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A revision of neotropical *Diospyros* (Ebenaceae): part 14

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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. *Diospyros miroma* B.Walln. is described as a new species from southeastern Bahia in Brazil. The Brazilian endemics *D. ketun* B.Walln. from Minas Gerais and the state of Rio de Janeiro, *D. mexiae* Standl. from eastern Minas Gerais, and *D. amabi* B.Walln. from southeastern Bahia and Espirito Santo are here described in detail. Figures, distribution maps, vernacular names, information on habitat, lists of specimens, and an identification key are included.

Key words: Ebenaceae, *Diospyros amabi*, *ketun*, *mexiae*, *miroma*, revision, taxonomy, distribution map, Flora of South America.

Zusammenfassung

Im Rahmen einer Revision der neuweltlichen Ebenaceae für "Flora Neotropica" und einigen Regionalfloren konnten Herbarbelege aus ca. 100 Herbarien studiert werden. *Diospyros miroma* B.Walln. wird als neue Art aus dem südöstlichen Bahia in Brasilien beschrieben. Die brasilianischen Endemiten *D. ketun* B.Walln. aus Minas Gerais und dem Staate Rio de Janeiro, *D. mexiae* Standl. aus dem östlichen Minas Gerais und *D. amabi* B.Walln. aus dem südöstlichen Bahia und Espirito Santo werden eingehend beschrieben. Abbildungen, Verbreitungskarten, Volksnamen, Angaben zum Habitat, Listen der gesehenen Herbarbelege, sowie ein Bestimmungsschlüssel werden präsentiert.

Introduction

In the Americas, the Ebenaceae are represented by the genera *Diospyros* with about 100–150 species, and *Lissocarpa* with eight species. In the course of the ongoing revision of the Ebenaceae for "Flora Neotropica", the following contributions have already been published: Wallnöfer 1999, 2000, 2001a, 2001b, 2003, 2004a, 2004b, 2004c, 2005, 2007–2020, 2008a, 2008b, 2010a, 2010b, 2010c, 2012, 2015a, 2015b, Wallnöfer & Mori 2002, Estrada & Wallnöfer 2007 and Wallnöfer & Chávez 2014 (see also Duangjai et al. 2006, 2009).

In the course of the ongoing revision the species are published in single installments. Here special focus is brought on the species occurring in Southeastern Brazil; thereafter the Amazonian species will follow. Due to the size and complexity of the genus *Diospyros*, any discussion on relationship, infrageneric arrangement and biogeography in the Neotropics would be premature and thus remains to be done after completion of the revision.

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Terminology: The terminology which is used in the descriptions is in accordance with Stearn (1992). The term "patent" means spreading at an angle of 90° (this definition is also given by Beentje et al. 2003, and Beentje & Williamson 2010). As in part 1–13 of the current revision, the term "spreading" is used for all intermediate positions of the hairs between appressed and patent. Where necessary, any further specifications are added, e. g. "slightly spreading". An indumentum is called "medium dense" when the surface (epidermis) of the organ in question is still visible between the crowded hairs; it is defined as "dense" when the surface is not visible.

Note: Additions are given in brackets; coordinates given in brackets were determined during this revision; acronyms of herbaria according to Thiers (2020); 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.

Key for the species presented in part 14

1	Abaxial leaf surface densely covered with epidermal papillae (Fig. 10b, 11) ... *D. miroma*
1*	Abaxial leaf surface without epidermal papillae 2
2	Mature leaves glabrous, coriaceous ..... *D. amabi*
2*	Mature leaves (except the old ones) at least partially with indumentum, usually firmly chartaceous 3
3	Hairs on the abaxial surface of leaves up to 1 mm long, simple, ± patent, flexuose to curled (Fig. 5a–b, 8a) ..... *D. ketun*
3*	Hairs on the abaxial surface of leaves less than 200 µm long, usually 2-armed, ± appressed, irregularly bloated and ± crooked (Fig. 7b, 8c–f) ..... *D. mexiae*

***Diospyros amabi* B.Walln.**, Ann. Naturhist. Mus. Wien, B, 106: 239–240 (2005); – [Fig. 1–3].

Typus: Brasil, Bahia, Município de Una, Reserva Biológica do Mico-Leão (IBAMA), entrada no km 46 da rod. BA-001 Ilhéus/Una, 15°9' S, 39°5' W, região da mata higrófila sul Baiana, (flbuds), 12 Feb. 1997, **A.M. de Carvalho, A.M. Amorim, S.C. Sant'Ana, J.G. Jardim, P.B. Monteiro & E.R. de Castro 6316** [holotype: W (Fig. 1, 2a), isotypes: CEPEC n.s. (dig. photo), K 2× n.s. (dig. photos), NY n.s. (dig. photo), SPF 2× n.s. (dig. photos)], "árvore 12 m; folhas discolores com face inferior mais clara; botões florais verdes"; cited in Amorim et al. (2008) as "*D. tetrandra*".

Tree up to 18 m tall, dbh up to ca. 12 cm, already flowering when 5 m tall, evergreen; juvenile twigs and leaves often covered at least partially by felted efflorescences of fine, white crystal needles (probably consisting of naphthoquinones and their derivatives) when dry; twig apices and leaf primordia usually densely covered with simple, appressed, straight, brown or ferruginous, short hairs; twigs subterete, glabrous; – **leaves:** alternate; petioles 10–20 mm long, 1.8–3 mm thick, canaliculate adaxially, glabrous when

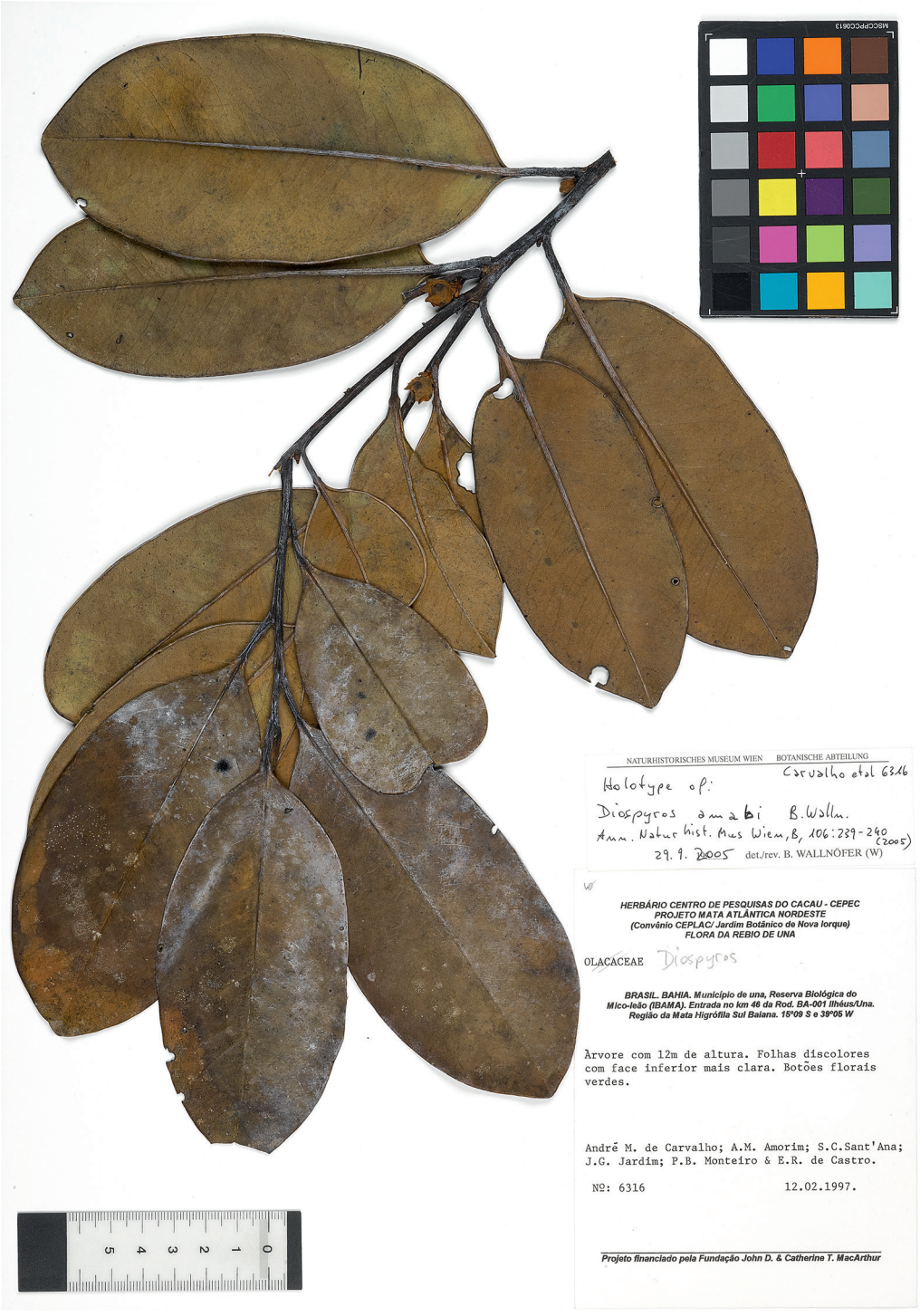

Fig. 1: Holotype of *Diospyros amabi* B.WALLN. [W] (see also Fig. 2a).

