

Somrania, a new genus of Gesneriaceae from Thailand

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ABSTRACT. The new genus *Somrania* D.J.Middleton is described along with two new species, *Somrania albiflora* D.J.Middleton and *Somrania lineata* D.J.Middleton & Triboun.

INTRODUCTION

This contribution arose from specimen and field based taxonomic work on the Gesneriaceae towards an account of the family for the Flora of Thailand. We present a new genus of Gesneriaceae with two hitherto undescribed species. The genus first came to our attention when seeds of an unknown species of Gesneriaceae from Ranong Province in Thailand collected by a joint Royal Botanic Garden Edinburgh/Forest Herbarium Bangkok expedition were grown at the Royal Botanic Garden Edinburgh. When this plant flowered it could not be named to genus or species. A second undescribed species was later collected in Phangnga Province in Thailand and is clearly related to the Ranong plant but also quite clearly not the same species. We describe these two species in the new genus *Somrania* D.J.Middleton, named in honour of Dr Somran Suddee of the Forest Herbarium Bangkok.

Somrania is most similar to *Damrongia* Kerr ex Craib and, to some extent, to *Loxocarpus* R.Br. *Damrongia* has recently been resurrected from synonymy of *Chirita* Buch.-Ham. ex D. Don (Weber et al., 2011). *Loxocarpus* was until recently included in synonymy of *Henckelia* Spreng. (Weber et al., 2011; Kiew & Lim, 2011). Despite their straight fruits these plants belong in the twisted-fruited group of Old World Gesneriaceae (Möller et al., 2009; Weber et al., 2011). The most easily

observable difference between *Somrania*, on the one hand, and *Damrongia* and *Loxocarpus*, on the other, is in the presence of branched hairs in *Somrania*. These hairs are completely lacking in the other two genera, which have their own characteristic indumentums of dense multicellular uniseriate hairs in both genera (which is generally brown in *Damrongia* and silvery in *Loxocarpus*). In *Somrania albiflora* D.J.Middleton the branched hairs are large and cover all vegetative parts and the inflorescence axes; in *S. lineata* D.J.Middleton & Triboun the branched hairs are smaller and are not found on the inflorescence axes. The only other Asian species of Gesneriaceae with branched hairs of which we are aware are *Paraboea tarutaoensis* Z.R.Xu & B.L.Burt and *Paraboea vulpina* Ridl. (Xu et al., 2008). In addition the corolla of *Somrania* is tubular and only slightly widened distally whilst that of *Damrongia* is infundibuliform and that of *Loxocarpus* flat-faced or campanulate (*Paraboea tarutaoensis* and *P. vulpina* are also flat-faced and differ in many other characters). Lastly *Somrania* and *Loxocarpus* species have plagiocarpic fruits whilst those of *Damrongia* are orthocarpic.

A preliminary molecular phylogenetic study which includes *Somrania albiflora* and *S. lineata*, and which will be published in due course, supports the conclusions presented here (Puglisi, pers. comm.).

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Somrania D.J.Middleton, **gen. nov.**

Similar to *Damrongia* and *Loxocarpus* but differs in the branched hairs on the vegetative parts (absent in *Damrongia* and *Loxocarpus*), and in the tubular corolla (infundibuliform, campanulate or flat-faced in *Damrongia* and *Loxocarpus*). – Type: *Somrania albiflora* D.J.Middleton.

Lithophytic herbs, scapose or with a short flowering stem. *Leaves* primarily arising at base of plant, more rarely opposite on short stem, weakly to strongly anisophyllous, petiolate; blade herbaceous, margin crenate or dentate, with 4–8 pairs of secondary veins, tertiary venation alternate percurrent, adaxial surface with acicular hairs and short glandular hairs, abaxial surface with branched hairs and shortly stalked or sessile glands. *Inflorescences* either scapose or on short stems,

cymose. *Calyx* of 5 lobes almost free to the base. *Corolla* zygomorphic, tube cylindrical, limb 2-lipped with 2 upper and 3 lower lobes, mouth weakly to strongly oblique. *Stamens* 2, inserted in lower half of corolla tube; filaments straight; anthers adnate face to face; staminodes 3, equal or medial one shorter. *Disk* present, margin crenate. *Ovary* 2-carpellate, unilocular; style straight or slightly curved; stigma with only the lower lobe developing, weakly and subequally laterally bilobed, lobes rounded. *Fruit* a capsule, held at an angle to the pedicel, not twisted, fusiform, dehiscence loculicidal on upper surface only. *Seeds* numerous, unappendaged.

Distribution.— Currently only known from two species on karst limestone in Peninsular Thailand.

