in Panamá and Tapantí in Costa Rica, *C. costaricana* attains rather large size. At Cerro Punta, we collected material with stems to 15 meters in height and nearly 8 cm diam. Botanists and horticulturists have confused these large forms of *C. costaricana* with *C. woodsoniana*. The solitary habit with even more robust stems, lack of persistent ligules at the apex of the leaf sheath, heavily nerved, straight pinnae, larger inflorescences with longer peduncles, and elongated fruits distinguish *C. woodsoniana*.

The presence of the two ligules at the apex of the leaf sheath is a diagnostic character unifying these forms. These appendages are lanceolate and membranous and more or less deciduous, at least in their upper portion. The lower or basal portion is not as membraneous and is often persistent as a triangular tooth or auricle (Fig. 4) long after the upper portion has fallen or rotted away. Since the upper portion is membranous and rots away rather rapidly, the overall visibility of this appendage is much reduced with time. Therefore, it is best viewed on leaf sheaths on the apical portions of stems near new, emerging leaves.

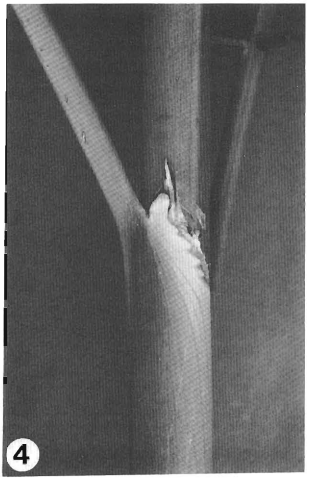
Chamaedorea costaricana has been cultivated for ornament in San José, Costa Rica at least since the late 1800s and probably earlier, the forested slopes of Volcán Barva serving as a ready and accessible source of plants and seeds. Today, handsome clumps are found throughout the city. It is also commonly found in towns and villages to the north of San José along National Route 9 that winds past Volcán Barva to the Atlantic lowlands. Here, such as at the towns of Heredia and Barva, it is seen as a large hedge, screen, or single specimens in many of the yards and residences. From Costa Rica, it has spread throughout the horticultural world and is one of the more widespread members of the genus in cultivation, being found in gardens and collections in California, Florida, Hawaii, Australia, and elsewhere.

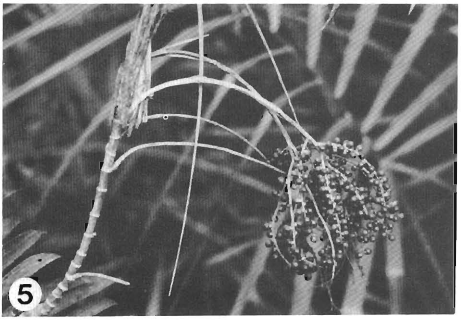
Surprisingly, much, if not most, of the material in California cultivated as *C. costaricana* is actually *C. pochutlensis*. In addition, material in California and Hawaii grown as *C. woodsoniana* is actually *C. costaricana*.

Chamaedorea hooperiana D. R. Hodel **sp. nov.** (Figs. 6–8).

Subgeneris *Chamaedoreae* Mart. ex H. A. Wendl. inflorescentiis masculis solitariis, floribus masculis solitariis petalis connatis apicaliter corollis aperturis lateralibus. *C. graminifoliae* H. A. Wendl. et *C. pochutlensi* Liebm. affinis sed surculis basilibus propullanibus erectis post vaginas infuscatas persistentes crassas induratas subligneas, foliis crassis induratas differt. Typus: Cult., *D. R. Hodel 772* (holotypus BH; isotypi CR, HNT, K, MEXU, MO, NY).

Cespitose, new lateral shoots emerging from tops of old dried persistent basal sheaths (Fig. 8), forming fairly dense clumps to 3–4 m across, erect, leaning with age, to 4–5 m tall, stems 2–2.5 cm diam., green, ringed, often covered with old leaf bases, internodes to 15 cm long. Leaves 5–7, erect-spreading, pinnate; sheath to 40–50 cm long, tightly clasping, obliquely open apically and there splitting deeply opposite petiole with age, rough-brown-margined, below this whitish and longitudinally striate-nerved, old sheaths persistent, drying brown, hard, durable, ± woody; petiole to 20–35 cm long, lime-green and grooved especially near the base adaxially, rounded and pale abaxially; rachis to 0.8–1 m long, lime-green and sharply angled adaxially, rounded abaxially with a green or yellowish band extending onto sheath, attenuate apically; 20–26 pinnae on each side of rachis (Fig. 7), these regularly arranged, opposite to subopposite, flat off rachis, elongate-lanceolate, lower and middle ones longest, these to 40 × 1.8 cm, becoming progressively shorter toward apex of rachis,





4. The short ligule at the apex of the leaf sheath is a diagnostic feature of *Chamaedorea costaricana*. Compare it with that of *Chamaedorea quezalteca* in Figure 12. 5. The infructescence of *Chamaedorea costaricana* is held below the leaves. 6. A large clump of *Chamaedorea hooperiana* grows at Ingwersen Nursery in Oceanside, California. 7. Leaf and pistillate inflorescence of *Chamaedorea hooperiana* were taken from a plant cultivated in the garden of P. Sullivan in Ventura, California, *Hodel 804*.

