

Distribution — Indonesia: Papua: Sorong, Paniai, and Japen Waropen Divisions where it has been observed but without collections. Papua New Guinea: W Sepik, E Sepik, Western, Eastern Highlands, Gulf, Morobe, Central, Milne Bay, New Britain, and New Ireland Provinces.

Habitat & Ecology — In rain forest at 0–2000 m.

Etymology — The species was named for Count Luigi Maria d'Albertis (1841–1901), Italian zoologist, ethnologist, and explorer, collector of the type specimen.

Vernacular names — Panjawing (Ndu language – E Sepik Province), kerekere (Milne Bay Province), korakh (Daga language – Milne Bay Province), wokoton hokilibe (Was-sisi language – W Sepik Province), kuwei-sinii (Baiamo Sani language – E Sepik Province).

Notes — 1. *Calyptrocalyx albertianus* is distinguished by a solitary or occasionally clustering habit, moderate to tall, robust stem(s), regularly pinnate leaves, numerous stamens and ruminate endosperm. It is most closely related to *C. spicatus* of the Moluccas, but differs by its smaller stature, smaller lip of the floral pit, smaller fruit, and fewer stamens.

2. There is considerable variation in fruit size throughout the distributional range. Accordingly, Essig (1977; 1995) noted a possible new *Calyptrocalyx* sp. from the Milne Bay and New Britain Provinces, listed as *Calyptrocalyx* sp. nov. ined. H.E. Moore, but this and other collections examined from these areas fit within the overall variation for *C. albertianus*. The name *Calyptrocalyx* 'brassii' was subsequently applied by H.E. Moore to a specimen collected from Maneau Range, conserved at Arnold Arboretum (A) and labelled as a 'type' in anticipation of publication which never eventuated. *Calyptrocalyx clemensiae* was described for a collection from Boana, Morobe Province, and *C. albertianus* var. *minor*, a variety described with a short stem and smaller fruit, was named from Oriomo River, Western Province, but these are attributable to *C. albertianus*.

3. This species is used as a betel nut substitute.

## 2. *Calyptrocalyx amoenus* Dowe & M.D. Ferrero, spec. nov. — Fig. 1

Palma caespitosa, statura moderata, segmentis foliorum regulariter dispositis, pennis a apice brevibus sed basi longioribus et intervallio inter pinnas descrescente distalis. Inflorescentia multi-spicata, spicis filiformibus, fructibus ellipsoideis, mesocarpio tenui, endospermio homogeneo. — Typus: Ferrero 980037 (holo LAE; iso BRI), Papua New Guinea, W Sepik Province, Freida River, Spiau area of Omasai Creek, up from Wabia village, 120–140 m alt., Mar. 1998.

Solitary or clustering small to moderate palms. Stems 2.6–5 m tall, 2–5 cm diam.; internodes 3–6 cm long, dark green; crown with 8–12 leaves. Leaves regularly pinnate, 140–190 cm long, new leaf emerges crimson-red; leafbase 30–40 cm long, light green, glabrous, margin moderately lacerate-fibrous; petiole 8–10 cm by 3–5 mm, shallowly channelled adaxially, glabrous; pinnae 9–24 per side, alternate to subopposite, 2–22 cm apart, sometimes with extended gaps between pinnae, becoming increasingly closer together and smaller toward the apex, basal pinnae long and very widely separated, broadly lanceolate, acuminate, basally constricted, cupped, abruptly caudate with a 4–10 cm long, 2 mm wide filamentous drip tip; pinnae glossy dark green adaxially, dull lighter green abaxially, 13–44 by 1.2–12 cm, midrib prominent, secondary veins

