



A *Strobilanthes* (Acanthaceae) miscellany

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Summary. This paper presents miscellaneous, previously unpublished results arising from the authors' research into *Strobilanthes*. *S. moylaniae* J.R.I.Wood & Scotland from New Guinea and *S. dengii* J.R.I.Wood & Scotland from Sumatra are proposed as new species, while an unnamed species is described from Sumba Island in Indonesia in the hope that it might be rediscovered. A new subspecies, subsp. *subovata* J.R.I.Wood & Scotland is described for *S. timorensis* Nees, while attention is drawn to its plietesial flowering pattern. The new combinations *S. benculensis* (Bremek.) J.R.I.Wood & Scotland, *S. wetarensis* (Bremek.) J.R.I.Wood & Scotland, *S. javanica* (Bremek.) J.R.I.Wood & Scotland and *S. serpens* (Nees) J.R.I. Wood & Scotland are made. Typification is clarified and where appropriate lectotypes are designated for *Hemigraphis hispidula* Craib, *Lepidagathis setigera* Blume, *Ruellia crispa* L., *R. sabiniana* Lindl., *Strobilanthes duclouxii* Benoist, *S. erecta* C.B.Clarke, *S. flava* Kurz, *S. forrestii* Diels, *S. scabra* Nees, *S. secunda* T.Anderson and *S. thomsonii* T.Anderson.

Key Words. *Hemigraphis*, *Lepidagathis*, new combinations, new species, plietesial flowering, *Sericocalyx*, typification.

Introduction

Strobilanthes Blume is the second largest genus of Acanthaceae with around 400 – 420 accepted species according to our estimate and if a broad concept of the genus is accepted. It is almost entirely Asian in its distribution, extending from Japan and Korea in the north, from Afghanistan and Pakistan in the west and just reaching northern Australia in the south. It is most diverse in the Indian subcontinent, south China and mainland South East Asia but many species also occur in island South East Asia. The genus is remarkable for the diversity of its pollen (Carine & Scotland 1998; Wood *et al.* 2003; Wood & Scotland 2009; Hu Chia-chi *et al.* 2011) and the plietesial flowering pattern of many species (Wood 1994b). Although several species are widely distributed (Bennett *et al.* 2008), most are rare and localised in their distribution (Wood & Scotland 2009). Most grow in hill forest in areas with a seasonally dry monsoon climate and the genus is noticeably less diverse in tropical rain forest. A few species reach altitudes above 3000 m in the Himalayas and SW China (Hu Chia-chi *et al.* 2011) but most are found at lower altitudes. Several species are cultivated both in temperate and tropical regions and are occasionally reported as naturalised outside their native range (Wood 2014).

Over the last 25 years, the authors and various colleagues have published a series of papers on the distribution, characteristics, systematics and taxonomy of *Strobilanthes* but there remain a number of matters that await publication. This paper aims to tidy up

miscellaneous issues left over from these studies or which have arisen from the study of specimens received on loan. In particular, two descriptions resulting from Elizabeth Moylan's work on *Hemigraphis* Nees (Moylan *et al.* 2002, 2004) are still pending. A number of generic transfers are needed and the opportunity is taken to lectotypify several species whose typification is ambiguous.

We accept a broad concept of *Strobilanthes* following Terao (1983) based on our own morphological (Wood 1994b; Carine & Scotland 2002; Wood & Scotland 2009) and molecular studies (Moylan *et al.* 2004). These results have been confirmed by other studies (Tripp *et al.* 2013) and are now generally accepted (Hu *et al.* 2011; Augustine 2018; Deng 2019). Essentially, this means that all genera placed in the *Strobilanthininae sensu* Bremekamp (1944) belong to the genus *Strobilanthes*, including species placed both in *Hemigraphis* and *Sericocalyx* Bremek.

Materials and Methods

This paper is based on the study of herbarium specimens, principally those received on loan from BM, K and L. Extensive use has been made of on-line resources, particularly the literature available through the Biodiversity Heritage library and the specimen images on Jstor. Images available on the websites of individual herbaria, especially those of Kew (K), Edinburgh Botanic Garden (E), Naturalis in the Netherlands (L, U) and The Natural History Museum,

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Paris (P) have also proved very useful. All cited specimens have been seen unless indicated to the contrary. The original work of Elizabeth Moylan as part of her DPhil studies of species placed originally in *Hemigraphis* has also provided valuable insights although she is not responsible for decisions we have made in this paper.

New taxa

***Strobilanthes moylaniae* J.R.I.Wood & Scotland, sp. nov.**
Type: Papua New Guinea, Tovobada Hills, Waigani village, 10 May 1967, R. Pullen 6946 (holotype CANB-171572, isotypes K, L-2824954, also said to be at A, LAE).

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Prostrate herb, rooting at the nodes, stems eventually ascending, terete, pubescent. *Leaves* petiolate, 1.8–4 × 1–2.2 cm, ovate-elliptic to oblong-elliptic, tapering at the base into the petiole, apex obtuse, margin crenate, both surfaces adpressed pilose and somewhat asperous, abaxially paler; petioles 5–13 mm, pubescent. *Inflorescences* terminal and pedunculate from the uppermost leaf axils, dense, subcapitate, pubescent with prominent white, glandular hairs; peduncles 0.2–1.5 cm; bracts subtending a single flower, 10–13 × 3–4 mm, oblong-elliptic to subrhomboid, obtuse to subacute, crenate, pubescent with white, gland-tipped hairs; bracteoles absent; calyx subequally 5-lobed, the lobes linear, 8 × 0.5 mm, shortly glandular-pilose; corolla lilac, funnel-shaped above a cylindrical basal tube, c. 15 mm long, 5-lobed, the lobes oblong, rounded, c. 2 × 1 mm; long filaments c. 4 mm long, pubescent in lower half, held at corolla mouth, short filaments c. 1 mm long, glabrous; anthers 1 mm long; pollen c. 30 × 20 µm, ellipsoid, bireticulate, c. 20-ribbed; ovary oblong-ovoid, glandular; style c. 12 mm long, glandular below. *Capsule* linear-oblong in outline, 6 × 1 mm, 8-seeded, retinacula short, stubby; seeds lenticular, c. 1.25 mm diam., shortly pubescent. Fig. 1.

RECOGNITION. *Strobilanthes moylaniae* is superficially similar to *S. reptans* (G.Forst.) Y.F.Deng & J.R.I.Wood in its habit and the absence of bracteoles. However, the new species is easily distinguished from *S. reptans* by the glandular (not multicellular) hairs on the bracts, calyx and ovary, flowers with stamens held at the corolla mouth (not included) and longer filaments that are pubescent (not glabrous) in the lower half.

DISTRIBUTION & HABITAT. Papua New Guinea. Light scrubby woodland at c. 90 m.

CONSERVATION STATUS. This species is only known from the type collection made over 50 years ago. This may reflect genuine rarity but equally it could have

been overlooked because of its strong superficial similarity to *Strobilanthes reptans*. Any attempt to categorise this species within IUCN (2012) categories would be premature so it must be treated as Data Deficient (DD) until careful search for it is made near the type locality in Papua New Guinea.

ETYMOLOGY. This species is named after Elizabeth Moylan who made a major study of species treated as *Hemigraphis* (Moylan *et al.* 2002, 2004). She separated out this specimen as a putative new species but never described it.

