

## One new species and two new records of *Jasminum* (Oleaceae) in Peninsular Malaysia

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**ABSTRACT.** *Jasminum ledangense* Kiew is a new species restricted to Gunung Ledang, Johor and *Jasminum carissoides* Kerr and *J. nervosum* Lour. are new records for Malaysia. *Jasminum carissoides* is restricted to limestone in Kedah (Langkawi) and Perlis and also occurs in Peninsular Thailand, while a narrow-leaved form of *J. nervosum* is found on limestone in Kedah (Langkawi). *Jasminum insularum* Kerr is confirmed as a distinct species. It is extremely rare and known from just three specimens, the type from Peninsular Thailand, one from Kelantan and another from Pahang in Malaysia. Descriptions are provided for these species.

**Keywords.** Gunung Ledang, small-leaved jasmines, Thailand

### Introduction

The new species described here, *Jasminum ledangense* Kiew, was collected by Ridley more than a hundred years ago. He identified his specimen as *Jasminum laurifolium* Roxb., which does not occur in Peninsular Malaysia (Ridley, 1901). For some reason, neither *Jasminum laurifolium* nor the Gunung Ledang specimen appeared in his Flora account (Ridley, 1923). Recent collections show that it is in fact a new species distinct in its narrow, coriaceous leaves with obscure venation.

Since Ridley (1923) wrote the *Flora of the Malay Peninsula*, four distinct small-leaved jasmines (leaves 1.5–8.5 cm long) have been collected from limestone. *Jasminum cordatum* Ridl. is distinguished by its ovate, minutely pubescent leaves with pinnate venation where its three to four pairs of strongly ascending veins arise near the lamina base. It is endemic in Peninsular Malaysia and restricted to limestone in Perak and Selangor. The two species collected from Langkawi Is., Kedah, have smaller, more-or-less glabrous leaves that have a pair of veins that arises at the base of the midrib and ascends parallel to the margin. One, *Jasminum carissoides* Kerr, originally described from Peninsular Thailand, has smaller, ovate leaves usually with a blunt apex and mucronate tip. It has also been collected from the mainland in Perlis. The other proves to be a distinctive, narrow-leaved form of *Jasminum nervosum* Lour., a common and highly variable jasmine in Thailand. This form appears to be restricted to limestone and also occurs in southern Thailand. Elsewhere, *Jasminum nervosum* is not confined to limestone and is widespread from India to China reaching its southern limit in Peninsular Malaysia. Chin (1979) included *Jasminum insularum* Kerr, originally described from Thailand, in his checklist of the limestone flora. It is quite different

from the other three small-leaved species in having narrowly lanceolate, extremely coriaceous leaves with a thick, revolute margin. In Peninsular Malaysia, it has been collected from Kelantan and Pahang. *Jasminum carissoides* and *J. nervosum* are new records for Peninsular Malaysia. Descriptions are provided for *Jasminum carissoides*, *J. insularum* and *J. nervosum*, none of which were included in Ridley (1923), which is still the only account of *Jasminum* for Peninsular Malaysia.

