

staminate flowers not seen, but clearly close together (4–6 per cm on each side of the rachilla). Female inflorescences branched to one order, the partial inflorescences formed by a single rachilla arising directly from the axis, less than 10 cm total length including a stalk up to 1.5 cm and swollen at the base; flower scars along one side c. 3 mm distant, rachilla bract with an apiculate limb over 2 mm long, involucre almost wholly immersed in the rachilla bract, held at an acute angle to the rachilla axis. Pistillate flowers not seen. Immature fruit spherical, abruptly beaked, epicarp scales unchanneled, drying yellow with red-brown margin. Fig. 3.

DISTRIBUTION AND HABITAT. Laos (Bolikhamxay Province) and (historically) Thailand (Nong Khai Province) in evergreen forest and tall, bamboo-rich scrub on seasonally-flooded ground at about 200 m.

LOCAL NAMES. *wai kating* (in both Thailand and Laos).

SPECIMENS EXAMINED. LAOS. Ban Pakleuk, where the Houay Phai crosses the Muang Hom Road, Thapahabaat Distr., Bolikhamxay Province, 18°24'00" 103°09'00", 10 April 1998, stam. *Khamphone* 139, stam. *Khamphone Sengdala* 140, 17 Dec. 1998, stam. *Khamphone Sengdala* 323 (all FRCL, K), 17 Dec. 1998, fr. *Khamphone Sengdala* 324 (holotype K, isotype FRCL). THAILAND. Pon Pisai, Nong Khai Province, 24 Feb. 1924, fr. A. *Kerr* 8560 (K, BK).

NOTES. The known range of the species is very limited (the two localities are less than 50 km apart) but its occurrence in a highly degraded habitat (of a kind which has received little fieldwork in Laos) suggests that it will be found more widely in future.

4. *Calamus bimaniferus* T. Evans, K. Sengdala, O. V. Viengkham, B. Thammavong & J. Dransf. sp. nov. a ceteris speciibus Indochinensis praesentia flagelli et cirri vestigialis bene recedit, *C. insigni* Griff. et speciebus affinis Peninsulae Malayanae simulans, *C. penicillato* Roxb. simillima sed cirri vestigiale spinis aciculiformibus differt. Typus: Laos, *Khamphone Sengdala* 368 (holotypus K, isotypus FRCL).

Slender, clustering, scrambling, flagellate and usually subcirrate rattan to at least 3 m. Stem without sheath c. 3–4 mm diam., with sheath c. 5–10 mm. Leaf 0.3–0.5 m long, usually continued into a rudimentary cirrus reaching an additional 5–15 cm, sheath green with patches of brown indumentum, spines few (or wholly absent, *Sounthone Ketphanh* 7), scattered, green-based with dark tips, 1–7 mm, base slightly swollen, tip acicular and horizontal or slightly deflexed, ocrea tiny, unarmed, marcescent; knee present, petiole of upper leaves 8–15 cm, adaxially flat or with slight longitudinal ridges, sometimes with one or two recurved spines, abaxially rounded, rachis acutely bifaced and unarmed adaxially, abaxially rounded and bearing scattered short, recurved, dark-tipped spines; leaflets lanceolate, 10–15 × 1.5–2.6 cm, 4–6 on each side, mostly approximate in pairs but with the basal ones often solitary, if cirrus absent, rachis usually ends with a single, reduced, isolated, asymmetrical leaflet with the main costa strongly clawed abaxially but rarely ends in a symmetrical pair of leaflets connate about 30%, adaxially 3 prominent naked costae, abaxially 3–5 sub-prominent naked costae, leaflet margins naked or with a

