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## New Species of *Siparuna* (Siparunaceae) IV. A New Subcanopy Tree from White-Sand Areas in Brazil and Venezuela

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**ABSTRACT.** A new species of *Siparuna* (Siparunaceae), *S. ficoides*, is described, illustrated, and placed in a phylogenetic context based on morphological and DNA sequence data. The species, which is a monoecious subcanopy tree, is known from three collections made near Manaus, Brazil (two from the same tree), and one in the state of Bolívar, Venezuela.

**RESUMEN.** Se describe y se ilustra una nueva especie de *Siparuna* (Siparunaceae), *S. ficoides*, además se la ubica en un contexto filogenético basado en datos morfológicos y en secuencias de DNA. Esta nueva especie es un árbol monoico de subdosel, de la cual se han registrado tres colecciones cerca de Manaus, Brasil (dos del mismo árbol) y una colección en el Estado de Bolívar, Venezuela.

**Key words:** Brazil, Central Amazon basin, forest on sandy soils, *Siparuna*, Siparunaceae, Venezuela.

The Ducke Forest Reserve comprises some 10,000 ha of non-flooded forest on the outskirts of Manaus, capital of the state of Amazonas, Brazil. Between 1955 and 1978, about 7000 collections of vascular plants were made there, and another 7354 were added between 1992 and 1998, as part of a British-Brazilian technical cooperation that resulted in a "Field Guide to the Vascular Plants" (Ribeiro et al., 1999; M. Hopkins, pers. comm., May 2004). This collection density makes the Ducke forest the best-documented site in the Amazon basin, at least with regard to vascular plants. It is all the more remarkable that new species of trees continue to come to light among collections made in the reserve during the 1990s that are now available for study, mainly in the herbaria INPA, K, MG, NY, RB, and SP. One such species is described here, based on collections from the Ducke reserve and from the Venezuelan state of Bolívar. This distributional range makes sense phytogeographically because the Ducke area harbors many species

adapted to sandy soils, such as are typical of the Rio Negro basin and the Venezuelan Gran Savanna.

Siparunaceae consist of just two genera, *Siparuna* Aublet (including *Bracteanthus* Ducke) and its sister group *Glossocalyx* Benthham, a monotypic West African genus very similar to *Siparuna* (Renner, 2004; Renner & Hausner, 2005). Most of the 53 species of *Siparuna* are dioecious, but the phylogenetically basal species (in a molecular phylogeny; Renner & Won, 2001) are monoecious and include the large tree species as well as most lowland species found in the genus. Besides monoecy, they share entire-margined leaves, fruitlets that lack styler arils, and little-developed tepals. ("Styler aril" is a term introduced by Corner [1976] for the fleshy appendages present on some Siparunaceae fruitlets; others, for example, Endress [1980] and Barroso [1999], have referred to these appendages as superarils because they do not derive from the seed or funiculus like a true aril [van der Pijl, 1982: 139, fig. 25]. Instead, the appendages in *Siparuna* develop as asymmetric outgrowths at the style base. The styler arils in *Siparuna* are orange or red in color and rich in oil, but contain little or no starch. As far as known, monoecious species lack styler arils, and their drupelets' exo- and mesocarp instead often becomes slimy.) The new species described here has been sequenced for one chloroplast locus and one nuclear locus (Renner & Won, 2001, under the name *S. aff. monogyna*), and based on these data it belongs in a clade that also includes *S. cristata* (Poeppig & Endlicher) A. DC., the species to which it is most similar morphologically (see below).

***Siparuna ficoides* Renner & Hausner, sp. nov.**

TYPE: Brazil, Amazonas: Res. Flor. Ducke, Manaus-Itacoatiara, km 26, 02°53'S, 59°58'W, permanently tagged tree 3325-74, 29 Sep. 1995, C. A. Sothers, E. da C. Pereira & C. F. da Silva 591 (holotype, INPA; isotypes, K, MG, MO, NY, R, SP, U). Figures 1, 2.