± straight, only slightly falcate, long-acuminate, slightly contracted at base, ± thick, durable, a prominent pale midrib sharply angled adaxially and 2 much less prominent primary nerves on each side of this, secondaries and tertiaries faint and inconspicuous, midrib prominent abaxially, apical pair of pinnae slightly wider.

Inflorescences infrafoliar, emerging from tops of dried persistent sheaths, erect. Staminate with peduncle to 30 cm long, 1.5 cm wide at base, erect-spreading, pale green where exposed; bracts 5–6, tubular, tightly sheathing, obliquely open apically and there bifid except largest which is long-acuminate and greatly exceeds peduncle and often conceals 1 or 2 smaller ones, longitudinally striate-nerved, drying brown at anthesis; rachis 20 cm long, light green; 40–45 rachillae, these to 25 cm long,

spreading-drooping, light green, 1.75–2 mm diam. Pistillate (Fig. 7) with peduncle to 50 cm long, 1.5 cm wide at base, erect, pale or greenish in flower where exposed, reddish orange in fruit; bracts 6, similar to those of staminate inflorescence, brown and persistent in fruit; rachis to 22 cm long, green-yellow at anthesis, reddish orange in fruit; 40 rachillae, lower ones longest, these to 22 cm long, apical ones to 10 cm long, spreading slightly, ± stiff, yellow-green at anthesis, reddish orange in fruit.

Staminate flowers spirally arranged, 3–3.5 mm distant, subglobose, 3–3.5 × 3–4 mm, highly aromatic, slightly sunken in elliptic depressions; calyx cupular, 1 × 2 mm, membranous, light green, shallowly 3-lobed, lobes broadly rounded, sepals connate nearly to top; petals valvate, connate apically and there adnate to pistillode and corolla opening by lateral slits, petals later apically spreading slightly? but remaining inwardly curved, yellow, 3.5 × 3 mm, broadly acute, reflexed only slightly at tip, margins ± thickened; stamens 2.5 mm tall, filaments 1–1.5 mm long, very pale green, nearly clear-colored, anthers 1 mm long, yellow changing to white; pistillode columnar, 2.75 mm tall, light green, darkened and narrowed apically. Pistillate flowers in rather remote spirals, 8 mm distant, globose, 3 × 3 mm, slightly immersed in elliptic depressions; calyx very light green or nearly yellow, 1–1.5 × 3 mm, prominently 3-lobed, lobes broadly rounded, sepals connate and/or lightly imbricate basally; petals tightly imbricate, opening only briefly apically, light greenish yellow, 2.5–2.75 × 3 mm, acute; pistil globose, light green, 3 × 3 mm, styles lacking, stigma lobes distinct but low, rounded. Fruits black, oblong-globose, 7–8 mm diam.

Distribution: MÉXICO. Veracruz. Dense, wet forest, 1,000–1,500 m elevation.

Specimens Examined: MÉXICO. Veracruz: Catemaco, *D. & R. Hodel 922* (BH, MEXU); *Dressler & Jones 91* (GH). CULTIVATED. California: La Habra, garden of Lou Hooper, *Hodel 772* (holotype BH; isotypes CR, HNT, K, MEXU, MO, NY); Ventura, garden of Pauleen Sullivan, *Hodel 804* (BH); San Marino, Huntington Botanical Gardens *43001*, *Hodel 690* (BH).

The epithet honors Lou Hooper of La Habra, California in whose garden I collected the type specimen.

Chamaedorea hooperiana exists in only a few collections in southern California. Pauleen Sullivan in Ventura, Louis Hooper in La Habra, Jack Ingwersen in Oceanside (Fig. 6), and the Huntington Botanical Gardens in San Marino have mature plants in their gardens. For years these plants were unidentified and their origin uncertain. The common story was that the existing plants originated from one introduction by an unknown seaman who collected seeds in a port of call in Central American and brought them to Southern California.

In December, 1989, during field work in México, we found it in the wild in the Catemaco region of Veracruz, enabling us to provide a known locality for it. Sullivan has plants of both sexes and produces seeds regularly that she has distributed to local palm collectors and hobbyists. I originally thought that this species was *C. karwinskyana* and plants of *C. hooperiana* may have been distributed as such. However, I have since examined the type of *C. karwinskyana* and realize that it can be included with *C. pochutlensis*.