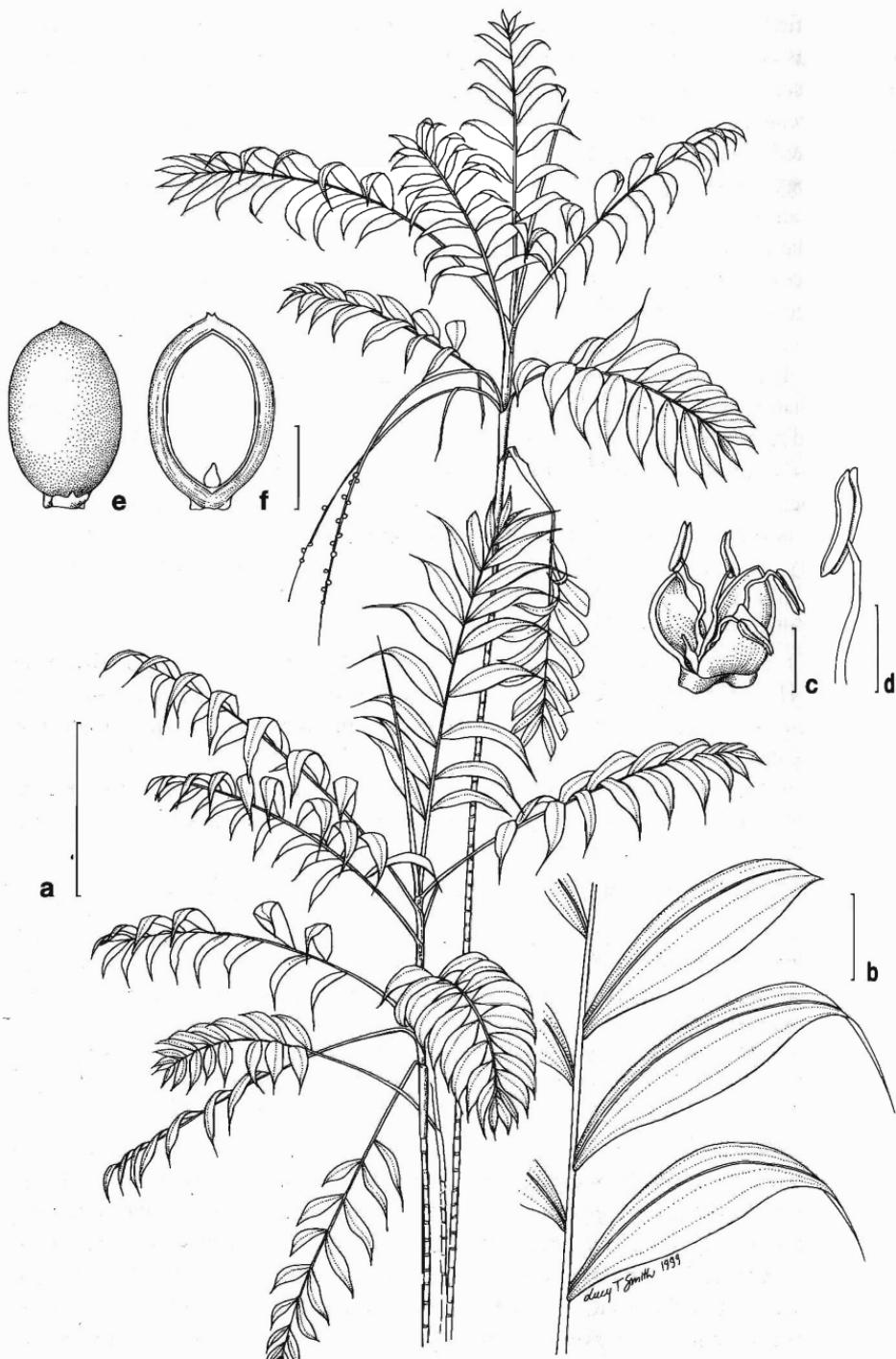


Fig. 1. *Calyptrocalyx amoenus* Dowe & M.D. Ferrero. a. Habit; b. leaf detail with pinnae; c. staminate flower; d. stamen; e. fruit; f. fruit in longitudinal section. — Scale bars: a = 30 cm; b = 5 cm; c & d = 1 mm; e & f = 5 mm (*Ferrero 980037*). Drawing by Lucy T. Smith.

