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## New Species of *Chamaedorea* from Costa Rica and Panama

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Recent work in support of a project on *Chamaedorea* in cultivation that the International Palm Society will publish in 1991 has yielded several undescribed species native to Costa Rica and/or Panama. Since they are all being grown by collectors and/or botanical gardens, it is appropriate to name them at this time.

***Chamaedorea robertii*** D. R. Hodel & N. W. Uhl **sp. nov.** (Figs. 1-3).

Subgeneris *Chamaedoropsis* Oerst. *C. pumilae* H. A. Wendl ex Dammer et *C. sullivanioris* D. R. Hodel & N. W. Uhl affinis sed laminis smaragdinis non venetis, marginibus dentatis remotioribus, inflorescentiis masculis spicatis, floribus masculis albidis, floribus femineis aureis differt; *C. pumilae* affinis sed laminis longioribus et latioribus, pluribus nervis differt; *C. sullivanioris* affinis sed laminis magis profunde bifidis differt. Typus: *D. R. & R. M. Hodel 737* (holotypus, BH; isotypus, PMA).

Stem solitary, erect apically, short, not apparent but creeping at or slightly below the leaf litter, 2.5 cm diam., green, prominently ringed, internodes 1.5 cm long, overall height including leaves less than 1 m.

Leaves 5-7, erect-spreading, simple and bifid (Fig. 1); sheath to 12 cm long, splitting deeply opposite the petiole, cylindrical and clasping tightly in a tubular manner only in the basal third, green, ragged and brown-margined apically; petiole 20-25 cm long, green and flattened adaxially and

slightly channeled from the lower margins of the blade extending downward to the sheath, green and rounded abaxially; rachis 20 cm long, green and angled adaxially, green and rounded abaxially; blade rich green, 40-50 × 20 cm, simple, bifid apically to nearly half its length, each lobe 20-25 cm long, acuminate, tips 18-20 cm apart, 12-16 raised and prominent primary nerves on each side of the rachis adaxially and abaxially, secondaries numerous and faint, margin conspicuously toothed.

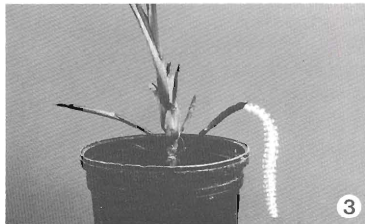
Inflorescences infrafoliar or sometimes interfoliar, often emerging from the leaf litter of the forest floor, spicate. Staminate inflorescence (Fig. 3) with a peduncle to 25 cm long, 5 mm wide at the base and there ± flattened, 4 mm wide at the apex and there rounded, erect-ascending, pale green or yellowish where exposed at anthesis; bracts 5, acute-acuminate, greenish at anthesis ageing to dark brown or nearly black, tubular, tightly sheathing basally, the upper ones inflated apically to 8 mm diam. for two-thirds their length, ± leathery, longitudinally striate-nerved, prophyll 2 cm long, 2nd bract 3-4 cm long, 3rd 5 cm long, 4th 12 cm long, 5th 15 cm long, uppermost equalling or slightly exceeding the peduncle, sometimes 5th bract very short and concealed by the 4th; rachis or flower-bearing portion to 10-15 cm long, 3-4 mm diam., pendulous, whitish, longitudinally ridged around each flower. Pistillate inflorescence (Fig. 2) ascending but often horizontal in fruit; peduncle similar to that of the staminate

but orange in fruit; bracts 5, similar to those of the staminate but burgundy in color when newly emerged, browning only slightly by anthesis, brownish in fruit; rachis to 10 cm long,  $\pm$  stiff, horizontal, pale yellow or whitish at anthesis, 5 mm in diam., orange in fruit.

Staminate flowers arranged in 3 densely spiralling rows, closely placed but not contiguous, bullet-shaped,  $5 \times 3.5$  mm, greenish-white, immersed in elliptic pits 3–4 mm long; calyx cupular,  $1-1.25 \times 3.5$  mm, whitish tinged with green apically, shallowly 3-lobed, lobes broadly rounded, sepals imbricate, membranous; corolla with the petals erect, valvate, free more than half-way to the base,  $4 \times 3$  mm, acute, green but with a whitish base; stamens exerted beyond the corolla, filaments columnar,  $4 \times 0.6$  mm, clear-colored, anthers bilobed, held beyond the corolla, 1.25 mm long; pistillode columnar,  $4 \times 0.75$  mm, clear, trifold apically. Pistillate flowers densely arranged, some contiguous but most not, 1–1.5 mm distant, very depressed-globose,  $2.5 \times 3.5$  mm, yellow, immersed in circular depressions 4 mm across; calyx ringlike,  $1 \times 3.5$  mm, pale yellowish or whitish, very shallowly and inconspicuously 3-lobed; corolla with the petals imbricate, spreading slightly apically,  $2.5 \times 4.5-5$  mm, yellow, truncated and mucronate apically; pistil strongly depressed-globose,  $2.5 \times 3-3.5$  mm, light yellowish, styles very short or lacking, stigmas pointed, erect, pale. Fruits black, globose, 7 mm diam., densely crowded.

*Distribution:* PANAMA. Chiriquí. Bocas del Toro. Veraguas. Coclé. COSTA RICA. Guanacaste. Alajuela. Heredia. San José. Dense, wet forest, mostly on the Atlantic slope, 650–1,500 m elevation.

