



## A new species of *Miconia* (Melastomataceae: Miconieae) from Espírito Santo, Brazil

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### Key words

Atlantic forest  
Melastomataceae  
*Miconia*  
montane forest  
taxonomy

**Abstract** *Miconia michelangeliana* belongs to *Miconia* sect. *Tamonea*. This new species can be distinguished from other species in this section by the strongly winged branches and the glabrous leaves. The flowers are larger than usual in the genus, and are 6-merous, pleiostemonous (with 18–24 stamens each), with a persistent calyx and a glabrous ovary apex. This species occurs only in montane forests in the state of Espírito Santo, Brazil.

**Resumo** *Miconia michelangeliana* pertence a *Miconia* seção *Tamonea*. Esta nova espécie pode ser distinguida das demais nesta seção pelos ramos fortemente alados e folhas glabras. As flores são maiores do que o usual no gênero, e são 6-meras, pleiostêmones (com 18–24 estames cada), com cálice persistente no fruto e ápice do ovário glabro. Esta espécie ocorre apenas em florestas montanas do estado do Espírito Santo, Brasil.

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### INTRODUCTION

We describe a new species of *Miconia* Ruiz & Pav. (Melastomataceae), that occurs in the mountains of the state of Espírito Santo, along the Brazilian coast between Bahia and Rio de Janeiro. These mountains present a rich flora (Thomaz & Monteiro 1997), mostly in montane forests (Magnago et al. 2007) and grasslands on granitic outcrops (Fernandes et al. 2007). This flora is particularly rich in Melastomataceae (Goldenberg & Reginato 2006), with about 150 species and several endemics, such as *Dolichoura espritusanctensis* Brade and *D. kollmannii* R. Goldenb. & R. Tav., *Leandra fallacissima* Markgr., *Merianthera burlemarxii* Wurdack, *Miconia capixaba* R. Goldenb., *M. kollmannii* R. Goldenb. & Reginato, *M. labiakiana* R. Goldenb. & C.V. Martin, *Ossaea suprabasalis* R. Goldenb. & Reginato and *Tibouchina boudetii* P.J.F. Guim. & R. Goldenb. Five of these species have been described in the last ten years, and the high frequency of these recently described taxa indicates how poorly studied this flora has been. Both this fact and the large amount of endangered species (Simonelli et al. 2007, Kollmann et al. 2007) show that this region merits intensive botanical research and conservation programs.

Tribe *Miconieae* has about 1 800 species native to the Neotropics (Michelangeli et al. 2004). It is composed of 18 genera, from which *Miconia* (1 050 spp), *Leandra* Raddi (250 spp), *Clidemia* D. Don (200 spp), and *Ossaea* DC. (100 spp) are the largest. The distinction between these genera as well as smaller ones is often complicate, since these large genera are recognized mainly by plesiomorphic characters. Recent phylogenetic works has shown that especially *Miconia* (Goldenberg et al. 2008) and *Leandra* (Martin et al. 2008) are not monophyletic. Moreover, in the case of *Miconia*, these clades are not exactly represented by the traditionally recognized sections (sensu Cogniaux 1891), which means that the sections are also not

monophyletic (Goldenberg et al. 2008). The low resolution of the trees shown in these phylogenies does not allow generic and infra-generic alignments, which means that modern alternatives to the traditional taxonomy are still not available. Because of that, the discussion on the relationships of this new species will be kept within the traditional morphology-based limits of *Miconia* and its sections (sensu Cogniaux 1891).