NOTE. The pollen of this species (Fig. 2) is clearly ellipsoid and similar in shape and ornamentation to that of *Strobilanthes tomentosa* (Nees) J.R.I.Wood illustrated by Wood & Scotland 2009: 8 and Hu Chia-chi *et al.* 2011: 382. The ellipsoid shape is different from the spheroidal pollen of *S. reptans* (Nurulaini *et al.* 2017) but it is highly likely that the pollen of *S. reptans* is more variable than implied by this illustration.

***Strobilanthes dengii* J.R.I.Wood & Scotland, sp. nov.**
Type: Indonesia, Sumatra, Tipanuli Residency, Lae Pondon, E of Sidikalang, 29 March 1954, A. H. G. Alston 14958 (holotype BM, isotype U, ?BOGOR).

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Subshrub c. 3 m in height; stems stout, woody, much branched, obscurely winged, somewhat pustulate, bifariously scurfy-pubescent, glabrescent when old. *Leaves* shortly petiolate, 1–3.5 × 0.5–1.8 cm, ovate, acuminate, base attenuate and decurrent onto the petiole, margin serrate, both surfaces glabrous except a few appressed hairs on midrib near base, abaxially paler; petioles 1–5 mm. *Inflorescence* of numerous, axillary, bracteate cymes mostly with 3–5 flowers; bracts resembling small leaves, mostly 5–10 × 3–5 mm; calyx subequally 5-lobed to the base, glabrous, lobes linear, obtuse, at anthesis c. 7 × 0.5 mm but strongly accrescent to 15 × 1 mm; corolla “mauve-white”, glabrous, ±funnel-shaped, the short basal cylindrical tube 2–3 × 1.5 mm, then bent slightly and gradually widened for c. 18 mm to 10 mm at the mouth, the limb 5-lobed with rounded ovate lobes c. 2–3 × 2–3 mm; stamens didynamous, longer filaments pilose, c. 7 mm long, shorter filaments glabrous, c. 2 mm long; anthers 2 × 0.5 mm, included; style glabrous, 12 mm long. *Capsule* oblong, 12–15 × 3 mm, glabrous, 4-seeded; seeds lenticular, pubescent. Fig. 3.

RECOGNITION. Resembling *Strobilanthes atropurpurea* Nees in the leaf shape, subequally lobed calyx with linear, obtuse lobes and the glabrous corolla, ovary and capsule but readily distinguished by the very robust, shrubby habit, axillary cymose inflorescences

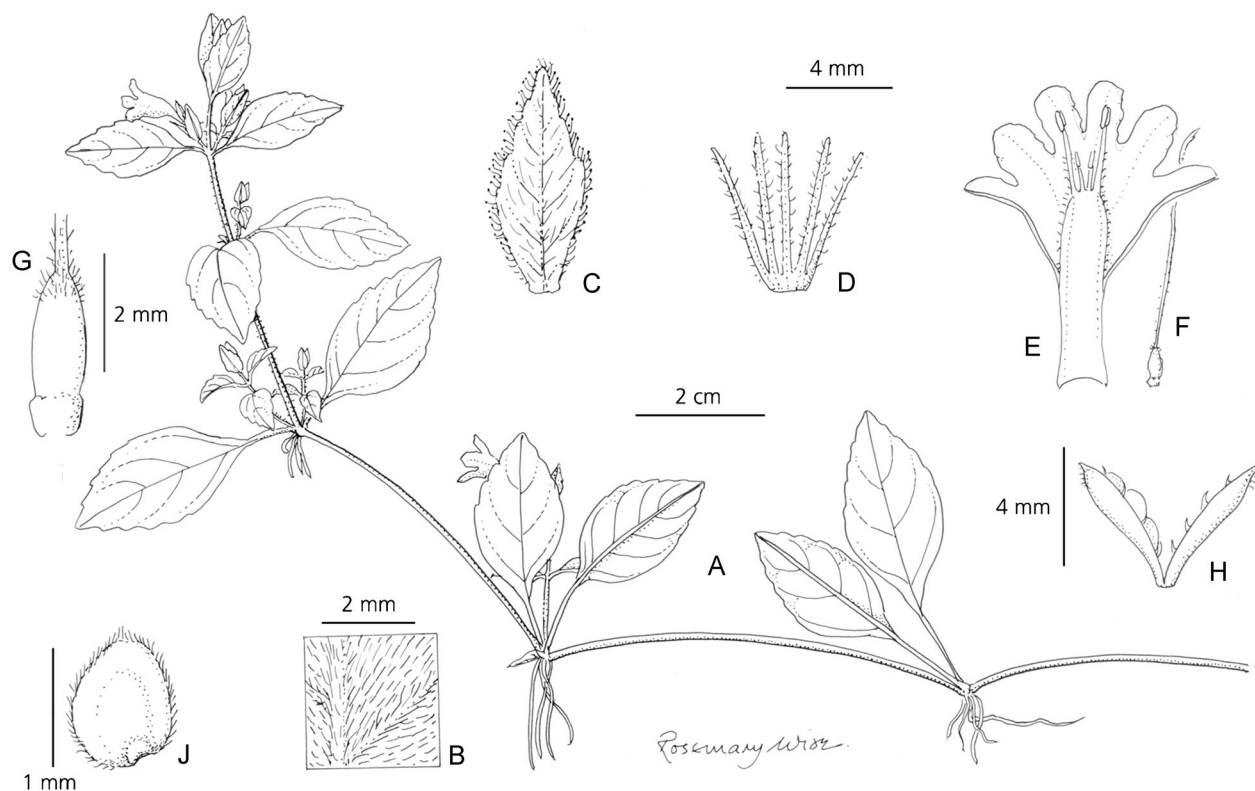


Fig. 1. *Strobilanthes moylaniae*. A habit; B abaxial leaf surface; C bract; D calyx; E corolla opened out showing stamens; F ovary and style; G apex of ovary and base of style; H capsule; J seed. From Pullen 6946.

(not flowers in 1-sided racemes, often reduced to solitary axillary flowers) and in the smaller, narrowly funnel-shaped corolla less than 10 mm wide (not strongly ventricose, up to 20 mm wide).

DISTRIBUTION & HABITAT. Not known, presumably forest.

CONSERVATION STATUS. This species is only known from the type collection made over 65 years ago. This may reflect genuine rarity or the destruction of the

original habitat, but equally may reflect the lack of recent collecting in the area. There are reports of coffee plantations in the region but whether these affect the type locality is unknown. It must be classified as Data Deficient within IUCN (2012) guidelines until further information becomes available.

ETYMOLOGY. This species is named after our colleague Deng Yunfei, who has published extensively on the Acanthaceae and other aspects of the Chinese flora. He has collaborated with the authors on various papers on *Strobilanthes* and drew our attention to the distinctiveness of this species.

NOTE. This species was separated out as a novelty by Hiroshi Terao but was never published. We were inclined to think of it as a form of the variable *Strobilanthes atropurpurea* until Deng Yunfei drew our attention to its distinct characteristics. Not only is it far more robust but the inflorescence is not composed of one-sided racemes, nor reduced to single axillary flowers. Most distinct of all is the smaller infundibuliform corolla which lacks the distinct ventricose bulge of *S. atropurpurea*. It is possible that two other collections from North Sumatra, *Bartlett* 8494 (US) from Deleng Baroes, Karo and *Van Steenis* 9349 (L) from Gadjah-Blang Kedjeren in Gajolanden, belong to this species but they differ somewhat from *Alston* 14958 and a final decision must await further collections, which may help show the range of



Fig. 2. *Strobilanthes moylaniae*. SEM photograph of pollen of Pullen 6946.

