

Mexico) has not been located; the lectotype here chosen is the syntype cited as having been collected from between La Galera and Pochutla (Oaxaca, Mexico).

8. *Cryosophila stauracantha* (Heynhold) R. Evans, comb. nov. *Chamaerops stauracantha* Heynhold, *Alph. Aufz. Gew.* 136. 1846. *Acanthorrhiza stauracantha* (Heynhold) Linden, *Catalogue général* 87: 75. 1871.—TYPE: described from a plant cultivated in Belgium, original collector unknown (holotype: not located).—MEXICO. Quintana Roo: ca. 50 m S of Mexico Hwy 186 (Villahermosa–Chetumal), Km 218.5 (3.8 km W of Nachicocum, 34.0 km W of intersection with Mexico Hwy 307 N to Cancún), 18°29'N, 88°47'W, 50 m, 6 Oct 1990, *Evans 204* (neotype, here designated: MICH!; isoneotypes: BH! CHAP! MO! US!).

Cryosophila argentea Bartlett, *Carnegie Inst. Wash. Publ.* 461: 40. 1935. *Acanthorrhiza collinsii* Cook, *Natl. Hort. Mag.* 20: 50. 1941, nom. superfl.—TYPE: BELIZE. Belize: Cornhouse Creek, Manatee River, 31 Jan 1931, *Bartlett 11288* (holotype: MICH!; isotypes: BH! US!).

Cryosophila bifurcata Lundell, *Wrightia* 1: 53. 1945.—TYPE: BELIZE. Toledo: Punta Gorda–San Antonio rd, near Jacinto Creek, in high ridge, 14 Nov 1944, *Gentle 4972* (holotype: LL!, photos: LL! MO!).

Common names: *escoba*, *akum*, *guano-kum* (Mexico); *give-and-take* (Belize).

Solitary palm. Trunk (1.2–) 3–6 (–10) m long, usually more or less erect, sometimes arching upward, 5–12.1 cm DBH, armed with root-spines usually densest proximally and thinning distally, sometimes distributed more or less equally along length of trunk; internodes 1.2–2.9 cm long. Root-spines 0–150+ per 10 cm of trunk, most to ca. 15 (avg. ca. 4–6) cm long, occasional outliers to ca. 40 cm long, unbranched or 1 (–3)-times-branched, usually descending; basal adventitious roots growing into the soil, similar morphologically to root-spines above but longer (including their branches), sometimes forming a cone to ca. 0.5 m high and ca. 0.25 m in diameter. Leaves 18–24, 4–5 distal to leaf through which youngest inflorescence emerges, additionally 3–7 marcescent; petiole (0.62–) 0.78–1.68 (–2.36) m long, (0.74–) 0.93–1.72 (–2.10) cm wide; hastula 0.6–1.6 (–2.0) cm long, 1.0–2.1 cm wide, 0.8–2.2 times as wide as long, (broadly to) very broadly to depressed-triangular, blunt to more or less pointed, apically bifid or not; blade 0.170–0.230 mm thick, adaxial surface dull, abaxial surface silvery pubescent; central segments (49.5–) 59.5–96.5 (–103.5) cm long; marginal segments 43.5–69.5 (–81.0) cm long, ($\frac{2}{3}$ –) $\frac{3}{4}$ – $\frac{7}{8}$ (–nearly) as long as central segments; central abaxial split to within 1.0–5.0 (–8.5) cm of base, dividing blade into two more or less equal halves of (16–) 19–23 (–25) segments each; primary adaxial splits almost always less deep than central abaxial split (inner splits ($\frac{4}{5}$ –) $\frac{7}{8}$ –nearly to base), dividing each half into (4–) 5–8 sections of 2–5 (–7) segments each, with the central sections containing 4–6 (–7) segments each, the middle (2–) 3–6 sections of each half containing 2–3 (–4) segments each, and the marginal sections containing 2–5 (–6) segments each; secondary adaxial splits of central sections ($\frac{1}{4}$ –) $\frac{1}{5}$ – $\frac{3}{4}$ (– $\frac{7}{8}$) to base; central section of each half usually fully or partially divided, never undivided, the adjacent inner sections of each half often fully divided and the outer sections often undivided; marginal section almost always undivided, never fully divided; widest segment 2.3–3.5 (–4.3)

