

moderately restricted area of New Guinea, it can occur in very great abundance and persist in secondary riverine vegetation.

SPECIMENS SEEN. PAPUA NEW GUINEA. Southern Highlands Province: Mubi R., Sisibu, across river from Kantobo, Feb. 1996, *Baker et al.* 644 (K!, LAE!); Mubi R., Mabogo Island, near Gobe Village, Feb. 1996, *Baker et al.* 650 (K!, LAE!). Western Province: Fly R., 528 mile camp, May 1936, *Brass* 6811 (A, BM!, BO, BRI); Kiunga, above junction of Fly and Elevala Rs., Sept. 1972, *Streiman & Lelean* NGF 18410 (BH, K!, L!, LAE!).

NOTES. *Calamus reticulatus* is a very striking thicket-forming rattan of river-banks. It appears to be an obligate rheophyte, only inhabiting open, sunny areas at river margins where it can grow extremely vigorously, forming vast masses of stem and foliage, which blanket other vegetation.

*Calamus reticulatus* is closely related to *C. vestitus*, sharing very similar leaf sheath spine and seed morphology. The ocrea, however, is strikingly different. Though tubular like that of *C. vestitus*, the ocrea of *C. reticulatus* is composed of a reticulum of fibres which extends well beyond its origin and is stretched around the petiole and flagellum of the leaf sheath above to form a funnel. The ocrea is also armed with numerous needle-like spines. An astonishingly similar ocrea-type can be found in the distantly related rattan genus *Korthalsia*, *K. jala* J. Dransf. from Borneo.

In addition to the ocrea morphology, *C. reticulatus* can be distinguished from *C. vestitus* by the more numerous leaflets (56 – 64 each side of rachis in *C. reticulatus*, 20 – 47 in *C. vestitus*), and by the longer and more numerous bristles on both surfaces of the leaflets of *C. reticulatus*. The rheophytic habit of *C. reticulatus* is also striking; *C. vestitus* shows no preference for river-banks. Moreover, the known distribution of *C. reticulatus* is disjunct from that of *C. vestitus*, being restricted to south-west Papua New Guinea (Map 1).

**4. *Calamus bankae* W. J. Baker & J. Dransf. sp. nov.**, *C. longipinnae* Lauterb. et K. Schum. affinis sed foliis paucioribus aggregatis vice regularibus, ocrea tubulari vice fissa, spinis ocreae acicularibus et ramis inflorescentiae pistillatae congestis vice laxis differt. Typus: Papua New Guinea, Gulf, Kikori Distr., Victory Junction, confluence of Sirebi and Kuru Rivers, 34 km N of Kikori (7°7'25.9"S, 144°19'30.2"E), Nov. 2000, *Baker et al.* 1097 (holotypus K!; isotypi AAU!, LAE!, NY!).

Moderately robust, clustering rattan climbing to 15 m. Stem with sheaths c. 11 mm diam., without sheaths to c. 9 mm diam.; internodes c. 25 cm. Leaf ecirrate to 74 cm long including petiole; sheath pale yellowish green, occasionally with patches of very thin, orange-brown indumentum, spines numerous, 1 – 2.5 × 1 – 1.5 mm, triangular, solitary, some deflexed, very few erect, colour as sheath, but with black tips, sometimes with dark purple-brown scales; knee 20 – 22.5 mm long, 9 – 10 mm wide, colour as sheath, armature as sheath; ocrea 24 – 28.5 × 1.6 cm, inflated, tubular, splitting longitudinally with age, clasping and usually obscuring sheath, papery, tattering to fibres, persistent at first, but eventually disintegrating completely, brown, with numerous needle-like spines 2 – 4 mm long and scattered dark purple-brown scales; flagellum present, c. 150 cm long; petiole c. 20 cm, 5.5 × 2 mm at base, slightly channelled adaxially, rounded abaxially, with scattered dark purple-brown scales,

armed as sheath adaxially, with few solitary grapnels abaxially; rachis c. 39 cm, with indumentum as petiole, armed on abaxial surface with solitary and irregularly-grouped grapnel spines; leaflets c. 19 each side of rachis, arranged in three widely-spaced groups of 5–8 leaflets, leaflets regularly spaced within each group, but slightly divaricate, upper leaflets of middle group overlapping lower leaflets of upper group, linear, longest leaflet towards base  $29.5 \times 1.5$  cm, mid-leaf leaflets  $29 \times 1.2$  cm, apical leaflets  $18 \times 0.9$  cm, apical leaflet pair not united, margins with bristles 0.5–1.5 mm, adaxial surface with bristles 1–3 mm on all major veins, abaxial surface with few bristles 1.2–2.5 mm on mid-rib only, leaflet with very few scales as petiole, transverse veinlets inconspicuous. Staminate inflorescence not seen. Staminate flowers not seen. Pistillate inflorescence very slender, flagelliform, 1.5 m long including 1.4 m peduncle, lacking flagelliform tip, branched to 2 orders; prophyll  $28 \times 0.5$  cm, tubular, not splitting, with scattered dark purple-brown scales, with minute spines throughout; peduncular bracts 4, similar to prophyll, armed as prophyll, but also with scattered grapnel spines, rachis bracts  $6–20 \times 0.3–0.4$  cm, tubular, tattering at mouth, with scattered indumentum of matted dark purple-brown scales, with numerous minute spines; primary branches 2, to 16.5 cm long, 4.5 cm apart, rather congested, with up to 13 rachillae, secondary bracts tattering, with armature and indumentum as rachis bracts; rachillae  $8.5–20$  mm  $\times$  4 mm, straight, erect; rachilla bracts  $3 \times 3$  mm, distichous, funnel-shaped, tattering with age, with indumentum as rachis bracts; proximal floral bracteole  $1.5 \times 2.5$  mm, distal floral bracteole  $1.5 \times 1.5$  mm. Pistillate flowers  $5.3 \times 2.1$  mm at anthesis; calyx 2.1 mm diam., tubular in basal 3 mm, with 3 lobes to  $1.4 \times 1.5$  mm, with dark purple-brown scales; corolla  $3.5 \times 1.7$  mm, tubular in basal 2.2 mm, with 3 lobes to  $1.7 \times 1.3$  mm, glabrous; staminodes 6, 0.6 mm long, staminodal ring 1.4 mm high; ovary  $2 \times 1.5$  mm, subglobose, style 0.7 mm long, stigmas 1 mm long. Fruit not seen. Fig. 1.