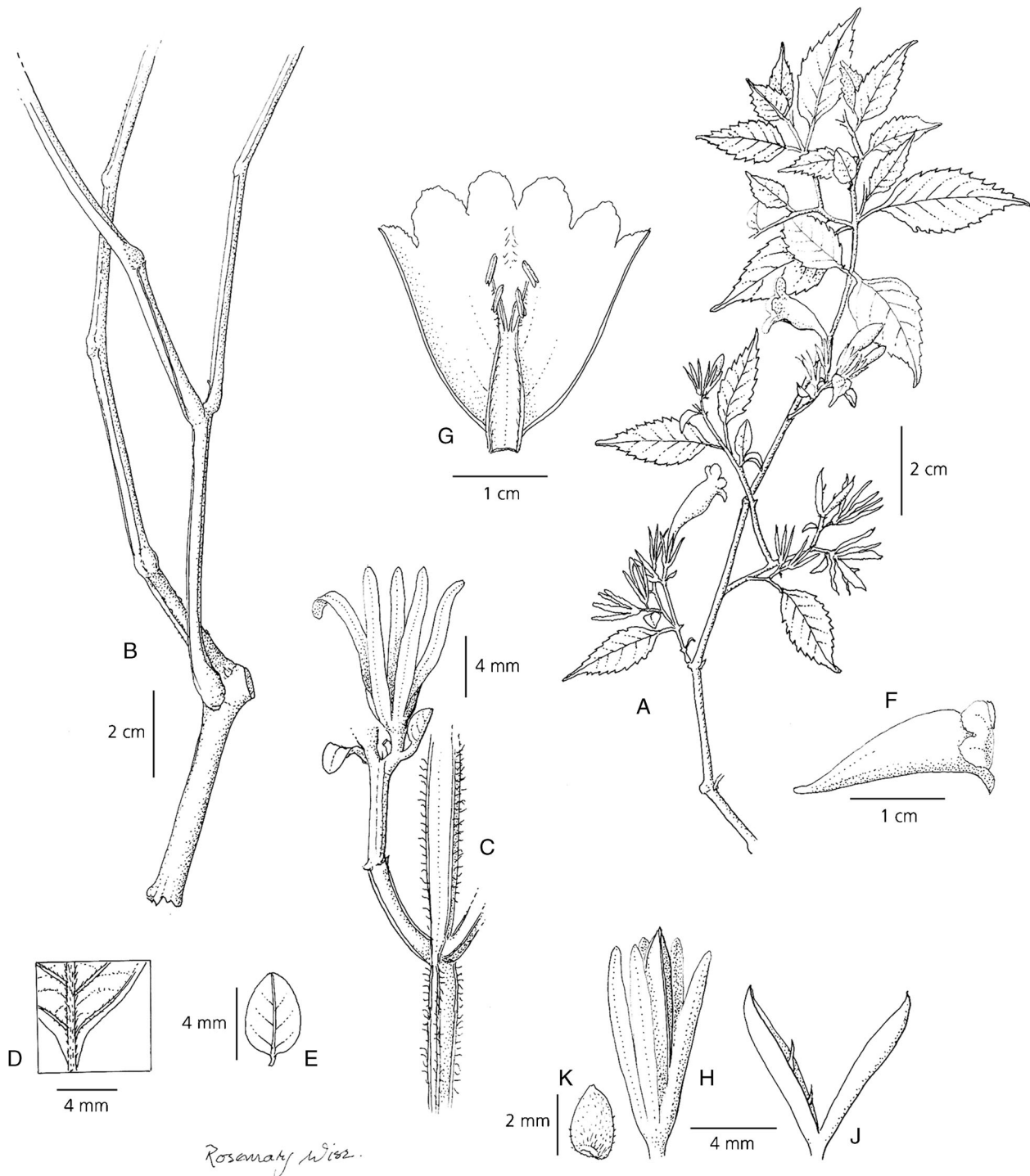


Fig. 3. *Strobilanthes dengii*. A habit with flowers; B mature leafless stem; C detail of stem with base of inflorescence; D leaf base; E bract; F corolla, side view; G corolla opened out to show stamens; H capsule within calyx; J capsule opened out to show retinacula; K seed. From Alston 14958. DRAWN BY ROSEMARY WISE.

variation in *Strobilanthes dengii*.

***Strobilanthes* sp.**

Erect isophyllous shrub; stem glabrous. *Leaves* petiolate; petioles 0.5 – 0.7 cm, lamina 6 – 13 × 3 – 4.6 cm,

lanceolate to ovate, tapering to an acuminate apex and narrowly cuneate base, margin entire to obscurely undulate, both surfaces glabrous, adaxially with prominent cystoliths, abaxially paler. *Inflorescence* terminal, consisting of 1 – 3 condensed thyrses, glandular-pilose with stipitate glands, c. 2.5 – 3 cm long (immature),

the conspicuously glandular hairs present on bracts, calyx and corolla; peduncles c. 7 mm long; bracts oblong-elliptic, 8–9 mm long, each subtending two flower buds; bracteoles absent; calyx subequally 5-lobed to base, lobes linear, acute, 7 mm long, 0.25 mm wide, glandular-pilose; corolla c. 10 mm long, glandular hairy, colour unknown, longer and shorter filaments glabrous; pollen ellipsoid, 60 × 40 µm; ovary comose with 8 ovules, style pubescent. *Capsule* not seen. Fig. 4.

RECOGNITION. This undescribed species resembles *Strobilanthes linearifolia* (Bremek.) Y.F.Deng (= *Hemigraphis ciliata* S.Moore) in the leaf shape, small, terminal inflorescence and absence of bracteoles but is a subshrub, the calyx is larger (7 mm long, not < 5.8 mm long) and all filaments are glabrous.

DISTRIBUTION. Indonesia.

SPECIMEN EXAMINED. INDONESIA. Soemba (Sumba): Kadoemba; [10–11 Sept. 1873, *fide Flora Malesiana* ser. 1, 1: Cyclopaedia of collectors (Steenis 1950)], J. E. Teysmann 1910 (Distribution No. 8878) (K, L-2824911, SING).

NOTE. This species collected almost 150 years ago was separated out by Elizabeth Moylan and appears to be distinct. Although we have not formally described it as new, a full description is provided in the hopes that someone may be motivated to explore the island of Sumba and rediscover it. All the available information is provided above and in the accompanying Fig. 4. Some details are based on C. B. Clarke's sketch which is clearly visible in Fig. 4.

***Strobilanthes timorensis* Nees (1847: 178).** Type: Timor, sine data et col. (holotype GZU-000268994).

Sericocalyx timorensis (Nees) Bremek. (Bremekamp 1944: 161).

Sericocalyx timorensis var. *quadriovulatus* Bremek. (Bremekamp 1944: 162). *nom. superfl.*, autonymic variety.

