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Mallotus actinoneurus and *Mallotus tokiae* (Euphorbiaceae), a new record and a new species for Thailand

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ABSTRACT. A new species of *Mallotus* (Euphorbiaceae) is described for Peninsular Thailand. Typical are the densely spined fruits, lack of inflorescences (axillary flowers), lack of indumentum and opposite leaves. *Mallotus actinoneurus*, up to now only known from NE Peninsular Malaysia, is also found at the Thai side of the border. The staminate inflorescences and flowers of this species were previously unknown, the inflorescences and buds are newly described here.

KEY WORDS: *Mallotus*, Narathiwat, new record, new species, Surat Thani, Thailand.

INTRODUCTION

The genus *Mallotus* is always roughly divided in two groups, species with alternate versus those with opposite leaves (e.g., Van Welzen et al., 2007). The specimen *Chayamarit et al. 2580* has opposite leaves, whereby one of each pair is typically somewhat smaller than the other leaf. The specimen has extremely reduced terminal inflorescences, whereby the fruits appear as single fruit per axil. Within *Mallotus* several species show the same absence of inflorescences or have very short inflorescences, e.g., *M. calocarpus* Airy Shaw, *M. glomerulatus* Welzen, *M. mirus* S.E.C.Sierra in Thailand and *M. actinoneurus* Airy Shaw and *M. monanthos* Airy Shaw in the Malay Peninsula (Sierra et al., 2007). All species either form a monophyletic group termed the Glomerulatus clade (e.g., fig. 7.6 in Sierra et al., 2010) from which *M. calocarpus* is sometimes separated (e.g., fig. 7.7 in Sierra et al., 2010). These five species all have smooth fruits and this is where *Chayamarit et al. 2580* differs - its ovaries and fruits are densely set with short spines. Based on this very deviating character the species is newly described here. Typically, all species are local endemics, within Thailand *M. calocarpus* is endemic in Chanthaburi Province (South-eastern), *M. glomerulatus* in Nakhon Phanom Province (North-eastern) and *M. mirus* in Prachin Buri Province (South-eastern). *Mallotus monanthos* is found exactly in the centre of the Malay Peninsula, and *M. actinoneurus* in the NE of Peninsular Malaysia close to the Thailand-Malaysia border. The latter species is here newly recorded for Thailand as a collection (*Poopath et al. 76*) was just made on the Thai side of the border in Narathiwat Province.

The species can be added into the Key (Van Welzen et al., 2007; this will also be done for the website: www.nationaalherbarium.nl/thaieuph). The species mentioned as ‘23 *Mallotus* sp. nov.’ under lead 38b is *M. mirus* and this species keys out incorrectly, which is improved here too:

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36a. Fruits and petioles densely hairy. Lower leaf surface hairy or midrib hairy. — SE, PEN
36-Ia. Glandular scales absent. Blade apex caudate, lower leaf surface densely hairy only on midrib — PEN **1a. M. actinoneurus**
36-Ib. Glandular scales whitish, sparsely present near base on lower leaf surface. Blade apex acuminate, lower leaf surface hairy. — SE **3. M. calocarpus**
36b. Fruits and petioles glabrous to densely hairy. Lower leaf blade surface (sub)glabrous to sparsely hairy. — NE, SE, PEN
37a. Margin of leaf blade crenulate to subentire to denticulate with glandular teeth
37-Ia. Upper surface of leaf blade with 4–8 marginal extrafloral nectaries per side. Pistillate inflorescences (staminate ones unknown) reduced to single, terminal flower surrounded by bracts **23. M. mirus**
37-Ib. Upper surface of blade with 2 or 3 extrafloral nectaries near base close to midrib. Inflorescences up to 6.3 cm long **33. M. resinosus**
37b. Margin of leaf blade entire or with a single subapical tooth per side
38a. Leaf margin with a single subapical tooth per side, apex acuminate, upper surface with extrafloral nectaries in loops of nerves. Fruits smooth. — NE **10. M. glomerulatus**
38b. Leaf margin without teeth, apex bluntly acute, upper surface with extrafloral nectaries on nerves except above third nerve. Fruits with spines. — PEN **40. M. tokiae**

