

Calamus flabelloides Furtado in Gard. Bull. Singapore 15: 173 (1956); Dransfield, Man. Ratt. Mal. Pen. 195 (1979) and Ratt. Sabah 145 (1984). Type: Peninsular Malaysia, Johor, Sg. Kayu, Corner S 29284 (holotype SING; isotype K); **synon. nov.**

7. A new variety of *Calamus divaricatus*

Calamus divaricatus is a variable plant endemic to Borneo, occurring from the lowlands up to c. 1800 m in montane forest. Forms from lowland forest in Sabah are particularly robust whereas those from ridgetops in montane forest as in the Mulu National Park, Sarawak, are very slender. They do, however, intergrade and seem to be conspecific. They all possess leaf sheaths with finely muricate ridges, strongly divaricate leaflets and inflorescences with few partial inflorescences, the rachillae and axes covered in hispid indumentum; the pistillate partial inflorescence has a strikingly triangular outline. A population in the Mulu National Park is unusual in being acaulescent (referred to in Dransfield 1984b as *C. divaricatus* 'acaulescent taxon'); however, it seems to intergrade with more typical populations nearby. A further form was collected by P. W. Richards on the Oxford University Expedition on G. Dulit, Sarawak; this, represented by staminate (*Richards* 1916) and pistillate (*Richards* 1777) material, differs from the slender climbing form of *C. divaricatus* in the leaflets being close and diverging at an acute angle rather than distant and divaricate. The indumentum on the rachillae is slightly different in being more ferruginous and less hispid, but the inflorescences are otherwise not significantly different. Furthermore the fruit is top-shaped as in typical *C. divaricatus*. The leaflet form and arrangement is so distinctive that I believe the taxon deserves recognition as a variety of *C. divaricatus*.

Calamus divaricatus Becc. var. **contrarius** J. Dransf. var. nov. a varietate typica folio multo minore, foliolis confertis non divaricatis bene distincta. Typus: Borneo, Sarawak, *Richards* 1777 (holotypus K).

Differing from the type variety in the much smaller leaf with shorter closer leaflets diverging at an acute angle rather than being divaricate. (Fig. 5).

BORNEO. Sarawak, 4th Division, G. Dulit, *Richards* 1777 (K), 1916 (K).

8. Miscellaneous new species of *Calamus*

Calamus lambirensis J. Dransf. sp. nov. humilis gracilis, foliolis remotis in sectione *Macropodo* vaginis foliorum muricatis egregia, vaginis *C. muricato* et *C. zonato* sectionis *Coleospathi* superficialiter affinis sed inflorescentia areolis magnis et floribus grandibus paucis dissimillima. Typus: Borneo, Sarawak, *Awang Morshidi* S 24059 (holotypus K; isotypi BH, SAR).

Slender clustering rattan, climbing to c. 3 m only. Stem without sheaths 4 mm diam., with sheaths to c. 8 mm; internodes c. 8 cm. Sheaths drying dull brown, armed with scattered or partially whorled short, triangular, flattened, pale brown spines to 4 × 1.5 mm, interspersed with very fine and close ridges, densely tipped with minute spines, the ridges sinuous, encircling the sheath or not, grey indumentum abundant between the ridges; knee scarcely developed; ocrea membranous, short, tattering, armed with inci-

