

ATTALEA CRASSISPATHA, A RARE AND ENDEMIC HAITIAN PALM

ANDREW HENDERSON AND MICHAEL BALICK

Henderson, Andrew and Michael Balick (Institute of Economic Botany, New York Botanical Garden, Bronx, NY 10458-5126). *Attalea crassispatha*, a rare and endemic Haitian palm. *Brittonia* 43: 189–194. 1991.—The taxonomic history of the poorly known Haitian endemic palm *Attalea crassispatha* is given. Morphology and pollen morphology are described and illustrated. A discussion is given concerning its position within the Attaleinae. In particular, staminate flower morphology of the subtribe is discussed.

Key words: Palmae, *Attalea*, Attaleinae, Haiti.

The French priest and naturalist Charles Plumier first visited Haiti just over 300 years ago, in 1689. Amongst the palms that he saw and illustrated was one referred to as "*Palma cocifera, vaginis ventricosus & liratis*" (Plumier, 1703). Martius (1844), using Plumier's unpublished notes and drawings in Paris, gave a complete description of the species, calling it *Maximiliana crassispatha*, thus replacing Plumier's pre-Linnaean polynomial (but at the same time mistakenly changing "*liratis*" (furrowed) to "*lyratis*" (lyre-shaped), in reference to the peduncular bract). Martius also mistakenly described the pinnae as being clustered, and the number of stamens as 3–6. He also quoted Plumier on the abundance and distribution of the palm: "*Plurima haec palma reperitur apud insulam Santo Domingo. . .*" (Many of these palms are found on the island of Santo Domingo. . .).

Burret (1929a, 1929b) transferred the species to the genus *Attalea*, without giving reasons. He also (1929a) reproduced four more of Plumier's original drawings. Cook (1939) wrote a long paper on the palm, and noting its many differences from other related species, he placed it in a new genus, *Bornoa*, named after a former president of Haiti, Louis Borno. However, this name was not validly published. Bailey (1939) also wrote at some length on the palm, maintaining it in the genus *Attalea*. Various regional works have also followed this disposition (e.g., Barker & Dardeau, 1930; Moscoso, 1943, 1945). Glassman (1977) considered the palm related to *Orbignya*, but probably representing a new genus. Most recently, Uhl and Dransfield (1987) also suggested that *A. crassispatha* was perhaps related to *Orbignya*, but they also stated that they were not confident of assigning the species to any genus until more material was available.

Many of the authors cited above have commented on the outstanding botanical interest of this Haitian palm, as well as its isolated geographic position, its economical potential, and especially its rarity in the wild. The purpose of the present paper is to present a complete morphological description of the palm, and at the same time to examine how its staminate flower morphology helps define generic boundaries in the Attaleinae.

ATTALEA CRASSISPATHA (C. Maritus) Burret (Figs 1–3)

Maximiliana crassispatha C. Martius in Orbigny, Voy. Amérique MÉR. 7(3). Palmiers 110. 1844.
Attalea crassispatha (C. Martius) Burret, Kongl. Svenska Vetenskapsakad. Handl. 6(7): 23. 1929.
Bornoa crassispatha Cook, Nat. Hort. Mag. 18: 265. 1939 (nomen nudum). *Cocos crassispatha*
C. Martius ex Moscoso, Catologo Florae Domingensis 58. 1943. LECTOTYPE (Glassman, 1977):
Plumier, Nov. Pl. Amer. t. 1. 1703.

Stem solitary, erect, columnar or slightly swollen at base or middle, to 20 m tall, to 35 cm diam, gray, smooth, with obscure nodes. *Leaves* 15–19, stiff and