mature; young, small leaves of Mori & Benton 13254 (NY) with scattered, ± straight, appressed, short hairs abaxially; leaf lamina (5–) 10–18.7 cm long, (2–) 4–8 cm wide, (1.6–) 2–2.7 times as long as wide, widest at or slightly above the middle, coriaceous, dull or slightly shiny on both sides when dry, adaxially dull dark green and abaxially light green or olive-colored when alive, glabrous on both sides; flachnectaria on abaxial leaf surfaces blackish, circular or elliptic, scattered near the base of the lamina, rarely more distally (e. g., on Folli 6429); leaf apex obtuse, rounded or abruptly acute, less frequently gradually tapering (Folli 6429) or emarginate; base of the lamina cuneate; leaf margins entire, revolute when alive and when dry, slightly thickened especially distally, glabrous; midvein on adaxial side deeply sunken proximally, only slightly impressed distally, on abaxial side markedly prominent, hairy on small, young leaves (Mori & Benton 13254), glabrous when mature; secondary veins 12–15 per side, ± prominent on both sides; veins of third order slightly prominent or ± flat on both sides; higher order veins usually not, or only hardly visible; – male **inflorescences** and male flowers not available; – **female flowers:** 4-merous, not available at anthesis; buds up to 13 mm long, green or olive-colored when alive, solitary in the axil of old leaves, or in the axil of bracts on short, only scarcely developed shoots (Mori & Benton 13254 in NY, Fig. 2b); pedicels up to 2 mm long, and up to 2 mm thick distally; pedicels, bracts and bracteoles densely covered with appressed or spreading, straight or flexuose, brown or ferruginous hairs; bracts broadly rounded, 1–2 mm long, 2 mm wide; bracteoles ovate, 3–3.5 mm long, 2.5 mm wide, obtuse distally; calyx 10 mm long, undivided in the proximal 6–7 mm, on the outside (abaxially) medium densely to densely hairy at the base and more scattered hairy distally (indumentum as on pedicels; hairs 0.1–0.4 mm long), on the inside (adaxially) at the base and along the median line densely covered with appressed, straight, ± parallel orientated, long hairs, distally and in the expanded sinuses between the calyx lobes medium densely covered with ± patent, flexuose to curled, ± ferruginous hairs; calyx lobes broadly triangular, 3–4 mm long and 5–6 mm wide; sinuses between the calyx lobes moderately expanded and only slightly protruding to the outside; corolla in bud ca. 6 mm long, glabrous adaxially; corolla tube ca. 2 mm long and 4 mm wide when dry, on the outside covered with the same sort of indumentum as that on the abaxial side of the calyx, but ± glabrous proximally; corolla lobes contorted, glabrous abaxially, except along the median line; staminodia 4 (only one flower bud of Mori & Benton 13254 dissected), their filaments adnate to the corolla tube over their whole length; antherodes (aborted anthers) flat, 1 mm long, free, attached to the corolla tube at 1 mm above its base; apical connective appendage narrowly conical, 0.5 mm long; connectives glabrous or with few, short hairs; ovary 3 mm wide and 2 mm high, densely covered with appressed, straight hairs, 8-locular; stylodia 4, ca. 1 mm long, glabrous distally; – **fruits:** stalk up to 4 mm long; fruits solitary, ± globose or slightly oblate, up to 3.5 cm long and 4 cm wide when dry, with scattered, appressed, ± straight hairs of different length around the apex and base, glabrescent when older, green or olive when immature and alive, brown to blackish when dry; fruit wall hard, ca. 2 mm thick, with tightly adhering epidermis; calyx on fruits ca. 5 mm high and ca. 30 mm wide, undivided in the proximal ca. 11 mm, lacking longitudinal ridges running down from the sinuses abaxially, ± glabrescent on the outside, densely covered with indument on the inside; calyx lobes broadly rounded and abruptly tapering into the acute apex, ca. 9 mm long, 15 mm wide, flat; sinuses between the calyx lobes flat on older fruits (e. g., Folli 6429, Fig. 2c), or expanded and protruding outwards on younger fruits (Kollmann et al. 3873); seeds not available.

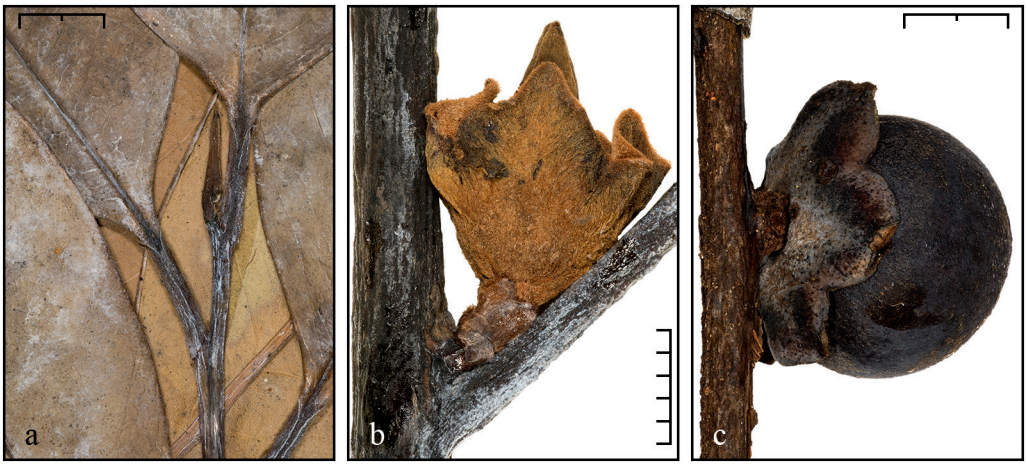

Fig. 2: *Diospyros amabi*: a: leaves (from Carvalho et al. 6316, holotype [W]); – b: female flower bud (from Mori & Benton 13254 [NY]); – c: fruit (from Folli 6429 [W]); – scale = 1 cm, except in b: 0.5 cm.

Note: The two collections from Espirito Santo (Kollmann et al. 3873, Demuner et al. 1228) were available for study only via digital photos, and were assigned here provisionally to *D. amabi*. They need thus direct reexamination especially with respect to the presence/absence of any indumentum. Demuner et al. 1228 displays quite small leaves.

Distribution and habitat: The species is only known from southeastern Bahia and seems to occur also in Espirito Santo in eastern Brazil (Fig. 3). In Bahia it was collected at low elevations on light brown, sandy clay or on sandy soil in the "southern Bahian wet forest" (mata higrófila sul Baiana), in the "mata de tabuleiro" and in the restinga near the coast. In the literature it was reported to occur in the "submontane tropical moist forest" (AMORIM et al. 2008 under "*D tetrandra*"), the "floresta ombrófila densa/aberta" (SANTOS & SANO 2009a), and in the "Mata Atlântica, incluindo áreas de restinga" (SANTOS & SANO 2009b). In Espirito Santo it was collected in a secondary forest (Demuner et al. 1228), and around a radar station at 1030 m elevation (Kollmann et al. 3873).

Phenology: In Bahia it was collected with flowers in February and December, and in fruit in July, September and November. The two collections from Espirito Santo were collected in fruit in June and July.

Vernacular names: In Bahia it is called "caquí baiano" (Folli 6429).

Specimens examined: **Brasil**, Bahia, Município de Una, Reserva Biológica do Mico-Leão (IBAMA), entrada no km 46 da rod. BA-001 Ilhéus/Una, Picada da Bandeira, 15°9' S, 39°5' W, região da mata higrófila sul Baiana, (fr), 25 Jul. 1996, **S.C. de Sant'Ana et al. 602** [paratypes: CEPEC n.s. (dig. photo), NY], "árvore ca. 12 m; folhas verdes, discolores; frutos imaturos esverdeado"; – same reserva: Picada do Marimbondo, 15°10' S, 39°4' W, southern Bahian wet forest; light brown sandy clay, (yfr), 24 Nov. 1996, **W.W. Thomas et al. 11388** [paratypes: CEPEC n.s. (dig. photo), NY], "tree 8 m; leaves stiff-coriaceous, revolute, dull dark green above, olive beneath; fruit olive"; both cited as "*D. tetrandra*"in AMORIM et al. (2008); – estrada Olivença/Una, a 23 km ao S de Olivença, próximo ao nível do mar, [15°9' S, 39°1' W], restinga, (flbuds female, fr: CEPEC), 31 Dec. 1979, **S.A. Mori & F.P. Benton 13254** [paratypes: CEPEC n.s. (dig. photo), K, MG n.s. (dig. photo), NY, RB n.s. (dig. photo)], "árvore 5 m × 8 cm; fruto verde"; – Una,

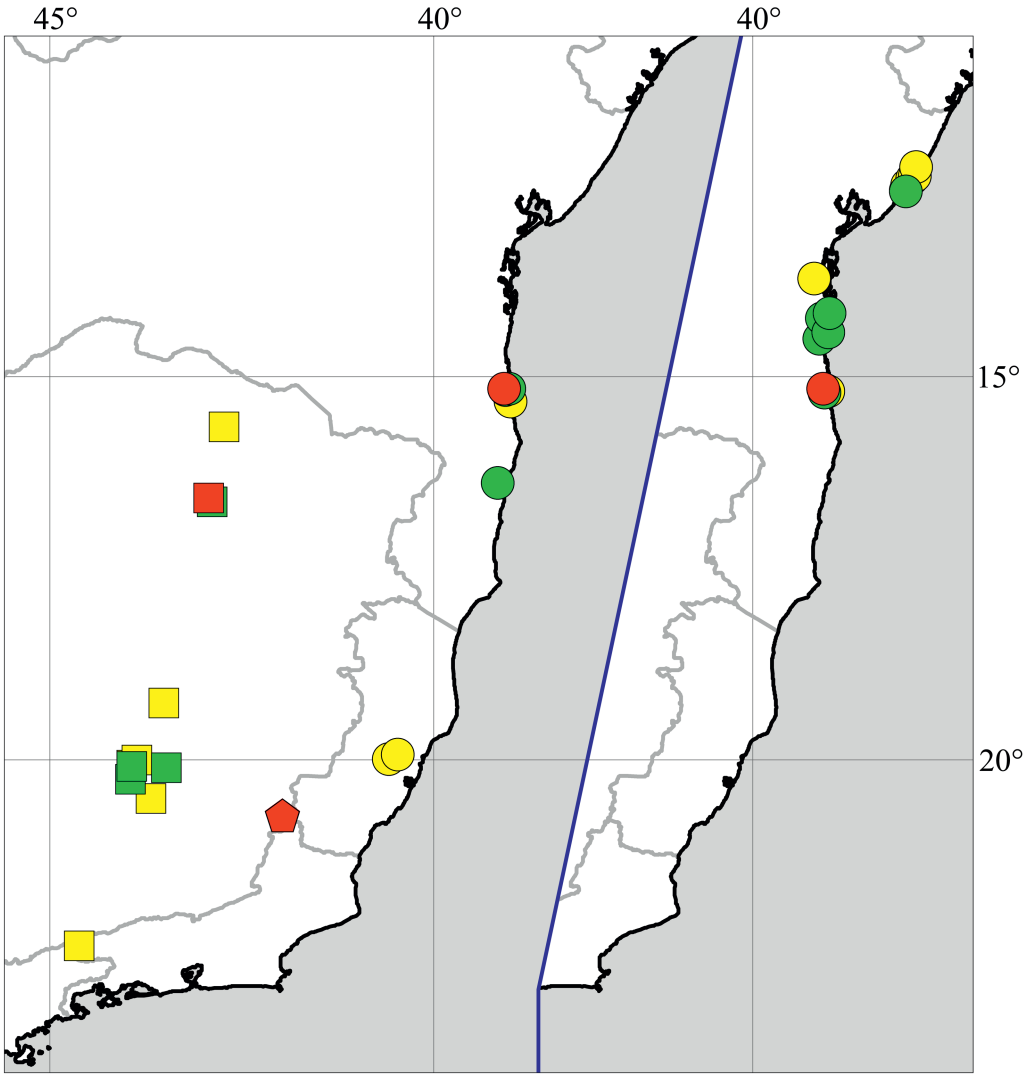

Fig. 3: On left side distribution of *Diospyros amabi* (●; type locality: ●; only digital photos of specimens seen: ●); – *D. ketun* (■; type locality: ■; only digital photos of specimens seen: ■); – *D. mexiae* (type locality: ⬟); – on right side distribution of *D. miroma* (●; type locality: ●; only digital photos of specimens seen: ●).

