

CENTRAL AMERICAN NOVELTIES IN THE GENUS BLAKEA (MELASTOMATACEAE)

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Current work on a treatment of the Melastomataceae for Flora Costaricensis has disclosed several new species, many of which were collected in lower elevation montane forests during the last decade. The three new species of *Blakea* presented here represent significant additions to two divergent trends of floral evolution within the genus. *Blakea chlorantha* is to be included with the small group of species characterized by pendant pedicellate flowers with green, connivent petals and copious nectar production, whereas *B. crassifolia* and *B. micrantha* are to be added to the evolutionary line having small, subsessile, nectarless flowers with expanded, tuberculate or verrucose petals.

Blakea chlorantha Almeda, *sp. nov.*

Figure 1

Frutex vel arbuscula ad 3–5(–9) m altus. Ramuli primum obscure quadrangulati demum teretes sicut petioli pedicellique modice vel dense setosi pilis ca. 0.5 mm longis demum glabrati. Folia in quoque jugo in forma isomorphica, in dimensionibus isomorphica; petioli 1.2–1.7(–2.5) cm; lamina elliptica vel elliptico-lanceolata 6–9(–12.3) cm longa et 3–5.5(–8.7) cm lata, chartacea vel subcoriacea, integra, 5-plinervata, apice acuminata, basi acuta, supra glabra, subtus sparse vel modice setosa pilis gracilibus plerumque 0.5 mm longis. Flores 6-meri in foliorum axillis 1–3 fasciculati; pedicelli 4–10 mm longi; bracteae exteriores et interiores 5–9 × 4–5 mm ovatae vel elliptico-ovatae, apice obtuso vel rotundato. Hypanthium (ad torum) 6–6.5 mm longum extus modice setosum pilis 0.5 mm longis; calycis tubus 2 mm longus, lobis 4–4.5 mm longis triangularibus. Petala 6–8.5 × 5–6 mm crassiuscula glabra anguste-obovate, apice late rotundato. Stamina isomorphica glabra inter se non cohaerentia; filamenta 2.5–3 mm longa; antherarum thecae 3–3.5 mm longae apice dorsaliter biporosae, connectivo dorsaliter 1 mm supra basim calcari minuto elevato. Stylus 7–12 mm longus; stigma truncatum. Fructus ignotus.

TYPE: COSTA RICA. **Puntarenas:** Ca. 3–3.5 km SE of Santa Elena and 2–3 km E of Monteverde on the Peñas Blancas trail, Cordillera de Tilaran, elevation 1500–1540 m, 19 December 1973, *Almeda et al.* 2005 (Holotype, DUKE!; isotypes, CAS!, CR!, F!, MO!, US!).

ADDITIONAL COLLECTIONS EXAMINED: COSTA RICA: Border of Alajuela, Puntarenas and Guanacaste Provinces: roadside along continental divide at 1550–1580 m, *Dryer* 1045 (F).

Blakea chlorantha is presently known only from the Cordillera de Tilaran, Costa Rica, a small mountain range situated on the western edge of an old, dissected, intrusive volcanic block of mountains. This range supports a large and diverse assemblage of plant and animal species. It has been the subject of intensive conservation efforts following discovery of the Golden Toad (*Bufo periglenes* Savage), which is known from only a few hectares within the lower montane forest (Savage, 1966).

The diagnostic characters of the new species are its green pendant flowers, small (5–9 mm long) ovate to elliptic-ovate floral bracts, and entire, revolute foliar margins which are modified adaxially (at petiole-laminar junction) into pseudoformicarial flap-like pouches (mostly 2–4 mm long and 3–4 mm wide), the basal and lateral margins of which are free from but conspicuously decurrent on the lower petiolar surface. In foliar shape, vegetative indument, and shape and posture of floral organs, *Blakea chlorantha* resembles *B. austin-smithii* Standley, another Costa Rican endemic presently known only from the volcanic slopes of the Cordillera Central. These two species are readily distinguished by the latter's epiphytic habit and possession of larger (10–24 mm long) linear-lanceolate floral bracts, and elliptic-obovate, bluntly denticulate leaves.