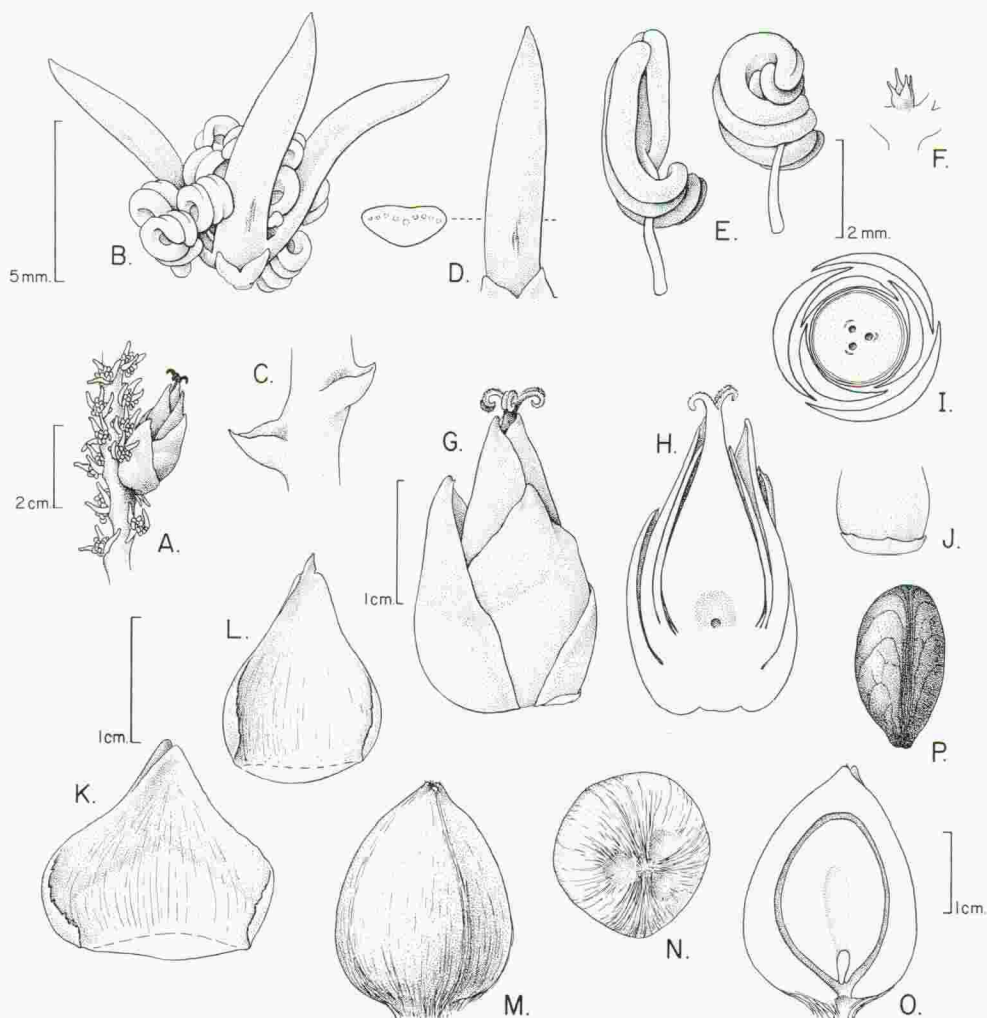


FIG. 1. *Attalea crassispatha*. A. Rachilla section with staminate and pistillate flowers. B. Staminate flower. C. Bracts of staminate flowers. D. Staminate petal, with cross-section. E. Stamens in two views. F. Pistillode. G. Pistillate flower. H. Pistillate flower in longitudinal section. I. Pistillate flower in cross-section. J. Staminodial ring. K. Pistillate sepal. L. Pistillate petal. M. Fruit in side view. N. Fruit, basal view. O. Fruit in longitudinal section. P. Endocarp.

ascending, neatly abscising and leaving a clean stem; sheath open, not distinguishable from the petiole; sheath and petiole 1.30–1.35 m long, flat adaxially, rounded abaxially, sparsely fibrous on the margins; rachis 3.2–4 m long, anvil-shaped in cross-section; pinnae 127–165 per side, regularly spaced, stiffly spreading in one plane, opposite to subopposite, linear, bifid apically to 15 cm, glabrous; proximal pinnae 60–65 × 1–1.5 cm, middle pinnae 65–90 × 4 cm, apical pinnae 40–45 × 1.5 cm. *Inflorescences* (and *infructescences*) interfoliar, either predominantly staminate or staminate and pistillate, both types occurring on the same tree; peduncle short, to 20 cm long, to 6 cm diam, dorsiventrally flattened; prophyll to 40 cm long, to 20 cm diam, becoming very fibrous at apex; peduncular bract persistent, to 120 cm long, sheathing peduncle for ca 10 cm and then open except for a 20 cm pointed apex, woody, to 1.5 cm thick, deeply lirate abaxially; numerous