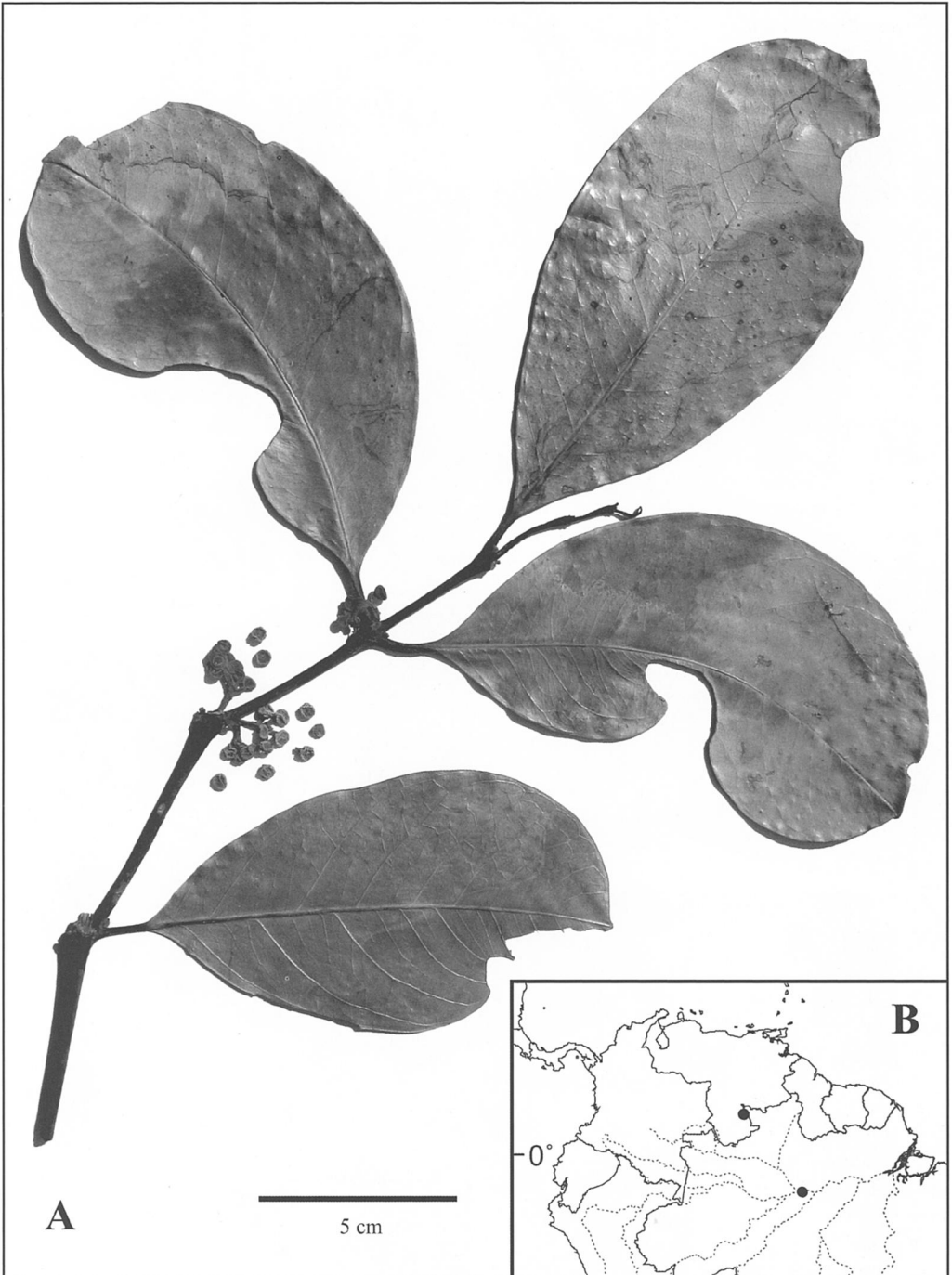


Figure 1. —A. Habit of *Siparuna ficoides* Renner & Hausner (*Sothers et al. 591*, MO, isotype). —B. Distribution of *S. ficoides*.

