

deeply bifid apically to $\frac{3}{4}$ its length, lobes broadly diverging, 18×5 cm, 5-7-nerved.

Inflorescences interfoliar, perhaps infrafoliar in fruit; peduncles erect, to 15 cm long, 2-3 mm wide at base, 1-1.5 mm diam. at apex, greenish in flower, orange in fruit; bracts 4-5, tightly sheathing, greenish, membranous, becoming brown and tattered at anthesis, finely longitudinally striated, prophyll 5 mm long, 2nd bract 1.5 cm, 3rd 4 cm, 4th 7 cm long. Staminate inflorescence with 5-10 rachillae, these to 11 cm long, slender, spreading, greenish at anthesis. Pistillate inflorescence furcate (Fig. 4) or with 3 rachillae to 8 cm long, erect, greenish in flower, orange in fruit.

Staminate flowers in loose spirals, 1-3 mm apart in bud, \pm ovoid at anthesis, 2×2 mm, 1 mm wide at apex, cream-colored, superficial leaving elliptic scars 1-1.5 mm long; calyx low, 0.5×2 mm, membranous, 3-lobed, lobes broadly rounded; petals valvate, free to base, erect, deltoid, $2 \times 2-2.5$ mm, acute or slightly rounded; stamens short, filaments short or absent, anthers bilobed, lobes elliptic; pistillode columnar, 1.25-1.75 mm high, reddish and slightly lobed apically. Pistillate flowers in loose spirals, 2-3 mm apart, ovoid, 2×1.5 mm, superficial leaving rounded scars 1.25 mm long; calyx low, 0.5×1.5 mm, membranous, scarcely 3-lobed; petals imbricate basally, free apically, 1.75×2 mm, acute or rounded apically; staminodes present; pistil ovoid, $1.75-2 \times 1.5$ mm, greenish, stigma lobes darkened, flat, recurved. Fruits black, globose, 8-10 mm diam.

Distribution: COSTA RICA. Heredia. Limón. Dense, wet forest on the Atlantic slope, 700-1,100 m elevation.

Specimens Examined: COSTA RICA. Heredia: Braulio Carrillo National Park, *R. Chazdon* 136 (BH), 160, 198, 200 (CR), 205 (holotype, CR); *M. H. Grayum* 6733 (MO). Limón: Volcán Irazú, *R. Ocampo* s. n. (CR).

The epithet honors Robin Chazdon, col-

lector of the type and a majority of the paratypes and who has added immensely to our knowledge of palms in Braulio Carrillo National Park.

Chamaedorea chazdonii is known from only a few collections from the Atlantic slope of Costa Rica in Braulio Carrillo National Park on Volcán Barva and outside the park on Volcán Irazú. It is most closely related to *C. correae* from Panama but this latter species can be distinguished by its gray-green, moderately thick leaves with more nerves on each side of the rachis, gray petioles, staminate inflorescence with 1-3 ascending and more densely flowered rachillae, more peduncular bracts, and yellowish staminate flowers. *C. chazdonii* may also be confused with *C. dammeriana* but this differs in its larger habit, erect stems, more numerous leaves with more nerves, pendulous staminate rachillae, densely placed and globose staminate flowers with a prominent calyx and stamens equalling the pistillode, and oval fruits distinctly narrowed at both ends.

Chazdon (1987) referred to *C. chazdonii* as *Chamaedorea* sp. "chiquita."

Chamaedorea matae D. R. Hodel **sp. nov.** (Figs. 5-7).

Subgeneris *Chamaedoreae* Mart. ex H. A. Wendl. floribus masculis petalis connatis apicaliter corollis aperturis lateralibus. *C. warszewiczii* H. A. Wendl. affinis sed foliis pinnis paucioribus (8), rachillis femineis pendulis differt. Typus: Costa Rica, *G. Mata* 497 (holotypus, CR) (Fig. 5).

Stem solitary, erect, to 3 m tall, 1.5-2 cm diam., green, smooth, ringed, internodes 5-12 cm long. Leaves 4-7, spreading, pinnate; sheath to 20 cm long, tubular, tightly clasping, obliquely open apically, longitudinally striated; petiole to 15-25 cm long, green and grooved adaxially, rounded and pale abaxially; rachis 50-70 cm long, green and angled adaxially, rounded with a yellowish band abaxially



5. Type specimen of *Chamaedorea matae*, G. Mata 497.

extending onto sheath; pinnae 4–5 on each side of rachis, broadly lanceolate, basal ones to 30×9 cm, acuminate, strongly sigmoid, thick, leathery, 5–6 prominent primary nerves, these drying yellow and prominent below, end pair of pinnae conspicuously wider, to 15 cm wide, 10–12-nerved (Figs. 5,7).

