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***Vantanea maculicarpa* (Humiriaceae): a new tree species from French Guiana**

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Abstract

A new species of Humiriaceae, *Vantanea maculicarpa*, growing in French Guiana *terra-firme* forest is described and illustrated. This new species is distinguished from all other species of *Vantanea* by fruits covered by white lenticels, a character so far unknown in this genus. It also presents a pubescent intrastaminal disk, a feature encountered in two other *Vantanea* species only: it is further distinguished from *V. parviflora*, the morphologically most similar species, by more stamens and from *V. ovicarpa* by a much smaller rough endocarp with five valves. A key to the species of French Guiana and the IUCN status Least Concern (LC) are proposed.

Keywords: *Vantanea*, Humiriaceae, French Guiana, taxonomy

Introduction

The genus *Vantanea* Aubl. (1775: 572, pl.229) comprises 21 species (including the new species here described) and is the largest genera of Humiriaceae. It is spread from Costa Rica through northern South America to Bolivia and south Brazil (Kubitzki 2014). In French Guiana, four species (including the new species described in this article) have been recorded in *terra-firme* forests up to 800 m a.s.l. The genus *Vantanea* is characterized by its arborescent habit, coriaceous simple leaves with entire margins, flowers with a cupular calyx and five distinct petals (usually white), and drupaceous fruits with carnose mesocarp and woody endocarp dehiscent at seed germination by oblong valves. *Vantanea* differs from other Humiriaceae genera in having numerous stamens (30–230) and anthers with two bilocular thecae (Cuatrecasas 1961). The species described in this article was already distinguished from *V. parviflora* Lam. (1792: 145, pl.7) and considered as a distinct morphospecies in French Guiana based on vegetative criteria, specifically obovate blades and shorter petioles. Fruits were collected in 1985 and are covered by distinctive white lenticels, a character so far unobserved in other species of *Vantanea*.

Materials and Methods

The studied material was received on loan from CAY and includes six fertile specimens (two with flowers and four with fruits) and three sterile specimens of the new species, plus three fertile specimens of *V. parviflora* (the species morphologically most similar). A comprehensive bibliographic survey of publications describing *Vantanea* species (Cuatrecasas 1961; Rodrigues 1982; Sabatier 1987; McPherson 1988; Gentry 1990; Sabatier 2002; Herrera *et al.* 2010) was carried out. Digitized herbarium sheets of all *Vantanea* species were downloaded from various database portals, including the New York Botanical Garden (<http://sweetgum.nybg.org/science/vh/>), the Muséum national d'Histoire naturelle (https://science.mnhn.fr/institution/mnhn/collection/p/item/search/form?lang=en_US), the Smithsonian National Museum of Natural History (<http://collections.nmnh.si.edu/search/botany/>) and the Kew Royal Botanic Gardens (<http://apps.kew.org/herbcat/gotoSearchPage.do>). Terminology of leaf and inflorescence are based on Harris & Harris (2001). The conservation status was evaluated using the IUCN Red List criteria (IUCN 2012); the Area of Occupancy (AOO) was calculated by using the online “GeoCAT” software “<http://geocat.kew.org>” (Bachman *et al.* 2011).

Taxonomy

Key to the species of *Vantanea* in French Guiana, adapted from (Sabatier 2005)