Perennial herb, stems hispid, becoming woody and erect, reaching at least 2 m (*fide Schmutz* 6165). *Leaves* 3–12 × 0.5–5 cm, oblong-lanceolate, acuminate, narrowed at base into a slightly winged petiole 1–2 cm long, margin repand, lateral veins c. 7 pairs, both surfaces scabrid, adaxially shiny. *Inflorescence* terminal and axillary, often forming a loose, leafless branched thyrse, the branches up to 10 cm long, the flowers arranged in short bracteate spikes at the branch tips; spikes 1.5–4 cm long; bracts 7–12 × 2–5 mm, oblong-lanceolate to ovate, acuminate, obtuse, asperous-pilose, the whitish hairs sometimes glandular apically; bracteoles c. 5 × 0.75 mm, linear; calyx c. 8 mm long, slightly unequally lobed to just above the base, lobes linear, 1 mm wide, longest lobe c. 8 mm,

shorter lobes 6 mm, pilose with gland-tipped hairs; corolla c. 13 mm long, pubescent, yellow, the lobes c. 3.5 mm long; longer filaments 3.5 mm, shorter filaments 2 mm; anthers included. *Capsule* oblong in outline, 8.5–10 × 2 mm, shortly comose with gland-tipped hairs, 4–6-seeded; seeds c. 2 × 1.5 mm, lenticular, pubescent.

Bremekamp (1944) treated this species as belonging to *Sericocalyx* (as *S. timorensis* (Nees) Bremek.) and divided it into two varieties, var. *quadriovulatus* Bremek., a superfluous name for the type variety and var. *sexovulatus* Bremek., the varieties distinguished by the number of ovules, four in the first case but six in the second. As the number of ovules and seeds is quite variable in several species referred previously to *Aechmanthera* (Wood & Scotland 2009: 16), *Hemigraphis* (Moylan *et al.* 2002: 785, 790, 794, 812 *etc.*) or *Sericocalyx* (Kurz 1871: 74 in discussion of *Strobilanthes flava*), this character is of little value, particularly as it shows no correlation with other characters or any geographical or ecological patterning. However, examination of around 25 specimens of *Strobilanthes timorensis* indicates that this species can be divided into two geographically distinct subspecies based on the shape of the bracts, lanceolate to oblong in the type subspecies but ovate to elliptic in the subspecies *ovata* described below. Subsp. *timorensis* is more eastern in its distribution than subsp. *ovata*.

subsp. **timorensis**

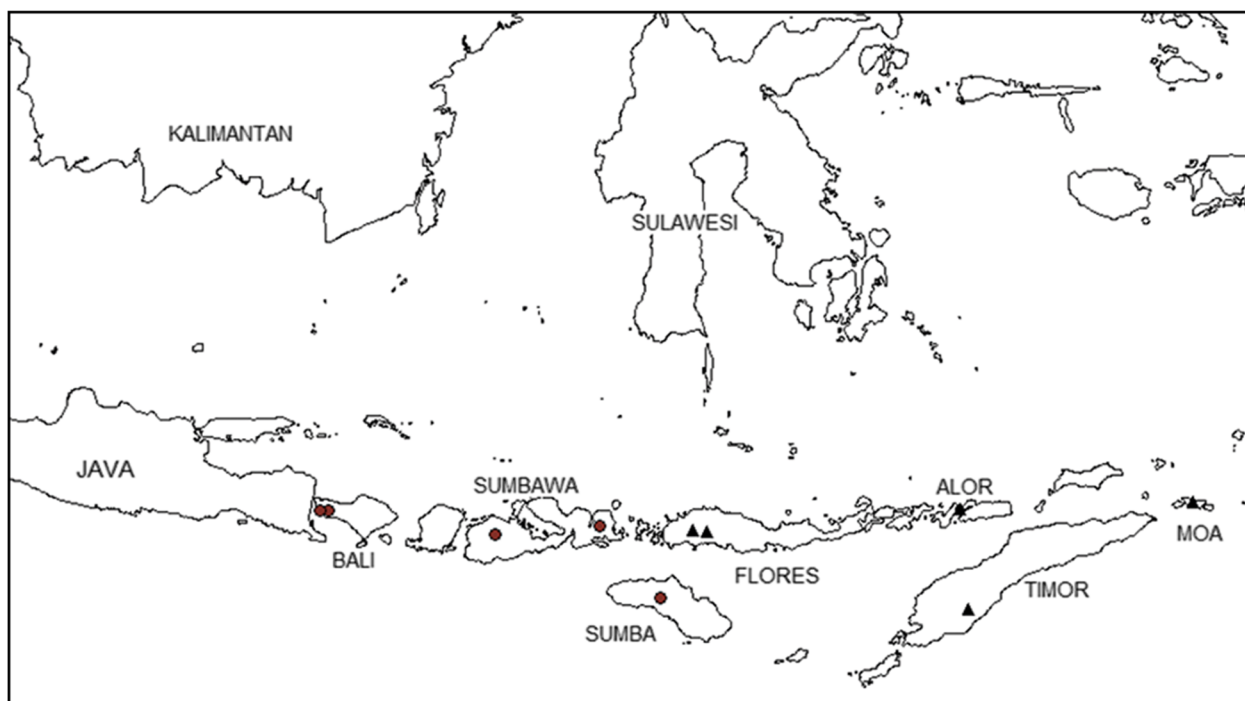
RECOGNITION. Bracts lanceolate to oblong-lanceolate, narrowed to an acute apex. Capsule 4-seeded (where known).

DISTRIBUTION & HABITAT. Timor and the neighbouring islands of Alor, Flores and Moa between 250 and 1000 m (Map 1). It is not recorded who made the type collection or whether it was found in East or West Timor, but the two collections cited below are from West Timor — Zippelius is known to have been based in Kupang in Indonesian (West) Timor.

SPECIMENS EXAMINED. INDONESIA. West Timor: Without data, *Zippelius* s.n. (L-2834256, L-2834261), *ex Herb Paris* (L-2834259); Niki Niki, 750 m, 27 June 1964, C. Kooy 106A (L2834264). **Flores:** Near Ruteng West Flores, 1200 m, 22 April 1965, *Kostermans & Wirawan* 454 (L-2834258). Soenda Eil, West Flores 600–1000 m, 11 April 1967, *E. Schmutz* 1443 (L-2834265). Manggarai, Rangga, West Flores, 250 m, 9 July 1987, *E. Schmutz* 6165 (L-2842393/L-2834257). **Alor:** Lantoka-Mumang, Central highlands, 750 m, 17 May 1938, *O. Jaag* 1234 (BM, L-2834262). Lantoka-Pido, Central highlands, 800 m, 18 May 1938, *O. Jaag* 1262 (L-2834263). **Moa:** 1883, *Riedel* s.n. (K).



Fig. 4. *Strobilanthes* sp., Teysmann 1910 (K).



Map 1. Lesser Sunda Islands of Indonesia showing native distribution of *Strobilanthes timorensis* subsp. *timorensis* (▲) and subsp. *subovata* (●).

PHENOLOGY. Subspecies *timorensis* apparently flowers in the May to July period.

