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# Studies in Annonaceae XXXII. A Peculiar New Species of *Malmea* (Annonaceae) from Panama and Colombia

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**ABSTRACT.** In the framework of the multidisciplinary Annonaceae Project, a monograph of the neotropical genus *Malmea* is being prepared by the author. A new species of *Malmea* with dimerous flowers, exceptional for Annonaceae, is here described. An overview of deviations from the typical trimerous annonaceous perianth is given for the Neotropics.

One of the characteristic features of Annonaceae is a perianth consisting of one whorl of three sepals, and two whorls of three petals each. In the Neotropics, variation in number of perianth parts sometimes appears, and has for example been reported for *Cymbopetalum* (Murray, 1993) and *Rollinia mucosa* (Jacquin) Baillon (Murray & Johnson, 1987). In these cases, however, the variation is of no taxonomic significance. Maas et al. (1986) were unable to pronounce upon the constancy of dimerous whorls of sepals and petals in the Brazilian species *Anaxagorea silvatica* R. E. Fries as only one flowering collection is known.

In Annonaceae most deviations from the general pattern of the perianth that do have diagnostic value for species and genera occur in Africa and Asia (van Heusden, 1992). In the Neotropics only a few deviations occur. In several sections of *Annona* the inner whorl of petals is lacking (or rudimentary). Another exceptional species, *Annona phaeocladus* Martius, has a variable number of petals, arranged spirally (see Spichiger & Mascherpa, 1983). The position of this species within *Annona* is doubtful, and it may be transferred to *Duguetia* (Maas & Rainer, pers. comm.). At the generic level *Tetrameranthus* (5 species) and *Tridimeris* (1 species, and 2 unpublished species; Schatz, 1987) are characterized by their tetramerous and dimerous flowers, respectively.

Within the scope of the international Annonaceae Project the genus *Malmea*, with 18 currently described, all trimerous species, is now under revision. *Malmea dimera* Chatrou, the third dimerous species for the Neotropics, after *Anaxagorea silvatica* and *Tridimeris hahniana* Baillon, is described here.

***Malmea dimera* Chatrou, sp. nov.** TYPE: Panama. Panamá: Cerro Azul, ca. 1 km before Lago Goofy, 20 Nov. 1983 (yfl, fr), *Correa A. et al.* 4367 (holotype, PMA; isotypes, F, MO, NY, U). Figure 1A–E.

Arbor usque ad 15 m alta. Ramuli novelli ut facies abaxialis petiolorum costarumque pilis fuscis adpressis obtecti. Folia (anguste) elliptica, 11–18 cm longa et 3–6 cm lata, costa supra impressa, subtus carinata. Inflorescentiae terminales vel oppositifoliae aut supra-axillares; pedunculi, bracteae et pedicelli pilis ut in ramulis vestiti. Flores dimeri. Petala et sepala ciliata. Monocarpia 25–60, fusca vel picea in vivo. Semina nitida, foveolata.

Tree (or treelet), 3–15 m tall, to 8 cm diam. Young twigs and abaxial side of petiole, primary vein, and lamina covered with brown, appressed hairs (0.1–)0.2(–0.4) mm long (simply called hairs hereafter). Petioles 4–6 mm long, 1.5–2 mm diam., canaliculate. Lamina (narrowly) elliptic (to (narrowly) obovate), (7–)11–18(–22) cm long, (2.5–)3–6(–7.5) cm wide, length/width ratio (2–)2.3–3.3(–4), olive green to grayish green, shiny, base attenuate (to acute), apex gradually acuminate (acumen 5–20 mm long). Venation brochidodromous, all intercostal areas fully closed, primary vein on upper side immersed proximally to slightly raised distally, on lower side raised and carinate, (8–)9–11(–13) secondary veins on either side of primary vein, angle with primary vein 60–80°, curving abruptly to form loops at obtuse to right angles, tertiary loops indistinct, shortest distance between loops and margin 3–7 mm, intersecondaries present in almost every intercosta, length 50–100% of intercosta. Inflorescence terminal, leaf-opposed, or supra-axillary, maximally two flower scars and two actual flowers on rhipidium. Peduncles, bracts, and pedicels hairy. Peduncles 3–10 mm long, 0.5–2 mm diam. Pedicels 12–31 mm long, 1 mm diam. proximally to 2 mm distally, fruiting pedicels to 4 mm diam. distally. Bracts two, one bract 1–2 mm below articulation, 1.5–3 mm long, ovate-triangular, obtuse, caducous, one bract at 50–90% from the base of pedicel, 1.5 mm long, transversely broadly ovate-triangular, obtuse to rounded, semi-amplectent.