Fazenda Bolandeira, numa extensa faixa de mata, no sentido norte-sul, paralela aos cordões litorâneos e próximo a uma área que apresenta uma vegetação semelhante à do cerrado, 15°18'55" S, 39°0'20" W, restinga arbórea; solo arenoso, (fr), 14 Jul. 2002, **L.A. Mattos-Silva et al. 4617** [CEPEC n.s. (dig. photo), UESC n.s.], "árvore 18 m × 10 cm, abundante em áreas encharcadas; folhas concolores; frutos imaturos cor verde"; – Porto Seguro, Reserva Natural Vale [correct is probably: "RPPN Estação Veracel"], estrada Trancoso, 29 m, UTM 469703/8203885 [= 16°15' S, 39°17' W, but correct is probably ca. 16°23' S, 39°10' W], mata de tabuleiro, (fr), 26 Sep. 2009, **D.A. Folli 6429** [CVRD n.s., SPF n.s. (dig. photo), W], "árvore 10 m; fuste 5 m, cilíndrico; CAP fuste 35 cm; diâmetro da copa 2 m; descamação ausente; exsudação: seiva; fruto imaturo verde".

Espirito Santo, Município Fundão, Goiapaba-Açu, [19°55' S, 40°28' W], mata secundária, (fr), 25 Jul. 2000, **V. Demuner et al. 1228** [MBML n.s. (dig. photo), SPF n.s. (dig. photo)], "árvore 8 m, DAP 15 cm; fuste 6 m; fruto de cor verde"; – Município de Santa Teresa, cabeceira do Rio Bonito, terreno da Aeronáutica, Radar, 1030 m, [19°59' S, 40°35' W], (fr), 12 Jun. 2001, **L. Kollmann et al. 3873** [MBML n.s. (dig. photo), SPF n.s. (dig. photo)], "árvore 8 m, dap 15 cm; fuste 7 m; frutos verdes".

Diospyros ketun **B.WALLN.**, Ann. Naturhist. Mus. Wien, B, 101: 573–574 (1999); – [Fig. 3–5, 8a–b].

Typus: Brasil, Minas Gerais, Grão Mogol, estrada Francisco Sá/Grão Mogol/Jambeiro, Córrego Jambeiro, [ca. 16°35' S, 42°56' W], mata ciliar, (fr), 5 Jan. 1986, **C. Kameyama, I. Cordeiro, J.R. Pirani, R. Mello Silva & M. Meguro CFCR 8880** [holotype: W (Fig. 4, 5e); isotypes: MBM n.s. (dig. photo), NY n.s. (dig. photo), SPF 2× n.s. (dig. photos), W]; "arvore ca. 8 m; frutos imaturos verdes".

Tree up to 12 (–20) m tall, already flowering when ca. 3 m tall, evergreen; trunk with a circumference at breast height of 50 cm (Valente s.n.); twig apices and leaf primordia densely covered with a ferruginous indumentum composed of ± patent, flexuose to curled hairs which are often flattened und twisted when dry (Fig. 5a); young twigs terete, medium densely to densely covered with the same sort of indumentum as indicated above, glabrescent when older; – **leaves:** alternate; petioles (5–) 10–22 mm long, 2–3 mm thick, canaliculate adaxially, covered with the same sort of indumentum as that on young twigs, ± glabrescent when old; leaf lamina (4–) 10–19 cm long, (2.4–) 4–8.7 cm wide, (1.3–) 1.7–3 times as long as wide, widest at or often below or above the middle, firmly chartaceous or slightly coriaceous; adaxial leaf surface ± shiny when dry, scattered to medium densely covered with the same sort of indumentum as that on the abaxial side, but hairs slightly shorter and soon weathering (old leaves becoming glabrous); abaxial leaf surface dull when dry, persistently and more densely covered with patent [this is well observable especially on areas protected from mechanical pressure, e. g. near the midvein], ferruginous or brown, flexuose to curled, up to 1 mm long hairs which are sometimes flattened und twisted when dry (Fig. 5b, 8a); hair surfaces with warts and longitudinal elevations (Fig. 8b); indumentum on living leaves said to be ferruginous, ochreous or yellowish; leaf apex acute, less frequently obtuse, sometimes rounded; base of the lamina cuneate, rarely broadly rounded; leaf margins with a thickened border, entire, slightly revolute especially at the base; flachnectaria on abaxial leaf surface few, circular or elliptic, up to 0.5 (–1) mm in diameter, usually arranged near the base, rarely more distally; midvein on adaxial side deeply sunken, at first densely hairy, later on glabrescent, on abaxial side markedly prominent, and densely covered with patent, ferruginous hairs; secondary veins 10–12 per side, slightly raised and ± glabrous adaxially, prominent and hairy abaxially; veins of third order prominent adaxially, slightly prominent or flat and often hardly visible abaxially; higher order veins flat, often hardly visible adaxially, usually invisible abaxially; – **inflorescences:** always born on new shoots: the proximal ones placed in the axil of caducous bracts and the more distal ones in the axil of adult leaves; male cymes 1 (–2?)-flowered, at their base often with additional younger cymes, thus inflorescences often with several flowers per leaf axil (according to SANTOS & SANO 2018: 1–7-flowered); stalks (peduncles and pedicels) up to ca. 6 mm long and 1–1.5 mm thick, densely covered with patent, ferruginous hairs; bracts up to 3 mm long and wide, acute, abaxially hairy, adaxially glabrous or with scattered, appressed hairs distally, soon deciduous;

Fig. 4: Holotype of *Diospyros ketun* B.WALLN. [W] (see also Fig. 5e).

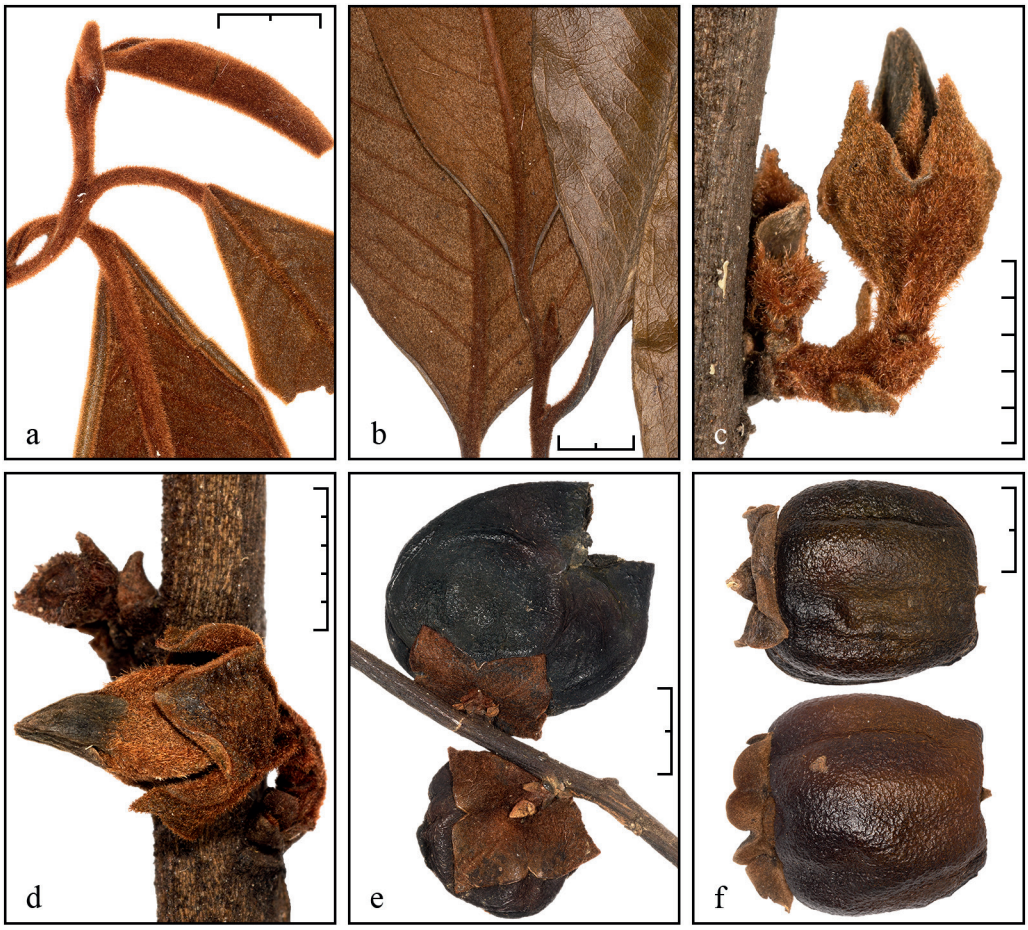

Fig. 5: *Diospyros ketun*: a: young leaves (from Costa BHCB 32626 [W]); – b: leaves (from Martinelli & Távora 2709 [W]); – c–d: male flower buds (from Costa BHCB 32626 [W]); – e: fruits (from Kameyama et al. CFCR 8880, holotype [W]); – f: fruits (from & Stehmann 2766 [W]); – scale = 1 cm, except in c–d: 0.5 cm.