KEY TO THE SPECIES

1. Corolla white throughout and with a slightly oblique mouth; branched hairs present on leaves and inflorescence axes

S. albiflora

1. Corolla white with two orange-brown lines in the corolla and with a strongly oblique mouth; branched hairs on leaves but not on inflorescence axes

S. lineata

Somrania albiflora D.J.Middleton, **sp. nov.**

Differs from *Somrania lineata* in the branched hairs being larger and more frequently branched, the pure white corolla, and the less oblique corolla mouth. – Type: Thailand, Ranong, Ngao Waterfall National Park, Trail to waterfall, 580 m alt., seed collected 20 Feb. 2006, cultivated as RBGE acc. no. 20060626, vouchered and chosen as type as *Middleton 4216* (holotype **E!**; isotypes **BKF!**, **E!**). Fig. 1, 2A.

Lithophytic or terrestrial herb, to 20 cm high; stem, when present, densely covered in frequently-branched hairs. *Leaves* primarily arising at base of plant but sometimes there is a short stem with opposite leaves, these somewhat differing in size; petiole 3.5–14 cm long, densely covered by frequently-branched hairs; blade ovate, 1.8–16.4 x 0.8–12 cm, 1.2–1.8 times as long as wide, apex acute to obtuse, base cordate, sometimes somewhat unequally so, margin coarsely and somewhat irregularly dentate, with 6–8 pairs of secondary veins, covered with a mixture of acicular and shorter glandular hairs above, densely covered with frequently-branched hairs all over beneath, more

densely so on venation, and with minute shortly stalked to sessile glands. *Inflorescences* on short stems, 8.7–16 cm long, many-flowered; bracts narrowly obovate, 2.5–5 x 0.7–1.2 mm, densely covered with branched hairs; peduncle 5–13.5 cm long, densely covered with large branched hairs; pedicels 5.5–7.4 mm long, glandular pubescent with occasional larger branched hair. *Calyx* tube very short, lobes 3.8–4 x 0.5–1 mm, narrowly triangular, apex acute, glandular pubescent with hairs of varying lengths. *Corolla* white throughout, with a tube which widens slightly and gradually towards lobes, weakly 2-lipped, mouth slightly oblique, lobes spreading, c. 13.5 mm long; tube 9.5–10 mm long, glandular pubescent outside, glabrous inside; upper lobes ovate, apex rounded to obtuse, c. 2.5 x 4.5 mm; lateral lobes ovate, apex rounded to obtuse, c. 3 x 3.7 mm; lower lobe ovate, apex rounded, c. 3.5 x 3.5 mm. *Stamens* inserted in lower half of corolla tube at 2 mm from base which is 20% of tube length; filaments very pale orange, straight, c. 4 mm long, glabrous; anthers c. 2.5 x 1 mm; staminodes equal in size, c. 0.9 mm long. *Disk* yellow, to 0.7 mm high, margin thick, strongly crenate. *Pistil* c. 11.4 mm long, held in

upper part of corolla tube; ovary green, 3.7 mm long, densely covered in a mixture of short glandular hairs (0.1 mm long) and slightly longer (0.2 mm) eglandular hairs; style white, c. 7.2 mm long, slightly curved, pubescence as on ovary but less dense; stigma with only the lower lobe developing, weakly and subequally laterally bilobed, lobes rounded. *Fruit* fusiform, 7–11 x 1.2–1.8 mm, densely and minutely pubescent. *Seeds* c. 0.5 x 0.2 mm.

Distribution.— Only known from Ranong Province in Thailand although may also be found in the far south of Burma.

Ecology.— On limestone rocks or cliffs in dry evergreen forest or overhanging mangrove at 20–580 m altitude.

Etymology.— The specific epithet refers to the pure white corollas.

Proposed IUCN conservation assessment.— Data Deficient (DD). Although this species is currently only known from two limestone sites in Ranong province both of these sites are very close to the Burmese border and the possible distribution of the species in Burma is currently unknown.

Additional specimen studied (paratype).

Thailand.— PENINSULAR: Ranong [Kra Buri, Ban Lam Liang, Tham Phra Khayang, 20 m alt., 24 June 2006, *Williams, Pooma & Poopath 2123 (A!, BKF!, E!)*].

Somrania lineata D.J.Middleton & Triboun, **sp. nov.**

Differs from *Somrania albiflora* in the branched hairs being smaller and less frequently branched, the two orange-brown lines in the corolla, and the strongly oblique corolla mouth. — **Type:** Thailand, Phangnga, Sra Nang Manohra Waterfall Forest Park, Trail to limestone hill, on moist limestone base, 100 m alt., 17 June 2010, *Triboun 4440* (holotype **BK!**; isotype **E!**). Fig. 2B.

