# A New *Areca* from Western New Guinea

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1. Leaves of *Areca mandacanii* showing irregular leaflet arrangement; Martinus Iwanggin provides scale.

**A new species of *Areca* related to *A. catechu* has been discovered in swampy areas in western New Guinea. This remarkable palm has future potential not only as a nut-crop species, but also for its ornamental horticulture value.**

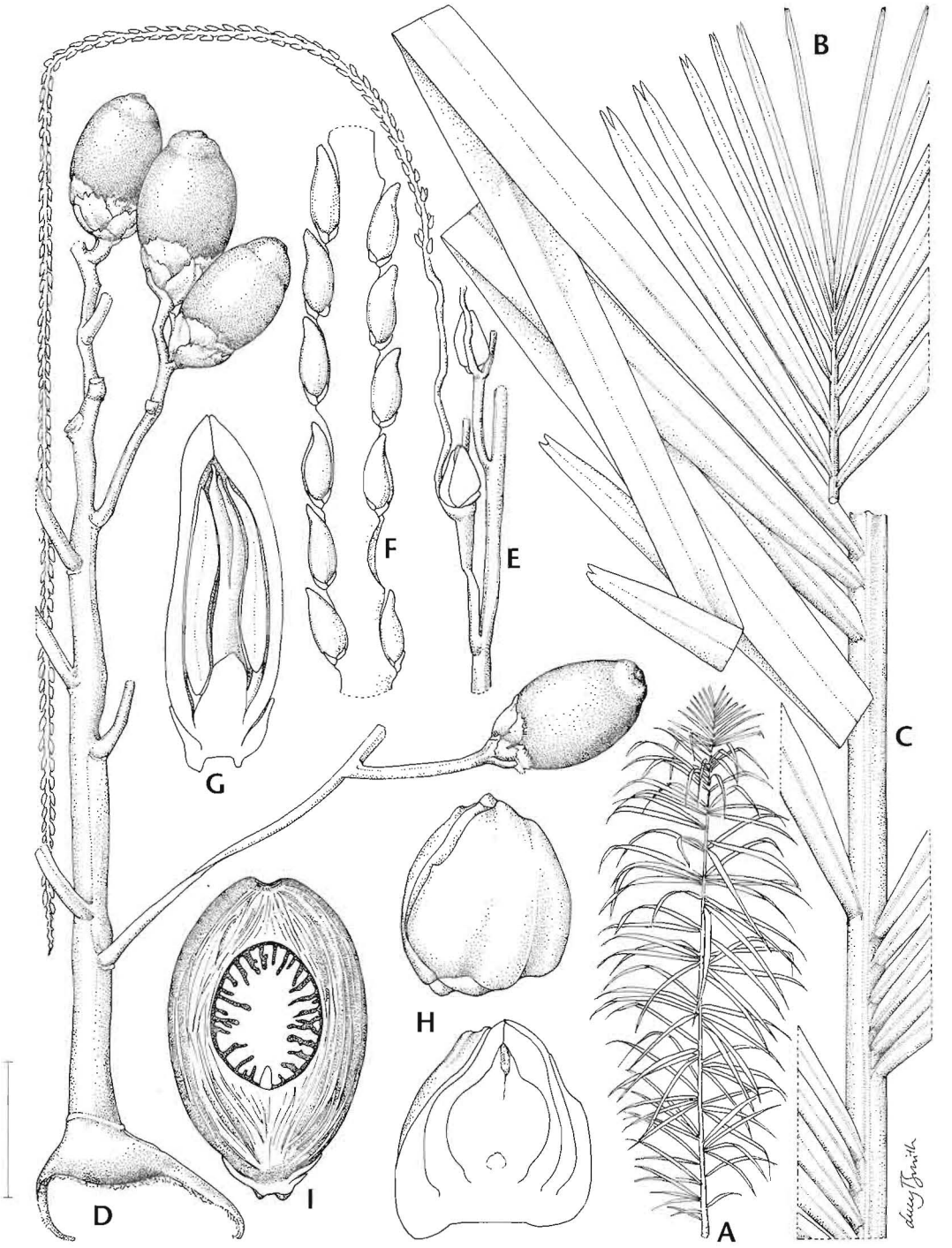
As part of the Palms of New Guinea project (Baker 2000, 2002), the author conducted a field trip to the area of Teminabuan (south of Sorong) in the Bird's Head Peninsula of Western New Guinea in 2003. During the field trip, many interesting palms were encountered and collected, such as the newly described genus *Dransfieldia* (Baker et al. 2006) and the

rediscovery of *Hydriastele flabellata* (Becc.) W. J. Baker & Loo (Heatubun 2005) – this latter beautiful undergrowth palm was originally collected by Beccari almost 132 years ago and the type locality has already vanished within the town center of Sorong. Among the other species found was a new species of *Areca* described in detail here.

