Clidemia intonsa and Miconia chapensis (Miconieae, Melastomataceae), two new species endemic to cloud forest refuges in the Coastal Cordillera of Venezuela

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Clidemia intonsa and *Miconia chapensis (Miconieae, Melastomataceae),* two new species endemic to cloud forest refuges in the Coastal Cordillera of Venezuela

Abstract

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Two new species of *Miconieae (Melastomataceae)* from cloud forest refuges of the Coastal Cordillera of Venezuela are described as new to science. *Clidemia intonsa* grows in Cerro Patao in northeastern Venezuela and is most similar to some species from Trinidad. *Miconia chapensis* grows in Cerro La Chapa at the western extreme of the Coastal Cordillera and resembles one species from French Guiana and Surinam and two species from Central America and the west coast of northern South America.

The largest tribe in *Melastomataceae,* the neotropical berry-fruited *Miconieae,* comprises about 2000 species, of which about 175 belong to *Clidemia* and more than 1000 to the large genus *Miconia* (Wurdack & al. 1993). In this paper, we describe two new species of the tribe, *Clidemia intonsa* and *Miconia chapensis,* both of which grow in the Coastal Cordillera that stretches along the northern coast of Venezuela. This mountain range is divided into an inner and an outer chain that are further dissected into blocks by depressions that create topographic separation of its different sectors. Cloud forest fragments on the mountain tops are therefore separated as evergreen islands in a sea of a dryer vegetation in a manner that has favoured high levels of endemism. The cloud forest species are often limited to the humid upper part of the mountains and occur very localised. Many of these natural forest fragments therefore serve as refuges for unique and interesting floras (Steyermark 1979). The discovery of two new species in the cloud forests of the Coastal Cordillera of Venezuela stresses the necessity to explore more thoroughly its vanishing ecosystems.

Clidemia intonsa E. Cotton & W. Meier, **sp. nova**
Holotype: Venezuela, Edo. Sucre, boundary of Dttos. Arismendi and Valdéz, Paria Península, Cerro Patao, NE of Puerto de Hierro, 10°41'N, 62°03'W, 1000-1050 m, 22.3.2000, *W. Meier 6683* (VEN; isotypes: AAU, B, K, MO, MY, NY). – Fig. 1.