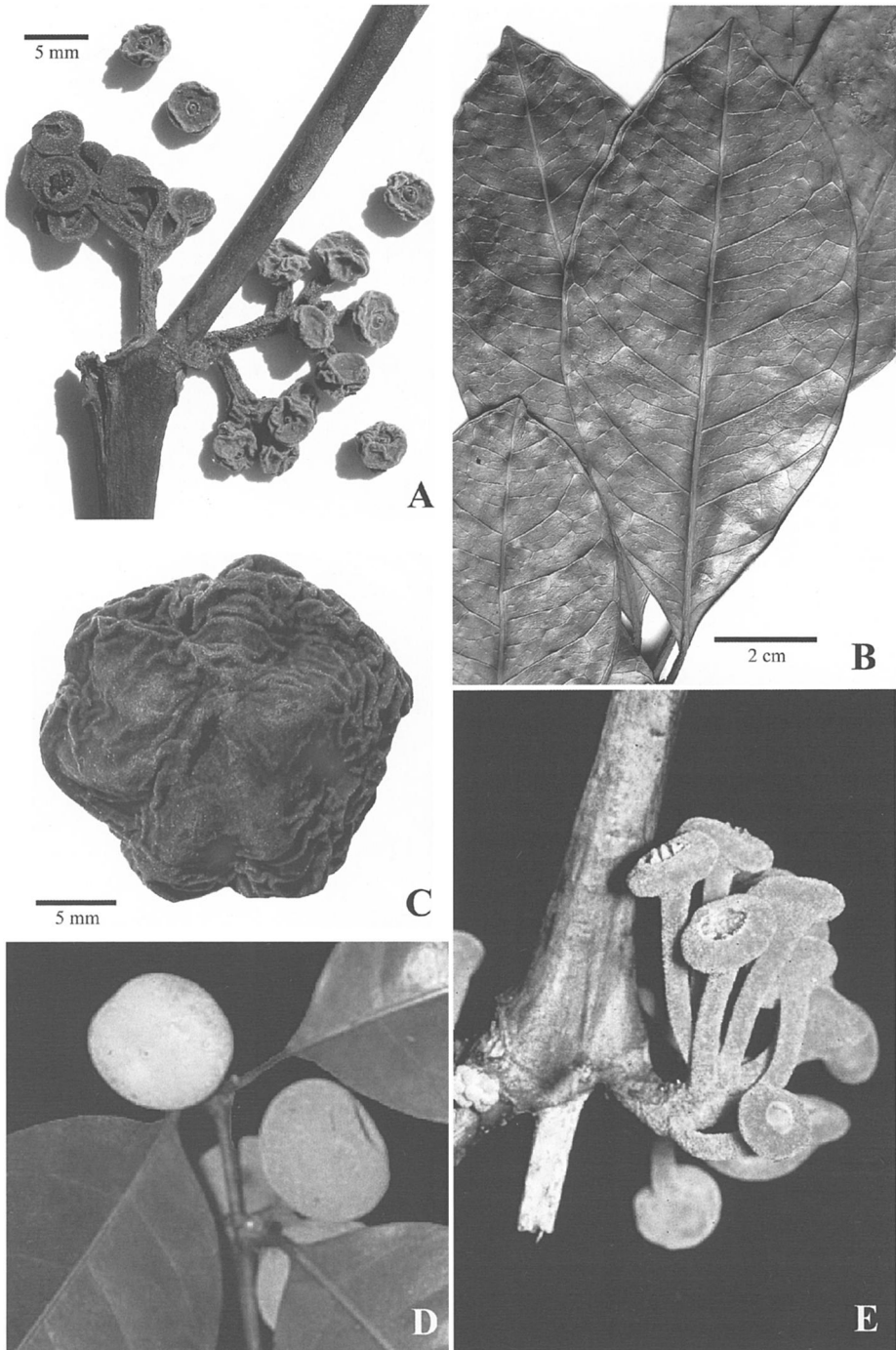


Figure 2. *Siparuna ficoides* Renner & Hausner. —A. Inflorescences with male (left) and female flowers (right, some broken off); (Sothers *et al.* 591, MO, isotype). —B. Lower leaf surface, showing the loose tertiary venation (Briceño 427, NY, paratype). —C. Fruiting receptacle (Assunção *et al.* 808, NY, paratype). —D. Branchlet with young fruiting receptacles (Reserva Florestal Ducke, tree 3133-74; vouchers from this tree are Assunção *et al.* 808 and Vicentini *et al.* 1010). —E. Inflorescence with male flowers (Reserva Florestal Ducke, tree 3325-74; a voucher from this tree includes the isotype Sothers *et al.* 591, MO). Photos D and E: M. J. G. Hopkins.

A *Siparuna cristata* foliis brevioribus et angustioribus (9–15 × 4–8.8 cm) cum venis tertiariis irregulariter anastomosantibus laxè dispersis fructibus subglobosis (ca. 2 × 1.1 cm) pilosibusque differt.