bracteoles ca. 2 mm long and wide, ± acute, densely hairy abaxially, glabrous adaxially, soon deciduous; – **male flowers:** 4-merous (Fig. c–d), not available at anthesis; largest buds ca. 10 mm long (pedicels excluded), green or yellow and with a ochreous indumentum when alive (Pirani et al. CFCR 8486, Salino 9655); calyx 7 mm long, 6 mm wide, undivided in the proximal 4 mm, on the outside medium densely to densely covered with appressed or spreading, flexuose to curled, ± ferruginous hairs of different length; calyx on the inside densely covered with the same sort of indumentum (as described above) distally, medium densely to densely covered with appressed, ± parallel orientated hairs proximally; calyx lobes ca. 4 mm long and wide, triangular, acute or obtuse, ± flat; sinuses between the calyx lobes slightly expanded; corolla in bud 8 mm long (according to SANTOS & SANO 2018: 10 mm long at anthesis, with triangular-ovate, 3 mm wide, acute lobes), green when alive, blackish when dry; corolla tube 3.5 mm long, 4.5 mm

wide, glabrous inside, on the outside as well as proximally near the median line of the lobes densely covered with spreading or ± patent, flexuose to curled, ferruginous hairs of different length; corolla lobes ca. 4 mm long, ± scattered, appressed hairy or partially glabrous abaxially, glabrous adaxially; stamens 15 (only one flower of Costa s.n. dissected; Santos & Sano 2018 reported 10 stamens from Santos et al. 61), 1.5—3.5 mm long (3 of them short); filaments (0.2–) 0.5–1 mm long (according to Santos & Sano 2018: 1–2 mm long at anthesis), 0.2 mm wide, glabrous, some of them paired, adnate to the corolla tube near its base; anthers 1.3–2.5 mm long, ca. 0.5 mm wide; connectives with appressed hairs proximally on one side, glabrous or sometimes only with a few hairs on the other side, tapering into a 0.4–0.8 mm long, ± clavate appendage distally; rudiment of the ovary (pistillode) densely covered with hairs, 2 mm long (including the 1 mm long rudiment of the style), 1.8 mm in diameter; – **female flowers** not available for study (see the note); – **fruits:** stalk 4–6 mm long, 2–2.5 mm thick, ± densely hairy; fruits solitary, ± globose, up to ca. 3 cm in diameter (Fig. 5e–f), with remnants of indumentum around the apex (hairs of different length, flexuose, appressed to spreading), glabrescent elsewhere, green when immature and alive, black when dry, apparently 8-locular; fruit wall ca. 1 mm thick, with slightly detaching epidermis on larger fruits; calyx on fruits up to 25 mm wide and 8 mm in height, undivided in the proximal 6–7 mm, medium densely to densely covered on both sides with appressed, spreading or ± patent, flexuose or curled, ferruginous hairs, with faint, longitudinal ridges running down from the sinuses abaxially when dry; lobes 9 mm long and 11 mm wide, ± acute, flat or longitudinally revolute; sinuses between the calyx lobes slightly expanded downwards; seeds not available.

Note: Female flowers were not available for study. The single flower bud of Vianna s.n. (BHCB 128470; digital photo seen) is quite large and thus seems to represent a female flower. The flower buds of Pirani et al. CFCR 8486 could also be female. The few, small flower buds on the duplicate in W are however not suitable for dissection. As could be seen on close-up photos of Barros 931 (which were sent to me by Rafaela Campostrini Forzza), the indumentum on the abaxial leaf surface consists of long hairs and matches the one of *D. ketun*. The indumentum of Saiter et al. 444 (BHCB) however still needs to be analyzed. – *D. ketun* and *D. mexiae* have a very similar habit but their indumentum is markedly different.

Figures: twig with fruits (Santos & Sano 2004: fig. 1C); twig with male flower, fruit (Santos & Sano 2018: fig. 1C–D).

Distribution: The species is only known from Minas Gerais, and from one locality in the western part of the state of Rio de Janeiro in southeastern Brazil (Fig. 3). It was collected at elevations of ca. 900–1250 m.

Phenology: The species was collected with flowers or flower buds from August to October, and in fruit in January, April, June, and July.

Habitat and Ecology: It grows in evergreen, riparian forests (mata ciliar, mata ripária) but it was also collected in a low, secondary forest (Lombardi & Stehmann 2766). – Nine individuals with a circumference of ≥ 10 cm in breast height and a total height of 5.5–9.0 m were recorded by Salino et al. (2009) in four plots (5 × 30 m) out of 30 in a montane, seasonal semideciduous forest (floresta estacional semidecídual montana) near Nova Lima (east of Belo Horizonte). Santos & Sano (2009a) reported it from the floresta estacional semidecidual, and Santos & Sano (2018) from montane forests mostly along rivers.

Specimens examined: **Brasil**, Minas Gerais, Rio Pardo de Minas, Parque Estadual de Serra Nova, trilha para o Córrego Sussuarana, captação de água de Serra Nova, 840 m, 15°38'56" S, 42°44'27" W, (fr), 24 Mar. 2012, **F.Z. Saiter et al. 444** [BHCB n.s. (dig. photo)], "árvore 8 m; fruto imaturo verde"; – Grão Mogol, Jambeiro à 7 km de Grão Mogol, [ca. 16°35' S, 42°56' W], beira de riacho, na mata, (young, solitary flbuds: female?), 5 Sep. 1985, **J.R. Pirani et al. CFCR 8486** [paratypes: BHCB n.s. (dig. photo), SPF n.s. (dig. photo), W], "árvore 7 m; botões verdes com pilosidade ocrácea"; – Serra do Cipó, capão de floresta do Alto Palácio, cabeceira do Rio Preto, PARNACIPÓ, 1250 m, 19°15.431' S, 43°30.998' W, (fr), 18 Apr. 2007, **E.L. Valente s.n. (VIC 19404)** ["HUEMG" n.s. (dig. photo), SPF n.s., VIC n.s. (dig. photo)], "planta ca. 12 m; CAP ca. 50 cm; folha discolor com a parte abaxial ferruginosa" (cited in SANTOS & SANO 2018); – [Município de Nova Lima], RPPN Mata Samuel de Paula, na trilha principal que atravessa a reserva, 18°8'7.9" S, 43°16'47.2" W [correct is ca. 20°0'4" S, 43°52'16" W], floresta estacional semidecídual montana, (very young flbuds), 16 Aug. 2004, **A. Salino 9655** [BHCB n.s. (dig. photo)], "árvore 8 m; botões florais amarelos" (cited in SALINO et al. 2009); – Nova Lima, Condomínio Passárgada, [20°4' S, 43°56' W], (flbud female), Oct. 2007, **L. Vianna s.n. (BHCB 128470)** [BHCB n.s. (dig. photo)], "árvore 6 m"; – Nova Lima, Mina do Tamanduá (MBR), [20°5' S, 43°56' W], floresta perenifólia, (fl male), Sep. 1995, **L.V. Costa s.n. (BHCB 32626)** [paratypes: BHCB n.s. (dig. photo), W], "árvore 5 m"; – Município de Santa Bárbara [correct is Catas Altas], [Parque Nacional do] Caraça, Colégio do Caraça, ca. 1100 m, [20°6' S, 43°29' W], perto do rio, (fr), 19 Jul. 1977, **G. Martinelli & A. Távora 2709** [RB n.s. (dig. photo), SPF n.s. (dig. photo), W], "árvore ca. 6,5 m, saxícola, heliófila; folhas na face dorsal ferrugíneas; frutos imaturos de cor verde"; – Condomínio Aconchego da Serra, Itabirito, 20°15' S, 43°57' W, mata baixa secundária, (fr), 15 Apr. 1999, **J.A. Lombardi & J.R. Stehmann 2766** [BHCB n.s. (dig. photo), ESA n.s. (dig. photo), MBM n.s. (dig. photo), W], "árvore ca. 10 m; folhas coriáceas, ferrugíneas na face abaxial; frutos imaturos verdes"; – Ouro Branco, Serra do Ouro Branco, área 3, [ca. 20°30' S, 43°41' W], em mata ripária, (fl male, but mostly defl), 8 Jan. 2006, **M.F. Santos et al. 61** [NY n.s. (dig. photo), SPF n.s. (dig. photo)], "árvore 3 m; folhas discolores, face abaxial com pilosidade avermelhada; pedúnculo floral com pilosidade avermelhada" (cited in SANTOS & SANO 2018).

Rio de Janeiro, Parque Nacional do Itatiaia, lote 17, ca. 920 m, [ca. 22°25' S, 44°37' W], (fr), 3 Jun. 1942, **W.D. de Barros 931** [RB 2× n.s. (dig. photos)], "árvore ca. 20 m; frutos imaturos, verdes".

***Diospyros mexiae* STANDL.**, Publ. Field Mus. Nat. Hist., Bot. Ser. 22 (2): 97–98 (1940); – [Fig. 3, 6–8].

Typus: Brasil, Minas Gerais, Districto Carangola, about 5 km N of Fazenda da Gramma [not located], west facing mountain slope, 920 m, [ca. 20°43' S, 41°58' W], mata virgem; understory in dense shade, (fr), 4 Feb. 1930, **Y. Mexia 4316** [holotype: F (Fig. 6; photo F 52502; photo NY: N.S. 6887 at FHO, NY; photo MG029998), isotypes: BM, CAS, G, GB, GH, K, MICH, MO, NY, PH, S, U, UC, VIC n.s. (dig. photo), WIS n.s., Z], "arborescent 5 m, slender; fruits green".

Note: Unfortunately, the itinerary of Ynes Mexia which was published by BRACELIN (1935, 1938) does not contain any further details regarding the collecting site.

