

DISTRIBUTION. Known from four localities along a 110 km stretch of the western slopes of the Owen Stanley Range, north-east of Port Moresby.

HABITAT. Lower montane oak forest between 1250 – 1830 m.

CONSERVATION STATUS. Least concern. Although *C. anomalus* is known from a relatively small part of the Owen Stanley Range, forest clearance in this area is limited.

SPECIMENS SEEN. PAPUA NEW GUINEA. Central Province: Mafulu, *Brass* 5298 (holotype B†; isotype NY!); Boridi, Sept. 1935, *Carr* 13123 (B†, BM!, K!, L!, SING), Oct. 1935, *Carr* 14421 (B†, BM!, K!, L!, SING), *Carr* 14422 (B†, BM!, K!, L!, SING), Sept. 1973, *Foreman* LAE 60184 (L, LAE!); Ridge SW of Efogi village, Sept. 1973 *Foreman* LAE 52494 (LAE!); Koiari Mts, Sept. 1972, *Zieck* NGF 36506 (LAE!), *Zieck* NGF 36507 (LAE!), *Zieck* NGF 36508 (LAE!), *Zieck* NGF 36509 (LAE!).

NOTES. This remarkable rattan was considered so unusual by Furtado (1955) that he erected a new genus, *Schizospatha*, to account for it. Although *Schizospatha* has since been placed in synonymy with *Calamus* (Moore 1973), the morphology of *C. anomalus* is still regarded as bizarre for the genus. In vegetative form, *C. anomalus* is rather similar to other slender montane rattans in New Guinea, but its unusual inflorescence morphology is shared only by its close relative *C. essigii*. Curiously, Burret did not acknowledge this peculiar method of inflorescence emergence in the protologue of *C. anomalus* or its synonym *C. setiger*.

Burret (1936) distinguished *Calamus setiger* from *C. anomalus* on the grounds that the former possesses bristle-like spines and apical pairs of leaflets that are united only briefly compared with *C. anomalus* with its few, very small, short spines and its apical leaflets united to between a quarter and a half of their length. On re-examining the same collections, Burret's conclusions are shown to be flawed. Specimens cited by Burret in the protologue of *C. setiger* display some variation in the degree of fusion of the apical leaflet pair, including one specimen at Kew (*Carr* 14422) which has apical leaflets fused to almost one quarter of their length. The spines of *C. anomalus sensu* Burret are slightly different from those of *C. setiger* in being distinctly ascending, rather sparse and readily detached, but these distinctions cannot be regarded as sufficient to maintain two species. Furtado (1955) disputed Burret's assertion that *C. anomalus* is closely related to *C. setiger*, mistakenly believing that it does not possess the distinctive inflorescence morphology of the latter and consequently he did not include it in his new genus *Schizospatha*.

***Calamus essigii* W. J. Baker sp. nov.**, *C. anomalus* Burret affinis sed habitu graciliore, petiolo distincto ferenti, foliolis angustissimis linearibusque, et inflorescentia ramis paucioribus differt. Typus: Papua New Guinea, Central Province, Port Moresby Sub-District, Kokoda Trail, 1 mile from Owers Corner, *Essig & Womersley* LAE 55180 (holotypus K!; isotypi L!, LAE!, BH).

Very slender, clustering, short-stemmed rattan, sometimes climbing to 8 m. *Stem* with sheaths 4 – 5 mm diam., without sheaths 2 – 2.5 mm diam.; internodes 4.5 – 10 cm. *Leaf* ecirrate 12 – 23 cm long including petiole, to 29 cm in juvenile leaves on lower stem; sheath with thin, brown, scaly indumentum, most abundant near sheath mouth, scattered brown scales in lower sheath, unarmed or armed