Excepting the brief note by Spruce (1908), who suggested probable beetle pollination for an Ecuadorian species of *Blakea*, information is not yet available on pollination mechanisms in the genus. The differences in floral structure among the Costa Rican species of *Blakea*, however, strongly suggest that different groups of pollinating agents are involved. Field observations of *B. chlorantha* and *B. austin-smithii* thus appear worthy of placing on record at this time. Although natural pollinators have not been seen, these two species share several floral characteristics reminiscent of the bat-pollination syndrome summarized by various workers (Faegri & van der Pijl, 1971; van der Pijl, 1936; Proctor & Yeo, 1973; Vogel, 1958).

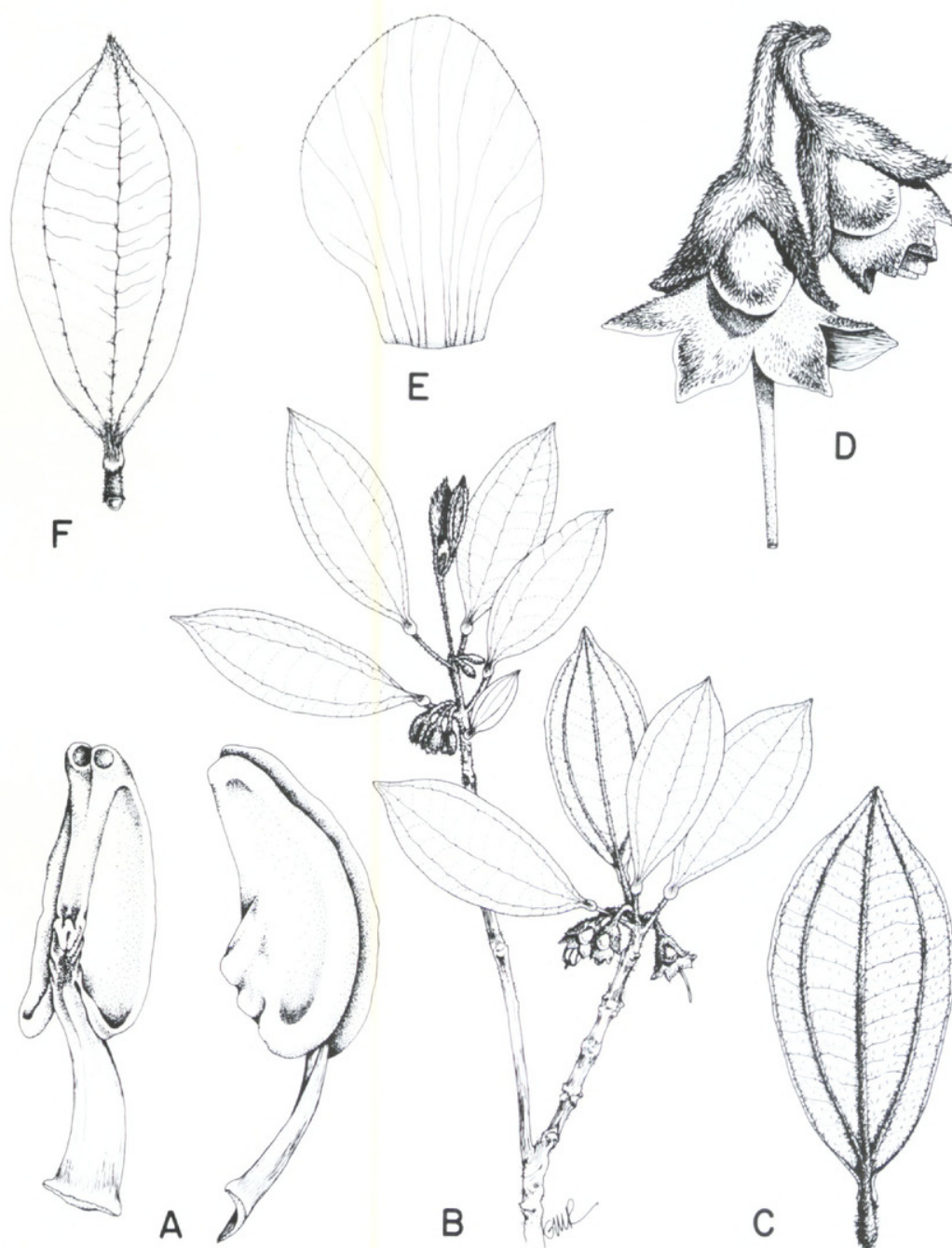


Figure 1. *Blakea chlorantha* Almeda. A, stamens, dorsal view (left) and lateral view (right), $\times 10$; B, habit $\times 1/2$; C, representative leaf, abaxial surface, $\times 1/2$; D, floral bud (right) and immature hypanthium (left), $\times 2$; E, petal, $\times 5$; F, representative leaf, adaxial surface, $\times 1/2$. (A–F from Almeda et al. 2005.)

Observed features include the following: 1) nocturnal anthesis; 2) production of a musty odor; 3) drab green petal color; 4) strong pendant pedicels which bring open flowers to an exposed \pm horizontal position; 5) overlapping petal conformation to form a bell-like corolla; and 6) production of copious mucilaginous nectar.

Blakea crassifolia Almeda, *sp. nov.*

Figure 2