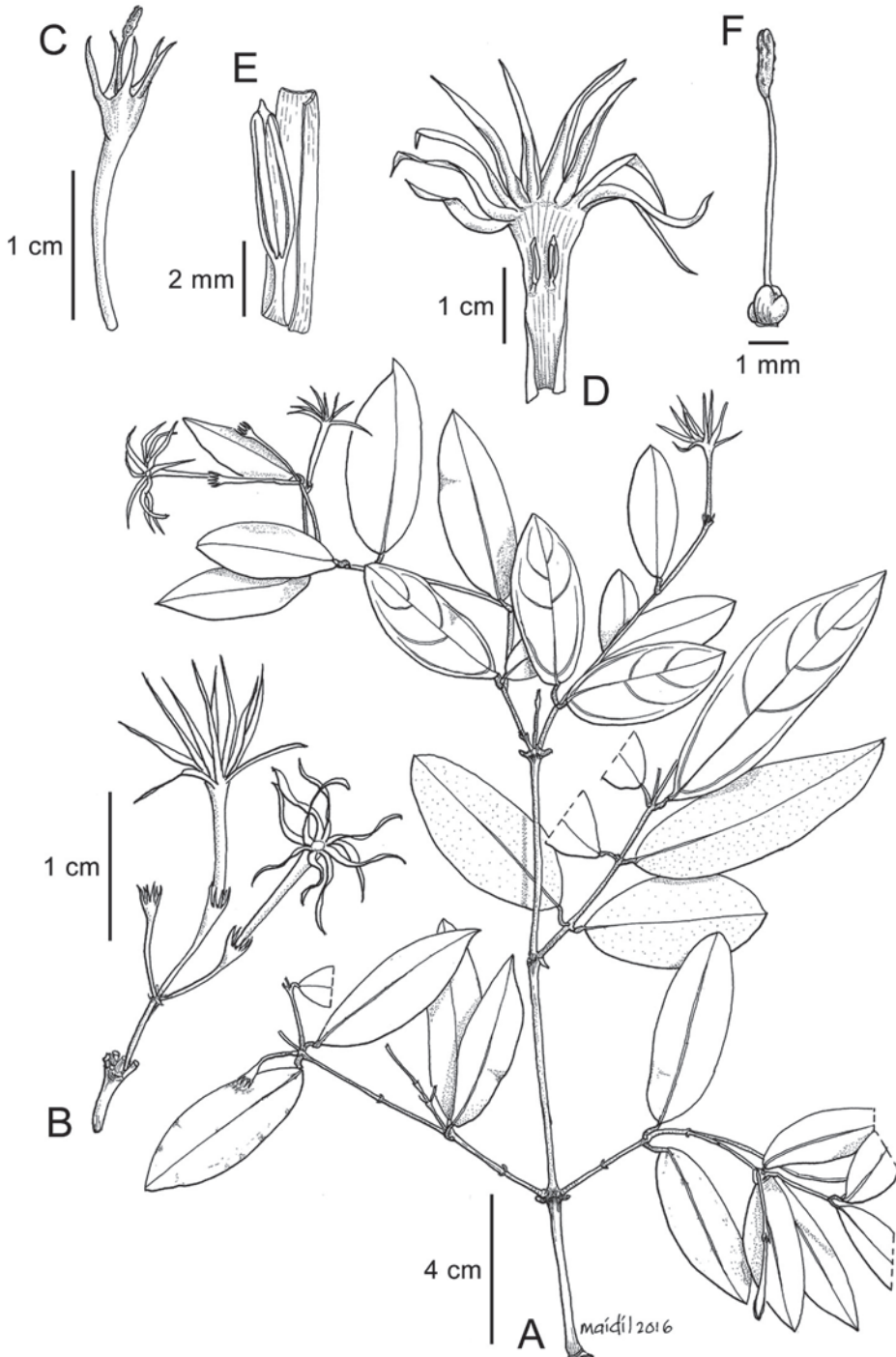
Green (2000) in his account of *Jasminum* for the *Flora of Thailand* mistakenly synonymised *Jasminum carissoides* and *J. insularum* with *J. cordatum*, a Malaysian species. Re-examination of the Thai specimens shows that Green's '*Jasminum cordatum*' is completely different from Ridley's *J. cordatum* and that the Thai specimens he identified as such belong to *J. carissoides* (Kiew, 2017). The narrow-leaved *Jasminum insularum* that he had synonymised with the ovate-leaved *J. cordatum* is here reinstated as a distinct species. *Jasminum cordatum* does not occur in Thailand.