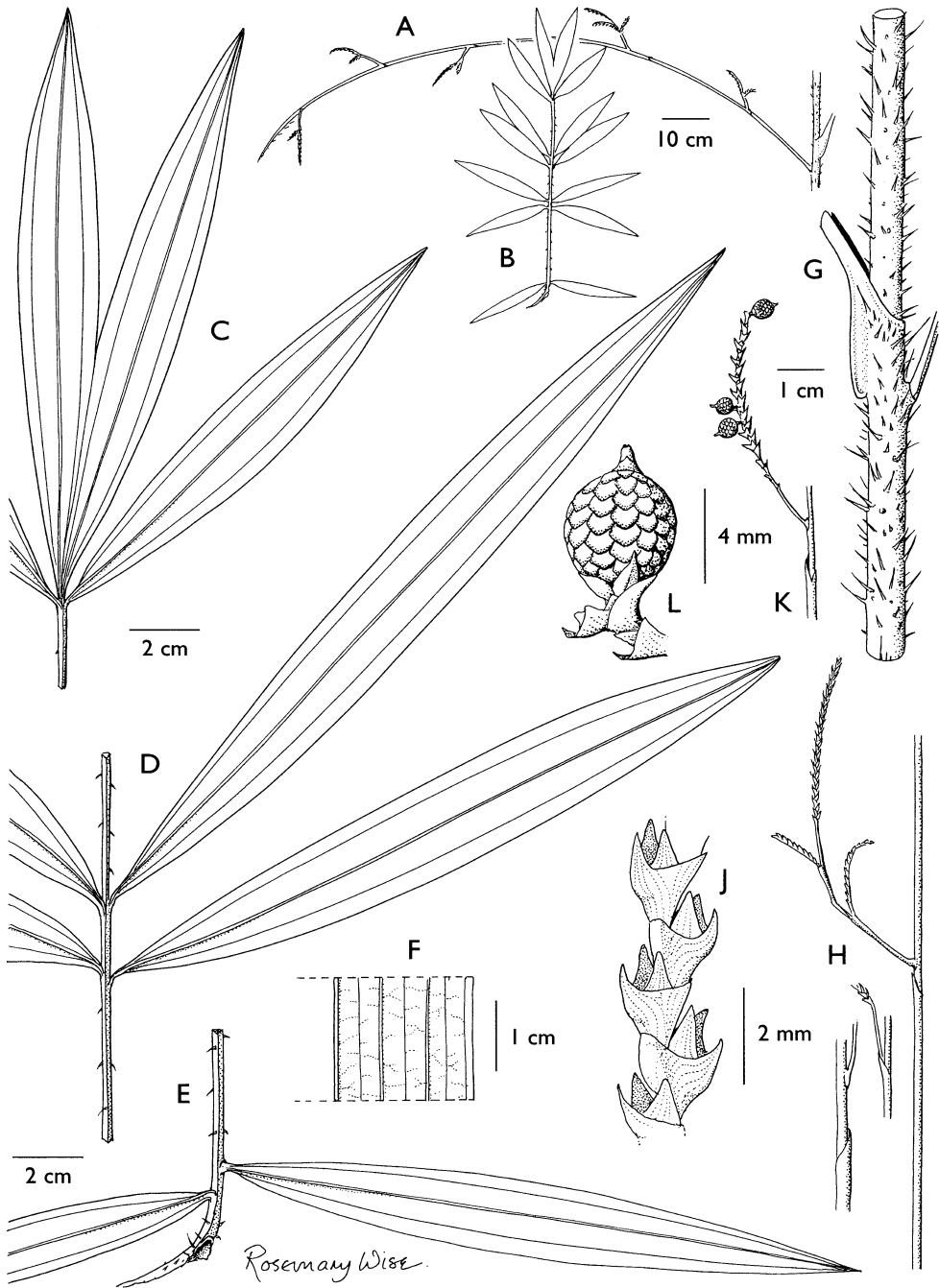


FIG 3. *Calamus pauciflorus*. A male inflorescence habit; B leaf; C leaf tip; D leaf (middle part); E petiole; F leaflet surface; G sheath; H male partial inflorescence (three examples, showing variation in position of primary branch relative to primary bract mouth); J male rachilla (part); K female rachilla; L immature fruit. A – K from *Khamphone Sengdala* 323; L from *Khamphone Sengdala* 324. Drawn by Rosemary Wise.

few small remote bristles, transverse veinlets prominent, numerous, sinuous, sometimes interrupted. Inflorescences short, more or less erect, lacking a terminal flagellum, 20 – 70 cm long, with red indumentum; primary bracts entire, slightly inflated, armed with a few small prickles, ending in an apiculate limb. Male inflorescences with c. 5 partial inflorescences; rachillae straight or slightly curved, up to 3 cm long, inserted in or arising just outside the mouths of the tertiary bracts, flower scars along one side c. 3 mm distant. Female inflorescences branched to two or occasionally three orders; partial inflorescences up to 9 cm, often less, inserted or exerted from the primary bracts; secondary bracts slightly inflated at the mouth, unarmed, entire, ending in an apiculate limb; rachillae up to 3 cm, relatively robust, zig-zag, rachilla bracts tightly sheathing, unarmed, sometimes with an apicular limb; involucrephore exerted from rachilla bract or at the mouth, arising perpendicular to the axis, involucre shallowly cupular, flower scars 3 – 4 mm distant. Fruiting perianth conspicuously pedicellate. Fruit only seen immature, spherical, at least 8 mm diam. with an abrupt beak, the scales greenish in life with a brown submarginal band and narrow pale margin. Fig. 4.

DISTRIBUTION AND HABITAT. Laos in Khammouan, Savannakhet and Attapu Provinces in semi-evergreen forest, sometimes degraded, at 160 – 530 m.

LOCAL NAMES. *wai hangnou*, *wai hangnou noy*, *wai keekai* and *re itch*.

SPECIMENS EXAMINED. LAOS. Phon Nong Na, Ban Malua, Nakay Distr., Khammouan Province, 17°40'13" 105°24'41", 8 March 1999, fr. *Khamphone Sengdala* 368 (isotype FRCL, holotype K), stam. *Khamphone Sengdala* 369, fr. *Khamphone Sengdala* 370 (FRCL, K); Ban Kabout, Thakhek Distr., Khammouan Province, 17°25' 104°52', 160 m, 20 May 1993, ster. *Khampiou* 42 (FRCL, K); Phou Lapheung, Tasaeng Nong, Nong Distr., Savannakhet Province, 5 April 1992, ster. *Sounthone Ketphanh* 7 (FRCL, K); Phou Lekfay, Ban Tatkoum, Sanxay Distr., 14°53'26" 107°06'49", 14 May 1999, fr. *Khamphone Sengdala* 396, stam. *Khamphone Sengdala* 397 (FRCL, K).