Frutex epiphyticus. Ramuli glabri primum quadrangulati demum teretes. Folia rigida integra in quoque jugo in forma isomorhica, in dimensionibus isomorhica vel anisomorhica; petioli (1-)2-4 mm; lamina crasse coriacea (.5-)2-6.5 \times 1-4.3 cm, glabra, ovata vel elliptico-ovata, apice acuto ad cuspidato vel mucronato basi rotundata vel cordata 3-5-nervata. Flores 6-meri in foliorum axillis 1-2(-6) fasciculati; pedicelli 1-2 mm longi; bractae exteriores 5-8 \times 2.5-4 mm elliptico-lanceolatae apice acuto vel obtuso extus sparse lanatae demum glabratae; bractae interiores 4-7 \times 2.5-4 mm elliptico-ovatae apice acuto vel rotundato. Hypanthium 3-5 \times 4-6 mm glabrum; calycis tubus 1 mm longus, lobis (3-)3.5-4.5 mm longis anguste triangularibus. Petala carnea et tuberculata 5-7 \times 1.5-2.5 mm oblongo-lanceolata vel anguste oblanceolata. Stamina isomorhica glabra inter se non cohaerentia; filamenta 3.5-4.5 mm longa; antherarum thecae 2-2.5 \times 0.5 mm oblongo-subulatae connectivo dorsaliter 0.5 mm supra basim calcari minuto elevato. Stigma punctiforme; stylus glaber 6 mm longus. Semina ca 0.5-1 mm longa, albida vel brunneola, clavata, lunata vel pyriformia.

TYPE: PANAMA. **Cocle:** La Mesa above El Valle in forest on both sides of junction with road to Cerro Pilon, elevation ca 800 m, 21 July 1974, *Croat 25430* (Holotype, CAS!; isotypes, MO, US!).

ADDITIONAL COLLECTIONS EXAMINED: COSTA RICA: Heredia/Alajuela Border: Colonia Virgen del Socorro along road leading from Costa Rica #9 to the Colonia, *J. & K. Utley 5629* (CAS, DUKE, F). PANAMA. Cocle: foothills of Cerro Pilon, near El Valle at 900 m, *Duke & Correa 14713* (MO); woods along trail to La Mesa about 4.5 miles beyond El Valle, *Wilbur & Luteyn 11697* (CAS, DUKE, F, MO, US).

