

collected again by Manitz et al. in 1976 (29816 HAJB), Verdecia & Bonet in 1996 (7325, 7326 HMC), Zona et al. in 2000 (Zona et al. 842, deposited in FTG and HMC), and Verdecia & Mera in 2001 (7517 HMC). These collections were identified as *C. pauciramosa* by earlier collectors and as *C. cf. pauciramosa* by Zona and Verdecia & Mera, reflecting the fact that the specimens were similar to this other species, yet different. In June 2003 we visited the type locality twice to collect, study, and describe this new species.

Description

Coccothrinax torrida C. Morici & R. Verdecia sp. nov. TYPE: Cuba. Guantánamo: Loma de Punta Guayacanes, 20° 03'21" N, 74° 33'96" W, 45 m asl, 30 May 2003, Morici & Verdecia 748 (HOLOTYPE: HMC; ISOTYPES: FI, HAC, HAJB, NY, ORT). (Fig. 1)

Palma gracilis solitaria, usque 2–8 m alta. *Coccothrinax pauciramosa* Burret affinis, sed foliis semiorbicularibus segmentis in parte superiore glauco-ceraceis, parte vaginae foliaris libera acuminata, parte folii basali indivisa latiore, colore inflorescentiarum infructescentiarumque pallidiorum atque fructibus parvis albis differt.

Small solitary palm; trunk grey, slender, 2–8 m tall and 2.5–3.9(–4.5) cm dbh, vertically cracked in the lower 1–2 m, the nodal scars barely noticeable, irregularly shaped, the internodes at breast height variable and irregular, of about 0.5–1.5 cm. Root cone at the base of the stem often present, up to 40 cm in both height and basal diameter. Leaves 9–20 in crown, 68–98 cm long (from sheath base to leaf tip). Skirt of dry leaves often covering the upper 0.5–3 m of the stem. Leaf sheath 20–30 cm long, pale brown, flexible, unarmed, covered in a whitish deciduous tomentum that rapidly disappears from exposed parts; sheath fibres 0.5–3.5 mm thick, straw-colored, confluent, initially joined at their tips, forming an acuminate free flap of 6–13 cm, then split as new leaves are produced; free strands 3–7 cm wide. Petiole biconvex, 20–26(–31) cm long (sheath excluded), 5–9 mm wide close to the base of the blade; blade semiorbicular (to ¾ orbicular); segments 16–19, the central ones 24–30(–42) cm long, reaching maximum width

of 2–2.5 cm at shoulder at 3/5 of their length; palman irregular, oval-shaped, 13–23 mm wide, with thick bright yellow ribs on the adaxial surface, ending in a thicker reinforced sinus between segments, with a bright brown scar; central two segments often more deeply divided than the others; adaxial surface of the leaf green, glaucous, unevenly coated with a shiny wax that is absent from youngest and oldest leaves; abaxial surface green, with silvery deciduous indumentum; adaxial hastula small, rigid, triangular-ovate, 5–10 mm long, yellow and shiny; abaxial hastula triangular, acute, not often prominent. Inflorescences 90–109 cm long (from base to tip), curved at tip, longer than leaves, emerging above crown, 2–3 fresh ones borne at a time together with older dead ones; partial inflorescences 3–4; rachillae 4–12 in each partial inflorescence, ca. 1 mm thick close to the base, (1.9–)5–7.5 cm long, white during anthesis, turning yellow-green as fruits develop; bracts membranous, with deciduous brown tomentum persisting at the tips, green then green-white at anthesis and afterwards brown; bracts of partial inflorescences thinner and after anthesis becoming papyraceous and semitransparent; rachilla bracts lanceolate, 1–1.7 mm long. Flowers sessile, creamy white, mildly and sweetly scented (reminiscent of *Nerium oleander*); perianth lobes 6, 1.3–1.6 mm long, shortly joined at the base; anthers sagittate, 1.6–2 mm long, white; ovary globose, green; style 1.5 mm long, apex obtuse. Unripe fruits 2–4 mm, light green, smooth, densely packed together on the rachilla, stigmatic scar prominent; ripe fruits globose, creamy white, 4.8–6.3 mm in diam.; overripe fruits browning and cracking, with endocarps partially exposed as the result of sunburn. Seed 3.4–4.5 mm in diam., slightly compressed, with 3–4 grooves, weighing 51.6 mg on average; cotyledonary petiole 10–14 mm long; basal ligule 7–8 mm long; eophyll rigid, flat, 1.2–1.4 mm × 80–90 mm, with 3 veins; eophyll petiole exposed, elongate.