with numerous, very fine spines to 3 mm long, most abundant in upper parts of sheath, spines most numerous near to sheath mouth, spines at sheath mouth to 5 mm long, erect; knee to 7 mm long, unarmed or armed as sheath; ocrea absent or minute; petiole 1–3 cm, to 11 cm in juvenile leaves on lower stem, to 2 mm wide and 1.5 mm thick at base, flattened adaxially, rounded abaxially, with thin, brown indumentum, unarmed or with few solitary, reflexed, grapnel spines; rachis 8–55 mm, with indumentum as petiole, unarmed or armed as petiole; leaflets 3–5 each side of rachis, subregular or in two distinct subregular groups, narrowly linear, longest leaflet near base 12–21.5 × 0.5–0.8 cm, apical leaflets 11.5–21 × 0.4–0.6 cm, apical leaflet pair united to one tenth of their length or not at all, few minute spines on leaflet margins, most frequent towards apex, very few on adaxial surface of midrib, transverse veinlets rather inconspicuous. *Flagellum* to 36 cm, readily detached. *Staminate inflorescence* 10.5–17.5 cm long including 15–45 mm peduncle, branched to 2 orders or rarely 1 order; prophyll 40–80 × 3–5 mm, tubular if not subtending primary branch, otherwise split to base by emerging primary branches, sometimes remaining tubular distally, with indumentum as sheath, sometimes armed with few reflexed grapnel spines; peduncular bracts absent; rachis bracts 20–60 × 3–4 mm, similar to prophyll, imbricate; primary branches up to 5, to 45 mm long, 25–35 mm apart, straight to strongly recurving, barely adnate to primary inflorescence axis above point of insertion, bursting through base of rachis bracts, with up to 6 rachillae, sparse to abundant brown indumentum on all axes, readily detached; rachillae 2–15 × 0.3–1 mm, sometimes recurving; rachilla bracts 0.75–1 × 0.6–1 mm, triangular, distichous, glabrous; floral bracteole 0.8–1.2 × 0.5–0.6 mm, elliptic. *Staminate flowers* 4 × 2 mm prior to anthesis; calyx 1.8–2 mm diam., tubular in basal 1 mm, with 3 lobes to 0.5 mm long, glabrous; corolla 3.5 × 1.5 mm in bud, very briefly tubular at base, glabrous; stamens 6, filaments 2–3 × 0.3–0.5 mm, anthers 1.5 × 0.4–0.7 mm; pistillode minute, to 1 mm long. *Pistillate inflorescence* similar to staminate inflorescence, 10–10.5 cm long including 30–40 mm peduncle, branched to 1 order; prophyll 25–50 × 2–5 mm; peduncular bracts absent or 1, similar to prophyll; rachis bracts 13–30 × 3–4 mm; primary branches (= rachillae) up to 5, 4–20 × 1–2 mm, 15–30 mm apart, recurving; rachilla bracts 0.5 × 1.5 mm, subdistichous, triangular, glabrous; proximal floral bracteole 1 × 0.5 mm, distal floral bracteole 1.2–1.7 × 1–1.5 mm, glabrous, scar of sterile staminate inconspicuous. *Pistillate flowers* 4 × 2 mm prior to anthesis; calyx 2 mm diam., tubular in basal 3 mm, with 3 lobes to 0.75 × 1.25 mm, glabrous; corolla 3 × 2 mm, tubular in basal 0.5 mm, with 3 lobes to 2.5 × 1.5 mm, glabrous; staminodes 6, 2 mm long, staminodal ring 0.5 mm high; ovary 1.5 × 1.5 mm, spherical, style 1 mm long, stigmas 1 mm long. *Fruit* globose, 9.5 × 9 mm including beak to 1 mm long, with 12–15 longitudinal rows of smooth scales with minutely fimbriate margins. *Seed* somewhat immature in available material, 7 × 5.5 × 5 mm, ellipsoid, with a shallow depression on one side; endosperm homogeneous; embryo basal. Fig. 1.

**DISTRIBUTION.** Known from a small area between the Astrolabe Range and the Tinumu Range due east of Port Moresby.



FIG. 1. *Calamus essigii*. **A** habit with pistillate inflorescence  $\times \frac{2}{3}$ ; **B** staminate inflorescence attached to leaf sheath  $\times 1$ ; **C**, **D** staminate flower  $\times 15$ ; **E** fruit (slightly immature)  $\times 30$ . **A** from *Essig & Womersley* NGF 55180, **B** – **D** from *Larivita & Maru* LAE 70623, **E** from *Zieck* NGF 36158. Drawn by Lucy T. Smith.

**HABITAT.** In understorey of lower montane forest with *Lithocarpus* and *Castanopsis* between 650 – 900 m.

**LOCAL NAMES.** Hulawarra (Goari)

**CONSERVATION STATUS.** Near threatened. While the forests of the Astrolabe and Tinimu Range are thought to be relatively undisturbed, *C. essigii* is known from an area so small and in such close proximity to the major urban centre of Port Moresby that the species faces an appreciable level of threat.

**SPECIMENS SEEN.** PAPUA NEW GUINEA. Central Province: 1 mile from Owers Corner, Kokoda Trail, Port Moresby Sub-Distr., Feb. 1972, *Essig & Womersley* LAE 55180 (holotype K!; isotypes L!, LAE!, BH); Girinumu plantation passing Chapsinum mission station, Sogeri Sub-Distr., Sept. 1976, *Larivita & Maru* LAE 70623 (BRI!, LAE!, K!); Astrolabe Range, Sogeri Sub-Distr., May 1968, *Zieck* NGF 36158 (BH, BRI!, K!, LAE!). Locality unknown: New Guinea, 1885, *Sunderland* s.n. (MEL!).

**NOTES.** This extremely slender, rather short-stemmed rattan is closely related to *C. anomalus*, but is readily distinguished from that species in both vegetative and reproductive features (Fig. 1). It usually possesses a distinct petiole that can be as much as 3 cm in length whereas the petiole of *C. anomalus* is lacking or is little more than a few millimetres in length. The leaflets of *C. essigii* are arranged subregularly or in two widely-spaced, subregular groups; those of *C. anomalus* are organised in two widely-spaced groups, each comprising two divaricate pairs of leaflets. The leaflets of *C. essigii* are very narrowly linear in contrast to the lanceolate leaflets of *C. anomalus*. While general inflorescence morphology of the two species is rather similar, the inflorescences of *C. essigii* are much smaller than those of *C. anomalus*. Moreover, the pistillate inflorescence is branched to just one order in *C. essigii* compared with two orders in *C. anomalus*. Similarly, its staminate inflorescence is branched to two orders or sometimes only one order whereas that of *C. anomalus* is branched to three orders.

It could be suggested that *C. essigii* is a depauperate montane form of *C. anomalus* and indeed their ranges are adjacent to each other. However, the former is known only from localities at considerably lower elevations than the latter.

The species is named for Fred Essig, botanist at the University of South Florida and collector of the type specimen, whose research in Papua New Guinea has contributed much to our knowledge of the palms of New Guinea.

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