cm wide at its widest; longitudinal girdered veins usually 20–40 per half-segment, inconspicuous, 0.3–0.6 (–0.8) mm apart; longitudinal ungirdered veinlets 0–1 (–2) between adjacent veins, the larger superficially indistinguishable from veins, 0.2–0.4 mm apart; irregular transverse veins connecting lateral veins (or larger lateral veinlets) short, inconspicuous. Inflorescences with (1–) 2 (–3) orders of branching, each ascending at emergence through split petiole base, then arching or deflected; primary axis (ca. $\frac{1}{2}$ m–) 54.0–79.5 cm (–ca. 1 m) long, 0.54–1.32 (–1.56) cm in diameter; peduncle 20.5–50.5 cm long; prophyll 9.0–19.0 cm long, 2.0–2.7 (–3.7) cm wide; peduncular bracts (4–) 5–6, 13.0–28.5 cm long, narrowly ovate to ovate; internodes between peduncular bracts averaging 4.1–9.3 (–11.4) cm long; rachis (12.5–) 19.5–41.5 (–ca. 50) cm long, $\frac{1}{3}$ – $\frac{2}{3}$ of total inflorescence length; rachis bracts (16–) 20–32, caducous, all but basal-most usually falling as inflorescence bud opens, the basal bracts 10.5–23.5 cm long, narrowly ovate to ovate, the apical bracts briefly joined at their apices, more persistent than all but basal-most bracts, usually falling as a single unit; first-order branches to 13.6 cm long near base of rachis, shorter toward apex; rachillae to 8.2 cm long near base of rachis, shorter toward apex; rachillae bracteoles 1.3–13.3 mm long, 0.1–1.3 mm wide. Flowers 3.4–4.6 mm long, 2.6–3.3 mm in diameter; pedicel 0.2–1.1 mm long; floral bracteole 0.5–2.0 mm long, 0.2–0.7 mm wide; receptacle 0.4–0.7 mm long; sepals 2.9–4.3 mm long, connate basally to $\frac{1}{3}$ their length; petals 2.4–3.2 mm long, 2.6–3.6 mm wide; filaments 2.3–3.0 mm long, connate basally $\frac{1}{3}$ – $\frac{2}{3}$ their length; stamen tube 0.8–1.1 mm in diameter; anthers 1.2–1.6 mm long, 0.4–0.7 mm wide; ovary 0.8–1.1 mm long, 0.4–0.7 mm in diameter; stigmas+styles 1.5–1.9 mm long. Infructescence open, revealing the separate first-order branches. Fruit 1.1–1.4 cm long, 1.1–1.3 cm in diameter, usually more or less spheroidal, sometimes spheric-ellipsoidal; seed 0.8–1.1 cm long, 0.8–1.0 cm in diameter, usually more or less spheroidal, sometimes spheric-ellipsoidal.

Distribution (Fig. 24). In wet to dry lowland forests of extreme southeastern Mexico, Belize, and northern Guatemala; sea level to 600 m.

