 2005).

*Drymonia*, with 74 species, is the third largest genus of Gesneriaceae in the Neotropics, after *Columnnea* (272 species) and *Besleria* (200 species) (Weber 2004). It ranges from Mexico to Bolivia, including Brazil, French Guiana, and the Caribbean. The highest species richness is found in Colombia with 31 species (Clavijo & Clark 2008) and Ecuador with 30 species (Clark et al. 2006). *Drymonia* is a genus of terrestrial subshrubs, vines or herbaceous epiphytes with campanulate, tubular or hypocyrotid flowers. *Drymonia* is especially diverse in the tropical wet forests along the western Andean slopes of southern Colombia and northern Ecuador where there are over 35 species.

*Drymonia* has a wide range of morphological variation as a result of different pollinators and dispersal mechanisms (Roalson et al. 2005; Clark et al. 2006). The morphological variation has made *Drymonia* a difficult genus to circumscribe. Ongoing studies on pollination biology have facilitated a better understanding of the morphological variation that pertains to pouched flowers (bird pollinated) and campanulate flowers (eu-glossine bee pollinated).

TAXONOMIC TREATMENT

***Drymonia atropurpurea*** Clavijo & J.L. Clark, sp. nov. (**Fig. 1**). TYPE: ECUADOR. ESMERALDAS. PASTOQUIA: Alto Tambo, remnant patch of primary forest on north side of road between Durango and Alto Tambo on Hwy San Lorenzo–Ibarra, 0°57'59" N, 78°33'39" W, 695 m, 29 May 2008 (fl, fr), J.L. Clark 10443 (HOLOTYPE: US; ISOTYPES: BRIT, K, MO, NY, QCNE, UNA).

Differs from other congeners by the subshrub habit, relatively large leaves to 46 cm long, dark purple inflorescence bracts, bullate purple dark calyx, and angulate corolla tube.