1. Leaves with petioles not thickened at base; blades elliptic to oblong-elliptic, apex shortly acuminate. Flower buds ca. 3 cm long. Petals red; ovary and disc glabrous *V. guianensis* Aubl. (1775: 572, pl.229)
- Leaves with petioles often thickened at base; blades obovate, obovate-elliptic, elliptic, or oblanceolate, apex rounded, emarginate (sometimes shortly acuminate). Flower buds 0.8–1.2 cm long. Petals white or greenish-white; ovary and disc pubescent.....2
2. Leaf blades obovate, 4–11 cm long, petioles ca. 0.5 cm long. Stamens 150–230. Fruits globose, covered by numerous white lenticels, ca. 2.5 cm in diameter, exocarp brown, firm, ca. 3 mm thick, endocarp rough with 5 valves..... *V. maculicarpa*
- Leaf blades obovate-elliptic or elliptic, 4–11 cm long, petioles 0.5–1.5 cm long. Stamens 80–120. Fruits smooth or slightly pubescent, ca. 2.4–2.8 × 2.2–2.5 cm, exocarp green, fleshy, ca. 2 mm thick, endocarp rough with 5 valves *V. parviflora*
- Leaf blades oblanceolate to obovate-elliptic, 8–15 cm long, petioles 0.8–1 cm long. Stamens 120–200. Fruits smooth, ca. 5–7 × 4–5 cm, exocarp ca. 5 mm thick, endocarp smooth with 6–7 valves *V. ovicarpa* Sabatier (2003: 235, fig.1)

Vantanea maculicarpa Sabatier & Engel, *sp. nov.* (Figs. 1 and 2)

Type:—FRENCH GUIANA. RN2 Cayenne—Régina, niveau Petites Montagnes Tortue, 4°18'N, 52°15'W, 1 November 2009, D. Sabatier 5574 (Holotype CAY! (barcode CAY111685); Isotype P! (barcode P01156374)).