NOTES. The field notes accompanying Schmutz 6165 comment: “On July 9 1987 there were thickets of this plant in flower. If not distressed by *Eupatorium odoratum*, (they) will grow up to as tall as a man and more, and as thick as a walking stick, suitable for firewood One year later, there are big masses of seedlings, sized between 5 and 22 cm..... (on) August 27 1988 in Pouggeok/Ulung at 700 m I met a few flowering specimens. They always reveal as being side shoots from early (before simultaneous flowering) cut main stems. Such often happens close to the road when people are cleaning up the road by cutting away all the weeds.” He also noted seven-year flowering cycles and an unfounded folk legend that flowering announces a prolonged dry season (Schmutz 1988: 19). These field notes indicate quite clearly that this is a plietesial species, flowering gregariously in an approximately seven-year cycle. Although plietesial flowering has been known in *Strobilanthes* for two centuries (Bremekamp 1944; Wood 1994b), Schmutz’ brief paper is only the second note of the phenomenon in the Malesian region after Van Steenis (1942).

***Strobilanthes timorensis* subsp. *subovata* J.R.I. Wood & Scotland, subsp. nov.** Type: Indonesia, Bali, Zollinger 3801 (holotype W-1889-0169698, sheet at W with original label “3801 *Strobilanthes* ? Cor. lutea. In

fruticetis et sylvis pr. Djembrana, Ins. Bali, 12 X 46 Zollinger”, isotypes BM-001190988, K-0010968301, W-1889-0169699).

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Sericocalyx timorensis var. *sexovulatus* Bremek. (Bremekamp 1944: 162). Type: Indonesia, Sumbawa, O. Warburg 17113 (holotype B-10-1184356).

RECOGNITION. Bracts ovate to ovate-elliptic 3 – 5 mm (not < 2 mm) broad, acuminate. Capsule 6-seeded where known.

DISTRIBUTION & HABITAT. Bali, Sumbawa, Sumba (Map 1). Records from Java are of cultivated plants. Scrub, mostly at lower altitudes than subsp. *timorensis*.

SPECIMENS EXAMINED. INDONESIA. Java: Bogor, probably all cultivated, without data, Nov. 1902, sine col. (NY); *ibid.*, 22 Sept. 1954, Alston 17127 (BM-013861726); *ibid.*, 5 Feb. 1951, Nedi & Idjan 173 (L-2834255); Graaf von Limburg Road, Buitenzorg, 250 m, 5 Nov. 1925, Danser 5594 (L-2834254). **Bali:** Djandikesoma (Candikesuma), 20 m, 13 Aug. 1910, Sarip 183 (L-2834249); Djembrana (Jembrana), the type. **Sumba:** 2 Dec. 1934, De Voogd 1862 (L-2834250). **Sumbawa:** Sambon, 3000 ft, [c. 900 m, 1880s], O. Warburg 17113 (B-10-1184356); Bima, Donggo, 250 – 500 m, 3 Dec. 1909, Elbert 3504 (L, K-00939205); Bima, Timtu, 75 – 250 m, 3 Dec. 1909, Elbert 3554 (L-28342452); Bima, Donggo, 100 – 300 m, 3

Dec. 1909, *Elbert* 3596 (L-2834256, K-00939206); Bima, Doro-Kechi, Biusa, 10 – 150 m, 16 Dec. 1909, *Elbert* 3884 (L-2834246); Bima, Kologebirge (west side), 200 – 375 m, 9 Dec. 1909, *Elbert* 3693 (L-2834253); Mt Batalante, Semongkat, 300 m, 19 Oct. 61, *Kostermans* 19042 (C, K, L-2834248). **Uncertain location, possibly Sumbawa:** *Riedel* s.n. (K).

PHENOLOGY. Flowers August to February.

New combinations

As noted in the introductory section a broad concept of *Strobilanthes* is generally accepted today. The following species belonging to the Strobilanthinae sensu Bremekamp (1944) have never been transferred to *Strobilanthes* and the necessary combinations are made below. It is hoped that all recognised species of the Strobilanthinae now have a valid name within *Strobilanthes*.

***Strobilanthes benculensis* (Bremek.) J.R.I.Wood & Scotland, comb. nov.**

<http://www.ipni.org/urn:lsid:ipni.org:names:77220446-1>

Semnostachya benculensis Bremek., *Verh. Kon. Ned. Akad. Wetensch. Afd. Nat., Sect. 2*, 41 (1): 204 (Bremekamp 1944: 204). Type: Indonesia, Sumatra, *Ajoeb* (Exped. Jacobsen) 349 (holotype L-0002947).

DISTRIBUTION. Endemic to the Bengkulu area of western Sumatra.

SPECIMENS EXAMINED. INDONESIA. Sumatra: Bengkulu, Soobah Ajam, 1200 m, 12 July 1916, *Ajoeb* (*Exped Jacobsen*) 349 (L); Gunung Seminoong base, south of Lake Ranau, 650 m, 12 Nov. 1929, *Van Steenis* 3952 (L); Kaba, 1000 m, 18 March 1932, *de Voogd* 1329 (L); sin data, *Forbes* s.n. (BM). Padang, Barisan Range, near Air Sirah, 0°57'S 100°32'E, 5 May 1996, *de Vogel & Vermeulen* 7437 (C, L). Aceh, Takigeon (Takengon), 1097 m, 7 Jan. 1932, *W. & C. Bingham* 731 (A, NY); Ketembe valley of Lau Alas, 200 – 400 m, 17 May 1972, *de Wilde & de Wilde* 12039 (L).

***Strobilanthes wetarensis* (Bremek.) J.R.I.Wood & Scotland, comb. nov.**

<http://www.ipni.org/urn:lsid:ipni.org:names:77220447-1>

Hemigraphis wetarensis Bremek., *Verh. Kon. Ned. Akad. Wetensch. Afd. Nat., Sect. 2*, 41 (1): 89 (Bremekamp 1944). Type: Indonesia, Lesser Sunda Islands, Wetar, Ilwaki, in Eucalyptus scrub, 150 – 550 m, *Elbert* 4427 (holotype L-0003024).

DISTRIBUTION. Endemic to Wetar in the Lesser Sunda Islands.

SPECIMENS EXAMINED. INDONESIA. Wetar: Tihusces, 485 – 500 m, *Elbert* 4548 (L). East Timor, c. 730 m, 3 July 1929, *M. E. Walsh* 479 (BM).

***Strobilanthes javanica* (Bremek.) J.R.I.Wood & Scotland, comb. nov.**

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Hemigraphis javanica Bremek., *Verh. Kon. Ned. Akad. Wetensch. Afd. Nat., Sect. 2*, 41 (1): 89 (Bremekamp 1944). Type: Indonesia, Central Java P[B]rambanan, *Junghuhn* s.n. (L-2831943).

DISTRIBUTION. Endemic to Java and neighbouring islands. It is found mostly in East Java extending west to Prambanan in central Java and east to the island of Bali.

SPECIMENS EXAMINED. INDONESIA. East Java: Between Tjerme and Krian, Dorgelo 1977 (L); Prov. Malang, Pasuruan, *Backer* 36991 (L-2831813); below Nongko Djadjar, *Backer* 37254 (L-2831809); Tengger Mts, *Mousset* 862 (L-2831819); Besuki Distr., Sumber Waru, *Koorders* 43876 (L-2831818), 47977 (L-2831821); sin. loc. *De Vriese* s.n. (L-2831816), *Horsfield* s.n. (K). Bawean Island, Gunung Besar (?Tinggi), *Dorgelo* 133 (L-2831812). **Bali:** Buleleng [Bulelang], *A. H. G. Alston* 17060 (BM).

