

reluctant to give any formal taxonomic status to these collections in the absence of fruit, but it may prove sufficiently distinct to be given varietal rank under *C. myriacanthus*.

Calamus paulii *J. Dransf.* sp. nov. ad sectionem *Platyspathum* pertinens *C. myriacantho* affinis sed magnitudine minima, spinis vaginarum regulariter dispositis, foliis late spathulatis, pedunculo brevi, rachillis paucis differt. Typus: Borneo, Sarawak, *Paul Chai et al.* S 36834 (holotypus K; isotypus SAR).

Solitary, small rattan, acaulescent or with a short erect or decumbent stem to 1 m tall; stem without sheaths c. 12 mm diam., with sheaths c. 25 mm diam.; internodes c. 20 mm only. Leaf sheaths mid-green, bearing numerous flattened brown spines 2–20 mm long, arranged in partial whorls or short horizontal groups, scattered thin grey-brown scales present between the spine groups; ocrea thin, brown, quickly tattering; knee absent. Flagellum absent. Leaf ecirrate, 90–120 cm long, including petiole to 60 cm; petiole \pm triangular in cross section, armed with sparse spines to 20 mm arranged in groups of 2–4 at the very base, the spines around the mouth of the sheath sometimes larger; rachis in proximal region armed as the petiole, towards the tip armed with short reflexed spines; leaflets 12–15 on each side of the rachis, \pm regularly arranged though tending to be closer together near the leaf tip, broad, spathulate, cucullate, the longest to 15 \times 4 cm, dark shining green when fresh, drying pale greenish-brown, pluricostate, the margins near the tip bearing conspicuous black bristles; transverse veinlets conspicuous. Staminate inflorescence more highly branched than the pistillate, to c. 50 cm long; peduncle c. 20 cm long; primary bracts closely sheathing, densely covered with indumentum, unarmed or sparingly armed with short reflexed prickles to 1 mm; partial inflorescences c. 7, rather crowded, the proximal c. 20 cm long, bearing distichous tubular bracts, densely covered with indumentum, each subtending a secondary branch, in turn bearing distichous, straight or slightly arcuate rachillae to 20 mm long; rachilla bracts triangular, striate, to c. 1 mm; involucre c. 1 mm, striate. Staminate flower bud \pm ovoid; calyx tube striate, c. 2 \times 1.5 mm, with triangular lobes c. 0.5 \times 0.75 mm; corolla lobes smooth, c. 2.5 \times 1 mm; stamens very immature in available specimens. Pistillate inflorescence with peduncle c. 40–50 cm, bearing only 1 (–3) partial inflorescences to 7 cm; rachillae few (c. 6), distant, up to 40 \times 2 mm; rachilla bracts c. 2 mm long, striate, bearing caducous indumentum, involucre and involucrophore c. 1 mm, striate. Sterile staminate flower like the fertile but with empty anthers. Pistillate flower with calyx tube striate, c. 2.5 \times 1.5 mm, lobes c. 1 \times 1 mm; corolla lobes 3.5 \times 1 mm, smooth; staminodal ring c. 0.5 mm, bearing flattened sagittate staminodes 1.5 \times 0.4 mm; ovary very immature in available specimens. Mature fruit \pm spherical, c. 8 mm diam., tipped with a columnar beak 2.5 \times 1 mm, and covered in 17 vertical rows of reflexed, matt red-brown scales with slightly darker tips. Seed c. 5 \times 4 \times 3 mm, shallowly excavate. Endosperm homogeneous; embryo basal. Eophyll not known. (Fig. 2).

BORNEO. Sarawak 1st/2nd Division boundary, G. Buri, *P. Chai et al.* S 36834 (holotype K; isotype SAR), *Dransfield et al.* JD 6119 (BH, BO, K, L, SAR), JD 6121 (BH, K, L, SAR).