Mallotus actinoneurus Airy Shaw , Kew Bull. 33: 63. 1978; S.E.C.Sierra et al., Blumea 52: 46, map 1. 2007. — Type: Peninsular Malaysia, Trengganu, Jerteh, Gunong Tebu Forest Reserve, *KEP FRI (SOHADI) 17911* (holo **K**; iso **L**). Fig. 1.

Shrubs, 1.5–3 m high, dioecious. *Indumentum* composed of simple, tufted and stellatelytufted hairs, glandular scale hairs absent. *Stipules* narrowly triangular, 8.2–13 by 2.5–3.5 mm, persistent, margin entire, apex acute, densely to sparsely hairy, especially outside. *Leaves* opposite to rarely alternate; petiole 1.4–6.3 cm long, densely hairy, basal and apical pulvinus hardly broadened; blade elliptic to obovate, 25–35 by 7–14 cm, length/width ratio 2.1–3.6, chartaceous, base shallowly and narrowly emarginate, margin entire to denticulate with a few subapical glandular teeth, apex caudate, upper surface sparsely hairy on midrib and nerves, larger extrafloral nectaries marginal in lower half, 3 or 4 per side, 1–4 mm from margin, elliptic to orbicular, 0.7–0.8 by 0.7–0.8 mm, smaller ones all over the blade, 0.2–0.3 by 0.2–0.3 mm, lower surface sparsely hairy except for the densely hairy midrib, domatia absent, venation pinnate, nerves 9 or 10 per side, looping and closed near margin. *Staminate inflorescences* axillary racemes, 1 or 2 per node, reduced in length, up to 2 cm long, 1 or 2 flowers per node, basally a dense group of bracts; basal bracts linear, ca 5.5 by 0.8 mm, upper bracts linear, ca 3 by 0.3 mm, accompanied by 2 slightly smaller bracteoles, all externally hairy, internally (sub)glabrous. *Staminate buds* slightly ellipsoid, ca 2 mm in diam.; pedicel ca 1.8 mm long, thickening towards apex, densely hairy; sepals still too young to open, densely hairy outside; stamens many, probably ca 50. *Infructescences* racemes, with a single terminal fruit, ca 1.7 cm long, erect, single; peduncle ca 2 mm long; bracts linear-triangular, 3.5–7 by 0.7–1 mm, margin entire or trilobed, apex acute, densely hairy; bracteoles absent. *Pistillate flowers* (based on young fruit) ca 10 mm diam.; pedicels ca 2.5 mm long, densely hairy; sepals 3, triangular to narrowly triangular, 8–10 by ca 3 mm, free, margin entire, apex acute; ovary ca 9 by 8 mm, 3-locular, densely hairy; style ca 2.2 mm long; stigmas ca 6 by 1–1.2 mm. *Fruits* capsules, 15–18 by 23–27 mm, opening septicidally-loculicidally, surface smooth, densely hairy; wall 1.8–2 mm thick, glabrous inside; column ca 11.5 by 11.5 mm. *Seeds* ± globose, ca 12 by 11.5 by 12 mm, surface rugose, dull, light brown.

Thailand.— PENINSULAR: Narathiwat [Klong Ai Ka Pa in Hala-Bala Wildlife Sanctuary: *Poopath, Thanaros, Weecheanchan & Insura 76* (**BKF**)].

Distribution.— Endemic to the eastern border area of Thailand and the Malay Peninsula.

Ecology.— In tropical rain forest and logged areas, in shade, by stream. Altitude: 50−80 m. Flowering: August; fruiting: April.