NOTES. Bremekamp (1944: 89) equated all specimens from Java identified as *Strobilanthes hirsuta* Decne. (as *Hemigraphis decaisneana* Nees) with *S. javanica*, which is endemic to Java whereas *S. hirsuta* is endemic to Timor. *S. javanica* resembles *S. hirsuta* but can be distinguished from it (and also *S. wetarensis*) by the presence of bracteoles. It is also similar to *S. brunelloides* (Lam.) J.R.I.Wood but is distinguished by the subequally 5-lobed calyx (Fig. 5E), whereas *S. brunelloides* has 2-lipped calyx with upper lobes partially fused (Fig. 6F). The above specimens all seem to belong to *S. javanica* (Fig. 5).

Strobilanthes javanica has a strong superficial resemblance to *S. pavala* (Roxb.) J.R.I.Wood from India but differs in the presence of bracteoles and the glabrous filaments.

***Strobilanthes serpens* (Nees) J.R.I.Wood & Scotland, comb. nov.**

<http://www.ipni.org/urn:lsid:ipni.org:names:77220449-1>

Ruellia serpens Nees, *Prodr. [A. P. de Candolle]* 11: 145 (1847). Type: Indonesia, Tjiserae, Java, *Blume* 1228 p.p. (holotype GZU-000250312, isotype L-0065807,

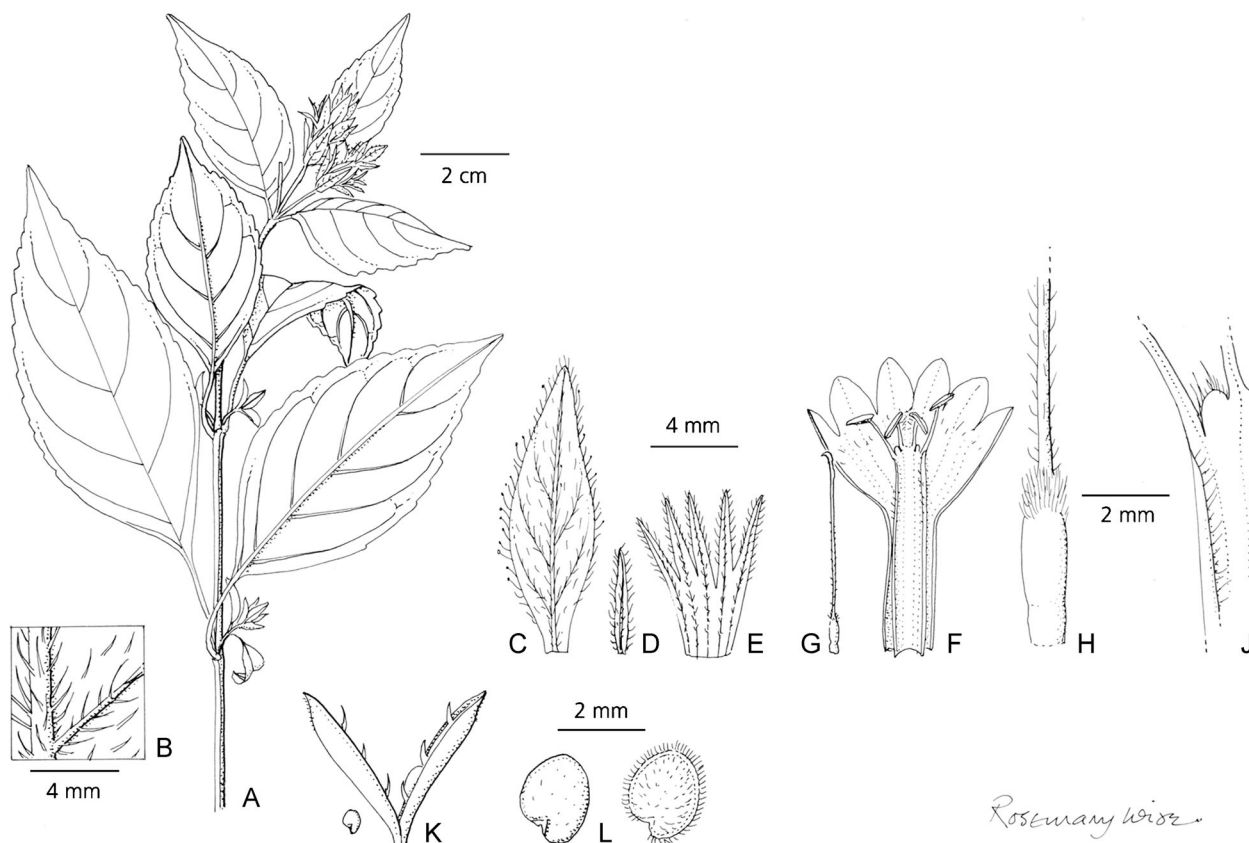


Fig. 5. *Strobilanthes javanica*. A habit; B abaxial leaf surface; C bract; D bracteole; E calyx; F corolla opened out showing stamens; G ovary and style; H apex of ovary and base of style; J gap between base of filaments; K capsule with seed to scale; L seeds, when dry (left), when wetted (right). From *Alston* 17060. DRAWN BY ROSEMARY WISE.

excluding portion on right labelled *Lepidagathis setifera* and bearing Bremekamp's annotation 'Lepidagathis sp. aff. javanica Bl.).

Hemigraphis serpens (Nees) Boerl. (Boerlage 1899: 658).

Ruellia nemorosa Zoll. & Moritzi (Zollinger & Moritzi 1845: 574). Type: Indonesia, Java, 'in sylvis umbrosis regionis calcareae', 'ad rivulam Bantur, Prov. Malang', *Zollinger* 2374 (isotype P-00719213).

Hemigraphis nemorosa (Zoll. & Moritzi) Bremek. (Bremekamp 1944: 95).

Hemigraphis ridleyi C.B. Clarke (1908: 652). Type: Malaysia, Pahang, *Ridley* 2180 (isotype SING-0027181).

Hemigraphis hispidula Craib (1913: 203). Type: Thailand, Hui Me Sakawn, between Pre and Nan, *Kerr* 2383 (lectotype K-000882584, designated here, isolectotype E-00273430).

Sericocalyx hispidula (Craib) Bremek. (Bremekamp 1944: 163).

DISTRIBUTION. Thailand, Peninsular Malaysia, Indonesia (Java).

NOTES. *Hemigraphis nemorosa* was distinguished from *Strobilanthes serpens* by having six, not four ovules but, as noted under *S. timorensis*, the number of ovules is variable within many species formerly placed in

Hemigraphis and *Sericocalyx* and is of little taxonomic significance. The only other differences adduced by Bremekamp relate to minor variations in indumentum. Consequently, *Hemigraphis nemorosa* is not recognised here as a separate species.

Blume 1228 is a mixed collection. Part of the collection represents *Strobilanthes serpens* (above) but the other part represents the following species of *Lepidagathis*:

Lepidagathis setigera *Blume* (1826: 802). Type: Indonesia, Java, Tjikao, *Blume* 1228 p. p. (lectotype L-0065807, small portion on right of sheet labelled *Lepidagathis setigera* and bearing Bremekamp's annotation 'Lepidagathis sp. aff. javanica Bl.', designated here).