almost as strong, all veins raised adaxially, only minor veins dominant abaxially; marginal veins thicker than secondary veins; two terminal pinnae basally united. *Inflorescence* 70–115 cm long, 2-spiked, filiform, rigid, moderately arched; peduncle 40–75 cm by c. 3 mm, dorsi-ventrally compressed; rachilla 30–35 cm by c. 3 mm; floral pits congested. *Flowers* c. 1.5 mm apart, cream. *Staminate flower* broadly ovoid in bud, c. 2 mm high, widely opening at maturity; sepals c. 0.5 mm long, triangular, obtuse, apex acute, strongly carinate, margins hyaline; petals c. 2 mm long, triangular, broadly ovate, apex moderately acute, inward curving, longitudinally striate; stamens 6, 2.5–3 mm long; filaments c. 0.1 mm diam., not noticeably tapered, c. 2.5 mm long, extended outward between the petals; anthers ovoid, c. 1.2 mm long, with ± parallel sides, versatile; pistillode elongate, c. 2.5 mm long, slightly tapered toward the apex, apex flat; pollen mostly circular, monosulcate, exine finely reticulate. *Pistillate flower* not seen. *Fruit* ellipsoid, 9–13 mm long, 6–10 mm diam., crimson; epicarp smooth, minutely granular when dry; mesocarp sparsely fibrous; endocarp crustaceous. *Seed* ellipsoid, 7–10 mm long, 4–6 mm diam.; endosperm homogeneous.

**Distribution** — Papua New Guinea: W Sepik Province; Freida River area.

**Habitat & Ecology** — In rain forest at 120–140 m.

**Etymology** — From *amoena* – delightful, in reference to the general appearance of the palm.

**Vernacular name** — Yurrimak.

**Notes** — 1. *Calyptrocalyx amoenus* is distinguished by caudate pinnae that decrease in size towards the leaf tip, a 2-spiked inflorescence, staminate flower with 6 elongate stamens, ellipsoid fruit 9–13 mm long, 6–10 mm diam. that are crimson at maturity, and homogeneous endosperm.

2. The stem of this palm is used to make spears, spear heads, or practice bows. Stems are also used for cross-beams in houses. Staminate flowers have a soapy smell.

### 3. *Calyptrocalyx arfakianus* (Becc.) Dowe & M.D. Ferrero, *comb. nov.*

*Linospadix arfakianus* Becc., Malesia 1 (1877) 62. — *Bacularia arfakiana* (Becc.) F. Muell., Fragm. 11 (1878) 58. — *Paralinospadix arfakianus* (Becc.) Burret, Notizbl. Bot. Gart. Berlin-Dahlem 12 (1935) 333, syn. nov. — Type: *Beccari s.n.* (holo FI; iso FI, K), Indonesia, Papua, Mt Arfak, Hatam, 1500–2000 m, July 1875.

*Linospadix pachystachys* Burret, Notizbl. Bot. Gart. Berlin-Dahlem 11 (1933) 711. — *Paralinospadix pachystachys* (Burret) Burret, Notizbl. Bot. Gart. Berlin-Dahlem 12 (1935) 335, syn. nov. — Type: Stein 128 (holo B†), Indonesia, Papua, Waigeo, 250 m, 20 May 1931.

Solitary, small palms. *Stem* erect, 1–2 m tall, 10–14 mm diam.; internodes to 3 cm long, dark green; crown with 6–10 leaves. *Leaves* irregularly segmented, 75–100 cm long; leafbase 15–18 cm long, green, minutely nerved, margin moderately lacerate-fibrous; petiole 15–25 cm by 2–3 mm, adaxially channelled; lamina to 50 cm long, to 16 cm wide, dark glossy green adaxially, much lighter abaxially; segments unequal on either side, irregularly arranged, 2 per side or 1–4 on one side and up to 10–12 on the other, with some major divisions; basal segments narrow c. 12 mm wide; terminal segments united to form a deeply bifid apex, margins truncate, toothed; primary ribs adaxially prominent, 15 mm apart, not raised abaxially; secondary veins raised slightly on both surfaces. *Inflorescence* to 75 cm long, 2–4-spiked, pendulous; prophyll to 12 cm long; peduncular bract to 20 cm long; peduncle 45–55 cm long, to 2 mm wide,