Mallotus tokiae Welzen **sp. nov.**

Resembling *M. calocarpus* but differs in the lack of glandular scale hairs, in the extrafloral nectaries set along the margin on every nerve and the spined instead of smooth fruits. — Type: Thailand, Surat Thani, trail behind Khao Sok Ranger Station, Ratchaprapha Dam, 09° 00’ N, 98° 25’ 15’’ E, *Chayamarit, Pooma, Chamchumroon, Phattarahirankanok & Middleton 2580* (holo in **BKF** (SN 193513), iso in **BKF** (SN 193514)). Fig. 2.

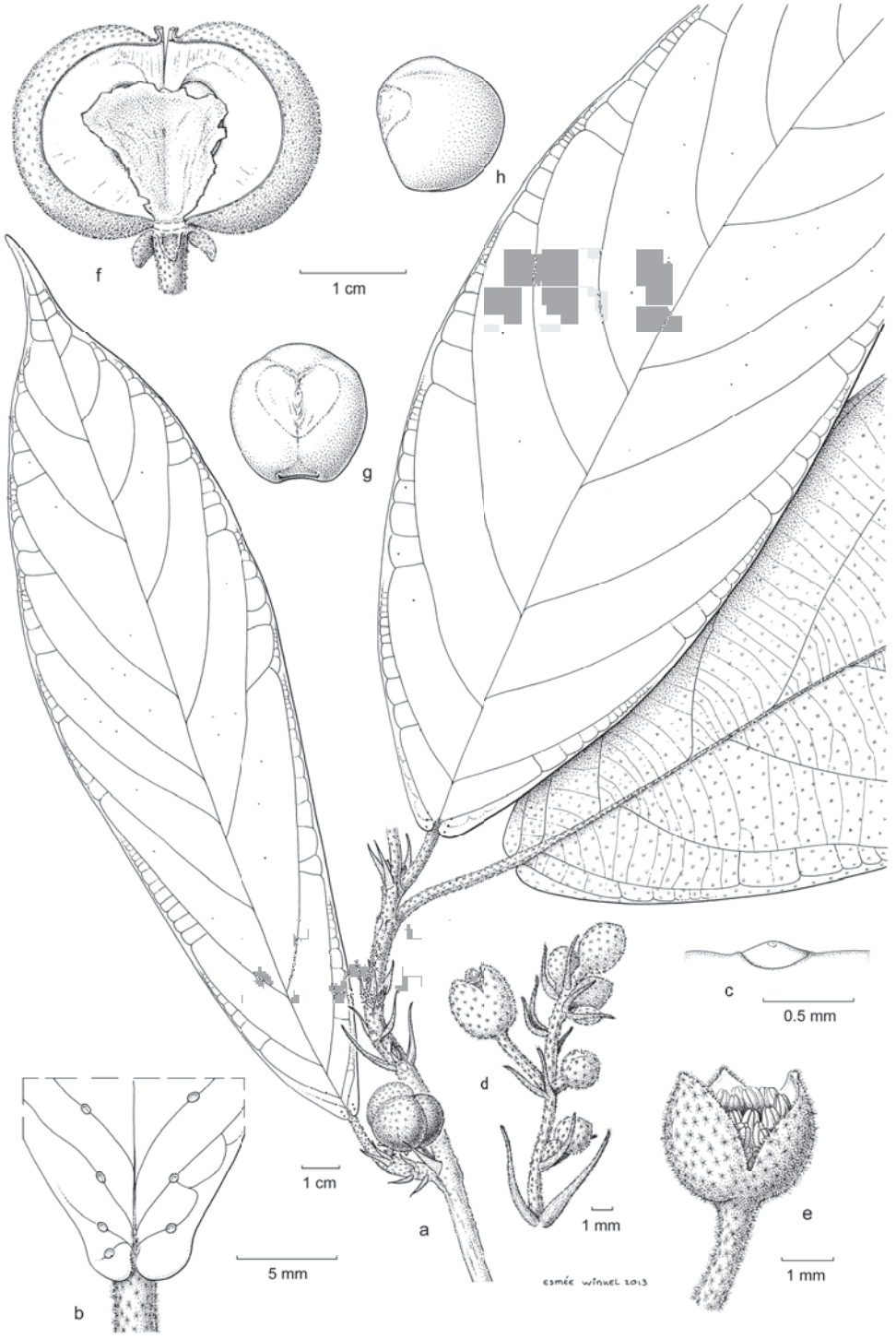

Figure 1: *Mallotus actinoneurus* Airy Shaw: A. Habit; B. extra-floral nectaries on upper surface near base of blade; C. glandular teeth along blade margin; D. staminate inflorescence; E. staminate flower; F. dehiscing fruit showing septa and columella; G. seed in adaxial view; H. seed in lateral view [A−C: *KEP FRI (Sohadi) 17911*, L; D, E: *Poopath, Thanaros, Weecheanchan & Insura 76*, BKF; F−H: *KEP FRI (Kochummen) 2499*, L]. Drawing: Esmée Winkel, 2013.

