

## Halmoorea, A New Genus from Madagascar, with Notes on Sindroa and Orania

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One of the major difficulties in the elucidation of the limits of palm genera from Madagascar lies in the great scarcity of good material from the island. The type specimens are frequently inadequate and the protologues do not even match the specimens they purport to describe. The monotypic genus *Sindroa* exemplifies these problems. Jumelle (1933) based *Sindroa* on a collection made by Perrier (11937) in the mountains of the Masoala Peninsula at Marambo. *S. longisquama* was described as being dioecious and bearing acute leaflets, yet the inflorescences of the type specimen show clear signs of bearing flowers of both sexes and the leaflets are clearly praemorse (attached to the type is a note in Perrier's hand to the effect that the leaflets are not acute because they had been eaten in the bud by rhinoceros beetle!). With this inauspicious beginning *Sindroa* remained almost unknown.

In April 1971, H. E. Moore searched for *Sindroa* on the Masoala Peninsula and collected (9921) a handsome distichous leaved palm, bearing some of the characters of *Sindroa* and furthermore called "sindroa" by the local people. Thus it seemed that *Sindroa* had been recollected. However some features of the distichous palm did not match the type of *S. longisquama*; in particular the leaflets of the distichous palm bore pale grey brown rather than dark reddish brown ramenta. Then in December 1972, Moore revisited the Masoala Peninsula and discovered and

collected (10115) a palm with spirally arranged leaves which also seemed to be congeneric with *Sindroa*. The leaflets of the spirally arranged palm bore dark reddish brown ramenta as in the type of *S. longisquama*, and, although the type bears flowers and Moore 10115 fruit, the two collections are clearly conspecific. Moore (in his field notebook) noted the great similarity between *Sindroa* and Asiatic *Orania* even in the rather unusual seedling; on the basis of these observations *Sindroa* was placed next to *Orania* in the "Major Groups of Palms and Their Distribution" (Moore 1973). In his field notes, it appears that Hal Moore was not certain whether the distichous palm was specifically distinct from *Sindroa longisquama*.

Bernardi recollected the distichous palm (Bernardi 14450) and described and illustrated it in a paper as *Sindroa longisquama* (Bernardi 1974). Unfortunately the copious fruiting material collected by Bernardi has not yet been distributed from Tananarive.

In reevaluating *Sindroa* for Genera Palmarum we have come to the conclusion that the only difference separating *S. longisquama* from the rest of the genus *Orania* (excluding *O. appendiculata*) is the presence of ramenta on the undersurface of the leaflet midribs. This vegetative character is too trivial for the separation of genera and thus we believe *Sindroa* to be congeneric with *Orania*. The rather wide geographical disjunction is paralleled by many angiosperms. *Sindroa* is thus



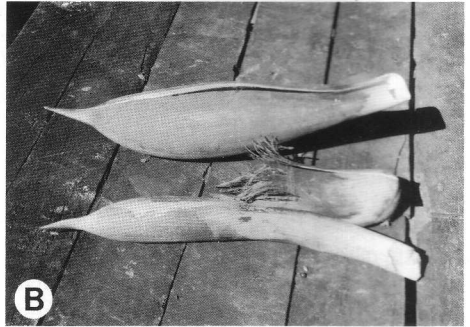
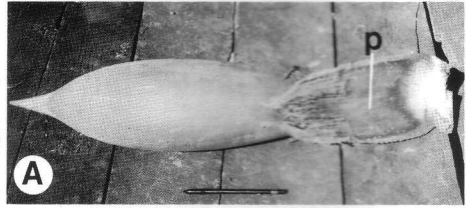
1. Crown of *Halmoorea trispatha*, Moore 9921.

formally reduced to synonymy in *Orania* and the combination *O. longisquama* published.

***Orania longisquama* (Jumelle) J. Dransf. & N. Uhl, comb. nov.**

*Sindroa longisquama* Jumelle in Ann. Mus. Col. Marseille sér. 5.1 (1): 11. 1933; Jumelle & Perrier de la Bâthie, Fl. Madagascar 30: 160. 1945. Type: Madagascar, Masoala, Perrier 11937 (P, holo.!).

The distichous palm collected by Hal Moore as *Sindroa*, however, is clearly different from *Orania longisquama*. The inflorescence bears a prophyll and two large peduncular bracts rather than a prophyll and a single large peduncular bract as in *Orania*. The staminate flower has three large blunt or subacute, free, imbricate sepals (rarely two of them briefly connate), and bears 27–30 stamens, whereas in *O. longisquama* the sepals are united and acute and the stamens number 9–15. In the pistillate flower the staminodes number 12 whereas in *Orania* there are only 3–6. The distichous palm is thus abundantly distinct from *O. longisquama*. Furthermore the distichous palm does not fit within the variation found in *Orania*. We conclude that it represents a distinct genus albeit related to *Orania*. *Halmoorea* is an obvious choice of name for this extraordinary palm.

