

same plane, the longest to 27 cm long, flattened, 6×3 mm in T.S.; triads arranged distichously, to 10 mm distant with subtending bracts very inconspicuous. Staminate flowers unknown. Pistillate flower depressed globose; calyx with 3 rounded, imbricate, ciliate-margined lobes to 2.5 mm long, 5 mm wide, joined for c. 0.5 mm at the very base; corolla with 3 rounded, imbricate, ciliate-margined lobes to 2.25 mm long, 4.5 mm wide; staminodes absent; ovary rounded, about 3 mm diam., tipped with irregularly lobed and flattened stigma. Half-mature fruit greenish, with black calyx and corolla, borne on a yellowish-green rachilla, the fruit \pm cylindrical, 15×5 mm. Maturing fruit turning yellowish, then orange, finally deep purplish-black, the rachillae eventually yellowish to orange. Mature fruit broadly ellipsoid, very slightly curved, to 3×1.5 cm, with a distinct low collar surrounding the apical stigmatic remains; epicarp smooth but not satiny; endocarp with conspicuous longitudinal fibres; seed adhering to the endocarp, to 2×1 cm, attached basally; endosperm deeply and irregularly ruminant; embryo basal. (Fig. 4).

SARAWAK. 4th Division, G. Mulu National Park, proposed extension, Sg. Buda near Sg. Medalam, alluvial forest, 100 m, *Dransfield* JD 5313. (holotype K; isotype SAR). Ulu Sg. Berar, *Yü Puan Ching* S 39580 (BH, K, SAR) *Paul Chai* S 39531 (BH, K, KEP, L, SAN, SAR); Miri: Lambir National Park, *Awang Morshidi* S 24085 (BH, K, SAR), *Banyeng & Sibat* S 24467 (BH, K, L, SAR, SING); 21st Mile, Lambir-Subis, *Sylvester Tong* S 36593 (K, SAR); Niah, Ulu Sg. Batu, *Ilias Paie* S 39047 (BH, K, L, SAN, SAR); Marudi, Batang Tinjar at Long Palau, *Fuchs* 21218 (A, G, K, L, SAR); Bintulu: Sg. Geraes, *H. E. Moore* 9148 (BH, K, SAR); Ulu Stiran, Labang, *Ashton* S 18076 (K, SAR); Nanga Sapulan, Segan F. R., *Ilias Paie* S 27019 (BH, K, L, SAR); Bt. Urang, *Dransfield* 776 (K); N Setungan, Ulu Segan, *Ashton* S 22006 (K).

Pinanga mooreana, named for my friend and frequent mentor, Prof. H. E. Moore Jr, is closely related to the highly polymorphic *Pinanga malaiana* (Griff.) Scheff. It differs from the latter in being very robust in all its parts, with leaf much larger with leaflets of a different texture and coloration, not greyish below, and diverging from the rachis at a much greater angle; the inflorescence has 5–8 rachillae as opposed to 1–4 (very rarely more) in *P. malaiana*, and the fruit is of a different shape in its development, and changes in colour from green to yellow to orange to purplish-black rather than cream to pink to red to purplish-black. Furthermore the fruit of *P. malaiana* has a curiously satiny texture which is absent in *P. mooreana*.

So far *P. mooreana* is known only from the 4th and 5th Divisions of Sarawak where it seems to be confined to lowland forest. In the G. Mulu National Park it is one of the characteristic features of alluvial forest; in the Bintulu area, however, I have collected it at the edge of kerangas forest.

12. *Pinanga tenacinervis* *Dransfield* sp. nov. ab aliis speciebus *Pinangae* distincta foliolis sigmoideis fibris elasticis illis folii *Corni sanguineae* similibus. Quamquam *P. patulae* superficialiter similis, haec species habitu acaulescente radicibus gralliformibus et calyce floris feminei gamosepalo differt. Typus: Borneo, Sarawak, *Dransfield* JD 5342 (holotypus K; isotypus SAR).