*Specimens Examined:* PANAMA. Chiriquí: Fortuna, *G. de Nevers & G. McPherson* 6854 (MO); *B. Hammel* 2256 (MO); *H. Churchill* 5263, 5264, 5756 (MO); *S. Knapp et al.* 4055, 4057 (MO); Cerro Colorado, *S. Mori & R. Dressler* 7814 (MO); *J. Folsom & L. Collins* 1800



1. *Chamaedorea robertii*, *D. R. Hodel* 624, cultivated in the JBRCW, Costa Rica. 2. Pistillate plant of *C. robertii*, *D. R. Hodel* 828, cultivated in Los Angeles, California. It was originally collected at the type locality in Panama. 3. Staminate plant of *C. robertii*, *D. R. Hodel* 857, cultivated in Los Angeles, California. It was originally collected at the type locality in Panama.

(MO). Bocas del Toro: Fortuna, *H. & A. Churchill* 6191 (MO); *G. McPherson* 6816 (MO); Quebrada Higueron and Quebrada Gutierrez, *J. Kirkbride Jr. & J. Duke* 739 (MO, BH). Veraguas: Bajo Chitra, *G. de Nevers & G. McPherson* 6765 (MO); Santa Fe, *T. Antonio* 3543 (MO). Coclé: El Copé, *D. R. & R. M. Hodel* 737 (holotype, BH; isotype, PMA); *J. Fol-*

som 3243 (MO); *J. Folsom & J. Kauke* 2648 (MO); *G. de Nevers et al.* 6384 (MO); *B. Hammel* 2421, 4094 (MO). COSTA RICA. Guanacaste: Río Negro, *W. Haber ex E. Bello* C. 5874 (MO). Alajuela: Río Laurencito de San Ramón, *I. Chacón et al.* 2200 (CR). Heredia: Braulio Carrillo National Park, *R. Chazdon* 196 (CR). San Jose: Braulio Carrillo National Park, *D. R. Hodel et al.* 971, 975, 976 (BH, CR). CULTIVATED. United States. California: Los Angeles, in greenhouse, *D. R. Hodel* 828, 857 (BH), originally collected at the type locality. Costa Rica. Puntarenas: San Vito, Jardín Botánico Robert y Catherine Wilson (JBRCW), *D. R. Hodel* 624 (BH), originally collected at the type locality.

The name honors Hodel's son Robert who, at age seven, made the walk from El Copé to the Continental Divide and assisted in collecting the type.

*Chamaedorea robertii* is an attractive and unusual species because of its simple, bifid, heavily nerved leaves, acaulescent habit, and spicate inflorescences. The flower-bearing portion of the staminate inflorescence is pendulous (Fig. 3) and densely crowded with relatively large, white-tinged-with-green flowers. The pistillate inflorescence has densely crowded, yellow flowers and the peduncle is sheathed in attractive, burgundy-colored bracts.

When it flowered for the first time in the greenhouse in Los Angeles, we originally thought this taxon was a member of subgenus *Stephanostachys* because of the densely placed staminate flowers. However, subsequent collections from this cultivated material show that the staminate flowers of *C. robertii*, while closely placed, are clearly distinct and not contiguous,

thus excluding it from *Stephanostachys*. *C. robertii* is most closely related to *C. pumila* and *C. sullivaniorum*. *C. robertii* can be distinguished from both by its forest-green leaves with more remotely toothed margins, spicate staminate inflorescences with whitish flowers, and yellow pistillate flowers. It differs from *C. pumila* in the larger, broader leaf with more nerves (12–15 rather than 10) and from *C. sullivaniorum* in the leaf being more deeply bifid.

**Chamaedorea palmeriana** D. R. Hodel & N. W. Uhl. **sp. nov.** (Figs. 4,5).

Subgeneris *Chamaedorea* Mart. ex H. A. Wendl. *C. amabili* H. A. Wendl. ex Dammer affinis sed laminis bifidis usque ad medi vel ultra, nervis multo paucioribus, floribus masculis angulatis differt; *C. simplicis* Burret affinis sed laminis pluribus nervis, marginibus dentatis, inflorescentiis masculis non spicatis differt. Typus: *D. R. & M. A. Hodel* 726A (holotypus, BH; isotypus, PMA).

Stem solitary, erect but often creeping or procumbent and rooting along its length, to 1 m high, 7–10 mm diam., smooth, green, ringed, internodes 5–10 cm long, often with aerial roots at the base.

Leaves 7 or sometimes more, simple and bifid (Fig. 4), held horizontally; sheath 5–7 cm long, cylindric, green, minutely white-spotted, obliquely open apically, faintly longitudinally striate-nerved; petiole to 15 cm long, green and flattened adaxially, green and rounded abaxially and there with a faint pale yellow or light green band extending from the rachis to the sheath; rachis 8–12 cm long, green and angled adaxially, green and rounded abaxially;

4. *Chamaedorea palmeriana*, *D. R. & M. A. Hodel* 726B, in wet forest at the type locality in Chiriquí, Panama. 5. Staminate inflorescence of *C. palmeriana* cultivated in Los Angeles, California. The plant was originally collected at the type locality in Panama. 6. Herbarium specimen of *C. correae*, *R. Liesner* 1001, showing simple, bifid leaves and spicate inflorescences. 7. Herbarium specimen of *C. correae*, *B. Hammel* 2413, showing prostrate stem rooting at the nodes.