pient ridges and spicules. Flagellum to c. 1 m long. Leaf ecirrate to 70 cm, including the petiole to 13 cm; petiole semicircular in cross section, to 4×2 m at the base, armed with a few scattered horizontal spines along the 2 edges and short spinose ridges on the abaxial surface near the base and a few scattered reflexed spines to 2.5 mm along the mid-line of the abaxial surface; leaflets 9–13 on each side of the rachis, rather distant but \pm regularly arranged; proximal leaflets the longest, to 25×1.5 cm, leaflet size decreasing distally to 14×1.2 cm; leaflets with 3 main veins, sometimes acuminate in a long filiform drip tip, and/or rather densely armed with brown bristles to 4 mm at the tip, the margins armed with scattered minute bristles, transverse veinlets sinuous, rather conspicuous, adaxial surface unarmed, abaxial surface armed with rows of extremely small short brown hairs with pale swollen bases. Inflorescences 1–2 m long, staminate and pistillate superficially similar; partial inflorescences 2–3 only, the terminal flagellum to c. 45 cm long; primary bracts armed with short spiny ridges and scattered very short spines with swollen base; distal portion of inflorescence with reflexed spines, scattered or arranged in grape-like groups; proximal partial inflorescence lax, \pm triangular in outline, to 15×6 cm, the distal partial inflorescence smaller; second order branches c. 6 on each side, the most proximal 1 or 2 on each side in the staminate inflorescence bearing 1 or 2 third order branches; staminate and pistillate rachillae very slender, zig-zag, the longest c. 5 cm long, bearing very sparse brown scales. Staminate flowers c. 2–3 mm distant; rachilla bract triangular c. 1 mm long; involucre c. 0.5 mm long; scar of the staminate flower c. 0.8 mm diam. Staminate flower c. 4.5×1.5 mm in bud, bullet-shaped; calyx striate, \pm glabrous, c. 3.5 mm, tubular in basal 2 mm, with 3 acute triangular lobes to 1.5×1 mm; corolla glabrous, tubular in basal 2 mm, with 3 narrow acute petals to 2.5×0.7 mm; filaments c. 1 mm, anthers 1.0×0.2 mm; pistillode apparently absent. Pistillate flowers not known at anthesis. Almost mature fruit \pm obpyriform, 8×6 mm, tipped with a beak to 1×1 mm, and covered in c. 16 vertical rows of reddish-brown scales. Seed spherical, c. 4 mm diam., shallowly pitted; endosperm homogeneous; embryo lateral. Eophyll unknown. (Fig. 6).

BORNEO. Sarawak, 4th Division, Lambir Hills National Park, *Awang Morshidi* S 24059 (holotype K; isotypes BH, SAR), *Dransfield et al.* JD 5937 (BH, BO, K, L, PNH, SAR), JD 5939 (BH, K, L, SAR). Brunei, Bt. Biang, *Ashton* A 90 (K).

Calamus lambirensis is a slender, thicket-forming rattan of ridge tops on Tertiary sandstones at about 50–500 m. Because of its slender lax inflorescence with few large flowers borne on expanded areolae it clearly belongs to Furtado's Section *Macropodus*, being related to *C. sarawakensis*, *C. hispidulus* and *C. gibbsianus*. It is unusual in the presence of muricate leaf sheaths, thus resembling superficially *C. zonatus* Becc., *C. muricatus* and *C. divaricatus*; these last three are, however, quite different in inflorescence structure, and belong to Furtado's Section *Coleospathus*.

Calamus nanodendron *J. Dransf.* sp. nov. egregia, robusta, erecta non scandens, foliis magnis, inflorescentia brevissima, inflorescentia floribus et fructibus *C. conirostri* Becc. et *C. lobbiano* Becc. affinis sed fructu oblato vice obpyriformi rostratoque; a *C. lobbiano* foliolis concoloribus et caule magno et



FIG. 6. *Calamus lambirensis*. **A** portion of sheathed stem $\times \frac{2}{3}$; **B** portion of leaf $\times \frac{2}{3}$; **C** part of staminate inflorescence $\times \frac{2}{3}$; **D** part of staminate rachilla $\times 4$; **E** staminate flower $\times 6$; **F** staminate flower bud in section $\times 6$; **G** part of infructescence $\times \frac{2}{3}$; **H** mature fruit $\times 3$. **A** & **B**, **G** & **H** from Dransfield et al. JD 5939, **C**–**F** from Dransfield et al. JD 5937. Drawn by Heather Wood.