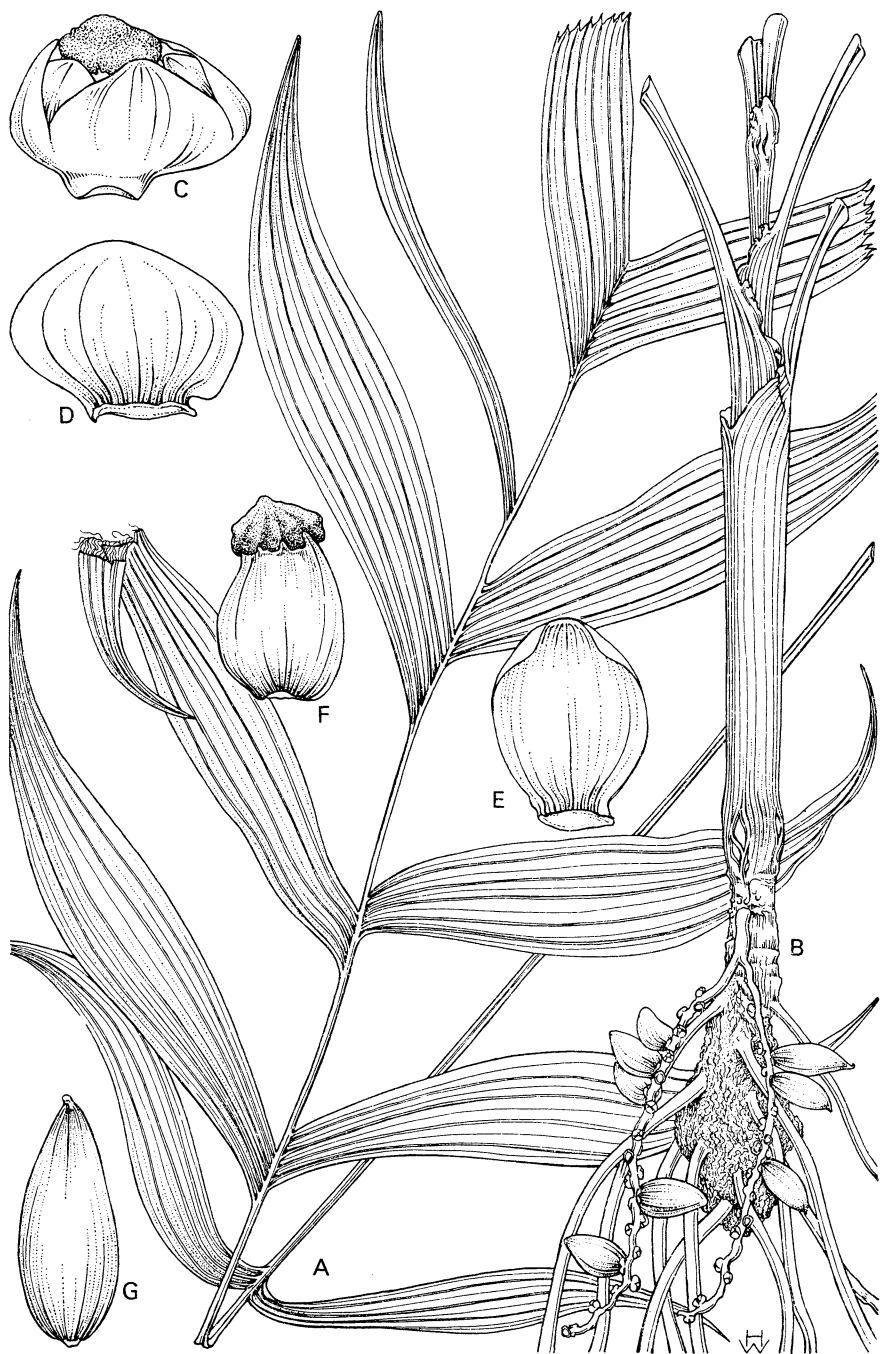


FIG. 5. *Pinanga tenacinervis*. **A** whole leaf with one leaflet showing tough fibres $\times \frac{1}{3}$; **B** stem with stilt roots, inflorescence and crownshaft $\times \frac{2}{3}$; **C** pistillate flower $\times 10$; **D** sepal from pistillate flower $\times 15$; **E** petal from pistillate flower $\times 15$; **F** ovary $\times 15$; **G** half-mature fruit $\times 2$. All from *Dransfield* JD 5342. Drawn by Miss H. Wood.

Clustering, acaulescent, unarmed, pleoanthic monoecious palm. Stems apparently suckering underground to produce rather loose colonies of 3–5 stems; stem very short, scarcely more than 10 cm tall, surrounded by conspicuous stilt roots, about 3 mm diam.; stem to 1.2 cm diam., with internodes to 8 mm long, with surface dull greenish-brown, glabrous. Crownshaft to 16 × 2 cm, bright green, shiny when fresh, dull, striate when dry, with inconspicuous scattered brown scales. Crown with 5–6 leaves. Whole leaf including leaf sheath to c. 110 cm; leaf sheath c. 10 cm long; petiole 45 cm × 3 mm, triangular in cross-section, bright green, bearing very sparse, scattered brown scales; leaflets 5–6 on each side of the rachis, subopposite or alternate, dark green, shiny above when fresh, ± sigmoid, the apical pair joined; lowermost leaflet pair generally narrower than the rest to 18 × 2 cm; mid-leaf leaflets to 22 × 5 cm, long-acuminate, rarely a single fold leaflet present to 1 cm wide; apical leaflets to 12 cm long, 4 cm wide with a coarsely dentate upper margin; leaflets 1–6-ribbed; lamina very sparsely brown-scaly on upper surface, on lower surface with scattered minute, brown-based, branched, white hairs; fibres of fibrovascular bundles extremely tough, the leaflets hence difficult to tear, the fibres protruding from torn surfaces in the manner of the leaf of *Cornus sanguinea*. Inflorescence spicate or bifid, pendulous, to 10 cm long with a basal peduncular portion about 2 cm long; prophyll only known in immature state, strongly two-keeled; rachillae green, glabrous; triads arranged strictly distichously, about 4 mm distant. Staminate flower unknown except in a very immature state; stamens apparently 8 in number. Pistillate flower globular, somewhat sunken into the rachilla; calyx tubular below with 3 ovate, cucullate, glabrous sepals, about 1.5 mm high; corolla of 3 ovate, cucullate, glabrous, imbricate petals about 1.2 mm high; ovary ovoid about 1 mm high, tipped with irregular umbonate stigma. Almost mature fruit crimson, shiny, fusiform, about 1.2 × 4 mm; endosperm apparently ruminant. (Fig. 5).

SARAWAK. 5th Division, G. Mulu National Park, by Sg. Medalam, near G. Buda, in alluvial forest, on shallow soils overlying limestone, 150 m, *Dransfield* JD 5342 (holotype K; isotype SAR).

I have seen no other specimen of this distinctive *Pinanga*. Although there is a superficial resemblance to *P. patula* Blume, the gamosepalous pistillate flower suggests a relationship with *P. albescens* Becc. ex H. Winkler.

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