Two New Species of *Diospyros* (Ebenaceae) from Mesoamerica

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ABSTRACT. *Diospyros hartmanniana*, of cloud forests in Panama and Costa Rica, and *Diospyros whitei*, of lowland forests in central and eastern Panama, are described and illustrated. Their similarities to and differences from other Mesoamerican species of *Diospyros* are discussed.

The genus *Diospyros* consists of approximately 500 species of small to large trees distributed throughout the tropics and subtropics of the world. The last worldwide revision of the family Ebenaceae was that of Hiern (1873), where some 250 species were recognized. Hiern recognized five genera, *Royena* L., *Euclea* Murray, *Maba* J. R. Forster & G. Forster, *Tetraclis* Hiern, and *Diospyros* L. In *Diospyros* s. str., Hiern recognized 14 sections defined on characters of the seed and inflorescence. Only a fraction of the approximately 80 New World taxa were included in Hiern's monograph. Bakhuizen van den Brink (1936), in monographing the Malaysian species of Ebenaceae, placed the genus *Maba* into synonymy with *Diospyros* at the rank of subgenus. He divided the Asian species of *Diospyros* into 36 sections, most of which are probably artificial (White, 1983). *Royena* and *Maba* are currently placed within the genus *Diospyros* s.l. (White, 1983), and Old World species previously regarded as *Maba* are placed in section *Forsteria* (Bakhuizen van den Brink) White. In his treatment of Ebenaceae for *Flora Zambesiaca*, White (1983) recognized 11 sections, most of which were endemic to Africa. Section *Forsteria* has several species in the New World and is defined by its possession of an ovary with three bi-ovulate locules. In Mesoamerica only *D. inconstans* Jacquin and *D. salicifolia* Willdenow are members of this group. For the rest of the taxa occurring in the Neotropics, no sectional classification has been proposed. In Asia, where some 200 species of *Diospyros* occur, the sectional classification proposed by Bakhuizen van den Brink (1936) has not been taken up in floras, and many species have been described relatively recently. In the course of preparing the treatment of *Diospyros* for *Flora Mesoamericana* the following new taxa were encountered.

Diospyros hartmanniana S. Knapp, sp. nov. TYPE: Panama. Chiriquí: near Costa Rican border, ca. 13 road-km from Río Sereno, Finca Hartmann, 1550–1750 m, 8°50′N, 82°45′W, 23 Oct. 1992, *G. McPherson & P. M. Richardson 15959* (holotype, BM; isotypes, MO, PMA not seen). Figure 1.

Species haec a *Diospyros campechiana* Lundell, foliis coriaceis petiolo breviori (6–9 mm longo vs. 10–20 mm longo), inflorescentia masculina tantum 3–5-flora, inflorescentia feminei uniflora, floribus carnosis, staminibus filamentis aureo-pubescentibus, baccis globosis, differt.

Trees, 6–20 m; branchlets glabrous or minutely strigose with scattered black trichomes, drying shiny black, the buds coarsely and densely black-strigose. Leaves 6–11 × 3–5 cm, elliptic, thick and coriaceous, glabrous above, sparsely strigose with scattered coarse black trichomes beneath, the trichomes denser near the veins, glabrescent, the young leaves densely black-strigose beneath, the trichomes breaking off and leaving black dots on the leaf undersides, the base acute, the margins somewhat revolute, the apex broadly acute, the ultimate tip rounded; lateral nerves 5–6 pairs, inconspicuous, the midvein drying darker beneath; petiole 6–9 mm, fleshy. Inflorescences axillary along the current growth. Male flowers in 3–4(–5)-flowered subsessile to shortly pedunculate cymules, the peduncle and bracts black-strigose, the pedicels ca. 0.5 mm; calyx 1.5–2 mm, fleshy, black-strigose without, glabrous within, drying black, the tube ca. 1 mm, flat, the lobes 5, ca. 1.5 mm, semiorbicular; corolla 4–5 mm, urceolate to somewhat salverform, glabrous throughout, drying black, the tube 3–3.5 mm, the lobes 4, ca. 1.5 mm, broadly deltate, the margins thinner and overlapping in bud; stamens ca. 10–12(–20), 1.5–2 mm (not including the elongate connective), densely golden pubescent, the connective long-apiculate; pistillode ca. 1 mm, black-strigose at the apex, otherwise glabrous. Female flowers (seen in young fruit only) solitary, sessile or nearly so, the pedicel 0–0.5 mm. Fruits 1.5–2.5 cm diam., yellow-orange when ripe, drying reddish brown, glabrous except for a patch of stiff black trichomes around the persistent style base;

