

Ann. Naturhist. Mus. Wien, B	119	183–226	Wien, Jänner 2017
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## A revision of neotropical *Diospyros* (Ebenaceae): part 10

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### Abstract

In the course of a revision of the New World Ebenaceae for "Flora Neotropica" and some regional floras, specimens from ca. 100 herbaria have been studied. The South American *Diospyros sericea* A.DC. (synonyms: *D. vestita* BENOIST, and *D. praetermissa* SANDWITH), and *D. pseudoxylophia* MILDBR. are here described in detail. Lectotypes for these four taxa are selected. Figures, distribution maps, vernacular names, information on habitat and ecology, lists of specimens, and an identification key are included.

**Key words:** Ebenaceae, *Diospyros sericea*, *D. vestita*, *D. praetermissa*, *D. pseudoxylophia*, revision, taxonomy, distribution map, Flora of South America.

### Zusammenfassung

Im Rahmen einer Revision der neuweltlichen Ebenaceae für "Flora Neotropica" und einige Regionalfloren konnten Herbarbelege aus ca. 100 Herbarien studiert werden. Die südamerikanischen Arten *Diospyros sericea* A.DC. (Synonyme: *D. vestita* BENOIST und *D. praetermissa* SANDWITH) und *D. pseudoxylophia* MILDBR. werden eingehend beschrieben. Lectotypen für alle vier Taxa werden ausgewählt. Abbildungen, eine Verbreitungskarte, Volksnamen, Angaben zum Habitat und zur Ökologie, Listen der gesehenen Herbarbelege, sowie ein Bestimmungsschlüssel werden präsentiert.

### Introduction

In the Americas, the Ebenaceae are represented by the genera *Diospyros*, with about 100–130 species, and *Lissocarpa* with eight species. In the course of an ongoing revision of Ebenaceae (WALLNÖFER 2001a, 2001b, 2004a, 2004b, 2004c, 2007–2016, 2008a, 2008b, 2010a, 2010b, 2010c, 2012, 2015a, 2015b, WALLNÖFER & CHÁVEZ 2014, WALLNÖFER & MORI 2002, ESTRADA & WALLNÖFER 2007; see also DUANGJAI et al. 2006, 2009) for "Flora Neotropica", "Flora of Ecuador", "Flora of the Guianas", and "Flora de Paraguay" several new species have already been described (WALLNÖFER 1999, 2000, 2003, 2005).

Note: Additions are given in brackets; coordinates given in brackets were determined during this revision; acronyms of herbaria according to THIERS (2016); data from herbarium labels are cited here in a standardized way; – abbreviations: defl = deflorate; fl = flowering; flbuds = with flower buds; fr = fruiting; st = sterile; yfr = with young fruits; carp = fruit in the carpological collection; n.s. = not seen; s.n. = without number; s.d. = without date; s.coll. = without collector; s.lat. = sensu lato; s.str. = sensu stricto; 2× = 2 sheets.

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Fig. 1: Isolectotype of *Diospyros sericea* A.DC. [BM].

***Diospyros sericea* A.DC.**, Prodr. 8: 236 (1844); – [fig. 1–6].

≡ *Maba sericea* (A.DC.) HIERN, Trans. Cambridge Philos. Soc. 12 (1): 140 (1873).

**Typus:** Brasil, Bahia, Jacobina [ca. 11°11' S, 40°30' W], Igreja Velha [not located; protologue: "prope Bahiam"], (fl male), 1841, **J. Blanchet 3358** [lectotype (here designated, dig. photo accessible via the internet): G-DC (G00142251), isolectotypes: BM 2× (fig. 1), BR 3×, C, F 2× (photos F 59346, 59347), G 7×, K 2×, LE, M 2× (photo F 20082 in US), MG 2× n.s., MO, NY, OXF, P 8×, U, W 3×], "fl. jaunâtre, hauteur de deux hommes"; – Minas Gerais, protologue: "in prov. Minas-Geraes Brasiliensium", (flbuds male), 1840, **P. Claussen 484** [syntypes: DS, G-DC (G00142211), G-BOIS].

Note: According to URBAN (1895: 2), the collections of Blanchet gathered between 1833 and 1847 are from the Gaucho Manoel, who visited also the Serra Jacobina. A sheet in BM bears the date 1842 and another one in G the year 1843. It is not clear whether or not all the specimens numbered 3358 belong to one or more gatherings. An additional sheet of Blanchet in F bears the year 1843, and erroneously the number "3538". It may also represent an isolectotype. The syntype of Claussen 484 kept in DS bears the date 1844. Two further unnumbered specimens of Claussen in the herbarium G-DC represent also syntypes (see photo F 7509 in MO and US).

= *Diospyros vestita* BENOIST, Arch. Bot. Mém. 5 (1): 248 (March/April 1933) [non *D. vestita* BAKH., Gard. Bull. Straits Settlem. 7 (2): 187 (Mai 1933); see STAFLEU & COWAN 1976].

**Typus:** Guyane Française, Charvein, [5°34' N, 53°54' W], (fl), 8 Jan. 1914, **R. Benoist 520** [lectotype (here designated): P (fig. 2), isotype: P], "fleurs blanches".

= *Diospyros praetermissa* SANDWICH, Kew Bull. 1949 (4): 482–485 (1950).

**Typus:** Brasil, Amazonas, "Manáos [= Manaus], silvis terris altis ultra Coloniam João Alfredo" [not located; – RB: "Manáos, mata de terra firme, alta, argillosa dos fundos da Colonia João Alfredo"], [ca. 3°8' S, 60°1' W], (fl female), 7 May 1936, **A. Ducke 546** [lectotype (here designated): K (the large, flowering twig; K000644373, dig. photo accessible via the internet), isolectotypes: A, F (photo F 59317), K, MG n.s. (dig. photo), MO, NY, RB n.s. (dig. photo), S, US], "arbor magna, flor. albis" [RB: "arv. gr., fl. branca"].

Note: The specimens of Ducke 546 in A, K (K000644372), MO, NY, S, and US bear a different label and are most likely by error dated 7th May 1937. They are treated here as isolectotypes. The small twig with a fruit near the lower left corner of the sheet which bears the lectotype as well as the fruits in the carpological collections in K and RB, and on the sheet of MG were gathered according to the label in December 1936, and are, thus, regarded here as syntypes. Furthermore, some paratypes are indicated in the protologue (SANDWICH 1950).

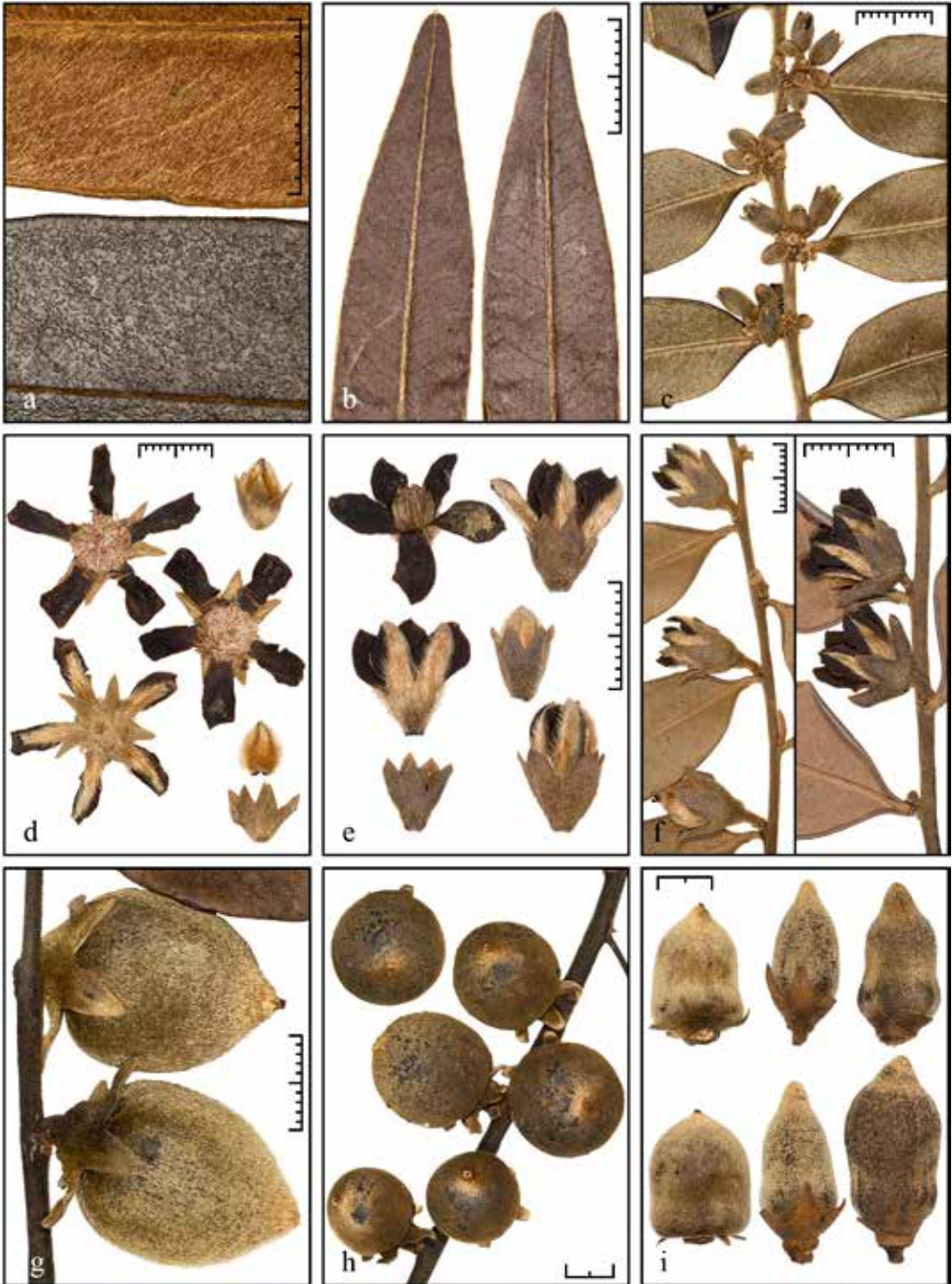
Tree up to ca. 35 (–40) m tall, dbh up to ca. 80 cm, already flowering when ca. 1 m tall in southern populations, probably evergreen; for further details of the living plants see the chapter "Habit and Biology"; buds scale-less, 1–1.5 cm long, composed of involute young leaves which are densely covered with spreading, ± straight, long, light brown or sometimes golden-brown hairs; young twigs covered with a dense indumentum



Fig. 2: Lectotype of *Diospyros vestita* BENOIST [P].

composed of larger and thicker,  $\pm$  straight,  $\pm$  spreading, up to 1.5 mm long hairs and thinner, strongly flexuose or curled,  $\pm$  felted, shorter hairs; twig apices sometimes with a pair of distinct line-like grooves in the indumentum (impressions of the margins of leaves in bud) running in zig-zag fashion from node to node (e.g., Irwin et al. 26835, Sobral & Ganev 7631, Thomas et al. 5922); indumentum persisting long time on older twigs; bark of old twigs usually gray-brown, sometimes black or with expanding lenticels which often form warty protuberances or ridges (e.g., Thomas et al. 9689); **leaves** (fig. 3a, 5b–c) alternate; petioles 2–4 mm long, ca. 1.5 mm thick, densely hairy; leaf lamina obovate, to ovate-lanceolate, (1.5–) 2.5–7 (–10) cm long, (0.8–) 1.5–2.2 (–2.9) cm wide, (1.5–) 2–4 (–6.3) times longer than wide, widest below the middle, coriaceous; adaxial leaf surface glabrous (except at the base), often warty and wrinkled due to subepidermal stone cell granules especially when young, drying dark brown or black when young and gray when old; abaxial leaf surface densely covered with a  $\pm$  irregular layer of grayish, epidermal papillae (these often grouped in patches or sometimes not well developed; – fig. 4a–b); leaves of populations from drier (southern) areas gray or brownish, less frequently ferruginous or golden-brown when dry,  $\pm$  densely covered with appressed or spreading hairs of different length and thickness abaxially (the longer hairs up to 1 mm long, thick, and  $\pm$  straight, the shorter ones thinner and  $\pm$  flexuose or sometimes strongly curled); leaves of populations from more humid (northern) areas gray when dry, covered with  $\pm$  scattered, shorter, and thinner hairs abaxially; leaf apex acute or acuminate, rarely obtuse; base of the lamina cuneate to abruptly cuneate, tapering along the short petiole; leaf margins entire, hairy, revolute, at the base strongly revolute especially when dry, often undulate in the northern populations; flachnectaria on abaxial leaf surfaces minute, densely covered with appressed, short hairs and thus hardly visible, usually few and not or only slightly embossed on adaxial leaf surfaces in the southern populations, up to 20 along the midvein and usually markedly embossed adaxially in the northern populations (e.g., Duke 2053), apparently missing on many leaves especially in the southern populations; midvein on adaxial side sunken, densely covered with spreading or  $\pm$  patent hairs, on abaxial side markedly prominent and densely covered with appressed or spreading hairs; secondary veins ca. 9 per side,  $\pm$  arcuate, glabrous, flat or slightly sunken and often hardly visible adaxially, raised and densely hairy abaxially; tertiary and quaternary veins often not visible on both sides; **inflorescences**: cymes placed in the axil of adult leaves up to the distal parts of new shoots; male cymes (fig. 3c) often only 1-flowered, less frequently up to 7-flowered (e.g., Orlandi & Bautista 692, Heringer et al. 5686, 14985) or even 10-flowered (Maciel et al. 832); stalks (peduncles and pedicels) up to ca. 5 mm long and ca. 1.5 mm wide, densely hairy; pedicels of the lateral flowers up to 5 (–7) mm long, 1 mm thick; female cymes (fig. 3f) usually 1-flowered (exceptions: Ganev 3476 with one 2-flowered and Hatschbach et al. 52011 with one 4-flowered cyme); stalks (peduncles and pedicels) up to 4 mm long and 1.5 mm thick, becoming much thicker distally, covered with the same indumentum as that one on petioles; bracteoles 1.8–2.5 (–4) mm long, 0.8–1.5 (–3) mm wide in both sexes, ovate or semiorbicular, acute, rounded or sometimes  $\pm$  truncate, densely hairy abaxially, glabrous or scattered hairy adaxially, soon caducous; **flowers** (4–) 5 (–6)-merous, similar in both sexes but the female ones slightly larger and wider; male flowers (fig. 3c–e) 8.5–13 mm long at anthesis (when petals erect and with pedicels excluded); calyx 6–9 mm long and 5–7 mm wide, undivided in the proximal 2–5 (–6.5) mm, densely to medium densely covered with  $\pm$  spreading hairs of different length on the outside (the longer hairs ca. 0.5 mm long and slightly flexuose, the shorter, thinner

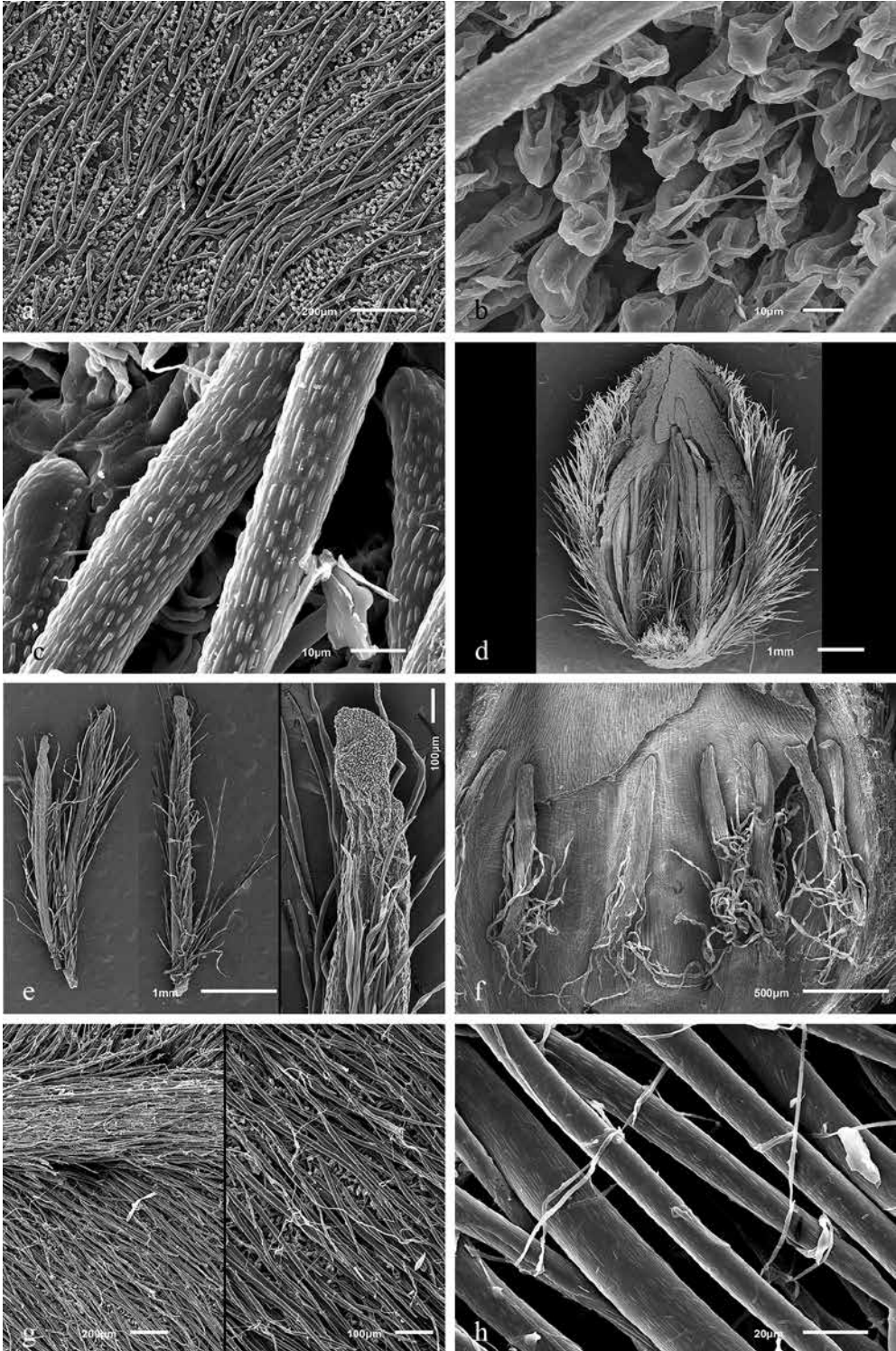




ones  $\pm$  strongly curled), on the inside densely covered with longer,  $\pm$  appressed hairs; calyx lobes (1–) 2–5 mm long, (1.5–) 2–3.5 mm wide (often strongly unequal on same flower), erect, triangular, acute, with flat margins; corolla 10–11.5 mm long (when lobes erect), densely covered with long,  $\pm$  thick,  $\pm$  straight,  $\pm$  appressed hairs on the outside, but hairs towards the margins of lobes shorter, thinner and much more flexuose, glabrous near margins and inside; tube 3–4.5 mm long, ca. 4 mm wide,  $\pm$  funnel shaped; throat ca. 2–3 mm wide; corolla lobes 7 mm long and 3–4 (–6) mm wide,  $\pm$  elliptic, widest in the distal third, acute to obtuse; stamens (fig. 4d–e) 47–82 per flower [47: Silva et al. 4596 from Goiás; 48: Kirkbride 5490 from Distrito Federal; 49: Benoist 520 and Prévost & Sabatier 3484 from French Guiana; 52: Prévost 3552 from French Guiana; 53: Thomas et al. 9689 from Bahia; 54: Markgraf et al. 3256 from Minas Gerais; 63: Ratter et al. R4504 from Goiás; 81: Fernandez & Delgado 5702 from Venezuela, Bolívar; 82: Fonséca & Onishi 1280 from Mato Grosso; 82: Goodland 213 from Minas Gerais], (3–) 6–9 mm long, often paired, exserted; filaments 0.5–1 (–2) mm long and ca. 0.2 mm wide, adnate to the corolla tube 0.5–1.5 (–2) mm above its base (and forming there a thick ring of tissue), with scattered, long,  $\pm$  straight,  $\pm$  appressed hairs distally; anthers linear, (2–) 4.5–8 mm long and 0.2 mm wide, with a 0.5 mm long, conical or slightly spatulate, glabrous connective appendage distally; connectives on both sides with same hairs as on the filaments; rudiment of the ovary (fig. 4d) subglobose, ca. 1 mm in diameter, densely hairy, lacking stylochia; **female flowers** (fig. 3f) up to 13 (–17) mm long at anthesis (when lobes erect and with pedicels excluded; 17 mm long in Costa s.n. BHCB 26227), covered with the same indumentum as that on the male flowers; calyx up to 9 (–11) mm long and 5 (–7) mm wide, undivided in the proximal 3–6 mm; calyx lobes 2.5–5 (–7) mm long, 2–3.5 (–5.5) mm wide, triangular, acute, with flat margins; corolla up to 10 (–15) mm long at anthesis (when lobes erect; 15 mm long in Costa s.n. BHCB 26227), glabrous inside; tube 3–4 mm long, ca. 4 mm in diameter, slightly urceolate; throat ca. 3 mm wide; corolla lobes 5 (–10) mm long, 3 (–6) mm wide, widest in the distal half, acute or obtuse; staminodia (fig. 4f) 10–24 per flower [10: Killeen et al. 5815 from Bolivia, Santa Cruz; 11 or 12: Costa s.n. BHCB 26227 from Minas Gerais; 14: Ratter et al. R6368 from Minas Gerais; 24: Duke 2053 from Pará], 4–5.5 (–7) mm long (free part linear, 3–4 mm long, 0.2 mm wide), solitary or laterally paired, adnate to the corolla tube up to 2.5–3 mm above its base, with long,  $\pm$  straight or flexuose,  $\pm$  appressed hairs especially at the attachment point, with scattered shorter,  $\pm$  appressed hairs more distally, glabrous below the attachment point and at the apex; ovary always 3-carpellate and 6-locular, 7 (–9) mm long (including stylochia), ca. 2–2.5 mm (with indumentum 3–4.5 mm) in diameter, gradually narrowed into the stylochia, densely covered with  $\pm$  spreading, straight, long hairs; stylochia 3, exserted, fused together at the base, 2–2.5 mm long, densely hairy except at the apex; stigmata widened and bilobed; stalk of the **fruits** 2–6 mm long, at the base

◀ Fig. 3: *Diospyros sericea*: a) abaxial (on top) and adaxial (on bottom) leaf surface (from Eiten & Eiten 8793 [SP]); – b) abaxial surfaces of juvenile leaves (from Ratter et al. R2341 [UB]); – c) male inflorescences (from Maciel et al. 832 [NY]); – d) male flowers (from Harley & Hind 27201 [SPF]); – e) male flowers (from Prévost & Sabatier 3484 [W]); – f) female flowers (on left side: Mori & Benton 13115 [NY], on right side: Duke 2053 [A]); – g) fruits (from Amorim et al. 539 [W]); – h) fruits (from Stergios 10441 [NY]); – i) fruits (column on left side: Noblick 1769 [HUEFS], central column: Irwin et al. 21741 [MICH], column on right side: Irwin et al. 21079 [Z]); – scale = 1 cm.







2 mm thick, enlarging distally up to 6 mm and forming a sort of disk at the base of the persistent calyx,  $\pm$  densely hairy; fruits (fig. 3g–i, 5d–e) up to 6-seeded, up to 3.5 cm in diameter, 2.5–4.3 cm high,  $\pm$  globose and often with a small conical apex, less frequently  $\pm$  irregularly fusiform (e.g., Irwin et al. 21079) or cylindrical on proximal  $\frac{2}{3}$  and conical distally (e.g., Noblick 1769) especially when young, with tightly adhering epidermis when dry, detaching with the calyx; fruit surface bumpy and warty due to large subepidermal stone cell agglomerations, densely covered with appressed or especially distally  $\pm$  spreading, golden-brown or grayish hairs of different length and thickness (the longer hairs 1.5 mm,  $\pm$  straight and thick, the shorter ones thinner, flexuose or sometimes strongly curled and  $\pm$  felted), only partially glabrescent when fully ripe; fruit wall 2 mm thick, hard, consisting of stone cell layers; calyx on fruits up to 20 mm in diameter and 5–10 mm high, undivided in the proximal 6 mm and there  $\pm$  cup-shaped, covered with remnants of the indumentum; lobes triangular, up to 8 mm long, 5 mm wide, acute, with  $\pm$  flat margins, at first appressed and then spreading; seeds shaped like segments of an orange-fruit, 12–15 mm long, 6–7.5 mm wide, 6 mm thick, dark brown when dry,  $\pm$  warty and foveolate; endosperm not ruminant.

**Notes:** This species is widely distributed, highly variable and is treated here in a broad sense. It was not possible to segregate any subspecies. In the wet forests of the Amazonian area, the indumentum on the leaves is much less dense and the hairs are shorter than in the populations of the much drier cerrado zone. One collection from the mata atlântica (Atlantic forest) of Bahia (Fiaschi et al. 1290) seems to be more related to the Amazonian populations. More material from this population is needed for study! – Male and female flowers are quite similar and are, if not dissected, often hardly distinguishable on herbarium specimens. The female ones are often slightly larger and wider at their basis. The cymes are often only one-flowered in both sexes, a fact which does not facilitate the sexual distinction.

**Figures:** branch, male and female flowers (MIQUEL 1856: tab. 1, fig. II); apical part of a juvenile plant showing plagiotropic branches with distichous leaves (HALLÉ et al. 1978); branch with fruits (FUNCH et al. 2004); branch, flowers, fruit (SANTOS & SANO 2004: fig. 1); bark, leaves, male flower (RIBEIRO et al. 1999 sub *D. vestita*), cross section of leaf (PARMENTIER 1892: pl. 1, 5); leaf venation (FIGUEIREDO et al. 1971: fig. 16, 20, 24).