ADDITIONAL SPECIMENS EXAMINED. **Belize.** BELIZE: Craig Point, Sibun River, *Gentle 1392* (GH, K, MICH, MO).—CAYO: vicinity of Cuevas S of Millionario, *Croat 23605* (F, MO); vicinity of La Flor at Río de la Flor, 6 mi S of Grano de Oro, *Croat 23789A* (MO); 2 mi S of Georgeville, *Liesner & Dwyer 1621* (MO); Mountain Pine Ridge, San Agustín, *Lundell 6909* (LL, MICH); near Aguacate Lagoon, 17°19'N, 89°04'W, *Rose Innes 257* (MO); line transect 3, about 1 mi S of Belmopan and 0.5 mi E of Hummingbird Hwy, *Spellman & Newey 1892* (MO); Vaca Plateau, above Blue Hole Camp, *Whitefoord 20083* (MO).—COROZAL: *Gentle 630* (MICH, MO).—ORANGE WALK: Mile 45, Northern Highway, *Dwyer & Liesner 12251* (MO).—TOLEDO: Solomon Camp, vicinity of the junction of Richardson Creek and Bladen Branch, foothills of the Maya Mountains, 16°32'N, 88°45'W, *Davidse & Brant 32135* (MO); Give and Take Ridge, Bolo Camp, upper reach, Golden Stream River, *Gentle 4616* (LL); Punta Gorda–San Antonio Road, near Jacinto Creek, *Gentle 4972* (LL); San Antonio, Moffredge Creek, *Gentle 5063* (LL); near Condemn Branch Pine Ridge, *Gentle 5380* (LL); near Mofredge Lagoon, *Gentle 5390* (LL); near Jacinto Creek, *Gentle 5397* (LL); near San Antonio, *Gentle 5477* (LL), *Gentle 5502* (CAS, LL, MO, NY); Edwards Road beyond Columbia, *Gentle 6246* (LL); beyond Manga Camp, Edwards Road, 30 mi beyond Columbia, *Gentle 6509* (LL); Cero Hill, *Gentle 6999* (LL, NY); between Punta Gorda and Paslaw, *Gentle 7807* (LL, NY); southwestern Maya Mountains, Columbia River Forest Reserve, Union Camp, 16°23'N, 89°09'W, *Holst 4210* (MO).—Without locality: *Dawson s.n.*, 1928 (F); *Records s.n.* (F, bag of misc. seeds). **Guatemala.** ALTA VERAPAZ: near the Finca Sepacuite, *Cook & Griggs 77* (US); near Chirriacté, on the Petén hwy, *Standley 91950* (F); *Standley 91964* (F); 2.5 mi W of Cubilgüitz, *Steyermark 44347* (F); vicinity of Laguna Sapalá (Chajvovuch), 1 mi SW of Sibicté, *Steyermark 44922* (F); south of Cerro Chinajá, between Sachaj and Sacacac, *Steyermark 45177* (F).—IZABAL: between