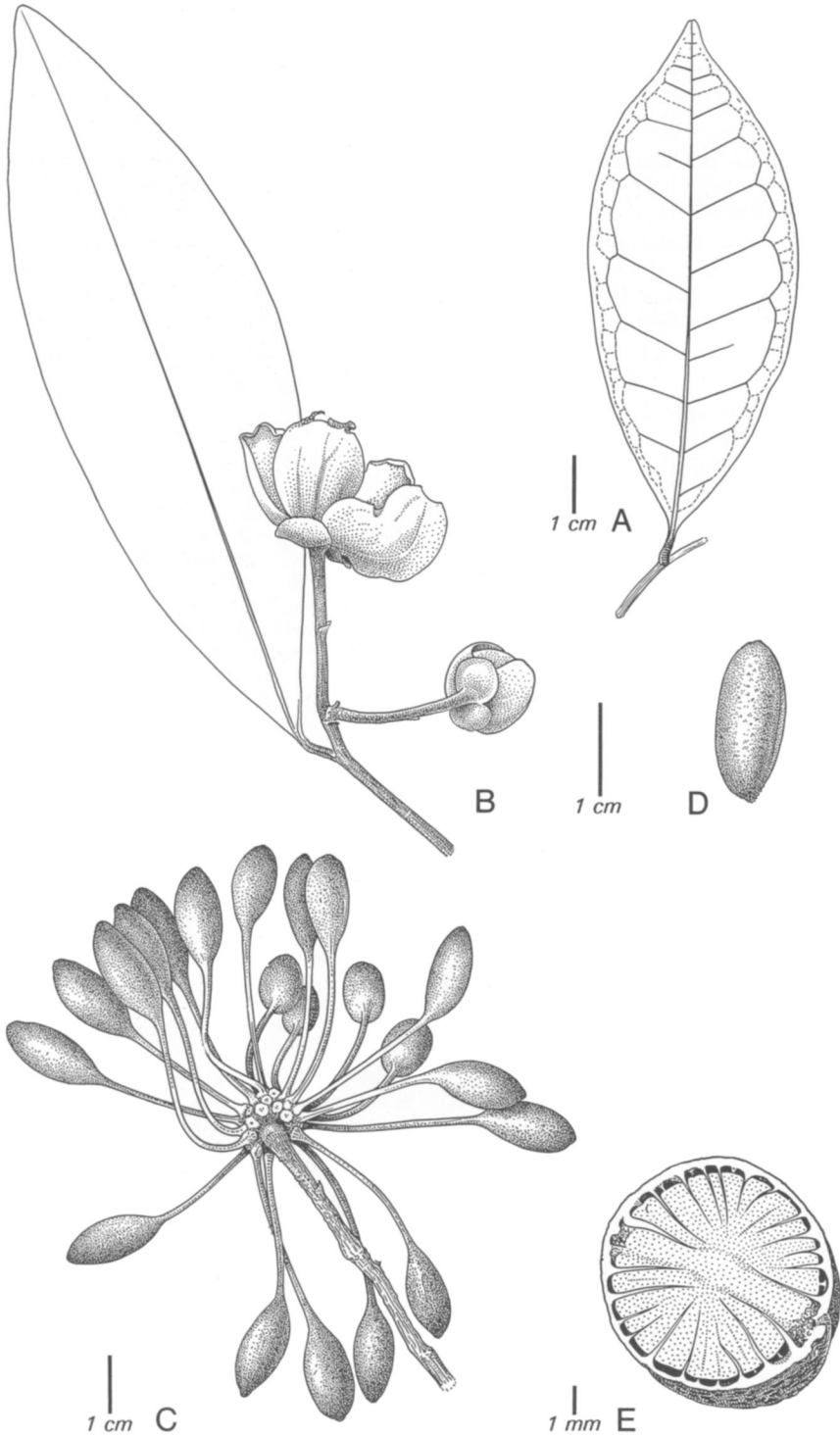


Figure 1. *Malmea dimera* Chatrou. —A. Leaf. —B. Terminal, two-flowered inflorescence. —C. Fruit. —D. Seed. —E. Cross section of seed, showing spiniform ruminations. A, C, D, E, Foster & Kennedy 2009; B, Duke & Bristan 8188.

Flowers bisexual, only 2 mature flowers observed. Sepals transversely broadly elliptic to transversely broadly ovate, 3–4.5 mm long, 5–6 mm wide, ciliate, outer side glabrous to sparsely hairy, inner side glabrous. Outer petals (broadly) elliptic with convex margins, 15 mm long, 12 mm wide, ciliate, glabrous on both sides. Inner petals broadly elliptic with convex margins, 13 mm long, 12 mm wide, ciliate, glabrous on both sides. Staminate portion of torus glabrous, carpellate portion of torus hairy. Stamens ca. 150, 1.5–2 mm long, thecae 1 mm long. Carpels ca. 25, 1.5 mm long, densely hairy. Fruit green, maturing dark brown to black (in vivo). Fruiting receptacle (sub)globose, 7–15 mm diam., sparsely hairy to glabrous. Monocarps 25–60, ellipsoid, 16–20 mm long, 7–9 mm diam., glabrous to sparsely hairy, verrucose when immature (in sicco), fruit wall ca. 0.2 mm thick; stipes, 21–28(–34) mm long, 1 mm diam. to 2 mm distally, glabrous to sparsely hairy, with one longitudinal groove. Seeds ellipsoid, 16–18 mm long, 6–8 mm diam., (reddish) brown, shiny, pitted, raphe a slightly elevated rib, rumination spiniform.

*Distribution.* *Malmea dimera* is distributed in the Panamanian provinces of Panamá and Darién and the Colombian states of Antioquia and Chocó.