**Distribution:** It is known from Colombia (Antioquia, Guaviare, Meta, and Bolívar), Venezuela (Amazonas, and Bolívar), Guyana, Suriname, French Guiana, Bolivia (Santa Cruz), and Brazil (Amazonas, Pará, Amapá, Tocantins, Maranhão, Piauí, Ceará, Rondônia, Mato Grosso, Goiás, Distrito Federal, Bahia, Minas Gerais), (fig. 6). A preliminary distribution map for Brazil was presented by OLIVEIRA-FILHO & RATTER (1995: 180, fig. 18). It grows at low altitudes (50 m and more) in the north and up to elevations of ca. 1600 meters in the south (Bahia, Minas Gerais, Goiás).

◀ Fig. 4: *Diospyros sericea* (a–f): a) abaxial leaf surface with papillae; a hidden flachnectarium can be seen in the center of the photo (from Ducke 2053 [U]); – b) epidermal papillae (from Assunção et al. 778 [W]); – c) characteristic longitudinal ridges on hair surface (from Ducke 2053 [U]); – d) longitudinal section of a male flower bud displaying stamens and the hairy rudiment of the ovary (from Harley et al. 27149 [NY]); – e) stamens (from Fonséca & Onishi 1280 [NY]); – f) staminodia (from Ratter et al. R6368 [E]); – *D. pseudoxylopi* (g–h, both from Pérez et al. 3058 [W]): g) abaxial leaf surface with papillae; – h) shallow longitudinal ridges on hair surface; – (SEM-photographs: Dan Topa, Central Research Laboratories, Natural History Museum Vienna).

**Habitat:** In Colombia it was collected in primary rain forests. In Venezuela it is reported from evergreen lowland forests (KNAB-VISPO et al. 2003), and in Venezuelan Guayana from riparian forests, lower montane forests (on bauxite), and from forests on granitic outcrops at 100–800 m elevation (SOTHERS & BERRY 1998). Primary (sometimes also secondary) non-flooded moist forests are the habitats in French Guiana (e.g., WALLNÖFER & MORI 2002). In eastern Bolivia it is reported from gallery forests (KILLEEN & SCHULENBERG 1998) and from savannas (cerrado). In northern Brazil it is a rarely collected canopy tree which reaches up to ca. 35 m in height and which is reported from non-flooded (terra firme), primary forests (RODRIGUES 1963, SALOMÃO et al. 1988, SALOMÃO & ROSA 1989, RIBEIRO et al. 1999) and sometimes also from old secondary forests (capoeira alta).

*D. sericea* is a typical riverside species in the central Brazilian gallery forests (mata ciliar) and is also common in the cerradão (OLIVEIRA-FILHO & RATTER 1995). According to HARLEY & GIULIETTI (2004), it is one of the commonest trees in the cerrado (savanna). In the Distrito Federal (Brasília) it occurs in the cerrado, cerradão, and in the "matas de galleria" (gallery forests) (SOARES-SILVA et al. 2003).

In the Chapada Diamantina in Bahia it is a member of the canopy in gallery forests, montane forests, and tableland forests (FUNCH et al. 2002, 2008). These authors noted: "Although predominantly evergreen, these montane forests demonstrate a more pronounced degree of deciduousness than the gallery forests due to the greater representation of a group of deciduous or semideciduous trees, such as ... *D. sericea*, ... These contribute to moderate peaks of leaf fall during the dry season, from August to October", and "A significant portion of the species are typical of the mesophyllous semideciduous montane and tableland forests, although they are often found in the gallery forests as well, such as ... *D. sericea*, ...". According to COUTO et al. (2011), it reaches there a height of ca. 12 m and is a member of the canopy in the "floresta estacional semidecídua submontana".

In central Brazil these habitats are indicated by many authors (e. g., OLIVEIRA-FILHO & MARTINS 1986, FUNCH et al. 2004, SANTOS & SANO 2004, RATTER et al. 2006, MARIMON et al. 2006, MENDONÇA et al. 2008, PARREIRA & CABRAL 2011, MEWS et al. 2012) and collectors (see the list of specimens).

It is classified by OLIVEIRA-FILHO et al. (2006) as being a member of the formation called by them "Low altitude tropical seasonal forests – Central-west region" within the seasonally dry tropical forests of South America. – The distribution pattern of *D. sericea* seems to fit, at least partially, into the so called "Residual Pleistocenic Seasonal Formations Arc" or abbreviated "Pleistocenic Arc" (see for this PRADO & GIBBS 1993, PRADO 2000).

**Ecology and plant sociology:** *D. sericea* is listed and mentioned in many floristic and vegetation studies in central and southeastern Brazil (compare the overviews of OLIVEIRA-FILHO & RATTER 1995, RATTER et al. 1996, 2003, OLIVEIRA-FILHO et al. 2005). RATTER et al. (2006) carried out a comparison of the flora of 316 sites in the core area of the cerrado (in a broad sense) and its surroundings and reported this species from 38 sites.

The population density is often low but in some areas it was reported to be higher: In Curvelo (Minas Gerais), 23 individuals (with diameter  $\geq 5$  cm 0.3 m above ground level) were counted per hectare (OTONI et al. 2013). Twelve individuals (with basal diameter



Fig. 5: *Diospyros sericea* from the vicinity of Saül in French Guiana; a) trunk (Mori, ... & Wallnöfer 24666); b–c) adaxial and abaxial leaf surfaces, respectively; d–e) fruits (b–e: Wallnöfer et al. 13465), © B. Wallnöfer.

$\geq 3$  cm) were reported from 10 of the total 67 plots of 30 m<sup>2</sup> (six in dry cerradão and six in wet forest) in Mato Grosso (OLIVEIRA-FILHO 1989, OLIVEIRA-FILHO et al. 1990). In another forest in eastern Mato Grosso, five individuals (with dbh  $\geq 5$  cm) were found per hectare (MARIMON et al. 2001). In an altered seasonally inundated forest in a rice cultivation region ("floresta inundável em área antropizada") of the Araguaian Plain in Tocantins, five individuals (with diameter  $\geq 15$  cm in 1.3 m height) per hectare were registered (BRITO 2005, MARTINS et al. 2008). In the Município de Utinga (Chapada



Diamantina, Bahia) the species is said to be "muito frequente, provavelmente a espécie dominante, pelo porte e pelo número de individuos" (Queiroz & Nascimento 4228). As reported by several collectors, the species seems to be quite frequent in many other places (see the list of specimens).

**Habit and Biology:** In the north of its distribution range, the species is represented by up to ca. 35 (–40) m tall trees with a dbh up to ca. 80 cm. Ducke (RB 22288) found in Pará a trunk with more than 1 m diameter at its base. On some very large trees in the Reserva Ducke near Manaus, one meter high and 20 cm wide, unbranched buttresses were observed (Sothers et al. 523, 721, Assunção et al. 778, Kukle 163). In French Guiana, a large tree with a dbh of ca. 80 cm displayed a markedly fluted trunk (fig. 5a, Mori, ... & Wallnöfer 24666). The trunk of another tree with a dbh of 50 cm (Wallnöfer et al. 13461) was in cross-section nearly circular and only very faintly fluted, and that of a smaller tree with a dbh of 34 cm (Wallnöfer et al. 13465) was nearly cylindrical. In the much drier cerrado zone of Goiás, Bahia, and Minas Gerais, the trees are much smaller and reach only a maximal height of 10–15 m. Here, some plants were reported to flower already when being just about one meter tall.

The bark was reported to be usually dark-colored to black, rarely gray or lighter-colored, hard, brittle, smooth or rough,  $\pm$  longitudinally fissured, and to detach in irregular, small pieces. The dead bark is black, the inner, living bark is reddish, red, red-brown or tan in transection (visible on "slashes" and "blazes"), and becomes rapidly orange-brown after exposure to air. The wood is hard, whitish, creamy white, and becomes yellowish when exposed to air. For more details see the specimen list (especially Wallnöfer et al. 13461, 13465, Mori, ... & Wallnöfer 24666) as well as SANO (1995), RIBEIRO et al. (1999), WALLNÖFER & MORI (2002), FUNCH et al. (2004).

According to HALLÉ et al. (1978) and own observations in French Guiana, the growth architecture conforms to Massart's model. These authors noted in the legend of their fig. 48 (on p. 194) about *D. sericea*: "The tiered plagiotropic branches are clearly seen as branches with distichous leaves. A flush of growth initiated by the trunk meristem has just begun, this orthotropic shoot has spiral phyllotaxis".

As can be seen on several herbarium specimens, the growth of the ultimate main and lateral axes occurs simultaneously, a fact which is called syllepsis (see for this HALLÉ et al. 1978: 42). As a consequence of this, the proximal internodium of the lateral axes is quite long, and scale-like leaves are missing at its base. The proximal leaves of new axes are nearly the same size as the more distal ones.

As the ecological condition on or near the floor of the forest is, with respect to the water regime, markedly different from that in the crown, the leaves of seedlings and juvenile plants do not need a special protection. As a consequence of this, hairs are only very scattered and epidermal papillae are completely missing abaxially (fig. 3b). The indumentum on shade-leaves is usually a little bit denser, but the epidermal papillae are not or not fully developed.

According to FUNCH et al. (2004), SANO (1995), and HARLEY & GIULIETTI (2004), the leaves of the southern populations are hanging down and "droop in two ranks along the slender branches". The same was observed by the author in French Guiana (Wallnöfer et al. 13461, 13465, Mori, ... & Wallnöfer 24666; see also fig. 5b). The collector Malme

(2042) noted: "arbor mediocris habitu *Xylopiam schomburgkianam* in memoriam revocans", alluding to the striking resemblance to some species of *Xylopia* (Annonaceae). The living leaves are shiny dark green adaxially, greenish-white, silky grayish green to silvery tan, sometimes ferruginous, or golden-brown abaxially (data according to collectors and to FUNCH et al. 2004, SANO 1995, and HARLEY & GIULIETTI 2004). The flowers are placed in the axil of adult leaves nearly up to the apex of new shoots, and are only rarely reported to slightly smell sweetish at anthesis (Harley & Hind 27201, Sothers & Pereira 721), and to be pendent (Prévost & Sabatier 3484). According to collectors, the calyx is green or pale greenish-brown; the corolla green, pale green, greenish-cream, greenish-white, cream, white, yellowish, greenish-yellow; the anthers are white or cream; the stylodia cream; the stigmas green or cream, and the ovaries golden-yellowish. The fruits are green, greenish-cream, yellowish or greenish-orange when unripe, and yellow, orange, or sometimes brown when ripe. They are covered with light grey to brownish or sometimes ferruginous hairs, are pointing downwards, and are said to be edible and to have a sweet taste (FUNCH et al. 2004, Silva et al. 2259, Harley et al. 27149, Cordeiro 636). The seeds are brown to black. Germination is epigeal and the cotyledons are soon shed (Sabatier & Prévost 4430, 4679; for further details see these two collections in the list of specimen from French Guiana).

Growth in *D. sericea* seems to depend only moderately on the presence of mycorrhiza (PARRON et al. 1999). – As can be seen on several collections (e.g., Alencar et al. 867, 1171, 1447, Filho & Bautista 231, Irwin et al. 8799, Oliveira et al. 12), flowers are often infected and transformed into galls which resemble fruits. Sometimes also the young stems are galled (Harley et al. 15274, Irwin et al. 12050).

**Phenology:** In Colombia it was collected in flower in March and September, and in fruit in September and from November to December; in Venezuela in flower from May to June, and in fruit in February, and from April to May; in the Guianas in flower from November to March and in July, and in fruit in February, May, September and November; in Bolivia in flower in October, and in fruit in February, May, and from July to August. In Brazil it was collected in flower and in fruit more or less all over the year.

SANTOS et al. (2015) studied the phenology of this species in a campo rupestre in the Parque Estadual de Serra Nova in Minas Gerais. Flowering started in September shortly before the beginning of the rainy season and lasted till December. Ripe fruits were observed especially towards the end of the dry season. In the Distrito Federal (Brasília) it was reported to flower in October and to be in fruit from October to February (SOARES-SILVA et al. 2003). According to SANTOS & SANO (2004), it flowers in Grão-Mogol (Minas Gerais) from April to December. RIZZINI (1965) reported that new leaves are set out between October and November. According to FUNCH et al. (2002), the production and loss of leaves is concentrated in one part of the year. Flowering is sub-annual, irregular and of intermediate duration. Fruiting is annual, regular and of long duration. More detailed data may be exposed in her thesis (FUNCH 1997) which, unfortunately, is not yet available via the internet.

**Dispersal:** According to MARIMON & FELFILI (2001), birds and deer eat the fruits. The collector Rosa (5164) reported that the fruits are highly appreciated by "guaribas" (primates belonging to the genus *Alouatta*) and by other animals. Stannard et al. (PCD 2607) mentioned: "a maioria dos frutos estava comida por pássaros".

**Vernacular names:** In Colombia it is called "escobillo" in Antioquia (Agudelo 19), and "mulato" in Meta (Lozano et al. S.N. [3]). – In Venezuelan Guayana (Bolívar) it is called "casarón" (Ramírez & Paredes 48); by the Piaroa Indians "dauañay" (Blanco Carmona 1051) or "paraguito" (Blanco Carmona 1051), and by the Yekwana Indians "juororuma" (Salas TT-210); (compare also SOTHERS & BERRY 1998: sub *D. vestita*). Along the Rio Caura in Venezuela it is known in the language of the Criollos as "barabaro" (KNAB-VISPO et al. 2003), a name which is, however, also used for some other species of *Diospyros* as well as for *Lissocarpa guianensis* (WALLNÖFER 2004a). – The vernacular name reported from Suriname (in Brokopondo and Sipaliwini) is "blaka-oema" (Vreden 13681, Lindeman et al. 378, Bureau Boschwezen L.B.B. 14713). – In French Guiana it is named "bois de charbon" (Lemée s.n.), "baaka-tiki" by the Paramaka Indians (BAFOG Service Forestiere 105M), and "loibi" by the Djuka (Ndyuka people) (Daniel 49).

The following vernacular names were indicated from Brazil: in **Amazonas**: "piabinha rosea" (Adair INPA 58684); in **Pará**: "cafui" (FONSECA et al. 2005), "caqui preto" (Pires & Silva 1577, Silva 5219), "caqui" (Soares 280, Oliveira 4135, BASTOS 1964), "mucuiba" (FONSECA et al. 2005), and "piriquiteira" (Capucho 504); in **Amapá**: "caqui" (Rosa & Santos 4319, FERREIRA 2012), "caxinguba" (Cowan 38165), and "maria pretinha" (Rodrigues 2878, RODRIGUES 1963); in **Tocantins**: "caqui-do-cerrado" (Oliveira et al. 1992), and "micuiba" (Pires & Santos 16965); in **Maranhão**: "caqui" (Rosa & Vilar 2830), "kaki bravo" (Noberto et al. 117), and "olho de boi" (Ratter et al. 6706, R6806); in **Ceará**: "maria-preta" (Bezerra s.n.), and "piroá-preto" (Fernandes et al. s.n.); in **Mato Grosso**: "a'a'apré tsutu' rã ne" by the Xavante Indians (MARIMON & FELFILI 2001), "coquerinha" (Ratter et al. R2341), "olho de boi" (Fernandes-Bulhão et al. CFB 849), and "tucaneiro" (Eiten & Eiten 9178, Fonséca & Onishi 1280); in **Goiás**: "caqui-do-cerrado" (Fonseca et al. 5255), "culhoéns de macão" (Burchell 6970) [cited as "culhõens de macãto" in HIERN 1873], "olho de boi" (Ratter et al. R4504, R4520), and "pimanta de macaco" (Fontella 3276); in the **Distrito Federal**: "olho de boi" (Fernandes-Bulhão et al. 2); in **Bahia**: "macaca" (Silva 89), and "macaqueira" (FUNCH et al. 2004, HARLEY & GIULIETTI 2004, and as indicated on eight labels); in **Minas Gerais**: "cabuclo" (Goodland 213), "jiga" (Costa s.n. BHCB 27625), "macaqueira" (Carvalho & S.T. Silva 796, Thomas et al. 5922), "macaqueira da miuda" (Kuhlmann 139, 1937), "olho de boi" (Ratter et al. R6368), "pindaíba" (Costa et al. 461), and "unha da onça" (Mexia 5587). According to PARREIRA & CABRAL (2011), in Mato Grosso it is called also "marmelada", a name which is, however, generally used for *D. hispida*.

**Use:** The fruit is said to be edible, but although quite sweet it is rarely eaten (FUNCH et al. 2004). The wood is used for fire (MARIMON & FELFILI 2001).

Specimens examined: **Colombia**, **Bolívar**, La Raya, Quebrada La Culebra, Caño Caribon between junction of Ríos Cauca and Magdalena, 80–110 m, 8°20' N, 74°55' W [correct seem to be 8°20' N, 74°34' W], (st), 4 May 1987, **A.H. Gentry & H. Cuadros 57350** [MO], "tree 10 cm dbh, sterile". – **Antioquia**, Mun. Zaragoza, carretera a Zaragoza entre Carralao [? Escarralado] y Angostura, 70–100 m, [ca. 7°37' N, 74°54' W], (fr), 12 Jan. 1989, **R. Fonnegra G. & F.J. Roldán 2571** [FHO (+ carp.), HUA n.s., MO, NY, W], "árbol 12 m, abundante; fruto verde oscuro opaco; semillas café claro"; – Mpio. Anori, Vereda Tenche, sector Tenche medio, 410 m, 7°15'45" N, 74°57'35" W, bosque primario poco perturbado, (flbuds), 22 Aug. 2002, **C. Robles & D. Tuberquia 576** [COL n.s. (dig. photo), JAUM n.s.], "árbol 14 m, DAP 20,34 cm"; – Remedio [Remedios], 910 m, [ca. 7°2' N, 74°42' W], b.h./b.m.h.t. [bosque húmedo tropical / bosque muy húmedo tropical], (fl, fr), 12 Sep. 1966, **J. Agudelo H. 19** [MEDEL n.s. (dig. photos)], "árbol grande". – **Meta**, Mpio. de Villavicencio, Reserva Bavaria, 890–1025 m, [4°10' N, 73°39' W], a lo largo del sendero, (fr), 17 Nov.



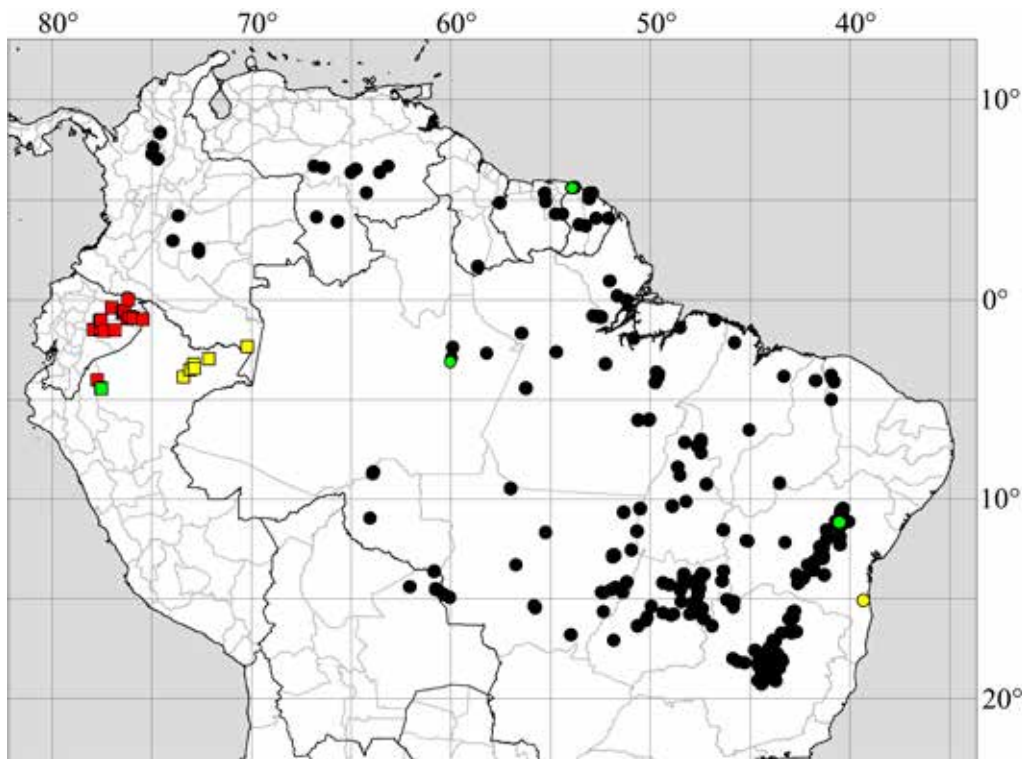


Fig. 6: Distribution of *Diospyros sericea* (●); type localities: ●: *D. sericea* in Bahia, *D. praetermissa* in Amazonas, *D. vestita* in French Guiana; ●: Fiaschi et al. 1290 in the mata atlántica of Bahia); – *D. pseudoxylophia* (■); type locality: ■; intermediate populations between *D. pseudoxylophia* and *D. sericea* (□).

1995, **G. Lozano et al. S.N. (3)** [COL n.s. (dig. photos)]; – Sierra La Macarena, Caño "20", 850 m, [ca. 2°55' N, 73°55' W], (fr), 2 Nov. 1962, **J.M. Idrobo 4857** [COAH n.s. (dig. photo), COL], "arbolito 2 m [correct is probably: árbol 20 m]; tronco de 20–40 cm de diámetro; hojas verde oscuro por el haz, verde claro por el envés". – **Guaviare**, Mpio. San José del Guaviare, vereda Agua Bonita, finca Las Delicias, carretera hacia El Retorno, km 3, 316 m, 2°31.777' N, 72°37.658' W, bh-T/bmh-T [bosque húmedo tropical / bosque muy húmedo tropical], (fl female, fr), 9 Mar. 2000, **J.G. Ramírez A. et al. 7210** [COAH n.s. (dig. photo)], "árbol 21 m, DAP 47 cm; hojas discolores; pubescencia café-crema; frutos inmaduros verdes, café al madurar"; – Mpio. El Retorno, "Estación Experimental El Trueno", 260 m, 2°24' N, 72°43' W [correct is 2°22' N, 72°37' W], bosque medio denso sobre superficie de denudación; dominancia de *Pseudolmedia*, *Iriartea deltoidea*, *Crepidospermum* sp., (fr), 21 Dec. 2001, **W. Ariza & C. Villa** [label partly covered] [COAH n.s. (dig. photo)], "árbol 16 m, DAP 28 cm".

**Venezuela, Bolívar**, Distrito Cedeño, planicie aluvial, piedemonte y altiplanicie entre el margen derecho del Río Orinoco medio y el borde NW de la Serranía de Los Pijiguaos (Bajo Río Suapure), ca. 600 m, 6°18–48' N, 66°30'–67°10' W, bosques sobre la altiplanicie de la Mina, (st), Apr.–May 1987, **J.O. Ramírez & L. Paredes 48** [MO], "altura 19 m, circunferencia altura del pecho 138 cm"; – Mun. Raul Leoni, cabeceras Río Túriba y Caño La Miel, 45 km al este de Pijiguaos, 800 m, 6°34' N, 66°23' W, bosque y arbustales sobre lateritas bauxíticas, (fl male), Jun. 1989, **A. Fernandez & L. Delgado 5702** [MO, W], "árbol 18 m; pétalos verdes externamente con tomentos ocre; estambres blancos"; – Cuadrícula de Investigación, campamento Dedemai [Otto Huber via email, 2.12.2001: on Río Nichare, 6°21'18" N, 64°59'48" W], Río Tabaro, 120 m, 6°21' N, 64°59' W, crece en zonas bajas, (st), 9 Apr. 1994, **L. Salas TT-210** [MO], "árbol de pequeño

mediano porte (ca. 10–20 m)"; – Municipio Cedeño, Río Caura, Boca del Río Nichare, 80 m, 6°35' N, 64°45' W [correct seem to be 6°30' N, 64°45' W], bosque tropical siempreverde, (fr), 16 Apr. 1996, **C. Knab-Vispo & G. Rodriguez 532** [MO, WIS], "las hojas de ese muestra vienen de un árbol joven de 2 m, las frutas de un árbol con 30 cm de diámetro del tronco"; – alrededores del Campamento Auraima, Río Paragua, 330 m, 6°22'30" N, 63°33'30" W, bosques húmedos de lomerío con pendientes rocosas de sabanas abiertas, (fl, fr), 13 May–13 Jun. 1987, **B. Stergios 10441** [MO, NY, U, W], "árbol 15 m; botones florales blancos; frutos gris-ferrugíneo"; – Río Chiguao en los alrededores de "El Araguaney", 6°40' N, 63°9'30" W, selvas húmedas de lomerío, (fr), 13 May–13 Jun. 1987, **B. Stergios 10985** [PORT n.s., VEN n.s. (dig. photo)], "árbol caído, sin hojas; frutos anaranjados"; – cuenca alta del Río Caura, a la altura del caño La Ceiba (caño Cumaca), [RODRÍGUEZ et al. 2008: 300 m], 5°20' N, 64°13' W, selvas húmedas ribereñas, (flbuds), 9–26 May 1988, **B. Stergios & L. Delgado 12897** [MO, NY, VEN n.s.], "árbol; botones verdes"; – Dto. Cedeño, región del Alto Suapure, REF/EST/180/MOP-CODESUR, "Estudio a nivel Exploratorio de los Recursos Forestales Bloque DC-h2" [not located], terreno muy rocoso y pendiente 45%, (fr), Feb. 1971, **C. Blanco Carmona 1051** [MER n.s. (dig. photo)], "árbol mediano; corteza lisa, de fibras muy largas; hojas dísticas; haz verde oscuro, envés verdoso con indumento ligeramente marrón pálido; cáliz persistente; frutos globosos cubiertos con tomento ferrugíneo". – Amazonas, Dpto. Atures, 43 km N–E de Santa Barbara del Orinoco, 220 m, 4°16' N, 66°42' W [correct seem to be 4°7' N, 66°42' W], B. en lomerío; aflor. Granít., (fr), Apr. 1990, **E. Marin 1019** [MO], "árbol 16 m; 7 m de fuste y 98 cm de CAP; fruto de color amarillo"; – Dpto Atabapo, Río Cunucunuma, raudal Tucudishodó 7 km al NE del Cerro Huachamacare, 230 m, 3°53' N, 65°40' W, (st), Mar. 1990, **A. Fernandez 7439** [NY], "árbol 10–12 m; flores (en prefloración) verdes".

