

Calamus elopurensis *J. Dransf.* sp. nov. a ceteris taxis gregis *C. javensi* affinis vaginis foliorum cinereo-tomentosis sparsissime armatis, ocrea magna, petiolo valde evoluto, 4–6 foliolis amplis versus apicem rachidis aggregatis distinguibilis. Typus: Borneo, Sabah, *Kadir* A2651 (holotypus K; isotypi SAN, SING).

Clustering slender rattan climbing to c. 5 m only; stem without sheaths to 6 mm, with sheaths to 10 mm; internodes to 22 cm. Sheaths dull green, longitudinally striate, covered with grey tomentum, and armed with very few spines to 8 mm, or unarmed; knee conspicuous, rounded, \pm glabrous; ocrea conspicuous, developed as a triangular limb to 7 cm on the side of the stem away from the petiole, usually grey tomentose and with a fringed margin. Flagellum to 1 m. Leaf ecirrate to 60 cm, including petiole; petiole to 20 cm, sometimes much less, but always conspicuous, c. 4 mm wide, usually densely covered with grey floccose indumentum and armed with distant grapnel groups of spines; leaflets dark green, usually 2 pairs only or 2 pairs and one single leaflet or 3 pairs; terminal leaflet pair joined for c. $\frac{1}{3}$ their length, forming a terminal flabellum to 35 \times 10 cm; lateral pairs with leaflets to 35 \times 5 cm, sometimes in impoverished individuals much less; laminae concolorous unarmed, glabrous except for caducous hairs on the main veins near the base; transverse veinlets conspicuous; young leaves tinged pink. Staminate inflorescence to 1.5 cm with up to 8 partial inflorescences, the first borne c. 80 cm above the base; bracts on the peduncle with expanded lanceolate limb to 16 \times 1 cm, bearing scattered reflexed spines; partial inflorescence with an axis to 9 cm, the first few branches branching further, the others unbranched; bracts on axis of partial inflorescence tubular in proximal 5 mm, with an expanded triangular limb to 5 mm, with scattered grey tomentum and a fimbriate margin; rachillae to 12 \times 0.2 cm, deep cherry red when fresh, bearing close distichous bracts to 1 mm, and bracteoles to 1 mm. Staminate flower to 3.5 \times 1 mm; calyx tubular in lower 1 mm, with 3 triangular lobes to 1 \times 0.7 mm, with conspicuous thickened margins; corolla tubular at the very base, with 3 petals to 3.5 \times 1 mm; stamens 6, with anthers to 1.5 \times 0.2 mm. Pistillate inflorescence similar to staminate but with fewer partial inflorescences; rachilla to 5 \times 0.3 cm, with congested bracts; areole of pistillate flower to c. 2.5 mm. Pistillate flowers and fruit not known. Fig 2.

SABAH. Sandakan, Elopura, Sepilok F. R., *Kadir* A2651 (holotype K; isotypes SAN, SING); Segaliud-Lokan F. R., *Dransfield et al.* JD5774 (K, SAN); Lower Kinabatangan, Subak Estate, *Dransfield et al.* JD5768 (K, SAN, SAR); Beluran, Ulu Tungud F. R., *Dransfield et al.* JD5805 (K, KEP, SAN, SAR); Belotan, *Castro* 3200 (K, SAN); Ulu Dusun, *Dransfield et al.* JD5767 (K, L, SAN, SAR).

Specimens of *Kadir* 2651 in SING had been labelled *Calamus elopurensis* nov. sp. by Furtado, but the name has never been published.

Calamus amplijugus *J. Dransf.* sp. nov. intra gregem *C. javensi* affinem foliolis amplissimis bullatis regulariter dispositis, rachillis longis laxisque distincta. Typus: Borneo, Sabah, *Dransfield* JD5775 (holotypus K; isotypi L, SAN, SAR).