Slender tree up to 5 m tall, evergreen; twig apices medium densely covered with light or ferruginous hairs of different length: the shorter ones usually 2-armed, ± appressed, irregularly bloated and ± crooked, the longer ones fewer, apparently simple (but probably also 2-armed, see the note below), ± appressed and ± flexuose; young twigs terete, medium densely covered with the same sort of hairs as those described above, glabrescent when older; – **leaves:** alternate; petioles (6–) 8–16 mm long, 1.5–2 mm thick, canaliculate adaxially, hairy, ± glabrescent when old; leaf lamina (4–) 8–16.5 cm long, (1–) 3–6.2 cm wide, 1.9–3.4 times as long as wide, widest at or above the middle, firmly chartaceous; leaf surface ± shiny adaxially and dull abaxially when dry; adaxial side of the leaves at first medium densely covered with light or ferruginous, ± spreading, ± curled and crooked, often somewhat bloated hairs (only the specimen in Z shows

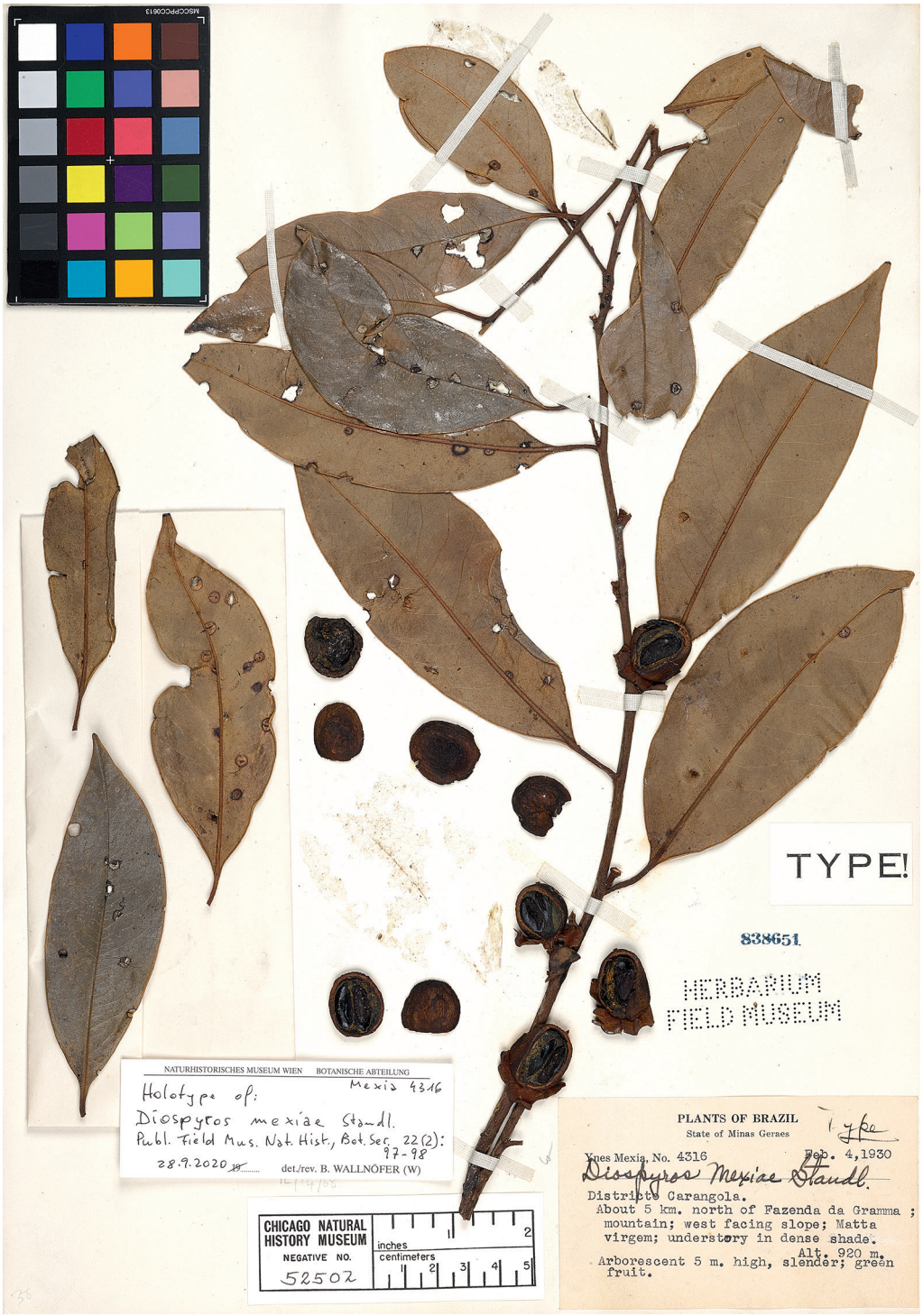

Fig. 6: Holotype of *Diospyros mexiae* STANDL. [F].

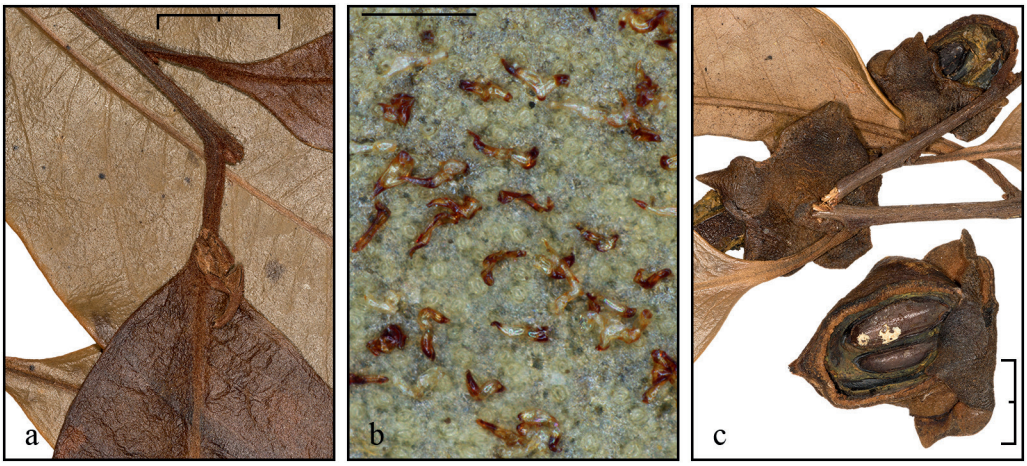

Fig. 7: *Diospyros mexiae*: a: young and mature leaves (from Mexia 4316, isotype [Z]); – b: indumentum on abaxial leaf surface (from Mexia 4316, isotype [MICH]); – c: immature fruits (from Mexia 4316, isotype [S]); – scale = 1 cm, except in b: 250 µm.

two very young leaves but only the adaxial side of them is visible, Fig. 7a), soon glabrescent; abaxial side of the mature leaves sparsely to medium densely covered with light or ferruginous, ± appressed, irregularly bloated and ± crooked, usually 2-armed, less than 200 µm long hairs (Fig. 7b, 8c–f), glabrescent except on areas protected from mechanical pressure (e. g. near the midvein); leaf apex acuminate, less frequently acute or rounded; base of the lamina cuneate; leaf margins with a thickened border, entire, revolute at the base; flachnectaria on abaxial leaf surface few, circular or irregularly elliptic, up to 0.5–1 mm in diameter, arranged near the base, rarely more distally; midvein on adaxial side sunken, on young leaves (specimen in Z) adaxially medium densely covered with spreading, flexuose, light or ferruginous hairs, glabrescent on mature leaves, on abaxial side markedly prominent, sparsely to medium densely covered with the same sort of hairs as those on the twigs, soon glabrescent; secondary veins ca. 10–12 per side, slightly raised adaxially, prominent abaxially; veins of third order flat or slightly prominent adaxially, hardly visible abaxially; higher order veins not or hardly visible; – **inflorescences and flowers** not available; – **fruits:** stalk 4–5 mm long, 2–3 mm thick, medium densely covered with ± spreading, ferruginous hairs of different length; fruits (known only from the immature stage, Fig. 7c) solitary, slightly elongated, up to ca. 2 cm in diameter, abruptly tapering into a conical apex, green when alive, glabrescent except at the densely hairy apex and the less densely hairy base; hairs of different length, the shorter ones thickened and ± irregular in shape, the longer ones up to 1 mm long, straight or slightly flexuose, ± spreading, attached at their base laterally to the surface (these are apparently 2-armed hairs with the arm pointing in the proximal direction much reduced); fruit wall ca. 1 mm thick, packed with stone cell granules; stylodia 4 and thus fruit 8-locular; calyx 4-merous, up to 20 mm wide, undivided in the proximal 6–9 mm, sometimes with faint, longitudinal ridges running down from the sinuses abaxially when dry, on the outside sparsely to medium densely covered with light or ferruginous, appressed to spreading, ± flexuose hairs of different length, on the inside along the median line of the