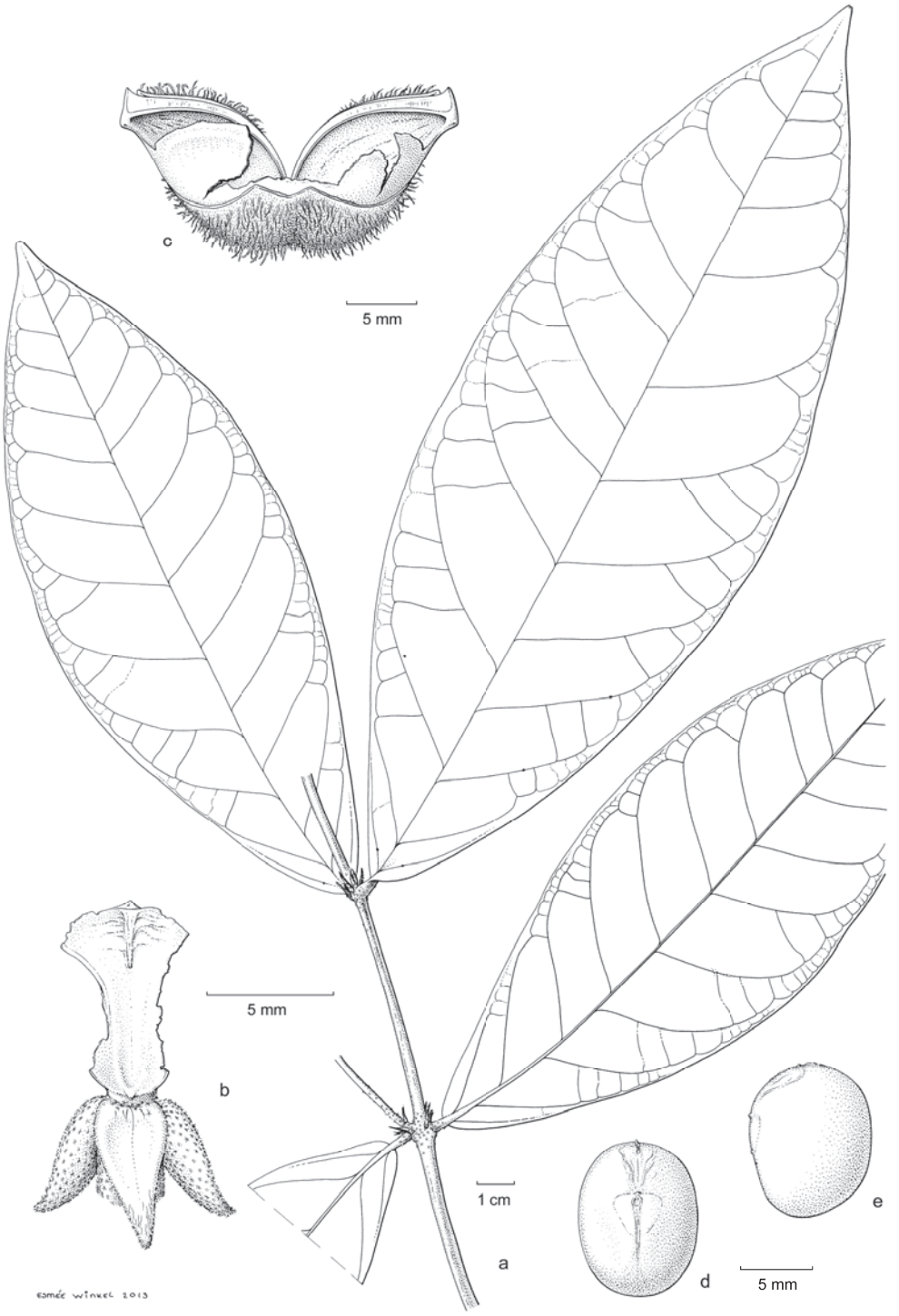

Figure 2. *Mallotus tokiae* Welzen: A. Habit; B. columella; C. 2-valved part of fruit, completely septicidally dehisced and only partly loculicidal; D. seed in adaxial view; E. seed in lateral view [*Chayamarit, Pooma, Chamchumroon, Phattarahirankanok & Middleton 2580*, BKF]. Drawing: Esmée Winkel, 2013.

Shrub, ca. 1.5 m high, probably dioecious. *Indumentum* of stellate to almost lepidote hairs, glandular scales lacking. *Stipules* triangular, 4.2−6 by 1.2−2.1 mm, outside hairy, inside glabrous, late caducous. *Leaves* opposite; petiole 5−9 mm long, densely hairy, completely pulvinate; blade elliptic, 13−26.7 by 4.3−9.4 cm, length/width ratio 2.8−3, drying greenish brown, coriaceous, base cuneate to narrowly emarginated, margin entire, apex bluntly acute, upper surface glabrous, with extra floral nectaries, elliptic, ca 0.8 by 0.4 mm, on every major nerve, ca 0.5−1 cm from the margin, except the third nerve, there present above the nerve, becoming smaller and disappearing towards the apex, lower surface subglabrous with few stellate hairs, lacking peltate scales; venation penninerved, hardly visible from above and beneath, nerves 8−14, looped and closed near margin, somewhat bullate within the arches. *Staminate inflorescences* and staminate and pistillate flowers unknown. *Fruits* terminal, single, axillary, lobed