### Taxonomy

#### *Jasminum ledangense* Kiew, sp. nov.

In its narrowly lanceolate leaves with a pair of veins from the base and forming a submarginal vein with an additional 3–4 lateral veins in the upper half, in the filiform calyx teeth and star-like flowers, it resembles *Jasminum nervosum* but it is different in its coriaceous leaves (not membranous as in *J. nervosum*), 3 times longer than wide (not 2.5 times longer than wide), longer petioles 0.5–1 cm long (not 0.2–0.5 cm long), obscure venation except for the midrib prominent beneath (not conspicuous but plane above and beneath), pedicels 6–20 mm long (not 2–5 mm long), corolla tube 2–2.5 times longer than the lobes (not 3–3.5 times longer) with lobes 1.5–2 mm wide (not 2.5–3 mm wide) and fruit lobes 11–12 × 7–8 mm (not c. 6 × 4 mm). – TYPE: Peninsular Malaysia, Johor, Gunung Ledang, Ampong Jatuh, 2°23.70'N 102°36.27'E, 16 February 2012, Ong *et al.* FRI 75292 (holotype KEP; isotypes K, BKF). (Fig. 1–2)

Slender, glabrous climber, bark dark brown, twigs terete. **Leaves** unifoliolate, glabrous; petioles twisted, 0.5–1 cm long; lamina elliptic to narrowly lanceolate, 5–9.5 × 1.7–2.5 cm, coriaceous, dark green above, base rounded, margin recurved, apex acute; midrib impressed above, prominent beneath, lateral veins obscure, the basal pair forming a submarginal vein c. 2 mm from the margin, lateral pinnate veins scarcely visible beneath, 3–4 on either side of the midrib in the upper half of the leaf and joining the submarginal vein; without domatia. **Inflorescences** terminal on short side branches, 3-flowered cymes, usually reduced to a single flower, peduncles 1.5–2.7 cm long; bracts linear, c. 1 mm long. **Flowers** star-like, pedicels 6–20 mm long. **Calyx** glabrous, tube campanulate, 2–3 mm long, lobes 5, stiffly filiform, 2.5–6 mm long. **Corolla** white, lobes spreading, flushed purple-pink outside, tube 17–22 mm, 2 mm wide, lobes 8–10, narrowly oblong, 15–21 × 1.5–2 mm, narrowed to an acute tip, spreading. **Stamens** almost sessile (short-styled flower); anthers narrowly ellipsoid, c. 6 mm long, connective broad, tip mucronate. **Ovary** globose, c. 1 mm diam., glabrous; style



**Fig. 1.** *Jasminum ledangense* Kiew. **A.** Flowering leafy shoot. **B.** Flowering cyme. **C.** Calyx. **D.** Corolla opened to show position of stamens. **E.** Stamen. **F.** Carpel. Drawn by Mohamad Aidil bin Noordin from Ong *et al.* FRI 75292.



**Fig. 2.** *Jasminum ledangense* Kiew. **A.** Habit. **B.** Flowering cyme. From Ong *et al.* FRI 75292. (Photos: Ong P.T.)

c. 5 mm long (short-styled flower); stigma narrowly ellipsoid, c. 4 mm long. **Fruits** bilobed, lobes  $11\text{--}12 \times 7\text{--}8$  mm.

*Distribution.* Endemic in Peninsular Malaysia, known only from Gunung Ledang, Johor (formerly known as Mt Ophir, Malacca).

*Ecology.* Primary hill or montane forest, from 375 m to the summit at 1140 m elevation. Gunung Ledang is a well-collected mountain peak and the fact that only four collections have been made in the last 120 years indicates that it is a very rare species.

*Etymology.* Referring to its only known locality, Gunung Ledang, Johor, Peninsular Malaysia.

*Additional specimens examined.* PENINSULAR MALAYSIA: **Johor:** G. Ledang [Mt Ophir, Malacca], lower part of hill, 10 Jun 1892, *Ridley s.n.* (K, SING); *ibidem*, summit, Apr 1880, *Hullett* 824 (K, SING [SING0209789]); *ibidem*, summit, 20 Apr 1993, *Saw* FRI 37715 (L).

*Notes.* *Jasminum* has a heterodimorphic flower with long- and short-styled morphs.