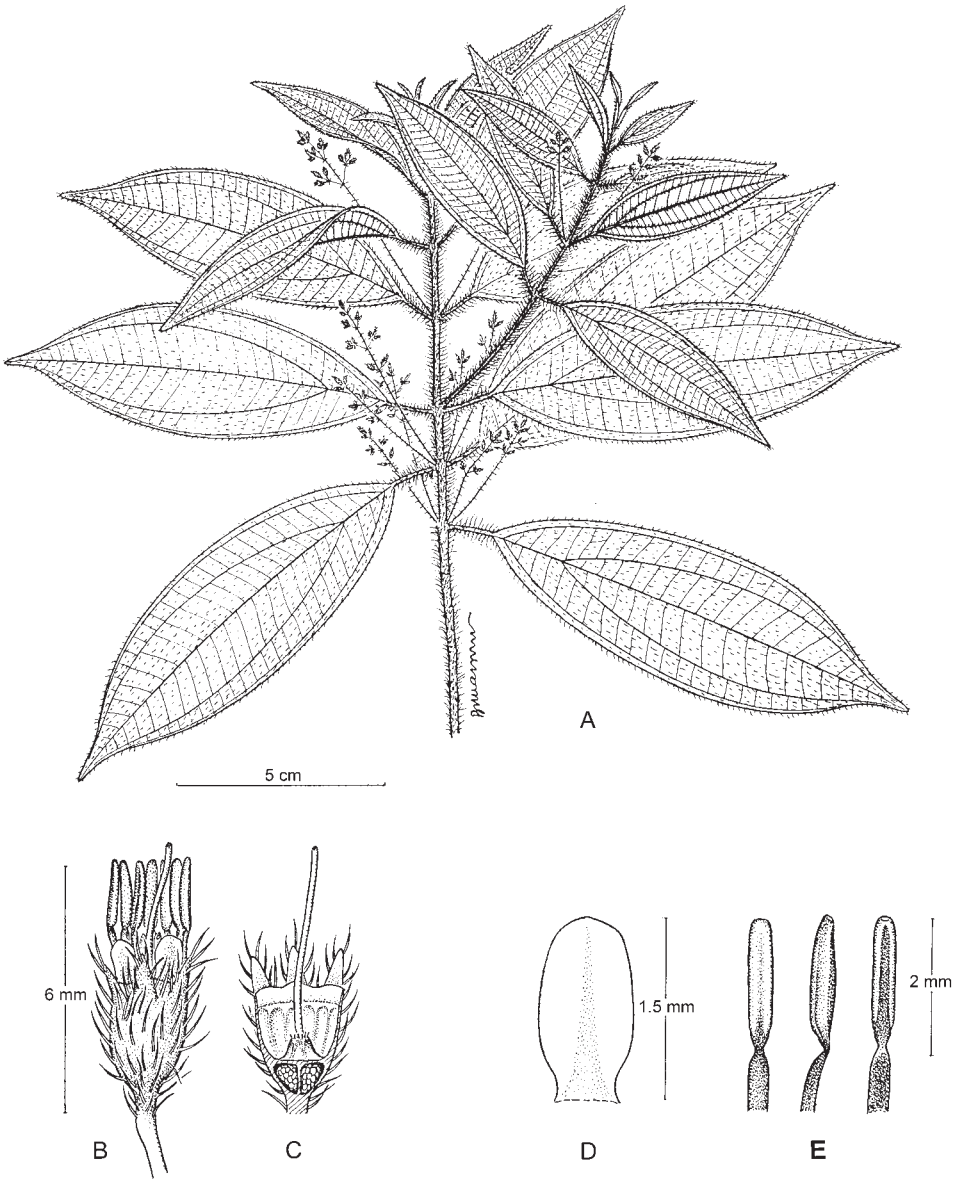

Fig. 1. *Clidemia intonsa* – A: habit; B: flower in early anthesis; C: longitudinal section of a flower (petals and stamens removed) showing the inferior ovary, hypanthium, torus, ovary cone topped with glandular hairs, style, calyx tube and adaxial side of three external teeth; D: petal; E: anthers with a section of the filaments in ventral, lateral and dorsal view, showing the slightly dorsal pore (*Meier 6683,* VEN).

Clidemiae cruegerianae Griseb. et *C. trinitensi* Griseb. affinis a quibus differt foliis petiolatis (non sessilibus) inflorescentiis dichasiis compositis in pedunculis 1-2.5 cm longis in axillis foliorum portatis (non floribus aggregatis et sessilibus in axillis foliorum superiorium), ovario 4-cellulari (non 3-cellulari).

Shrub 1.5-2 m tall; young stems sub-quadrangular soon becoming terete, densely pubescent; hairs smooth, thin, multicellular, 1.8-2.5 mm long. *Leaves* of a pair equal to subequal; petioles 1-1.5 cm long, with hairs similar to those on the stems; lamina elliptic, 9-11.5 × 2-3.5 cm, membranous; apex acuminate; base cuneate; margins ciliate, cilia 1.2-1.6 mm long; adaxially moderately dotted by hyaline, short-stalked glands and scattered pubescence of hairs like in the stem but only 0.8-1.2 mm long; abaxially glabrous; venation 5-plinerved, excluding the tenuous inframarginal nerves, the outer primary nerves basal or diverging from the median nerve 1-3 mm above the lamina base, the inner primary nerves diverging 1-1.5 cm above the lamina base, adaxially shortly puberulent to glabrous, abaxially moderately to sparsely setulose with hairs similar to those of the petioles and stems, the surface of the nerves moderately dotted by short-stalked, hyaline glands. *Inflorescences* 1-2 in each leaf axil, thyrsoid with filiform axis; peduncles 1-2.5 cm long, with occasional hairs similar to those on the petioles and stems; bracts subtending the first pair of branches narrowly elliptic, c. 1 mm long, tipped with three setulae, the central one 1-1.2 mm long, the lateral ones 0.6-0.7 mm long; bracts subtending other branches of the dichasia filiform, 1.2-1.5 mm long; pedicels to 1 mm long, densely covered with short-stalked, hyaline glands. *Flowers* 4-merous; hypanthium 2 mm long to the torus, moderately setulose, setae 0.6-1 mm long, the surface densely covered with short-stalked, hyaline glands; calyx lobes rounded, c. 0.4 mm long, the external calyx teeth well developed, exceeding the lobes by 0.6-1 mm, setulose, the setae 0.6-1 mm long; petals oblong, 1.2-1.5 × 0.7-0.8 mm; filaments 1.5-1.6 mm long, glabrous; anthers linear, 1.8-2.0 mm long, with one, small, slightly dorsal pore; ovary 4-locular, completely inferior; ovary cone 0.4 mm long, topped with few, minute, glandular hairs; style glabrous, 4-4.5 mm long; stigma punctiform, glandular-granulose. *Fruits* not seen.