Blakea crassifolia is so named because of its unusually thick leaves which become rigid and coriaceous on drying. Distinguishing characters of this species are the relative absence of an indument on

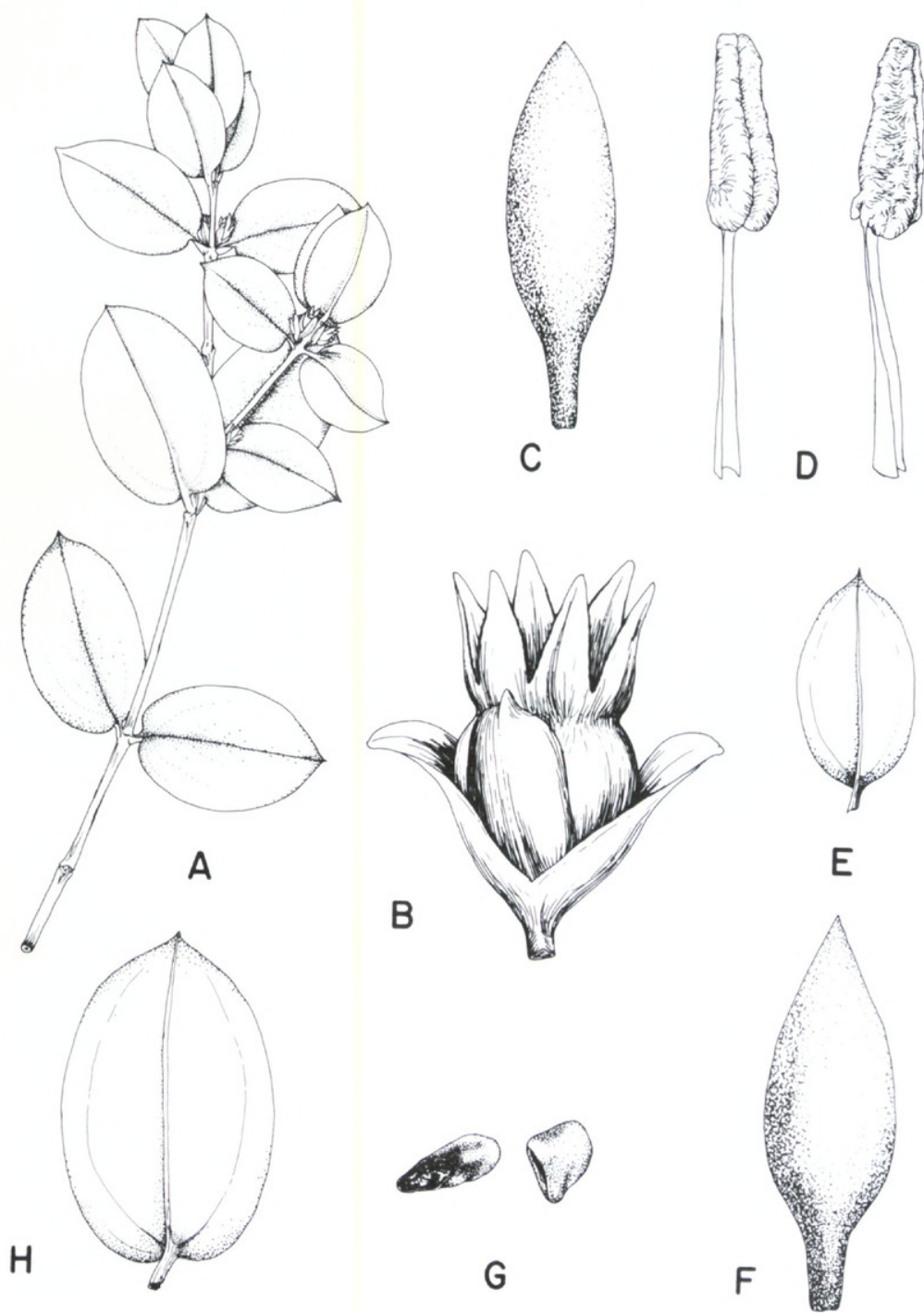


Figure 2. *Blakea crassifolia* Almeda. A, habit, $\times 1/2$; B, hypanthium with enveloping decussate floral bracts, $\times 4-1/2$; C & F, mature petals, $\times 8$; D, stamens, ventral view (left) and lateral view showing dorsal appendage (right), $\times 10$; E & H, representative leaves (abaxial surfaces), $\times 1$; G, seeds, $\times 8$. (A-F, H from Croat 25430; G from Wilbur & Luteyn 11697.)