Bananera and "La Presa" in Montaña del Mico, *Steyrermark 39183* (F).—PETÉN: *Bartlett s.n.* (MICH, loose stem sections); Tikal, along rd to main plaza, *Contreras 50* (LL, MO, NY); Tikal, on Group "E" of ruins, *Contreras 283* (CAS, LL, MO, NY); Uaxactún, Tikal District, *Cook & Martin 123* (US), *Cook & Martin 124* (US); Tikal National Park, Tikal, *Ibarra 20* (LL); Santa Teresa, Subín River, *Lundell 2669* (MICH); La Libertad, *Lundell 2887* (MICH); entre La Libertad & Subín, 50 km al sur de Santa Elena, *Molina R. 15515* (F, NY); surrounding ruins at Tikal, *Moore & Cetto 8201* (BH); camino para el Remate, a aprox. Km 10, cerca Tikal, Parque Nacional de Tikal, *Tún O. 310* (F). MEXICO. CAMPECHE: Campo Experimental Forestal Tropical "El Tormento," Km 5 carretera Escárcega-Candelaria, *Chavelas P. et al. ES-950* (MEXU), *Chavelas P. et al. ES-1008* (ENCB), *Chavelas P. et al. ES-1052* (MICH), *Chavelas P. et al. ES-1136* (MEXU), *Chavelas P. et al. ES-1137* (ENCB, MICH), *Chavelas P. et al. ES-1376* (MEXU), *Chavelas P. et al. ES-1563* (MEXU), *Chavelas P. et al. ES-1634* (MEXU), *Chavelas P. et al. ES-1682* (MEXU), *Chavelas P. et al. ES-1692* (MICH); Hacienda San Pablo, near Champotón, Colon, *Collins 38* (US); Hacienda San Pablo, near Champotón, Km 28, *Collins 70* (US); San Pablo, *Collins s.n.* (US, bag of misc. fruits); Campo Experimental "El Tormento," Escárcega, *Hernández M. & Trigos 1245* (MO); Mpio. Hopolchén, Ejido Pach-wits, 32 km S of Xmaben on the dirt rd from Hopolchén to Xpujil, 19°00'N, 89°20'W, *Sanders et al. 9673* (MO).—CHIAPAS: 6-12 km S of Palenque on the rd to Ocosingo, Mpio. Palenque, *Breedlove 24233* (CAS); western side of Laguna Miramar E of San Quintín, Mpio. Las Margaritas, *Breedlove 33197* (CAS); ruins of Yaxchilán on the banks of the Río Usumacinta, Mpio. Ocosingo, *Breedlove 33874* (CAS), *Breedlove 42837* (CAS); 10 km towards Chancala on rd to Bonampak from the Palenque-Ocosingo rd, Mpio. La Libertad, *Breedlove 57381* (CAS); loc. a 4 km al W de Crucero Corozal, camino Palenque-Boca Lacantum, Mpio. Ocosingo, *Martínez S. 6940* (MO); loc. a 10 km al S de Ejido Benemerito de las Americas camino a Flor de Cacao, en la Zona Marquee de Comillas, Mpio. Ocosingo, *Martínez S. 9529* (MEXU, MO); Mpio. Ocosingo, orillas del Río Lacanjá, 3 km al S del Centro Arqueológico Bonampak, *Meave et al. B-190* (MEXU); N Pichucalco, cerca Estación Suspira, *Miranda 6629* (MEXU).—QUINTANA ROO: loc. 2 km al N de Estero Franco, carretera Chetumal-La Unión, *Cabrera et al. 2101* (MEXU); 8 km N of Unión, 110 km SW of Chetumal, *Davidse et al. 20151* (MO); along Mexico Hwy 307 (La Unión-Cancún) at Km 100, 20.1 km S of Felipe Carrillo Puerto, 29.6 km N of Limones, 19°17.5'N, 88°05.5'W, *Evans 201* (F, INB, MICH), *Evans 202* (MICH, MO, NY, PMA); ca. 50 m S of Mexico Hwy 186 (Villahermosa-Chetumal) at Km 218.5, 3.8 km W of Nachicocum (34.0 km W of intersection with Mexico Hwy 307 N to Cancún), 18°29'N, 88°47'W, *Evans 203* (CAS, DUKE, EAP, MEXU, MICH); a 9 km al N de La Unión, *Télez & Cabrera 1672* (MEXU); 15 km al NE de La Unión, camino a Ucum, *Quero 3283* (MEXU).—TABASCO: arriba del campo recreativo, de las grutas del Coconá, Cerro del Coconá, a 3 km de Teapa, *Cowan & Zamudio 3320* (CAS, ENCB, NY); Allende, ca. 600 m S of Mexico Hwy 195 (Villahermosa-Pichucalco), ca. 3.9 km W of turnoff S to Teapa, 17°33'N, 92°59'W, *Evans 193* (BH, MICH, MO); Cerros El Azufre (carretera Teapa-Pichucalco), *Hernández X. & Segalen 226* (MEXU), *Hernández X. & Segalen 228* (MEXU); en el km 24 de la carretera de Tenosique hacia Nuevo Mexico, Mpio. Tenosique, *Magaña & Zamudio 792* (ENCB, XAL); Camino 20 a 4 km del Camino W-O rumbo al Naranjito, 400 m adentro del camino, Balancán, *Menéndez et al. 231* (MO); Camino N-30 a 3 km de W-O, Balancán, *Menéndez et al. 322* (CAS, ENCB, MO, XAL); about 4 km from Teapa on rd to Pichucalco, *Moore 8267* (BH); a 400 al sur de la Carretera 20 y a 4 km de la Carretera O (cero) en dirección W, Balancán, *Novelo et al. 37* (MEXU); a 200 m al norte de la carretera N-25 y a 6.1 km al este de la carretera W-O, Balancán, *Novelo et al. 127* (K, MO, XAL).

The NY duplicate of *Contreras 1570* at NY is *C. stauracantha* but apparently mislabeled; neither the description nor the locality (Guatemala, Petén, Dos Lagunas, on Carmelita rd in ramonal, about 2 km W) apply to *Cryosophila*. Duplicates of *Contreras 1570* at CAS, LL, and MO are *Gaussia maya* (Cook) Quero & R. W. Read.