### *Miconia michelangeliana* R. Goldenb. & L. Kollmann, sp. nov.

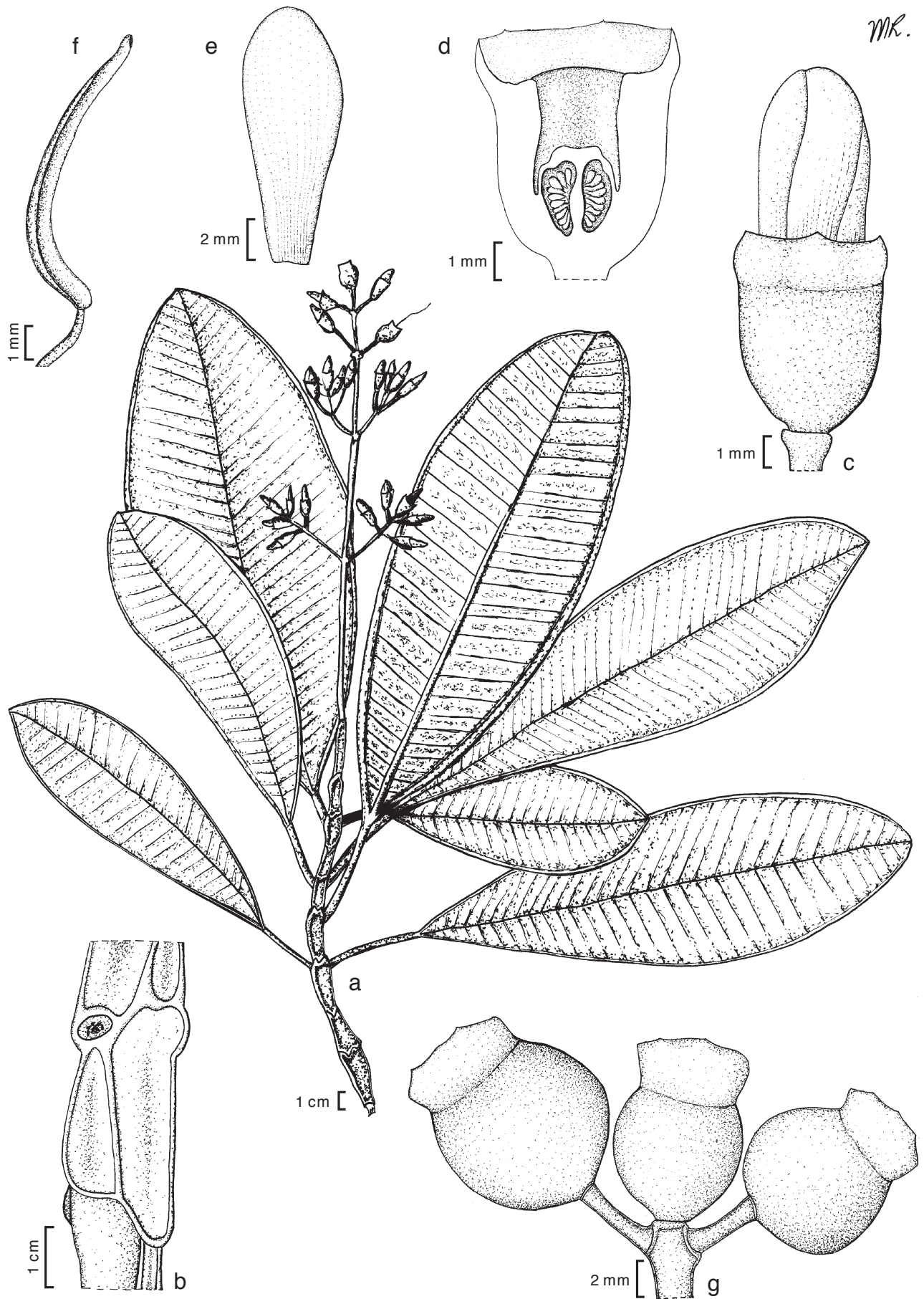
— Fig. 1a–g, 2a, b

Haec species congeneris sect. *Tamoneae* et *Jucundae* ramis alatis, foliis glabris, floris hexameris et pleiostemonis, calycis persistentibus, ovario ad apicem glabro distinguitur. — Typus: *L. Kollmann* 10743 (holo MBML; iso CEPEC, NY, RB, UPCB), Brazil, Espírito Santo, Município de Santa Teresa, Nova Lombardia, Terreno de J.V. Furlani, alt. 895 m, 12 March 2008 (fl., fr.).