**Guyana**, Upper Takutu-Upper Essequibo, Essequibo River, Gunn's, 240–260 m, 01°39' N, 58°38' W, forest near airstrip, (fr), 30 Sep. 1989, **M.J. Jansen-Jacobs et al. 1897** [B, BBS n.s. (dig. photo), CAY, F, K, MO, NY, U, US], "fruit 3 cm long, green with brownish indument".

**Suriname**, Sipaliwini, distr. Nickerie, area of Kabalebo Dam project, in line from km 34 westward, 150–200 m, [4°50' N, 57°30' W], forest, (st), 31 Oct. 1981, **J.C. Lindeman & A.C. de Roon 718** [BBS n.s. (dig. photo), U], "seedling of 40 cm"; – Lely Mts., SW plateaus covered by ferrobauxite, on plateau 5 in base line p. 34–36, 550–710 m, [4°15' N, 54°45' W], forest, (st), 25 Sep. 1975, **J.C. Lindeman et al. 378** [BBS n.s. (dig. photo), K, NY, U], "fallen tree, ca. 20 cm diam.". – Brokopondo, Boschreserve, Sectie O, [5°17' N, 55°17' W], (st), 18 Sep. 1916, **Bureau v. h. Boschwezen 2422** [NY, U]; – Distr. Brokopondo, Nat. Res. Brownsberg, op plateau, 250 m, [4°53' N, 55°13' W], (fl), 26 Jan. 1973, **Bureau v. h. Boschwezen L.B.B. 14713** [BBS n.s. (dig. photo), NY, U], "boom, 20 m hoog, diam. 45 cm; male flowers with ca. 30 stamens"; – same area: (fl), 10 Dec. 1973, **C. Vredend (L.B.B.) 13681** [BBS n.s. (dig. photo), K, NY, U], "tree ca. 20 m; leaves dark green above, very pale green beneath; calyx pale greenish brown; corolla pale green; anthers creamy; young fruit green is actually a small gall; male flowers with over 25 stamen". – without data, (flbuds), 1862, **A. Kappler 168** [L].

**Guyane Française**, Maroni, Charvein, [5°34' N, 53°54' W], (fl), Mar. 1901, **A. Lemée s.n.** [?] [P 2×], "arbre, feuilles blanchâtres en-dessous"; – Route de Charvein à l'Acarouany, km 3.5, [5°34' N, 53°52' W], (flbuds), 18 Nov. 1953, **BAFOG Service Forestiere 105M** [CAY, U], "fruits verts, redondés 3 à 4 cm de diam. devenant jaune à maturité, contenant plusieurs noyaux comme des noyaux d'oliver"; – Cay Karouany [Acarouany], [5°36' N, 53°48' W], (st), 1856, **P.A. Sagot s.n.** [P, S]; – Station de la Piste de St. Elie (ECEREX), 5°18' N, 53°3' W, forêt primaire, (st), 1 Jul. 1997, **J.-F. Molino 1849** [CAY n.s., W], "arbre 2,5 cm dbh; stérile; tronc noir; pilosité dense, appressée, sur rameaux et face inférieure des feuilles; limbe ondule, vert sombre dessus, vert plombe luisant dessous"; according to Marie-Françoise Prévost (email: 20.5.1998), this plant was growing between two large trees of "*D. vestita*"; – same area: (fl male), 28 Jul. 1998, **M.F. Prévost 3552** [CAY n.s., W], "arbre 35 cm dbh; rhytidome noir; feuilles distiques sur axes plagiotropes; court pétiole canaliculé; limbe discolore a marge ourlée et ondulée, atteint 9 × 2.5 cm; nervure I déprimée face supérieure et arrondie saillante face inférieure; nervures II en arceaux laches visibles surtout face inférieure; boutons floraux axillaires (1 à 3); calice 4 à 5 mm soude sur 3 mm; dents 2–3 mm avec poils appresses; pétales blanc crème: tube 6 à 8 mm et 5 lobes de 7 à 10 mm; longs poils appliqués a l'extérieur de la corolle"; – same area: (fl male), 15 Mar. 1998, **M.F. Prévost & D. Sabatier 3484** [CAY n.s., W], "arbre 30 m, 58 cm dbh; feuilles des axes plagiotropes alternes distiques, a court pétiole et marge ourlée; limbe discolore légèrement coriace atteint 10 × 2.5 cm; jeunes limbes avec poils appliqués face inférieure d'où un aspect soyeux; nervure I déprimée face supérieure et arrondie saillante face inférieure; nervure II visibles sur le frais surtout inférieure, en arceaux légèrement sensibles à l'ongle; fleurs axillaires (par une, plus rarement par 2) pendantes; calice vert 5 à 7 mm a 5 dents et fine pilosité appressée; 5 pétales blanc crème; tube 6 à 8

mm et 5 lobes 7 à 10 mm qui s'oxydent rapidement en rougeâtre lie de vin; pétales recouverts extérieurement de longs poils appliqués"; – same area: (st), 15 Mar. 1998, **M.F. Prévost & D. Sabatier 3487** [CAY n.s., W (+ carp.)], "arbre 53 m, stérile; tronc à écorce noirâtre avec plages plus claires; feuilles des axes plagiotropes alternes distiques; limbe discoloré atteint 8–10 × 2 cm; nervure I déprimée face supérieure et saillante face inférieure; jeunes limbes serices par nombreux poils appressés; fruits collectes au sol; calice persistant à 5 sépales; épicarpe noirâtre recouvert de petites aspérités; taille des fruits 3 × 3 cm"; – same area: (st), 7 Oct. 2000, **D. Sabatier & M.F. Prévost 4679** [CAY n.s., W], "hypocotyle brun violacé, anguleux; épicotyle légèrement comprimé, très pileux, portant 2 paires de feuilles elliptiques 4–5 × 2–2,2 cm; axes I et II reproduisant un petit modèle de Massart; feuilles suivantes beaucoup plus petites, avec pilosité soyeuse de la nervure primaire et de la marge"; – same area: 5°20' N, 53°0' W, forêt primaire, (st), 18 Oct. 1992, **D. Sabatier & M.F. Prévost 4139** [CAY, MO, W], "arbre 51.6 cm diam; petites feuilles distiques, discoloré, vert luisant face supérieure et vert jaunâtre face inférieure, atteint 8 × 2 cm; marge révoluée surtout à la base du limbe; face inférieure soyeuse très visible sur les jeunes limbes; nervure I déprimée face supérieure et saillante face inférieure; nervures II quasi invisibles sur les 2 faces; stérile"; – Station de recherche de Silvolab à Paracou (Commune de Sinnamary) Forêt de Paracou [Site expérimental C.T.F.T., Région littorale], [5°20' N, 52°55' W], forêt primaire dense non perturbée; ancien chablis, régénération dense, (st), 16 Mar. 1995, **J.-F. Molino 1321** [CAY, MPU n.s.], "arbre stérile, 5 cm DBH; rhytidome noir à l'intérieur; poil blanc-jaune appliquées sur rameaux, pétioles, face inférieure des limbes et nervure face supérieure; pétiole 1 mm; limbe oblong, plat et ondulé sur les bords, atteignant 6,5 × 1,5 cm, base arrondie, apex aigu; nervure I seule visible; nervures II un peu saillantes dessous"; – Fleuve Sinnamary Petit Saut, bassin du Sinnamary, n° 121, rive gauche, 5°3' N, 53°3' W, forêt primaire, (fl), 21 Feb. 1989, **D. Sabatier 2356** [B, CAY, K n.s., MG n.s., MO, NY n.s., P, U, W], "arbre 25 m, 30 cm diam.; écorce noirâtre; jeunes rameaux vert-jaunâtre à pubescence soyeuse appressée persistant sur les rameaux plus âgés et devenant grisâtre; limbe souple à marge légèrement ourlée franchement révoluée à la base; nervure I° légèrement déprimée avec fine pilosité dessus; nervures II° finement imprimées dessus sensibles dessous; nervures III° et nervilles en réseau dense quasi plan, assez bien visible dessous; face inférieure densément soyeuse, pilosité légèrement dorée; fleurs à calice vert; corolle blanchâtre"; – same area: (st), 22 Feb. 1989, **D. Loubry 248** [CAY]; – Grand Santi, [4°15' N, 54°23' W], forêt secondaire, (st), 19 Aug. 1985, **R. Daniel R.D. 49** [CAY], "arbuste"; – Dorlin, 3°45' N, 53°33' W, forêt primaire, (st), 8 Apr. 1998, **D. Sabatier & M.F. Prévost 4430** [W], "plantule; arbre à écorce noire; fruit et plantules collectes; fruit orange 3.5 × 2.5 cm; calice noirâtre persistant à 6 sépales; plusieurs graines par fruit, brunes 2–2.3 × 1 cm; germination épigée; hypocotyle blanc et cotylédons rapidement caduques; jeunes feuilles des plantules avec marge ciliée et nervure I pileuse face inférieure; le premier étage plagiotrope est observé sur une plantule dont l'épicotyle atteint 5 cm"; – Säul and vicinity, Les Eaux Claires, ca. 7 km N of Säul, Sentier Botanique, ca. 3.5 km from start of trail, ca. 380–430 m, 3°41' N, 53°13' W, non-flooded, moist forest along a ridge, (fr), 9 Nov. 1997, **B. Wallnöfer et al. 13465** [CAY, NY, W 2× (+ carp.)], "tree ca. 20 m, dbh 34 cm; growth form no longer recognizable; trunk: more or less cylindrical and without any remarkable enlargement at base; bark: dark, covered with different light and dark lichens; with small longitudinal fissures; detaching in irregular small pieces; interior of dead bark black and very hard, interior of living bark relatively thick, red-brown with darker longitudinal bundles; slash without any remarkable smell; damages of bark not healing very well; termites observed within bark; branches: bark smooth, greenish to blackish; wood of branches whitish; living bark whitish to light brown, the innermost stripe (near xylem) rapidly becoming orange-yellow after exposure to air; leaves: glands 1–3 per leaf, near midvein, but missing on many leaves, light translucent, well visible as emergences on adaxial leaf-surface; hairs light; leaf margins slightly revolute abaxially, but markedly revolute near pedicel; adaxial leaf-surfaces: dark green, shiny; midvein light green, depressed, but central part light brown and slightly prominent; secondary veins more or less flat, lighter green; abaxial leaf surfaces: grey-light green, dull; midvein grey or light brown-yellowish on older leaves, prominent; secondary veins only slightly prominent and not differing in color; small buds in leaf axils green with light hairs; fruits greenish, densely covered with appressed light grey to brownish hairs, very hard, axillary, sessile, solitary, pointing downwards; calyces greenish, appressed on fruits, with 6 locules (3 fruits opened); many old fruits on the ground: black, still compact and hard"; – from same tree: (fr), 15 Feb. 1993, **S.A. Mori et al. 22993** [CAY, FHO, NY n.s.], "tree 25 m × 22 cm; bark with slash of outer bark black, the inner bark reddish; leaves shiny, dark green above, light green below; calyx persistent, in a flattened star-shape; fruits green with silvery-white pubescence"; – same area: ca. 1.3–2 km from start of trail, ca. 350 m, 3°41' N, 53°13' W, non-flooded, moist forest along a ridge, (st), 7 Nov. 1997, **B. Wallnöfer et al. 13461** [CAY, NY, W 2×], "tree 25 m, dbh 50 cm; trunk in cross-section nearly circular (only very faintly fluted); bark dark brown to black; interior of dead bark black and very hard,



interior of living bark red-brown with darker longitudinal bundles; termites observed within bark; wood whitish, after exposure to air yellowish; reiteration shoot in the crown growing according to Massart's model"; – same area: along plateau, ca. 400 m, 3°37' N, 53°12' W [ca. 3°41' N, 53°13' W], non-flooded moist forest, (fr), 25 May 1992, **S.A. Mori et al. 22300** [CAY, NY n.s.], "tree 30 m × 40 cm, with one poorly developed buttress; bark with very fine, reticulate, vertically oriented fissures; slash: outer bark black, inner bark red; fruits yellow, globose to oblong, 3.5–4 cm diam., with 5 seeds per fruit, these flattened, shiny, black and covered with mucilaginous pulp; endosperm not ruminant"; – same area: near Allinckx family gravesite on hillside just W and near Eaux Claires, ca. 250 m, 3°40' N, 53°13' W, non-flooded moist forest, (flbuds), 6 Nov. 1997, **S.A. Mori, ... & B. Wallnöfer 24666** [CAY, NY, W 2×], [Wallnöfer's annotations:] "tree ca. 35 m tall, dbh ca. 80 cm; trunk without any remarkable enlargement at base; trunk irregular in circumference, markedly fluted (see fig. 5a): longitudinal depressions 10–15 m long, distally becoming shallow and gradually disappearing; bark of trunk outside blackish-brown, with small longitudinal fissures, detaching in irregular or few cm long scales; interior part of dead bark black; exterior part of living bark relatively thick and appearing from distance brown (many brown longitudinal bundles embedded in a light brown tissue); interior, thin part of living bark becoming rapidly orange-brown after exposure to air; wood whitish; slash without any remarkable smell; branches in whorls, these 10–20 cm distant from each other; bark of young twigs light brown-greenish colored; bark of older twigs grey, the interior light brown, near xylem orange-brown; wood whitish, with longitudinal orange-brown longitudinal bundles; bark of branches grey to brown, interior of dead part black, living part light brown, turning rapidly orange-brown after exposure to air; leaves green (main vein light green) adaxially, grey-green abaxially; base of leaf-lamina strongly revolute in vivo abaxially; flower buds greyish, pointing downwards, up to 5 per leaf-axil", woodsamples and bark separate; leaves and buds in alcohol; – same tree: (fl male), 24 Sep. 1994, **S.A. Mori & C. Gracie 24028** [NY], "tree 45 m × 70 cm; trunk irregular; bark dark, rough, peeling in small irregular plates; slash exudes clear sap which later forms a black, gelatinous mass; inner bark pinkish; sapwood yellow, oxidizes to yellow-orange; small leaves not collected; flowers from ground and photos only"; – Bassin de l'Arataye, Station des Nouragues, 4°3' N, 52°42' W, forêt primaire, (st), 30 Jul. 1989, **D. Sabatier & M.F. Prévost 2963** [CAY, NY, W], "arbre 16.6 cm diam., stérile; feuilles: limbe a marge ondulée; nervure I très légèrement saillante face sup. et saillante face inf.; limbe très discoloré, face sup. vert très foncé"; – Interfluve Kourouai-Kapiri, Montagne couronnée 87, 4°3'25" N, 52°5'10" W, forêt secondaire, (st), 10 Mar. 2009, **J.-F. Molino & D. Sabatier 2675** [CAY n.s., W], "arbre DBH 29,3 cm; poils appliqué blancs sur rameaux, pétioles face inférieure, marge des limbes et nervure 1° face supérieure; feuilles sessiles, elliptiques-lancéolées, en gouttière, vert jaunâtre face inférieure, 4–8 × 1,5–2,5 cm, base obtuse, apex aigu; nervure 1° imprimée face supérieure, autres nervures sans relief".

**Bolivia, Santa Cruz**, Prov. Velasco, Parque Nacional Noel Kempff M., Campamento Las Torres, margen del Río Iténez (Guaporé), frontera con Mato Grosso, lado noreste del serranía Huanchaca, 24 km S de Flor de Oro, ca. 50 km N del Río Verde, 200–400 m, 13°39' S, 60°48' W, bosque ralo de pendiente (3–10 m de altura), con fajas de roca abierto, temporalmente con flujo de agua; suelos arenosos, (fr), 25 May 1991, **M. Peña et al. 256** [F n.s. (dig. photo), LPB, NY, USZ n.s. (dig. photo)], "arbolito 5 m; frutos inmaduros"; – same area: 200 m, 13°39' S, 60°49' W, con diferentes formaciones desde pampas inundadas, islas de bosques, bosque alto de pie de monte y bosque semideciduo; los cuales se distribuyen en la pendiente de la meseta, con afloramiento de roca; la vegetación baja de 8–10 m con algunas fajas o cejas de bosque alto y húmedo, (fr), 16 May 1994, **R. Quevedo et al. 2589** [F n.s. 2× (dig. photos), MO, USZ n.s. (dig. photo)], "árbol 15 m; corteza semilisa, grisácea, oscura; frutos ovoides verde oscuro, con cáliz leñoso"; – Pampa húmeda Los Fierros, 155 m, 13°38'24" S, 60°47'45" W, bosque húmedo, alto, con mucha Vochysiaceae, (fl female), 21 Oct. 1993, **T. Killeen et al. 5815** [CAS, CTES, F n.s. (dig. photo), LPB, MO, P, USZ n.s. (dig. photo)], "árbol de 25–30 m; flores verdes; frutos viejos, 2–4 semillas"; – Serranía de San Simón, 200 m, 14°25' S, 62°03' W, formaciones de pampa arbolada y algunas islas grandes de bosque alto; paisaje montañoso muy visible por la explotación de oro en la zona; actualmente se destruyen estas formaciones por la quema inducida, (fr), 22 Jul. 1993, **R. Quevedo et al. 1014** [F n.s. (dig. photo), K n.s., MO, NY, P, USZ n.s. (dig. photo), W], "árbol 18 m, 15 cm DAP; corteza gris oscura; frutos verde claro con pubescencia amarillenta"; – Meseta de Huanchaca, 850 m, 14°31' S, 60°44' W, sabana cerrado alrededor de Huanchaca II, (fr), 11 Jul. 1999, **S.G. Beck 25052** [LPB], "arbolito 3 m; frutos globosos"; – La Meseta, 900 m, 14°33'30.2" S, 60°45'29.8" W, campo rupestre; suelos arenosos, (fr), 26 Aug. 1995, **R. Guillén et al. 4167** [F n.s. (dig. photo), MO, USZ n.s.], "árbol 5 m; frutos verdes"; – campamento Las Gamas, 850 m, 14°48'17" S, 60°23'14" W, isla de bosque, (fr), 18 Feb. 1997, **Y. Uslar et al. 572** [G, LPB, MO n.s., USZ n.s. (dig. photo)], "árbol 8 m; fruto inmaduro verde aterciopelado".

**Brasil**, Amazonas, Mun. de Manaus, ca. 90 km NNE de Manaus, Distrito Agropecuário da SUFRAMA, rodovia BR 174, km 64, depois 21 km leste na ZF3, Fazenda Porto Alegre, acampamento Cabo Frio ("Projeto Dinâmica Biológica de Fragmentos Florestais, Reserva no. 3402"), 50–125 m, 2°25' S, 59°54' W, mata de terra firme; sobre latosolo amarelo, (fl), 7 Dec. 1989, **P. Kukle 163** [COL n.s. (dig. photo), INPA, K, MO, NY], "tree 30 m, 56.1 cm dbh; buttresses 1 m high; exudate lacking; bark hard, 1–3 mm thick, scaly, blackish; inner bark hard, 1 cm thick, red with darker dots; sapwood tan; fruits immature"; – Manaus-Itacoatiara, km 26, Reserva Florestal Ducke, 2°53' S, 59°58' W [correct is ca. 2°57' S, 59°57' W], floresta de vertente; solo argiloso; dossel [canopy], (fl), 15 Jan. 1998, **P.A.C.L. Assunção et al. 778** [INPA n.s., IAN n.s., K n.s., MO n.s., W], "árvore 35 m; DAP 43 cm; base com sapopema [buttress roots] de aresta não-ramificada, assimétrica, altura > comprimento (1 m × 20 cm); ritidoma marrom-escuro a negro, com sulcos de 1 mm profundidade; desprendimento em placas pequenas quadradas; corte: casca morta < 0.5 mm, negra; casca viva rosada, siliciosa, 2 mm; alborno amarelado, oxidando a amarelo; flores com cálice verde; corola creme-esverdeada; estames cremes, inodora"; – same area: (defl), 12 Jan. 1996, **C.A. Sothers & E. da C. Pereira 721** [INPA n.s., K, NY n.s. (dig. photo)], data as above except for: "botões creme-esverdeados; cálice verde; flores com pétalas creme-esverdeadas; estames amarelo-castanhos; odor suave adocicado; final de floração"; – same area: (yfr), 17 Jul. 1995, **C.A. Sothers et al. 523** [INPA n.s., K], data as above except for: "frutos imaturos creme-esverdeados, pilosos; cálice verde; flores velhas no chão"; – same area: (st), 1 Sep. 1976, **Adair INPA 58684** [INPA], "DAP 13 cm; textura pesada"; – same area: Quadra 33, (fr), 11 Oct. 1963, **W. Rodrigues 5495** [FHO, INPA, RB n.s. (dig. photo)], "árvore rara 18 m, 27 cm diâmetro; frutos amarelos; árvore no. 4327"; – Rio Uruará, Itapiranga, estrada de rodagem, [ca. 2°43' S, 58°10' W], mata; terra firme, (flbuds male), 12 Sep. 1968, **M.G. Silva 1929** [MG], "árvore 20 m; flor em botão esverdeada".

**Pará**, Rio Jari, Monte Dourado, Planalto, [ca. 0°50' S, 52°50' W], mata alta, terra firme, (fl), 28 Feb. 1968, **E. Oliveira 4135** [IAN, NY], "árvore 20 m; flor branca"; – same data: (flbuds), **4137** [IAN, NY], "árvore de 25–28 m; flor clara"; – same area: (fr), 30 Sep. 1968, **N.T. Silva 1042** [FHO, IAN, NY, W], "árvore 20 m"; – same area: estrada entre Pilão e Repartimento [IAN label: estrada entre Bandeira e Pilão km 39], [ca. 0°50' S, 52°50' W], mata de terra firme [IAN label: capoeira, terra firme], (fl female, yfr), 18 Jun. 1969, **N.T. Silva 2219** [FHO, IAN, NY], IAN label: "árvore 15 m × 25 cm; flor branca"; – Mun. de Almeirim, Gleba Monte Dourado da reserva genética, 0°51' S, 52°32' W, floresta tropical, primária de terra firme, (fl), 6 Feb. 1987, **J.M. Pires & N.T. Silva 1577** [INPA, MG 2× n.s., NY 2×], "árvore 18 m"; – estrada entre Monte Dourado e Munguba, km 4, [0°54' S, 52°30' W], mata de terra firme, (st), 13 May 1969, **N.T. Silva 1958** [FHO, NY], "árvore 18 m × 20 cm diam."; – estrada do Munguba, km 12, [ca. 0°54' S, 52°25' W], floresta de terra firme; relevo plano, (fl female), 20 Dec. 1979, **N.T. Silva 5219** [INPA n.s. (dig. photo), MG 3×], "árvore total 32,4 m; tronco cilíndrico, DAP 34 cm, altura comercial 17,4 m; copa 15 m"; – Portel, margem da baía de Portel, [NY label: 1°57' S, 50°49' W], margem da baía, (fr), 26 Oct. 1955 [NY label: 25 Oct. 1955], **L. Williams & N.T. Silva 18240** [IAN, K (+ carp.), MG n.s., NY], "árvore 10 m; casca verde-escura [NY label: bark dark greenish-black]; liber marrom; madeira amarela"; – Belém, Bosque Municipal, [1°27' S, 48°29' W], mata da terra firme, (fl female), 31 Jan. 1947, **A. Ducke 2053** [A, IAC, IAN, K, MG, NY, R, SP, U, US], "árvore mediana; flor branca com cálice verde"; – same locality: (fl), 2 Feb. 1948, **N.T. Silva 86** [IAN, K, P], "árvore; folhas pequenas e compridas; flor média, cor branca"; – Bragança, [1°3' S, 46°46' W], mata de terra firme / silva non inundabili, (fl male), 8 Feb. 1923, **A. Ducke RB 22306** [K, MG n.s. (dig. photo), RB n.s. (dig. photo), paratypes of *D. praetermissa*], "arbor parva, floribus albidis"; – same area: Colonia Benjamin, [ca. 1°3' S, 46°46' W], capoeira velha / in silva secundaria vetustiore loco alto, (fl, fr), 11 Jan. 1923, **A. Ducke RB 22305** [K, RB n.s. (dig. photo), paratypes of *D. praetermissa*], "arbor parva, fructibus maturis luteis"; – Município de Oriximiná, rio Trombetas, margem direita, Porto Trombetas, estrada da Mineração Rio-Norte km 60 atrás da Mina de Bauxita, [ca. 1°43' S, 56°27' W], mata alta de terra firme; solo argiloso, (fl male), 30 Aug. 1980, **C.A. Cid et al. 1919** [INPA, MG], "árvore 30 m × 1,3 m de diâmetro; flores castanhas"; – Mineração Rio do Norte, Porto Trombetas, Serra do Saracá, estrada que dá acesso ao igarapé do Saracazinho, [ca. 1°43' S, 56°27' W], solo argilo-arenoso; área do desmatamento, (fr), 15 Jul. 1987, **E. Soares 280** [INPA 2×], "árvore 10 m × 15 cm diam.; madeira dura; casca fina; cheiro agradável; frutos verdes"; – Serra de Santarem, loco Piquiatuba, [2°40' S, 54°43' W], mata do planalto / in silva colina, (fl male), 16 May 1927, **A. Ducke RB 22288** [FHO (fragm.), K 2×, MG n.s. (dig. photo), RB n.s. (dig. photo), paratypes of *D. praetermissa*], "arbor ultra 30 m alta; trunci diametro ultra 1 m; floribus viridi-albidis"; – Altamira, Rio Xingu (Juruá), travessão do CNEC, Dique K 13, [ca. 3°14' S, 52°14' W], mata de terra firme; solo areno-argiloso, (fr), 27 Nov. 1986, **S.A. da M. Souza et al. 554** [MG n.s., NY n.s. (dig. photo)], "árvore 35 m × 90 cm de circunferência; fruto imaturo verde"; – Tucuruí, A.N. 3, Zona das Pedras, margem direita do Rio Tocantins, [ca. 3°40' S, 49°40' W], mata de terra firme; solo areno-argiloso,

(st), 10 Apr.–29 May 1981, **U.N. Maciel et al. 566** [MG], "árvore 12 m × 0.59 m circ."; – Tucuruí, km 20 da estrada para o Breu, próximo ao matadouro, [ca. 3°45' S, 49°35' W], mata de terra firme; solo areno-argiloso, (fr), 12 Jun. 1980, **M.G. Silva 5485** [MG n.s., NY], "árvore 20 m × 40 cm diam.; fruto imaturo verde"; – Tucuruí, Operação Curupira, base 2, rio Tocantins, margem direita, foz do rio Pitinga, adjacência, [ca. 3°57' S, 49°37' W], mata de terra firme; solo argiloso, (fr), 2 Oct. 1984, **J.F. Ramos & E.F. Lima 1578** [INPA], "árvore 15 m × 45 cm diam.; frutos imaturos esverdeados"; – ca. 70 km from Tucuruí, 65 km SSW on old BR 422, then 5 km NW on new logging road, ca. 4°11' S, 49°44' W, forest on terra firme, (flbuds male), 18–20 Nov. 1981, **D.C. Daly et al. 1453** [F, FHO 2×, IAN, INPA, K, MG, NY], "tree 15 m; staminate buds green"; – prope medium flumen Tapajoz, ad cataractam Poção [RB label: R. Tapajoz, estrada das cachoeiras inferiores, mata de t. f., reta perto de Poção; EGLER & CAVALCANTE (1963): next to cachoeira Maranhão Grande], [4°28' S, 56°13' W], in silva terris altis ad cataractam, (fl male), 23 Dec. 1919, **A. Ducke RB 12614** [K, MG n.s. (dig. photo), RB n.s. (dig. photo), paratypes of *D. praetermissa*], "arbor vix mediocris floribus albidis"; – Mun. de Parauapebas, Serra dos Carajás, área do Rio Gelado, [ca. 6°0' S, 50°8' W], (flbuds), 1985, **N.A. Rosa 5164** [MG], "árvore ca. 30 m × 1,5 m circ.; flores pardos; frutos quando maduros são muito apreciados por guaribas e outros animais" (cited in SALOMÃO et al. 1988); – Reserva Biológica da Serra dos Carajás, Companhia Vale do Rio Doce, área 4 do igarapé Bahia, próximo aos tanques de rejeito, 620 m, [ca. 6°2' S, 50°35' W], floresta de terra firme, (st), 4 Jan. 1992, **G. dos Santos et al. 410** [FHO, MO], "árvore 45 cm diam."; – same area: ca. 20 km E of AMZA camp N-5, 7 km NW of new airport, along road and powerline, 650 m, 6°04' S, 50°03' W, primary forest on thin soils, (fr), 22 Jun. 1982, **C.R. Sperling et al. 6289** [FHO, MG n.s., NY]; – same area: 13 km from AMZA headquarters, road to sawmill, [ca. 6°5' S, 50°5' W], forest on terra firme, (fl), 18 Oct. 1977, **A.S. Silva et al. AS 63** [F, FHO, GH n.s., K, MG n.s., MICH, MO, NY, RB n.s. (dig. photo), UFG n.s. (dig. photos)], "tree 20 m × 15 cm diam.; buds yellowish green"; – Boa Vista [not located], (fl, fr), 1933, **P. Capucho 504** [F].