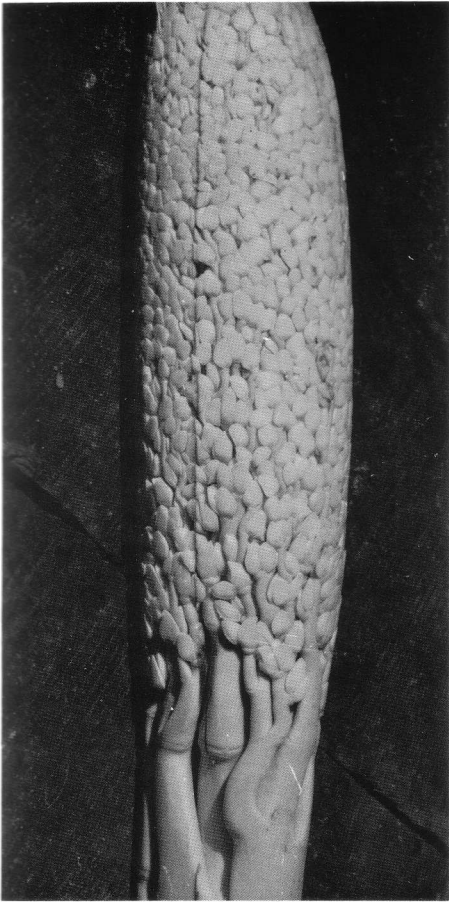


2. A. Inflorescence of *Halmoorea trispatha* in bud; p, prophyll. B. Inflorescence bud opened to show prophyll and two peduncular bracts.

***Halmoorea* J. Dransf. & N. Uhl, gen. nov.**

Palma solitaria, inermis, pleonantha, monoeca. Folium reduplicatum, pinnatum, pinnis praemorsis ramentas infra ferentibus. Inflorescentia interfoliacea trispatha, bracteis peduncularibus magnis, tubularibus, rostratis; rachillae basin triades versus apicem flores staminatus singulariter vel binatim ferentes. Flos staminatus sepalis 3, liberis, imbricatis (2 raro connatis), petalis 3, liberis, valvatis, staminibus 27–30, pistillodio carenti. Flos pistillatus sepalis 3 truncatis, basin connatis, petalis 3, liberis, valvatis, staminodiis 11–12, gynoeicio triloculato triovulato. Fructus 1, 2, vel 3-lobatus. Genus egregium Madagascariense Oraniae affine sed inflorescentia bracteis 3 (vice 2), sepalis floris staminati fere liberis et numero staminum staminodiorumque differt.

Solitary, moderate, unarmed, pleonanthic, monoecious palm. Stem erect, bare, internodes short, irregular, nodes prominent. Leaf distichous, reduplicately pin-



3. Close-up of unopened flowers from inflorescence of Figure 2.

nate, neatly abscising; sheath splitting, short, thick, woody, densely covered with brown scales, fibrous along the margins; petiole elongate, stout, adaxially channeled, abaxially rounded, with pale indument abaxially; rachis much longer than the petiole, curved, abaxially rounded, adaxially angled except at the base where grooved, with indument as the petiole; leaflets single-fold, numerous, regularly arranged in one plane, rather stiff, linear-lanceolate, obliquely praemorse, green above with prominent midnerve, 2 marginal nerves, and numerous tertiary



4. Photograph presumed to be of *Halmoorea* taken in Madagascar by Dr. M. E. Darian.

nerves, adaxially  $\pm$  glabrous, abaxially with thin gray indumentum, small punctiform scales, and irregular large gray-brown ramenta along the main veins especially near the base, transverse veinlets obscure. Inflorescence interfoliar, about as long as the petiole, branching to 3 orders; peduncle stout, covered in caducous brown scales; prophyll  $\pm$  ovate, 2 winged, persistent, margins irregular, irregularly splitting and becoming fibrous at the tip; peduncular bracts 2, tubular, inflated, beaked, both entirely enclosing the inflorescence,  $\pm$  woody, deciduous at anthesis, densely covered with irregularly mar-

gined, brown scales; rachis longer than the peduncle, brown tomentose, bearing spirally arranged, low, glabrous, coriaceous, collar-like bracts subtending first order branches; first order branches bearing few, spirally arranged, similar bracts, each subtending a 2nd order branch; 2nd order branches with a basal bare portion and few small, spirally arranged bracts subtending rachillae, all axes finely roughened; rachillae moderate, irregular, bearing up to 10 spirally arranged triads basally, paired or solitary flowers distally; rachilla bracts and bracteoles low, rounded, inconspicuous.

