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A new species of *Kamettia* (Apocynaceae: Rauvolfioideae), a genus new to Thailand

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ABSTRACT. A new species, *Kamettia chandeei* D. J. Middleton, is described and illustrated. The genus *Kamettia* is newly recorded for Thailand and greatly extends the known distribution of this genus.

The genus *Kamettia* currently has only one species, *K. caryophyllata* (Roxb.) Nicolson & Suresh, which is found in the Western Ghats of India. *Kamettia* belongs in the subfamily Rauvolfioideae of the Apocynaceae sensu Endress & Bruyns (2000). In some parts of this subfamily fruit characters can be more diagnostic for generic delimitation than flowers as the flowers are sometimes rather invariable across genera. In December 2002 a specimen, *Middleton, Suddee & Hemrat* 1661, was collected in Kaeng Krachan National Park, Phetchaburi, Thailand that bore some similarities to *K. caryophyllata* but had only unopened flowers and very few of those. Subsequent returns to the area in the hope of finding better material were unsuccessful until May 2005 when flowering material was found and the plant proved to be quite common in the Phanoen Thung area of Kaeng Krachan National Park. Fortunately a fruit was found which confirmed the suspicion that this new plant was indeed a second species of *Kamettia*, characterised by a combination of a climbing habit, verticillate leaves, a lax terminal inflorescence, a salverform corolla, an apocarpous ovary, an undifferentiated style head, follicular fruits, and winged seeds. Subsequently better fruiting material was discovered in August 2005 in the same location, *Pooma, Poopath & Hemrat* 5678.

In the Flora of Thailand account of the Apocynaceae (Middleton, 1999) *Kamettia* would key out with *Alyxia* in the key to flowering material. In Thailand *Kamettia* and *Alyxia* can be distinguished by the larger flowers, the glabrous inflorescence and the glabrous ovary of *Kamettia*. It would not key out at all in the key to fruiting material but is the only genus of Apocynaceae in Thailand which is a climber with leaves mostly in whorls and with a winged seed.

It is interesting that a genus known from relatively few specimens only from SW India has now been found in Thailand. Given the collection locality's proximity to the Burmese border it is likely also to occur in Burma. It should also be noted that the authors have collected in Kaeng Krachan National Park on frequent occasions at different times of

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year and that only on this one occasion did we find good flowering material. This might suggest that flowering is either intermittent or very ephemeral and if this is so for both this new species and *K. caryophyllata* it could mean that they are more common and widespread (but simply not collected) than currently thought.

Kamettia chandeei differs from *K. caryophyllata* in having longer and narrower leaves with a cuneate rather than obtuse to rounded base, narrower and longer sepals, and the stamens inserted lower in the corolla tube.

KAMETTIA Kostel.

Allg. Med. Pharm. Fl. 3: 1062. 1834; Suresh & Nicolson, Taxon 35: 354. 1986. Type species: *Kamettia malabarica* Kostel., nom. illeg.— *Ellertonia* Wight, Icon. 4(2): t.1295. 1848; Hook.f., Fl. Brit. India 3: 641. 1882. Type: *Ellertonia rheedei* Wight, nom. illeg.

Climber with white latex. Leaves verticillate, more rarely also opposite but never exclusively so, veins mostly anastomosing into an intramarginal vein; colleters in petiole axils. Inflorescence terminal, lax, dichasial, often umbelliform at first node. Flowers 5-merous. Sepals without colleters inside. Corolla lobes overlapping to the left in bud; mature corolla salverform with the tube slightly to quite strongly curved. Stamens free from the style head; inserted in lower half of corolla tube, completely included in tube; filaments thin and short; anthers ovate, base cordate, fertile most of length. Disk absent. Gynoecium of 2 separate carpels united into a common style; ovaries glabrous; style short; style head ellipsoid, apex acuminate; ovules many. Fruit of paired fusiform follicles, these divergent, often lenticellate. Seeds flattened, with a wing at both ends.

Two species, *Kamettia caryophyllata* in the Western Ghats of India, and *Kamettia chandeei* in south-western Thailand. Both species have been infrequently collected.