**Areca mandacanii** *Heatubun* **sp. nov.**, habitu *A. catechu* L. similis, sed plica foliolorum solitaria, lineari, irregulariter disposita incisura acuminata, fructibus grandibus, ellipsoideis, seminibus globosis, differt. Typus: Indonesia, West Papua Province, Sorong Selatan Regency, Teminabuan District, Sayal Village, Maampou forest, Feb. 2003, *Heatubun 423* (Holotypus BO!; isotypi K!, MAN!).

Solitary, moderate pleonanthic, tree palm. *Stem* up to 15 m tall, 8–10 cm diam.; internodes 13–30 cm long, dark green, shiny, nodal scars conspicuous, white. *Leaves* 8 in crown, pinnate, appearing plumose, 200–250 cm long (including petiole); sheath tubular, ca. 92 cm long, smooth, light green; crownshaft well defined, up to 152 cm long and up to 15 cm diam.; petiole short to 6 cm long, channelled adaxially, rounded abaxially; rachis somewhat arching, with adaxial longitudinal ridge, rounded abaxially; blade with irregularly arranged leaflets, divided into 13–15 groups, ca. 60 leaflets on each side, held in several planes, near petiole small and gradually becoming larger, terminal leaflets regularly arranged (ca. 13 or 14 leaflets); leaflets somewhat arching, single-fold, linear, 55–60 cm long, 2 cm wide, tip acuminate, notched, split to 3 cm long and pointed in a few leaflets near the petiole, papery, green adaxially and light green abaxially. *Inflorescence* infrafoliar, ca. 60 cm long at anthesis, protandrous, branching to 2 or 3 orders; peduncle 5 cm long, green with numerous minute red-brown dots; prophyll 64 × 6 cm, borne about 1/3 way up the peduncle, lanceolate, 2-keeled, papery, cream to light brown, entirely enclosing the inflorescence, then splitting longitudinally and falling before staminate anthesis; rachis green to whitish green; rachis bracts not persistent; rachillae numerous, 37 cm long, covered by light brown to chocolate-brown thick indument, highly contrasting with the rachis, first branching rachillae ca. 50 cm long, elongate. *Staminate flowers* small, triangular, 4.5 × 2.5 mm, asymmetric; sepals 3, low, about 2 × 1 mm; petals 3, strongly keeled, 4.5 mm long, ca. 1.25 mm wide at basal; pistillode 2.5 × 0.5 mm, trifid, dark brown; stamens 6, 1.5

2. Reproductive organs of *Areca mandacanii*: young inflorescence with staminate and pistillate flowers (left); young fruits and rachilla covered with brown indumentum (right).




3. *Areca mandacanii*: **A**. leaf; **B**. apical portion of leaf; **C**. mid portion of leaf; **D**. infructescence with immature fruits; **E**. portion rachillae showing position of staminate and pistilate flowers; **F**. staminate flowers on rachilae; **G**. staminate flower in section; **H**. pistillate flower whole and in section; **I**. fruit in section. Scale bar A = 62.5 cm; B, C, D = 4 cm; E, I = 3 cm; F= 7 mm; G =1.6 mm; H = 1 cm. A from photograph, B–E & H from *Heatubun 423*, F, G & I from *Heatubun 413*. Drawn by Lucy T. Smith.

mm long, sagittate; anthers 1.5 mm long, arrow head shape, creamy, longer than the filaments, twisted basally; filaments 0.5 mm long, dark brown. *Pistillate flowers* larger than the staminate, triangular, 10–13 mm diam., sitting on the branch-nodes; sepals 3,