FIG. 2. *Calamus paulii*. **A** portion of sheathed stem $\times \frac{3}{2}$; **B** leaf $\times \frac{3}{2}$; **C** pistillate inflorescence $\times \frac{3}{2}$; **D** part of staminate rachilla $\times 4$; **E** staminate flower bud $\times 6$; **F** dyad from pistillate inflorescence $\times 5$; **G** young fruit $\times 3$; **H** mature fruit $\times 2$; **J** seed $\times 3$. **A-C**, **F** & **G** from Chai *et al.* S 36834, **D** & **E** from Dransfield *et al.* JD 6121, **H** & **J** from Dransfield *et al.* JD 6119. Drawn by Heather Wood.

This is a very elegant diminutive 'wi tulang' with neat, broad, spatulate and cucullate dark green leaflets and regularly armed sheaths; the inflorescences are generally much shorter than the leaves. This is close to *C. myriacanthus* but differs in the much smaller size of all its parts, the very regular leaf sheath armature and the leaflet and inflorescence form.

Calamus sabalensis *J. Dransf.* sp. nov. a ceteris speciebus Borneensibus sectionis *Platyspathi* habitu acaulescenti caespitosa, foliolis paucis dissitis linearibus recedit. Typus: Borneo, Sarawak, *Dransfield et al.* JD 6133 (holotypus K; isotypi BH, L, SAR).

Clustering, acaulescent, undergrowth palm with short subterranean stem, c. 15 mm diam., with sheaths to c. 30 mm diam. Sheaths splitting opposite to the petiole for much of their length, dull mid-brown, sparsely armed with dark brown spines c. 3–15 mm, scattered or in groups of 2–4, largely confined to the mid-line, pale brown indumentum abundant between the spines, the leaf sheath mouth with irregular tattering ocrea to 10 cm, bearing minute spines arranged in horizontal rows or scattered. Whole leaf to c. 2 m, usually less, ecirrate, the petiole up to 1.25 m, \pm rounded in cross section, c. 5 mm diam. at the base, armed with grouped spines 5–15 mm long, spines becoming small and very sparse distally, the rachis unarmed; leaflets regularly arranged, distant, (5–) 10–15 on each side of the rachis, rather thin, drying dull greenish-brown, narrow linear-lanceolate, acuminate, the longest c. 30 \times 1.5 cm, the apical pair c. 20 \times 1 cm, armed with very sparse short bristles on 3 nerves on adaxial surface and one nerve abaxially, the margins bristly near the tips; transverse veinlets conspicuous, rather distant. Flagellum absent. Inflorescences to 1.3 m long, tending to arch out of the crown or flop on the forest floor, with 2–5 partial inflorescences; prophyll in robust inflorescences tightly sheathing the peduncle for c. 30 cm, armed with scattered spines to 10 mm, apically with a short triangular limb to 6 cm rather densely armed with brown spines to 15 mm, in smaller inflorescences the prophyll much smaller and more sparsely armed; primary bracts much smaller than the prophyll, sparsely armed or unarmed. Staminate inflorescence branching laxly to 3 orders, the proximal partial inflorescence up to 30 cm long with up to 8 distichous second order branches, the longest to 10 cm, bearing very short third order branches, the rachillae up to 4 mm, or third order branches lacking and flowers borne on branches of the second order; bracts on second and third order branches infundibuliform, striate, minutely scabrid, densely brown scaly. Staminate flower c. 3.2 mm long; calyx tubular, shallowly 3-lobed, 1.5 \times 1.5 mm, striate; petals highly polished, c. 3 \times 1 mm; filaments slender, c. 0.1 mm long, inflexed, anthers elongate, c. 1.5 \times 0.3 mm; pistillode c. 1 \times 0.2 mm, trifid. Pistillate inflorescence branching to 2 orders, the proximal partial inflorescence to c. 14 cm with about 5 distant, slightly reflexed rachillae to 70 \times 2 mm; rachilla bracts as in the staminate. Sterile staminate and pistillate flowers at anthesis not available; calyx in fruit striate, c. 2 mm, irregularly lobed; petals 2 \times 1 mm. Mature fruit spherical, 9 mm diam., tipped with a beak to 2 \times 1 mm, covered in 15 vertical rows of red-brown scales. Seed rounded, c. 7 mm diam., slightly flattened on one side; endosperm homogeneous. (Fig. 3).