Kamettia chandeei D.J. Middleton, **sp. nov.** *Frutex scandens. Folia 3-verticillata vel opposita, chartacea, elliptica, apice acuminato. Corolla tubo 12.6–16 mm longo, lobis 12.5–17.5 x 3–4.4 mm. Ovarium glabrum.* Typus: Thailand, Phetchaburi, Kaeng Krachan National Park, trail to Than Thip Waterfall, 700 m altitude, 12º 49' N, 99º 21' E, Primary evergreen forest, on a steep bank above stream, 12th May 2005, *David J. Middleton, Chandee Hemrat, Stuart Lindsay, Somran Suddee & Suwat Suwanachat* 3418 (holotype BKF; isotypi A, E, MICH). Figs. 1 & 2.

Climber to 12 m high, white latex present in young twigs and leaves but not in the older stems. Stems reddish-brown with paler lenticels when young, glabrous, becoming corky with age and covered with large corky protuberances when mature. Leaves in whorls of 3, occasionally with an opposite pair; petioles 6–10 mm long, glabrous, small colleters present in the axils of the petiole with the stem; blade dark green above, paler beneath with pink or green venation, elliptic, 5.8–10.5 x 2.4–4.6 cm, 1.9–3.8 times as long as wide, apex short acuminate with a sharp tip, base cuneate, glabrous above and beneath, 7–11 pairs of secondary veins weakly anastomosing into a submarginal looped vein, tertiary veins mostly obscure or visible as faint branches from the secondary veins. Inflorescences few- to many-flowered, 3.7–13.7 cm long, axes glabrous; bracts lanceolate, 2–4 mm long; pedicels

3–4 mm long. Sepals narrowly ovate, 1.6–2.5 x 0.6–1 mm, 2.4–2.7 times as long as wide, quite variable even within a single flower, apex acuminate, glabrous, sparsely ciliate to eciliate, no colleters in the axils. Corolla dark red outside on tube and on the parts of the lobes that are exposed in bud, white inside and on parts of lobes not exposed in bud; corolla bud head lanceolate with an acuminate apex, open corolla salverform with a noticeably curved tube, sometimes quite strongly curved; tube narrow, slightly widening around the stamens, 12.6–16 mm long, 1.6–1.8 mm wide around stamens, 0.8–1.2 times as long as lobes, 5–8.9 times as long as sepals, glabrous outside, very few short hairs scattered inside, sparsely pubescent in throat; lobes narrowly ovate to elliptic, slightly falcate, 12.5–17.5 x 3–4.4 mm, 3.2–4.7 times as long as wide, apex acuminate, glabrous outside, glabrous inside, slightly ciliate at very base. Stamens inserted at 4.3–6.4 mm from corolla base which is 0.3–0.4 of corolla tube length; filaments 0.5–1.4 mm long, glabrous; anthers lanceolate, 2.2–2.5 x 0.5–0.6 mm, apex acuminate, fertile for most of length except for the acuminate apex. Ovaries 0.9–1.8 mm high, glabrous; style 0.2–2.4 mm long (see notes); style head 0.7–1.3 mm long, apex acuminate. Fruit of paired fusiform follicles, dark brown, glabrous, lenticellate, to 20 cm long, to 6 mm wide (but still immature). Seeds flattened, ca. 15 x 5 mm, including a wing at both ends (but immature).

Thailand.— SOUTH-WESTERN: Phetchaburi [Kaeng Krachan National Park trail to Than Thip Waterfall, 700 m alt., 12 May 2005, *David J. Middleton, Chandee Hemrat, Stuart Lindsay, Somran Suddee & Suwat Suwanachat* 3418 (A, BKF, E, MICH); trail to Than Thip Waterfall, Aug. 2005, *Rachun Pooma, Manop Poopath, Chandee Hemrat* 5678 (BKF); trail to Thor Thip Waterfall, 500 m alt., 10 May 2005, *David J. Middleton, Chandee Hemrat, Stuart Lindsay, Somran Suddee & Suwat Suwanachat* 3341 (A, BKF, E, MICH); just above Than Thip Waterfall, 740 m alt., 14 Dec. 2002, *David J. Middleton, Somran Suddee & Chandee Hemrat* 1661 (A, BKF)].

Distribution.— So far only known from Kaeng Krachan National Park in Phetchaburi province in Thailand but likely to occur in neighbouring Burma.

Ecology.— Collected in primary evergreen forest at 500–740 m altitude.