Similar florally to *C. graminifolia* and vegetatively to *C. pochutlensis*, *C. hooperiana* can be distinguished in the manner in which it sends forth new shoots from the base of the plant. These emerge from the tops of the persistent, nearly woody, basal leaf sheaths (Fig. 8). In addition, *C. hooperiana* has thicker, durable, nearly plasticlike leaves. Rhizomatous stems emerging some distance from the parent plant and soft, thin, narrowly liner pinnae also distinguish *C. graminifolia*. Other distinguishing characters of *C. pochutlensis*

include the staminate flowers with apically spreading petals and broader, softer pinnae.

A handsome species of easy culture, *C. hooperiana* is a vigorous and relatively fast grower. Its eventual size should be considered when placing it in the landscape. With age, it will form rather dense clumps several meters across. Stems toward the perimeter of the clump tend to lean outward gracefully, occupying even more space. It is more resistant to infestations of mites than *C. costaricana* and *C. pochutlensis* and is much superior as an indoor plant. In fact, it holds great promise for use in interior situations due to its tolerance of low light and low humidity and resistance to pests. Collectors in southern California have made hybrids between *C. hooperiana* and *C. pochutlensis*.

Chamaedorea pochutlensis Liebm. in Mart., Historia Naturalis Palmarum 3: 308, 1849. Type: México, Oaxaca, *Liebmann 6579* (holotype C, isotype MO).

Chamaedorea karwinskyana H. A. Wendl., Allg. Gartenzeitung 21: 179, 1853b. Type: Cult., *Wendland s. n.* (holotype GOET).

Nunnezharia pochutlensis (Liebm. in Mart.) O. Kuntze, Revisio Generum Plantarum 2: 730, 1891.

Nunnezharia karwinskyana (H. A. Wendl.) O. Kuntze, Revisio Generum Plantarum 2: 730, 1891.

Chamaedorea elatior Hort. (non Mart.).

Chamaedorea robusta Hort.

Stems to 3–5 m tall or more (Figs. 9, 10), 2–3 cm diam., internodes 10–25 cm long, forming dense clumps eventually reaching 2–3 m across. Leaves 3–5, to 2 m long; sheath to 30 cm long, green but drying pale or whitish and persisting on stem; petiole to 30 cm long; rachis to 1 m long or more with a pale or light green band extending onto sheath, petiole and sheath ± slightly glaucous; pinnae 20–33 on each side of rachis, regularly arranged, elongate-lanceolate, to 40 × 2–3 cm, a prominent pale midrib and 2 submarginal primary nerves, secondaries and tertiaries inconspicuous. Inflorescences infrafoliar, erect-spreading; peduncles 30–40 cm long; rachises 10 cm long; staminate with 12–25 rachillae, these 15–20 cm long, slender ± drooping, green; pistillate with 12–18 rachillae, these 15 cm long, slender, spreading and ± stiff but becoming ± drooping and reddish orange in fruit. Staminate flowers strongly aromatic. Fruits black with glaucous bloom, globose-ellipsoid, 12–13 × 8–10 mm.

Distribution: MÉXICO. Moist forest on the Pacific slope, 50–2,000 m elevation.

Specimens Examined: MÉXICO. Oaxaca: inland from Puerto Ángel, *Moore 8238* (BH); in hills behind Pochutla, *Liebmann 6579* (holotype C, isotype MO); *D. & R. Hodel 940* (BH, MEXU); in hills behind Puerto Escondido, *D. & R. Hodel 934A, 934B* (BH, MEXU). Guerrero: road from Acapulco to Acahuizotla, *Moore 6202* (BH). Michoacán: near Atenga on road to Playa Azul, *Moore 8789* (BH); near Uruapan, *Moore et al. 5755* (BH); Apatzinga, Aguililla, *Hinton et al. 15984*. Jalisco: Colima, Rancho El Jabali, *Sanders et al. 8146* (RSA); Estación Biología Las Joyas. *Cochrane & Judziewicz 10647* (RSA); road from Autlán to Barra de Navidad, *Moore & Bunting 8743* (BH); Sierra de Parnaso, *Boutin & Kimnach 3113* (HNT); Sierra de Manantlán, Cerro La Piedra Bola, *Iltis & Guzman 29106, 29107* (WIS); La Manzanilla, *McVaugh 25051* (MICH). Nayarit: road from Tepic to Jalcocotán, *Moore & Bunting 8693* (BH); *Boutin 2090* (HNT). Sinaloa: Sierra Tacuichamona, Capadero, *Gentry 5605* (GH); Sierra Surotato, La Jolla, *Gentry 7281* (RSA). Durango: below Los Molinos, *Kimnach & Sanchez-Mejorada 1781* (HNT): El Palmito, *Kimnach & Sanchez-Mejorada 1689* (HNT). CULTIVATED. México: Guadalajara, *Iltis & Nee 1667* (WIS); Cuernavaca, in park by Palacio Cortes,