Ridley (1901: 18) identified his and Hullett's specimens as *Jasminum laurifolium*, which they resemble in their coriaceous, narrowly ellipsoid leaves, but

the leaves of *J. laurifolium* are much longer and 5–8 times longer than wide (5–14 × 1–3 cm), the lateral veins more numerous (5–12 on either side of the midrib), and it is usually 3–5-flowered.

*Jasminum carissoides* Kerr, Bull. Misc. Inform. Kew 1938: 27 (1938); Kerr, Fl. Siam. 2: 396 (1939). – TYPE: Thailand, Surat Thani, Ban Kawp Kep, climbing on bushes on a rocky limestone hill, 100–200 m, 16 August 1927, *Kerr 13353* (lectotype K, designated here; isolectotype BK) (Fig. 3).

*Jasminum cordatum* auct. non Ridl.: Green, Fl. Thailand 7(2): 339 (2000).

Scrambling shrub or bushy climber (height not recorded) with many side branches 3–12.5 cm long. Young twigs terete, greyish, glabrous. **Leaves** unifoliolate; petiole 0.1–0.4(–0.7) cm long; lamina broadly ovate to broadly or occasionally narrowly lanceolate, 2.5–3.7(–5) × 1.3–1.5(–2.4) cm, slightly coriaceous, glabrous, base rounded to slightly cordate, margin slightly thickened, apex rounded, blunt and mucronate or sometimes acute, dark green and glossy above, light green beneath; venation obscure, with the basal pair ascending and forming a submarginal vein with a pair of minor veins from the base outside and parallel to the main basal pair, in the upper half 2 lateral veins join the submarginal vein, when dry midrib and veins slightly prominent on both surfaces; without domatia. **Inflorescences** 3-flowered cymes often reduced to a single flower, terminal on side branches, peduncle and pedicel to 10–13 mm long, glabrous. Bracts narrowly lanceolate, c. 1 mm long, bracteoles linear, c. 1 mm long. **Flowers** fragrant. **Calyx** glabrous, cream to light greenish, tube 1.5–3 mm long, lobes 5–6, filiform, 3–4(–6) mm long. **Corolla** white, tube 17–24 mm long, slender to 2 mm wide, lobes 5–8, narrowly oblong, 9–15 × 2–3 mm, apex acute. **Stamens**: filaments c. 1 mm long; anthers c. 4.5 mm long, apex mucronate. **Ovary** small, c. 1 mm long; style c. 4 mm long (short-styled flower); stigma bilobed, c. 2 mm long. **Fruit** unknown.

**Distribution.** Peninsular Thailand (Surat Thani and Songkhla) and Peninsular Malaysia (Langkawi, Kedah, and Bukit Chuping, Perlis).

**Ecology.** In Peninsular Malaysia, it is restricted to limestone substrates in the north that experience a monsoon climate with a distinct dry season. It grows on exposed summits of rugged limestone karst hills or in Langkawi on limestone islands at sea level.

**Etymology.** Latin: *-oides* = similar to *Carissa*, Apocynaceae.

**Additional Malaysian specimens examined.** PENINSULAR MALAYSIA: **Kedah:** Langkawi, SE of Kuah 3 May 1962, *Burt & Woods B1812* (E); Pulau Dayang Bunting, 29 Apr 1962, *Burt & Woods B1767* (E); ibidem, 10 May 1967, *Stone 6927* (KLU); ibidem, 26 Feb 1970, *Stone 9144* (KLU); Pulau Jerkom Kechil, 13 May 1967, *Stone 6986* (KLU); ibidem, 9 May 2008, *Julius et al. FRI 56092* (KEP, SAN); Pulau Kedrah, 17 Nov 1941, *Corner SFN 37812* (SING [SING0209386]). **Perlis:** Bukit Chuping, 23 Apr 1962, *Burt & Woods B1710* (E).



*Notes.* *Jasminum carissoides* is confined to Peninsular Thailand and northern Peninsular Malaysia that experience a monsoon climate with a distinct dry season. In contrast, *Jasminum cordatum*, with which Green (2000) confused it, occurs further south in Perak and Selangor in the equatorial zone. The small, broadly ovate leaves with a blunt apex are characteristic of this species. However, sometimes narrowly ovate leaves occur but these are always on the same branch as typical ovate leaves.