Amapá, Serra do Navio, Rio Amapari, just off Macaco Ore Body, 70–300 m, [ca. 0°55' N, 52°1' W], primary forest (heavily forested hills), (fr), 8 Nov. 1954, **R.S. Cowan 38165** [IAN, K (+ carp.), NY, RB n.s. (dig. photo), US (carp.)], "tree 35 m; leaves silvery-brownish beneath; fruit green"; – Serra do Navio [according to RODRIGUES (1963): 0°55' N, 52°1' W, 150–250 m], (st), 1961, **W.A. Rodrigues 2878** [INPA n.s. (dig. photo)], "árvore grande"; – Camaipi, EMBRAPA reserve and vicinity, ca. 0°10' N, 51°37' W, (st), 13 Sep. 1983, **S.A. Mori et al. 16184** [FHO, NY], "tree 13.9 m × 11.2 cm; bole 11.6 m; tree 2564"; – próximo à Santana, [0°3' S, 51°11' W], campo de terra firme, (st), 5 May 1982, **N.A. Rosa & M.R. Santos 4319** [INPA, MG, NY], "árvore 16 m × 70 cm circ."

Tocantins, Araguaína, Rio das Lontras, land of George Yunes & Cia., ca. 300 m, [ca. 7°10' S, 48°15' W], cut-over gallery forest, (fr), 13 Mar. 1968, **H.S. Irwin et al. 21079** [AAU, MG n.s., MO (+ carp.), NY (+ carp.), UB, UEC n.s., ZT 2×], "tree ca. 5 m × 8 cm; fruits green"; – Serra de Mamoneira, W of Filadélfia, [ca. 7°22' S, 47°38' W], foothills of serra along stream, (fr), 5 Aug. 1964, **G.T. Prance & N.T. Silva 58565** [FHO, MG n.s., NY, UB], "tree 10 m × 20 cm diam."; – Município de Goiatins, Bacia do Tocantins, Sub-bacia do rio Manuel Alves Grande, 247 m, 7°42'47" S, 47°25'9" W, cerrado denso; solo concrecionário-arenoso; relevo levemente ondulado, (fr), 14 May 2010, **F.C.A. Oliveira et al. 1992** [IBGE n.s., RB n.s. (dig. photo)], "árvore ca. 6 m, 23 cm DAP; casca lisa; folhas membranáceas; frutos carnosos imaturos cor verde"; – Mun. Presidente Kennedy, road from highway BR-153 to Itaporã, 12 km W of village of Presidente Kennedy, Fazenda Primavera along Ribeirão Feíno, 400–500 m, ca. 3°25' S, 48°37' W, in margin of gallery forest, (fr), 2 Feb. 1980, **T. Plowman et al. 8307** [F n.s. (dig. photo), FHO, INPA n.s. (dig. photo), MG, NY], "tree 8 m × 10 cm diam.; fruits light brownish green; leaves dark shiny green above, pale light green beneath"; – 328 km de Anápolis para Belém [apparently near Guaraí, ca. 8°50' S, 48°30' W], (fr), 9 Nov. 1963, **N.T. Silva 57746** [FHO, NY], "árvore 8 m × 5 cm diam."; – próx. a Chapada das Mangabeiras, 9°17' S, 47°10' W, mata de galeria, (fr), 22 Mar. 1978, **J.S. Assis 79** [RB n.s. (dig. photo)], "árvore 6 m, 6 cm de diâmetro, frequência fraca; frutos jovens, verde-amarelados"; – Palmas, Parque Est. do Lajeado Faz. Céu, 634 m, 10°10.322 S, 48°10.627 W, floresta de galeria, (st), 11 Oct. 2002, **N.R. Cunha 208** [UFG n.s. (dig. photos)]; – ca. 24 km S of Paraíso [Paraíso do Tocantins], 600 m, [10°22' S, 48°53' W], outcrops and rocky slopes, (fr), 24 Mar. 1968, **H.S. Irwin et al. 21741** [F, IAN, MG n.s., MICH, NY (+ carp.), U (+ carp.), UB, W (+ carp.)], "tree ca. 10 m × 25 cm; fruits green"; – Ilha do Bananal em frente de São Felix, [ca. 11°37' S, 50°39' W], cerrado estacionalmente alagável, (fl), 22 May 1979, **J.M. Pires & M.R. Santos 16965** [MG n.s., RB n.s. (dig. photo)], "árvore 6–8 m, frequente"; – Município Dianópolis, beira do rio, afloramento rochoso, na cachoeira, 700 m, 11°33'53" S, 46°19'27" W, mata de galeria; relevo levemente inclinado; substrato: arenoso com rochas, (fl male), 26 Sep. 2003, **A.O. Scariot et al. 803** [CEN n.s., W], "árvore 5 m; flor branca".



**Maranhão**, Turiaçu, km 6 da BR 106 Maracaçumé-Sta. Helena, fazenda Maracaçumé Agro Industrial, Grupo Mesbla, [ca. 2°10' S, 45°45' W], floresta de igapó; solo arenoso, (fr), 2 Dec. 1978, **N.A. Rosa & E. Vilar 2830** [F, MG, NY 2×], "árvore 25 m, 1.1 m de circunf.; frutos imaturos verdes"; – Montes Altos, Mangaba, [ca. 3°52' S, 43°16' W], chapada da serra com afloramento, (fl male, fr), 20 Aug. 1982, **U.N. Maciel et al. 832** [IAN, INPA n.s. (dig. photo), MG, NY], "árvore 12 m, 0,58 m circ.; botão, flor creme"; – Mirador, Parque Estadual de Mirador, [ca. 6°33' S, 45°1' W], cerrado as margens de um riacho temporário, (fr), 26 Sep. 1988, **F. Noberto et al. 117** [MG], "árvore comum, 6 m, 30 cm circ.; frutos imaturos verdes e maduros amarelos"; – Morro de Baleia, ca. 2 km towards Carolina from Pedra Caída on the Estreito-Carolina road, 7°3' S, 47°27' W, growing in a dry, wooded gully on a hillside clothed in cerrado vegetation, (st), 1 Jul. 1993, **J.A. Ratter et al. 6706** [INPA n.s. (dig. photo), UB], "tree 12 m, bearing galls"; – Município de Carolina, Transamazonian Highway, BR 230 and BR 010, Pedra Caída, 35 km N of Carolina (ca. 7°8' S, 47°25' W), base of Serra de Baleia, [correct is probably ca. 7°2' S, 47°25' W], flat plain with serras (mesas) and intersected by streams; sand soil; pronounced dry season; sparse cerrado vegetation, periodically burned and grazed; this plant: in area of dry stream beds, (flbuds male), 14 Apr. 1983, **E.L. Taylor et al. E1253** [FHO 2×, MG, NY n.s. (dig. photo), W], "tree 6 m, 30 cm circ.; immature fruits green"; – Fazenda Madeira, Riberão Urupuchete, ca. 17 km N of Carolina, 7°11' S, 47°25' W, dryish margin of gallery forest, (fr), 12 Jul. 1993, **J.A. Ratter et al. R6806** [E, INPA n.s. (dig. photo), K, UB], "tree sloping out from the edge of the gallery forest: height only 6 m but trunk about twice this length".

**Piauí**, Município de Sete Cidades, Parque Nacional, Serra Negra, Bananeiros, [4°5' S, 41°41' W], (fr), 16 Sep. 1977, **G.M. Barroso & Elsie 278** [RB n.s. (dig. photo)]; – Município Piracuruca, Piscina dos Milagres (1a. Cidade), PARNA de Sete Cidades, 150 m, 4°5'30.4" S, 41°40'47.8" W, mata fria; substrato argiloso, (st), 22 Apr. 2002, **M.E. Alencar 1447** [UEC n.s. (dig. photo), TEPB n.s.], "árvore ca. 5 m (freq. média); frutos [galls!] imaturos escurecidos"; – Município Piracuruca, Cachoeira do Riachão (1a. Cidade), PARNA de Sete Cidades, 165 m, 4°6'27" S, 41°40'14" W, mata fria; afloramento rochoso, (st), 24 Feb. 2000, **M.E. Alencar et al. 867** [UEC 2× n.s. (dig. photo), TEPB 2× n.s.], "subarbusto ca. 1,5 m; frutos [galls!] imaturos verdes"; – same locality: 160 m, 4°6'28.3" S, 41°40'12.0" W, mata fria; afloramento rochoso, (st), 23 Feb. 2001, **M.E. Alencar et al. 1171** [UEC n.s. (dig. photo), TEPB n.s.], "árvore ca. 15 m (freq. rara); frutos [galls!] imaturos verdes"; – Cachoeira do Riachão, na descida da escada para a Cachoeira, [4°6' S, 41°40' W], (fr), 15 Sep. 1977, **G.M. Barroso & Elsie 229** [RB n.s. (dig. photo)], "árvore ca. 5–8 m"; – Sete Cidades, [ca. 4°6' S, 41°41' W], (fr), Nov. 1977, **G.M. Barroso & E.F. Guimarães 4861** [RB n.s. (dig. photo)]; – Serra das Confusões, Caracol, [ca. 9°13' S, 43°29' W], carrasco, (fl male), 19 Nov. 1981, **A. Fernandes & E. Nunes s.n.** [EAC n.s., UEC, W], "arvoreta; flor branca".

**Ceará**, Ubajara, Planalto da Ibiapaba, Portão Planalto Cafundó, [3°49' S, 40°54' W], mata úmida, (fl), 22 Jan. 1999, **A. Fernandes et al. s.n.** [EAC n.s. (dig. photo)]; – Ubajara, Chapada da Ibiapaba, [ca. 3°49' S, 40°54' W], mata úmida, (fr), 4 Jan. 1984, **A. Fernandes s.n.** [EAC n.s., UFRN n.s. (dig. photo)], "arbusto"; – Serra da Ibiapaba, entre São Benedito e Ibiapina, [ca. 3°59' S, 40°53' W], carrasco, (flbuds), 4 Jan. 1942, **P. Bezerra s.n.** [EAC n.s., INPA], "árvore ca. 15 m"; – Guaraciaba do Norte, [4°10' S, 40°46' W], cerrado, (fr), 15 Jun. 1980, **A. Fernandes et al. s.n.** [EAC n.s., INPA], "arbusto"; – Ibiapaba, [5°3' S, 40°55' W], (st), s.d., **F. Allemão & M. Cysneiros 961** [R].

**Rondônia**, margem da estrada Belmonte-Porto Velho, [8°40' S, 63°53' W], mata, (fr), 26 Aug. 1975, **M.R. Cordeiro 636** [MG], "árvore 10 m × 70 cm circ.; frutos amarelos de sabor agradável"; – Porto Velho, estrada Belmonte, [8°40' S, 63°53' W], capoeira alta; terreno argiloso, (fr), 4 Sep. 1975, **C.D. Mota & L. Coêlho 27** [INPA, MG], "árvore 12 m; frutos imaturos"; – Porto Velho, estrada do Rodagem, km 8, Viana, [ca. 8°46' S, 63°54' W], mata derrubada; terra firme, (fr), 31 May 1952, **G.A. Black et al. 52-14641A** [IAN n.s., INPA, K (+ carp.), R], "árvore pequena; fruto cinzento"; – Rio Pacaás Novos, próximo a la cachoeira, serra que fica em frente ao acampamento, [ca. 10°59' S, 64°1' W], mata de terra firme; solo arenoso, (fr), 25 Mar. 1978, **J.U. Santos et al. 253** [FHO, IAN, INPA, MG, NY, RB n.s. (dig. photo)], "árvore 15 m; fruto verde, imaturo; pouco frequente".

**Mato Grosso**, Usina Hidrelétrica Salto Apiacás [Apiacá], margem direita a 1000 m da concreteira, 9°30' S, 57°00' W, alta floresta, floresta pluvial densa, (st), 16 Jun. 1988, **ENGEVIX 67** [UB], "altura 20 m, DAP 17 cm; casca rugosa avermelhada"; – Município Santa Teresinha, beira do Rio Araguaia, 10°28'31" S, 50°30'9" W, savana arbórea aberta; beira de estrada, antropizado, (fr), 11 Jun. 1997, **F.R. Dário et al. 1328** [ESA n.s. (dig. photo), UFMT n.s. (dig. photo), W], "arbusto 4 m; frutos imaturos verdes"; – MT. BR 158, depois na Rod. para o Povoado de Vila Rica, a 73 km S do Povoado, estr. do Roncador, [ca. 10°40' S, 51°20' W],

vegetação de transição entre mata baixa e cerrado, (flbuds female, fr), 14 Oct. 1985, **C.A. Cid Ferreira et al. 6456** [FHO, INPA, MG, NY n.s. (dig. photo), SPF, W], "árvore 12 m, 10 cm diâm.; flores esverdeadas; frutos quando imaturos verdes e quando maduros amarelos"; – Município Sinop, margem da estrada entre Cláudia e Sinop, 11°40'42" S, 55°13'17" W, borda de floresta ombrófila aberta; solo seco tipo PVA; relevo plano, (fl male), 7 Nov. 1996, **G.F. Árbocz et al. 3086** [ESA n.s. (dig. photo), UFMT n.s. (dig. photo), W], "árvore 8 m; folhas discolores; flores amareladas"; – Município de Novo Santo Antônio, Parque Estadual do Araguaia, Fazenda Querambrás, ca. 2 km da sede do parque, 12°34'28,9" S, 50°55'4,6" W, campo de murundus, (fl), 10 Nov. 2005, **B.S. Marimon BS-958** [NX n.s. (dig. photo)], "árvore 10 m, ocasional; casca cinza; flores bege; botões florais e frutos imaturos verdes"; – near Rio Suiazinho, ca. 290 km NNW of Xavantina, 12°50' S, 51°53' W, sapling on floor of evergreen seasonal forest, (st), 5 Sep. 1972, **J.A. Ratter et al. R2341** [UB]; – ca. 4 km N of base camp of the expedition (12°54' S, 51°52' W), ca. 270 km N of Xavantina, dense dry forest, (fr), 16 May 1968, **J.A. Ratter et al. R1439** [A, FHO, IAN, K, LE n.s., NY, U], "tree 26 m; dbh 24 cm; no buttresses; bark smooth with soft white longitudinal stripes 7–24 cm long; blaze: wood creamy white, cortex pale mauve-purple, white stripes from the bark-surface extending into it, bright egg-yolk yellow tissue at the junction of wood + cortex"; – Córrego de Porco, 240 km N of Xavantina on Xavantina-São Felix road, [12°53' S, 51°50' W], growing on the edge of a narrow strip of low forest along the banks of a stream (surrounded by cerrado formation), (fr), 7 May 1968, **J.A. Ratter et al. R1331** [A, FHO, K (+ carp.), LE n.s., NY, U], "slender tree 8 m (broken off at the top); trunk 27 cm dbh; bark silvery, fairly smooth; blaze: wood pale yellow, surrounded by deep red cortex containing a few irregular short black stripes"; – Expedition Base Camp: 12°49' S, 51°46' W, ca. 4 km E of base camp, cerrado, (flbuds), 18 Sep. 1968, **R.M. Harley & R. Souza 10112** [NY, UB], "tree to 8 m, with silky hairy leaves beneath and orange fruits"; – Serra do Roncador, Mun. de Barra do Garças, 260 km along new road NNE of village of Xavantina, at Royal Society-Royal Geographic Society Base Camp, ca. 450 m, 12°51' S, 51°45' W, cerradão woodland (just outside of gallery forest), etc., (fl male, fr), 16 Sep. 1968, **G. Eiten & L.T. Eiten 8793** [FHO, K 2×, MO 2×, NY, RSA, SP 2×, TUR 2×, UB], "tree 8 m, trunk 12 cm dbh"; – same data: inside gallery forest, etc., (fl), 9 Oct. 1968, **9178** [K, NY, SP, UPS, US], "tree 15 m, 7 dm dbh"; – same tree and datum: **S.G. Fonséca 1280 & E. Onishi 501** [MG n.s., NY, RB n.s. (dig. photo), UB, W]; – Município São José do Rio Claro, Bairro Piracema, 13°19'56" S, 56°43'26" W, contato savana florestada / floresta estacional; borda de mata; relevo plano; solo do tipo latossolo vermelho-amarelo; textura média, (fr), 1 May 1997, **N.M. Ivanauskas et al. 1968** [ESA n.s. (dig. photo), UFMT n.s. (dig. photo), W], "árvore 18 m"; – Município Região de Cocalinho, [ca. 14°10' S, 51°10' W], (fl male), 1997, **G.F. Árbocz et al. 4878** [ESA n.s. (dig. photo), UFMT n.s. (dig. photo), W]; – same area: (fl male), 1997, **A. Rozza & G. Árbocz s.n.** [ESA n.s. (dig. photo)]; – same area: (fr), 1997, **A. Rozza et al. 521** [ESA n.s. (dig. photo), UFMT n.s. (dig. photo), W]; – margem do rio das Mortes acima de Xavantina, [14°42' S, 52°25' W], (fr), 25 Apr. 1958, **A. Lima 58-3085** [FHO, INPA n.s., K, RB n.s. (dig. photo)], "árvore 5–6 m com galhos longos, subpendentes"; – Serra do Roncador, 5 km S of Chavantina, grounds of brick factory, [14°44' S, 52°21' W], margin of creek, (fr), 26 Sep. 1964, **G.T. Prance et al. 59125** [FHO, MG n.s., NY, UB], "tree 15 m, 12 cm diam."; – ca. 6 km SW of Xavantina, 14°44' S, 52°20' W, low dry forest growing along a laterite-capped ridge (quasi-cerradão) associated with *Hirtella glandulosa*, (yfr), 3 Aug. 1967, **J.A. Ratter & J. Ramos R279** [FHO, K, LE n.s., U, UB], "tree 8 m; dark red bark blaze; very hard dark wood"; – Município Água Boa, Reserva Indígena Areões, a 8 km da Aldeia Mutum, ca. 250 m, 14°34'4" S, 51°58'29" W, mata seca (mata de *Brosimum rubescens* TAUB.), relevo: plano; substrato: concrecionário (laterita), (fr), 13 Mar. 1997, **B.S. Marimon BS-89** [IBGE n.s., NX n.s., RB n.s. (dig. photo), UB n.s.], "árvore 25,0 m, 33,7 cm DAP; frequência: rara; fruto verde, piloso"; – Município de Nova Xavantina, Rio das Mortes, fragmento preservado em frente à Ilha 23, [ca. 14°27' S, 51°43' W], (fr), 10 Oct. 2009, **C. Fernandes-Bulhão et al. CFB 785** [NX n.s. (dig. photo)], "árvore; casca lisa e branca com leves estrias longitudinais; entrecasca bege; frutos jovens verdes"; – coleta (com barco) nas margens do Rio das Mortes, [ca. 14°27' S, 51°43' W], (fr), 8 May 2010, **C. Fernandes-Bulhão et al. CFB 849** [NX n.s. (dig. photo), W], "árvore 10 m; frutos jovens verdes"; – 4 km a oeste de Xavantina, [14°41' S, 51°23' W], cima da cerra, solo pedregoso, (fr), 6 Aug. 1967, **S.G. Fonséca 270** [NY, UB, W], "árvore 8 m"; – km 23 de Vila Bela, caminho da Cachoeira de Vila Bela, [ca. 14°57' S, 60°2' W], terra firme; solo argiloso, (fr), 5 May 1983, **L. Carreira et al. 754** [INPA, MG, NY], "árvore 6 m; frutos globosos, esverdeados"; – Mun. Vila Bela da Sma. Trindade, Córrego da Cascata, [ca. 14°57' S, 60°2' W], mata junto a rio, (fr), 18 Aug. 1997, **G. Hatschbach et al. 66995** [GH n.s., MBM], "árvore 8 m"; – Cuiabá, Chapada das Guimarães, próximo a cachoeira da Salga-deira, [OLIVEIRA FILHO & MARTINS (1986): 15°21' S, 55°49' W, 350–680 m], cerrado; solo pedregoso, (yfr), 19 Sep. 1982, **J.U. Santos & C.S. Rosário 370** [INPA n.s. (dig. photo), MG], "árvore ca. 4 m; botões florais e flores esverdeadas"; – same area: floresta de galeria, (fr), 7 Apr. 1985, **A.T. de Oliveira Filho 300** [UEC,

W], "árvore ca. 6 m; frutos cor creme"; – same area: ramal à direita, (fr), 21 Mar. 1983, **P. Lisbôa et al. 3226** [MG], "árvore 7 m; frutos imaturos verdes"; – same area: margem esquerda do Rib. Salgadeira, próximo à cachoeira, mata ciliar, em solo argilo-arenoso pedregoso, (fr), 23 Mar. 1979, **M. Macedo et al. 1249** [FHO, NY], "árvore pouco frequente; frutos cinzas"; – Santa Anna da Chapada, [15°26' S, 55°45' W], in ora silva primaria, (fr), 23 Jul. 1902, **G.O.A. Malme 2042** [S 2×]; – Fuß der Serra da Chapada [Chapada dos Guimarães NE Cuiabá], [15°28' S, 55°45' W], Galeriewald, (fr), 2 Feb. 1978, **K. Kubitzki 78-37** [M, HBG n.s.], "kleiner Baum"; – just above Vêu de Noiva, 720 m, [15°25' S, 55°50' W], gallery forest, (fl male), 16 Oct. 1973, **G.T. Prance et al. 19065** [COL n.s. (dig. photo), INPA, K, MG 2×, MO, NY, R, S, U, US], "tree 8 m, 30 cm diam.; buds green"; – same area: forest in small valley, (fr), 17 Oct. 1973, **19163** [INPA, K, M, MG 2×, MO, NY, P, R, S, U (+ carp.), US], "tree 10 m, 15 cm diam.; mature fruit yellow"; – perto da cachoeira Vêu de Noiva, do Rio Coxipozinho, 15°30' S, 55°45' W [correct is: 15°25' S, 55°50' W], mata ciliar do alto da chapada, perto da cachoeira; beira do alto da cachoeira, (fl male), 21 Oct. 1985, **J. Pirani et al. 1310** [FHO, INPA, MG n.s., NY n.s. (dig. photo), SPF, W], "árvore 10 m, heliófila; botões esverdeados; flor aberta com corola creme e muitos estames alvos"; – Barra dos Garças, Serra do Taquaral, 15°41' S, 52°20' W, mata em grotao, (fl male), 23 Nov. 1997, **L.C. Bernacci & G. Árbocz 2566** [ESA n.s. (dig. photo), IAC n.s., UFMT n.s., W], "árvore ca. 8 m; botões amarelados"; – Serra da Saudade, camp 120 km beyond Alto Araguaia, Brasília-Acre Highway, 750 m, [ca. 16°50' S, 53°59' W], (fr), 26 Aug. 1963, **B. Maguire et al. 56329** [FHO, MG, NY (+ carp.)].