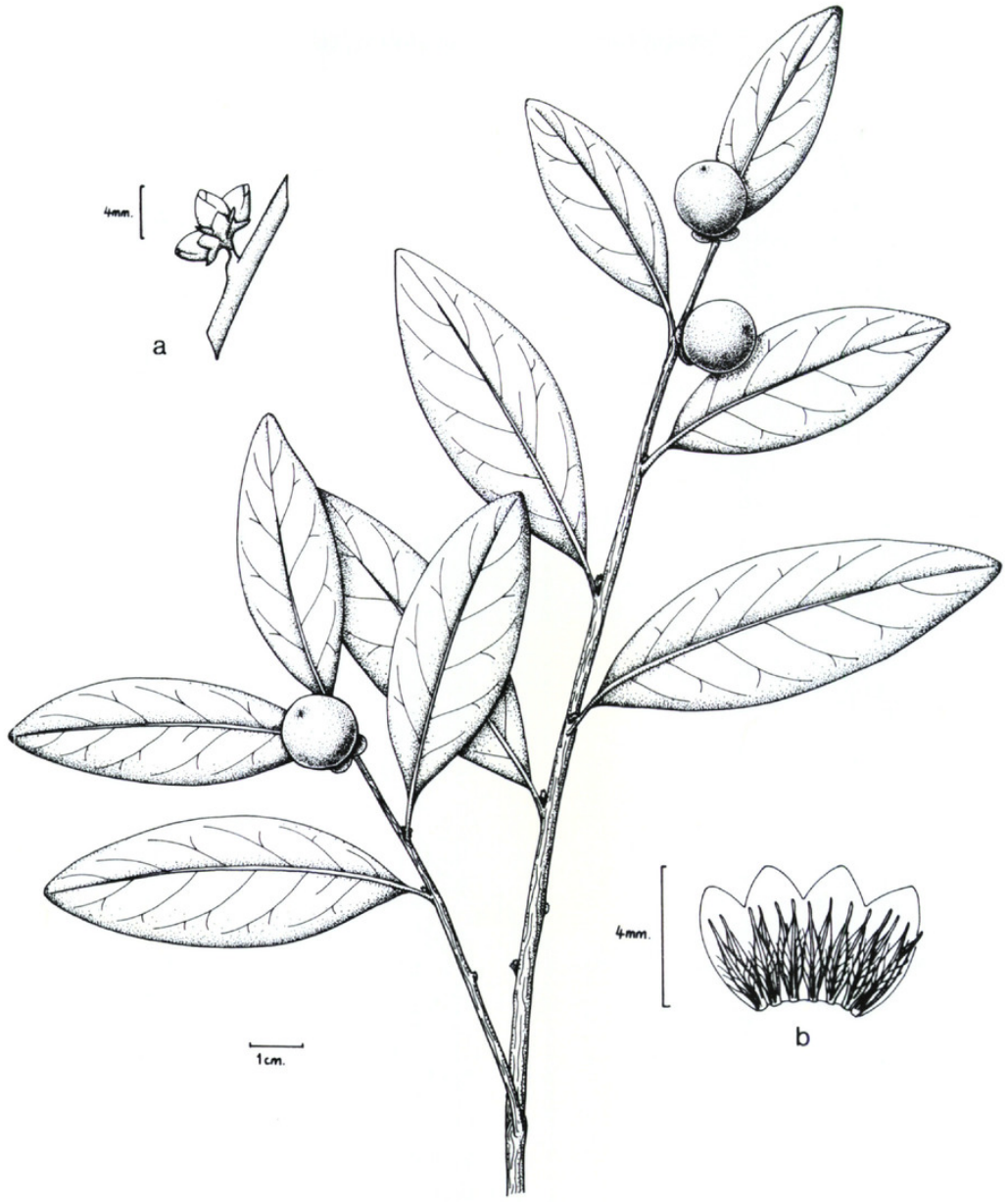

Figure 1. *Diospyros hartmanniana* S. Knapp (from *McPherson & Richardson 15959*, BM). —a. Male inflorescence of *D. hartmanniana* (from *McPherson & Hensold 15303*, MO). —b. Detail of male flower (from *McPherson & Hensold 15303*, MO).

