

indumentum and fibrous margins; rachis 1.3–2 m long, channelled in the proximal part, in mid-leaf 2–3 × 1–1.3 cm and keeled, white- to reddish-brown-pubescent or with scattered pale scales or with white bloom; leaflets regular, 47–65 on each side of the rachis, stiff or not very stiff, those on opposite sides of the rachis at an angle of 60–120 with each other, the proximal 38–84 × 0.4–4.5 cm, median 56–88 × 1.7–5 cm (interval 1.5–4 cm), distal 3.5–32 × 0.5–2.7 cm, mid-green, with yellow veins adaxially, with a thin whitish covering abaxially, main vein 1, with large (15–25 mm long) red-brown to whitish ramenta in patches to almost continuous along the midrib (rarely absent, HB 4730), with lines of scattered scales along the minor veins, bases sometimes thickened (HB 4616), apices praemorse, distal pair connate for 0.5–5 cm. **INFLORESCENCE** interfoliar, branching to 3 orders, erect to arching, with spreading branches (to almost pendulous in fruit); peduncle 25–50 cm long, proximally 3.5–10 × 2–6 cm diam., green with much red to brown pubescence; prophyll 26–45 cm long, 6–12 cm wide, borne 4–5 cm above the base of the peduncle, split abaxially, with toothed margins, green, brown-lepidote; peduncular bracts one or two (one in HB 4706, 4730, two in HB 4616, JD 6479), quickly deciduous, inserted at respectively 7–16 and 13–21 cm from the base of the peduncle, each 55–72 cm long and 6–14 cm wide, beaked for 6–12 cm, thin red-pubescent; rachis 58–69 cm long, zigzag, with scattered brown scales, with 12–22 branched and 6–12 unbranched first order branches, the proximal of these with an axis



Orania longisquama

of up to 35 cm long and 1.8–4 × 0.6–2.2 cm diam., with up to 20 second order branches; rachillae pale green, turning blushing pink in fruit, 8–36 cm long (possibly lengthening in fruit stage), 3–7 mm diam., glabrous or with scattered red scales; triads distant. **STAMINATE FLOWERS** with the sepals connate for 0.6–0.8 mm, free for 1.6–2.2 mm, 1.3–1.8 mm wide; petals 5.5–9.5 × 3–4.5 mm; stamens 12–20 (possibly in three antepetalous bundles—sometimes falling off in equal groups, with the removal of the petal), filaments 0.8–1.5 mm long with slightly bulbous base, anthers almost basifixed, 3–6 × 0.7–1 mm, some unequally sagittate, others equally sagittate; pistillode not seen. **PISTILLATE FLOWERS** with the sepals 1.3–3.2 × 2.2–5.2 mm; petals 3.5–7 × 3.6–6.7 mm, fleshy; staminodes 8–10, 1–2.5 mm long, narrowly triangular; ovary 3–9 mm high, 3.2–14 mm diam., with three styles 0.5–1 mm long and papillose or pubescent. **FRUIT** green, globose or obovoid, occasionally (as in JD 6375) 2- or 3-lobed, or with two abortive lobes basally, 4–5.5 × 3–4.5 cm. **SEED** globose with a basal conical bump, 3.1–4.4 × 3.2–4.2 cm, with large central lacuna when almost mature, this filled with sweet to slightly bitter fluid, later turning to homogeneous endosperm. **GERMINATING SEEDS** with elongate white cotyledonary petiole.

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NOTE. The leaf sheath sometimes splits to leave a tongue-like structure, reaching up to the proximal leaflets, producing an apparent petiole.

SPECIMENS SEEN. Analalava: NNE of Maromandia, July 1992 (fl., y.fr.), *Beentje & Andriampaniry* 4706 (BH, K, MO, P, TAN). Antalaha: Marambo, Nov. 1912 (fl.), *Perrier* 11937 (type; P); Mahavinitra near Ambatobe, Dec. 1972 (fr.), *Moore* 10118 (P, TAN). Maroantsetra: Hiaraka, Oct. 1986 (y.fr.), *Dransfield et al.* JD6375 (K, TAN); idem, April 1989 (fr.), *Du Puy & Du Puy* MB 152 (K, TAN); Antalavia, Feb. 1988 (bud), *Dransfield et al.* JD6479 (K, P, TAN). Mananara Avaratra: Antanambe, Oct. 1991 (fr.), *Beentje* 4455 (BH, K, MO, P, TAN); idem, April 1992 (bud), *Beentje et al.* 4616 (K, TAN). Toamasina: Betampona, Oct. 1991 (fr.), *Beentje* 4493 (BH, K, MO, P, TAN). Ifanadiana: Ambinanindrano, July 1992 (fl., fr.), *Beentje & Andriampaniry* 4730 (BH, K, MO, P, TAN). Manakara: Amby, May 1992 (fl., fr.), *Beentje & Andriampaniry* 4678 (BH, K, MO, P, TAN).



Orania longisquama. Crown, showing inflorescence and fruit (*Beentje & Andriampaniry* 4678).

2. ORANIA TRISPATHA

A majestic distichous palm of great beauty, and the largest member of the genus in Madagascar. The trunk is frequently swollen at the base. Because of its striking distichous leaves this species has been much sought after by enthusiasts.