Goiás, Mun. Minaçu, estrada Minaçu / Serra da Mesa, cerca 5 km da entrada norte do canteiro, 960 m, 13°47'26" S, 48°18'48" W, mata de galeria não-inundável com trechos inundáveis; solo areno-argiloso com cascalho e rochas (granito) aflorando; relevo acidentado; coletada na borda da mata; mata em transição com cerrado rupestre; área de influencia do AHE Serra da Mesa, (fr), 19 Aug. 1996, **B.M.T. Walter et al. 3417** [CEN], "árvore 8 m; frutos imaturos verdes"; – Mun. Campinaçu, Fazenda do Ze do Fumo, área que ficara isolada 'ilha' entre o córrego Carneiro e o 3 Ranchos, 560 m, 13°46' S, 48°17' W, cerrado arbóreo; substrato arenoso; relevo ondulado, (flbuds), 9 Oct. 1991, **T.B. Cavalcanti et al. 892** [CEN n.s., FHO, UFG n.s.], "ocasional; botões esverdeados"; – Mun. Niquelândia, Faz. Serra Negra (Niqueltocantins), Serra Negra, p/o lado da bagagem [rio], ao lado da linha de transmissão (elet.), 470 m, 14°02' S, 48°19' W, mata galeria com elementos de mata seca; encosta da S. Negra; solo arenoso, raso, muito cascalho e rochas aflorando; relevo muito acidentado – íngreme; área de influencia da UHE Serra da Mesa; local da futura ilha de Serra Negra, (fr), 11 Jun. 1992, **B.M.T. Walter et al. 1631** [CEN], "árvore 12 m, DAP 8 cm; folhas discolores; frutos imaturos verdes"; – Mun. Colinas do Sul, Rodovia Colinas do Sul a Serra da Mesa, km 3–5, [14°10' S, 48°5' W], cerrado, (fr), 19 Feb. 2000, **G. Hatschbach et al. 70384** [MBM n.s., W], "pequena árvore"; – Município de Alto Paraíso de Goiás, Parque Nacional da Chapada dos Veadeiros, próximo à cachoeira, 14°9' S, 47°50' W, (yfr), 24 Jan. 2005, **J. Paula-Souza et al. 4587** [ESA n.s., W], "arvoreta ca. 5 m; frutos amarelos"; – Alto Paraíso, Parana, 14°9'25" S, 47°47'20" W, cerrado, (fr), 22 Jun. 1995, **J.M. Felfili et al. 339** [RB n.s. (dig. photo)], "árvore ca. 2 m; frutos verdes"; – 21 km de Alto Paraíso para Colinas, [ca. 14°9' S, 47°39' W], mata galeria, (fr), 6 Sep. 1994, **M. A. da Silva et al. 2259** [IBGE n.s., RB n.s. (dig. photo)], "árvore ca. 8 m; folhas discolores; frutos maduros de cor amarela e imaturos de cor verde, comestíveis"; – Chapada dos Veadeiros, Parque Nacional do Tocantins, [ca. 14°4' S, 47°36' W], (fl, fr), 20 Dec. 1967, **A.P. Duarte 10694** [FHO, K, M, NY, RFA n.s.]; – 5–10 km N of Veadeiros [Alto Paraíso de Goiás], [14°4' S, 47°31' W], riverine forest, (fr), 19 Jul. 1964, **G.T. Prance & N.T. Silva 58250** [FHO 2×, GH n.s., MICH, NY, RB n.s. (dig. photo), S, UB, US], "tree 8 m; young fruit green"; – estrada Alto Paraíso/Terezinha de Goiás (GO 118), à direita da estrada à 2 km da entrada Norte (em frente à estátua) de Alto Paraíso, 1250 m, [14°8' S, 47°31' W], campo sujo (alguns locais com "murunduns" pedregosos); solo arenoso com afloramentos de rocha; relevo no geral plano, ondulado pelos "murunduns", (fl male), 23 May 1994, **B.M.T. Walter et al. 2104** [CEN, HRCB n.s. (dig. photo), UB n.s., W], "árvore 8 m, 18 cm DAP; botões florais verdes; flores velhas de cor castanha; folha discolores; planta ocasional"; – Alto Paraíso, morro pedregoso próximo ao Grande Hotel Paraíso, próximo à torre, [ca. 14°8' S, 47°31' W], (fr), 6 Sep. 1994, **R.C. Mendonça & F.C.A. Oliveira 2108** [MG n.s., RB n.s. (dig. photo)], "árvore 7 m e 40 cm de diâmetro; frutos maduros de cor amarela e imaturos verde"; – Mun. de Alto Paraíso, a oeste do centro da cidade, [14°8' S, 47°31' W], campo cerrado sobre terreno rochoso, (flbuds), 20 Feb. 1991, **D. Alvarenga et al. 728** [CEN n.s., FHO, IBGE n.s.], "árvore ca. 6 m; botão floral verde"; – Município de Cavalcante, RPPN Soluar, 805 m, ca. 13°45'0.8" S, 47°23'54.6" W, cerrado de encosta; solo areno-quartzoso; relevo íngreme, (fr), 18 May 2004, **M.L. Fonseca et al. 5255** [IBGE n.s., RB n.s. (dig. photo), W], "árvore ca. 6 m, 20 cm DAP, comum; folhas cartáceas; frutos imaturos com pilosidade ferruginea"; – ca. 8 km S of Cavalcante, 1000 m, [13°52' S, 47°27' W], gallery; steep rocky slopes with brejo and gallery woods below, (fr), 10 Mar. 1969, **H.S. Irwin et al. 24187** [FHO, NY, UB],

"tree ca. 5 m × 8 cm; fruit green"; – ca. 6 km from Terezinha [Teresina de Goiás] on the road to Cavalcantes, 13°48' S, 47°30' W [correct seems to be 13°47' S, 47°19' W], cerrado, (fr), 8 Oct. 1980, **J.A. Ratter et al. R4520** [E, K, UB, UEC n.s.], "tree 5 m, 12 cm dbh, regularly branched (spruce-like); bark smooth; ripe fruits orange"; – Mun. Teresina de Goiás, Rio São João [not located], 700 m, cerrado próximo ao rio, (fl male), 9 Nov. 1991, **G. Hatschbach et al. 55987** [C, HBG, HUEFS, MBM, MO, W, Z], "árvore 6 m; flor creme esverdeada"; – Mun. de São Domingos, margem (esquerda) do córrego São João, próximo ao povoado de São João [São João Evangelista], 675 m, 13°38'10" S, 46°19'01" W, cerrado; solo argiloso/arenoso; relevo plano, (fr), 29 Oct. 2000, **F.C.A. Oliveira et al. 1158** [CEN n.s., IBGE n.s., U], "árvore heliófita, ca. 6 m, 12 cm DAP, comum; folhas cor verde, cartáceas; frutos maduros cor alaranjada, pilosos"; – same locality: floresta de galeria do córrego São João; relevo plano, (fl male), 29 Oct. 2000, **M. A. da Silva et al. 4596** [IBGE n.s., RB n.s. (dig. photo), U], "árvore ca. 7 m; corola verde amarelada; cálice verde claro; folhas discolores, verdes, com parte abaxial verde prateada"; – Serra Geral de Goiás, Rio da Prata, ca. 6 km S of Posse, [UB: Centro oeste], 800 m, [14°7' S, 46°23' W], sandy cerrado, (fr), 4 Apr. 1966, **H.S. Irwin et al. 14330** [FHO, NY, UB n.s., W], "shrub ca. 3 m; fruit gray-green"; – Alto Horizonte, Região da Sururuca, Fazenda Cajás do Sr. Jair Eustáquio, [ca. 14°12' S, 49°20' W], borda de cerradão, (fr), 15 Mar. 2014, **J.E.Q. Faria 3907** [HUEG n.s., RB n.s. (dig. photo), UB n.s.], "árvore 5 m; fruto imaturo verde"; – Município de Uruaçu, ca. 48 km de Uruaçu/Campinorte, Fazenda Bela Vista (Sr. Sérgio Barros), 435 m, 14°19'02" S, 49°01'38" W, cerradão; solo argilo/pedregoso; relevo levemente ondulado, (fr), 23 Jun. 1998, **D. Alvarenga et al. 1203** [IBGE n.s., RB n.s. (dig. photo), UFG n.s. (dig. photos)], "árvore ca. 10 m × 35 cm DAP, heliófita, comum; casca fissurada; cálice verde; fruto seco"; – Mun. de Niquelândia, Área do Cristo, 14°27'08" S, 48°27'26" W, morro; relevo íngreme; campo sujo; solo argilo/pedregoso (laterítico), (fr), 16 Apr. 1996, **R. Marquete et al. 2560** [IBGE n.s., RB n.s. (dig. photo), UEC, UFG n.s. (dig. photos)], "árvore ca. 10 m; heliófila em alagado na nascente; tronco com casca lisa, cor cinza; folhas discolores verdes, nítidas na superfície adaxial; frutos verdes"; – Mun. de Niquelândia, estrada para o DNPM, Placa do IBAMA, subindo o morro do lado esquerdo de quem vai, ca. 830 m, 14°29'46" S, 48°27'0" W, solo argiloso/pedregoso; relevo íngreme; cerrado (queimado recentemente), (fl buds male), 19 Oct. 1996, **R. Marquete et al. 2685** [RB n.s. (dig. photo), U], "árvore 6 m, heliófila; tronco com casca fissurado, marrom; folhas cartáceas, discolores verdes, opacas em ambas as faces; botões esverdeados"; – ca. 14 km S of Niquelândia, ca. 750 m, [14°36' S, 48°28' W], gallery margin, cerrado and adjacent gallery forest, (fr), 22 Jan. 1972, **H.S. Irwin et al. 34812** [COL n.s. (dig. photo), F, K (+ carp.), MG n.s., MICH (+ carp.), MO, NY (+ carp.), UB, US], "tree ca. 5 m × 15 cm; fruit dried"; – Mun. São João D'Aliança, entre São João e Alto Paraíso de Goiás, 1100 m, [ca. 14°30' S, 47°30' W], cerrado, (yfr), 23 Jan. 1978, **G. Martinelli & P.P. Jouvin 3787** [INPA, RB n.s. (dig. photo), UB], "arbusto ca. 3 m, heliófila; folhas verdes, marcadamente discolor; frutos imaturos de cor verde com cálice persistente de cor verde"; – São João D'Aliança, centro oeste, 14°52'34" S, 47°47'24" W [MG label: a oeste de Buritizinho, 14°52'51" S, 47°47'22" W], [correct seems to be ca. 14°36' S, 47°37' W], savana arbórea aberta (campo cerrado); solo argilo-arenoso, (fr), 29 Jun. 1978, **S. Barros & J. Oliveira 15** [MG, RB n.s. (dig. photo), UB n.s., W], "árvore 10 m; frequência mediana; fuste com 30 cm de circunferência; copa regular, caule cinza claro; frutos jovens verdes"; – ca. 50 km from Planaltina on the road to São João D'Aliança, 14°40' S, 47°30' W [correct seems to be ca. 14°50' S, 47°34' W], cerrado on a rocky outcrop, (fl male), 7 Oct. 1980, **J.A. Ratter et al. R4504** [E, K, NY, UB, UEC n.s.], "tree 7 m, 15 cm dbh; bark with shallow fissured pattern resembling *Pseudobombax*"; – Mun. de Padre Bernardo, km 17 da estrada Mimoso / Água Fria, ca. 15°10' S, 48°25' W, mata estacional/cerradão, (fl), 12 Sep. 1996, **B.A.S. Pereira & D. Alvarenga 3193** [IBGE n.s., RB n.s. (dig. photo), UEC, UFG n.s. (dig. photos)], "árvore ca. 10 m; flor verde-amarelada"; – Planaltina, Córrego Maranhão (cabeceira), [ca. 15°15' S, 47°52' W], mata ciliar, (st), 7 Jun. 1982, **J.E. de Paula 1528** [UB], "árvore de 8 × 0,20 m, ramosa; madeira alva; folha coriácea subesclerofila"; – Município de Planaltina de Goiás, estrada de chão para Água Fria de Goiás, 1045 m, 15°21'45,6" S, 47°39'40,5" W, cerrado; relevo plano; solo: latossolo vermelho, (fr), 17 Mar. 2003, **M.L. Fonseca et al. 4227** [IBGE n.s., RB n.s. (dig. photo)], "árvore ca. 11 m, 0,23 m DAP, comum; folhas discolores, face abaxial dourada; frutos imaturos cor verde com pilosidade ferrugínea"; – a 4 km da Lagoa Formosa e à 13 km da Cidade de Planaltina [Planaltina de Goiás], em direção à São João D'Aliança, 1150 m, [ca. 15°22' S, 47°32' W], área de cerrado, porem a beira de um córrego; vegetação riparia, sob forte ação antrópica, (fr), 13 Apr. 1995, **J. Fontella 3276** [R], "arvoreta heliófila 2,5–3 m; frutos imaturos de cor verde e maduros de cor atropurpurea"; – próximo de Formosa, [ca. 15°31' S, 47°22' W], cerrado, (yfr), 6 Feb. 1967, **A.P. Duarte 10287** [NY, RB n.s. (dig. photo), RFA n.s., W], "pequena árvore"; – same area: pasto, (fr), 7 Aug. 2008, **I.N.C. de Azevedo et al. 432** [HEPH n.s., RB n.s. (dig. photo)], "árvore 6 m"; – Diolândia, [15°23' S, 49°56' W], mata ciliar, (fr), 7 Sep. 2003, **F.P.R. de Jesus 247** [HEPH n.s., RB n.s. (dig. photo)], "árvore 5 m; fruto imaturo



verde, quando maduro de cor amarela"; – Mun. Jaraguá, Rod. Brasília-Belém, Rio das Almas, [15°43' S, 49°21' W], cerrado junto a matinha de galeria, (fr), 21 Nov. 1975, **G. Hatschbach 37764** [UC, Z], "pequena árvore; fruto amarelo"; – Abade pres Meia Ponte, [15°51' S, 48°57' W], dans le bois, (fl female), 10 Sep. 1894, **A.F.M. Glaziov 21710** [B (destroyed, fragm. in F), BR, C, G, K, LE n.s., NY, P 2×], "arbre; fleur rousses"; – Serra dos Pirineus, 70 [correct is ca. 15] km N of Corumbá de Gioás on road to Niquelândia, ca. 700 m, [15°48' S, 48°50' W], gallery forest and adjacent cerrado, (fl, fr), 20 Jan. 1968, **H.S. Irwin et al. 18917** [COL 2× n.s. (dig. photos), F, K (carp.), MG n.s., MO 2×, NY (+ carp.), RB n.s. (dig. photo), UB, US], "tree ca. 4 m × 6 cm; fruit brown, mature"; – "Goyáz, along the Caminho da Carrreira" [around the city Goiás], [ca. 15°56' S, 50°8' W], (fr), 10 Apr. 1828, **W.J. Burchell 6970** [K 2×, P], "arbuscula frondosa 15 ped."; – same data: (fr), **6986-2** [GH, K, L, P]; – Mun. de Mossâmedes, Serra Dourada, na cabeceira do rio Indio Grande, [16°6' S, 50°11' W], formação rupestre, (fr), 13 May 1994, **J.A. Rizzo et al. 11372** [UFG n.s. (dig. photos)], "árvore de 4 m"; – a 3 km do trevo de Mossâmedes para a cidade de Goiás, à esquerda da rodovia, [16°6' S, 50°11' W], floresta ciliar, (fr), 14 Sep. 1994, **J.A. Rizzo et al. 11748** [UFG n.s. (dig. photos)], "10 m"; – vertente NW da Serra do Cais, próximo à Córrego do Ouro, 16°22' S, 50°37' W, (fr), 4 Mar. 1978, **H. Magnago 86** [RB n.s. (dig. photo)], "árvore 2,5 m; 10 cm diâmetro do fuste; 3 m de diâmetro da projeção da copa; frutos jovens, verde-amarelados"; – Serra do Caiapó, ca. 16 km (straight line) S of Caiapônia, 800 m, [17°7' S, 51°48' W], forest traversed by stream and adjacent cerrado; forest, (fr), 1 May 1973, **W.R. Anderson et al. 9543** [FHO, NY, UB], "tree 5 m".

Distrito Federal, área do Colégio Agrícola de Brasília, [ca. 15°48' S, 48°0' W], cerradão, (fr), 12 Jul. 1963, **A. Mattos Filho & E.P. Heringer 349** [RB n.s. (dig. photo)], "árvore ca. 15 m × 0,35 m; frutos velhos no chão"; – probably from same place: (fr), 12 Jul. 1963, **A. Mattos & Heringer 1880** [RB n.s. (dig. photo)]; – Adjacência da Cachoeira do Pipiripau, [15°39' S, 47°47' W], (fl male), 23 Oct. 1980, **E.P. Heringer et al. 5686** [IBGE n.s., K, MG, MO, NY, UEC n.s., US], "árvore grande e frondosa; botões verde claro"; – same locality: gallery and adjacent cerrado; sandy soil, (fr), 20 Feb. 1970, **H.S. Irwin et al. 26421** [F, K, MG n.s., MO, NY, RB n.s. (dig. photo), US], "tree ca. 4 m × 8 cm; fruit green"; – Córrego Landim, ca. 25 km N of Brasília, 850 m, [15°40' S, 47°45' W], wooded margin, córrego, (yfr), 27 Jan. 1966, **H.S. Irwin et al. 12050** [FHO, NY, UB n.s.], "tree ca. 8 m × 25 cm; the branchlets commonly with glabrous galls; fruit gray-green"; – Planaltina, área do CPAC [Centro de Pesquisa Agropecuária do Cerrado], [15°36' S, 47°44' W], cerradão, (st), Aug. 1983, **Haridasan et al. MH 357** [UB 2×]; – Planaltina, REEC – Cerradão, 998 m, 15°35'30" S, 47°42'30" W, cerradão distrófico; latossolo vermelho escuro (LVE), (fl), 29 Nov. 2000, **C. Fernandes-Bulhão et al. 2** [INPA n.s. (dig. photo)], "árvore ca. 12 m, frequente; tronco liso com estrias; flor creme"; – Córrego Monteiro, vicinity of Planaltina, 950 m, [15°37' S, 47°40' W], gallery margin; gallery forest and adjacent cerrado slopes, (st), 29 Sep. 1965, **H.S. Irwin et al. 8799** [FHO, NY, UB], "tree 4 m × 5 cm; fruit green [galls!]"; – Reserva Biológica de Águas Emendadas, ca. 40 km a NE de Brasília, a margem do córrego Vereda Grande, 1000–1150 m, 15°32–38' S, 47°33–37' W, margem do córrego, (st), 24 Sep. 1982, **A.E. Ramos 102** [CEN, UEC n.s.], "árvore ca. 4 m, com floração jovem"; – perto de DF 06, 10 km S de Planaltina, 1000 m, 15°44' S, 47°38' W, transição entre campo cerrado e mata ciliar, (fl male), 23 Nov. 1983, **J.H. Kirkbride Jr. 5490** [SPF, UB n.s., US, W], "arvorezinha 4 m; botões verdes".

Bahia, Mun. Campo Formoso, Morro do Cruzeiro, east of town, 10°30' S, 40°20' W, cerrado, (fl male), 31 Jan. 1993, **W. Thomas et al. 9689** [CEPEC n.s. (dig. photo), HUEFS n.s. (dig. photo), NY, U], "tree 3 m, leaves dark shiny green above, sericeous greenish-white beneath; corolla white"; – Campo Formoso, Lagoa Grande, Poços, 828 m, 10°35'15" S, 40°25'7" W, mata seca, (fr), 29 Oct. 2005, **A.C. de Moraes et al. 72** [HUEFS n.s., W], "árvore ca. 3 m; folhas verdes discolores; frutos imaturos verdes"; – Carnaíba, arredores da cidade [M. Sobral via email, 13.7.2016: municipality of Pindobaçu, mining place in the Serra da Carnaíba], [ca. 10°42' S, 40°27' W], em campo rupestre, (fl female, yfr), Apr. 1994, **M. Sobral & W. Ganev 7631** [HUEFS, MBM], "árvore 8 m"; – Pindobaçu, Serra da Paciência, 1200 m, 10°41'35" S, 40°22'45" W, vegetação arbustiva com grandes áreas abertas; substrato pedregoso, (fl), 10 Apr. 2001, **T. Ribeiro et al. 221** [CEPEC n.s. (dig. photo), HRB n.s.], "árvore 4 m; folhas discolores, cartáceas, face abaxial dourada; cálice verde; corola alva"; – Mun. Jacobina, caminho para cachoeira de Paiaió, 680 m, 10°54'02" S, 40°21'55" W, mata estacional de altitude; margem do rio no interior da mata; solo areno-argiloso, (flbuds), 4 Apr. 1996, **A.M. Giulietti et al. PCD 2817** [ALCB n.s., CEPEC n.s. (dig. photo), HUEFS n.s. (dig. photo), K, SPF], "árvore 7 m, ocasional; folhas discolores, faces adaxial verde-escura e abaxial verde-acastanhada; botões verde-claros"; – Serra do Tombador, ca. 25 km na estrada Jacobina/Morro do Chapéu, 750 m, [11°7' S, 40°41' W], matas de galeria e campos rupestre, (fl female, yfr), 20 Feb. 1993, **A.M.V. de Carvalho et al. 4144** [CEPEC n.s. (dig. photo), NY, U], "árvore ca. 5 m; folhas discolores com face inferior alvo-ferruginea;

flores e frutos alvo-ferrugíneos"; – Mun. Jacobina, caminho para Pingadeira, 700 m, 11°09'53" S, 40°30'17" W, mata de encosta, antropizada; solo areno-pedregoso, (fl male), 6 Apr. 1996, **M.L. Guedes et al. PCD 2878** [ALCB n.s., CEPEC n.s. (dig. photo), K, SPF], "árvore 12 m, frequente; folhas coriáceas, discolors, face adaxial verde-escuro brilhante e abaxial verde-clara com pelos dourados; flores de cálice verde-claro e corola creme"; – Cachoeira do Aníbal, na saída da cidade no sentido Jacobina / Capim Grosso, [11°12' S, 40°30' W], campo rupestre intercalado por mata de galeria, (fr), 25 Oct. 1995, **J.G. Jardim et al. 689** [CEPEC n.s. (dig. photo), NY, W], "arvorezinha ca. 3 m; folhas discolors, verde brilhante na face superior e face inferior mais clara algo dourada; frutos imaturos verdes coberto por indumentos dourados"; – Piemonte da Diamantina, Bairro Grotinha, 11°11'45" S, 40°30'26" W, campo rupestre, (fl female, fr), 23 Nov. 2001, **M.L. Guedes et al. 9377** [ALCB n.s., CEPEC n.s. (dig. photo)], "árvore 6 m, frequente; folhas cartáceas, discolors; face adaxial verde brilhante; frutos imaturos ferrugíneos"; – Antena do Bairro dos Índios, 770 m, 11°12'16" S, 40°30'27" W, vegetação herbáceo-arbustiva, com árvores esparsas, (yfr), 26 Jun. 1999, **F. França et al. 3156** [HUEFS n.s., UFRN n.s. (dig. photo)], "árvore 6–7 m; folha membranácea a cartácea, discolor; fruto imaturo verde"; – Serra do Cruzeiro, 1040 m, 11°12'24" S, 40°28'55" W, vegetação arbustiva-herbácea com elementos arbóreos; substrato pedregoso/arenoso, (fl male), 7 Apr. 2001, **N.G. Jesus et al. 1309** [CEPEC n.s. (dig. photo), HRB n.s., W], "árvore ca. 3 m; folhas discolors"; – Serra da Jaboticaba, 11°16'11" S, 40°31'30" W, savana gramíneo-lenhosa; solo litólico, (fr), 21 Aug. 1980, **W. da Fonseca 312** [CEPEC n.s. (dig. photo), HRB n.s., RB n.s. (dig. photo)], "arbusto ca. 2,5 m; botões cremes"; – Mun. Jacobina, 625 m, 11°18'22" S, 40°29'22" W, mata estacional, (fr), 28 Mar. 1996, **B. Stannard et al. PCD 2607** [ALCB n.s., CEPEC n.s. (dig. photo), K, SPF], "árvore ca. 10 m, frequente; frutos imaturos verde-escuros, maduros avermelhados; a maioria dos frutos estava comida por pássaros"; – entrada a 8 km na Rod. Jacobina/Capim Grosso, situado a 20 km da rodovia, [ca. 11°20' S, 40°25' W], mata ciliar, (fr), 27 Oct. 1995, **J.G. Jardim et al. 713** [CEPEC n.s. (dig. photo), NY, W], "árvore ca. 13 m; folhas discolors verde escuro na face superior e face inferior dourada; frutos imaturos verde algo dourado"; – Miguel Calmon, entre a Fazenda Pé de Serra e o riacho do Caldeirão, 820 m, 11°24'27" S, 40°33'16" W, vegetação arbórea semi-caducifolia, (fr), 5 Apr. 2001, **N.G. Jesus et al. 1284** [CEPEC n.s. (dig. photo), HRB n.s.], "árvore ca. 8 m; folhas cartáceas, discolors, face abaxial ferrugínea; frutos cilíndricos com pilosidade ferrugínea"; – próximo a Sete Passagens, 11°23'53" S, 40°32'38" W, (fr), 9 Sep. 2007, **E.P. Queiroz & F.A. Queiroz 2378** [HRB n.s., RB n.s. (dig. photo)], "árvore 12 m; folhas carnosas, sericea abaxialmente; frutos esverdeados"; – Jacobina, Serra do Brite, 500–600 m, 11°09' S, 40°01' W, contado savana/floresta ombrófila, (defl male, fr), 21 Aug. 1984, **R.P. Orlandi & H.P. Bautista 692** [HUEFS, MG, RB n.s. (dig. photo)], "arbusto ou arvoreta frequente"; – Chapada Diamantina, Morro do Chapéu, 11°33' S, 41°9' W, (fr), 25 Oct. 2003, **M.L. Guedes et al. 10730** [ALCB n.s., CEPEC n.s. (dig. photo)], "árvore; folhas cartáceas, discolors; face adaxial verde brilhante"; – same area: (defl female, yfr), Dec. 1996, **L.V. Costa s.n. (BHCB 35067)** [BHCB n.s. (dig. photo), W]; – Cidade de Mundo Novo, Serra de Mundo Novo, [ca. 11°53' S, 40°29' W], (fl), 29 Apr. 1972, **A.L. Costa s.n.** [ALCB n.s., BAH n.s., CEPEC n.s. (dig. photo)], "árvore"; – Morro do Chapéu, próx. à Faz. Efigênia, 890 m, 11°56' S, 41°6' W, cerrado, (flbuds), 21 May 1986, **S.J. Filho & H.P. Bautista 231** [MG, PEUFR n.s. (dig. photo), RB n.s. (dig. photo), UB], "árvore; folhas com a face dorsal sericea; frutos jovens seríceos; frutos [galls!] imaturos castanhos"; – Município de Utinga, entrada a ca. 9 km NW de Utinga na BA-046 (Utinga-Morro do Chapéu), do lado direito da estrada no sentido de Morro do Chapéu, ca. 12°01' S, 41°02' W [correct seems to be 12°3' S, 41°9' W], mata estacional, (fr), 17 Oct. 1994, **L.P. de Queiroz & N.S. Nascimento 4228** [HUEFS, UFRN n.s. (dig. photo)], "árvore ca. 1,5 m, copada; folhas coriáceas, discolors, com face abaxial cinérea; frutos imaturos verde-amarronzados; muito frequente, provavelmente a espécie dominante, pelo porte e pelo número de indivíduos"; – Mun. de Barreiras, entrada para Brasília, BR 242, coletas entre 20–22 km a partir da sede do município, [12°7' S, 45°10' W], cerrado, (fr), 12 Jun. 1992, **A.M. Amorim et al. 539** [CEPEC n.s. (dig. photo), NY, W], "arbutinho 3 m; folhas verdes discolors; frutos imaturos verdes"; – valley of the Rio das Ondas, ca. 10 km W of Barreiras, ca. 500 m, [12°8' S, 45°5' W], cut-over gallery forest and adjacent cerrado, (fl female, fr), 2 Mar. 1971, **H.S. Irwin et al. 31303** [BM, F, K, MG n.s., NY, RSA, UC, Z], "tree ca. 6 m × 12 cm; corolla cream; fruit green"; – Ibotirama, Fazenda Arame, [ca. 12°11' S, 43°13' W], (fl), 6 Jul. 1973, **F.B. Ramalho 222** [RB n.s. (dig. photo)], "árvore ca. 8 m; flores verde-amareladas, sem perfume"; – Ruy Barbosa, Serra do Orobó, caminho para o Pátio das Orquídeas, 550 m, 12°18'10" S, 40°29'14" W, floresta estacional semidecidual, (fr), 20 Aug. 2005, **L.P. de Queiroz et al. 10849** [CEPEC n.s. (dig. photo), HUEFS n.s.], "árvore ca. 3 m; copa aberta; folhas cartáceas, discolors, com face abaxial cinérea; frutos amarronzados" (cited in CARDOSO & QUEIROZ 2008); – Serra do Orobó, [12°19' S, 40°29' W], mata seca, (st), 9 Jul. 1978, **C.T. Rizzini & P.A. Mattos 1073** [RB n.s. (dig. photo)], "árvore 6 × 0,25 m"; – same area: Riacho do meio, 688 m, 12°18'43" S, 40°29'9"