**DISTRIBUTION.** Known from a single collection in Gulf Province of Papua New Guinea.

**HABITAT.** Hill forest on karst limestone above riverside swamp forest, 50 m.

**LOCAL NAMES.** Not known.

**USES.** Not known.

**CONSERVATION STATUS.** Data deficient. It is not possible to assess the conservation status of such a poorly known species. Large expanses of primary vegetation remain in Gulf Province and neighbouring areas of Papua New Guinea, but logging companies are active in the region.

**SPECIMENS SEEN.** PAPUA NEW GUINEA. Gulf Province: Kikori Distr., Victory Junction, confluence of Sirebi and Kuru Rs., 34 km N of Kikori, ( $7^{\circ}7'25.9''$ S,  $144^{\circ}19'30.2''$ E), Nov. 2000, *Baker et al.* 1097 (AAU!, K!, LAE!, NY!).

**NOTES.** This new species is known from only one pistillate specimen from Gulf Province of Papua New Guinea (Map 1). At first glance, it resembles a form of *C. longipinna* with grouped leaflets, but closer scrutiny reveals numerous characters to distinguish it as new (Fig. 1). In addition to the arrangement of the leaflets in three widely-spaced groups, the leaf bears rather few leaflets (c. 19 each side of the rachis). The smallest forms of *C. vestitus* may have as few as 20 leaflets each side, but *C. bankae* cannot be included in that species because its sheath and ocrea

morphology is so different. The ocrea is tubular, lacking a congenital split, but it is fragile and readily tatters into papery shreds. It is armed throughout with numerous, fine, needle-like spines. Most striking though is the pistillate inflorescence morphology. Unlike all other members of the group, the primary branches are congested rather than lax, with the rachillae straight and inserted at an acute angle to the primary branch.

The inflorescence in the available material consisted of a flagelliform peduncle to 1.4 m with just two primary branches inserted near the tip. This may be typical of the species, but it is conceivable that such a small number of branches is abnormal. Further collections are required to gain a clearer impression of the inflorescence morphology of this species.

*Calamus bankae* is named for Roy Banka, Assistant Curator of the National Botanic Garden at the Papua New Guinea Forest Research Institute, Lae and co-collector of the type material, in honour of his significant contributions to the exploration of New Guinea palm botany and in recognition of his collaboration in the *Palms of New Guinea* project.

**5. *Calamus wanggaii*** *W. J. Baker & J. Dransf. sp. nov.*, *C. longipinnae* Lauterb. et K. Schum. affinis sed foliolis paucioribus aggregatis oblanceolatis vice regularibus linearibusque, setis foliolorum longissimis, spinis ocreae triangularibus differt. Typus: Indonesia, Papua, Manokwari Regency, Wasior Distr., Sikama R., 3 km SE of Wosimi River at Senderawoi, 26 km SSE of Wasior (2°57'2.7"S, 134°34'22.5"E), Feb. 2000, *Barrow et al.* 129 (holotypus K!; isotypi AAU!, BO!, BRI!, L!, MAN!).

Moderately robust, clustering rattan climbing to 25 m. Stem with sheaths c. 15 mm diam., without sheaths to 7–9 mm diam.; internodes c. 35 cm. Leaf ecirrate to 75 cm long including petiole; sheath dark green, with abundant, thin indumentum of minute, matted, brown and white scales, with numerous spines, 2–6 × 0.5–1 mm, solitary, narrowly triangular; knee 28 mm long, 13 mm wide, colour and armature as sheath; ocrea 22 × 2.6 cm, persistent, inflated, boat-shaped, split longitudinally to base on side opposite petiole insertion, clasping and usually obscuring sheath, papery, tattering, with sparse indumentum as sheath, armed as sheath; flagellum present, c. 2 m; petiole c. 13 cm, 6 mm wide and 5 mm thick at base, shallowly channelled adaxially, rounded abaxially, with sparse indumentum of scales as sheath, adaxial surface with short spines similar to sheath spines, abaxial surface with scattered solitary grapnel spines; rachis c. 51 cm, indumentum as petiole, unarmed adaxially, abaxial surface as petiole; 28 leaflets each side of rachis, arranged in three widely-spaced groups of 9–11 leaflets, leaflets regularly spaced within groups, but divaricate, upper and lower leaflets of middle group overlapping with leaflets in adjacent groups, oblanceolate, longest leaflet in upper part of lowest group, 33 × 2 cm, mid-leaf leaflets 26.5 × 2 cm, apical leaflets 17 × 1.2 cm, apical leaflet pair briefly united, leaflets armed with conspicuous bristles on mid-vein and one major either side, 7–11 mm, bristles very rare or absent from abaxial surface, numerous short bristles on margin, 0.5–1 mm, some scales on leaflet bases, transverse veinlets conspicuous. Staminate inflorescence c. 2.2 m long including c. 1.9 m peduncle (always?) and at least 25 cm flagelliform tip, branched to 3 orders;