*Habitat.* Disturbed forest and on riverbanks, at elevations to 250 m. Flowering from April to November, fruiting the whole year round.

*Local names and uses.* Yaya Laguna, Guanabana torete (Darién, Panamá). The Bayano Cuna (Panamá) use the plant medicinally (purpose not reported) and call it Huichugola.

The bark is reported to contain latex (*Duke 367*). On some collections the appearance of a typical odor of the bark is mentioned, described as “pungent scent,” “peppery aroma,” or “lemon disinfectant smell.”

There is no doubt about the constancy of appearance of dimerous flowers. Of 23 collections, 15 had flowers or flower buds, all of which are dimerous. This aberrant feature for annonaceous flowers has not been remarked on by any collector. Probably this is due to the fact that hardly any mature flowers, but mostly young buds, have been collected.

*Malmea dimera* most closely resembles Peruvian *M. dielsiana*, and *M. obovata* from the Brazilian state of Bahia, which are both trimerous species. The leaves of these three species are almost indistinguishable. Apart from the number of sepals and petals, the indument of the monocarps helps to distinguish *M. dimera* from *M. dielsiana*: glabrous to sparsely hairy in *M. dimera* and densely hairy in *M. dielsiana*. Additional differences between *M. dimera* and *M. obov-*

*ata* are a longer pedicel, and longer trichomes on young twigs, leaves, and inflorescences of the latter species.