W, mata de encosta próximo à nascente, (fl male), 21 Dec. 20## [incomplete], **L.P. de Queiroz et al. 10025** [HUEFS n.s., W], "árvore ca. 12 m; folhas cartáceas; botões verdes; sépalas verdes; pétalas e estames creme"; – Chapada Diamantina, Palmeiras, ca. 33 km de Seabra, estrada para Morro do Camelo, 757 m, 12°25'27" S, 41°28'41" W, cerrado de altitude, (st), 1 May 2003, **V.F. Oliveira et al. 12** [ALCB n.s., CEPEC n.s. (dig. photo)], "árvore ca. 3 m, ocasional; folhas discoloradas; frutos [galls!] verde-amarelado"; – Pai Inácio, Caminho para o Cercado, 870 m, 12°25'43" S, 41°29'30" W, cerrado; afloramentos rochosos de arenito, (yfr), 29 Jun. 1995, **M.L. Guedes et al. PCD 1999** [ALCB n.s., CEPEC n.s. (dig. photo), K], "árvore ca. 8 m, frequente; folhas face abaxial com tomentos amarronzados e adaxial verde-brilhante; frutos com cálice verde"; – same area: 840 m, 12°27'35" S, 41°28'25" W, campo rupestre; afloramentos rochosos, (fl), 28 Dec. 1994, **M.L. Guedes et al. PCD 1436** [ALCB n.s., K], "árvore ca. 8 m, frequente; folhas discoloradas, semi-crassas; flores em botões esverdeados; frutos imaturos verdes e maduros vináceos"; – same area: 960 m, 12°27'17" S, 41°28'5" W, mata ciliar; rochas areníticas com cobertura coluvial; solos hidromórficos e litólicos, (flbuds), 26 Sep. 1994, **A.M. Giuliatti et al. PCD 843** [ALCB n.s., CEPEC n.s. (dig. photo), K], "árvore ca. 8 m, frequente; folhas discoloradas, face abaxial com tomentos seríceos e adaxial verde intenso brilhante; frutos imaturos de cor verde"; – Mun. Lençóis, Serra da Chapadinha, ao longo do córrego Cercado, 600 m, 12°27'3" S, 41°25'7" W, a beira do rio; vegetação de cerrado próximo ao rio; rochas areníticas, solos litólicos e areia hidromórfica, (fl), 6 Feb. 1995, **A.M. Giuliatti & L. Funch PCD 1629** [ALCB n.s., CEPEC n.s. (dig. photo), K], "árvore ca. 8 m, ocasional; casca rugosa; frutos imaturos verdes"; – Mun. de Lençóis, 2 km E of the Lençóis junction on the highway BR 242, 470 m, 12°29' S, 41°20' W, in cut-over dystrophic cerradão, (fr), 2 Aug. 1998, **J.A. Ratter et al. R8045** [UEC], "coppiced multitruncked tree, 5 m tall, with smooth grey bark; ripe fruits pale orange"; – Rio Lençóis, 500 m, 12°31'30" S, 41°22'26" W, mata ciliar, (fr), 14 Jan. 1999, **R.B. Santos 17** [HUEFS n.s., SPF n.s. (dig. photo)], "árvore ca. 5 m; casca rugosa com sulcos longitudinais e líquenes esbranquiçados; folhas bastante discoloradas, coriáceas, com face adaxial verde brilhante e face abaxial verde fosco, nitidamente pilosa; frutos imaturos verdes e maduros amarelos; frutificação plena e muitos caídos no chão; alguns frutos estão abertos com uma espécie de rachadura"; – 2–5 km N of Lençóis on trail to Barro Branco, [12°32' S, 41°24' W], cerrado, (yfr), 11 Jun. 1981, **S.A. Mori & B.M. Boom 14308** [CEPEC n.s. (dig. photo), FHO, MO, NY n.s. (dig. photo), W], "tree 5 m × 20 cm, frequent"; – same area: ca. 400 m, (fr), 1 Nov. 1979, **S.A. Mori 12931** [CEPEC n.s. (dig. photo), K, MG n.s., NY, RB n.s. (dig. photo)], "árvore 6 m, comum"; – (fl male), 2 Mar. 1980, **S.A. Mori & R. Funch 13357** [CEPEC n.s. (dig. photo), FHO, NY n.s. (dig. photo), W], "arvorezinha 3 m × 6 cm"; – Trilha Lençóis-Capão, próximo à Cachoeira Estrela do Céu, 800 m, 12°34'11" S, 41°25'3" W, campo rupestre, (fl female, yfr), 28 Jan. 1997, **S. Atkins et al. PCD 4597** [ALCB n.s., CEPEC n.s. (dig. photo), HUEFS n.s. (dig. photo)], "árvore ca. 4 m, ocasional; folhas membranáceas, discoloradas; botões esverdeados; frutos imaturos verdes"; – próximo ao cemitério de Lençóis, [12°34' S, 41°23' W], beira de estrada, (fr), 7 Oct. 1995, **E. de Melo et al. 1317** [HUEFS, VIES n.s. (dig. photo)], "árvore ca. 6 m; folhas discoloradas; frutos maduros amarelos"; – Lençóis, 600–800 m, 12°34' S, 41°23' W, (fr), 3 Apr. 1980, **L.R. Noblick 1769** [HUEFS], "árvore 6–8 m"; – Chapada Diamantina, Foz do Capivara, situado a 14 km de Lençóis, [12°37' S, 41°23' W], (fr), 12 Oct. 1999, **M.T.S. Stradmann et al. 644** [ALCB n.s., CEPEC n.s. (dig. photo)], "árvore 10,5 m, muito frequente; folhas coriáceas, discoloradas; face dorsal verde-oliva e ventral brilhante; frutos maduros laranja, imaturos verdes, com látex [?] branco"; – Andaraí, Chapada Diamantina, área de lote, [ca. 12°48' S, 41°20' W], (fr), 30 Apr. 2001, **D.L. Santana et al. 178** [ALCB n.s., CEPEC n.s. (dig. photo)], "árvore 5 m; folhas coriáceas, discoloradas; face abaxial com tomentos ferrugíneos; frutos imaturos verdes e maduros alaranjados"; – Andaraí, margem do Rio Paraguaçu, 341 m, 12°51'04" S, 41°18'35" W, mata ciliar, (fl), 6 Dec. 2007, **M.L. Guedes et al. 14164** [ALCB n.s., CTES n.s., NY n.s. (dig. photo)], "árvore ca. 8 m, ocasional; folhas discoloradas; botões esverdeados"; – Mun. Mucugê, Guiné, 1080 m, 12°51'55" S, 41°30'25" W, campo rupestre, (fr), 15 Feb. 1997, **T.R. Santos et al. PCD 5726** [CEPEC n.s. (dig. photo), SPF n.s. (dig. photo)], "árvore ca. 4 m, ocasional; folhas discoloradas, face adaxial verde-escuro; botões verdes; frutos imaturos verdes"; – Mucugê, Fazenda Caraíbas, 13°8'98" S, 41°24'85" W [correct seems to be 12°58' S, 41°29' W], veg. arbustiva-arbórea, (fr), 12 Dec. 2004, **M.T.S. Stradmann & P. Castilho 1119** [ALCB n.s., CEPEC n.s. (dig. photo)], "árvore 6 m; folhas membranáceas, discoloradas; frutos imaturos com tomentos ferrugíneos"; – na estrada para Guiné de Mucugê, 965 m, 12°57'50" S, 41°28'25" W, cerrado, (fl, yfr), 16 Jul. 1996, **R.M. Harley PCD 3668** [ALCB n.s., CEPEC n.s. (dig. photo), K, SPF n.s. (dig. photo)], "árvore 7 m, raro; copa ampla e derreada; flores de cálice pouco ferrugíneo e corola creme-esverdeada; frutos imaturos verdes"; – Nova Rodovia Andaraí/Mucugê, a 15–20 km ao S de Andaraí, ca. 800 m, [12°58' S, 41°20' W], mata de cipó, (fl female, yfr), 21 Dec. 1979, **S.A. Mori & F.P. Benton 13115** [CEPEC n.s. (dig. photo), K, MG n.s., NY, RB n.s. (dig. photo)], "árvore 6 m × 15 cm"; – same area: km 21, coletas no entroncamento para Itaetê,

[12°59' S, 41°21' W], capoeira; região de Mata de Cipó; solo argiloso, (fl female, fr), 20 May 1989, **L.A. Mattos Silva et al. 2801** [CEPEC n.s. (dig. photo), HUEFS], "árvore 5 m; flores ferrugíneas; frutos imaturos, cor verde"; – Mun. Piatã, estrada Piatã – Abaíra, 4 km após Piatã, 1200–1300 m, 13°9' N, 41°47' W, entre rochas, (fl, fr), 7 Jan. 1992, **R.M. Harley et al. H 50690** [BHCB n.s. (dig. photo), CEPEC n.s., F (dig. photo), HUEFS n.s., K 2×, NY n.s. (dig. photo), SP, SPF], "árvore 3 m; fruto âmbar; flores femininas com sépalas verde-claras; corola creme, margem dos lobos castanho; estigma úmido, verde"; – estrada para Catolés, ca. 200 m da rodovia, 1000 m, 13°13'53" S, 41°44'57" W, cerrado, (fr), 3 Feb. 2005, **J. Paula-Souza et al. 5396** [ESA n.s., UFRN n.s. (dig. photo), W], "arvoreta 4 m; frutos maduros amarelos"; – Mun. de Abaíra, subida para Serra do Barbado pela da casa de Zê da Mata, 1600–1800 m, 13°18' S, 41°54' W, vegetação de encosta com pequenos campos rupestre, solo arenoso com rochas, (fl), 22 Nov. 1993, **W. Ganev 2543** [SPF], "árvore ca. 10 m, muito ramificada, comum; folhas cartáceas, verde com face inferior verde-dourado; pedúnculo e pedicelo verde-claro; flores com sépalas e pétalas verde-claro; estames creme; frutos imaturos verde; em floração"; – estrada Catolés – Inúbia, Samambaia, 1100 m, 13°17' S, 41°52' W, carrasco de encosta com campo rupestre e solo arenoso; beira rio do calado, (fr), 9 Jul. 1994, **W. Ganev 3476** [HUEFS n.s., NY n.s. (dig. photo), SPF], "árvore ca. 5 m, muito ramificada; folhas coriáceas verdes discolores; frutos imaturos verdes com tons ferrugíneos; população comum"; – base da encosta da Serra da Tromba, 1150 m, 13°17' S, 41°48' W, mata ciliar, (fr), 2 Feb. 1992, **J.R. Pirani et al. 51483** [K, SPF], "árvore 6 m; folhas discolores, amarelas abaxialmente; frutos secos"; – Érico Cardoso, Tamanduá, estrada Morro do Fogo para Veredas, 1170 m, 13°19'50" S, 42°5'54" W, cerrado arbóreo aberto, (fr), 4 Jul. 2001, **H.P. Bautista et al. 3285** [CEPEC n.s. (dig. photo), HUEFS n.s., W], "árvore ca. 4 m; folhas semi-coriáceas, discolores; frutos imaturos verdes"; – ca. 18 km N de Rio de Contas, próximo ao entroncamento para Brumadinho, ca. 13°19' S, 41°56' W [correct seems to be 13°25' S, 41°47' W], cerrado, (fl male), 29 Oct. 1993, **L.P. de Queiroz & N.S. Nascimento 3689** [CEN n.s., K, HUEFS n.s., W], "árvore ca. 3.5 m, pouco ramificada, comum; folhas coriáceas; botões verde-acinzentados"; – Mun. Agua Quente, Pico das Almas, vale ao N-O da Serra do Pau Queimado, próximo da Casa Folheta, beira do Riacho Folheto, 1250–1300 m, 13°29' S, 42°00' W, normalmente entre rochas, na mata, (fl male), 11 Dec. 1988, **R.M. Harley & D.J.N. Hind 27201** [CEPEC n.s. (dig. photo), F, K, NY, RB n.s. (dig. photo), SPF, UB], "arvoreta ou árvore 10 m; tronco ± 25 cm diam.; casca profundamente fissurada longitudinalmente, marrom-claro; folhas discolores, verde-acinzentado-claro, seríceas na face inferior, verde-escuro-brilhante na face superior, dísticas e ± pendentes; cálice verde com margem estreita verde-amarelado; pétalas creme com ápices esverdeados, carnosas; estames e estiletos creme; levemente perfumada"; – Serra do Rio de Contas, 10 km N of town of Rio de Contas on road to Mato Grosso, ca. 1000 m, 13°28' S, 41°50' W, woodland along small stream, normally damp grassland, now dry, and dry cerrado/carrasco woodland on slopes of surrounding quartzitic hills, (fl), 19 Jan. 1974, **R.M. Harley et al. 15274** [CEPEC n.s. (dig. photo), FHO, K, MO, NY, P, U, US], "small tree ca. 5 m; leaves coriaceous, dark green above, grey-green beneath; flowers infrequent, dull greenish-white; stems with galls"; – Município Rio de Contas, Faz. Brumadinho, 14 km da sede do município, 1270 m, 13°31'058" S, 41°54'863" W, região de cerrado; mata ciliar, (st), 15 Jan. 1999, **D. Carvalho 1** [CEPEC n.s. (dig. photo)], "árvore, CAP 48 cm; tronco liso"; – Pico das Almas, vertente leste, estrada Faz. Brumadinho – Faz. Silvina, 1250–1400 m, 13°32' S, 41°55' W, frequente em cerrado e na margem da mata de galeria, (fl male, fr), 13 Dec. 1988, **R.M. Harley et al. 27149** [CEPEC n.s. (dig. photo), F, K, NY, RB 2× n.s. (dig. photos), SPF n.s., UB], "árvore 8 m; folhas brilhantes verde-escuro na face superior, prateadas na face inferior; cálice verde-claro; corola creme-esverdeada; anteras alvas; frutos pendentes, alaranjados; sementes com polpa fina, comestível doce"; – estrada para o Pico das Almas, [13°35' S, 41°55' W], (fl), 10 Apr. 1999, **R.C. Forzza et al. 1188** [CEPEC n.s. (dig. photo), HUEFS n.s. (dig. photo), NY, SPF n.s. (dig. photo)], "arvoreta ca. 3 m; folhas discolores; flores com cálice verde; corola creme"; – Serra do Rio de Contas, about 3 km N of the town of Rio de Contas, 980 m, 13°35' S, 41°50' W, cut-over woodland by river, (yfr), 21 Jan. 1974, **R.M. Harley et al. 15375** [CEPEC n.s. (dig. photo), FHO, K, MO, NY, P, U], "tree 2 m; leaves dark green above, sericeous grey beneath; branches complanate; fruit grey-green"; – ca. 5 km na estrada da cidade para Pico das Almas, [13°36' S, 41°50' W], cerrado e campo rupestre, (fl male), 27 Dec. 1997, **A.M. de Carvalho et al. 6368** [CEPEC n.s. (dig. photo), NY n.s. (dig. photo), W], "árvore ca. 4 m; folhas concolores com face inferior mais clara; flores amarelo-esverdeadas"; – Rodovia Livramento do Brumado / Rio de Contas, 10 km ao NW da 1a, 1000 m, 13°36' S, 41°49' W, campo rupestre, (fr), 19–20 Jul. 1979, **S.A. Mori et al. 12298** [CEPEC n.s. (dig. photo), FHO, RB n.s. (dig. photo)], "árvore 6 m × 10 cm"; – ca. 1 km S de Rio de Contas, próximo à Cachoeira dos Fragas, 1100 m, 13°35'45" S, 41°49'19" W, transição caatinga-cerrado com afloramento rochoso; mata ciliar, (fr), 16 Jul. 2001, **V.C. Souza et al. 26149** [BHCB n.s. (dig. photo), CESJ n.s., ESA n.s. (dig. photo), FUEL n.s., HUEFS n.s., MBM n.s., SPF n.s.], "árvore ca.



5 m; frutos imaturos verdes"; – Rio de Contas, ca. 3 km SW da cidade, [13°36' S, 41°48' W], campo arenoso, (fl male), 13 Dec. 1984, **A.M. Giulietti et al. CFCR 6759** [CEPEC n.s. (dig. photo), K 2×, SPF n.s., W], "árvore 3–6 m; botões verde-claros; frutos marrons; com formigas nos ramos"; – arredores de Rio de Contas, [13°36' S, 41°48' W], campo rupestre, (fr), 15 May 1983, **G. Hatschbach 46401** [CEPEC n.s. (dig. photo), F, INPA, NY], "árvore 5 m"; – Mun. de Ituaçu, 2 km SE da cidade de Ituaçu, 600 m, 13°48'50" S, 41°16'41" W, mata de galeria, (flbuds), 22 Jun. 1987, **L.P. de Queiroz et al. 1673** [CEN n.s., CEPEC n.s. (dig. photo), HUEFS, NY], "árvore ca. 2,5 m, frequente; com folhas cartáceas, discoloreres; flores em botões esverdeados; fruto carnoso castanho"; – proximidades do Riacho do Jatobá, 13°49'26" S, 42°38'58" W, savana arbórea aberta; solo arenoso, (fr), 2 Apr. 1980, **S.B. da Silva 89** [CEPEC 2× n.s. (dig. photos), RB n.s. (dig. photo)], "árvore 2,8 m; frequência fraca; 6 cm de diâmetro do fuste; 1 m de diâmetro da copa; caule marrom escuro; frutos verdes (jovens)"; – Caetitê, próximo a Lagoa Grande, 920 m, 13°57' S, 42°18' W, floresta estacional semidecídua; solo argiloso; relevo tabular, (yfr), 2 Jun. 1984, **M.M. Santos 96** [CEPEC n.s. (dig. photo), MG], "árvore 6,5 m, 28 cm dbh; diam. da copa 4 m; caule tortuoso; frequência densa"; – ca. 7 km S de Caetitê, na estrada para Brejinho das Ametistas, ca. 1000 m, ca. 14°10' S, 42°32' W, Gerais (campo cerrado com árvores esparsas), (fr), 27 Oct. 1993, **L.P. de Queiroz & N.S. Nascimento 3601** [CEN n.s., HUEFS n.s., W], "árvore de ca. 10 m, ramificada, copada; folhas coriáceas; frutos maduros carnosos, laranja"; – Serra Geral de Caititê ca. 12 km SW of Caititê [Caetitê], by the road to Morrinhos, and ca. 9 km W along this road from the junction with the Caititê – Brejinhos das Ametistas road, ca. 950 m, 14°14' S, 42°35' W, cerrado, (fr), 10 Apr. 1980, **R.M. Harley et al. 21195** [CEPEC n.s. (dig. photo), FHO, K, NY n.s. (dig. photo), U, W], "tree 7 m, with spreading branches and slightly drooping leaves in two ranks; leaves very coriaceous, dark glossy green above, silky grey-green beneath; calyx and fruit green"; – Buerarema, rodovia Buerarema – São José da Vitória (BR 101), ramal à esq., ca. 15 km de Buerarema, entrada à direita, ca. 9,5 km da BR, Fazenda Sta. Rosa, entrada ca. 500 m à dir., proprietário: José Elias, 600 m, 15°06'19" S, 39°17'20" W, (fl female), 5 Feb. 2003, **P. Fiaschi et al. 1290** [CEPEC n.s., HUEFS n.s. (dig. photo), NY n.s., SPF n.s. (dig. photo), W], "árvore ca. 15 m; folhas discoloreres; flores com cálice verde-claro e corola alva; frutos imaturos densamente pilosos"; – without further data, (fl female), 1844, **J. Blanchet 260** [G, P, W]; – (fl), 1857, **J. Blanchet s.n.** [G-DC].

Minas Gerais, Formoso, Fazenda Matinha, ca. 760 m, [ca. 15°4' S, 46°8' W], cerradão sobre areia quartzosa, (flbuds), 10 Oct. 1988, **D. Alvarenga 110** [MG], "árvore ca. 6 m; flores e botões verdes"; – Reserva de Grande Sertão Veredas, area of Rio Preto (tributary of R. Carinhonha), very near the border with Bahia, 15°08' S, 46°46' W, [correct is 15°9' S, 45°46' W], on the margin of a low, dense, gallery forest, (defl female, yfr), 6 Nov. 1989, **J.A. Ratter et al. R6368** [E, FHO, K, MG, MO, NY], "tree 4 m; flowers creamish green"; – Município de Arinos, RPPN Veredas do Pacari, estrada para Chapada Gaúcha, 750 m, 15°26'22.8" S, 45°49'15.7" W, transição de mata de galeria/cerrado; solo arenoso; relevo ondulado, (fr), 27 May 2004, **M.L. Fonseca et al. 5500** [FURB n.s. (dig. photo), IBGE n.s., RB n.s. (dig. photo)], "arvoreta heliófita, ca. 3,5 m, comum; frutos imaturos cor verde"; – Municípios de Unai, Formosa e Bonsucesso, UHE [Usina Hidroelétrica] de Queimado, [ca. 16°2' S, 47°18' W], cerrado, (fr), 7 Sep. 1992, **E.M. Teixeira & A.E. Brina s.n.** [BHCB n.s. (dig. photo)]; – Mun. de Unai, Fazenda do Chupador, [ca. 16°23' S, 46°53' W], cerrado, (flbuds), 26 Oct. 1961, **A.P. Duarte 6368** [CTES, FHO (fragm.), MG n.s., NY, RB n.s. (dig. photo), SP], "pequena árvore; frequência regular"; – Município Unai, [ca. 16°23' S, 46°53' W], mata ciliar, (fr), 7 Sep. 1992, **A.E. Brina s.n.** [RB n.s. (dig. photo)]; – Rio Pardo de Minas, Parque Estadual de Serra Nova, Trilha Gerais de Santana, 15°39'12" S, 42°44'42" W, (fr), 22 Mar. 2012, **M.J.R. Rocha et al. 491** [BHCB n.s., RB n.s. (dig. photo)], "arbusto 1 m; flores amareladas; frutos imaturos verdes"; – Mun. Porteirinha, Cachoeira do Cerrado, [15°41' S, 42°50' W], margem do rio encachoeirado; cerrado, (fr), 15 Apr. 2007, **O.S. Ribas & J.M. Silva 7665** [FURB n.s. (dig. photo)], "arvoreta 4 m"; – estrada Serranópolis-Rio Pardo, ca. 780 m, 15°58'54" S, 42°50'10" W, campo sujo de cerrado sobre solo arenoso-quartzoso com pedregulhos, (fr), 13 May 1998, **J.R. Pirani et al. 4286** [G n.s., SPF n.s. (dig. photo)], "árvore 5 m, heliófila; folhas dísticas pendentes; frutos imaturos verde-oliváceos"; – Município de Riacho dos Machados, estrada para BR 251, 809 m, 16°3'26" S, 43°2'6" W, cerrado, (fl male), 7 Nov. 2002, **F.F. Mazine et al. 497** [ESA n.s. (dig. photo), W], "árvore 5 m; flores brancas"; – Grão Mogol, Bacia do Córrego Escurona, 750–800 m, 16°35'42" S, 42°57'48" W, cerrado, (fl male), 2 Nov. 1987, **J.R. Pirani et al. CFCR 11341** [SP n.s., SPF n.s., W], "árvore 7 m, com longos ramos patentes; as folhas deflexas, verde-escuro brilhante na face superior, claras e opacas na face inferior; flores 4–5 meras; cálice verde; pétalas e estames creme-esverdeados; frutos imaturos"; – Alto do Morro Jambreiro, flanco da descida para o Córrego Escurinha, [ca. 16°34' S, 42°54' W], entre grandes rochas numa mata rala de *Pterodon*, (fr), 7 Sep. 1990, **T.R.S. Silva et al. CFCR 13487** [NY n.s. (dig. photo), SPF n.s., W], "arvoreta 4 m; folhas discoloreres, lustrosas; frutos imaturos verde-amarelados"; – arredores

