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Bomarea rinconii (Alstroemeriaceae), a new species from the Talamanca Mountains in Chiriqui Province, Panama

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Introduction

Bomarea Mirbel (1804: 71; Alstroemeriaceae) includes 122 species (Govaerts 2013) and is divided into four subgenera (Hofreiter & Tillich 2002): *Baccata* (five species), *Bomarea* (ca. seventy species), *Sphaerine* (twelve species) and *Wichuraea* (eighteen species). *Bomarea* is distributed from Mexico and the Greater Antilles to southern South America (Gereau 1994). The centre of distribution of the genus is along the Andes from Colombia to Bolivia (Hofreiter 2008).

The diversity of *Bomarea* species scientifically documented for Panama has not increased in the last two decades: from five species (two endemic) in the *Flora of Panama* of Woodson, Schery and collaborators (Killip 1945) to 12 species (four endemic) in *Flora Mesoamericana* (Gereau 1994) and 12 species (four endemic) in the recent *Catálogo de plantas vasculares de Panamá* (Correa *et al*. 2004). After the recent treatment of *Bomarea* subgen. *Bomarea* sect. *Multiflorae* by Hofreiter (2008), this number decreased to 11 species: *Bomarea acuminata* Baker (1887: 212) is a synonym of *B. andreana* Baker (1882: 205), and *B. caldasii* (Kunth, 1816: 283) Ascherson & Graebner (1906: 431) is synonymous with *B. multiflora* (Linneaus f., 1782: 207) Mirbel (1804: 72), but *B. costaricensis* Kränzlin (1913: 4) is newly reported for Panama. Of these 11 species, four are endemic to Panama and Costa Rica, and only *B. caudatisepala* Gereau (1989: 599) and *B. bracteolata* Gereau (1989: 601) are endemic to Panama (Hofreiter 2008).

No new taxa of *Bomarea* have been described from Panama since Gereau (1989). However, some areas of the country have not been sufficiently collected because difficult orography and landscape, principally in far western (Cordillera de Talamanca) and far eastern Panama.

During a botanical excursion made in 2006, a specimen of *Bomarea* from a cloud forest was collected in the Reserva Forestal Fortuna (Cordillera de Talamanca) in Chiriqui Province. Subsequently, herbarium collections of *Bomarea* from 12 herbaria (B, CR, FR, INB, MO, NY, PMA, SCZ, SEL, UCH, USJ and WU; abbreviations from Thiers 2013) were studied. The specimen did not match any of the known taxa of the genus and hence is described and illustrated here as a new species.

Bomarea rinconii* Cáceres González, *sp. nov. (Fig. 1)

Type:—PANAMA. Chiriqui Prov.: Distr. Gualaca, Reserva Forestal Fortuna, cloud forest, elevation 1800 m, 8° 46' 12.54" N, 82° 11' 44.02" W, 4 April 2006, *Cáceres González 2988* (holotype: UCH!; isotypes: UCH!, PMA!).

This new species is similar to *Bomarea caudatisepala*, but it is characterized by leaves that are 2.6–3.0 times longer than wide (ovate or ovate-lanceolate), involucral bracts that are generally trifid and equal in length, every sepal having a short horn (1.0–1.5 mm long) located 1–2 mm below the apex, inner tepals (4.6–4.9 cm long), stigma trifid (every lobule 2.5–3.0 mm long), whereas *B. caudatisepala* has a horn, but it is longer (7–10 mm long) and located 2–4 mm below the apex, and the involucral bracts are entire.