Lithophytic herb, rosulate or with a stem to 1.5 cm long supporting opposite leaves and two inflorescences, these leaves reduced and strongly anisophyllous. *Leaves* primarily arising at base of plant; petiole 3–10.2 cm long, densely covered in a mixture of short acicular hairs and small branched hairs with 2–4 branches; blade ovate, 2.5–12.5 x 2.3–10 cm, 1.1–1.5 times as long as wide, apex rounded, rarely almost obtuse, base rounded

to cordate, sometimes somewhat unequally so, margin somewhat irregularly crenate, with 4–8 secondary veins on each side of midrib, densely covered with short acicular hairs and even shorter glandular hairs above, densely covered in short acicular and sparsely-branched hairs and sessile glands beneath. *Inflorescences* either scapose or on short stems, 6–12 cm long, 3–8-flowered; bracts linear, c. 2 mm long, covered with short acicular and short glandular hairs; peduncle 4–8.2 cm long, densely covered in a mixture of short acicular and even shorter glandular hairs; pedicels 3–8 mm long, densely covered in a mixture of short acicular and even shorter glandular hairs with occasional globular subsessile gland. *Calyx* tube 1–1.5 mm, lobes 1.8–2.5 x 0.8 mm (to 5.5 mm long in fruit), narrowly elliptic to triangular, apex acute with a blunt tip, indumentum as on pedicels. *Corolla* white throughout except for two orange-brown lines in line with sinuses between lower three lobes, these lines to about half way down inside of tube, mouth strongly oblique with lower lip longer than upper lip, c. 18 mm long; tube 10–12 mm long, c. 2 mm wide at base and c. 4 mm at apex, densely covered in a mixture of short acicular and shorter glandular hairs outside, glabrous inside; upper lobes squarish, apex rounded, c. 2.2 x 2.5 mm; lateral lobes orbicular to obovate, apex rounded, 2.2–3 x 2.5–3 mm; lower lobe orbicular to obovate, apex rounded, 3.2–3.5 x 3.2–3.5 mm. *Stamens* inserted at 4 mm from corolla base which is 36% of tube length; filaments straight to slightly curved near the anther, white, 3.5–4 mm long, slightly widening just above base, glabrous; backs of anthers dark purple to nearly black, connective white, each 1.5–1.8 x 0.5 mm; 2 lateral staminodes c. 2.5 mm long, medial 1 mm long. *Disk* c. 0.9 mm high, weakly crenate. *Pistil* c. 11.5 mm long, held in upper part of corolla tube; ovary c. 3.5 mm long, densely covered in short acicular hairs; style c. 7.8 mm long, densely covered in a mixture of short acicular hairs and even shorter glandular hairs; stigma with only the lower lobe developing, weakly and subequally laterally bilobed, lobes rounded. *Fruit* fusiform, 7.5–8.5 x 1.3–1.5 mm, with tiny glands. *Seeds* c. 0.4 x 0.2 mm.

Distribution.— Thailand (Phangnga).

Ecology.— On limestone rocks or cliffs in shade in evergreen forest at 75–100 m altitude.