Inflorescences interfoliar, erect to nodding or arching; peduncles to 50 cm long, 7–10 mm diam., greenish in flower and red-orange in fruit where exposed; bracts 5, \pm loosely sheathing, brownish in flower and fruit, bifid, acuminate, fibrous, becoming tattered, prophyll to 6 cm long, 2nd and 3rd bracts to 15 cm, 4th to 23 cm, 5th to 26 cm; rachises 3–8 cm long, green in flower, red-orange in fruit. Staminate inflorescence with up to 15 rachillae, these to 25 cm long, pendulous, green in flower. Pistillate inflorescence with 7–10 rachil-

lae, these to 15–20 cm long, green and pendulous in flower, red-orange and pendulous in fruit (Fig. 7).

Staminate flowers in moderately dense spirals 1–2 mm apart, \pm ovoid to barrel-shaped, 3×2.5 mm, leaving superficial elliptic scars 2.5–3 mm long; calyx low, 2.5×0.75 mm, scarcely 3-lobed; petals 3.5×2.5 –3 mm, acute, connate at tips and corolla opening by lateral slits, corolla and calyx strongly nerved when dry; stamens shorter than pistillode, anthers 1.5 mm high; pistillode columnar, 2.5–2.75 mm high. Pistillate flowers leaving \pm rounded superficial scars 2 mm long; petals broadly rounded in fruit, imbricate, 2×3 mm, dark-centered, brown-margined; calyx 0.75 mm high, scarcely 3-lobed. Fruits black, \pm oval, 7 – 8×5 – 6 mm; perianth strongly nerved in fruit.

Distribution: COSTA RICA. Puntarenas. PANAMA. Herrera. Dense, moist forest on the Pacific slope, to 400 m elevation.

Specimens Examined: COSTA RICA. Puntarenas: Osa Peninsula, Marengo Biological Station, D. R. & R. J. Hodel 715 (BH, CR); Corcovado National Park, A. Gentry 48472 (MO); R. Liesner 2841 (MO, CR), 3259 (CR); O. Tellez et al. 4197 (CR); Rincón de Osa, G. Mata 497 (holotype, CR); W. Burger & J. Gentry 8905 (MO, F); P. Raven 21516 (F); J. & K. Uiley 1189 (F); Carara Reserve, M. Grayum & P. Sleeper 5946 (MO); hills north of Palmar Norte, T. Croat 35184 (MO); G. deNevers et al. 7750 (CR); Esquinas Forest Reserve between Palmar Sur and Golfito, H. E. Moore 6539 (BH). PANAMA. Herrera: Cerro Alto Higo, B. Hammel 4225 (MO).

The name honors Guillermo Mata, collector of the type. *Chamaedorea matae* is close to *C. warscewiczii* with which it shares the broadly sigmoid, prominently nerved, leathery pinnae and barrel-shaped staminate flowers with petals connate apically and the corolla opening by lateral slits. However, this latter species has dou-



6. *Chamaedorea matae*, D. R. & M. A. Hodel 715, at Marengo Biological Station on the Osa Peninsula, Costa Rica. 7. Leaf and infructescence of *Chamaedorea matae*, D. R. & R. J. Hodel 715, showing broad terminal pinnae and pendulous fruiting rachillae.

ble the number of pinnae and spreading, rather than pendulous, pistillate rachillae.

***Chamaedorea serpens* D. R. Hodel sp. nov.** (Figs. 8,9).

Subgeneris *Chamaedoreae* Mart. ex H. A. Wendl. floribus masculis petalis connatis apicaliter corollis aperturis lateralibus. *C. pinnatifroni* (Jacq.) Oerst., *C. warszewiczii* H. A. Wendl. et *C. murriensi* Galeano affinis sed habitu minori, repenti et repullulanti ramificanti differt. Typus: D. R. & M. A. Hodel 745 (holotypus, BH; isotypus, PMA).

Stems caespitose, procumbent and sprawling and twisting along ground and through adjacent vegetation to 3–4 m long then shortly erect to 1.5 m tall (Figs. 8,9), 5–10 mm diam., rooting and sprouting at

nodes, smooth, green, prominently ringed, internodes 5–10 cm long. Leaves 4–5, erect-spreading, glossy green, pinnate or rarely simple and bifid; sheath to 20 cm long, tubular, tightly clasping, obliquely open apically, green, longitudinally striated; petiole to 20 cm long, green and flat above, pale and rounded below; rachis to 25 cm long, green and angled above, rounded and with a pale yellow or light green band extending onto sheath; pinnae 2–5 on each side of rachis, all but apical pair lanceolate, 12–18 × 2.5–4 cm, sigmoid, acuminate, narrowed at base, 4–5 prominent primary nerves above, 1 secondary between each pair of primaries, tertiaries numerous, faint, apical pair of pinnae (or if bifid) 27–30 × 8–12 cm, slightly sigmoid, acuminate, 9–12 prominent nerves above, these 1–2 cm apart.