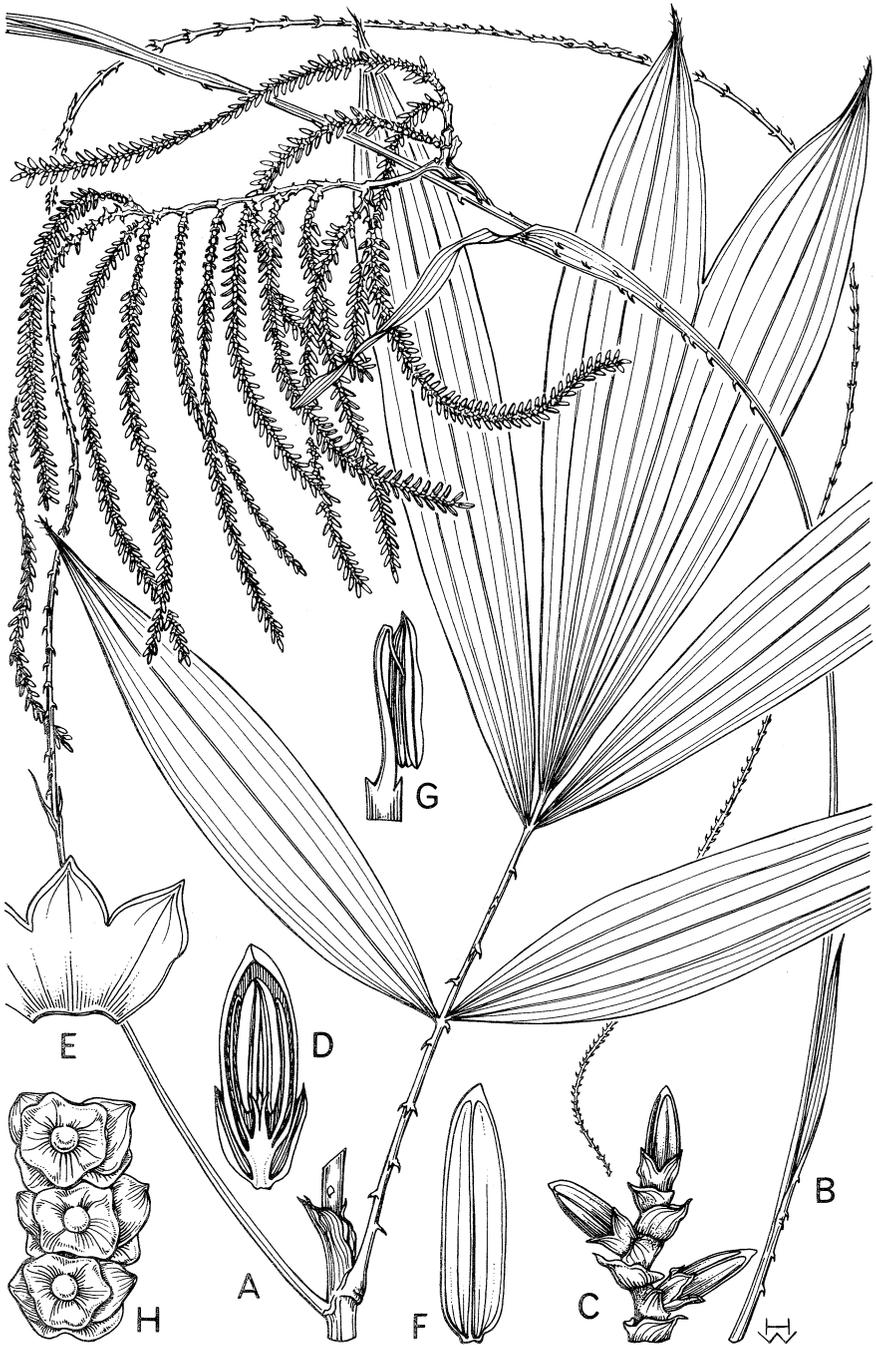


FIG. 2. *Calamus elopurensis*. **A** part of sheathed stem with one leaf, ocrea and flagellum $\times \frac{1}{2}$; **B** part of staminate inflorescence $\times \frac{1}{2}$; **C** tip of staminate rachilla with flower buds $\times 4$; **D** vertical section of staminate flower $\times 7\frac{1}{2}$; **E** calyx of staminate flower $\times 10$; **F** petal of staminate flower $\times 10$; **G** stamen $\times 10$; **H** portion of pistillate rachilla $\times 7\frac{1}{2}$. **A**, **H** from Dransfield JD5768, **B**-**G** from Kadir A2651. Drawn by Heather Wood.