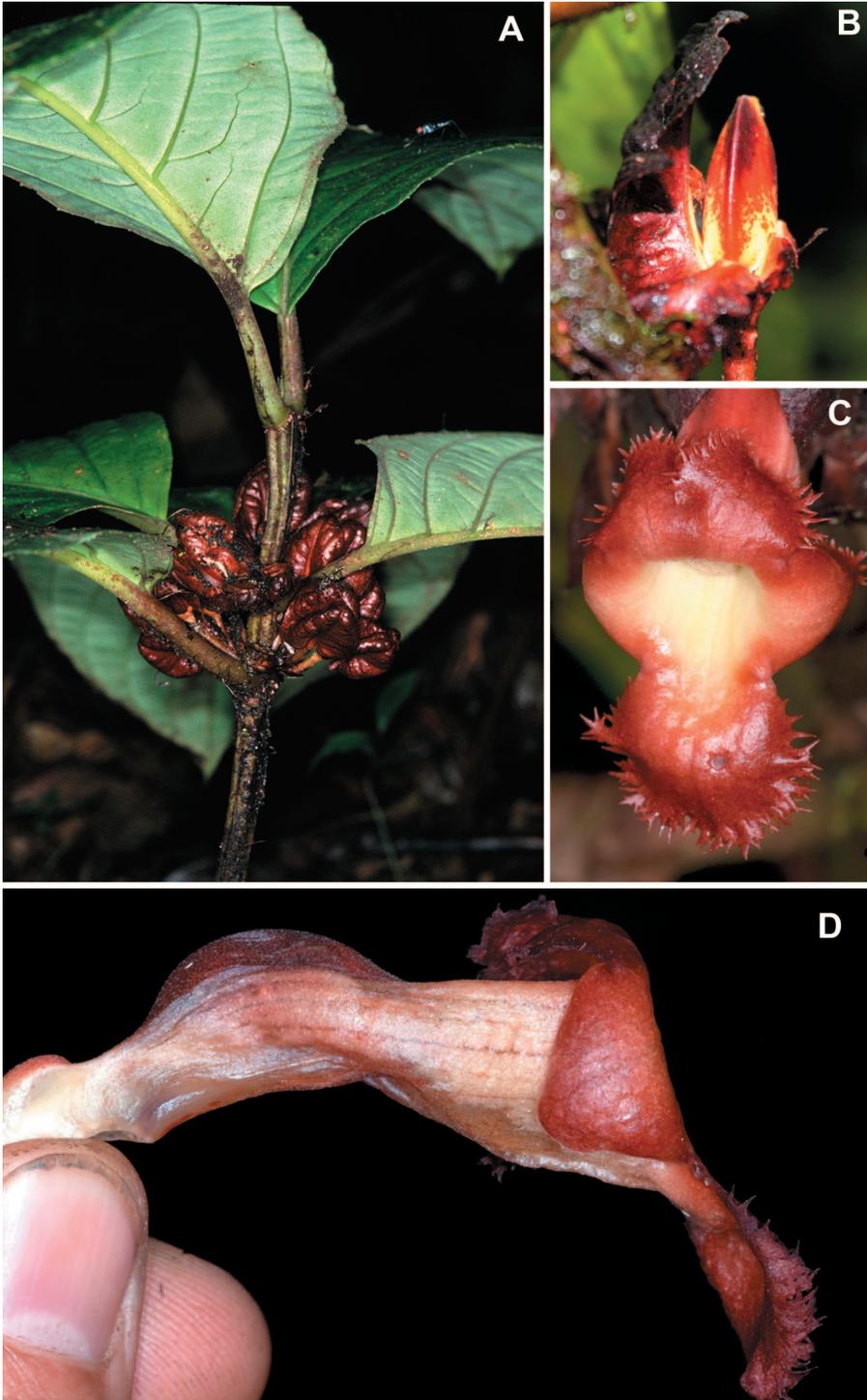


FIG. 1. *Drymonia atropurpurea*. A. Habit showing elongate unbranched stem. B. Immature fleshy bivalved capsule. C. Face view of corolla. D. Lateral view of corolla showing angulation. (Photos A, C and D by J.L. Clark & B by L. Clavijo; A. J.L. Clark 7143; B. L. Clavijo 1689; C & D. J.L. Clark 10443).