Staminate flowers asymmetrical, fleshy, angled; sepals 3, free, imbricate or rarely 2 united, rounded, margins somewhat irregular; petals 3, free, valvate, ovate-triangular, blunt or subacute, thickened at the tip; stamens 27–30, filaments short, slender, erect, anthers linear-oblong, bifid at the base and apex, basifixed, latrorse, connective broad; pollen  $\pm$  circular, monosulcate with finely rugulate, semitectate exine; pistillode absent. Pistillate flower only slightly larger than the staminate; sepals 3, rather large, free except basally where very briefly united, irregular, apically truncate, centrally thickened, laterally striate; petals 3, free, irregular, broadly triangular, valvate, abaxially smooth, adaxially irregularly roughened at the thickened tips; staminodes 11–12, free, threadlike, pointed; gynœcium trilocular, triovulate, irregularly obovoid, with 3 round bulges, one larger, stigmas 3, terete, ovule laterally attached, pendulous, probably hemianatropous. Fruit developing from 1, 2, or 3, carpels, rounded, bi- or trilobed, relatively large, further details not known.

Type species *H. trispatha*

**Halmoorea trispatha** *J. Dransf. & N. Uhl* sp. nov. Palma elata, ad 20 m; folia disticha, vaginis ferruginoso-lepidotis, petiolis ad 1 m longis, rachidibus 2 m longis, pinnae untrinque ca. 62, infra ramen-

tas pallidas ferentes. Sepala floris staminati 1.5 mm longa, petala  $9 \times 5$  mm; sepala floris pistillati  $5 \times 5$  mm, petala  $10 \times 8$  mm; ovarium  $5 \times 8$  mm, triovulatum; fructus 1, 2 vel 3-lobatus, ad ca. 6 cm latus. Typus: Madagascar, Prov. Diego Suarez, Masoala, *Moore 9921* (holotypus BH).

Moderate palm; trunk to 20 m tall, 20–35 cm dbh, swollen basally to 40 cm diam.; bark grey, weathered; internodes ca. 15 cm near the base, much shorter above, nodal scars prominent; crown with ca. 10 leaves held distichously in a fan; sheaths not forming a crownshaft, densely rusty brown scaly; petiole ca. 1 m long, ca. 4 cm diam., adaxially channeled, abaxially rounded, grey-green, covered in pale scales; rachis ca. 2 m long, abaxially rounded, adaxially angled, covered in pale indumentum; leaflets ca. 62 on each side, regularly arranged in one plane, abaxially green, adaxially grey-waxy and dotted with minute membranous brown scales, apex obliquely praemorse, midrib prominent adaxially, abaxially bearing abundant, large, lacinate ramenta, one pair of large veins prominent near the margin also bearing ramenta abaxially; transverse veinlets obscure; proximal pinnae ca.  $65 \times 1.5$  cm, median pinnae ca.  $75 \times 3.5$  cm, distal pinnae ca.  $10 \times 0.5$  cm. Inflorescence spreading; prophyll woody, 2-keeled, green but densely rusty-scaly, to  $30 \times 10$  cm; peduncular bracts 2, the first inserted 6–10 cm above the prophyll, terete, woody, inflated, beaked, brown, ca.  $80 \times 10$  cm, 2nd peduncular bract inserted ca. 10 cm above the first, similar but not inflated; peduncle ca. 16–20 cm long; rachis ca. 30 cm long, bearing 10–12 branches, each subtended by an inconspicuous rachis bract; rachillae glabrous, ca. 10 cm long, probably becoming much longer at anthesis, somewhat flexuous, bearing about 10 triads basally and paired to solitary flowers distally; rachilla bracts very small, rounded; floral bracteoles very low, rounded. Staminate flowers asym-

metrical, fleshy; sepals rounded, ca. 1.5 mm long; petals broadly triangular, ca.  $9 \times 5$  mm; stamen filaments very short, anthers  $6 \times 1$  mm. Pistillate flowers asymmetrical; sepals thick,  $\pm$ keeled, striate laterally, ca.  $5 \times 5$  mm; petals thick, ca.  $10 \times 8$  mm; staminodes thread-like, ca. 2 mm; ovary 3-lobed, ca.  $5 \times 8$  mm, stigmas papillose ca. 1.5 mm long. Fruit apparently 1, 2, or 3 seeded, green, the 3 seeded ca. 6 cm diam., stigmatic remains apparently basal.

Type: Madagascar, Prov. Diego Suarez, Masoala, across Onive River from Ambatobe and upriver from Ambohitralanana, 8 April 1971, *H. E. Moore 9921* (BH). Vernacular name "Sindroa."

Notes: The cabbage is said to be ined-

ible. Dr. M. E. Darian informs us that there may be two species in this genus, based on differences in trunk and seed size. Unfortunately we have no other material definitely identifiable with Hal Moore's collection. Further collections are essential.

#### LITERATURE CITED

- BERNARDI, L. 1974. Notulae ad *Sindroa*, genus endemicum Palmarum peninsulae Masoala, Madagascariae; cum digressionem circa *Humbertiam* Madagascariensem. *Candollea* 29: 163-171.
- JUMELLE, H. 1933. Nouveaux Palmiers de Madagascar. *Ann. Mus. Colon. Marseille. sér. 5.1*(1): 11.

### CLASSIFIED

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