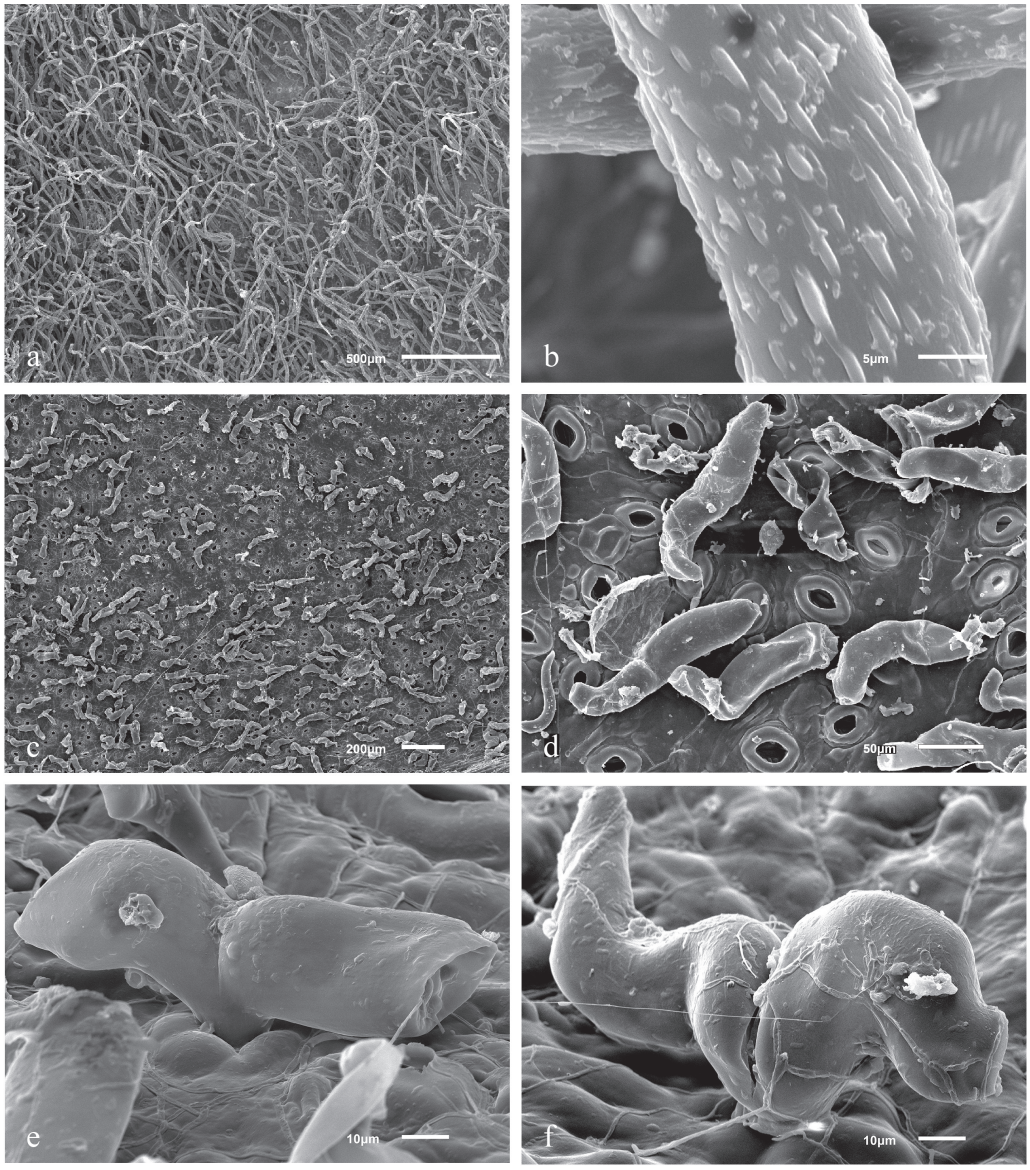

Fig. 8: *Diospyros ketun* (a–b): a: abaxial leaf surface with long, flexuose hairs; – b: hair with warts and longitudinal elevations on hair surface (a–b from Martinelli & Távora 2709 [W]); – *D. mexiae* (c–f): indumentum, 2-armed hairs and stomata (c–f from Mexia 4316, isotype [PH]); – (SEM-photographs: Wencke Wegner, Central Research Laboratories, Natural History Museum Vienna).

lobes densely covered with longer, ± straight, appressed hairs and towards the margins of the lobes medium densely to densely covered with flexuose to curled or ± crooked, spreading or ± patent hairs of different length; calyx cup abruptly elongated at the base; lobes 7–8 mm long and 9–13 mm wide, acute; sinuses between the calyx lobes inconspicuous; seeds not available.

Note: As flowers are not available, *D. mexiae* is not well understood. More collections are urgently needed for study. All of the hairs (indumentum) seem to be 2-armed but this character is due to the minuteness of the details barely to perceive. In addition the arm pointing in the proximal direction seems often to be much reduced and thus the hairs appear to be simple. Although quite similar in its habit, it can be distinguished from *D. ketun* by the different indumentum. – Some leaves show on their abaxial side characteristic, deeply sunken, hollow, ± bowl-shaped or slightly urceolate galls.

Distribution, phenology, and habitat: The species is only known from the type which was collected with fruits in February in dense shade in the understory of a primary forest at an elevation of 920 m near Carangola in eastern Minas Gerais (Fig. 3).

***Diospyros miroma* B.WALLN., sp.n.**; – [Fig. 3, 9–12].

Typus: Brasil, Bahia, Mun. de Una, Reserva Biológica do Mico-Leão (IBAMA), entrada no km 46 da rod. BA-001 Ilhéus/Una, Fazenda Maruim e Dois de Julho, ao Fundo da Reserva, 15°9' S, 39°5' W, no interior da mata, (fr), 22 Mar. 1994, **A.M. Amorim, S.C. Sant'Ana, J.G. Jardim & E.B. dos Santos 1598** [holotype: W (Fig. 9, 10f), isotypes: CEPEC n.s. (dig. photo), NY], "arvoreta 4 m; folhas marcadamente discolores, a face superior verde-escuro e a inferior verde-acinzentado; frutos imaturos verdes coberto por pelos castanhos".

Treelet or tree up to (1.2–) 2–7 m tall, already flowering when ca. 1.2 m tall, evergreen; twig apices densely hairy; young twigs terete, scattered to medium densely covered with curved or ± straight, ± appressed, spreading or ± patent, short, light hairs of different length; older twigs glabrescent, pendent or inclined downwards at least on plants growing in the restinga (Fig. 12); – **leaves:** alternate; petioles 2–9 mm long, 2.5–3 mm thick, canaliculate adaxially, covered with the ± same sort of hairs as that on the twigs; leaf lamina (5–) 12–22.6 cm long, (2.5–) 4–8.5 cm wide, (1.8–) 2.4–3.7 times as long as wide, widest at or slightly below the middle, firmly chartaceous, flat on southern populations; leaves strongly revolute longitudinally (Fig. 12), coriaceous and with sunken primary and secondary veins adaxially on plants growing in the restinga (northern populations); leaves lustrous green or dark green adaxially, and grayish or whitish abaxially when alive (Fig. 12c; Thomas et al. 9451: "lustrous green above, pale green and glaucous beneath"); dry leaves gray-brown to dark brownish (black when very young) and dull adaxially, and gray to grayish brown abaxially; adaxial leaf surface glabrous except on veins and margins when young; abaxial leaf surface densely covered with gray, minute epidermal papillae (Fig. 10b, 11) and with scattered, ± appressed, ± straight, light hairs of different length; hair surfaces densely covered with warts and longitudinal elevations (Fig. 11); indumentum on very young leaves very dense and appearing velvety gray or grayish-light brown; leaf apex acuminate, less frequently acute; base of the lamina abruptly cuneate, slightly rounded, or sometimes slightly truncate; leaf margins entire, revolute when dry; flachnectaria (Fig. 10b, 11a–c) on abaxial leaf surface minute, usually slightly raised, surrounded by a very dense layer of papillae and often covered by a tuft of hairs (thus ± hardly visible, but sometimes detectable as spots with differing color especially on young leaves), scattered over the lamina but less frequently distally and proximally, rare or missing on some leaves; midvein on adaxial side sunken, ± densely covered with curved, ± patent hairs on young leaves, soon glabrescent, on abaxial side

Fig. 9: Holotype of *Diospyros miroma* B.WALLN. [W] (see also Fig. 10f).

Fig. 10: *Diospyros miroma*: a: leaves (from Carvalho et al. 3373 [HUEFS]); – b: abaxial leaf surface with indumentum, epidermal papillae and one flachnectarium in the center (from Thomas et al. 16424 [W]); – c: male inflorescence (from Thomas et al. 9451 [MBM]); – d–e: female flowers, young fruits and one dissected female flower (from Queiroz 2900 [HUEFS]); – f: two immature fruits (from Amorim et al. 1598, holotype [W]); – scale = 1 cm, except in b: 500 µm, c–d: 0.5 cm.

markedly prominent, scattered to medium densely covered with ± appressed, straight or slightly bent hairs of different length; secondary veins 10–14 per side, ± flat or slightly raised on both sides (but ± strongly sunken adaxially on plants from the restinga), adaxially with scattered hairs when young but soon glabrescent, abaxially hairy; veins of higher order not or only hardly visible on both sides; – **inflorescences:** the male ones (Thomas et al. 9451, Fig. 10c) ± glomerate (cymes apparently branched and at their base with hidden additional cymes), 10–15 mm long, 5 to ca. 15-flowered, placed in the axil of mature leaves; stalks (peduncles and pedicels) ± hidden, up to 3 mm long and 1.5 mm thick, densely covered with spreading, ± straight or slightly bent hairs; longest pedicels ca. 4 mm long, 0.8 mm thick; several bracts present, up to ca. 6 mm long and

4 mm wide, medium densely to densely covered with appressed hairs abaxially, glabrous adaxially; bracteoles like the bracts, but much smaller, 3–4 mm long, ca. 2 mm wide; – female cymes (Queiroz 2900 from the restinga) 1 (–2)-flowered, at the base often with additional cymes, thus inflorescences 1–5-flowered, placed in the axil of mature leaves; stalk 2–3,5 mm long, 1 mm thick; bracts and bracteoles as on male plants; – **flowers:** 4–5 (–6)-merous; – **male flowers:** largest buds ca. 6 mm long (pedicels excluded, Fig. 10c); calyx ca. 4 mm long, undivided in the proximal ca. 1.5 mm, light green when alive, on the outside medium densely covered with appressed, ± straight or slightly bent hairs of different length, on the inside glabrous except for minute hairs at the base and along the margins of the lobes; calyx lobes 2.5–3 mm long and wide, triangular, flat; sinuses between the calyx lobes inconspicuous; only one heavily damaged anthetic corolla of Thomas et al. 9451 available, ca. 10 mm long, white or cream-colored when alive; corolla tube ca. 2 mm long, nearly glabrous on the outside; corolla lobes 8–9 mm long, ca. 6 mm wide, rounded distally, adaxially glabrous, abaxially along the median line densely covered with spreading, ± straight or slightly bent hairs of different length, glabrous towards the margins; stamens 53 (in a 5-merous flower of Thomas et al. 9451), 61 (in a 5-merous, slightly galled flower of Guedes et al. 5153 from the restinga), 2–5.8 mm long, filiform, exserted, a few paired, cream-colored when alive; filaments 0.3–1 mm long, adnate to the corolla tube near its base and on the receptacle; anthers 1–4 mm long, ca. 0.3 mm wide; filaments and connectives with appressed, long hairs on both sides, the latter tapering into a ca. 0.5 mm long appendage distally; rudiment of the ovary (pistillode) missing; – **female flowers** (Queiroz 2900; Fig. 10d–e): ca. 9 mm long at anthesis (when corolla lobes erect and with pedicels excluded); calyx ca. 6 mm long, undivided in the proximal 2–2.5 mm, yellow when alive (Guedes et al. 4031), medium densely covered with ± appressed, ± straight or slightly bent hairs of different length on both sides; calyx lobes 4–4.5 mm long, 3–3.5 mm wide, broadly triangular, flat; sinuses between the calyx lobes inconspicuous; corolla 9 mm long at anthesis (when lobes erect), cream-colored when alive; corolla tube ca. 2 mm long, glabrous on both sides; corolla lobes 6–7 mm long, 6 mm wide, broadly elliptic, adaxially glabrous, abaxially along the median line medium densely to densely covered with slightly spreading, ± straight or slightly flexuose hairs of different length, glabrous towards the margins; staminodia 19 and 22 (in two 5-merous flowers), some paired, attached 1 mm above the base of the corolla tube (visible on Fig. 10e); free part of the staminodia 1.5–2.5 mm long, filiform, glabrous or with some ± straight, long hairs; ovary 6–7 mm long, 3 mm wide (including the indumentum ca. 5 mm wide), yellow when alive (Guedes et al. 4031), very densely covered with straight, at first erect and then spreading or ± patent, (1–) 1.5–2 mm long, light brown or ± ferruginous hairs, 10-locular in a 5-merous flower of Queiroz 2900 (Fig. 10e, on top left side); stylodia (3?) or 5, 3–4 mm long, fused together in the proximal ⅓, densely covered with ± straight, appressed hairs; stigmata up to ca. 1.5 mm long, bilobed and widened distally, glabrous; – **fruits:** stalk 3–6 mm long, at the middle 2.5 mm thick (distally up to 5 mm wide), ± densely covered with ± appressed hairs; fruits solitary, ± globose or oblate (Fig. 10f, 12b–c), up to 3–3.5 cm in diameter, covered with raised tubercles which are themselves densely covered with short or minute, patent hairs and which have one up to 2.5 mm long, straight, patent, thick, brown bristle at the top (Fig. 10f, 12b–c); tubercles often strongly raised (especially around the base and apex of the fruits) and united into short ridges; fruits detaching with the calyx; living fruits green, turning yellowish and finally orange when mature (Fig. 12; ripe fruits said to be brown by Amorim et al. 850);