Terrestrial subshrub, 1–1.5 m tall. **Stem** erect, unbranched, quadrangular in cross-section, shallowly sulcate, subwoody, green with red spots, glabrate basally, strigose apically, trichomes ca. 1 mm long, unbranched, yellow when dry; internodes (2.4–)5–15 cm long. **Leaves** opposite, decussate, equal in a pair; petioles 2.8–5.2 cm long, terete, green with red spotting, base swollen with several pinkish gland-like enations, glabrate to strigillose, strigose in the immature leaves, trichomes less than 1 mm long, yellow when dry; blade elliptic to oblong, 20–46 cm long, 6.3–21 cm wide, coriaceous, upper and lower surface green, sometimes lower surface green suffused with light red, apex acuminate, base cuneate or sometimes slightly oblique, margin serrulate, becoming revolute when dry, upper surface glabrous, lower surface glabrate; 6–8 lateral pairs of veins, venation raised below, green when live, red–brown when dry, main vein strigose, secondary veins strigillose, higher order venation only evident abaxially, green when live, red–brown when dry. **Inflorescence** a reduced pair-flowered cyme, 1 inflorescence per axil with 2–6 flowers; peduncle reduced to less than 1 mm long; inflorescence bracts ca. 23 mm long, ca. 12 mm wide, dark purple, strigillose, elliptic, apex acute, margin entire; floral bract one, 10–23 mm long, 1–8 mm wide, dark purple, linear to spatulate, base decurrent, apex rounded, margin entire, strigose to strigillose towards the apex; pedicel 16–32 mm long, red–orange, strigillose to strigose, glands scattered along the pedicel. **Calyx** dark purple, coriaceous, bullate, persistent in fruit, apex rounded, margin entire, base truncate to cordate, glabrate to strigose at the base, venation evident, the main vein strongly raised abaxially, strigose; calyx lobes 5, 4 nearly equal, 5th lobe (dorsal) slightly smaller, lobes fused at the base for 2–4 mm, ventral lobes 18–25 mm long, 14–21 mm wide, rotund, margin occasionally involute, lateral lobes 19–28 mm long, 13–17 mm wide, ovate, margin involute apically, dorsal lobe 14–19 mm long, 8–13 mm wide, ovate. **Corolla** zygomorphic, funnellform; corolla tube strongly angulate (bent) at the base, posture perpendicular relative to the calyx, ca. 29 mm long, outer surface beige ventrally with some darker longitudinal lines, red–brown dorsally, glabrous; corolla base ca. 7 mm wide, spur ca. 11 mm long, ca. 8 mm wide, white; throat ca. 14 mm wide, light yellow, glandular trichomes on the inner surface; corolla lobes 5, subequal, red–brown, apex obtuse, margin fimbriate, glabrous, ventral lobe longer than the other four lobes, spreading, ca. 13 mm long, ca. 15 mm wide, orbicular, upper lobes reflexed, 6 mm long, 6–7 mm wide, orbicular, lateral lobes reflexed, 9–10 mm long, 8–9 mm wide, rotund. **Androecium** of 4 stamens, didynamous, 24–28 mm long, adnate to the corolla tube for 9–10 mm, glabrous, staminode absent; anthers oblong, dehiscence by basal pores that develop into longitudinal slits, 6–7 mm long, 1.5–2 mm wide. **Gynoeceum** with a single dorsal nectary gland, ovate, emarginate, 2.0–2.6 mm long; ovary superior, ca. 6 mm long, ca. 4 mm wide, glabrous, oblong, laterally compressed; style ca. 13 mm long, strigillose; stigma stomatomorphic, ca. 3 mm diameter. **Fruit** a bivalved laterally compressed fleshy capsule, ca. 18 mm long, ca. 14 mm wide, rounded, externally red–brown with yellow patches towards the apex and the base, glabrous; seeds numerous, immersed in a mass of fleshy funicular tissue, 0.4–0.6 mm long, 0.2–0.3 mm wide, brown when dry, rhombic, covered by a transparent aril.

*Distribution and habitat.*—*Drymonia atropurpurea* is known from wet forests on the western slopes of the Andes in northern Ecuador and southern Colombia, between 350 and 1400 meters. In Colombia it has been found in the understory of protected cloud forests that are part of the Río Nambí Natural Reserve in the Department of Nariño above 1000 meters. In northern Ecuador *D. atropurpurea* has been collected in remnant patches of wet forest between 350 and 695 meters in the Esmeraldas Province along the San Lorenzo–Ibarra highway.

*Drymonia atropurpurea* is distinguished from other congeners by the subshrub habit; large elliptic to oblong leaves to 46 cm long; dark purple bracts (inflorescence and floral) and calyces (Fig. 1A); bullate calyx lobes; corolla tube strongly angulate (bent) at the base (Fig. 1D); corolla posture perpendicular relative to the calyx; and dark reddish–brown corolla lobes. *Drymonia atropurpurea* is similar to *Drymonia turrialvae* because of their large leaves, relatively large funnellform corollas, and similar inflorescence. The two species are differentiated by the subshrub habit in *D. atropurpurea* in contrast to the herbaceous habit in *D. turrialvae*; the non-bullate leaves with the abaxial surface green in *D. atropurpurea* in contrast to the bullate leaves with the abaxial surface wine-red in *D. turrialvae*; and a laterally compressed fleshy capsule in *D. atropurpurea* (Fig. 1B) in contrast to a globose indehiscent berry in *D. turrialvae*.

*Etymology*.—The specific epithet is Latin for dark purple: *atro* (=black), *purpurea* (=purple), in reference to the dark purple color of the bracts and calyx.