capsules surrounded by bracts, presumably 3-locular, already dehisced, probably about 2 by 1 cm, opening septicidally and incompletely loculicidally from the base leaving paired valves, valves outside greenish, densely stellately hairy and covered with very slender, up to 2 mm long spines with an acute, bent apex; pedicel ca 5 mm long, densely hairy; sepals persistent, 5, ovate, ca 5.2–5.5 by ca 3 mm, valvate, reflexed, outside hairy, inside glabrous, margin entire, apex rounded; disc absent; wall thin, woody when dry; columella up to 8 mm long, sturdy, apically broadened. *Seeds* subellipsoid, 9.5–10 by ca 8.5 by 8−8.2 mm, without arilloid.

Thailand.— PENINSULAR: Surat Thani (Ratchaprapha Dam).

Distribution.— Endemic to Thailand.

Ecology.— Scattered in evergreen forest on limestone bedrock. Altitude: ca 100 m. Fruiting: February.

Etymology.— The species is named in honour of Nannapat Pattharahirantricin, who is nicknamed Tok. She is one of the collectors (then still called K. Phattarahirankanok) and an invaluable staff member of the Forest Herbarium in Bangkok.

Conservation.— According to the IUCN criteria (2001), this species is DD (Data Deficient), because no other specimens are known and information is lacking.

Note.— The species is only known from one fruiting specimen.

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