mature vegetative organs, sessile or subsessile flowers, lance-triangular, tardily deciduous calyx lobes, lanceolate to narrowly oblanceolate, tuberculate petals, and apically truncate anthers.

In Gleason's (1958) treatment of the Panamanian species, *Blakea crassifolia* keys to *B. parvifolia* Gleason, a species known only from the crest of Cerro Pajita, El Valle de Anton, which differs by its conspicuous floral pedicels, basally cuneate, obovate leaves and laterally coherent stamens. With respect to floral details and type and distribution of pubescence on juvenile, vegetative and floral organs, *B. crassifolia* is most similar to *B. micrantha* (also described herein). The latter species differs in having oblanceolate to spatulate leaves, conspicuously costate outer floral bracts, sparsely verrucose, ovate to elliptic-ovate petals, and unappendaged anther connectives.

There are some noteworthy differences between the Costa Rican and Panamanian collections of the new species. The Costa Rican specimens have thinner, longer (4.8–6.5 cm) elliptic-lanceolate leaves that are acuminate apically, shorter petioles (1–1.5 cm), and pink petals (fide *Utley* 5629); the Panamanian specimens have thicker, smaller, ovate to elliptic-ovate leaves that are acute to cuspidate or mucronate apically, longer petioles (2–4 mm), and white petals (fide *Croat* 25430). Morphological differentiation of this kind is especially common among isolated populations of epiphytic plants and seems unworthy of formal taxonomic recognition. The observed differences warrant further study as additional populations are located.

Blakea micrantha Almeda, *sp. nov.*

Frutex epiphyticus. Ramuli sulcato-quadrangulati demum rotundato quadrangulati primum sicut folia paulo furfuracei mox glabrati. Folia in quoque jugo in forma isomorphica, in dimensionibus isomorphica; petioli 5–10 mm; lamina chartacea vel coriacea integra, $1-4 \times 0.4-1.6$ cm, oblanceolata vel spatulata, apice obtuso vel rotundato basi attenuata, 3-nervata. Flores 6-meri sessiles vel subsessiles in foliorum superiorum axillis solitarii; bracteae exteriores $3-5 \times 2-3$ mm elliptico-lanceolatae apice rotundato extus sparse lanatae demum glabratae; bracteae interiores $3-4 \times 2-3$ mm elliptico-ovatae apice rotundato. Hypanthium $4-5 \times 3-5$ mm; calycis tubus 1 mm longus, lobis 1.5 mm longis late triangularibus. Petala integra $4.5-6 \times 2.5-3$ mm, elliptica vel elliptico-ovata extus

minute verrucosa. Stamina isomorphica glabra inter se non cohaerentia; filamenta 2–3.5 mm longa; antherarum thecae 2×0.5 –1 mm oblongo-subulatae, connectivo non appendiculato. Stigma punctiforme; stylus glaber 6 mm longus. Fructus ignotus.

TYPE: PANAMA **Veraguas**: Cerro Tute ca. 10 km NW of Santa Fe on ridgetop in cloud forest above 1000 m, 19 June 1975, *Mori 6765* (Holotype, CAS!; isotype, MO!).

The type and only known collection of *Blakea micrantha* was gathered in an area which has received little attention by field botanists. Although closely related to *B. crassifolia*, this apparently local entity is amply distinct. In addition to the diagnostic features enumerated in the discussion of the preceding species, *B. micrantha* is distinguished by its carinate distal branchlets, thinner, basally attenuate leaves with revolute margins and longer (5–10 mm) petioles.

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