locules 4 (?); fruiting pedicel ca. 0.5 mm, the fruits essentially sessile; fruiting calyx 0.8–1.2 cm diam., saucer-shaped, fleshy (?), lobed ca. to the middle, the lobes 4, 2.5–3 mm, wider than long, semi-orbicular, sparsely black-strigose, glabrescent, the apex rounded to flat. Seeds 4 or fewer by abortion, ca. 1 × 0.5 cm, dark brown.

Etymology. This species is named in honor of Ratibor Hartmann, on whose finca the type was collected and who has been a kind and generous host to many plant collectors in Panama.

Distribution. Cloud forests in extreme western Panama and in the Cordillera de Tilarán, Costa Rica; 1400–2200 m. Figure 2.

Diospyros hartmanniana is easy to distinguish from all other Mesoamerican *Diospyros* by its copious, coarse, black-strigose pubescence on the buds and new leaves. This type of pubescence is also found to some degree in *D. campechiana* Lundell of Guatemala and adjacent Mexico, but in that species the pubescence itself is less dense, and the trichomes are more slender and fine. These black trichomes break off in older leaves, leaving a circular base that looks somewhat like the black glands found in the genus *Hypericum*. Fruits of *D. campechiana* are more ellipsoid in shape than those of *D. hartmanniana*, and the leaves are in general larger (most commonly 15–26 × 5–9 cm) and dry a rich golden brown. The flowers of *D. hartmanniana* all dry black, and like the flowers of *D. di-*

Figure 2. Distribution of *D. hartmanniana* (circles) and *D. whitei* (squares).

gyna Jacquin, which dry similarly, are probably quite fleshy on live plants. None of the specimens mention this detail, so future collectors of this species are urged to record this information.

Paratypes. COSTA RICA. **Guanacaste:** Monteverde, transect 8, 1550 m, 10°48′N, 84°59′W, 13 July 1990, *A. Gentry et al. 71605* (BM, MO). PANAMA. **Chiriquí:** Cerro Pando area, ca. 2200 m, 8°52′N, 82°43′W, 24 Aug. 1982, *Hamilton et al. 969* (BM, MO); near border with Costa Rica, ca. 13 road-km from Río Sereno, Finca Hartmann, 1400–1800 m, 12 May 1991, *G. McPherson & N. Hensold 15303* (BM, FHO, MO), *G. McPherson & N. Hensold 15310* (BM, MO).

Diospyros whitei S. Knapp, sp. nov. TYPE: Panama. San Blas: Río Diablo y vecindad de Duque Sui, a unos 10 km de la costa frente a la Isla de Nargana, ruta hacia Cerro Ibedón, 80–110 m, 9°22′N, 78°35′W, *H. Herrera et al. 1175* (holotype, BM; isotypes, MO, PMA not seen). Figure 3.

Species haec a *Diospyros campechiana* Lundell, caule aureo-pubescente, foliis venatione scalariforme, lobis calycis intus dense aureo-adpresso-pubescentibus, baccis (immaturis?) minoribus, globosis, ad apicem aureo-pubescentibus, differt.

Tree to ca. 5 m; branchlets irregularly compressed, channeled when dry, dark brown, sparsely and minutely golden pubescent, the trichomes appressed. Leaves 9–20 × 3.5–8 cm, elliptic, chartaceous, drying dark, reddish brown; both surfaces glabrous except for a few minute golden, appressed hairs beneath, the base acute to slightly rounded, somewhat asymmetrical, the margins plane, the apex briefly subacuminate; lateral nerves in 6–8 pairs, raised beneath, the tertiary nerves subscalariform. Inflorescences axillary. Male flowers unknown. Female flowers in axillary 2–3-flowered fascicles, otherwise unknown, the pedicels (in fruit) ca. 2 mm. Fruit ca. 1.5 cm diam., subglobose, glabrescent with patches of persistent, long, golden, tightly appressed and silky hairs; styles 5, 1–1.5 mm, fused at the base, persistent on immature fruit, the stigmas irregularly lobed; fruiting pedicel ca. 2 mm, stout and woody; fruiting calyx 6–8 mm diam., saucer-shaped, shallowly 4-lobed, the lobes 1–2 mm, semiorbicular, strigillose on both surfaces, more densely so adaxially, the margins thickened and slightly reflexed. Mature fruits and seeds not known.

