



Monochaetum amistadense (Melastomataceae): A New Species from the
Páramo of Costa Rica

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ABSTRACT. *Monochaetum amistadense*, a new species from the páramo of Costa Rica, is described, illustrated, and compared to its closest presumed relative, *M. compactum*. The distributional range of *M. trichophyllum* is extended from Panama to Costa Rica, and a diagnostic key is provided for the 10 species of *Monochaetum* now known from Costa Rica.

The evolution of morphologically distinct taxa, often of limited geographic extent, has been a recurrent theme in the evolution of *Monochaetum*, a montane neotropical genus of some 45–50 species. The most recent regional monograph attributed 18 species of *Monochaetum* to Mexico and Central America, eight of which were reported from Costa Rica (Almeda, 1978).

Collections of *Monochaetum* made in the Cordillera de Talamanca during the last decade have added two additional species to the Costa Rican flora. *Monochaetum trichophyllum* Almeda, which was described from and thought to be endemic to Panama, is now known from the Atlantic slope of the Talamanca range (Limón: S side of unnamed cordillera between the Río Terbi and Río Siní, 2–4 airline km W of the Costa Rican–Panamanian border at 2,300–2,500 m, 11 Sep. 1984, *Davidse et al.* 28946, MO). The second addition, a distinctive novelty described below, is of special interest because it is the only known Costa Rican species confined to páramo habitats.

Monochaetum amistadense Almeda, sp. nov.

TYPE: Costa Rica. Limón: Cordillera de Tala-

manca, Cerro Kámuk massif, between Cerro Dudu and Cerro Apri, 9°14'30"–15°30'N, 83°03'30"–04°30'W, 23 and 26 Mar. 1984 (fl, fr), *Davidse et al.* 25932 (holotype, CAS; isotypes, CR, MO). Figure 1.

Frutex 0.5–2 m altus; ramuli teretes sicut petioli inflorescentiaque dense pilis patulis barbellatis 0.5–1 mm longis induti. Petioli 0.5–1 mm longi; lamina 3–7.5 × 1.5–3 mm elliptica vel elliptico-ovata apice acuta basi obtusa vel rotundata, supra utrinsecus venas primarias densiuscule strigosa, subtus dense vel modice strigosa pilis 0.5–1 mm longis barbellatis, 3-nervata vel 3-plinervata. Inflorescentia terminalis 1–2 flora, flores 4-meri. Hypanthium (ad torum) 5–6 mm longum; calycis lobis 4.5–5.5 × 2–2.5 mm anguste oblongo-triangularibus persistentibus. Petala 10–12 × 5–7 mm obovata. Stamina dimorpha glabra, thecis subulatis, poro dorsaliter inclinato. Stamina maiora; thecae 7–8.5 mm longae; appendix dorsalis 3–3.5 × 0.5 mm, apice rotundato. Stamina minora; thecae 4.5–5 mm longae; appendix dorsalis 3 × 0.25 mm, apice hebeti-acuto. Ovarium 4-loculare apice modice setoso. Semina 0.5 mm longa, oblongo-arcuata.

Erect, rigidly branched shrub 0.5–2 m tall. Distal internodes terete, copiously covered with spreading barbellate hairs 0.5–1 mm long, the nodes beset with flexuous spreading distally barbellate hairs 1.5–2 mm long. Older branches glabrate with reddish brown exfoliating bark. Mature leaves equal to somewhat unequal in size in each pair; petioles 0.5–1 mm long and 0.5 mm wide; blades membranaceous, entire, 3–7.5 mm long, 1.5–3 mm wide, elliptic to elliptic-ovate, 3-nerved or 3-plinerved, the apex acute, the base obtuse to rounded, the margin entire; adaxial surface copiously beset with a strigose indument of barbellate multicellular hairs in 4 longitudinal belts between the impressed primary veins