Differences

Coccothrinax torrida is one of the smallest species in the genus in terms of trunk and leaf size. The leaves are semiorbicular and

flat, with a wedge-shaped outline and an uneven coating of white wax on the adaxial surface. The palman is characteristic in being small, and brightly colored when fresh, with thick yellow ribs on the adaxial side, ending in a thicker sinus with a brown scar. The palman is also irregular, as the central two segments are often more deeply divided than the others. The fiber sheaths and inflorescences are similar to *C. pauciramosa*, which we consider the most closely related species (see discussion below). The fruits are small, with smooth, creamy-white epicarps. The seeds are small and have few grooves.

The white fruit color is especially diagnostic of this species, since most species of *Coccothrinax* bear fruits that range from pale pink to deep dark purple. Only one white fruited species, *C. montana* Burret, endemic to Hispaniola, had been described until now. Most authors do not comment on the white fruit color in *C. montana*, regarding the whole genus as pink to purple-fruited, while emphasising the importance of white fruit color in separating the genera *Thrinax* and *Zombia*. This error probably arose when Burret described this species in 1929. The fruits were described with the word white within parentheses ("Fructus <<maturi albi pericarpio carnosulo>>, immaturi sicci obovati, circ. 1,2–1 cm, fuscii.") probably because Burret did not see fresh material. Moscoso (1945) kept the parentheses in his overview of the Dominican *Coccothrinax*. Recently, L. Mera (pers. comm.) confirmed the fruit color in *C. montana*, and since 1999 he repeatedly has collected white fruits from the population of *C. montana* in El Maniel, Paraíso, Province of Barahona. Recently, Á. Leiva (pers. comm.) reported an unidentified white fruited *Coccothrinax* from Cacocúm, Holguín Province, Cuba, which is now grown in the National Botanical Garden of La Habana and which she considers related to *C. miraguama* (Kunth) Becc.

The closest relative of *Coccothrinax torrida* is *C. pauciramosa* Burret. Both are small sized *Coccothrinax*, with long, emergent, little-branched inflorescences that differ only in minor details. *Coccothrinax pauciramosa* Burret differs in having orbicular leaves without wax; segments held strongly reflexed (rather than flat); segment margins

parallel for most of their length with a shoulder close to the palman and another by the apex; stigmata abundant on the abaxial surface; obtuse free portion of the fibrous sheath; shorter palman; brown bracts, dark yellow-purple rachillae with spaced pedicellate flowers, and larger, red-purple fruits. *Coccothrinax montana* Burret is the only other white-fruited species described. It differs from *C. torrida* in having orbicular leaves without wax; a wider palman, with the central two or three segments less deeply divided than the others; thinner sheath fibers; shorter, curved, much branched inflorescences; and larger fruits with larger cerebri-form seeds. *Coccothrinax gracilis* Burret is similar to *C. torrida* in having a thin trunk, small leaves, and small seeds with few grooves. The former species differs in having orbicular leaves without wax and with a higher number of segments; a regular wider palman; thinner sheath fibers; curved, much branched inflorescences; and purple fruits that are rough when ripe and muricate when unripe.

Distribution and Habitat

Coccothrinax torrida occurs only on one isolated hill, Loma del Cuero (also called Loma del Chivo or Loma de Guayacanes), which is a karst limestone mountain located on the coastal plain of Punta Guayacanes. This mountain is the southernmost, sea facing, massif of Sierra de Imías. It is about 7 by 2.5 km in size, has two peaks of approximately 600 m elevation, and is cut near the middle by a ravine, which sharply splits the almost continuous sea facing karst cliff and drains directly into the sea. The whole hill is an isolated karstic block from the Miocene, limited to the North by metamorphic rocks of Sierra de Imías, to the East by another metamorphic hill between the rivers Tacre and Cajobabo, to the West by the Imías valley with rich soils and mesic forests, and to the South by the sea. There are no *Coccothrinax* species around the hill as both the rich soils and the metamorphic rocks are not suitable for palms of this genus. Nevertheless, Areces et al. collected a different undetermined species (HAJB29687) in 1976 on the northern side of the same hill on which *C. torrida*

grows. We did not reach the northern side during our work in 2003, but by examining the dry material we concluded that it is *C. bermudezii* León.