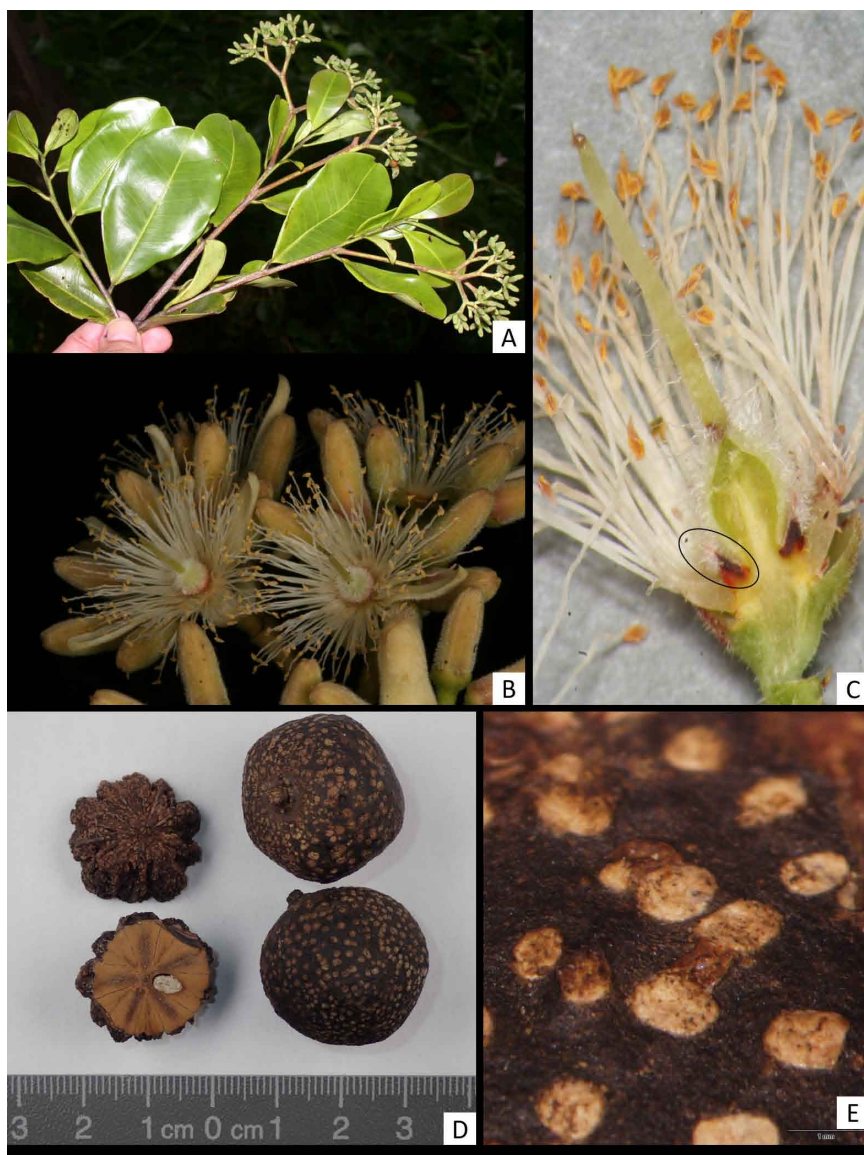


FIGURE 1. *Vantanea maculicarpa* (photographs A–C by Daniel Sabatier and D–E by Julien Engel). A. Flowering branch. B. Flower buds and flowers. C. Medial section of flower (note the pubescent intrastaminal disk). D. Two fruits (right), transverse section with one seed (below left) and upper view of endocarp (above left). E. Fruit surface showing white lenticels. (A. Sabatier & Prévost 4911. B–C. Sabatier 5574. D–E. Sabatier 4898).

