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Ravenea in the Comores

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Ravenea hildebrandtii was collected in 1875 in the Comore Islands off the northeast coast of Madagascar and was named and partially described in 1878 by C. Bouché. In 1878 plants of this palm were offered for sale at 20 German Marks by the nurseryman Otto Neumann of Schöneberg, Berlin, and several botanic gardens throughout Europe seem to have obtained examples, including the Royal Botanic Gardens, Kew. An expanded description together with a beautiful illustration (see cover this issue) were published by J. D. Hooker in the *Botanical Magazine* in 1884, based on the material in cultivation at Kew together with specimens sent by Wendland. Later *R. hildebrandtii* seems to have become lost in cultivation in Europe. In November 1963 H. E. Moore, Jr. visited the Comores and collected a large quantity of seed of a species of *Ravenea* which was distributed via the International Palm Society's Seed Bank as *R. hildebrandtii*. Moore's collection, however is quite distinct from *R. hildebrandtii* and represents an undescribed species which we describe below, naming it for Hal Moore. There seems little argument that true *R. hildebrandtii* is an exceptionally beautiful ornamental and, because of this and the confusion over the naming of the Moore collection we feel it may be of interest to discuss the two palms in some detail.

History of *Ravenea hildebrandtii*

Carl David Bouché (1809-1881), Inspector of the Botanic Gardens in Berlin from 1844, realized that palm seeds collected by Hildebrandt, and seedlings grown from them, did not match any known species or genus. He named the palm *Ravenea hildebrandtii*, in so doing commemorating Louis Ravené, apparently an official of the Berlin Botanic Gardens, and J. M. Hildebrandt, the collector. The name was first published in a short note with a very short description of the seedling palm in the April number of *Monatsschrift des Vereines zur Beförderung des Gartenbaues* for 1878. An illustration and more notes were published in the July number of the same journal, but little of the information could be used diagnostically as the cultivated material lacked flowers and fruit. It was not until 1883 that the seedlings, originating from Hildebrandt's collection but now scattered over Europe, began to flower. The first specimen of the palm in Kew to flower proved to be staminate, that at Herrenhausen pistillate. Pistillate plants at Kew appear to have flowered several years later. Wendland sent material of the pistillate flowers to J. D. Hooker, who then provided the expanded description and illustration (cover photo) in 1884 on which the concept of the genus could be based. Bouché certainly coined the name *Rave-*

nea, but it is debatable whether the description in the *Monatsschrift* is sufficient as a generic diagnosis or whether the description in the *Botanical Magazine* should be regarded as the protologue—should the genus be cited as *Ravenea* Bouché or *Ravenea* Bouché ex H. A. Wendland in J. D. Hooker? Adding to this complication is the problem of typification. Bouché cited, incidentally, the living plants in Berlin; as far as is known there is no herbarium material of these seedlings. In the herbarium at Florence there is material of *R. hildebrandtii* collected by Hildebrandt himself in 1875, a fragment of a specimen in Berlin, now presumed destroyed, but Bouché's description does not refer to any detail of Hildebrandt's collection. There is however an excellent specimen in Kew to act as type of the plate in the *Botanical Magazine*. We therefore suggest that the name should be attributable to Bouché ex H. A. Wendland in J. D. Hooker (1884) rather than Bouché (1878). Hildebrandt and Bouché both referred to *R. hildebrandtii* as a dwarf palm only about 3–4 m tall, and indeed the plate in the *Botanical Magazine* shows a dwarf palm with a very short stem. This aspect of the palm is totally different from that of the taxon named *R. hildebrandtii* by Moore. Moore's palm is perhaps even larger than a coconut; "the trunks reach 60 feet or more in height, more than 10 inches in diameter" (Moore 1965).

While preparing an account of the genus *Ravenea* for "*Genera Palmarum*" (Uhl and Dransfield in press), we examined all the material of the genus in the Bailey Hortorium and in Kew and realized that, as must already be obvious, there are two species of the genus in the Comores—true *R. hildebrandtii*, a dwarf palm, and another robust species (Fig. 1). Harold St. John, who visited the Comores in 1961, collected and photographed both taxa and, furthermore, sent seed of true *R. hildebrandtii* to the Fairchild Tropical

Garden in Florida where (as *Ravenea* sp.) it successfully flowers. Moore's *Ravenea* (as *R. hildebrandtii*) also grows well in Fairchild Tropical Garden but has not yet flowered. This robust taxon (Fig. 1) does not seem to match any of the large species from Madagascar and is thus described as new and named *R. moorei* in honor of the collector. Enthusiasts who grow palms as *R. hildebrandtii* should note the differences between the two taxa and name them accordingly. Fairchild Tropical Garden is fortunate in possessing both staminate and pistillate plants of *R. hildebrandtii*; although pollen has been transferred to the pistillate flowers, no fruit appears to have been produced; this is unfortunate as the palm has exceptional horticultural potential.

Besides describing *R. moorei* we provide a complete description of *R. hildebrandtii*.