The protologue as well as the collection represents a mixed gathering. The description of the stem and leaves refers to *Strobilanthes serpens* whereas the description of the inflorescence refers to *Lepidagathis setigera*, which is probably conspecific with *Lepidagathis incurva* Buch.-Ham. ex D. Don. It is lectotypified above to avoid any possible lectotypification of the name within *Strobilanthes*.

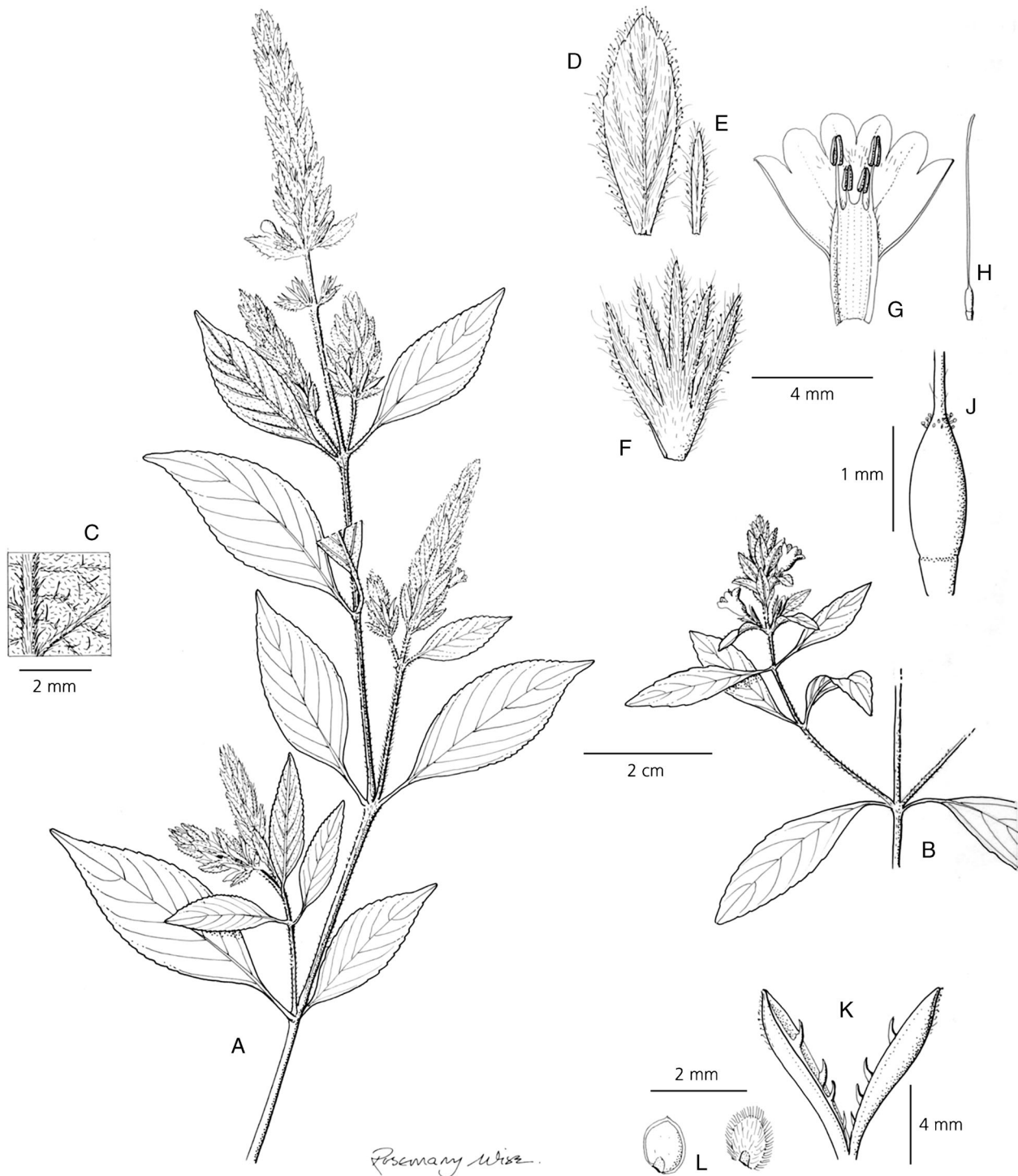


Fig. 6. *Strobilanthes brunelloides*. A habit; B flowering branch; C abaxial leaf surface; D bract; E bracteole; F calyx; G corolla opened out showing stamens; H ovary and style; J apex of ovary with glands and base of style; K capsule; L seeds when dry (left), when wetted (right). A, C – L from *T. Horsfield* 18, B from *Horsfield* s.n. DRAWN BY ROSEMARY WISE.

Typifications

Strobilanthes crispa (L.) Blume (1826: 798).

Ruellia crispa L. (Linnaeus 1753: 635). Type: Unlocalised, presumably Java, *Osbeck* 116 (LINN-HL804-11, lectotype designated here).

Sericocalyx crispa (L.) Bremek. (Bremekamp 1944: 163).

Although the lectotype has no original label, it was collected by Osbeck as indicated by Linnaeus (1753: 635). Osbeck is known to have visited Java and the collection number has been added as a result of studies by Hansen & Fox Maule (1973).

Strobilanthes crispa is apparently native in Java and Madura but has been cultivated elsewhere. Clarke (in sched.) identified the Osbeck collection as *S. scabra* but that species differs in the lanceolate scabrid (rather than ovate, pilose) bracts and is not known to occur outside cultivation in Indonesia.

Strobilanthes duclouxii Benoist (1922: 96). Type: China, Yunnan, Environs de Lan Ngui Tsi (?), 9 Aug. 1904, *Pius Pi in Ducloux* 2603 (lectotype P-00719313, selected here).

There are at least two isolectotypes at P and several specimens of the syntypes, all corresponding to the same species but the only one with Benoist's handwriting is the lectotype. It should be noted that not all specimens were distributed with the numbers cited by Benoist. We can only assume that numbers were changed at some stage during labelling or distribution.

Strobilanthes duclouxii is a synonym of *S. extensa* Nees.

Strobilanthes erecta C.B. Clarke (1907: 670). Type: Thailand, Chiangmai, Doi Chiang [Djieng] Dao, in grasiger Einsenkung, am Gipfel III, selten, 2160 m, *Hosseus* 401a (holotype M-0168696, isotype fragment P-07193170).

Strobilanthes suborbicularis Imlay (1939: 118). Type: Thailand, Chiangmai, Doi Lanka (Inthanon), *Put* 3302 (holotype K, isotypes BK-257647, BM-000906322, C-10005219).

Dossifluga suborbicularis (Imlay) Bremek. (Bremekamp 1944: 235).

Strobilanthes erecta is not represented in the Kew herbarium despite its description by Clarke (1907) and so was not taken up by Imlay (1939) who described the same species under the name *S. suborbicularis*. The holotype is in fact at Munich, where Hosseus' specimen is housed together with Clarke's manuscript description which was published by Hosseus some two years after Clarke's death in 2007.

Strobilanthes flava Kurz (1870: 78). Type: Based on *Ruellia flava* Roxb.