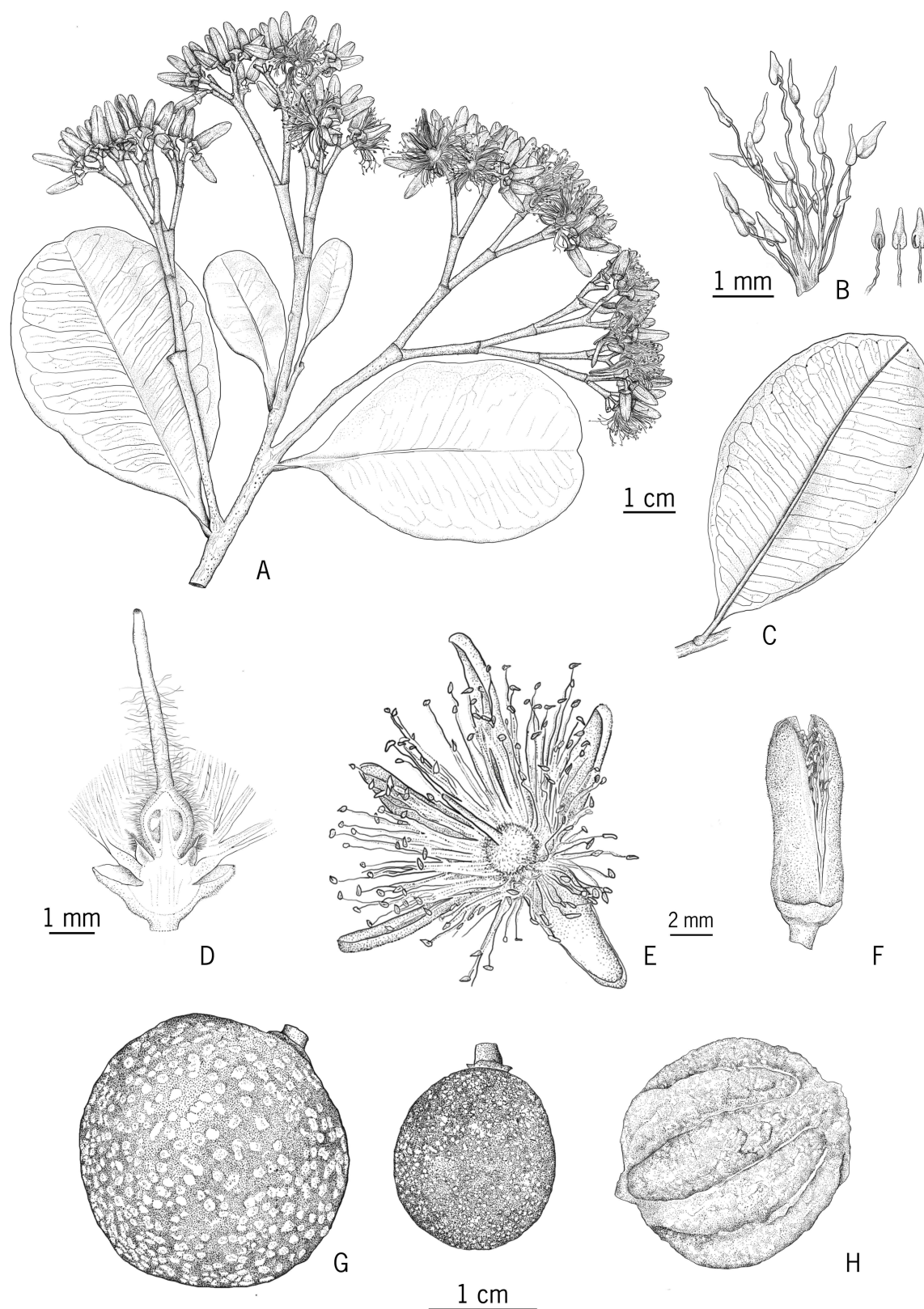


FIGURE 2. *Vantanea maculicarpa*. A. Flowering branch. B. Detail of stamens. C. Mature leaf. D. Medial section of flower. E. Flower at anthesis. F. Flower bud. G. Mature (left) and immature (right) fruit. H. Endocarp. (A–C. *Sabatier 5574*. D–F. *Sabatier & Prévost 4911*. G. *Sabatier 4898*, *Sabatier 5342*. H. *Sabatier 4898*). (Drawn by Laurence Ramon)

Diagnosis:—*Vantanea maculicarpa* is distinguished from all other species of *Vantanea* by its fruits that are covered by white lenticels, a character so far unknown in this genus as all other species of *Vantanea* have smooth, slightly pubescent or rarely tuberculous fruit surface (*V. tuberculata* Ducke (1938: 31, pl.5)). Fruits shape is globose, another distinctive feature of *V. maculicarpa*, as fruits are mostly ovoid or ellipsoid in this genus. Regarding flowers, *V. maculicarpa* has a pubescent disk, a feature shared by two other species only, *V. parviflora* and *V. ovicarpa* respectively. The new species closely resembles *V. parviflora*: they share leaves greenish-brown above, with secondary and smaller veins visible on both sides, and petioles thickened at base. *V. maculicarpa* is distinguished by shorter petiole and obovate blades while *V. parviflora* has more elliptical blades. Regarding flowers, *V. maculicarpa* differs from *V. parviflora* in having more stamens (150–230 against 80–120). Filaments length is also more variable (within a same flower) in *V. maculicarpa*, while it is more uniform in *V. parviflora*. The length ratio between the longest and the smallest filament of a same flower is also more variable between flowers in *V. maculicarpa*. To get an approximate picture, this ratio ranges from about 2 to 5 in *V. maculicarpa*, while it is ranging around 1.6 and quite homogeneous among flowers in *V. parviflora*. *V. maculicarpa* differs from *V. ovicarpa* in having globose, strongly rugose and smaller endocarp with 5 valves while the latter has large, ovoid, smooth endocarp with 6–7 valves.