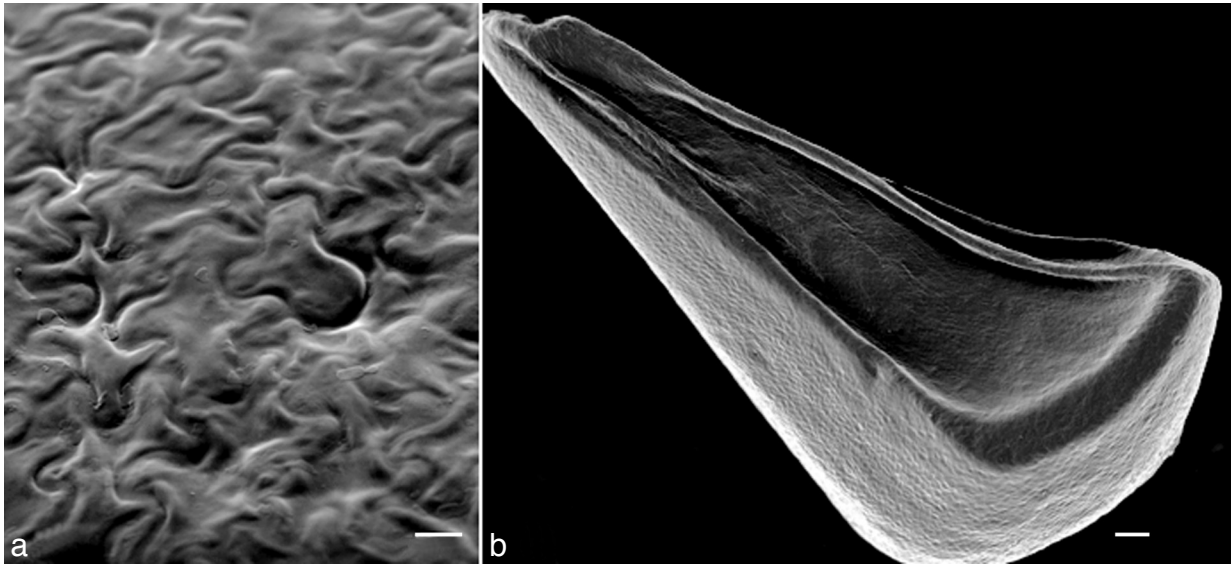
Tree 8–12 m. Branches glabrous, strongly decussate and 4-winged, internodes usually short and flattened but thick, 0.5–3 by 0.7–1.3 cm (at its apex) and 0.5–0.6 cm (at its base), 0.3–0.4 cm thick, with a thick interpetiolar ridge. Leaves glabrous, isophyllous or strongly anisophyllous in each pair; petioles 1.7–4 cm long, minutely sulcate. Blades 5.5–28 by 2–8 cm, elliptic-lanceolate to elliptic, sometimes slightly oblanceolate, apex rounded to obtuse, base acute to cuneate and very shortly decurrent, margins entire and revolute, coriaceous, slightly discolorous both in fresh and dried materials, both surfaces glabrous, shortly 3-plinerved, secondary veins free, diverging 1–6 mm from the base and running very close (1–4 mm) to the revolute margin; venation above with primary, secondary, transverse veins, and sometimes part of the reticulation impressed, below with primary, secondary, and transverse veins strongly prominent, the primary also minutely sulcate, reticulation sometimes barely visible, and sometimes slightly prominent, the areoles 0.5–2 mm diam. Panicles 14–18 by 3–4 cm, terminal, elongate, with 4 branchlets (2 accessories) per node; bracts 4–10 mm long, linear and soon caducous, bracteoles c. 1 mm long, linear and early caducous; flowers 6-merous, arranged in dichasia with the central flower sessile, and lateral ones on short, 2–4 mm anthopodia. *Hypanthium*

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**Fig. 1** *Miconia michelangeliana* R.Goldenb. & L.Kollmann. a. Branch with leaves and inflorescence; b. detail of winged branch; c. flower bud with hypanthium, calyx and petals; d. longitudinal section of the hypanthium and ovary from a flower bud; e. petal; f. stamen in lateral view, with upper part of filament; g. inflorescence unit with three fruits (a–f: Kollmann 10743; g: Goldenberg 886).



**Fig. 2** SEMs of seeds of *Miconia michelangeliana* R.Goldenb. & L.Kollmann. a. Surface of the testa; b. lateral view of the seed (all: *Vervloet* 326). — Scale bars: a = 10  $\mu$ m; b = 100  $\mu$ m.

8–10 mm long, narrowly campanulate (soon slightly urceolate, developing an apical constriction), with very thick walls, outside glabrous and green but with scattered white maculae (visible in fresh material), inside with a few glandular, slender trichomes 0.2–0.5 mm long; torus thick, granulose-glandulose; calyx tube c. 3 mm, persistent, essentially truncate but with abruptly acuminate, short teeth up to 0.2 mm long, or sometimes with 6 very short, wide, rather indistinct lobes up to 0.4 mm long; outer lobes apparently absent. *Petals* 6, 12–14 by 4.5–5.2 mm, white, oblong to oblanceolate, reflexed, margins entire, apex rounded and cucullate, glabrous. *Stamens* 18–25, yellow, ranging in size (but with variation independent of their position in the flower), filaments 6–11 mm long, anthers 6–9 mm long, linear-subulate, ventrally arcuate, with a small apical pore, c. 0.2 mm diam; connective not prolonged below the thecae, dorsally slightly thickened, not appendaged or with two small dorsal teeth. *Ovary* 3.2–3.7 mm high, fused to the hypanthium for 1/2 of its length, 6-celled, with c. 20 ovules in each cell, apex rounded, obscurely 5-costate, glabrous; style 16–18 mm long, sigmoidal, stigmatic region very small, punctiform. *Fruit* c. 1.1 by 0.9 cm, green when unripe, dark blue when ripe, globose, with a persistent calyx and a succulent but rather hard hypanthium 1.1–2.4 mm thick; seeds many per fruit, 2.5–3 by 1–1.5 mm, narrowly pyramidate, raphal part c. 2 mm long and strongly carinate, sometimes with 1–3 additional longitudinal ridges, testa smooth.