Slender to moderate clustering rattan with stems climbing to 20 m; stem without sheaths to 10 mm, with sheaths to 13 mm; internodes to 25 cm. Sheaths dull green with scattered caducous brown scales, unarmed, or, more usually, rather densely armed with horizontal pale green spines, 5–18 mm, with hairy margins when young; knee well-developed; ocrea to 10 mm, with fimbriate margin, and tattering irregularly. Flagellum to 2 m. Leaf ecirrate to 65 cm; petiole absent; rachis armed with abundant scattered or grouped reflexed black-tipped spines; leaflets subregularly to regularly arranged, broad spatulate and mucronate, frequently undulate and bullate, often shining, up to 10 on each side of the rachis, very conspicuously 3-nerved, the lowermost 2 leaflets on each side swept back across the stem; mid-leaf leaflets to 24 × 7 cm (usually rather less); apical leaflet pair joined together for c. $\frac{2}{3}$ their length; leaflets unarmed except for a few bristles at the tip. Inflorescences to 2 m long; staminate inflorescence with c. 6 or more partial inflorescences; axis of partial inflorescence to 20 cm bearing close tubular bracts to 10 mm, with triangular tips, with sparse brown scales; rachillae 12–22 cm long, rather distant, bearing rather inflated bracts to 2 mm; bracteole c. 1 mm; areole to 1 mm diam. Staminate flower with calyx striate, tubular in lower 1.5 mm, and with 3 triangular lobes to 0.5 × 1 mm; corolla with 3 petals to 4 × 1 mm; anthers 1.5 × 0.3 mm. Pistillate inflorescence with 3 partial inflorescences to 17 cm bearing c. 9 rather distant rachillae to 18 cm; flower groups c. 3 mm distant. Sterile staminate flower as the fertile. Pistillate flower with calyx tubular in lower 1.5 mm, with 3 triangular lobes to 0.5 × 1 mm; corolla with 3 petals to 3.5 × 1 mm; staminodes narrow triangular; ovary c. 1 mm diam; stigmas c. 1 mm, strongly recurved. Mature fruit spherical c. 9 mm diam. with a beak to 1 × 1 mm, and covered in 21 vertical rows of narrowly pointed ivory-coloured scales with dark brown tips and margins, seed 6 × 5 × 4 mm, irregularly excavate; endosperm homogeneous. Eophyll with 4 broad leaflets. Fig. 3.

SABAH. Sandakan, Lungmanis, *Dransfield et al.* JD5775 (holotype K, isotypes L, SAN, SAR); Kabili-Sepilok F. R., *Puasa* 6712 (K, SAN); Lower Kinabatangan, Subak Estate, *Dransfield et al.* JD5769 (K, SAN, SAR); Beluran District, Ulu Tungud F. R., *Dransfield et al.* JD5807 (K, KEP, SAN, SAR); Beluran District, Pulau Sapi, Bt. Merongo, *Dransfield et al.* JD5737 (K, L, SAN, SAR); Lahad Datu, Silabukan F. R., Bagahak, *Dransfield et al.* JD5819 (K, L, SAN, SAR); Lahad Datu, Segama, *Muin Chai* SAN31671 (K, SAN); Telupid, Bt. Tangkunan, *Dransfield et al.* JD5783 (K, L, SAN); Ranau, Bt. Ampuan, *Meijer* SAN20268 (K, SAN) and *Dransfield et al.* JD5577 (K, SAN, SAR).

SARAWAK. 1st Division, Quop, *J. Hewitt* s.n. (K).

This taxon bears a superficial resemblance to *C. spectabilis* Bl., known only from the type gathering from Java; however *C. spectabilis* appears to be a close relative of *C. rhomboideus* Bl., and very different from the *C. javensis* complex in inflorescence structure and sheath indumentum.

C. amplijugus is widespread in Sabah; it is a very beautiful species with its broad bullate leaflets. Forms from exposed forest on ultrabasic rock are smaller than normal and approach *C. javensis* in size; the broad ± regularly arranged, bullate leaflets, and relatively long lax rachilla will distinguish the present taxon.