Figure 3. *Diospyros whitei* S. Knapp (from *Herrera et al. 1175*, MO).

Etymology. This species is named in honor of the late Frank White (1927–1994), a life-long student of the family Ebenaceae.

Distribution. Central and eastern Panama in lowland to middle elevation rainforest, 80–800 m. Figure 2.

This species was first described by the late Frank White in the *Flora of Panama*, as sp. I (1978). It is still known only from immature fruiting material, but is quite clearly different from any other Mesoamerican or northern South American species of the genus. White (1978) felt that *D. whitei* was perhaps related to *D. campechiana*, but its golden, rather than black, pubescence and densely appressed-pubescent calyx lobes in fruit distinguish it from that species. The ladder-like venation in mature leaves (see Fig. 3) is distinctive, and not found in any other Mesoamerican species of *Diospyros*. The essentially glabrous leaves with only a few trichomes along the midrib are also found in *D. digyna*. That species is easily distinguished from *D. whitei*, however, by its leathery leaves with indistinct venation, solitary female flowers, and large green fruit with a leathery pericarp. The fruits on the specimens examined by both White and ourselves are probably not mature, thus the dense pubescence at the apex may be sparser or absent in more mature specimens. More collections of this species, particularly of male plants, are urgently needed.

Paratypes. PANAMA. **Coclé:** new works at Rivera

sawmill, Alto Calvario, 600–800 m, 12 May 1977, *Folsom 3168* (MO). **Darién:** Cerro Pirre, 4 Aug. 1967, *Bristan 1229* (MO, NY cited by White (1978), not seen).

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Literature Cited

Bakhuizen van den Brink, R. C. 1936. Revisio Ebenacearum Malayensium. Bull. Jard. Bot. Buitenzorg, ser. 3, 15: 1–486.

Hiern, W. P. 1873. A monograph of Ebenaceae. Trans. Cambridge Philos. Soc. 12: 27–300.

White, F. 1978. Ebenaceae. *In* R. E. Woodson, Jr. & R. W. Schery (editors), Flora of Panama. Ann. Missouri Bot. Gard. 65: 145–154.

———. 1983. Ebenaceae. *In* E. Launert (editor), Flora Zambesiaca 7(1): 248–300. Flora Zambesiaca Managing Committee, London.

Note added in proof

The following specimens of *Diospyros hartmanniana* were seen by the author after this paper went to press (duplicates of these collections are most probably at MO and INB):

COSTA RICA. **Alajuela:** Reserva Biológica Monteverde, Estación Eladios, 820 m, 10°19′N, 84°43′W, 2 Oct. 1990, *Bello 2442* (FHO). **Guanacaste:** Canton de Tilarán, Río Cañas, lado pacifico, 10°20′N, 84°51′W, 25 Aug. 1989, *Bello 1124* (FHO). **Puntarenas:** Monteverde, Fina Pablo Morales, 1600 m, 10°15′N, 84°48′W, 11 Jan. 1990, *Bello 1767* (FHO); Monteverde, cliff edge above Quebrada Maquina, along Río Fonseca, 1100–1300 m, 10°18′N, 84°48′W, 3 Jan. 1990, *Haber & Daniel 9895* (FHO); Monteverde, Bajo Tigre reserve, Pacific slope, 1200–1300 m, 10°18′N, 84°48′W, 3 Apr. 1990, *Haber & Zuchowski 10600* (FHO); Monteverde, Valle del Río Peñas Blancas, Fila del Toro, sendero Pipilacha y Campo Tres, 900–1100 m, 10°N, 84°W, 21 Jan. 1991, *Haber & Cruz 10632* (FHO); Canton Buenos Olán, upper reaches of Río Cabagra, 1700 m, 9°17′40″N, 83°11′50″W, 24 Sep. 1989, *Herrera 3542* (FHO).