**Etymology** — This species is named after Dr. Fabián Michelangeli, from The New York Botanical Garden, who has been researching the phylogeny and taxonomy of Neotropical *Melastomataceae*.

**Distribution & Ecology** — At the moment, known only from the Municipality of Santa Teresa, state of Espírito Santo, Brazil, at 900–950 m elevation. Flowering: March; fruiting: from May to July. *Miconia michelangeliana* has been collected in two neighbouring localities, distant about 10 km from each other. In both sites, the populations are small, with 10–20 individuals, and occur on the very top of the hills, in Montane Atlantic Forest. One of the populations is located inside an effective conservation unit (Reserva Biológica Augusto Ruschi), kept by the Brazilian Federal Government.

**Notes** — *Miconia michelangeliana* can be recognized by its strongly winged branches, glabrous leaves, large flowers (hypanthium 10–11 mm long, petals 12–14 mm long), with 6 petals and 18–24 yellow stamens, and glabrous ovary apex. The thick hypanthium and the persistent, truncate to subtrun-

cate calyx are also distinctive. This species could be placed in sect. *Tamonea* Cogn., which has been recognized based generally on the large flowers, but also on the long, subulate anthers, oblong to terete hypanthium and open, unruptured calyx, with a truncate tube or very small teeth (Triana 1871, Cogniaux 1891, Goldenberg 2000). Section *Jucunda* (Cham.) Triana has species that also bear these characters, except for the calyx with distinct triangular lobes, which are absent from sect. *Tamonea*. Despite the fact that the distinction between sect. *Tamonea* and sect. *Jucunda* is not very clear (Gleason 1925, 1932, Goldenberg 2000), and that *M. michelangeliana* does not seem to have any morphological counterpart in these sections, its calyx shape unmistakably placed it in *Tamonea*. Species complexes of both sections that shared some characters with *M. michelangeliana* are discussed in the following.

In sect. *Tamonea* from Eastern and Central Brazil, the species complex with *M. dodecandra* (Desr.) Cogn., *M. mirabilis* (Aubl.) L.O. Williams, *M. rufipila* Triana and *M. subcordata* Cogn. (the last two probably synonyms of *M. dodecandra*) also has 6-merous flowers and stamens with glabrous filaments, but the branches are not winged, the leaves are densely covered by stellate trichomes in the adaxial surface, and the flowers are smaller, with broadly triangular inner calyx lobes (Cogniaux 1891, Wurdack 1973, Wurdack et al. 1993, Martins et al. 1996, Goldenberg 2004).

In sect. *Jucunda*, also from Eastern and Central Brazil, the complex comprising *M. jucunda* (DC.) Triana and *M. staminea* DC. has 5-merous flowers, with triangular calyx lobes that are caducous (Martins et al. 1996, Goldenberg 2004). Another complex in sect. *Jucunda*, composed of *M. langsdorffii* Cogn., *M. riedelii* Naudin and *M. paucidens* DC., has small, membranaceous and dentate leaves, 5-merous flowers with distinct external teeth on the calyx (Martins et al. 1996, Goldenberg 2004). A third complex, with *M. holosericea* (L.) DC. and *M. francavillana* Cogn. has densely pilose leaves and purple anthers (Wurdack 1973, Wurdack et al. 1993, Martins et al. 1996). *Miconia amacurensis* Wurdack has terete branches, smaller, diplostemonous flowers and a caducous calyx (Wurdack 1973, Wurdack et al. 1993).

**Specimens studied.** BRAZIL, Espírito Santo, Município de Santa Teresa, Nova Lombardia, REBIO Augusto Ruschi, Trilha da Cachoeira, próximo à cachoeira, 29 May 2002, R.R. Vervloet et al. 326 (MBML, UPGB); Reserva Biológica Augusto Ruschi, 20 Jan. 2005, H.Q.B. Fernandes & R. Goldenberg 3369 (MBML, UPGB); Terreno do Furlani, 19°48'19,3"S, 40°32'18"W, alt. 950 m, 13 July 2007, R. Goldenberg et al. 886 (MBML, UPGB).

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