Ravenea hildebrandtii C. Bouché ex H. A. Wendland in J. D. Hooker, *Botanical Magazine* 110: t. 6776 (1884). Type: Cult. in Hort. Bot. Reg. Kew (holotype K).

R. hildebrandtii C. Bouché, *Monatsschrift des Vereines zur Beförderung des Gartenbaues* 1878: 197, 323, 324 (1878) (description and woodcut of juvenile palm only, inadequate for diagnosis); Lemaire, *l'Illustration Horticole* 27: 164 (1880) (description of juvenile, inadequate for diagnosis).

Slender, solitary, unarmed, pleonanthic, dioecious palm, sometimes flowering when \pm acaulescent; stem to ca. 6 m tall (rarely to 12 m), usually much less, ca. 5–6 cm diam., swollen at the base; internodes apparently short, scarcely evident in old stems, the stem surface grey-brown, becoming fissured longitudinally and laterally (on drying). Leaves ca. 12 in the crown, \pm curved; sheath soon splitting, the margins sparsely fibrous, abaxial surface densely covered in thick tomentum,



1. *Ravenea moorei* growing on lava at 600–800 m below Chemin du Capitaine Dubois, Grand Comore. Photo by H. E. Moore, Jr.

white in unexposed areas, soft brown where exposed; petiole 30–50 cm long, ca. 10 mm wide at the base, tapering to ca. 7 mm wide at the tip, adaxially deeply channeled, glabrous, abaxially rounded and rather densely covered in soft brown tomentum; rachis ca. 50–65 cm, gradually tapering, adaxially shallowly grooved or angled, laterally grooved, sparsely tomentose; leaflets ca. 20–40 on each side of the rachis, regularly arranged, 2–3 cm distant, linear, acuminate, the basal few very slender and short (ca. 10×0.3 cm), the mid leaf leaflets ca. $30\text{--}45 \times 1\text{--}1.8$ cm, the apical pair ca. 10×0.7 cm; leaflets \pm 5-veined, the midrib much larger than the rest, prominent adaxially, abaxially bearing conspicuous, close,

pale, \pm rounded, tattered ramenta; transverse veinlets obscure. Inflorescences solitary, axillary; staminate inflorescence 28–60 cm long, branched to 1 order; peduncle very slender, 17–35 cm long, ca. 3–4 mm diam., \pm rounded in cross section, tomentose; major bracts 4 or 5 including the prophyll, persistent; prophyll $5\text{--}7.5 \times 1\text{--}1.5$ cm, tubular or incomplete, 2-keeled, \pm membranous, tending to tatter irregularly, abaxially with scattered soft brown tomentum; first or first 2 peduncular bracts $11\text{--}14 \times 1.5$ cm, similar to the prophyll but not 2-keeled, tending to split along one side, membranous; distal pair of peduncular bracts much longer than the others, 25–40 cm long, splitting longitudinally almost to the base, becoming \pm flattened or expanded, ca. 2–2.5 cm wide, acute, distally \pm keeled, thick, coriaceous to \pm woody, adaxially glabrous, abaxially densely pale grey to brown tomentose; rachis bearing rather crowded, slender, spirally arranged rachillae; basal-most rachillae to 10 cm long, the distal much shorter, to ca. 3 cm long, ca. $0.75\text{--}1.5$ mm diam., bearing spiral or subdistichous solitary flowers borne on very short pedicels 0.25–0.75 mm long. Staminate flowers ca. 3–5 mm long; calyx explanate, tubular in the basal 0.5 mm, with 3 triangular, acute or mucronate lobes to 1×1 mm; petals 3, joined only at the very base, to 4×1.5 mm, acute or acuminate, 3-veined; stamens 6, filaments short, fleshy, ca. 0.5 mm long, anthers \pm elongate, 2.25×0.3 mm; pistillode conspicuous, narrowly pyramidal, ca. 1.5×0.4 mm. Pistillate inflorescence 90–160 cm long, branched to one order; peduncle 70–130 cm long, up to ca. 6 mm diam. at the base; bracts like those of the staminate but longer and more coriaceous or woody; rachillae ca. 7–12 cm long, ca. 2–2.5 mm diam. at the base, bearing spiral or subdistichous solitary flowers. Pistillate flowers open early in development; calyx cup-shaped, ca. 0.5 mm, with 3 short to long, acuminate, triangular lobes to 1.5

mm; petals 3, \pm free, ca. 2.5×0.5 mm, 3-veined, eventually disintegrating leaving the veins free; staminodes 6, filaments very slender, flattened, anthers sagittate, flattened, empty; ovary flask-shaped, ca. 3×1 mm, stigmas 3, short, recurved. Mature fruit broadly ovoid, ca. 10×8 mm, stigmatic remains lateral near the base; epicarp yellow, drying wrinkled, mesocarp apparently thin, endocarp very thin; seed rounded, ca. 5 mm diam.