4. Fruits of *Areca mandacanii*: immature fruits (far left) and mature fruits (near left).

imbricate, triangular, 10–13 mm long, 10–12 mm wide, 1–3 mm thick, asymmetrical, thicker at base, cream to light green; petals 3, imbricate, triangular, 13 × 10 mm, 0.5 mm thick, cream; staminodes ovate, 10 mm high, 9 mm wide, pointed, brown coloured at the tip, fleshy. *Fruits* ellipsoidal, 65–70 × 42–45 mm, with conspicuous woody discoid depression at apex, shallowly concave, 10–12 cm diam., stigmatic remains persistent in centre of depression, perianth persistent; epicarp smooth, shiny, ca. 0.5 mm thick, dark green when young, turning to golden yellow or light orange when mature; mesocarp fibrous, ca. 10 mm thick, but much thicker at the base of fruit (below the seed), where ca. 20 mm thick; endocarp very thin, adhering closely to seed; seed subglobose, ca. 28 × 25 mm; endosperm deeply ruminate; embryo basal.

**Distribution.** Bird's Head Peninsula of Western New Guinea.

**Specimens Examined.** INDONESIA: West Papua Province, Sorong Selatan Regency, Teminabuan District, Sayal Village, Maampouw forest, 10 m asl., 21 Feb 2003, *Heatubun et al. 423* (Holotype BO!, isotypes K!, MAN!); *Heatubun et al. 413* (K! (spirit collection), MAN!); *Heatubun et al. 424* (MAN); West Papua province, exact locality unknown, *Maturbongs s.n* (K!, MAN). CULTIVATED: Indonesia, West Papua Province, Manokwari, Reremi, 75 m asl., 10 Apr 2008, *Heatubun & Iwanggin 902* (MAN!).

5. Fruit of *Areca mandacanii* (left) compared with fruits of two different varieties of *A. catechu* (center and right).

**Habitat.** This palm grows in forest transitional between swampy areas and lowland rain forest, where the soils are temporarily inundated by water. Other palms that occupy the same habitat are *Areca macrocalyx*, *Calyptrocalyx* sp., *Drymophloeus litigiosus*, *Licuala beccariana* and *Sommieria leucophylla*.

**Local Name.** *Nggafa* (Sayal dialect) and/or *Pinang Hutan* (Indonesian for forest betel nut).

**Uses.** The stem of this palm is used for flooring by local people for their houses and the seed is chewed as a substitute for betel nut (*A. catechu* L.).

**Conservation Status.** Data Deficient. This species has been reported from a very restricted area in the Bird's Head Peninsula of Western New Guinea. Further population studies would be needed to assess the conservation status of this palm.

**Notes.** *Areca mandacanii* is similar to *A. catechu* in habit and inflorescence structure, but can immediately be distinguished by the leaf with single-fold leaflets, irregularly arranged in groups in several ranks, with tips acuminate and notched rather than the broad leaflets with several folds, arranged in a single plane and more or less regularly arranged, characteristic of *A. catechu*.

The structure of the inflorescence and flowers indicate that *A. mandacanii* belongs to subgenus *Areca* (subgenus *Blumeoareca*) section *Oeotheanthe* (*sensu* Furtado)) together with *A. catechu*. In this infrageneric classification

(Furtado 1933), subgenus *Blumeoareca* (correctly subgenus *Areca*) is characterized by the inflorescence branched to two or three orders, with many rachillae, staminate flowers unilateral or alternate-distichous, sepals free or sometimes united, stamens six, the pistillate flowers seated on the axis of the basal branches, subdistichous or subopposite or spiraled on the rachilla.

Despite the variation and complexity of morphological characters in New Guinean *Areca* species, the new species is quite different from the widespread *A. macrocalyx* Zipp. ex Blume and its relatives especially in inflorescence form, which in the *A. macrocalyx* complex is congested.

The attractive leaves and fruits make this species instantly identifiable from other New Guinean *Areca*. The irregular arrangement of leaflets (several planes) is reminiscent of *Woodyetia bifurcata*, the Australian foxtail palm. The fruit size, aroma and colour (yellowish golden) also make this palm of great interest to palm growers.

This palm is named for Mr. Dominggus Mandacan, the regent of Manokwari and the chief of the Arfak tribes, who has paid so much attention to the development of scientific activities in the Vogelkop (Bird's Head Peninsula) area, including botanical research, and who also supported our expedition in many ways.

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