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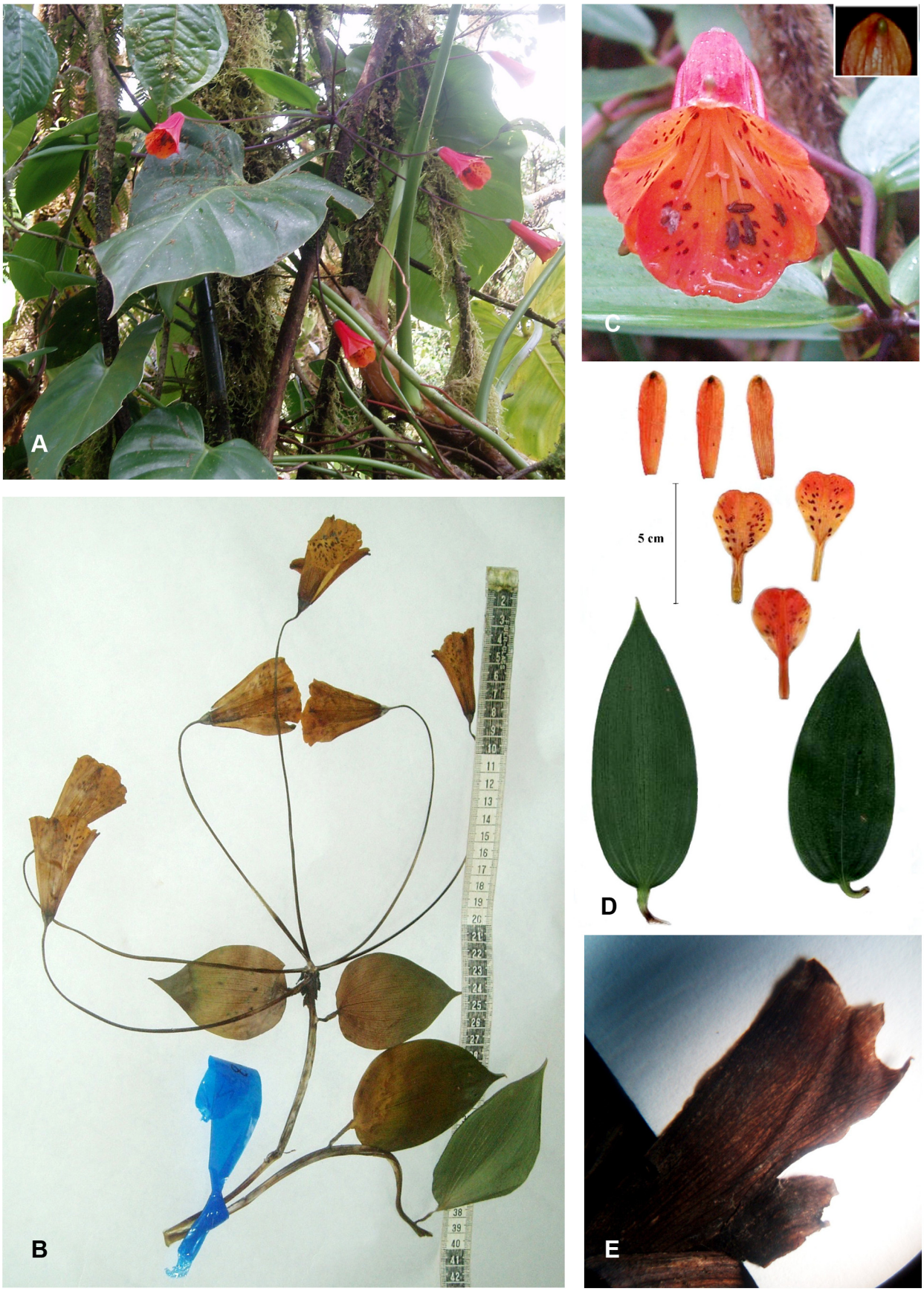

FIGURE 1. *Bomarea rinconii* A. Habit. B. Dry inflorescence. C. Flower, front view with a short horn (upper right corner). D. Flower. E. Trifid involucral bract. All from *Cáceres González 2988*. Photographs by Daniel A. Cáceres González.

Plant twining, stem slender up to 3 m long, 3.5–4.0 mm in diameter, glabrous. Leaves ovate or ovate-lanceolate, 7.8–11.0 × 5–6 cm, from 1.5–2.1 times longer than wide. Both leaf surfaces glabrous, acuminate apex; petiole 1.4–1.8 cm long, glabrous. Involucral bracts 5, glabrous, generally trifid, 1.3–1.9 × 0.25 cm at base and 0.70 cm at apex, lobules 1–2 mm long. Inflorescence an umbel, pedicels up to 6, unbranched, ebracteolate 15.7–20.0 cm long, pubescent with short scattered hairs (erect to slightly curved), 0.1–0.2 mm long, brown. Flowers actinomorphic, calyx with glandular pubescence, 0.01–0.05 mm long and yellowish; outer tepals 3, free, 4.4–4.6 × 0.4–0.5 cm at base to 1.1–1.3 cm at apex, dark orange to reddish orange abaxially and orange-yellowish adaxially, every sepal with a short horn 1.0–1.5 mm long located 1–2 mm below the apex, green to blackish; inner tepals 3, free, unguiculate, 4.6–4.9 cm long (up to 2–5 mm longer than sepals), 1.4–1.7 mm wide at base to 2.1 cm wide on the apex, which is retuse-mucronate to lightly rounded, orange yellowish abaxially, yellowish adaxially in the lower half and orange at the apex, mottled purple-brown on the upper two-thirds. Stamens 6, free, filaments 3.0–4.5 cm long, straight, shorter than petals, anthers oblong 3.8–5.0 × 1.5–2.0 mm. Ovary inferior, globose, 0.5–0.7 cm long × 0.5 cm diameter, densely glandular-pubescent (cream to slightly brownish), axial placentation. Style 1.3–1.6 cm, glandular pubescent on the base, stigma trifid with every lobule 2.5–3.0 mm long. Fruits and seeds unknown.