Borhidi (1996) defines the climate of the area as semidesert, with 9 to 10 dry months, in the rain shadow of Sierra del Purial and Sierra de Imías. His records for Baitiquirí (22 km W of the hill) report 28°C annual average temperature and 412 mm of rainfall.

Coccothrinax torrida is a saxicolous species that germinates and grows on old karstic limestone cliffs that are virtually soilless. This epilithic habit is shared with various species of *Thrinax* and *Coccothrinax*. *Coccothrinax torrida*, like most saxicolous species, is restricted to the substrate, and seedlings do not succeed on the plain at the bottom of the cliffs. This is probably due to competition from more rapidly growing species, but the area below is also heavily altered by grazing animals. The vegetation of the rocky cliffs that are exposed to the south, towards the sea, is a xeromorphic open scrub, rich in low spiny shrubs and lianas. The following species grow in close proximity to this new species of palm: *Spiroteca guanatanamensis*, *Maytenus buxifolia*, *Plumeria lanata*, *Caesalpinia* sp., *Mesechites rosea*, *Agave albescens*, *Calliandra colletioides*, *Pictetia cubensis*, and *Melocactus acunai*.

According to IUCN categories, the new taxon is vulnerable. The habitat shows little sign of alteration, but population size is small (estimated to number fewer than 5,000 mature individuals), the species is known from only one location, and the area of occupancy is very restricted.

Etymology.—The epithet of this species refers to the torrid environment in which the

palm lives, which is one of the hottest and driest areas of the Caribbean basin.

Additional specimens examined: CUBA. GUANTÁNAMO: Imías, en la Loma del Cuero, cerca del Río Tacre, 8 Feb 1976, *Areces et al.* 39363 (HAC); Imías, en la Loma del Cuero, cerca del Río Tacre, 8 Sep 1976, *Manitz et al.* 29816 (HAJB); Imías, 500 m al Este de Punta Guayacanes, 30 May 2003, *Morici & Verdecia* 747 and 748 (HMC); Imías, 600 m al Este de Punta Guayacanes, 7 Jun 2003, *Morici & Verdecia* 749 (HMC); Imías, Lomas cerca de la carretera entre Imías y Cajobabo, 9 Aug 1996, *Verdecia & Bonet* 7325, 7326 (HMC); Imías, Carretera a Baracoa entre Imías y Cajobabo, 27 Dec 2001, *Verdecia & Mera* 7517 (HMC); Imías, West of Cajobabo, along coastal road to Imías, 20°03.43'N × 74°33.45'W, elev. ca. 50 m, 15 Feb 2000, *Zona et al.* 842 (FTG, HMC).

Acknowledgments

We express our gratitude to Manuel Caluff of Jardín de los Helechos in Santiago de Cuba who contributed the illustration of this new species. We are also grateful to John Dransfield of Kew Gardens, Andrew Henderson of The New York Botanical Garden, and Scott Zona of Fairchild Tropical Botanic Garden for reviewing the manuscript.

Literature cited

- Borhidi, A. 1996. Phytogeography and vegetation ecology of Cuba. Akadémiai Kiadó, Budapest.
- Burret, M. 1929. Palmae Cubenses. Kungl. Sv. Vet. Akademiens Handlingar, Vol. 6, Part 7.
- Govaerts R. & J. Dransfield. 2005. World Checklist of Palms. Royal Botanic Gardens, Kew.
- Henderson, A., G. Galeano & R. Bernal. 1995. Field Guide to the Palms of the Americas. Princeton University Press, U.S.A.
- Moscoso R. M. 1945. Palmas Dominicanas. Contribuciones del Instituto Botánico. III. Vol. XXXIII.
- Sargent C. S. 1899. New or Little Known American Trees. Botanical Gazette 27: 87 (1899).