Grão Mogol, [16°34' S, 42°54' W], campo rupestre, margens rio encachoeirado, (fr), 15 May 1988, **G. Hatschbach et al. 52011** [BR, C, MO, WAG], "pequena árvore de 5 m"; – margem direita do Rio Itacambiruçu, entre a Ponte para Cristália e a Fazenda Jambeiro, 16°35' S, 42°54' W, na orla do "carrasco", beira do rio, (yfr), 28 May 1988, **D.C. Zappi et al. CFCR 12023** [SPF n.s., W], "arvoreta 2,5 m; frutos imaturos verde-amarelados"; – Vale do Rio Itacambiruçu, ca. 650 m, ca. 16°36' S, 42°55' W, em solo arenoso a margem do rio; com cerrado e vegetação da margem do rio, (fl male, fl female), 12 Dec. 1989, **P.T. Sano et al. CFCR 12537** [F n.s. (dig. photo), G n.s., HUEFS n.s., K n.s., MBM n.s., RB n.s. (dig. photo), SPF n.s., UB n.s., W 2×], "arvoreta 1,5 m; folhas discolores deflexas; sépalas verde-claras; pétalas e estames creme; ovário amarelo-ouro; estigmas creme; fruto imaturo verde-claro"; – Rio Itacambiruçu, [16°40' S, 42°50' W], cerrado próximo ao rio; solo arenoso, (fr), 21 Apr. 1978, **G. Hatschbach 41252** [CTES, HBG, MBM, MICH, MO, SPF n.s., UEC n.s., Z], "arbusto 3 m"; – Grão Mogol, estrada para Virgem da Lapa, [ca. 16°40' S, 42°39' W], mata mesófila, (fr), 14 Apr. 1981, **J.R. Pirani et al. CFCR 868** [SPF n.s., W], "árvore 3 m; botões verdes; frutos verdes"; – estrada para Botumirim, entre Cristália e Mombucas, 3 km de Cristália, 800 m, [16°43' S, 42°52' W], cerrado, (st), 22 Jul. 1985, **G. Martinelli et al. 11249** [BHCB, NY, RB n.s. (dig. photo)], "árvore 6–8 m, frequente; frutos imaturos verdes"; – Cristália, Faz. Matão, [16°43' S, 42°52' W], mata ciliar, (fl male), 28 Nov. 1991, **M.G. Carvalho & S.T. Silva 796** [BHCB n.s. (dig. photo), W]; – Faz. Curral Velho (Cristália), [16°43' S, 42°52' W], cerrado, (fr), 24 Apr. 1991, **M.G. Carvalho & S.T. Silva 124** [BHCB], "árvore, muito comum no cerrado destas localidades"; – estrada Cristália-Botumirim, 841 m, 16°44'20" S, 42°53'48" W, cerrado, (fl male), 8 Jan. 200# [incomplete], **L.P. de Queiroz et al. 7557** [HUEFS n.s., W], "árvore ca. 3,5 m; ramos plagiotrópicos; folhas cartáceas com face abaxial verde-escura, brilhante, face abaxial ligeiramente prateada; flores com cálice verde-claro; corola creme com ápice dos lobos vivescentes"; – Município Brejo das Almas, Serra do Catuny [Catuni], [RB: Montes Claros, Serra do Cattoni], 900 m [16°45' S, 43°25' W], carrasco, (fl male), 10 Nov. 1938, **F. Markgraf, A.C. Brade & H.L. de Mello Barreto 3256** [BHCB n.s. (dig. photo), BHMH n.s., F, RB n.s. (dig. photo), Z] (= Mello Barreto 12225), "arbusto 2 m (pequ. árvore)"; – Bocaiúva, [17°7' S, 43°49' W], cerrado, (fr), Mar. 1993, **L.V. Costa s.n. (BHCB 27625)** [BHCB n.s. (dig. photo), W], "árvore 6 m"; – Mun. Bocaiúva, Rod. BR-367, descida para o Rio Jequitinhonha, [17°10' S, 43°45' W], campo rupestre, junto a pequeno córrego, (fl), 20 Nov. 1997, **G. Hatschbach et al. 67311** [ESA n.s. (dig. photo), LI, MBM n.s.], "arbusto 2 m; flor creme"; – Estação Engenheiro Dolabella, Sítio, ramal de Montes Claros, [17°28' S, 44°0' W], mata próximo de cerrado, (defl female), 18 Mar. 1929, **J.G. Kuhlmann 139** [RB n.s. (dig. photo), W], "árvore 3–12 m"; – same area: (fr), 18 Mar. 1929, **J.G. Kuhlmann 1937** [RB n.s. (dig. photo)]; – Várzea da Palma, [ca. 17°36' S, 44°44' W], cerrado, (fl), 1990, **E.M. Teixeira & A.E. Brina s.n.** [BHCB n.s. (dig. photo)]; – Joaquim Felício, Serra do Cabral, Morro do Cruzeiro, ca. 900 m, [ca. 17°44' S, 44°17' W], no cerrado de chapada, (fl male), 2 Sep. 1985, **T.B. Cavalcanti et al. CFCR 8280** [BHCB n.s. (dig. photo), SPF n.s., W], "árvore 5 m; botões verdes"; – Rio da Onça, [ca. 17°44' S, 44°17' W], cerrado, solo rochoso, próximo ao rio encachoeirado, (yfr), 18 Jan. 1996, **G. Hatschbach et al. 64382** [MA]; – Serra do Cabral, Fazenda da Onça, ca. 1100 m, [ca. 17°44' S, 44°17' W], no cerrado, (fr), 1 Sep. 1985, **R. Mello Silva et al. CFCR 8171** [SPF n.s., W], "árvore 3–4 m; frutos verdes"; – Serra do Cabral, hills above Joaquim Felício, along or near road to TV tower, 17°45' S, 44°12' W, among rocks; rocky cerrado and transition to campo rupestre on slope, (fr), 13 Feb. 1988, **W.W. Thomas et al. 5922** [FHO, NY, SPF n.s., W], "tree 4 m; leaves dark lustrous green above, silvery tan beneath; fruit silvery brown"; – same area: estrada para Torre de TV, 17°45' S, 44°11' W, cerrado de altitude; campo rupestre e mata, (fl male, fr), 6 Nov. 1987, **J.R. Pirani et al. CFCR 11635** [SPF n.s., W], "arvoreta; botões jovens creme-esverdeados e frutos maduros alaranjados"; – Serra do Cabral, 17°43'48,1" S, 44°10'25,0" W, campo rupestre, (fr), 13 Mar. 1999, **V.C. Souza & J.P. Souza 22122** [BHCB n.s. (dig. photo), ESA n.s. (dig. photo)], "árvore ca. 7 m; frutos castanhos"; – base da Serra do Cabral, [ca. 17°46' S, 44°10' W], cerrado, (fr), 4 Sep. 1949, **M. Magalhães 4559** [RB n.s. (dig. photo), W], "árvore de 3–5 m, muito frequente; frutos maduros"; – ca. 5 km E of Parada das Batistás, MG-1, 625 m, [17°41' S, 44°6' W], gallery and cut-over cerrado, (fr), 11 Mar. 1970, **H.S. Irwin et al. 27392** [DS, F, MG n.s., NY, P, UB, W], "tree ca. 7 m × 20 cm; fruits green"; – Diamantina, PARNA Sempre Vivas, próximo a cachoeira Inhá-Cica, 690 m, 17°47'16" S, 43°37'15" W, cerrado sentido restrito e cerrado denso, (fr), 21 Jun. 2008, **D.T. Souza et al. 501** [BHCB n.s. (dig. photo)], "árvore 6 m; frutos imaturos verdes"; – de Três Marias para João Pinheiro, km 320, [ca. 18°1' S, 45°50' W], (fr), 14 Oct. 1965, **A.P. Duarte 9258A** [MG n.s., RB n.s. (dig. photo)]; – same data: **E. Pereira & A.P. Duarte 10168** [FHO], "árvore 5–6 m"; – Rio Abaeté, [ca. 18°10' S, 45°35' W], margem do rio, (fl), Jul. 1862, **L. Netto 186** [R, RB n.s.]; – Três Marias, Estação Ecológica de Pirapitinga, [18°13' S, 45°15' W], cerrado (também presente na floresta), (fl, fr), 12 Feb. 1994, **L.V. Costa s.n. (BHCB 26227)** [BHCB n.s. (dig. photo), W], "árvore 4 m"; – Mun. Corinto, Beltrão, [18°5' S, 44°32' W], cerrado;

solo rochoso, (fr), 13 Mar. 1997, **G. Hatschbach et al. 66161** [BHCB n.s. (dig. photo), CUVC n.s., LI, MBM, ULM]; – Corinto, Fazenda do Diamante, Corrígua [córrego?], **Diamante** [not traced], 590 m, [ca. 18°15' S, 44°35' W], streamside understorey, (fr), 10 Apr. 1931, **Y. Mexia 5587** [A, BM, CAS, F 2×, G, GB, GH n.s., K, MICH, MO, NY, PH, R, RSA, S, U, UC, US, WIS n.s., Z], "arborescent 3 m high; leaves dark green above, grayish green below; grayish green fruit"; – ca. 12 km W of Corinto, 600 m, [18°22' S, 44°33' W], creek margin, cerrado, (fr), 3 Mar. 1970, **H.S. Irwin et al. 26835** [COL n.s. (dig. photo), F, LIL, MG n.s., MICH, NY, U, UB], "tree ca. 8 m × 12 cm; fruits green"; – Monjolos, estrada sobre o antigo leito da ferrovia, a 21 km da encruzilhada com a estrada nova para Rodeador e Conselheiro Mata, 550 m, [ca. 18°18' S, 44°4' W], cerrado, (fr), 24 Mar. 1997, **J.R. Pirani et al. 3835** [K n.s., MBM n.s., NY n.s. (dig. photo), SPF n.s. (dig. photo)], "árvore 7 m; folhas discoloradas; frutos imaturos verdes"; – rodovia de Diamantina para Couto de Magalhães de Minas (BR 367), 715 m, ca. 18°7'31" S, 43°31'6" W, cerrado com afloramentos rochosos, (fl male, fr), 10 Jul. 2001, **F.N. Costa et al. 313** [BHCB n.s. (dig. photo), NY n.s. (dig. photo), SPF n.s., W], "árvore ca. 4 m; folhas discoloradas; sépalas verdes; pétalas creme-esverdeadas; frutos verdes a amarelos"; – 25 km by road NE of Diamantina, ca. 1.5 km from Rio Jequití, 790–900 m, [18°5' S, 43°28' W], rocky hillside with woods or dense brush, on sandy soil and quartzite rock, (fl female, fr), 12 Apr. 1973, **W.R. Anderson et al. 8706** [FHO (+ carp.), NY, UB], "tree 5 m; flowers green; fruit green"; – Diamantina, Mineração Tejuca [not located], mata secundária, (fr), Apr. 1989, **L.V. Costa et al. 472** [BHCB n.s. (dig. photo)]; – Município de São Gonçalo do Rio Preto, próximo ao Parque Estadual do Rio Preto, ca. 730 m, 18°02'07.3" S 43°22'41.1" W, fragmento de cerrado, (fl male), 2 Jan. 2014, **M.P. Soares & A.L.S. Fachardo IFRV 475** [B, IFRV n.s., NY, W 2×], "árvore 6 m"; – São Gonçalo do Rio Preto, comunidade do Alecrim, [ca. 18°2' S, 43°22' W], cerrado, (fr), 26 Jun. 2002, **F.N. Costa et al. 461** [SPF n.s. (dig. photo)], "frutos verdes"; – Parque Estadual do Rio Preto, da casa de hóspedes (18°7'34" S, 43°21'24" W) a cascata do Ribeirão das Éguas (18°8'43" S, 43°22'10" W) e então por fim ao camping (18°6'54" S, 43°20'28" W), cerrado, (fr), 8 Apr. 2000, **J.A. Lombardi et al. 3812** [BHCB n.s. (dig. photo), W], "árvore ca. 2,5 m; folhas cartáceas, argênteas na face abaxial; frutos imaturos verde-argênteos"; – same area: área com vegetação de cerrado e formações rupestres, (fr), 11 Jun. 1999, **A. Salino 4781** [BHCB n.s. (dig. photo)], "árvore 6 m; folhas subcoriáceas; frutos imaturos verdes"; – Município Diamantina, Cafundó – Extração, [18°17' S, 43°32' W], carrasco, (fl), 19 Nov. 1937, **H.L. de M. Barreto 9857** [BHCB n.s. (dig. photo), BHM n.s., F, R], "árvore 6 m, frequência regular; flor amarela"; – Ribeirão do Inferno, 883 m, 18°24'11" S, 43°30'53" W, campo rupestre, (fl), 8 Oct. 2003, **M.G. Bovini & L.C. Giordano 2392** [CEPEC n.s. (dig. photo), RB n.s. (dig. photo)], "árvore ca. 10 m, semi-heliófila; folhas cartáceas, face adaxial, alvo-esverdeada; botões verdes"; – estrada para Milho Verde, margem esquerda, [ca. 18°28' S, 43°30' W], matinha ciliar, (fl male), 7 Dec. 1997, **P.T. Sano et al. 744** [BHCB n.s. (dig. photo), SPF n.s.], "arvoreta 1,5 m"; – Município de Gouveia, rodovia Curvelo-Diamantina, ca. 37 km de Gouveia em direção a Curvelo, 18°35'39,6" S, 43°57'50,4" W, cerrado com afloramentos rochosos, (fr), 5 Apr. 1998, **V.C. Souza et al. 20885** [BHCB n.s. (dig. photo), ESA n.s. (dig. photo), SPF n.s. (dig. photo)], "arvoreta ca. 3 m; frutos imaturos verdes"; – Município de Curvelo, estrada Curvelo – Diamantina, 600 m, [ca. 18°45' S, 44°25' W], cerrado, (fl), 14 Dec. 1979, **G. Martinelli & G. Smith 6205** [MBM n.s., RB 2× n.s. (dig. photos)], "arbusto 2,3 m, heliófila frequente; folhas na face ventral verde-escuro lúcido; face dorsal verde-alvaco; flores em botões de cor verde-alvaco; frutos maduros castanhos"; – Curvelo, [ca. 18°45' S, 44°25' W], cerrado, (fr), 3 Jun. 1999, **E.T. Neto 3045** [BHCB n.s. (dig. photo)]; – St Francisco et Curvellos, [ca. 18°45' S, 44°25' W], ad rivulus inter, (fr), Sep. 1834, **L. Riedel s.n.** [A, LE, NY, US], "arbor 20–30 ped."; – Fazenda de São Sebastião, Curvelo, [ca. 19°6' S, 44°35' W], cerrado, (flbuds), 8 Oct. 1960, **E.P. Heringer 7740** [NY 2×, RB n.s. (dig. photo), UB]; – Cordisburgo, Gruta de Maquiné, 750–800 m, [19°7' S, 44°23' W], cerrado, (fr), 18 Apr. 1998, **W.A. Teixeira s.n. (BHCB 2013)** [BHCB n.s. (dig. photo), W]; – Paraopeba, [ca. 19°16' S, 44°24' W], (fr), 4 Nov. 1961, **Rizzini 2876** [RB n.s. (dig. photo)]; – same area: cerrado, (fl male), 25 Nov. 1965, **R. Goodland 213** [F, MO, NY, US], "occasional tree to 10 m"; – Faz. da Vargem Alegre de Guilherme, [ca. 19°16' S, 44°24' W], cerrado, (flbuds, fr), 10 Oct. 1957, **E.P. Heringer 5785** [RB n.s. (dig. photo), UB, W], "árvore pequena; galhos pendentes"; – Horto Florestal de Paraopeba, [19°16' S, 44°24' W], plantado no horto, procedente dos cerrados dos arredores, (st), 9 Sep. 1964, **P. Cavalcante 1129** [MG n.s., SP], "arbusto pequeno; estéril"; – Estação Florestal, 650 m, 19°17' S, 44°24' W, cultivated, (fl male), 15 Sep. 1975, **E.P. Heringer & G. Eiten 14985** [MO, UB, US], "tree 5 m, 20 years old"; – Santa Ana [Santana] de Pirapama, [ca. 19°1' S, 44°1' W], cerrado, (st), 1969, **C.C. Urbano CESJ 3559** [ESA n.s. (dig. photo), SPF n.s. (dig. photo)]; – Santana do Pirapama, Serra do Cipó (Serra da Lapa), Distrito de São José da Cachoeira, Trilha da Captação da Fazenda Toucan Cipó, 680 m, 19°00'22" S, 43°45'20" W, campo rupestre com afloramentos e árvores esparsas, (fr), 17 Feb. 2007, **V.C. Souza et al. 32564** [BHCB n.s. (dig. photo), ESA n.s., RB n.s. (dig. photo), W], "arbusto

ca. 4 m; frutos imaturos verdes, maduros laranja"; – Mun. Santana do Riacho, Serra do Cipó, encosta oeste, estrada Santana do Riacho-Lapinha, 1090 m, 19°08'17" S, 43°41'41" W, na orla da mata ciliar, (fr), 5 Mar. 1998, **J. Pirani et al. 4212** [F n.s. (dig. photo), SPF n.s.], "árvore 10 m; fruto oliváceos-sericeos". – Cipó, au Rio das Pedras [? São Gonçalo do Rio das Pedras], (fl, fr), 26 Aug. 1892, **A.F.M. Glaziou 18849** [C 2×, NY 2× (+ carp.), P 3×, US]; – Certão Contendas in deserto verus fl. S. Francisco, (flbuds), s.d., **C.F.P. von Martius s.n.** [M 2×, K]; – in Serra Grande do rio de Jiquitinonha [Jequitinhonha], [Minas Gerais? not located], (fl), Dec. 1824, **L. Riedel 1250** [LE, NY 2×, US], "arbor 20 ped.; flores flavo-virentes"; – without data, (fl male), s.d., **P. Claussen 443** [G]; – (fl male), 1838, **P. Claussen 1062** [A, BR, C, GH, NY 2×, P 5×, S, UPS]; – (flbuds), 1838, **P. Claussen s.n.** [BM]; – (st), 1840, **P. Claussen s.n.** [P 3×]; – (fl, fr), s.d., **P. Claussen s.n.** [G 3×, K, P]; – (fl), s.d., **C. Glocker 260** [BM]; – (fl), s.d., **C.A.W. Schwacke 8143** [R]; "Comissão Geográfica e Geológica de Minas Nr. 2508". – cultivated: Jardim Botânico do Rio de Janeiro, Seção XXXVII, canteiro A, (st), s.d., **R. Gomes & R. Gomes RB 299631** and **RB 299632** [RB n.s. (dig. photos)].

***Diospyros pseudoxylopia* MILDBR.**, Notizbl. Bot. Gart. Berlin-Dahlem 10 (92): 194–195 (1927); – [fig. 4, 6–7].

**Typus:** Peru: Regenwald von Ostperu, oberer Marañon, Puerto Melendez, unterhalb des Pongo de Manseriche, 155 m, [4°27' S, 77°31' W], flutfreier Urwald, (fl male), 18 Dec. 1924, **G. Tessmann 4784** [holotype: B (destroyed, photo F 4372 in G, GH, MICH, MO, NY), lectotype (here designated): F (fragm. ex B), isotypes: G, NY (photo in NY, US), S (fig. 7)], "Baum von 50 cm Durchm., 20 m Höhe, von 12 m an viele größere und kleinere Zweige. Kelch grün; Blüte gelblich, scheint sich nur ganz wenig zu öffnen, dann abzufallen"; an additional printed label states: "Ost-Peru, Stromgebiet des Marañon von Iquitos aufwärts bis zur Santiago-Mündung am Pongo de Manseriche, ca. 77°30 West", and the protologue: "Ostperu: Puerto Melendez unterhalb des Pongo de Manseriche, flutfreier Hochwald".

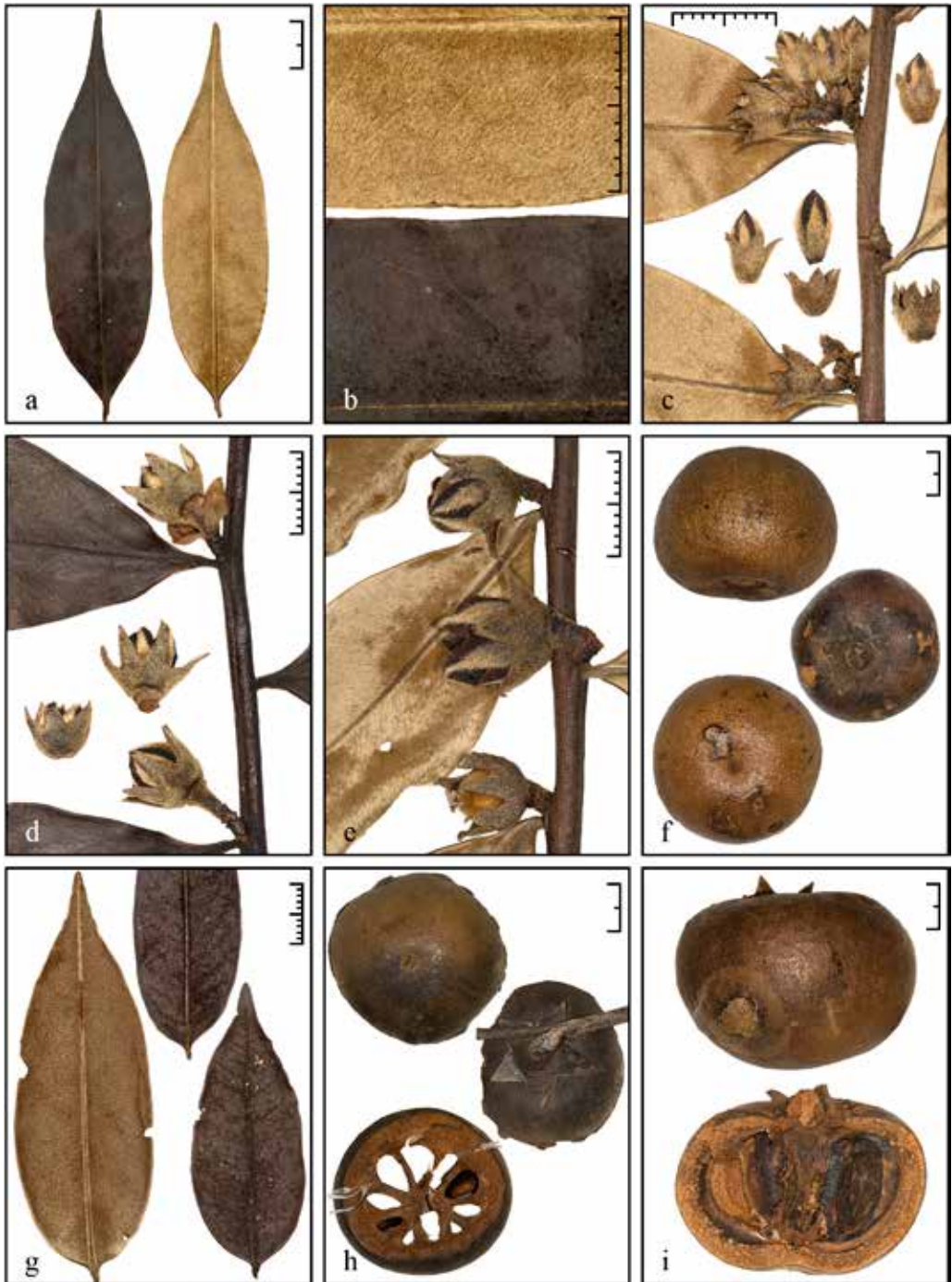
Note: The specimen in NY formerly belonged to the Bassler Herbarium (Iquitos) and was later remounted on a new sheet. As can be noted when comparing it with the two old photos in NY and US, it was broken and heavily damaged during this careless action.