Relationship. – As pointed out by several authors (Cogniaux 1891, Gleason 1932, Wurdack 1972, 1973) and summarized by Judd (1986), the genera of *Miconieae* are poorly characterized, often difficult to separate and quite arbitrary. Cladistic analyses of the axillary- and terminal-flowered taxa in the tribe by Judd (1989, 1991) are the most recent attempts to clarify the relationships of these groups of genera. *Clidemia intonsa* belongs to *C.* sect. *Sagraea* (DC.) Cogn., which has 4-merous flowers, leaves equal to subequal in each pair, short calyx lobes and well developed external calyx teeth (Cogniaux 1891). Although Judd (1989) treated *Sagraea* as a genus, we refrain from naming this new species in that genus until its circumscription and species are better known.

Clidemia intonsa appears to be related to species numbers 49-53 of Cogniaux (1891). This group includes *C. cruegeriana* Griseb. and *C. trinitensis* Griseb., both of which grow on the island of Trinidad and in eastern Venezuela; *C. intonsa* can readily be distinguished from these species, which have sessile leaves, by its petiolate leaves.

Distribution. – *Clidemia intonsa* is known only from the cloud forest on Cerro Patao, where it grows at 1000-1050 m elevation near the summit. Cerro Patao is part of the eastern section of the Coastal Cordillera of Venezuela, which extends into the Paria Peninsula. It is part of the Paria refuge, which has at least 29 endemic species (Steyermark 1979) and whose flora shows strong affinities to the adjacent island of Trinidad (Beard 1946, Steyermark & Agostini 1966). The cloud forests on Cerro Patao and the natural habitat of *C. intonsa* are dominated by *Clusiaceae, Sapotaceae, Melastomataceae, Lecythidaceae* and *Theaceae* (Steyermark & Agostini 1966). Since Cerro Patao is part of the Península de Paria National Park, these forests are relatively well protected.