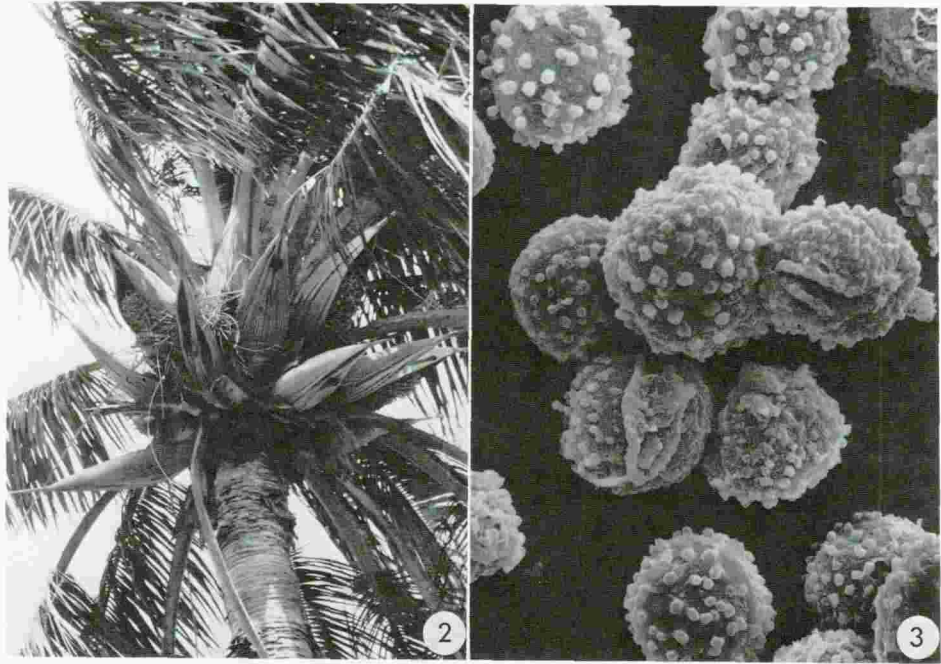


FIG. 2 & 3. *Attalea crassispatha*. 2. Crown, note crowded inflorescences on short peduncles, and damage to peduncular bracts by woodpeckers. 3. Pollen.

smaller bracts to 15 cm long present on the peduncle; rachis to 40 cm long; rachillae to several hundred, to 15 cm long, closely bunched, sparsely covered with whitish scales, with 0–8 pistillate flowers proximally and paired or solitary staminate flowers distally; staminate flowers densely crowded onto the rachillae, each subtended by a small bract, arranged on 3 sides of the rachillae only, creamy white; sepals 3, spreading but briefly imbricate basally, triangular, gibbous, 2 mm long; petals 3, free, straight and incurved, lanceolate, to 7 mm long, to 1.5 mm diam; stamens 8 or 9, at anthesis exerted laterally from petals; filaments 1.5–2 mm long; anthers curled but not twisted (and straight in bud), medifixed, to 4 mm long; pistillode very small, 4 or 5-fid; pollen circular, monosulcate, with tectate, perforate exine with clavate projections; pistillate flowers sessile, with vestigial lateral staminate flowers present; sepals 3, imbricate, deltate, 11–20 mm long; petals 3, imbricate, deltate, 16–20 mm long; staminodial ring to 1.5 mm high with to 6 short projections; ovary glabrous, to 10 mm high; stigmas 3, well exerted from petals and recurved at anthesis; ovule basal; fruit widely ovoid with prominent apical stigmatic residue; epicarp reddish at maturity; mesocarp ca 5 mm thick, very fibrous; endocarp to 3 mm thick, with 3 basal pores and 3 small apical ridges; seeds irregularly ellipsoid, to 2 cm long and 1 cm diam; endosperm homogeneous with hollow central cavity; germination remote ligular; eophyll entire.

Local names and uses: *Carossier*, *caroussier*, *côrossié*, *petit coco* (French), *ka-wosie*, *ti koko* (Creole). The freshly fallen fruits are gathered by children, who eat the seeds.

Additional specimens examined: HAITI. **Dep. Du Sud**: Coffee Station, Fond des Negres, 300 m, n.d., *C. Arndt s.n.* (US); Fond des Negres, 30 Jul 1939, *L. Bailey 299* (BH); Fond des Negres, 28 Jun 1927, *O. Cook s.n.* (BH, US); Massif de la Hotte, Fond des Negres, Hab. Buttet, 5 Nov 1926, *E. Ekman 7164* (EHH, NY); Fond des Negres, 18°22'N, 73°14'W, 11 Nov 1988, *A. Henderson & M. Aubry 805* (BH, COL, FTG, JBSD, K, NY); 10 km E of Les Cayes at Dumay, old road by bridge over

