NOTES ON RATTANS (PALMAE) IN SARAWAK, BORNEO

BORNEO. Sarawak: 1st Division, Serian District, Sabal Tapang Forest Reserve, Mile 74, Dransfield et al. JD 6133 (holotype K; isotypes BH, L, SAR), JD 6132 (K, SAR); Mile 70, JD 6086 (BH, K, SAR); G. Gaharu Summit Ridge, JD 6096 (BH, K, SAR).

Calamus sabalensis is a stemless palm of 'kerangas' forest at altitudes of 20–650 m. It forms small thickets of leaves. It is probably most closely related to C. bacularis but differs in the clustering, stemless habit, the very few leaflets and the leaflet armature, and the very sparsely branched inflorescence with much more slender rachillae.

Calamus acanthochlamys J. Dransf. sp. nov. ad sectionem Platyspathum pertinens C. myriacantho affinis sed foliolis pluribus lineari-lanceolatis, spathis inflorescentiae spinis rigidis dense armatis, rachillis pistillatis crassis reflexis distincta. Typus: Borneo, Sarawak, Ilias Paie S 39160 (holotypus K; isotypi BH, L, SAR).

Stout, solitary rattan, climbing to 7 m tall; stem without sheaths up to 2.5 cm diam., with sheaths to 5 cm diam.; internodes short, about 5 cm long. Leaf sheaths bright green armed with robust brown spines, to 25 × 4 mm, scattered and arranged in partial whorls; pale brown indumentum abundant between the spines; knee absent; spines around the leaf sheath mouth enlarged, crowded, ± horizontal or porrect, 20–50 × 4 mm, intergrading with those of the petiole. Flagellum absent. Leaf ecirrate to 3 m including the petiole to 1.5 m; petiole 1.5 × 3 cm diam. at the base, abaxially ± bare of spines, laterally armed with regularly arranged horizontal spines 20–50 × 4 mm, armature decreasing in size and abundance distally; rachis armed with short reflexed, bulbous-based spines c. 4 mm long; leaflets regularly arranged, 40–75 on each side of the rachis, stiff, narrow, linear-lanceolate, the longest ± in mid-leaf, c. 50 × 2.5 cm, the apical c. 12 × 1 cm, somewhat diwaricate, drying dull reddish or dirty brown, adaxially unarmed, abaxially armed with abundant short regular bristles on 3 nerves. Inflorescences from 1 to at least 1.5 m long, arching out of the crown; number of partial inflorescences not known; prophyll very robust, armed with lateral groups of spines and abundant pale brown tomentum, apically expanded into an irregularly tattering limb to at least 15 × 4 cm bearing abundant long brown spines to 10–40 × 3 mm; primary bracts tubular at the base, splitting longitudinally and expanded to form a long lanceolate blade, up to 40 × 3 cm, sparsely to heavily armed with spines 1–15 × 2 mm, and caducous tomentum, the whole limb ± as long as or exceeding the partial inflorescence. Stamine inflorescence branching to 3 orders; partial inflorescence ± triangular in outline, up to c. 35 × 24 cm, 2nd order branches held ± at right angles to the first order, the longest ±12 cm long, bearing distichously arranged, rather congested, ± reflexed short rachillae, the longest c. 12 × 2 mm, decreasing distally; rachilla bracts densely tomentose. Stamine flower c. 5 × 1.5 mm; calyx tube faintly striate, c. 1.75 × 1.5 mm with lobes c. 0.75 × 1 mm; filaments 2 × 0.2 mm, inflexed in bud, anthers 1.5 × 0.4 mm; pistillode conical, c. 1 × 0.2 mm. Pistillate inflorescence branching to 2 orders; partial inflorescence ± oblong in outline, 17–30 × 3–6 cm, bearing strictly distichous, low, ± horizontal bracts 5 × 6 mm; rachillae strictly distichous, stiff, ± reflexed, held in one plane,
Fig. 4. *Calamus acanthochlamys*. A portion of sheathed stem ×½; B mid-section of leaf ×½; C apex of leaf ×½; D part of staminate inflorescence ×½; E staminate flower bud ×7½; F staminate flower bud in section ×7½; G part of infructescence ×½; H pistillate flower ×7½; J pistillate flower, one petal removed ×7½; K fruit ×2. A–G, G–K from *Ilias Paie* S 39160, D–F from *Richards* 2333. Drawn by Heather Wood.
20–50 × 4 mm; rachilla bracts densely tomentose. Sterile staminate flower 4 × 1·5 mm, as the fertile but with empty anthers. Pistillate flower 5 × 2·5 mm; calyx tube 2 × 2·5 mm, the lobes c. 0·4 × 1·5 mm; petals 4 × 1·5 mm; staminodal ring c. 1 mm high bearing filaments c. 0·75 mm and empty anthers 1·5 mm; ovary c. 1 mm diam., tipped with divergent stigmas to 3 mm. Mature fruit ± broad-ellipsoid, 10 × 8 mm, tipped with a beak 2 × 1·5 mm, and covered with 18 vertical rows of chestnut-brown scales. Seed ellipsoid, c. 8 × 5 mm; endosperm homogeneous. (Fig. 4).

**Borneo. Sarawak.** 4th Division, Miri Suai, Ulu Sg. Sibau, *Ilias Paie* S 39160 (holotype K; isotypes BH, L, SAR); Ulu Sinrok, Similajau Forest Reserve, *Ashton S* 16587 (K, SAR); Ulu Tinjar, G. Dulit, *Richards* 2333 (K); 7th Division, Ulu Belaga, Kuala Linau, Rumah Nyaving, *Dransfield et al.* JD 4701 (K, KEP, SAR).

*Calamus acanthochlamys* is one of the largest of the ‘wi tulang’. It is most closely related to *C. myriacanthus* but differs in the numerous stiff narrow leaflets, the very congested strictly distichous, reflexed rachillae and the dense armature of the bracts.

5. The identity of *Calamus scabrifolius*

Beccari distinguished *C. scabrifolius* from *C. sarawakensis* by the regular rather than inequidistant leaflets. There is now sufficient material to show variation and I am unable to separate two species satisfactorily. *C. scabrifolius* is thus reduced to synonymy.


6. The identity of *Calamus flabelloides*

I have already discussed the close similarity between *Calamus flabellatus* and *C. flabelloides* (Dransfield 1979), and I hinted that *C. flabellatus* might represent a juvenile form of *C. flabelloides*. I have never found *C. flabellatus* in a fertile state; intermediates bearing leaves with a terminal flabellum and one or two lateral leaflets have been collected (e.g. *Dransfield et al.* 6070, and *Ridley* s.n. at Puak, both in K) linking the two states represented by the two names. I now feel confident in reducing *C. flabelloides* to synonymy with *C. flabellatus*. It should be noted, however, that the form originally described by Beccari as *C. flabellatus* probably retains juvenile foliage longer than is normal in this species.