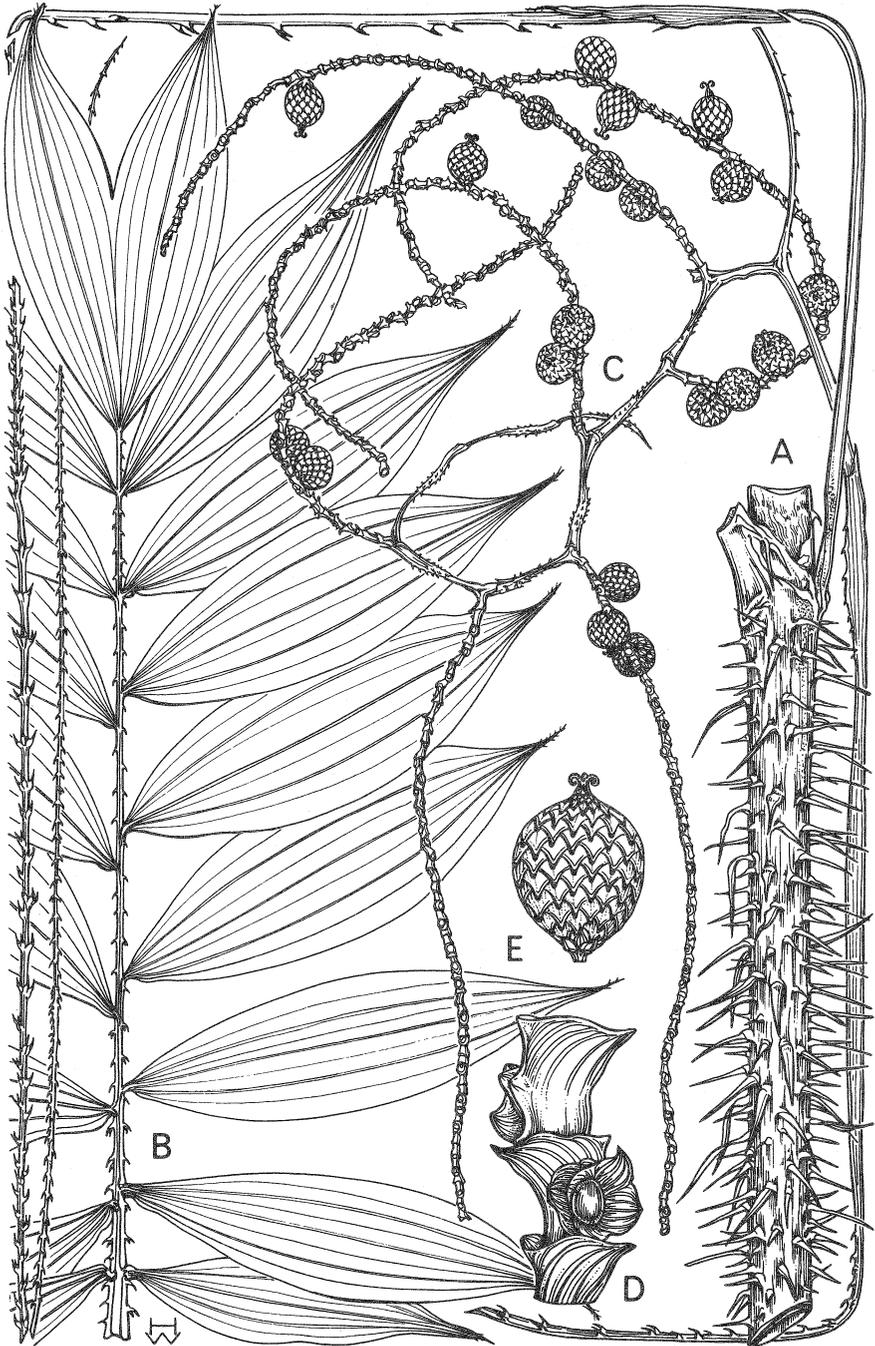


FIG. 3. *Calamus amplijugus*. **A** part of sheathed stem with flagellum $\times \frac{1}{2}$; **B** leaf $\times \frac{1}{2}$; **C** part of inflorescence $\times \frac{1}{2}$; **D** portion of pistillate rachilla $\times 5$; **E** fruit $\times 2$. **A**, **B** from Dransfield JD5819, **C**–**E** from Dransfield JD5775. Drawn by Heather Wood.