Chin (1979) had already noted that several specimens from Langkawi with a basal pair of veins that form a submarginal veins were different from the other limestone jasmines. These he named *Jasminum* sp. A based on *Stone 9144* and *Jasminum* sp. B based on *Stone 6920, 6927* and *6986*. Except for *Stone 6920*, which is *Jasminum nervosum*, the other three specimens all belong to *J. carissoides*.

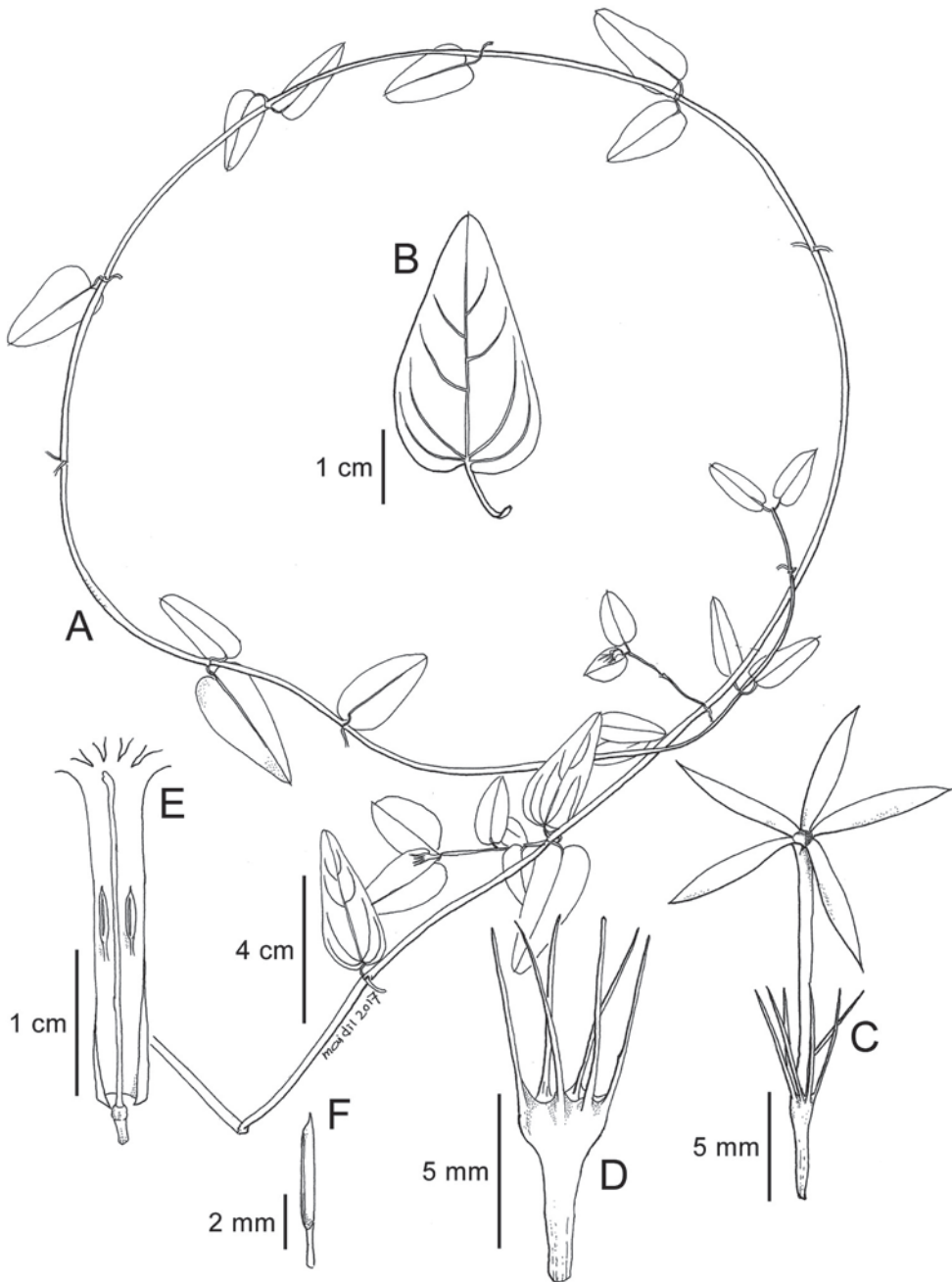
The Kew duplicate of the type collection is selected as the lectotype because it has attached the flowers dissected by Kerr. The flowers of *Julius et al. FRI 56092* are unusual in having three instead of the two stamens characteristic of the family Oleaceae.