*Conservation and IUCN Red List category*.—*Drymonia atropurpurea* is known from recently documented populations in Ecuador and Colombia. The population in Colombia is from the well-established protected area, Río Nambí Natural Reserve (Nariño). The population from Ecuador is from an area that is almost completely deforested along the San Lorenzo–Ibarra highway. According to the IUCN Red List criteria for estimated range, area of occupancy and population size (IUCN 2001), and considering the uncertain future of habitat conservation in Ecuador, *Drymonia atropurpurea* should be listed in the category NT (Nearly Threatened).

**PARATYPES. COLOMBIA. Nariño:** Municipio Barbaocoas, Corregimiento Altaquer, vereda El Barro. Reserva Natural Río Nambí, Sendero hacia el río Nambí. 1180–1400 m, 26 Jul 2011 (fr), L. Clavijo, M. Flores & A. Vásquez 1689 (COL, PSO). **ECUADOR. Esmeraldas:** Parroquia San Lorenzo, Cantón Alto Tambo, Border region of Awá Indigenous Territory, entrance to the Río Bogotá community (future biological research station), near Quebrada Pambilar, 350–600 m, 0°58'57" N, 78°35'50" W, 12 Feb 2003 (fl, fr), J.L. Clark 7145 (QCNE, SEL, UNA, US).

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#### REFERENCES

- APG (ANGIOSPERM PHYLOGENY GROUP) III. 2009. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Bot. J. Linn. Soc.* 161:105–121.
- CLARK, J.L., P.S. HERENDEEN, L. E. SKOG, AND E.A. ZIMMER. 2006. Phylogenetic relationships and generic boundaries in the Episcieae (Gesneriaceae) inferred from nuclear, chloroplast, and morphological data. *Taxon* 55:313–336.
- CLAVIJO, L. AND J.L. CLARK. 2008. El género *Drymonia* (Gesneriaceae). Rapid Color Guide #244 ([www.fnmh.org/plantguides](http://www.fnmh.org/plantguides)). Chicago Field Museum.
- FORZZA, R.C. (and 29 others), eds. 2010. Catálogo de plantas e fungos do Brasil. Andrea Jakobsson Estúdio/Jardim Botânico do Rio de Janeiro.
- KVIST, L.P., L.E. SKOG, AND M. AMAYA-MÁRQUEZ. 1998. Los géneros de Gesneriaceas de Colombia. *Caldasia* 20:12–28.
- Kvist, L.P., L.E. SKOG, M. AMAYA-MÁRQUEZ, AND I. SALINAS. 2005. Las Gesneriáceas de Perú. *Arnaldoa* 12:16–40.
- IUCN. 2001. IUCN Red List Categories and Criteria, Version 3.1. Prepared by the IUCN Species Survival Commission. International Union for Conservation of Nature and Natural Resources, Gland, Switzerland and Cambridge.
- ROALSON, E.H., J.K. BOGGAN, L.E. SKOG, AND E.A. ZIMMER. 2005. Untangling Gloxinieae (Gesneriaceae). I. Phylogenetic patterns and generic boundaries inferred from nuclear, chloroplast, and morphological cladistic dataset. *Taxon* 54:389–410.
- SKOG, L.E. AND L.P. KVIST. 1997. The Gesneriaceae of Ecuador. In: Valencia, R. & H. Balslev, eds. *Estudios sobre Diversidad y Ecología de Plantas, Memorias del II Congreso Ecuatoriano de Botánica*. Pontificia Universidad Católica del Ecuador, Quito, Ecuador. Pp. 13–23.
- SKOG, L.E. AND J.K. BOGGAN. 2006. A new classification of the Western Hemisphere Gesneriaceae. *Gesneriads* 56(3):12–17.
- WEBER, A. 2004. Gesneriaceae. In: Kubitzki, L. and J.W. Kadereit, eds. *The families and genera of vascular plants. Vol. 7. Flowering plants, dicotyledons: Lamiales (except Acanthaceae including Avicenniaceae)*. Springer–Verlag, Berlin & Heidelberg, Germany. Pp. 63–158.