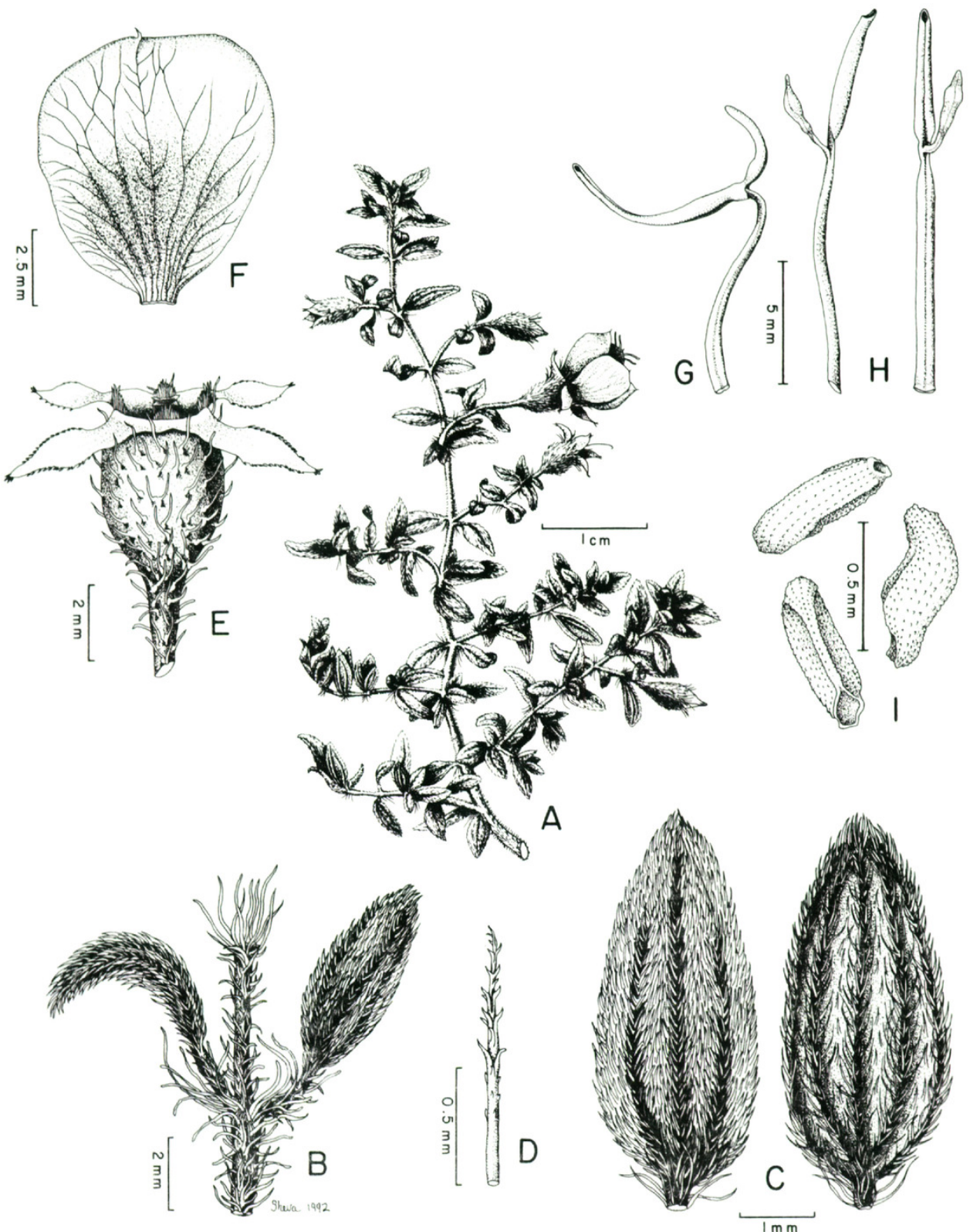


Figure 1. *Monochaetum amistadense* Almeda. —A. Habit. —B. Enlargement of cauline node and internode. —C. Representative leaves, adaxial surface (left) and abaxial surface (right). —D. Enlargement of adaxial foliar hair. —E. Fruiting hypanthium. —F. Petal. —G. Antepetalous stamen in profile view. —H. Antesepalous stamen, profile view (left), dorsal view (right). —I. Seeds. (A from *Davidse et al.* 29023, CAS; B–I from the holotype.)

that essentially conceal the blade surface; abaxial surface also copiously beset with a strigose indument of barbellate multicellular hairs largely concentrated on but not restricted to the three elevated primary

veins. Inflorescence reduced to solitary or paired 4-merous flowers commonly terminating lateral floriferous shoots; bracteoles only slightly reduced in size, otherwise identical to principal leaves in all