***Jasminum insularum*** Kerr, Bull. Misc. Inform. Kew 1938: 28 (1938); Kerr, Fl. Siam. 2: 401 (1939); Chin, Gard. Bull. Singapore 32: 194 (1979). – TYPE: Thailand, Phangnga, Pulau Tebun, 29 November 1918, *Haniff & Nur SFN 3605* (lectotype K, designated here; isolectotype SING [SING0194734]).

Slender climber or scandent shrub. Young twigs terete, c. 3 mm thick, minutely pubescent, soon glabrescent. **Leaves** unifoliolate; petiole 0.2–0.4 cm long, minutely pubescent; lamina narrowly lanceolate to narrowly ovate, 4–5.5 × 1.5–2 cm, thickly coriaceous, glossy above, beneath minutely verrucose, glabrous, base rounded, margin thickened, recurved, apex obtuse to rounded, tip mucronate; venation with a basal pair of veins, lateral and intercostal veins in the upper half of the leaf obscure, midrib slightly prominent above, prominent beneath; without domatia. **Flowers** solitary, usually terminal or sometimes axillary, peduncle c. 7 mm, pedicel c. 11 mm long. Bracts linear, to 2 mm long, minutely pubescent. **Calyx** glabrous, tube c. 1.5 mm, lobes subulate, 4–5 mm long. **Corolla** glabrous, tube to 27 mm long, lobes 8, oblong, to 18 × 6 mm, apex acute. **Stamens**: filaments c. 11 mm long; anthers narrowly ellipsoid, c. 5.5 mm long, apex mucronate. **Ovary** not seen; style slender, 21 mm long (long-styled flower); stigma shortly bilobed. **Fruit** bilobed, lobes ellipsoid, 9–10 mm long, 8 mm diam., ripening shining black.

**Distribution.** Peninsular Thailand (known only from the type collection) and Peninsular Malaysia where it is rare and known from only two records, one from Pahang (Bukit Chintamanis) and the other from Kelantan (Gua Panjang).

**Ecology.** In Peninsular Malaysia, rare and restricted to limestone karst hills, on cliffs or summits. In Thailand its habitat is not recorded.



**Fig. 3.** *Jasminum carissoides* Kerr. **A.** Slender climbing leafy shoot. **B.** Leaf venation. **C.** Flower. **D.** Calyx. **E.** Corolla opened to show position of stamens and style. **F.** Stamen. Drawn by Mohamad Aidil bin Noordin from *Burt & Wood B1767*.

*Etymology.* Latin, *insularum* = pertaining to islands, in reference to its first being recorded from an island.

*Additional Malaysian specimens examined.* PENINSULAR MALAYSIA: **Pahang:** Bukit Chintamanis, 16 Oct 1970, *Chin 454* (KLU). **Kelantan:** Gua Panjang, 13 Aug 1962, *UNESCO 661* (K, SING [SING0209388]).

*Notes.* Kerr (1938) noted that this was such a distinct species that he considered it worthy of description even though the material he had to hand was incomplete. The Kew duplicate of the type is selected as the lectotype because the specimen includes the flower examined by Kerr. This species is outstanding for its leaves that are thickly coriaceous, have a strongly recurved margin and lateral veins that are obscure. Green (2000) reduced this species to synonymy with *Jasminum cordatum* from which it is different in the thickly coriaceous, narrowly lanceolate lamina with a cuneate base, a prominent basal pair of veins, and with a thick recurved margin, solitary flowers and broader corolla lobes, 18 × 6 mm (not 9–17 × 3–5 mm).