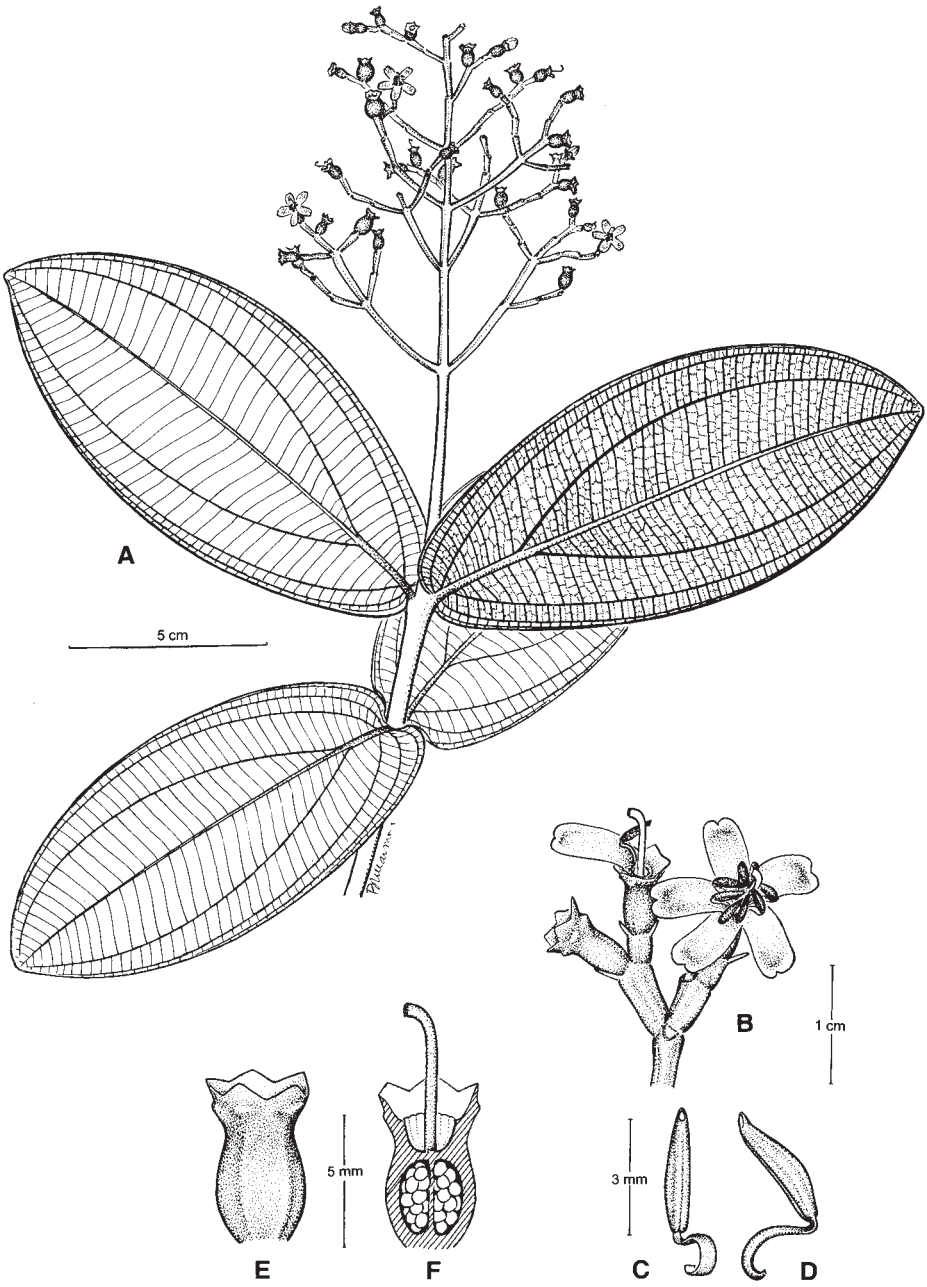

Fig. 2. *Miconia chapensis* – A: habit; B: section of the inflorescence showing a flower at anthesis, an older flower with only one petal, one stamen and the style, and a young fruit; C: anther with filament in ventral-lateral view; D: anther with filament in lateral view; E: external view of the hypanthium, calyx lobes and external teeth; F: longitudinal section of a flower (petals and stamens removed) showing the inferior ovary, hypanthium, torus, style and calyx lobes (*Meier & al. 8468,* VEN).

Miconia chapensis E. Cotton & W. Meier, **sp. nova**
Holotype: Venezuela, Edo. Yaracuy, boundary of Dttos. Nirgua and San Felipe, Serranía Santa María, north of Nirgua, Cerro La Chapa, 10°12'30"N, 68°33'W, 1250-1350 m, 25.6.2001, *W. Meier & al. 8468* (VEN; isotypes: AAU, B, K, MO, MY, NY, PORT). – Fig. 2.

Miconiae robinsonianae Cogn. et *M. reducenti* Triana affinis a quibus differt foliis sessilibus (non petiolatis) 7-plinerviis (non 5-plinerviis) ad basim subcordatis (non cuneatis et subauriculatis), antheris anguste oblongis (non subulatis).