respects; pedicels (at anthesis) 2–9 mm long lengthening up to 1.3 cm in fruit, moderately beset with appressed to antrorsely spreading barbellate hairs to 1 mm long. Fruiting hypanthia 5–6 mm long to the torus, 4 mm wide, campanulate to subcylindric, deeply pigmented and moderately covered with antrorsely spreading hairs like those of the pedicels. Calyx lobes (in fruit) persistent, 4.5–5.5 mm long and 2–2.5 mm wide at the base, narrowly triangular, adaxial surface glabrous, abaxial surface glabrous or beset with a few scattered barbellate hairs, the margins entire but fringed with barbellate hairs. Petals 10–12 × 5–7 mm, magenta, obovate, glabrous or with 1–3 hairs apically. Stamens strongly dimorphic, with dorsally inclined apical pores; larger (antepetalous) stamens geniculate, filaments 7–8 mm long, anther thecae 7–8.5 mm long, subulate, connective modified at the filament insertion into an incurved, dorso-basal, linear-oblong appendage 3–3.5 mm long; smaller (antesepalous) stamens ± erect, filaments 7–9 mm long, anther thecae 4.5–5 mm long, linear-oblong to subulate; connective modified at the filament insertion into an upturned, dorso-basal narrowly elliptic-lanceolate appendage 3 mm long. Ovary (at anthesis) superior, ovoid to obovoid, the body essentially glabrous but copiously setose at the summit surrounding the stylar scar. Style 6–7 mm long, somewhat declined to one side of the flower opposing the larger stamens. Capsules dry, semiwoody, loculicidal, erect at maturity and enclosed by the enveloping hypanthium; seeds 0.5 mm long, oblong-arcuate, somewhat keeled on the concave side, light brown and essentially smooth with a subdued luster.

Distribution. Known only from páramo habitats dominated by *Blechnum*, *Diplostephium*, and other

shrubs in the southern Cordillera de Talamanca from Cerro Dúrika to an unnamed cordillera just southeast of the Cerro Kámuk massif between the Río Siní and the Río Terbi west of the Panamanian frontier at elevations of 2,400–3,280 m. The range of *M. amistadense* is contained within the Costa Rican sector of Parque Internacional La Amistad.

Monochaetum amistadense, one of six endemic species in Costa Rica, is characterized by unusually small leaf blades that are 3-nerved or 3-plinerved, inflorescences reduced to solitary or paired flowers, and oblong-arcuate seeds that are somewhat keeled on the concave side and not strongly coiled distally. It is most similar to and may be derived from *M. compactum* Almeda of western Panama: the two have similar habits, stem pubescence, leaf shape, and petal color. *Monochaetum compactum*, however, has modally larger (to 2.8 cm long), 5-plinerved leaf blades, a mixture of glandular and barbellate hypanthial and pedicellar hairs, an inflorescence consisting of compound dichasia with flowers subtended by reduced bracteoles, and cochleate seeds that are coiled distally and lack a keel on the concave side.

Paratypes. COSTA RICA. LIMON: Cordillera de Talamanca, Atlantic slope, unnamed cordillera between Río Siní and Río Terbi, 9°00'–9°12'N, 82°58'–82°59'W, 13 Sep. 1984 (fl), *Davidse et al.* 29023 (CAS, CR, MO). PUNTARENAS: Cantón de Buenos Aires, Ujarrás, El Carmen, Cerro Dúrika, 9°22'35"N, 83°18'24"W, 12 Oct. 1989 (fl, fr), *A. Chacón* 521 (CAS, CR, INBIO, MO).

Morphologically, *M. amistadense* does not appear to be particularly close to any of the Costa Rican members of the genus and is readily distinguished from them by the following key.

KEY TO THE SPECIES OF *MONOCHAETUM* IN COSTA RICA

- 1a. Distal internode pubescence consisting of widely to retrorsely spreading barbellate hairs.
 - 2a. Sprawling or trailing subshrubs, the lateral branchlets divaricate and held at an angle of 65°–90°; adaxial foliar pubescence not forming well-defined longitudinal belts between the impressed primary veins; seeds dark brown, glossy, semicircular and laterally compressed; petals pink; Costa Rica and Panama *M. trichophyllum* Almeda
 - 2b. Erect, laxly to compactly branched shrubs, the lateral branchlets held at an angle of 45° or less; adaxial foliar pubescence forming 4 to 6 well-defined longitudinal belts between the impressed primary veins; seeds orange-brown with a subdued luster, cochleate or oblong-arcuate; petals white or magenta.
 - 3a. Principal leaves lanceolate to elliptic-lanceolate, 1.4–8.0 cm long, 0.6–2.9 cm wide, petioles 1–5(–11) mm long; cauline hairs 1–3(–5) mm long; inflorescence a multiflowered dichasial cyme with flowers subtended by sessile bracteoles that differ from principal leaves in size and shape; petals white; seeds distinctly cochleate and strongly coiled at the distal end; Mexico to Panama *M. floribundum* (Schlechtendal) Naudin
 - 3b. Principal leaves elliptic to elliptic-ovate, 3–7.5 mm long, 1.5–3 mm wide, petioles 0.5–1 mm long; cauline hairs 0.5–1 mm long; inflorescence reduced to solitary or paired flowers subtended by petiolate bracteoles that are similar to principal leaves in size and shape; petals magenta; seeds oblong-arcuate, not strongly coiled at the distal end; endemic to Costa Rica *M. amistadense* Almeda