Inflorescences of *C. stauracantha* are morphologically most similar to those of *C. warscewiczii*; both have long, narrow first-order branches, long rachillae (although both are usually shorter in *C. stauracantha* than in *C. warscewiczii*), and caducous rachis bracts. *Cryosophila stauracantha* has one inflorescence feature unique in the genus. The apical rachis bracts are briefly joined at their apices and are more persistent than all but the basal-most rachis bracts (see Fig. 13). These apical bracts typically fall as a single unit. *Cryosophila stauracantha* also differs

from *C. warscewiczii* by its usually smaller inflorescences, smaller fruits and seeds, and more deeply divided leaf blades. Also, its trunk is more densely armed, and the basal adventitious roots are not morphologically distinct from (though longer than) the root-spines above.

The name *Chamaerops stauracantha* Heynhold was validly published in 1846 by a brief description (spiny-stemmed, palmate-leaved palm) from a specimen cultivated in Belgium. Linden in 1871 transferred this species to *Acanthorrhiza* and subsequently indicated that a specimen (implying Heynhold's type) was collected in 1840 by himself and Funck from near Teapa in the Mexican state of Tabasco (Linden 1879). The only genus of palm occurring in all of Mexico and Central America with spiny stems and palmate leaves is *Cryosophila*. Comparison of recent collections of *Cryosophila* from near Teapa with type material of *Cryosophila argentea* Bartlett reveal that *Cryosophila argentea* is synonymous with the earlier *Chamaerops stauracantha*.

9. *Cryosophila warscewiczii* (H. A. Wendland) Bartlett, Carnegie Inst. Wash. Publ. 461: 38. 1935. *Acanthorrhiza warscewiczii* H. A. Wendland, Gartenflora 18: 242, footnote 1. 1869.—TYPE: east coast of Costa Rica and isthmus of Panama, original collector unknown (holotype: not located).—PANAMA. Bocas del Toro: near base of hill along rd leading up to huge Petroterminal de Panama (PTP) crude oil storage tanks, 1.5 km from intersection with new Lago Fortuna (La Sierpe)—Chiriquí Grande hwy, 5.0 km from Chiriquí Grande, 08°56'N, 82°09'W, 50 m, 26–27 Jul 1989, *Evans 145* (neotype, here designated: MICH!; isoneotypes: BH! MO! PMA! US!). *Cryosophila albida* Bartlett, Carnegie Inst. Wash. Publ. 461: 40. 1935.—TYPE: COSTA RICA. Plains of San Carlos, 13 Apr 1903, *Cook & Doyle 63* [not 14 Apr 1903, *Cook & Doyle 74*, as in protologue] (holotype: US 473820–21!).

Common names: *palma de escoba*, *guágara*, *guágara puerca*, *súrtuba*, *chonto*, *la bruja*.

Solitary palm. Trunk (1–) 3–6 (–12) m long, usually more or less erect, rarely arching upward, 3.9–11.8 (–15) cm DBH, armed with root-spines usually densest basally and distributed more or less equally over remainder of trunk or densest basally and distally, having a short more or less spineless length of trunk in between, sometimes densest basally and thinning distally; internodes 0.8–3.2 cm long. Root-spines 0–ca. 25 (–50+) per 10 cm of trunk, most to ca. 20 (avg. ca. 5–7) cm long, occasional outliers to ca. 40 cm long, unbranched or 1 (–2)-times-branched, usually descending; basal adventitious roots growing into the soil, almost always very different from root-spines above in being longer, more robust, and less frequently branched, forming a cone to ca. 1.5 m high and ca. 1.5 m in diameter. Leaves (9–) 15–24 (–27), 4–7 (–9) distal to leaf through which youngest inflorescence emerges, additionally 0–7 (–12) marcescent; petiole 0.62–2.70 m long, 0.94–2.24 cm wide; hastula 1.0–2.3 cm long, 1.2–1.9 (–2.4) cm wide, 0.8–1.2 (–1.7) times as wide as long, broadly to very broadly (to depressed-) triangular, subpointed to more or less pointed, apically bifid or not; blade 0.150–0.220 mm thick, adaxial surface dull, abaxial surface chalk-white-pubescent; central segments 58.0–114.0 cm long; marginal segments 47.5–89.5 cm long, (3/5–) 3/5–7/8 (–nearly) as