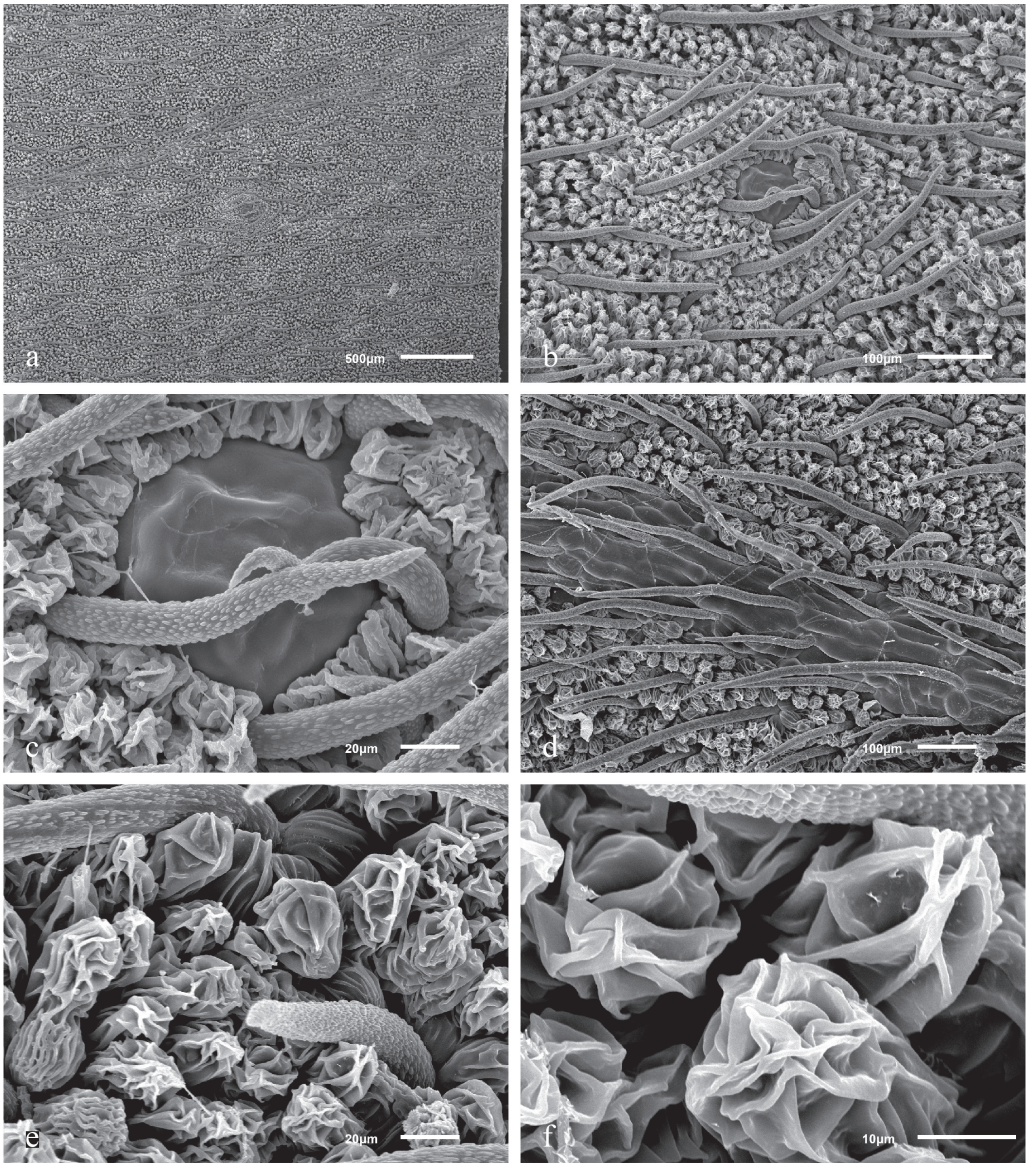

Fig. 11: *Diospyros miroma*: a–c: abaxial leaf surface with indumentum, epidermal papillae and one flachnectarium in the center; note the warts and longitudinal elevations on hair surfaces (from Thomas et al. 16424 [W]); – d: indumentum and epidermal papillae along a vein on abaxial leaf surface; – e–f: epidermal papillae on abaxial leaf surface (d–f from Guedes et al. 5153 [MBM]); – (SEM-photographs: Wencke Wegner, Central Research Laboratories, Natural History Museum Vienna).

fruit wall ca. 1 mm thick, with tightly adhering epidermis when dry; calyx on fruits up to 2.3 cm in diameter, undivided in the proximal 3 mm; lobes 9–11 mm long, 6–7 mm wide, triangular, ± adhering to the fruit or ± reflexed distally, scattered to medium densely

Fig. 12: *Diospyros miroma*: habit, leaves and fruits from the restinga at Imbassaí (Bahia), Sirgas 2000, 15–17 m, a–b: 14 Mar. 2020, c: 6 Jun. 2020 (courtesy of Guilherme Castello Branco, Bahia).

covered with appressed, ± straight or slightly flexuose hairs of different length abaxially, medium densely to densely covered with the same sort of hairs adaxially; margins of the lobes ± flat or slightly revolute when dry; area around the sinuses between the calyx lobes inconspicuous; seeds dark brown to blackish, shaped like the segments of an orange, ca. 18 mm long, ca. 7 mm wide and thick (Mori 12740).

Etymology: The plant name has been coined arbitrarily (see: TURLAND et al. 2018: Art. 23.2).

Note: *D. miroma* seems to be related to the Western Amazonian *D. glomerata* SPRUCE ex HIERN which displays also epidermal papillae on the abaxial leaf surfaces, and which has its distribution center in southern Colombia, northeastern Peru, and in the northwestern part of the Brazilian state of Amazonas. The latter species is morphologically somewhat polymorphic and needs thus further study. – The flowers are often galled and deformed especially on plants growing in the restinga (e. g., Guedes et al. 5153, Queiroz 2900; Fig. 12c: on the right side of the second orange fruit from top).

Several collections of *D. miroma* were available for study only via digital photos, thus the presence of papillae on the abaxial leaf surfaces could only be deduced in an indirect way. Leaf surfaces covered with a layer of papillae tend to have a gray (glaucous) appearance. In some cases however either the photos were of bad quality or the plants were not dried properly, thus slight doubts remained. In such cases the specimens were assigned tentatively to this species and need direct reexamination.

Figures: photo of a twig with an orange colored fruit (LIMA 2010).

Distribution and habitat: The species is only known from Bahia in eastern Brazil (Fig. 3). The northern populations were found, according to herbarium specimens, at low elevations in the restinga vegetation near the coast. There it was erroneously listed as "*D. duartei*" in QUEIROZ (2007), QUEIROZ et al. (2012), and GOMES & GUEDES (2014). For general information about the habitat see THOMAS & BARBOSA (2008). QUEIROZ (2007) found it on 12 spots of the investigated area. – In the south *D. miroma* was collected in the "mata higrófila Sul Baiana" at elevations between 80 and 212 m, and was reported from the "submontane tropical moist forest" and the "tabuleiro forest" (AMORIM et al. 2008 under "*D miltonii*"). It was found there also in secondary forests and was reported by Sant'Ana et al. 1030 from the "restinga arbórea".

Phenology: The species was collected in flower from August to December, and in fruit all over the year except in May, September and December.

Biology and ecology: Individuals growing in the open and low restinga vegetation ("restinga arbustiva" and "restinga arbórea") are only up to 1–2 (–3.5) m tall, and possess coriaceous, longitudinally strongly revolute leaves (Fig. 12). These plants display a very peculiar growth form which is explained in detail in the chapter "Growth form" under *D. gaultheriifolia* (WALLNÖFER 2019), a species which occurs also in the restinga. In the south, *D. miroma* is a 5–7 m tall tree of the shadow-rich forest understory and displays thus large, flat leaves. The leaves of individuals which grow in-between the restinga vegetation and the forests in the inland are intermediate in shape and texture. This can be seen on the specimens Bautista & Queiroz 4094, Meireles et al. 645 ("transição tabuleiro/restinga"), and Queiroz & Bautista 992. Unfortunately the primary forests ("tabuleiro forest") in the north seem to have been nearly completely destroyed

by man. *D. miroma* should be sought there in any of the forest remnants. Plants from the southern distribution range, as well as those from the restinga should be cultivated under equal ecological conditions in an arboretum to allow to detect any differences between the two main populations. Here they are considered to be conspecific.

Seed dispersal: According to Jardim et al. 2286, the fruits are eaten by the monkey which is called "mico-leão-de-cara-dourada" (*Leontopithecus chrysomelas*).

Vernacular names: In the restinga of Bahia it is called "cabeluda" (Guedes et al. 4031), and "cabeleira" (Queiroz 2007, Queiroz et al. 2012, Lima 2010, all under "*D. duartei*"). The specimen Queiroz & Bautista 992 was identified by the collectors as "*D. duartei*" and bears the obviously erroneous spelling "calceleira". No photos of the specimen Queiroz 3839 (cited by Queiroz et al. 2012) were available. – No vernacular names from the southern populations were reported.