- 1b. Distal internode pubescence consisting of appressed, barbellate or smooth hairs, or internodes entirely glabrous.
- 4a. Sprawling or trailing subshrubs, the lateral branchlets divaricate and held at an angle of 65°–90°; seeds dark brown and glossy, somewhat semicircular, laterally compressed and without pronounced gyrations.
- 5a. Hypanthial hairs appressed, essentially smooth and eglandular; calyx lobes 6–10 mm long, antrorsely spreading on fruiting hypanthia; principal leaves 3(–5)-plinerved with appressed hairs on and closely adjacent to the elevated primary veins abaxially; petals 15–19 mm long; white when fresh but drying to shades of pink; endemic to Costa Rica *M. talamancense* Almeda
- 5b. Hypanthial hairs antrorsely to widely spreading, smooth and often partly gland-tipped, calyx lobes 4–6 mm long, widely spreading to reflexed on fruiting hypanthia; principal leaves 5–7-plinerved (infrequently 3-plinerved) with appressed to antrorsely spreading hairs on the abaxial elevated primary veins and pilosulous to glabrate between them; petals 10–14 mm long, pink when fresh but often drying lavender or intense purple; Costa Rica and Panama *M. neglectum* Almeda
- 4b. Erect, laxly to compactly branched shrubs, the lateral branchlets held at an angle of 45° or less; seeds orange-brown with a subdued luster, cochleate, laterally gyrate, and strongly coiled at the distal end.
- 6a. Distal internodes glabrous; principal leaves sessile, cordate and clasping with 7–9(–11) elevated primary veins abaxially; hypanthia mostly glabrous except for a few barbellate hairs along the torus at the abaxial base of the calyx lobes; Costa Rica and Panama *M. cordatum* Almeda
- 6b. Distal internodes sparsely to copiously covered with appressed, barbellate hairs; principal leaves petiolate, varying in shape but never cordate or sessile; hypanthia covered with appressed, barbellate hairs occasionally intermixed with smooth, spreading glandular hairs.
- 7a. Principal leaves linear-oblong, 1.5–4 mm wide, 1(–3)-nerved with only the median vein elevated abaxially and extending the entire length of the blade; endemic to Costa Rica ...
..... *M. linearifolium* Almeda
- 7b. Principal leaves narrowly elliptic, elliptic-ovate, elliptic-lanceolate, ovate, or obovate, (2–)4–16(–20) mm wide, 3–5(–7)-plinerved with at least three veins elevated abaxially, the innermost pair of primary veins diverging from the median vein at a point well above the petiole–laminar junction.
- 8a. Bracteoles sessile, narrowly lance-triangular to subulate, commonly navicular and enveloping floral buds or their pedicels; petals white or pink; endemic to Costa Rica
..... *M. macrantherum* Gleason
- 8b. Bracteoles distinctly petiolate or tapering basally into a compressed, ill-defined petiolar region, elliptic, elliptic-lanceolate, linear-oblong, oblanceolate, or spatulate but never enveloping floral buds or their pedicels; petals magenta.
- 9a. Distal internodes quadrangular and strongly carinate at the intersection of adjacent stem faces; principal leaves ovate, elliptic-ovate, or varying to obovate, glabrous adaxially or with pubescence restricted to narrow belts along the distal half or third of the blade; calyx lobes lance-triangular and acute apically; endemic to Costa Rica *M. vulcanicum* Cogniaux
- 9b. Distal internodes terete to subterete; principal leaves narrowly elliptic to elliptic-lanceolate with 4 well-defined adaxial belts of pubescence between the impressed primary veins extending the entire length of the blade; calyx lobes linear-oblong to bluntly deltoid, rounded to obtuse apically; endemic to Costa Rica
..... *M. amabile* Almeda

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