Notes.— There appears to be a very great difference in length of the style between the two collections made in 2005: one of the collections, *Middleton et al*. 3418, has a short but well defined style whereas the other collection, *Middleton et al.* 3341 has almost no style at all. *Middleton et al.* 1661 is intermediate. The reasons are unknown but future work on the pollination biology of this species may yield clues. All the collection localities are within a few kilometres of each other.

The plants were located primarily by finding large numbers of fallen corollas on the ground. Fresh flowers still attached to plants collected during the day were almost never open. It is likely, therefore, that the species is night flowering. Cuttings placed in a cool dark place did indeed lead to the corollas opening. The corollas are white inside and the corolla tube is long which would suggest moth pollination but this has not been observed. In addition very many of the flowers appear to be parasitised.

This new species is named in honour of Mr. Chandee Hemrat of the Forest Herbarium Bangkok (BKF). It was Chandee that first found this species in 2002 and who climbed trees in order to make the collections in 2005. We also want to acknowledge his keen eye and his hard work on many field trips over the years.

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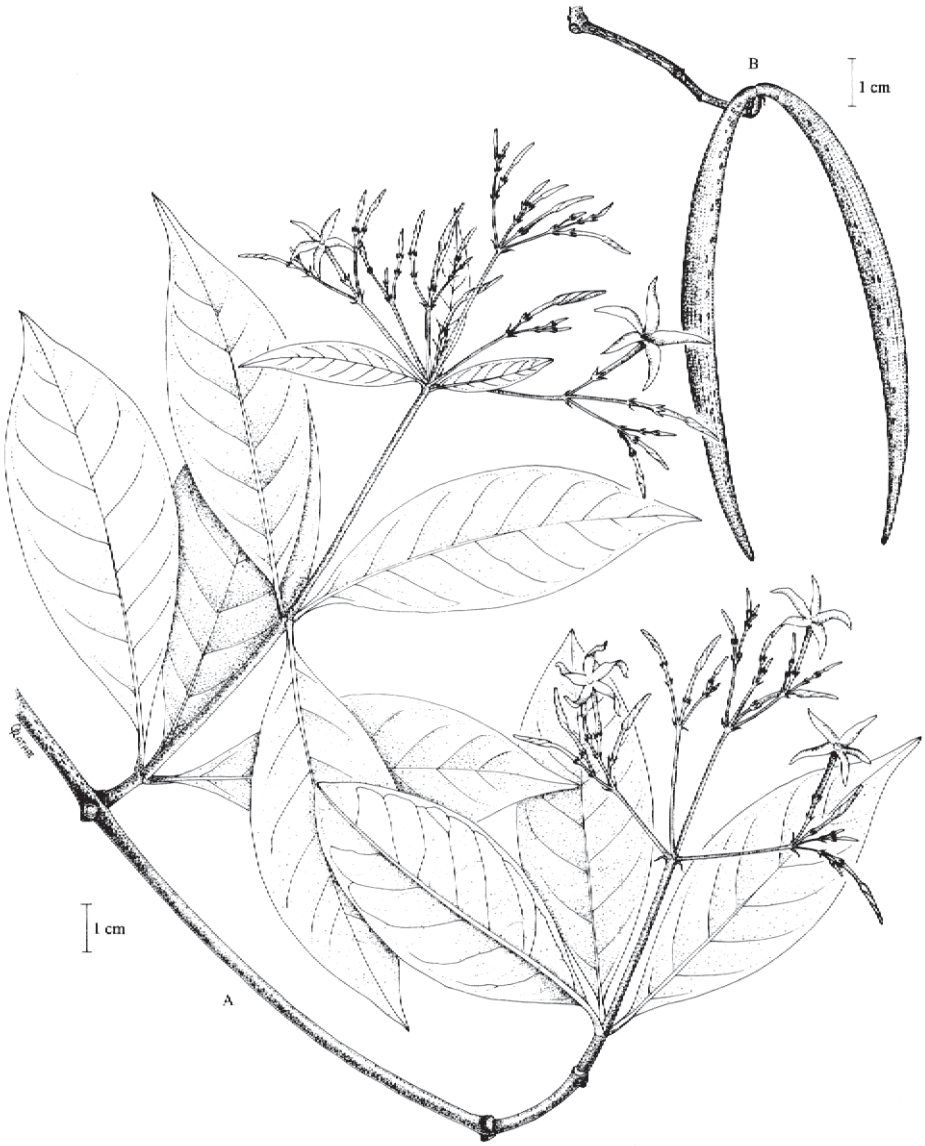

Figure 1. *Kamettia chandeei* D.J. Middleton: A. habit; B. follicle. A. from *Middleton et al.* 3418 (BKF), B. from *Pooma et al.* 5678 (BKF). Drawn by O. Kerdkaew.