Tree up to 40 m tall, dbh up to 40 cm, already flowering when 6 m tall, evergreen; wood very hard; trunk slightly fluted at base, without buttresses; bark gray to black, slightly furrowed, rough or smooth; slash yellow to dark brown; sap dark yellow (the former data according to collectors); branches expanding sylleptically and said to be horizontal; buds scale-less, 3–4 cm long, composed of involute young leaves which are densely covered with ± spreading, ± straight, long, golden-brown hairs; bark of young twigs black or brownish black, ± warty due to subepidermal stone cell granules, scattered to medium densely covered with spreading flexuose or ± curled short hairs and up to 2 mm long, ± straight hairs, ± soon glabrescent; **leaves** (fig. 8a–b) alternate, markedly brittle when dry; petioles 1–2 mm long, ca. 1 mm thick, densely hairy; leaf lamina ovate to lanceolate, sometimes slightly oblong, (2.5–) 4.5–9 cm long, 1.3–3.7 cm wide, (1.7–) 2.8–4.5 times longer than wide, widest usually below the middle, less frequently in the middle, coriaceous; adaxial leaf surface glabrous, sometimes warty due to subepidermal stone cell granules, dark green when alive, drying black when young and dark when old; abaxial leaf surface densely covered with ± straight or slightly bent, ± spreading hairs and a layer of epidermal papillae (fig. 4g), shiny (like velvet) and golden-brown when dry, light green or usually greenish-brown to ferruginous when alive; leaf apex acuminate, rarely acute; base of the lamina cuneate, tapering along the short petiole;





Fig. 7: Isotype of *Diospyros pseudoxylopia* MILDBR. [S].



leaf margins entire, slightly revolute, at the base strongly revolute especially when dry; flachnectaria on abaxial leaf surfaces densely covered with appressed, short hairs and hidden below the dense indumentum, apparently only few near base and apex (judging from the slight bosses on adaxial surface), apparently missing on many leaves; midvein on adaxial side sunken, densely covered with spreading or  $\pm$  patent hairs, glabrescent when old, on abaxial side markedly prominent, proximally medium densely covered with short, flexuose hairs and on distal parts also with longer hairs; secondary veins not or only hardly visible adaxially, hidden by the dense indumentum and hardly visible abaxially; tertiary and quaternary veins visible only on some leaves abaxially; **inflorescences**: cymes placed in the axil of adult leaves up to the distal parts of new shoots; male cymes (1–) 2–4 (–7)-flowered (fig. 8c), bearing additional bracteoles, but the proximal ones without flowers in their axil; stalks (peduncles and pedicels) 3–4 mm long and 1.5 mm wide, scattered to medium densely hairy; pedicels of the lateral flowers up to 2–4 mm long, 1 mm thick; female cymes (fig. 8d–e) 1-flowered; stalks (peduncles and pedicels) up to 6 mm long and 2 mm thick, becoming much thicker distally, covered with the same indumentum as that on male flowers; bracteoles 3.5–5.5 mm long, 2–3 mm wide in both sexes, deltoid, ovate or oblong, acute or rounded,  $\pm$  keeled and covered with short flexuose hairs abaxially, scattered hairy adaxially, caducous; **flowers** (4–) 5 (–7)-merous, similar in both sexes but the female ones slightly larger and wider; male flowers (fig. 8c) up to 12 mm long at anthesis (when petals erect and with pedicels excluded); calyx 5.5–7.5 mm long and ca. 6 mm wide, undivided in the proximal 4–4.5 mm, on the outside medium densely covered with  $\pm$  spreading or appressed,  $\pm$  flexuose hairs of different length, on the inside densely covered with longer hairs (these spreading on lobes), green when alive; calyx lobes 3–3.5 mm long, 2.5–3 (–4) mm wide (sometimes unequal on same flower), triangular, acute, with flat margins; corolla white or cream, less frequently greenish yellow or yellowish when alive, 8.5–11 mm long (when lobes erect); tube 3 mm long, medium densely covered with short hairs on the outside, glabrous inside; throat ca. 2 mm wide; corolla lobes 5 mm long and ca. 3.5 mm wide, markedly thickened,  $\pm$  acute, abaxially densely covered with long, spreading hairs along the keel, glabrous towards the margins and inside; stamens 13–30 [13: Palacios 1661; 18: Gudiño et al. 816; 23: Zak & Espinoza 5091; 30: Neill 8708], 3–5 mm long; filaments ca. 1 mm long, fused together and forming a thick ring of tissue which is adnate to the base of the corolla tube; anthers linear, 2–4 mm long, 0.3 mm wide, with a ca. 0.5 mm long, conical connective appendage distally; connectives covered with straight, long hairs (especially adaxially), glabrous distally; rudiment of the ovary tightly enclosed by the fused filaments, subglobose, 0.8–1.5 mm in diameter, densely hairy, lacking stylo-dia; **female flowers** (fig. 8d–e) 10–12 mm long at anthesis (when lobes erect and with

◀ Fig. 8: *Diospyros pseudoxylopi* (a–f): a) adaxial (on left side) and abaxial (on right side) leaf surface; – b) abaxial (on top) and adaxial (on bottom) leaf surface; – c) male inflorescences (a–c from Tessmann 4784, isotype [S]); – d) female flowers (from Neill et al. 8128 [W]); – e) female flowers (from Palacios 1708 [NY]); – f) fruits (from Cerón & Cerón 4502 [NY]); – (g–i) intermediate populations between *D. pseudoxylopi* and *D. sericea*: g) abaxial (on left side) and adaxial (on right side) leaf surfaces (from Gentry et al. 37101 [FHO]); – h) fruits (from Gentry et al. 29118 [MO]); – i) fruits (from Gentry et al. 37101 [MO on top, FHO on bottom]); – scale = 1 cm.

pedicels excluded), covered with the same indumentum as that on the male flowers; calyx 8–9 mm long and ca. 6 mm wide, undivided in the proximal 3–4 mm, green when alive; calyx lobes (3–) 5–6 mm long, (2–) 3–3.5 mm wide, triangular, acute, with flat margins; corolla 8 mm long at anthesis (when lobes erect), glabrous inside, white or cream when alive; tube ca. 1.5 mm long, ca. 3–4 mm in diameter; corolla lobes 6 mm long, 4.2 mm wide, widest below the middle, acute, thick in cross section; staminodia 10 (only one flower bud of Neill et al. 8128 dissected), 4 mm long (free part linear, 2–2.5 mm long), some solitary, some laterally paired, adnate to the corolla tube 1.5–2 mm above its base,  $\pm$  densely covered with flexuose, appressed hairs especially around the attachment point, glabrous proximally and distally; ovary usually 3-carpellate and 6-locular (one flower of Palacios 1708 with four stylodia and thus probably 4-carpellate and 8-locular), 6 mm long (including stylodia), ca. 3 mm in diameter, gradually narrowed into the stylodia, densely covered with golden-brown, spreading, straight, long hairs; stylodia 3 (–4), fused together in the proximal half, 2 mm long, densely hairy except at the apex; stigmata widened and bilobed; stalk of the **fruits** up to 8 mm long, 5.5 mm thick, enlarging distally up to 10 mm and forming a sort of disk at the base of the persistent calyx,  $\pm$  densely hairy; fruits (fig. 8f) up to 5.5 cm in diameter and 3.5 cm high, depressed globose (oblate) and with a short conical apex, densely covered with golden-brown, long hairs when young, soon glabrescent except at the apex and base, turning from green to yellow to yellow-orange when alive, gray brown or brown and with tightly adhering epidermis when dry, detaching with the calyx; fruit surface even (not bumpy) but often finely warty and rough due to minute subepidermal stone cell agglomerations; fruit wall 3–5 mm thick, hard, consisting of stone cell layers; mesocarp and pulp whitish when alive; calyx on fruits only slightly enlarging, up to 15 mm in diameter and less than 5 mm high, undivided in the proximal 3 mm, covered with remnants of the indumentum; lobes triangular, 6 mm long, 4–6 mm wide, acute, with flat margins, and with slightly reflexed apices at least when dry; seeds shaped like segments of an orange-fruit, 18–20 mm long, 11 mm wide, 6 mm thick, brown when alive, dark brown when dry; outer tangential (periclinal) wall of the exotestal cells finely striate below the surface; – (compare also the description in MACBRIDE 1959).

Notes: Specimens from Loreto in Peru and a specimen from the department Amazonas in Colombia are quite unusual. Only eight collections could be studied: four with fruits and four in the sterile condition (juvenile). Flowering material is needed for study! The color of dry leaves resembles that one of *D. sericea* but the fruits are typically those of *D. pseudoxylophia* (fig. 8g–i). The epidermal papillae on abaxial leaf surfaces are not or not well developed. One fruit of Gentry et al. 29118 is 10-locular (see fig. 8h). All these specimens are marked in yellow in the distribution map (fig. 6) and are separately listed below.

Figures: The leaf shown in RIBEIRO et al. (1999: 67) belongs to *D. cavalcantei*.

Distribution, habitat and phenology: It is known from Ecuador (Sucumbios, Orellana, Napo, and Pastaza), and from northern Peru (Amazonas, and Loreto). An uncertain specimen was collected in the department Amazonas in Colombia (see note above, and fig. 6). *D. pseudoxylophia* was indicated by error for the Parque Nacional Amacayacu in Amazonian Colombia by RUDAS LLERAS & PRIETO CRUZ (2005). The specimen in question (Pipoly 16382) represents in fact *D. capreifolia*. – *D. pseudoxylophia* was gathered in primary rainforests on well drained but also on partially inundated places on red clay



soil at elevations of 180–800 m. According to Palacios (1661), it is locally frequent in the Reserva Biológica Jatun Sacha on the Río Napo. – It was found in flower from July to February and in fruit in January, March, June, and from August to October.

**Vernacular names and use:** In Ecuador it is called "cara caspi" and "palo negro" in Orellana (Korning & Thomsen 47649), "lichihua yurac" and "pechiche" by the Quichua in Napo (Kohn 1303), "yimatoe" and "amarkabécamo" by the Huaorani in Pastaza (Gudiño et al. 816, 932), and "taúsh" in Amazonas, Perú (Asunción Leveau 80). – SÁNCHEZ SÁENZ (1997) reported for that species the names "quiboug+cu" and "usebaku" which are used by the tribe Muinane in the Middle Caquetá in Colombia. As the corresponding herbarium specimens were not available, it is, however, not clear to which species these names apply.

The Quichua (a tribe) in Napo use it as follows: "The bud is chewed with salt and the liquid strained through a cloth is placed in the eyes to treat cataracts" (Kohn 1303). According to SÁNCHEZ SÁENZ (1997), the Muinane use it for bows, tool handles, for construction and as fire wood. The identification of the corresponding vouchers needs, however, to be confirmed.

Specimens examined: **Ecuador**, **Sucumbios**, Reserva de Producción Faunística Cuyabeno, 1 km N of Laguna Grande, 265 m, 00°00' S, 76°12' W, tropical rain forest on tierra firme, (st), 1 Apr. 1988–1 Apr. 1990, **R. Valencia et al. 68103** [AAU, QCA n.s. (dig. photo)], "tree 8 m high, 7.5 cm dbh"; – same locality: (st), 9 May 1989, **R. Valencia et al. 68307** [AAU], "8 m high, 9 cm dbh". – **Orellana**, Estación Experimental INIAP-Napo, Payamino, 5 km al N Coca, Reserva Florística "El Chunchu", 250 m, 0°25' S, 77°00' W, bosque húmedo tropical, primario, (st), 10–11 Sep. 1986, **W. Palacios & D. Neill 1230** [MO n.s., U], "árbol 25 m; envés de las hojas café verdoso"; – Parque Nacional Yasuni, 260–350 m, 0°31–32' S, 76°23' W, rain forest on well drained hilly ground; soil temperature 24–25° C, (st), 30 May–21 Jun. 1982, **SEF 8577** [AAU, QCA n.s. (dig. photo)], "dbh 33.5 cm; no buttresses, slightly fluted at base; bark smooth, with large climbing aroids, epiphytic mosses"; – same data: **SEF 9201** [AAU, QCA n.s. (dig. photo)], "dbh 27.2 cm; no buttresses; bark slightly furrowed; slash hard, yellowish-brown"; – NW corner of the Parque Nacional Yasuni, 355–365 m, 0°33' S, 76°22' W, primary terra firme forest on permanent study plot S of SEF point 51, on the highest plateau in the area, (st), 1–15 Feb. 1986, **J. Korning & K. Thomsen 47649** [AAU, C, QCA n.s. (dig. photo), QCNE n.s. (dig. photo)], "tree 16.5 m × 12.0 cm; slash yellow; bark dark"; – same parque: Km 32,4 carretera Pompeya-Iro, parcela 12, 250–300 m, 0°36,008' S, 76°27,358' W, plano inundable, bosque primario, (st), 5 Oct. 1997, **M.J. Macía et al. 1696** [MA n.s. (dig. photo), MO n.s., QCA n.s.], "árbol 4,2 m; DAP 2,8 cm"; – same data except: parcela 10, 0°36,296' S, 76°27,476' W, (st), 20 Mar. 1998, **2887** (MA n.s. (dig. photo), MO n.s., QCA n.s.), "árbol 10 m; DAP 9,7 cm"; – 10 km E [W?] of Pontificia Universidad Católica del Ecuador Scientific Station, along road, 240–310 m, 0°40.956' S, 76°28.075' W, moist terra firme forest, (fr), 27 Jun. 1995, **P. Acevedo-Rodríguez & J.A. Cedeño 7545** [COL n.s. (dig. photo), GH n.s., MO, NY (+ carp.), QCA n.s. (dig. photo), QCNE n.s. (dig. photo), U], "tree 18–20 m; bark moderately rough, blackish; fruits globose, turning from green to yellow-orange; mesocarp and pulp whitish; seed brown"; – Río Tiputini, al noroeste de la confluencia con el R. Tivacuno, 6 km al este de la carretera Maxus, km 44, desvío hacia el pozo Tivacuno, 200–300 m, 00°59' S, 77°45' W [correct is ca. 0°40' S, 76°24' W], tierra firme; lomas de 30–50 m, de arcilla rojiza, (fr), 24 Mar. 1999, **K. Romoleroux et al. 3223** [F, QCA n.s.], "árbol de 30 m; frutos y hojas caídas"; – ECY [Estación Científica Yasuní], por el Sendero Torre, 261 m, 00°40'58" S, 76°23'07" W, bosque húmedo tropical; área de tierra firme colinada; especies representativas: *Iryanthera hostmannii*, *Oenocarpus bataua*, *Iriartea deltoidea*, *Simarouba amara*, (fl male), 24 Oct. 2006, **A.J. Pérez et al. 3058** [QCA n.s. (dig. photo), W], "árbol 15 m; flores en botones cremas"; – pozo petrolero Amo 2, 230 m, 00°57' S, 76°13' W, bosque muy húmedo tropical, bosque primario; suelo rojo, arcilloso, (fr), 9–13 Jan. 1988, **W. Palacios 2379** [AAU, FHO, MO n.s., NY, QCNE n.s. (dig. photo)], "árbol 25 m; frutos verdes" [flowers galled developing agglomerations of small leaves]; – Km 105,8 carretera Pompeya-Iro, parcela 17, 250–300 m, 0°58,423' S, 76°13,281' W, tierra firme, bosque primario, (fl female), 7 Nov. 1997, **M.J. Macía et al. 2014** [MA n.s. (dig. photo), MO n.s., QCA n.s. (dig. photo), QCNE n.s. (dig. photo)], "árbol 40 m; DAP 33,3 cm"; – same data: (st), 8 Nov. 1997, **2060** [MA n.s. (dig. photo), MO n.s.,

QCA n.s.), "árbol 6 m; DAP 4,1 cm"; – alrededores del Helipuerto de Amo Sur, 230 m, 00°52' S, 76°05' W, bosque húmedo tropical, inundado; suelo pantanoso, (fl male), 16–19 Jan. 1988, **C.E. Cerón M. 3433** [AAU n.s., BM n.s., FHO, K, MEXU n.s., MO, NY n.s., QCNE n.s. (dig. photo), W], "árbol 20 m; envés color manteca-canela; cáliz de 5 sépalos, color verde-agua; corola color crema"; – línea sísmica 10, sub-base de CGG, bloque 31, 230 m, 0°55'25" S, 75°56'30" W, bosque húmedo tropical; zona de tierra firme, (fl male), 1 Dec. 1997, **J. Jaramillo et al. 19915** [QCA n.s. (dig. photo)], "arbusto de 6 m; flores blancas"; – Río Yasuní y lagunas de Jatun-Cocha, 200 m, 00°58' S, 75°41' W [ca. 0°59' S, 75°27' W], bosque parcialmente inundado y varzea, bosque húmedo tropical, (flbuds male), 29 Sep. 1988, **C.E. Cerón & N. Gallo 5166** [AAU, MO n.s., NY, QCNE n.s. (dig. photo)], "árbol de 12 m; ramas caídas; flores axilares, verde agua". – Napo, Cantón Tena, Río Blanco comm. headwaters of Río Huambuno, 6 km NNW of Ahuano, 440 m, 1°00' S, 77°44' W [correct seems to be 1°0' S, 77°33' W], tropical wet forest life zone; primary forest, (st), 18 Jul.–9 Aug. 1990, **E. Kohn 1303** [QCNE n.s. (dig. photo)], "sapling 1 m tall"; – Reserva Biológica Jatun Sacha, 8 km de Puerto de Misahualli, margen derecha del Río Napo, 450 m, 1°4' S, 77°37' W, bosque húmedo tropical, primario, (fl male), 3 Jul. 1987, **W. Palacios 1661** [AAU n.s., BM n.s., FHO, K, MO, QCNE n.s. (dig. photo)], "árbol 25 m; frecuente en este sitio; envés de las hojas café; flores blancas"; – same data: (fl female, fr), **1708** [AAU, FHO, GB, K (+ carp.), MO n.s., NY, QCA n.s. (dig. photo), QCNE n.s. (dig. photo)], "árbol 8 m; flores cremas; cáliz verde; frutos amarillos"; – same area: cerca al riachuelo Chinguipino, 400 m, 1°04' S, 77°36' W, bosque muy húmedo tropical, primario, (st), 20 Jan. 1990, **C.E. Cerón et al. 8322** [F n.s., MO n.s. (dig. photo)], "árbol 18 m; flores [galls!] axilares café, brillantes"; – same area: 450 m, bosque muy húmedo tropical, primario y potrero, (fr), 24 Aug. 1988, **C.E. Cerón & M. Cerón 4502** [AAU, GB, MO n.s., NY (+ carp.), QCNE n.s. (dig. photo)], "árbol de 15 m; envés pubescente color verde canela; frutos amarillos, 5 cm de diámetro, redondo aplanados"; – same area: non-alluvial; red clay soil, (st), 28 Dec. 1987, **A.H. Gentry et al. 59890** [MO n.s., QCNE n.s. (dig. photo)], "tree 6 cm dbh"; – same data: (fl female, fr), 30 Dec. 1987, **60221** [K, MO, NY, QCNE n.s. (dig. photo)], "tree 23 cm dbh"; – same area: primary forest on low hills; red clay oxisol, (fl male), 7 Jan. 1989, **D. Neill 8708** [FHO, K, MO, QCNE n.s. (dig. photo)], "tree 30 m, canopy of forest; branches horizontal; leaves sericeous beneath with whitish hairs; corolla cream"; – same area: (fl female, fr), 28 Dec. 1987, **D. Neill et al. 8128** [AAU n.s., BM n.s., FHO, K, MO, NY n.s., W], "árbol 35 m, 21,5 cm DAP; hojas seríceas en el envés; corola blanca; cáliz verde; frutos verdes; corteza superficialmente fisurada; madera muy dura"; – same area: (fr), 2 Oct. 1986, **W. Palacios 1341** [FHO (+ carp.), K (+ carp.), MO n.s., NY, QAME n.s., QCA 3× n.s. (dig. photos), QCNE n.s. (dig. photo)], "árbol 12 m; envés de las hojas ferrugineo; frutos amarillos muy duros". – Pastaza, Canton Puyo, Mun. Puyo, Los Vencedores, Estación Experimental E.S.P.O.C.H., 800–1000 m, 1°30' S, 77°56' W, submontane forest; cleared slope with standing, living trees, (fl male), 1 Aug. 1995, **D.D. Soejarto et al. 9260** [F n.s. (dig. photo), QCNE n.s. (dig. photo)], "tree 25 m, 40 cm dbh; bark gray to black, rough; slash dark brown; sap dark yellow; flowers greenish yellow"; – Cantón Arajuno, campamentos temporales 9, 22 y 25, línea propuesta del oleoducto Villano-CPF por ARCO, km 25 noroeste del pozo Villano 2, 700 m, 1°27' S, 77°36' W, bosque primario pluvial premontano; suelo colinado, (fr), 3–14 Sep. 1998, **E. Freire & L. Santi 3309** [K n.s., MO n.s., QCNE n.s. (dig. photo)], "árbol de 20 m; envés de las hojas verde-claro; frutos amarillos"; – Pastaza Canton, Pozo petrolero "Moretecocha" de ARCO, 75 km E Puyo, 580 m, 1°34' S, 77°25' W, bosque húmedo tropical, primario, (fl male), 28–30 Sep. 1990, **E. Gudiño et al. 816** [AAU n.s., BM 2×, GB n.s., MEXU n.s., MO, NY n.s., QCA 2× n.s. (dig. photos), QCNE n.s. (dig. photo)], "árbol mediano, 25 m, 23 cm DAP; fuste recto; hojas coriáceas quebradizas; haz muy oscuro, envés parduzco; botones florales verdes"; – same data: (fl male), 4–21 Oct. 1990, **932** [AAU n.s., BM n.s., COL n.s. (dig. photo), K, MO, QCNE 2× n.s. (dig. photos)], "árbol mediano, 20 m, 18–20 cm DAP; fuste recto; hojas coriáceas quebradizas; haz oscuro, envés ferrugineo-verdoso; botones florales verdes"; – pozo petrolero "Ramirez", 20 km al S de la población de Curaray, 300 m, 1°32' S, 76°51' W, bosque húmedo tropical, primario, (fl male), 21–28 Feb. 1990, **C. Zak & S. Espinoza 5091** [FHO, MO, QCNE 2× n.s. (dig. photos)], "árbol de 15 a 18 m; flores con cáliz verde; corola crema".

**Perú, Amazonas**, Río Santiago, 2 km banda este del Río Santiago de la comunidad de la Poza [=? La Puza], trocha de mitallar, 180 m, [ca. 4°2' S, 77°45' W], monte virgen, (fr), 14 Aug. 1979, **J. Asunción Leveau 80** [MO], "árbol 25 m; fruta G-8". – Loreto, Alto Amazonas Province, Dtto. Manseriche, Pongo de Manseriche, 650 m, 4°26'01" S, 77°34'18" W, bosque primario, (fl male), 25 Nov. 1997, **R. Vásquez & E. Chávez 25002** [F n.s. (dig. photo), MO, W], "árbol 25 m; flores blancas".

The following specimens are unusual and are marked in yellow in the distribution map (fig. 6; see the note above):

**Colombia**, Amazonas, corregimiento de Tarapacá, cabeceras del río Porvenir pequeño y límite de la divisoria de aguas del río Porvenir grande, cabeceras de Caño Pájaro, 139 m, 2°22'17.9" S, 70°12'10.2" W, áreas de superficies disectadas y fuertemente disectadas; suelos arcillosos, (fr), 30 Jun. 2006, **R. López et al. 11014** [COAH 2× n.s. (dig. photos)], "arbusto 10 m; hojas discolor; frutos inmaduros verdes".

**Perú**, Loreto, tree plot at the Maronal campsite of Field Museum rapid inventory #12, on low rolling hills in the upper watershed of the Ampiyacu River, roughly 3 km E of the Quebrada Supay, 150 m, 2°57'56.3" S, 72°7'40.3" W, terra firme forest; well-drained soils, 32% sand and 22% clay, (st), 10–14 Aug. 2003, **N. Pitman et al. 9697** [AMAZ n.s. (dig. photos)], "tree 10.8 cm dbh" (cited in PITMAN et al. 2004); – Prov. Maynas, Sucusari, 120–140 m, 3°15' S, 72°54' W, bosque primario, (st), 23 Jan. 1992, **C. Grández 3473** [MO], "arbusto 4 m"; – Yanamono, Explorama Tourist Camp, halfway between Indiana and mouth of Río Napo, 130 m, 3°28' S, 72°50' W, [correct is 3°27' S, 72°51' W], non-inundated upland forest, (fr), 18 Feb. 1988, **A.H. Gentry et al. 61650** [MO, P n.s. (dig. photo)], "tree 25 m; fruits green"; – same area: upland forest on lateritic soil, (fr), 24 Jun. 1982, **A.H. Gentry et al. 37101** [AMAZ n.s., FHO (+ carp.), MO], "tree 30 m; fruits green" [the latter smooth, 5.4 cm wide, 3.5 cm high; fruit wall 5 mm thick; a photo of a living twig is available via Tropicos]; – same area: non-inundated forest on lateritic soil, (fr), 27 Jul. 1980, **A.H. Gentry et al. 29118** [AMAZ n.s., FHO, MO], "tree 30 m; fruits orange" [fruits large, depressed globose, smooth, 10-locular; a photo of a living twig is available via Tropicos]; – Explorama Inn, ca. 2 km W of Indiana on Río Amazonas, 130 m, 3°30' S, 73°02' W, [correct is 3°30' S, 73°4' W], well-drained forest on good soil, (st), 14 Feb. 1987, **A.H. Gentry et al. 55851** [MO], "tree 4 cm dbh; black bark ring"; – Iquitos, Allpahuayo, Estación Experimental del Instituto de Investigaciones de la Amazonia Peruana (IIAP), Quebrada Brashico, 150–180 m, 4°10' S, 73°30' W, [correct seems to be 3°53' S, 73°25' W], bosque inundable solo con agua de escorrentía, (st), 24 May 1991, **R. Vásquez & N. Jaramillo 16432** [MO], "árbol 5 m × 5.1 cm DAP".

### Key for *D. sericea* and *D. pseudoxylopia*

- 1 Abaxial leaf surface gray or brownish, less frequently ferruginous or golden-brown, and usually not markedly shiny when dry; bracteoles 1.8–2.5 (–4) mm long, 0.8–1.5 (–3) mm wide; young twigs densely covered with a persistent indumentum (bark well visible only on old twigs); petals in cross section not markedly thickened; stamens 47–82; fruits up to 3.5 cm in diameter and 2.5–4.3 cm high, variously formed (fig. 3g–i) but not depressed globose (oblate); fruit surface markedly bumpy, covered with a ± persistent indumentum; fruit wall 2 mm thick; – northern and central South America except Ecuador and Peru ..... *D. sericea*
- 1\* Abaxial leaf surface markedly golden-brown and shiny (like velvet) when dry, bracteoles 3.5–5.5 mm long, 2–3 mm wide; young twigs scattered to medium densely covered with hairs, soon glabrescent on older parts (bark soon well visible); petals in cross section markedly thickened; stamens 13–30; fruits up to 5.5 cm in diameter and 3.5 cm high, depressed globose (oblate); fruit surface even, soon glabrescent except at base and apex, often finely warty and rough due to minute subepidermal stone cell agglomerations; wall of the larger fruits 5 mm thick; – Ecuador and northern Peru ..... *D. pseudoxylopia*

### Acknowledgements

I wish to thank the following persons for sending specimens, digital photos and for providing information: João Aguiar Nogueira Batista (BHCB), Paul E. Berry (WIS), Chequita R. Bhikhi (BBS), Álvaro J. Pérez Castañeda (QCA), Antonio Sergio F. Castro (ESA), Ezequiel Chávez (USZ), Heleno Dias Ferreira (UFG), Rafaela Camprostrini Forzza (RB), Omaira Hokche (VEN), Marion J. Jansen-Jacobs (U), Georgy A. Lazkov (LE), Julio A. Lombardi (HRCB), Rosana C. Lopes (RFA), Luis Marcano-Berti (MER), Washington Marcondes-Ferreira (UEC), Beatriz Schwantes Marimon (NX), Felipe A. Cardona Naranjo (HUA), Heimo Rainer (W, WU), Paulo Takeo Sano (SPF), Matheus Fortes Santos (Brazil), Philip A. Silverstone-Sopkin (CUVC), Silvana Vieira (ESA). – Walter Till (WU) is acknowledged for critically reading the manuscript,

Heimo Rainer (W, WU) for allowing me to use his application for ArcMap 10 for creating the distribution map, Dan Topa (Vienna) for the SEM-photos, Wolfgang Reichmann (Vienna) for digitalizing some photographic slides and for preparing figure 6 as well as for improving one SEM-photo, Ines M. Ternbach (Vienna) for correcting the English, and our librarians Andrea Kourgli and Gabriele Palfinger (both Vienna) for procuring rare literature. Last but not least, I am grateful to the directors and curators of approximately 100 herbaria who kindly made their herbarium material available or sent photos.

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Jahr/Year: 2017

Band/Volume: [119B](#)

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Artikel/Article: [A revision of neotropical Diospyros \(Ebenaceae\): part 10 183-226](#)