Monoecious *subcanopy tree*, 13–20 m tall, with a DBH of 10–11 cm, the trunk straight, the slash wound light tan or yellowish and strongly lemon-scented; young branchlets terete or flattened at the nodes, glabrous. *Leaves* opposite; petioles 1–2.2 cm long; lamina drying light green, yellowish or grayish green, shiny, stiff-chartaceous to coriaceous, obovate or elliptic, 9–15 × 4.4–8.8 cm, the base obtuse and shortly attenuate, the apex obtuse, acuminate, truncate, or emarginate, mature leaves glabrous except for very few peltate or stellate-lepidote hairs on the lower leaf surface or on the midrib; with 9 to 12 pairs of secondary veins, these flat above, slightly raised below, anastomosing near the leaf margin, the tertiary veins irregularly reticulate and loosely spaced (Fig. 2B), the margin entire. *Cymes* in the axils of extant leaves or on leafless nodes, about 1.5 cm long, with 6 to 12 flowers, the peduncle 4–6 mm long, the pedicels of male flowers gradually elongating during anthesis and becoming up to 8 mm long, those of the female flowers and fruiting receptacles remaining short (Figs. 1, 2); cymes persistently velvety. Fresh *flowers* green with a cream-colored center, dried golden-brownish in color; *male flowers* cup-shaped, 3–3.5 mm high, 4–4.5 mm diam., the indumentum as on the cymes, the tepals reduced to a circular rim surrounding the flower center with its barely developed tomentose floral roof (Fig. 2A, E), stamens 27 to 30, fleshy and with small anther flaps, dorsally with a few stellate hairs; *female flowers* subglobose, 2.5–3.5 mm high, 4–5 mm diam., the tepals reduced to a circular rim around the flower center (Fig. 2A); the floral roof conical and velvety; carpels ca. 8, the styles basally fused to a short column and hardly protruding from the floral roof, the free parts of the styles thin and easily detached. *Fruiting receptacle* subglobose, ca. 1.1 cm in height and 2 cm diam. (Fig. 2C), when fresh greenish yellow and densely pubescent (Fig. 2D), dried material persistently velvety brown-pubescent, the drupelets protruding (Fig. 2C), drupelets about 6, apparently lacking a stylar aril.

*Distribution* (Fig. 1B), *habitat*, and *phenology*. *Siparuna ficoides* is known from the Central Amazon basin and the state of Bolívar in Venezuela, where it grows on sandy soils at altitudes up to about 410 m. Flowers and fruits have been collected in August and September.

*Etymology*. The species is named for its leaves resembling certain species of *Ficus* L. (Moraceae).

*Common name*. The Venezuelan Yekuana (or Yekuna) Indians refer to this species as Medebadi and apply the leaves against snakebites (*Briceño* 427).

*Siparuna ficoides* resembles *S. cristata*, which ranges throughout the Amazon basin and into northern Venezuela, adjacent northernmost Colombia, and Panama, and which also occurs in the Ducke reserve. The two species have similar glabrous leathery leaves, but *S. cristata* has glabrous fruits that are elongate in shape, reaching 3.5–4 cm in length, with a diameter of (1–)2–3.5 cm, whereas the fruits of *S. ficoides* are densely velvety pubescent and subglobose in shape. In addition, *S. cristata* usually has 10 to 18 stamens, while *S. ficoides* has 27 to 30 stamens, the leaves of *S. cristata* dry dark brown and their blades measure 18–27(–38) × (7–)9–14 cm, while leaves of *S. ficoides* dry light green or light brown and have blades measuring 9–15 × 4.4–8.8 cm. Yet another difference lies in the leaf venation: in *S. cristata*, the tertiary veins cross between adjacent secondaries in parallel paths without branching, while in *S. ficoides* they are irregularly anastomosing and loosely spaced (Fig. 2B) compared to other species of *Siparuna*. A few duplicates of *S. ficoides* were distributed as *S. monogyna* Jangoux, a name that we briefly thought might pertain to the new entity, but a study of the type of *S. monogyna* revealed that this name does not apply. Another monoecious species with velvety fruits is *S. gentryana* S. S. Renner, occurring in Ecuador and Colombia. However, *S. gentryana* has tuberculate fruits, rather than smooth, subglobose ones, and dark brown leaves with a venation more like *S. cristata*.

*Paratypes*. VENEZUELA. **Bolívar**: Foráneo Aripao, Botadero Norte, 8 May 1994, *E. Briceño* 427 (NY). BRAZIL. **Amazonas**: Res. Flor. Ducke, Manaus–Itacoatiara, km 26, near observation tower, permanently tagged tree 3133-74, 5 Sep. 1995, *A. Vicentini*, *P. A. C. L. Assunção*, *C. F. da Silva* & *E. da C. Pereira* 1010 (INPA, K, MG, MO, NY, R, RB, SP, U), same tree collected again, 6 Mar. 1998, *P. A. C. L. Assunção*, *E. da C. Pereira* & *C. F. da Silva* 808 (INPA, K, MG, MO, NY, RB, SP, U, UB).

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