It is certainly a rare species, presently known from just two localities in Peninsular Malaysia. Unlike the other three species, it is known only from karst hills east of the Main Range.

*Jasminum nervosum* Lour., Fl. Cochinch. 20 (1790); Kerr, Fl. Siam. 2: 402 (1939); Green, Fl. Thailand 7: 339 (2000). – TYPE: Vietnam, Turon, *s. coll.* 520 (holotype K [K000545637]).

Slender climber. Young twigs terete, c. 3 mm thick, minutely puberulous, soon glabrescent. *Leaves* unifoliolate, elsewhere very variable in shape and size; petiole 0.2–0.6 cm long, minutely pubescent; lamina narrowly lanceolate, 3.7–8.5 × 1–3 cm, (also ovate and oblong-ovate, 2.5–12 × 1–4.5 cm), membranous, glabrous, base rounded to cuneate, margin not recurved, apex attenuate; venation with a basal pair of slender veins ascending and forming a submarginal vein, in the upper half 3–4 lateral veins on either side of the midrib joining the submarginal vein, midrib and veins conspicuous, drying darker brown than the lamina, plane above, prominent beneath; intercostal veins obscure; without domatia. *Flowers* solitary, terminal or axillary, pedicel 0–20 mm long. Bracts ovate, 1–2 mm long. *Calyx* glabrous, tube 2–3 mm, lobes filiform 5–9 mm long. *Corolla* white, glabrous, tube 21–28 mm long, lobes 7–8, oblong, 14–22 × 2.5–3 mm, apex acute. *Stamens:* filaments short; anthers narrowly ellipsoid, c. 5.5 mm long, apex mucronate. *Ovary* not seen; style slender, 21 mm long (long-styled flower); stigma shortly bilobed. *Fruit* bilobed, lobes ellipsoid, (immature? 6 mm long, 4 mm diam.)

*Distribution.* Bhutan, India (Assam), Myanmar, Thailand, Indo-China, S. China, Taiwan, and Peninsular Malaysia. It is the most widespread of all Thai jasmines (Green, 2000) but in Malaysia it is rare and known from only two collections from Langkawi, Kedah.



*Ecology.* In Thailand in dipterocarp or dry evergreen forest or oak forest, sometimes on limestone, from sea level to 1600 m elevation. In Peninsular Malaysia, rare and restricted to limestone karst hills, on cliffs or summits.

*Etymology.* Latin, *nervosum* = veined, presumably referring to the conspicuous venation.

*Additional Malaysian specimens examined.* PENINSULAR MALAYSIA: **Kedah:** Langkawi, Tanjung Ru, 9 May 1967, *Stone 6920* (KLU); Kota Setar District, East of Langgar, 18 Mar 1924, *Burkill SFN 13340* (SING [SING0209788]).

*Notes.* The description here is based on the narrow-leaved form of *Jasminum nervosum* that occurs on limestone in southern Thailand and Malaysia. Henderson (1939) had already noted that two specimens from Langkawi (*Symington FMS 46737, 46783*) were similar to *Jasminum nervosum*. These specimens have not been located in BM, K and SING.

Both Kerr (1939) and Green (2000) agree that *Jasminum nervosum* is one of the most variable jasmines in Thailand. Kerr (1939: 403) noted that collections from limestone hills have much smaller leaves and this form appears to be quite common on limestone in southern Thailand, e.g., *Joompaw 22* (PSU), *Maxwell 87-548* (PSU), *Kerr 19280* (K), *Put s.n.* (K), *Haniff & Nur SFN 4228* (K) and *Ban Son-an* (K). The Peninsular Malaysian specimens from limestone also have particularly narrow leaves just 1–3 cm wide and belong to this form. Further study of variation in *Jasminum nervosum* throughout its range is required before this form can be considered for any formal taxonomic recognition.

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