Specimens Examined: COMORE ISLANDS: Grand Comore, Charboni-La Grille, at the north end of the island, Aug. 1961, *H. St. John 26544* (pistillate) (BH, K), *26543* (staminate) (BH, K); Maoueni, La Grille, Dec. 1967, *Bernardi 11646* (staminate) (G, K); without locality, *H. Humbert 395* (staminate) (K), *1608* (staminate) (FI, P); Anjouan, March 1877, *Bewsher 34* (staminate) (K); April 1861, *Dr. Kirk s.n.* (pistillate) (K); Moheli, Nov. 1968, *Schlieben 11214* (pistillate) (K); Johanna Is., in mountain forest, *Hildebrandt 1743* (pistillate) (\dagger B, FI).

Cultivated: Royal Botanic Gardens, Kew, Palm House, May 1884 (staminate) (holotype K); April 1891 (staminate and pistillate) (K); June 1901 (pistillate) (K); Herrenhausen, comm. *H. A. Wendland* Sept. 1884 (pistillate) (K), May 1885 (pistillate) (K).

Ravenea moorei J. Dransf. & N. W. Uhl, sp. nov. (Fig. 1).

Palma robusta elegantissima, ab altera specie Insularum Comorensium, *R. hildebrandtii*, habitu multo majore distinctissima, *R. robustiori* et *R. rivulari* Insulae Madagascariensis ut videtur affinis, sed a *R. rivulari* foliis paucioribus, foliolis majoribus, inflorescentiis solitariis, rachillas longiores ferentibus et fructu majore, et a *R. robustiore* fructu semper monospermo, rachillis brevioribus, foliolis minoribus et vagina folii lobo oppositipetiololo carenti differt. Typus: Insulae Comorenses, Grand Comore, *H. E. Moore & A.*

Moelevoce 9028 (holotypus BH; isotypus K).

Robust, solitary, unarmed, pleonanthic, dioecious tree palm. Stem to 20 m tall, 12–35 cm diam. at breast height, grossly swollen at the base, internodes ca. 20 cm long in lower part, much shorter towards the apex, nodal scars not very prominent, bark grey-brown. Leaves numerous, \pm spreading or erect, not curved, ca. 3 m long; sheath soon splitting, margins with long fine fibers, abaxial surface covered with thick tomentum, white in unexposed areas, soft brown where exposed, becoming thinner distally; petiole very short, ca. 10 cm long, 4 cm wide, 1.5 cm thick, adaxially flattened, abaxially \pm rounded, sparsely tomentose abaxially, glabrous adaxially; rachis elongate, gradually tapered, abaxially rounded, adaxially shallowly grooved or angled, laterally grooved, sparsely tomentose; leaflets very numerous, pendulous, ca. 80 on each side, regularly arranged, rather close, \pm opposite, rather narrow, long acuminate, proximal few leaflets very crowded and narrow, 15–25 cm long, ca. 1 cm wide; mid leaf leaflets 70×2.5 cm, decreasing in size towards the leaf tip, apical leaflets 15×0.7 cm, main veins ca. 5, the midrib the largest, prominent adaxially, abaxially bearing conspicuous, close, pale, \pm regularly arranged ramenta; transverse veinlets obscure, caducous tomentum present abaxially near the base. Inflorescences solitary, axillary; staminate inflorescence known only in the dead state, ca. 90 cm long, branched to 2 orders; peduncle ca. 35 cm long \times 1.5 cm diam., \pm rounded in cross section, bracts not known; rachillae numerous, slender, up to 15 cm \times 1.5 mm; pistillate inflorescence ca. 1.5 m long, \pm pendulous, branched to 1 order, rather lax; peduncle ca. 90 cm long, ca. 2 cm diam. near the base, rounded or elliptic in cross section, bearing caducous, soft brown tomentum; prophyll tubular, 2-keeled, 20 \times 5 cm, rather thin bearing caducous pale brown tomentum, tattering

and becoming fibrous with age; peduncular bracts 4, inserted close together, the proximal 3 tubular, similar to the prophyll but not 2-keeled, the 4th open, the longest one ca. 130×5 cm, irregularly splitting and becoming fibrous; rachis ca. 60 cm long, gradually tapering distally; rachillae numerous, ca. 100, rather stiff, \pm straight, 30–45 cm long, distal ones 15–20 cm long, 5 mm diam. at the base, tapering to 1.5–2.5 mm distally, bearing spirally or subdistichously arranged peg-like floral pedicels, $0.5\text{--}5 \times 1\text{--}1.5$ mm; pistillate flowers not known. Fruit ripening bright yellow to orange, spherical, 16 mm diam., stigmatic residue lateral, persistent sepals triangular, ca. 1.25×1 mm; persistent petals similar but smaller; epicarp smooth, wrinkling on drying, mesocarp fleshy, ca. 1.3 mm thick, endocarp not differentiated. Seed spherical, 9–11 mm

diam., dark brown, basally attached; endosperm solid, homogeneous, embryo basal.

Specimens Examined: COMORE ISLANDS: Grand Comore, on lava between Boboni and Kafeni, below Chemin du Capitain Dubois, 600–800 m altitude, surviving in secondary rain forest, vernacular name 'inazi', Nov. 1963, *H. E. Moore & A. Moelevoce 9028* (holotype BH, isotype K); Aug. 1961, *H. St. John 26542* (BH, K).

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