Description:—*Tree*, up to 40 m tall, 80 cm dbh; bole irregular, buttressed; bark becoming fibrous with age; branchlet terete, glabrous. *Leaves* simple, alternate, rigid coriaceous, glabrous, with several small glands scattered on lower surface, ca. 4–11 × 3–6 cm, margins entire, blades obovate, cuneate or attenuate at base, rounded and emarginated at apex, sometimes shortly acuminate, midvein prominently raised on abaxial surface, slightly raised on adaxial surface, secondary veins 8–10, arcuate and united near the margin, smaller veins reticulate; petiole sulcate, usually thickened at base, 4–6 mm long. *Inflorescence* paniculate-cymose, ca. 9 cm long, axillary or terminal, axis pubescent, pedicels ca. 0.5 mm long, pubescent; bracts deciduous. *Flower* buds 0.8–1 cm long; calyx broadly cupulate, ca. 3 mm long, 2 mm diameter, entire or slightly 5-lobed, minutely pubescent; petals valvate in bud, white, linear, rather thick, 5–8.5 × 1–1.5 mm, pubescent outside, hairs abundant, glabrous inside; stamens 150–230, united at base, filaments glabrous, white, 1–6 mm long with high variability within and among flowers (within-flower ratio between the length of the longest and the length of the smallest filament ranging from 2 to 5); anthers lanceolate, ca. 0.7 mm long, affixed near the base, orangish-yellow; thecae 2, bilocular, ca. 0.3 mm long; the connective long and acute (about half the length of the anther); disk thick, cupular, densely pubescent abaxially and in its adaxial upper-third; ovary 1.6 × 0.6 mm, globose-ovoid, densely crisp-pubescent, 5-locular; style ca. 3.6 mm long, sparsely pilose at base; stigma small, rounded. *Fruit* a globose drupe, ca. 2.5 cm in diameter, dark with numerous whitish lenticels; mesocarp ca. 3 mm thick, firm; fruit stone (pyrene) woody, strongly rugose, with 5 linear, ca. 5 mm wide, valves alternating with broad ribs; one (two) seed ca. 5 × 2.5 mm.

Phenology:—Flowers of *Vantanea maculicarpa* have been observed from the end of the rainy season in June to the dry season in November, immature fruits in October and mature fruits during the rainy season in April–May.

Distribution and Ecology:—The new species occurs in French Guiana *terra-firme* forest.

Etymology:—The epithet refers to the surface of the fruits covered by numerous white lenticels.

Conservation status:—The new species is known from 9 widely spaced localities of French Guiana, and these localities are not threatened by human activities. The Area of Occupancy (AOO) calculated is 28 000 km². *Vantanea maculicarpa* is thus classified as Least Concern (LC) following the IUCN Red List criteria (IUCN 2012).

Additional specimens examined (paratypes):—FRENCH GUIANA. Petite Montagne Tortue, 4°13'N, 52°13'W, 10 June 2005 (fl.), D. Sabatier & M.F. Prévost 4911 (CAY! (barcode CAY073328), P (barcode P04782086), NY); piste de Nancibo, 4°41'N, 52°30'W, 12 April 1985 (fr.), D. Sabatier 1071 (CAY! (barcode CAY080681, CAY080680)); DZ Saut Dalles, 3°16'N, 53°49'W, 05 May 1990 (fr.), D. Loubry 706 (CAY! (barcode CAY166269), NY, US, CBS, MPU (barcode MPU216145)); Massif des Emérillons, crête à 4.5 km au Sud du Piton Baron, 3°17'N, 53°4'W, 27 October 2007 (imm. fr.), D. Sabatier & J.F. Molino 5342 (CAY! (barcode CAY104064, CAY104065)); Crique Wapou, 4°25'N, 52°9'W, May 2005 (fr.), D. Sabatier 4898 (CAY! (barcode CAY171556), P! (barcode P01156368); Nancibo, 4°40'N, 52°29'W, 15 November 1985 (st.), D. Sabatier 1130 (CAY! (barcode CAY166268)); Nancibo, 4°40'N, 52°29'W, 27 December 1985 (st.), D. Sabatier 1172 (CAY! (barcode CAY166267)); St-Georges-Régina, entre pk 25,4 et pk 27, 4°1'N, 51°58'W, 4 November 1998 (st.), P. Grenand 3062 (CAY! (barcode CAY000286), MPU, MO, G).

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