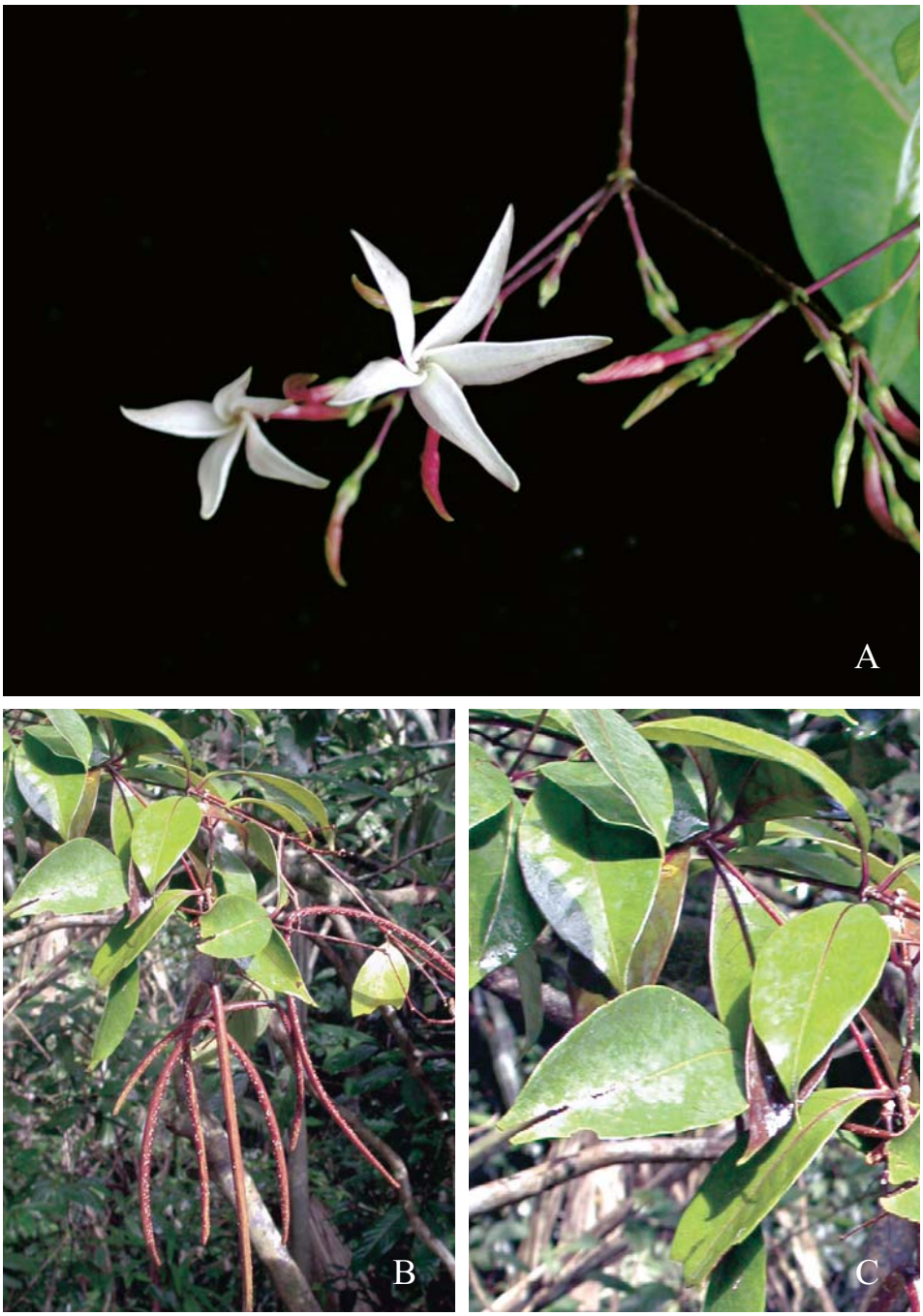

Figure 2. *Kamettia chandeei* D.J. Middleton. Photographed by D. Middleton (A); R. Pooma (B), (C).