Specimens examined: **Brasil**, Bahia, Entre Rios, estrada BA-099 (Linha Verde), entre as entradas para Subaúma e Massarandupio, [ca. 12°16' S, 37°52' W], transição tabuleiro/restinga, (fr), 5 Jul. 2009, **J.E. Meireles et al. 645** [RB n.s. (dig. photo)], "arbusto 1,5 m, virgado; folhas discolores, subcoriáceas; frutos imaturos verdes, maduros amarelos"; – Município Mata de São João, Santo Antônio, 12º23' S, 37º53' W, restinga arbórea com presença de áreas úmidas; restinga com presença de dunas com ca. de 10 m de altura; substrato arenoso, (fl female), 21 Sep. 1996, **M.L. Guedes et al. 4031** [ALCB n.s. (dig. photo)], "árvore ca. 2 m; folhas coriáceas discolores; cálice amarelo; pétalas creme, carnosa; ovário amarelo; fruto imaturo verde"; – same Município: Litoral Norte, Costa do Sauípe, Fazenda Sauípe, 12º31' S, 38º17' W [correct is ca. 12°25' S, 37°55' W], restinga arbórea-arbustiva, (fl), 17 Oct. 2003, **D.M. Loureiro et al. 694** [ALCB n.s. (dig. photo)], "árvore 3,5 m; folhas cartáceas, discolores, face adaxial verde brilhante e abaxial com tomentos esbranquiçados; botões creme"; – same area: Fazenda Sauípe, propriedade da Const. Norberto Odebrecht, [ca. 12°25' S, 37°55' W], restinga, dunas mortas, (fr), 25 Feb. 1986, **G.C.P. Pinto & H.P. Bautista 15 [or] 15/86** [ALCB n.s. (dig. photo), HRB n.s., HUEFS n.s. (dig. photo), MG n.s. (dig. photo)], "arvoreta; caule ereto; ramos pendentes; folhas involutas; frutos esféricos, papilo-cerdosos, imaturos de cor verde" [cited as "1586" in Gomes & Guedes 2014]; – same area: 12°24'35" S, 37°54'35" W, restinga, (fl male, galled), 10 Dec. 2004, **H.P. Bautista & E.P. Queiroz 4094** [HRB n.s., IBGE n.s. (dig. photo), RB n.s. (dig. photo)], "arbusto com ramos terminais pendentes; folhas coriáceas, glabras; flores cremes"; – Imbassaí, Sirgas 2000, 15 m, UTM 24L 0611258E/8617063S [= 12º30'28.60" S, 37º58'33.80" W], restinga, (fr), 14 Mar. 2020, **G. Castello Branco** [photos of living plants: Fig. 12a–b]; – same area: 16–17 m, UTM 24L 611231/8617054, and 611349/8616958 [= 12º30'28.82" S, 37º58'34.69" W and 12º30'32.0" S, 37º58'30.75" W], restinga, (fr), 6 Jun. 2020, **G. Castello Branco** [photos of living plants: Fig. 12c]; – Mun. de Mata de São João, Praia do Forte, 12°34'31" S, 38°0'16" W, restinga arbustiva, (fl female, yfr), 29 Nov. 1992, **L.P. de Queiroz 2900** [HUEFS, NY], "arbusto ca. 2 m; ramos plagiotrópicos; folhas coriáceas, revolutas; flores secas; fruto verdes"; – Parque Natural Municipal da Restinga de Praia do Forte, 3 m, 12°34'5" S, 38°0'21" W, restinga arbórea, (defl, galled), 22 Oct. 2016, **T.S. Sousa et al. 15** [ALCB n.s. (dig. photo)], "arbusto ca. 122 cm; casca rugosa"; – loteamento Praia do Forte, [12°35' S, 38°0' W], restinga, (fl female), 10 Dec. 2004, **E.P. Queiroz & H.P. Bautista 992** [CEPEC n.s. (dig. photo), HUEFS n.s. (dig. photo)], "arbusto 2 m; folhas coriáceas; flores cremes"; – same area: restinga, (fr), 23 Jan. 2006, **A.M. Miranda et al. 5365** [BHCB n.s. (dig. photo), HUEFS n.s. (dig. photo), PEUFR n.s.], "arbusto ca. 1,6 m, frequente; ramos decumbentes; folhas coriáceas, naviformes, adaxialmente verde-brilhante; frutos imaturos verdes"; – same area: restinga, (fl male), 9 Sep. 1997, **M.L. Guedes et al. 5153** [MBM], "arvore, ocasional; folhas coriáceas, discolores; flores creme"; – same area: AC4B, (fl male), 29 Aug. 2010, **H. Adorno 24** [HUEFS n.s. (dig. photo), PEUFR n.s., RB n.s. (dig. photo), UFRN n.s. (dig. photo)], "arbusto ca. 1,2 m; ramos marrom-acinzentados; folhas coriáceas; botões florais em estágio inicial de desenvolvimento; sépalas verde-claro; pétalas creme", [erroneously cited under *D. gaultheriifolia* in Wallnöfer 2019]; – Ituberá, APA do Pratigi, microbacia do Rio dos Cágados, 212 m, 13°42'51" S, 39°12'15" W, mata secundaria, (fr), 24 Feb. 2009, **F.D. Santana & L.P. de Aguiar 8** [CEPEC n.s. (dig. photo)], "árvore ca. 6,5 m; folhas verdes discolores; frutos imaturos verdes"; – Município de Maraú, rod. BR-030, trecho Maraú/Ubaitaba, km 32, 14°10' S, 39°0' W, mata perturbada, (fr), 14 Jun. 1979, **L.A.M. Silva et al. 487** [CEPEC n.s. (dig. photo), MG n.s. (dig. photo)], "arbusto 2 m; frutos imaturos verdes"; – same area: km 33, vegetação perturbada, (fr), 5 Feb. 1979, **S.A. Mori et al. 11355** [FHO, NY n.s., W], "arvorezinha 5 m"; – same Município: Fazenda Água Boa, BR-030, a 22 km a

E de Ubaitaba, ca. 100 m, [ca. 14°14' S, 39°6' W], (fr), 25 Aug. 1979, **S.A. Mori 12740** [CEPEC n.s. (dig. photo), K, MG n.s. (dig. photo), NY, RB n.s. (dig. photo)], "arvorezinha 3 m × 8 cm; frutos laranjas"; – Mun. de Uruçuca, Distr. de Serra Grande, 7,3 km na estrada Serra Grande/Itacaré, Fazenda Lagoa do Conjunto Fazenda Santa Cruz, 14°25' S, 39°1' W, (fr), 1–12 Jul. 1991, **A.M. de Carvalho et al. 3373** [CEPEC n.s. (dig. photo), FHO, HUEFS, NY, RB n.s. (dig. photo), W], "arbusto até arvorezinha ca. 5 m; folhas leve discolores com face abaxial mais clara; frutos imaturos verdes tornando-se amarelados"; – trail from headquarters of the Conduru State Park, ca. 10 km W of Serra Grande on road to Uruçuca, 158 m, 14°29'43" S, 39°8'4" W, disturbed and mature tropical moist forest, (flbuds), 27 Oct. 2014, **W.W. Thomas et al. 16424** [NY n.s., W], "tree 3 m; leaves pale beneath; buds very pale green"; – Mun. de Una, Reserva Biológica do Mico-Leão (IBAMA), entrada no km 46 da rod. BA-001 Ilhéus/Una, [NY: collection notes: Site: R, coletas efetuadas 2 km a partir da entrada da reserva], 15°9' S, 39°5' W, região da mata higrófila Sul Baiana, (fr), 8 Oct. 1992, **A.M. Amorim et al. 850** [CEPEC n.s. (dig. photo), NY], "arvoreta ca. 4 m; folhas discolores, face inferior verde pálido, face superior escuro; frutos maduros marrons"; – same Reserva: picada paralela ao rumo da reserva, (fr), 14–15 Apr. 1993, **A.M. Amorim et al. 1219** [CEPEC n.s. (dig. photo), HUEFS, K, MBM n.s. (dig. photo), NY, W], "arvoreta ca. 4 m; folhas discolores, a face superior verde a inferior acinzentada; fruto imaturos verdes com pelos castanhos"; – same Reserva: coletas próxima a portaria da Reserva, (fr), 29 Aug. 1995, **S.C. de Sant'Ana et al. 577** [CEPEC n.s. (dig. photo), K, NY, W], "árvore ca. 5 m; folhas verdes discolores; frutos velhos"; – same Reserva: atlantic coastal forest on hilltop, (fl male), 14 Nov. 1992, **W.W. Thomas et al. 9451** [CEPEC n.s. (dig. photo), MBM, NY, W], "tree 5 m; leaves coriaceous, revolute, lustrous green above, pale green and glaucous beneath; flowers creamy white"; – Una, Ecoparque de Una, rodovia BA-001 (Ilhéus/Una), entorno da REBIO [Reserva Biológica] de Una, 80 m, 15°9'35" S, 39°3'17" W, região da mata hidrófila sul Baiana, (fl male), 5 Nov. 2005, **J.L. Paixão et al. 627** [CEPEC 2× n.s. (dig. photos), HUEFS n.s. (dig. photo), SPF n.s. (dig. photo)], "arvoreta ca. 5 m; folhas com face superior brilhante e face inferior opaca; flores com pétalas brancas e estames creme"; – Una, ca. 44 km de Ilhéus (BA-001), na estrada para Una, 15°11'2" S, 39°1'0" W, restinga arbórea, (fr), 6 Jun. 2001, **S.C. Sant'Ana et al. 1030** [CEPEC n.s. (dig. photo)], "árvore ca. 6 m; folhas verdes discolores; frutos imaturos verdes, quando maduros amarelos"; – Reserva Biológica (IBAMA), entrada ca. 46 km da BR-001 Ilhéus/Una, limite L da reserva e trilhas percorrida pelo mico-leão-de-cara-dourada, 15°11'63" S, 39°3'65" W, área de plantio de "cacau-cabruca", (fr), 27–28 Oct. 1999, **J.G. Jardim et al. 2286** [CEPEC n.s. (dig. photo), NY], "árvore ca. 7 m; folhas discolores, verde na face superior e a face inferior alvacenta; frutos passados".

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