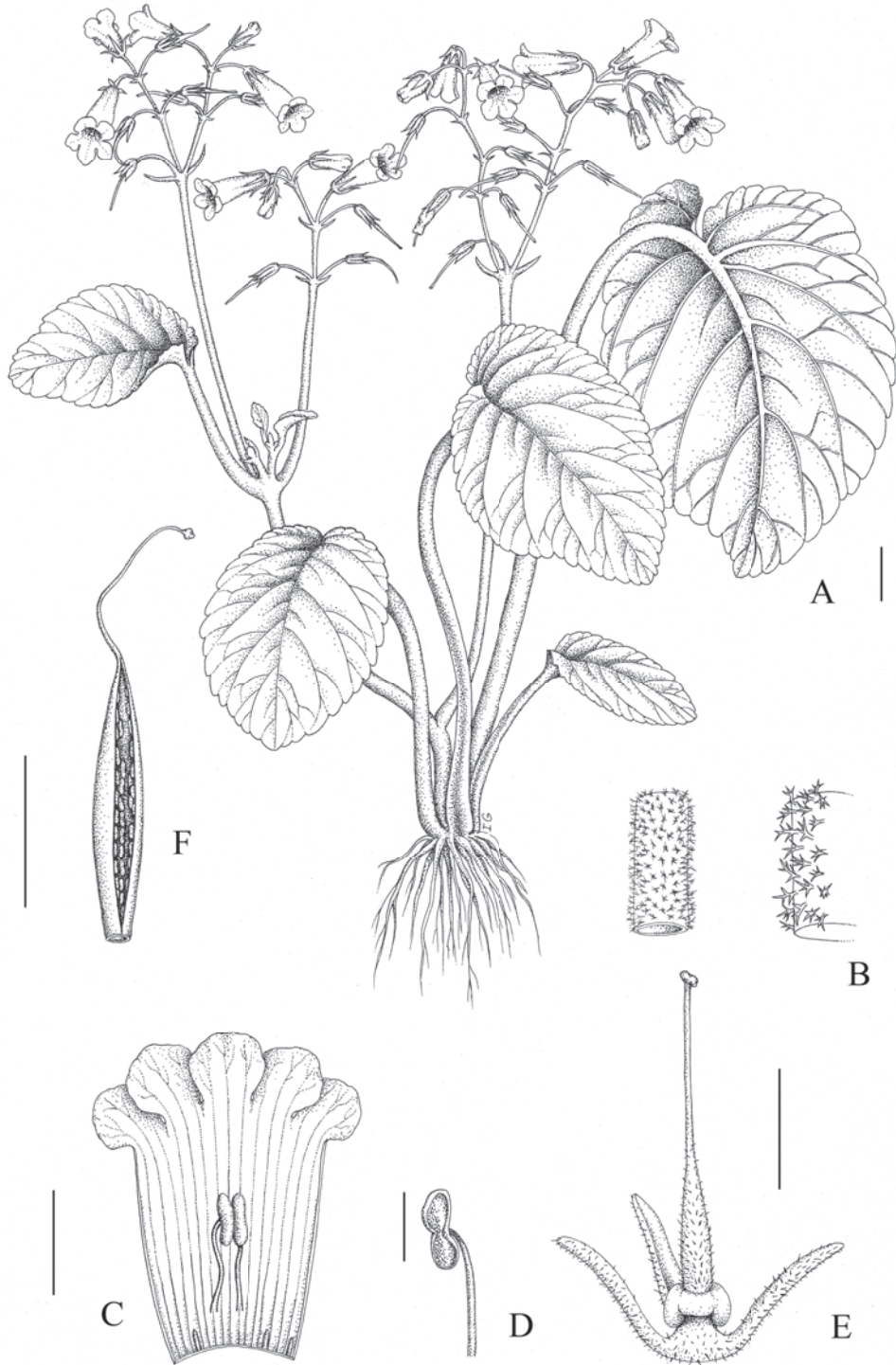


Figure 1. *Somrania albiflora* D.J.Middleton. A. Habit; B. Stellate hairs on petiole; C. Corolla dissection; D. Stamen; E. Calyx, disk and gynoecium; F. Dehiscent fruit and persistent style. Scale bars: A, B = 1 cm; C, E, F = 5 mm; D = 2 mm. Drawn from living collection which was subsequently vouchered as *Middleton 4216* (E).

Etymology.— The specific epithet refers to the two orange-brown lines in the corolla tube.

Proposed IUCN conservation assessment.— Critically Endangered CR B1ab(iii). This species is currently only known from Tham Pha Phueng and Sra Nang Manohra Waterfall Forest Park, only about 4 km apart and with a known Extent of Occurrence of considerably less than 100 km². Both are surrounded by disturbed vegetation and

both have high levels of disturbance from tourists leading to a decline in the quality of the habitat.

Additional specimen studied (paratype).

Thailand.— PENINSULAR: Phangnga [Muang Phangnga, Tham Pha Phueng, 75 m alt., 15 Sept. 2010, *Middleton, Bunpha, Karaket, Lindsay, Phutthai, Suddee & Tetsana 5434* (**BKF!**, **E!**, **K!**, **KEP!**, **PSU!**)].

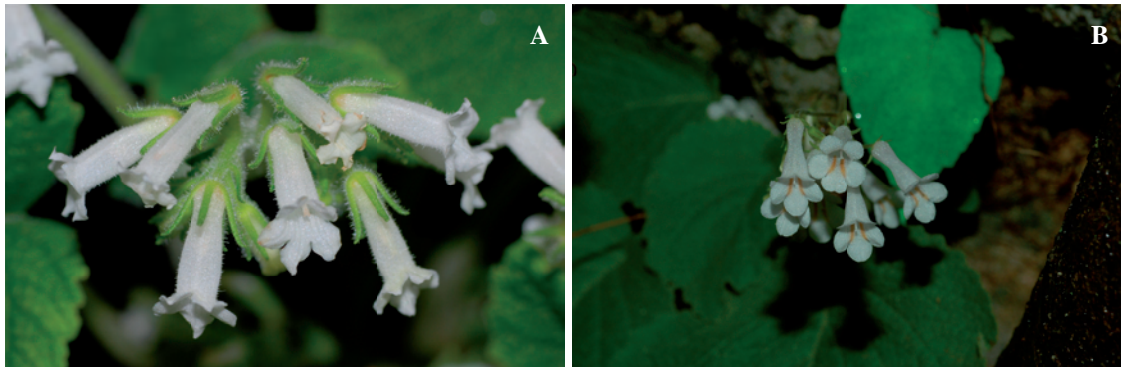


Figure 2. A. *Somrania albiflora* D.J.Middleton (photograph D.J.Middleton); B. *Somrania lineata* D.J.Middleton & Triboun (photograph T. Phutthai).

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