Ruellia flava Roxb. (Roxburgh 1832: 43), non *R. flava* Pers. (Persoon 1806). Type: Myanmar, Pegu, near Rangoon, *F. Carey* s.n. (no specimen preserved, lectotype Roxburgh image No. 2077 at K, epitype *S. Kurz* 2130 (K-000883167), both designated here).

Hemigraphis flava (Kurz) C.B. Clarke (1884: 426).

Sericocalyx flava (Kurz) Bremek. (Bremekamp 1944: 163).

Strobilanthes phyllostachya var. *dura* C.B. Clarke (1884: 446). Type: Myanmar, (Rangoon), *McClelland* s.n. (lectotype K-000883003, designated here).

Sericocalyx durus (C.B. Clarke) Bremek. (Bremekamp 1944: 163).

The typification of *Strobilanthes flava* is somewhat complicated. It was originally described as *Ruellia flava* by Roxburgh, but no specimen was preserved so the only possible type is the Roxburgh painting at Kew. *Ruellia flava* Roxb. is illegitimate, being a later homonym of *R. flava* Pers. *Strobilanthes flava* was first cited with *Ruellia flava* Roxb. as basionym by Kurz (1870: 78) where he treated it erroneously as the correct name for *Strobilanthes scabra* Nees. Kurz later provided a full description of *S. flava* in the *Forest Flora of British Burma* (Kurz 1877: 243). The specimen designated above as epitype (*Kurz* 2130) is from the same area (Pegu Yoma) as the Carey collection but was collected and annotated by Kurz. It should serve to resolve any ambiguity in the interpretation of the Roxburgh plate.

Strobilanthes klossii (S. Moore) Y.F. Deng (2019: 204).

Hemigraphis klossii S. Moore (1916: 133). Type: Indonesia, Western New Guinea, Utakwa R., *Kloss* s.n. (lectotype BM, designated by Moylan *et al.* (2002: 797), of which the portion at top of sheet, labelled Utakwa River to Mt. Carstensz, alt "Gauve" camp and in pencil above 'CC Oct Nov 12', second step designated here; isolectotype K000882762).

Unfortunately, when this was lectotypified by Moylan *et al.* (2002), it was not noted that there were three separate collections by Kloss mounted on the same sheet. In order to avoid ambiguity, a second step lectotypification is made above selecting the collection in the upper part of the sheet as the lectotype.

Strobilanthes sabiniana (Lindl.) Nees (1832: 86).

Ruellia sabiniana Wall. ex Lindl. (Lindley 1829: t. 1238). Type: a cultivated plant from Meghalaya, India, (Lectotype CGE ex Herb. Lindley, unlabelled portion annotated H.H.S (Herbarium Horticultural Society) on bottom right of sheet labelled *Ruellia sabiniana* Wallich, designated here).

The type is a plant cultivated in a hot house of the Horticultural Society of London (now the Royal Horticultural Society) grown from material obtained from the Calcutta Botanical Garden. The plant originated from near Pundua in the Khasi Hills of Meghalaya State, India, where it was probably collected by F. da Silva.

Strobilanthes scabra Nees (1832: 84). Type: Bangladesh, Sylhet, Wallich 2393a (K-001115843), lectotype, designated here.

There are four specimens in the Wallich collection in the Kew Herbarium associated with the name *Strobilanthes scabra*. Wallich 2377 ex Herb Wight, representing Nees' gamma variety, is *S. heteromalla* T. Anderson and is not further considered here. Nees' alpha variety is represented by Wallich 2393c (K-001115845) from Prome and is *S. phyllostachya* Kurz as recognised by Clarke's annotation. The remaining two specimens Wallich 2393a (K-001115843) and 2393b (K-001115844) are both from Sylhet and both represent the plant long recognised as *S. scabra*. Wallich 2393a is marginally the more complete specimen and is, therefore, selected as lectotype.

There are duplicates of Wallich 2393a in various herbaria including Edinburgh (E) and Nees' own herbarium at Graz (GZU). We have rejected the specimens at Graz for consideration as lectotype as Nees is known to have based his descriptions on Wallich's collections during his visit to London (De Candolle & Radcliffe-Smith 1981), even though he rarely annotated them. Contrastingly, the specimens in Graz are annotated by Nees but probably at a date after 1840, as *Strobilanthes* is treated as masculine in these annotations whereas in the 1830s he always treated the generic name as feminine, as did Blume, the original author (Wood 1994a).

There is an issue over the type location of Sylhet. This lies within the borders of Bangladesh. Most specimens of *Strobilanthes* labelled as from Sylhet originate from the Khasi Hills to the north, which lie within India. However, *S. scabra* is a plant of the Bengal plains so the type location probably lies within Bangladesh.

Strobilanthes secunda T. Anderson (1867: 480). Type: India, Assam, Simons 23 (lectotype K-001096878, designated here).

Ditrichospermum secundum (T. Anderson) Bremek. (Bremekamp 1944: 189).

Anderson cited five different collections as syntypes but only two of these at Kew bear his annotation, a Griffith collection and Simons 23, which he specifically cites as having seen at Kew. In view of this and the fact that the Griffith collection lacks an inflorescence, Simons 23 is designated as lectotype.

Strobilanthes thomsonii T. Anderson (1867: 478). Type: India, Sikkim, Ratong to Yoksum, 2500 – 5000 ft [c. 750 – 1500 m], 4 Oct. 1862, T. Anderson 1042 (lectotype BM-000906317, designated here).

Strobilanthes thomsonii var. *serratifolia* T. Anderson (1867: 478). Type: India, Sikkim, Kulhait & Rumaum, T. Thomson s.n. and T. Anderson s.n. (syntypes, not found at K, possibly present at CAL).

Anderson cited seven collections as syntypes of *Strobilanthes thomsonii* and we have selected as lectotype the only specimen we have seen with Anderson's annotation.

Anderson drew attention to the variation in *Strobilanthes thomsonii* as did Clarke (1884: 467). Very robust forms, such as Wood 6824 (E, FHO) and 7496 (E, FHO), both from Bhutan, may correspond with Anderson's var. *serratifolius*. However, the inflorescence can be very variable, sometimes lax and formed of branched axillary racemes as in Wood 6824 but sometimes condensed, unbranched and ± fasciculate as in Wood 7495 (E, FHO), also from Bhutan. The corolla of the last specimen is around 3 cm long whereas in Wood 5971 (E, FHO) from Bhutan the inflorescence is slender and the corolla a mere 2 cm long.

Although apparently common in Bhutan, Sikkim and neighbouring parts of Nepal and Darjeeling district, *Strobilanthes thomsonii* is rarely collected further east, but we have seen specimens from Arunachal Pradesh (Ludlow, Sherriff & Taylor 14202 [BM]), the Tizu River in Nagaland (Bor 6798 [K] and Sirhoi in Manipur (Kingdon Ward 18204 [BM. NY]).

Strobilanthes yunnanensis Diels (1912: 164). Type: China, Yunnan, eastern flank of the Lichiang Range, G. Forrest 2361 (lectotype E-00047318, chosen here, isolecotypes BM-000810989, GH-00063067, K-000882826, P-00719465).

This specimen is chosen here as lectotype rather than the other cited specimen, Forrest (7)616, partly because it is the more ample specimen and partly because the number (7)616 was not cited correctly.

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