TABLE I
COMPARISON OF STAMINATE FLOWERS OF SELECTED SPECIES FROM THE ATTALEINAE

Species	Petals	Stamens	Pistillode
<i>Parascheelea luetzelburgii</i>	3, connate basally for ca 3 mm, linear and very narrow, incurved at apex, 10 mm long	6, anthers loosely coiled	trifid, with 3 spreading arms to 1 mm long
<i>Orbignya polysticha</i>	3, free, spatulate, irregularly notched apically, incurved at apex, 7 mm long	8-15, anthers coiled and twisted	small, lobed
<i>O. phalerata</i>	2-3 (if 2 then by fusion of 2 petals), free, irregularly oblong, incurved and bifid at apex, 12 mm long	19-28, anthers irregularly coiled and twisted	small
<i>Markleya dahlgreniana</i>	3, briefly connate below, free above, lanceolate, 4.5 mm long	7-10, anthers somewhat coiled and twisted, slightly exceeding the petals	absent
<i>Maximiliana maripa</i>	3, connate basally for ca 1 mm, free above, lanceolate, 3.5 mm long	6, anthers straight, exceeding the petals	absent
<i>Scheelea butyracea</i>	3, free, linear, 15 mm long	6, anthers straight, much shorter than the petals	absent
<i>Attalea tessmannii</i>	3(-5), briefly connate basally for ca 2 mm, free above, linear, 15 mm long, minutely toothed on margins, with whitish scales abaxially	11-14, anthers straight, shorter than the petals	trifid
<i>A. crassispatha</i>	3, free, lanceolate, straight and not curved over, 7 mm long	8-9, anthers curled and not twisted, much shorter than the petals	very small, 4-5-fid

Dlo Gmier, 18°16'N, 73°43'W, 50 m, 14 Nov 1988, *A. Henderson & M. Aubry 806* (BH, COL, FTG, JBSD, K, NY); Massif de la Hotte, Fond des Negres, 18°22'N, 73°14'W, 260 m, 13 Jul 1983, *T. Zanoni & M. Mejía 26102* (JBSD).

Attalea crassispatha is only known from the southwestern peninsula of Haiti (Henderson & Aubry, 1989; Henderson et al., 1990). All other species of *Attalea*, and all other genera of the Attaleinae (*Orbignya*, *Scheelea*, and *Maximiliana*, see Uhl & Dransfield, 1987) are confined to Central or South America. Burret (1929b) described *Scheelea cubensis* from Cuba, but this is probably a cultivated palm).

The generic boundaries of the Attaleinae have long been a source of confusion and controversy in palm taxonomy. The most recent statement is that of Uhl and Dransfield (1987), who recognize four genera. The distinctions between these genera are for the most part based on staminate flower morphology. Apparently all other characters, including habit, leaves, pistillate flowers, and fruits, do not correlate with staminate flower morphology, and cannot be used to separate the genera satisfactorily. An alternative scheme was put forward by Wessels Boer (1965, see also 1988), who believed that the existence of intermediate staminate flower types obscured the generic boundaries based on this character. Consequently, Wessels Boer recognized one genus, *Attalea*. This approach was criticized by Moore (1966).

The staminate flowers of *Attalea crassispatha* do not fit any of the four genera of the Attaleinae. Furthermore, pollen morphology (Fig. 3) is very different from that of any other known species in the Attaleinae (Punt & Wessels Boer, 1967; Uhl & Dransfield, 1987), none of which have the clavate projections of *A. crassispatha*. The very short peduncle further distinguishes the Haitian palm from all other members of the Attaleinae. This suggests that the Haitian palm could be placed in its own genus, but this does nothing to resolve the problem of generic boundaries in the Attaleinae. However, an examination of all staminate flower types in the subtribe reveals that at least eight types can be recognized (Table I). Furthermore, intermediate types between some of these exist. For example, the staminate flowers of *Attalea colenda* (O. F. Cook) Balslev & Henderson (illustrated by Balslev & Henderson, 1987) are somewhat intermediate between the *Orbignya phalerata* type and the *Attalea tessmannii* type; the *Markleya dahlgreniana* type is intermediate between the *Maximiliana maripa* type and the *Orbignya phalerata* type (and is supposed by some authors to be of hybrid origin, see Bondar, 1957, but also Wessels Boer, 1965). There are also species of *Attalea* (e.g., *A. iguadummat* de Nevers) whose staminate petals approach closely those of *Scheelea*. We therefore are supportive of Wessels Boer's (1965, 1988) conclusion that intermediate forms obscure supposed differences, and we support an acceptance of the concept of one genus in the Attaleinae.

Acknowledgments

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