In contrast to the recently described *M. surinamensis* (Maas & Chatrou, 1995), which mostly has subaxillary inflorescences, a supra-axillary position of the inflorescence is sometimes encountered in *M. dimera*. This position is due to concaulescence of twig and petiole. Grooves indicating the area of concaulescence can be seen in those cases. On older twigs, inflorescences of *M. dimera* sometimes seem to be axillary. Careful study of the morphology shows that the true position is a terminal one on a strongly reduced axillary twig. Therefore, the position of these inflorescences is regarded as terminal.

*Paratypes.* PANAMA. **Darién:** 2–3 km W of Canglon and 1 km SW of Pan American Hwy., alt. 50–100 m, 4 Nov. 1982 (fr), *Alverson et al. 1968* (WIS); Canglon, without date (fr), *Duke & Bristan 360* (MO), without date (yfl), *Duke & Bristan 367* (MO); without locality, without date (fl), *Duke & Bristan 8188* (MO); Río Pirre, Apr. 1966 (yfl), *Duke & Bristan 8249* (MO); Cuna Reservation, Río Morti, 10 km upstream from Morti Arriba, alt. 50–90 m, 24 July 1966 (yfr), *Duke 8444* (DUKE, MO); between Paya and Palo de las Letras, 30 Aug. 1967 (fl), *Duke & Kirkbride 14025* (MO); Drill Site 7, Río Morti, alt. 250 m, 18 Sep. 1967 (yfl), *Duke 14175* (F, MO, NY); Ensenada del Guayabo, 18 km SE of Jaqué, alt. 25 m, 10 Jan. 1983 (fr), *Garwood et al. 104* (BM, MO); Río La Marea, alt. 5–50 m, 28–30 June 1969 (fr), *Holdridge 6303* (MO); RENARE hut in Darién National Park, alt. 20 m, 7 Aug. 1986 (yfl, fr), *McDonagh et al. 554* (BM, MO). **Panamá:** Río Majé, along river from waterfalls near Bayano Lake to Finca of Chocó Indian Eduardo Maycha, alt. 30–60 m, 4 May 1976 (yfl), *Croat 34603A* (MO); between Río Majé and Quebrada Brava, alt. 60 m, 4 May 1976 (fl), *Croat 34626* (F, MO, U); Río Bayano, near crossing of Pan American Hwy., above confluence with Río Chepo, 27 Sep. 1961 (yfl, fr), *Duke 3978* (MO); between Cañasas and Sabalo, alt. 100 m, 26 Sep. 1967 (yfl, fr), *Duke 14450* (MO); Majé, on Choco Indian trail ca. 8 km up the Río Majé, alt. 200 m, 18 Nov. 1970 (yfl, fr), *Foster & Kennedy 2009* (DUKE, MO, WIS); Lago Bayano, Isla Majé, trail behind Gorgas station, 16 June 1982 (yfl), *Foster 3922* (F); Cerro Azul, 25 Sep. 1986 (fr), *Valdespino & Solis 152* (U). COLOMBIA. **Antioquia:** Mun. Carepa, 45 km S of Turbo, reserva forestal Tulenapa ICA, alt. 20 m, 31 July 1987 (yfl), *Calles et al. 4863* (MO, U); Mun. Turbo, ENE of Turbo, 11 km from Currulao, alt. 45 m, 3 Aug. 1987 (yfl, fr), *Calles et al. 4973* (COL, MO, U). **Chocó:** bank of Río Truandó, 20 km W of Ríosucio, 19 Mar. 1958 (fr), *Bernal 25* (COL); Mun. Acandí, Vereda Coquitall, alt. 150–200 m, 23 May 1989 (yfr), *Fonnegra et al. 2849* (U).

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