Glabrous tree, 5-6 m tall; branchlets obscurely quadrangular to terete. *Leaves* subcoriaceous, sessile; blade elliptic to obovate, 11-14 × 5-6.5 cm, apex rounded to acute, base sub-cordate, margins entire; leaf venation notably 7-plinerved, with an additional pair of inframarginal nerves that reach only 1/3 of the lamina's length and then disappear into the margins, the inner pair of primary nerves diverging 1.4-2.5 cm above the lamina base. *Inflorescence* a terminal thyrse, 12-15 cm long, sometimes overtopped by lateral leafy shoots, the axis and branches distinctly light green; bracts 1-2 mm long, oblanceolate, mostly early caducous, one subtending each inflorescence branch and two subtending each flower. *Flowers* sessile, 5-merous, 1-1.2 cm long; hypanthium 4-6 mm long to the torus, 5-costulate; calyx tube c. 1 mm long, lobes broadly triangular, c. 0.6 mm long, the external calyx teeth barely visible as small bumps; corolla lilac, petals oblong to slightly obovate, 5-7 × 2.5-3 mm, apex emarginate to retuse; filaments 2-3 mm long, complanate, strongly sigmoid, glabrous; anthers linear-oblong in ventral view, somewhat laterally compressed, 2.8-3 mm long, with a small, ventrally inclined pore; connective somewhat thickened dorsally forming a hump that is thickest below the middle, not appendaged; ovary 3-locular, completely inferior, style glabrous, 5 mm long, stigma punctiform, granulose. *Fruit* baccate, black, globular, 5-8 mm in diameter.

Additional specimens examined. – Venezuela, Edo. Yaracuy, boundary of Dttos. Nirgua and San Felipe, Cerro la Chapa, 5 km north of Nirgua, east of trail Nirgua–Las Marías, 10°12'30"N, 68°33'30"W, 1200-1350 m, 27.12.2000, *W. Meier & al. 7787* (AAU, MO, VEN).

Relationship. – Miconia chapensis belongs to *M.* sect. *Tamonea,* distinguished by pentamerous, rather large flowers, often subtended by two bracts, and elongated, linear-subulate, one-pored anthers (Cogniaux 1891). Although *M. chapensis* does not have subulate anthers, it resembles other members of this group that also have 3-locular ovaries. It is most similar to *M. robinsoniana* Cogn. from the Galápagos Islands and *M. reducens* Triana from the coastal plains of northern Ecuador, Colombia and Central America. It also resembles *M. cacatin* (Aubl.) Renner with a 5-locular ovary, from French Guiana and Surinam. As can be seen, this group of similar and possibly related species together have a disjunct distribution and the species described here grows in the centre of the distributional gap.

Miconia chapensis can be distinguished from *M. reducens* and *M. robinsoniana* by the leaves being sessile (not with 1-3 cm long petioles) and 7-plinerved (rather than 5-plinerved), by the sub-cordate (rather than acute and subauriculate) base of the lamina, and linear-oblong (rather than subulate) anthers. From *M. cacatin* it can be distinguished by the leaves being sessile (not with 6-10 cm long petioles) and 7-plinerved (rather than 5-plinerved), by anthers that are 2.8-3 mm (rather than 5.5 mm) long and by lilac (not translucent yellow) petals.

Distribution. – Miconia chapensis is known only from the type locality on the north-western slopes of the Coastal Cordillera, Yaracuy State, Venezuela. It grows on the Cerro La Chapa, north of Nirgua, which is part of the Serranía Santa María in the central section of the outer Coastal Cordillera, in undisturbed or slightly disturbed montane cloud forest at 1300-1350 m altitude. Cerro La Chapa reaches 1360 m elevation, and the cloud forest at the summit, which covers a few thousand hectares, is especially rich in palms, both in species and in individuals. It is characterised by an abundance of emergent palms *(Socratea* and *Dictyocaryum)* and trees

(Sloanea), many epiphytes and hemiepiphytes with large leaves (mostly *Araceae* and *Cyclanthaceae*) in the interior of the forest and, in the understorey, an abundance of *Rubiaceae, Melastomataceae, Clusiaceae, Annonaceae, Arecaceae, Lauraceae, Euphorbiaceae, Fabaceae, Mimosoideae, Moraceae, Siparunaceae, Lacistemaceae* and *Quiinaceae* with the endemic *Froesia venezuelensis*.

Cerro La Chapa is remarkable for the presence of ten species and three subspecies endemic to this small area and for several species with interesting disjunct distributions. It has therefore been considered a refuge (Steyermark 1979).

Cerro La Chapa and its surroundings are being destroyed by cattle grazing, shifting cultivation, road construction and coffee plantations. Despite published documentation of the importance of this mountain (Steyermark 1971, 1977) and despite many efforts to rescue the area, it has not been possible to protect it effectively. The type locality of *Miconia chapensis* may be destroyed in the near future.

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