Etymology:—*Bomarea rinconii* is named in honour of Prof. Rafael Rincón Gómez (1947–), from the Escuela de Biología in the Universidad Autónoma de Chiriquí (UNACHI), who is considered one of the most knowledgeable contemporary botanists of western Panama. He contributed vastly to the collections of the UCH herbarium and is highly esteemed for his generous nature of sharing his knowledge with colleagues and students. During his career, he has been a man with a great passion for botany and insatiable curiosity about the vascular plants of Panama; he has played an important role in the education of many professionals at University of Panama and now at UNACHI.

Distribution:—*Bomarea rinconii* is so far only known from the Reserva Forestal Fortuna, Chiriqui Province, in the Cordillera de Talamanca, Panama.

Habitat and Ecology:—The new species grows in primary cloud forest at an elevation around 1800 m. The common associates are *Guzmania scandens* H.E.Luther & W.J.Kress (Bromeliaceae), *Sobralia* species (Orchidaceae), *Anthurium* species (Araceae), *Satyria* species (Ericaceae). It was observed flowering from April to May (end of the dry season).

Conservation status:—*Bomarea rinconii* has been collected only once in Panama. At this site, few individuals have been observed, and, hence, it is assumed to be rare. However, only few areas on the Reserva Forestal Fortuna have been explored, and there are many endemic species of plants in this protected area. Therefore, in the conservation assessment presented here (following the guidelines of the IUCN 2001), *Bomarea rinconii* is categorized as Critically Endangered (CR), represented by only two distribution records and based on the criteria B2bi–ii.

Discussion:—*Bomarea rinconii* belongs to the former section *Caldasianae* with inner tepals exceeding outer and inflorescence an umbel (Killip 1935), but this section is now included in section *Multiflorae* (Hofreiter 2008). In Panama, section *Multiflorae*, according to Hofreiter (2008), is represented by seven species: *Bomarea acutifolia* (Link & Otto, 1828: 57) Herbert (1837: 112), *B. andreana, B. caudatisepala, B. costaricensis, B. chiriquina* Killip (1945: 15), *B. hirsuta* (Kunth, 1816: 285) Herbert (1837: 114) and *B. suberecta* Gereau (1989: 599). Four of the seven species are similar to *B. rinconii* (*B. caudatisepala, B. suberecta*, *B. andreana* and *B. costaricensis*).

In *Bomarea rinconii* every sepal has a short horn 1.0–1.5 mm long, located 1–2 mm below the apex. A horn is also present in *B. caudatisepala*, but it is longer, 7–10 mm, and located 2–4 mm below the apex. Another important feature is that in *B. rinconii* the involucral bracts are trifid, whereas in *B. caudatisepala* they are entire. Leaves in *B. rinconii* (5–6 cm) are wider than in *B. caudatisepala* (2.7–4.5), from 1.5 to 2.1 times longer than wide in the former and 2.6 to 3.0 times longer than wide in the latter.

Lobules of the trifid involucral bracts are equal in length in *Bomarea rinconii*, but in *B. suberecta* the middle (central) lobe is longer than the outer (lateral) ones, as is evident from the holotype (*D'Arcy 6587*, MO!). In *B. rinconii* one of the involucral bracts is leaf-like, and in *B. suberecta* all involucral bracts are

equal. *Bomarea rinconii* has a twining habit, whereas *B. suberecta* is suberect to erect. *Bomarea rinconii* can be easily distinguished from *B. andreana* and *B. costaricensis* by the open inflorescence. *Bomarea rinconii* has a short horn, which is not present at all in *B. costaricensis* and *B. andreana*.

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