DISTRIBUTION. E Madagascar.

HABITAT. Lowland rain forest; flat ground near streams, swamp edges; 50–400 m.

LOCAL NAMES. *Sindro* or *Sindroa* (Betsimisaraka); *Anivo* (Antaisaka).

USES. Palm heart not edible. Wood used in hut construction (Manombo).

CONSERVATION STATUS. Critical. Known only from

three sites, all of which are under threat of destruction, with very low population numbers (less than fifty trees are known).

Orania trispatha (*J. Dransf. & N.W. Uhl*)
Beentje & J. Dransf. comb. nov.

SYNONYM:

Halmoorea trispatha J. Dransf. & N.W. Uhl, *Principes* 28 (4): 166 (1984). Type: Madagascar, Masoala, across Onive R. from Ambatobe and upriver from Ambohitralanana, 8 April 1971, *Moore* 9921 (Holotype BH, not seen; isotype P).

Solitary palm. **TRUNK** 20–22 m, 20–35 cm diam.; root boss 30 cm high, 40–60 cm diam.; internodes 12–15 cm, light brown or grey; nodal scars 5 cm; wood hard. Crownshaft absent. **LEAVES** distichous, forming a fan, 10–12 in the crown, held on edge in their distal part; sheath c. 60 cm long, without ligules or markings, green with brown margins, grading into petiole, with rusty brown indumentum and white wax; petiole 75–200 cm long, channelled with sharp edges, 2.3–7 × 2.9–6 cm diam., densely grey-brown pubescent; rachis 2–2.3 m long, in mid-leaf 2.6–3 cm wide, keeled; leaflets regular, 60–65 on each side of the rachis, those on opposite sides of the rachis at an angle of c. 150°, the proximal 58–93 × 0.6–4 cm, median 65–99 × 3–9.5 cm (interval 4–5 cm), distal 10–53 × 0.5–2 cm, distal pair hardly connate, discolorous, abaxially with a thin white covering, with minute brown scales, the midrib with many pale grey ramenta to 5 cm long, main veins 3–5, also with large pale ramenta, apices obliquely praemorse. **INFLORESCENCE** interfoliar, branched to 3–4 orders, spreading; peduncle 16–25 cm long, 5.5–6 cm diam., slightly flattened, densely red- or brown-pubescent; prophyll woody, 30–40 cm long, 6.5–10 cm wide, borne at c. 5 cm above the base of the peduncle, brown-pubescent; peduncular bracts two, the first inserted at 3–10 cm from the base of the peduncle, 60–80 cm long with a beak of 8 cm, the second inserted at 7–18 cm from the base of the peduncle, 58 cm long with a beak of 7 cm, both woody, inflated, terete, green with brown scales, inflated, deciduous in the fruiting stage; rachis 30–40 cm long, with 8–12 branched first order branches, these proximally 3 × 1 cm diam.; rachillae 15–46 cm long, 6–7 mm diam., zigzag, reddish-scaly to



Orania trispatha

glabrous; triads distant. **STAMINATE FLOWERS** asymmetrical, fleshy; sepals 1.5–4 × 4 mm, petals 9 × 5–9 mm; stamens 27–30, basifixed, latrose, the filaments very short, the anthers c. 6 × 1 mm; pistillode absent. **PISTILLATE FLOWERS** asymmetrical; sepals 5 × 5 mm, petals 17–33 × 12–15 mm (in fruit); staminodes 11–12, thread-like, c. 2 mm; ovary 3-lobed, c. 5 × 8 mm, with papillose stigmas to 1.5 mm. **FRUIT** green, when slightly immature semi-globose or obovoid and 3.9–4.5 cm diam., but more often 2-lobed or 3-lobed and 5–5.5 cm high and 5–8 cm diam., when immature containing a bitter-tasting fluid solidifying into a homogeneous endosperm; stigmatic remains sub-basal. **EOPHYLL** pinnate (*Beentje* 4522).

NOTE. The protologue states the pinnae are white-waxy on the adaxial surface; this should be the abaxial surface. The generic distinction could not be upheld, when we discovered that *Orania longisquama* may have either one or two peduncular bracts; with more material available, and with *O. ravaka* being described here, the number of stamens does not remain a generic character, but rather a specific one; the number of staminodes for *O. ravaka* encompasses the range of both *O. trispatha* and *O. longisquama*. The calyx in all taxa seems to be connate to varying degrees at its very base.

The specimen from Manombo (about 800 km S of the Masoala/ Mananara populations) has a different 'feel' to the leaf, with hardly any surface covering of a whitish substance, and fewer little red scales.

SPECIMENS SEEN. Antalaha: Ambatobe, April 1971 (fl.), *Moore* 9921 (type, P). Maroantsetra: Sahavary, Oct. 1986 (fr.), *Dransfield et al.* JD6400 (K, P, TAN). Farafangana: Manombo, Nov. 1991 (fr.), *Beentje* 4522 (BH, K, MO, P, TAN).



Orania trispatha, view into the distichous crown, Manombo (*Beentje* 4522).