NOTES. The species is named for the presence of both cirrus and flagellum at each non-flowering node. These can fancifully be considered the two 'hands' of the plant, and indeed in the Lao language they are both called 'meu go' or 'grasping hands'. This species seems quite widespread in central and southern Laos and is probably of little conservation concern because it flowers when the stems are short, has a clustering habit and, although it is reportedly used for local handicrafts is probably too short to be valuable in trade. Ban Malua, cited in the localities above, is incorrectly marked on the standard 1:100 000 maps of Laos as B. Maloy.

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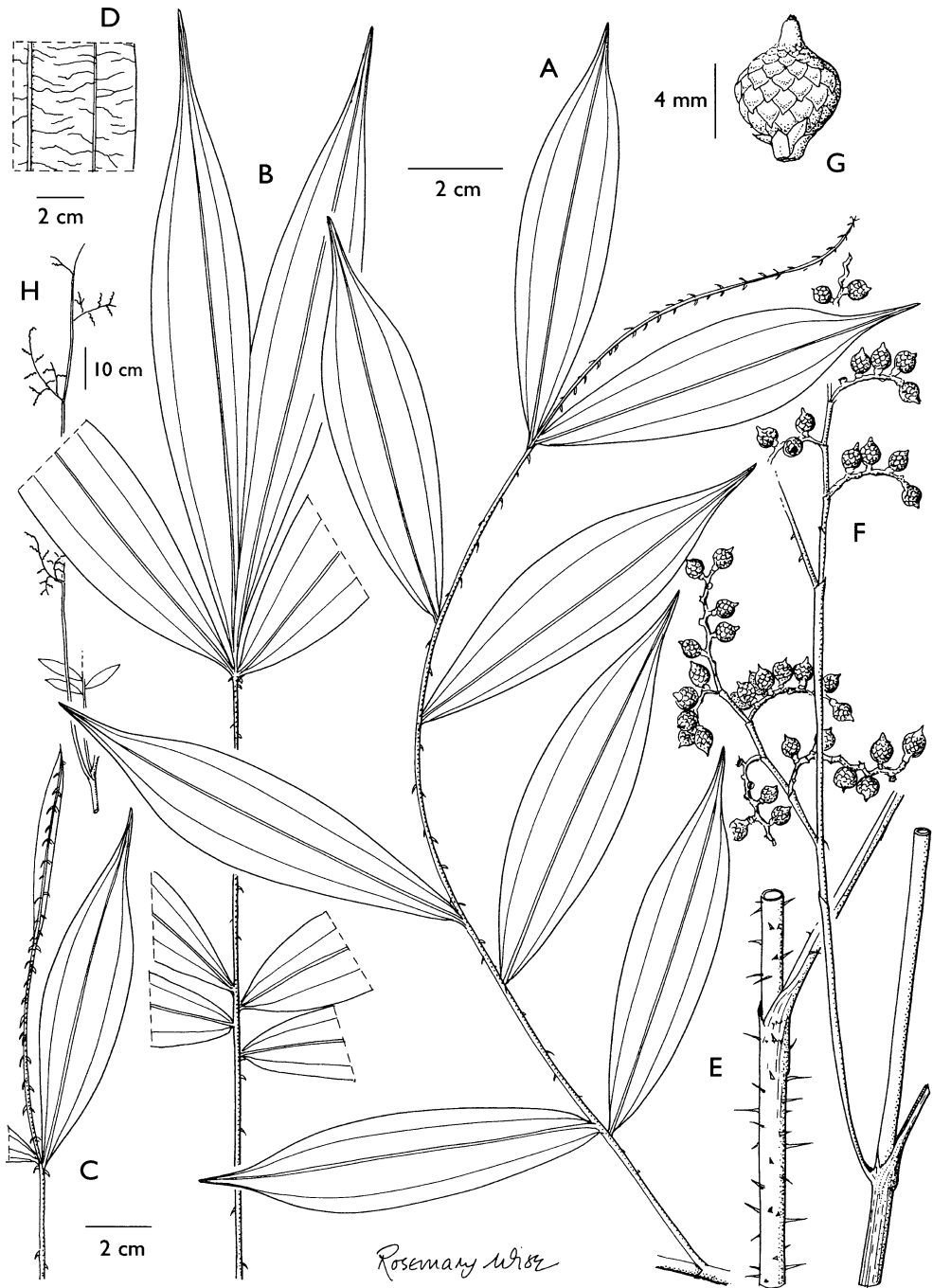


FIG 4. *Calamus bimaniferus*. A leaf; B–C alternative forms of leaf tip; D leaflet surface; E sheath; F infructescence and alternative, unarmed form of leaf sheath; G immature fruit; H male inflorescence habit. A–G from *Khamphone Sengdala* 324; H from *Khamphone Sengdala* 397. Drawn by Rosemary Wise.