

## ***Sohmaea teres* (Fabaceae), a new record for Peninsular Malaysia**

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**ABSTRACT.** *Sohmaea teres* (Wall. ex Benth.) H. Ohashi & K. Ohashi, a new record from Peninsular Malaysia, is described in detail with colour photographs. A key to the two *Sohmaea* H. Ohashi & K. Ohashi species in Peninsular Malaysia is also provided. The provisional conservation status of this species for Peninsular Malaysia is Critically Endangered because it is found only at a single locality (Gunung Pulai, Kedah) which has been proposed for quarrying.

**Keywords.** Desmodieae, endangered, flora, Leguminosae, limestone

### **Introduction**

The *Desmodium* group (Ohashi, 1973) of tribe Desmodieae Hutchinson includes 33 genera, of which several were split from *Desmodium* Desv. (Ohashi et al., 2018), the core genus of the group. In Ohashi (1973), *Desmodium* subgenus *Desmodium* was split into two sections: *Desmodium* sect. *Desmodium* and *Desmodium* sect. *Angustistipulosa* Ohashi. Later, Ohashi & Ohashi (2018) raised *Desmodium* sect. *Angustistipulosa* to genus rank as *Sohmaea* H. Ohashi & K. Ohashi based on morphological characters and phylogenetic analyses. The molecular phylogenetic study demonstrated that the genus *Alysicarpus* Neck. ex Desv. is closely related to *Sohmaea* (Ohashi & Ohashi, 2018). Morphologically, *Sohmaea* is distinguished from other known genera of the *Desmodium* group in having linear loments with narrowly oblong-elliptic articles, lacking both bracteoles at the base of the calyx and a disk in the flower (Ohashi & Ohashi, 2018). *Sohmaea* consists of seven species distributed from India through Southeast Asia to China and Taiwan (Ohashi & Ohashi, 2018). The centre of distribution is Myanmar through Thailand to Indochina.

During a field survey of Gunung Pulai, Baling, Kedah, in 2019, we discovered a plant that looked similar to *Sohmaea zonata* (Miq.) H. Ohashi & K. Ohashi (previously known as *Desmodium zonatum* Miq, and *D. ormocarpoides* auct. non DC.: Ridley, 1922). However, our plant was found to be *Sohmaea teres* (Wall. ex Benth.) H. Ohashi & K. Ohashi, a new record and the second species of the genus for Peninsular Malaysia. *Sohmaea teres* was discovered on thin soil and limestone rocks on a tower karst hill in Baling, Kedah, which is in the extreme north of the Peninsula close to the Thai border. Unlike *Sohmaea teres*, *S. zonata* is found in lowland to hill dipterocarp forest on granite-derived soil.

## Materials and methods

*Sohmaea teres* was collected at the base of a limestone karst on the trail to the summit of Gunung Pulai, Baling, Kedah (5°04'03.0"N 100°53'02.3"E). Material with flowers and fruits was collected as herbarium specimens and additional flowers were also preserved in Copenhagen Mixture (Chung et al., 2009) as a spirit collection. The species description is based on observations of living plants and spirit material which were compared to images of type specimens and descriptions in the literature. The dimensions of the reproductive parts given in the descriptions are from spirit material. A photographic record was also made. The conservation status assessment is based on the criteria listed in the IUCN Standards and Petitions Subcommittee Version 13. (IUCN, 2017).

## Taxonomy

In earlier work (Turner, 1997), *Sohmaea* in Peninsular Malaysia was not recognised as distinct from *Desmodium*, so a full genus description is provided here based on Ohashi & Ohashi (2018). The key to the two *Sohmaea* species in Peninsular Malaysia draws on those of Knapp-van Meeuwen (1962) and Ohashi (2004). *Sohmaea* is distinct from *Desmodium* by its 1–3-foliolate leaves, 4-lobed calyces with equal lobes, and rim-arillate seeds.

*Sohmaea* H.Ohashi & K.Ohashi, J. Jap. Bot. 93(3): 159 (2018). – TYPE: *Sohmaea laxiflora* (DC.) H.Ohashi & K.Ohashi.

Herbs, shrubs or subshrubs. **Stems** ascending or prostrate. **Stipules** 2, free, narrowly triangular to triangular. **Leaves** 1- or 3-foliolate, petiolate; lamina elliptic, narrowly to broadly ovate, base obtuse, rounded or cordate, apex acute to acuminate or rounded; lateral veins prominent, reaching the margin. **Inflorescences** terminal or a mixture of terminal and axillary, pseudoracemose, laxly-flowered or sometimes densely-flowered; with bracts and bracteoles; 2–8-flowered per node; pedicel present, deflexed or not after flowering. **Flowers**: calyx 4-lobed, adaxial lobes almost entirely connate; corolla standard obovate to nearly orbicular, acute, without auricles at the base, wings shortly clawed, apex obtuse, keels longer or shorter than the wings, claw longer than that of wings. **Stamens** diadelphous. **Disk** absent. **Ovary** sessile, linear; style shorter than ovary. **Fruits** loments, sessile or stalked, straight, rarely plicate, compressed, linear, pod surface striate or rugulose, rarely with reticulate venation; articles narrowly oblong to elliptic. **Seeds** distinctly rim-arillate, multi-reticulate, rarely sub-striate to striate on surfaces.

**Distribution.** Sri Lanka, Pakistan, India, Nepal, Sikkim, Bhutan, China, Taiwan, Myanmar, Thailand, Laos, Vietnam, through Malesia to New Guinea and the Solomon Islands.

### Key to *Sohmaea* species in Peninsular Malaysia

- 1a. Petioles less than 1 cm long; leaflets narrowly ovate-elliptic, 3–3.5 cm wide; loments with articles narrowly oblong, 4.5–5.5 mm long, not striate on surface; seeds 1–3 mm long ..... *S. teres*
- 1b. Petioles more than 1 cm long; leaflets ovate or narrowly ovate, up to 5.5 cm wide; loments with articles narrowly elliptic, 10–20 mm long, striate on surface; seeds more than 4 mm long ..... *S. zonata*

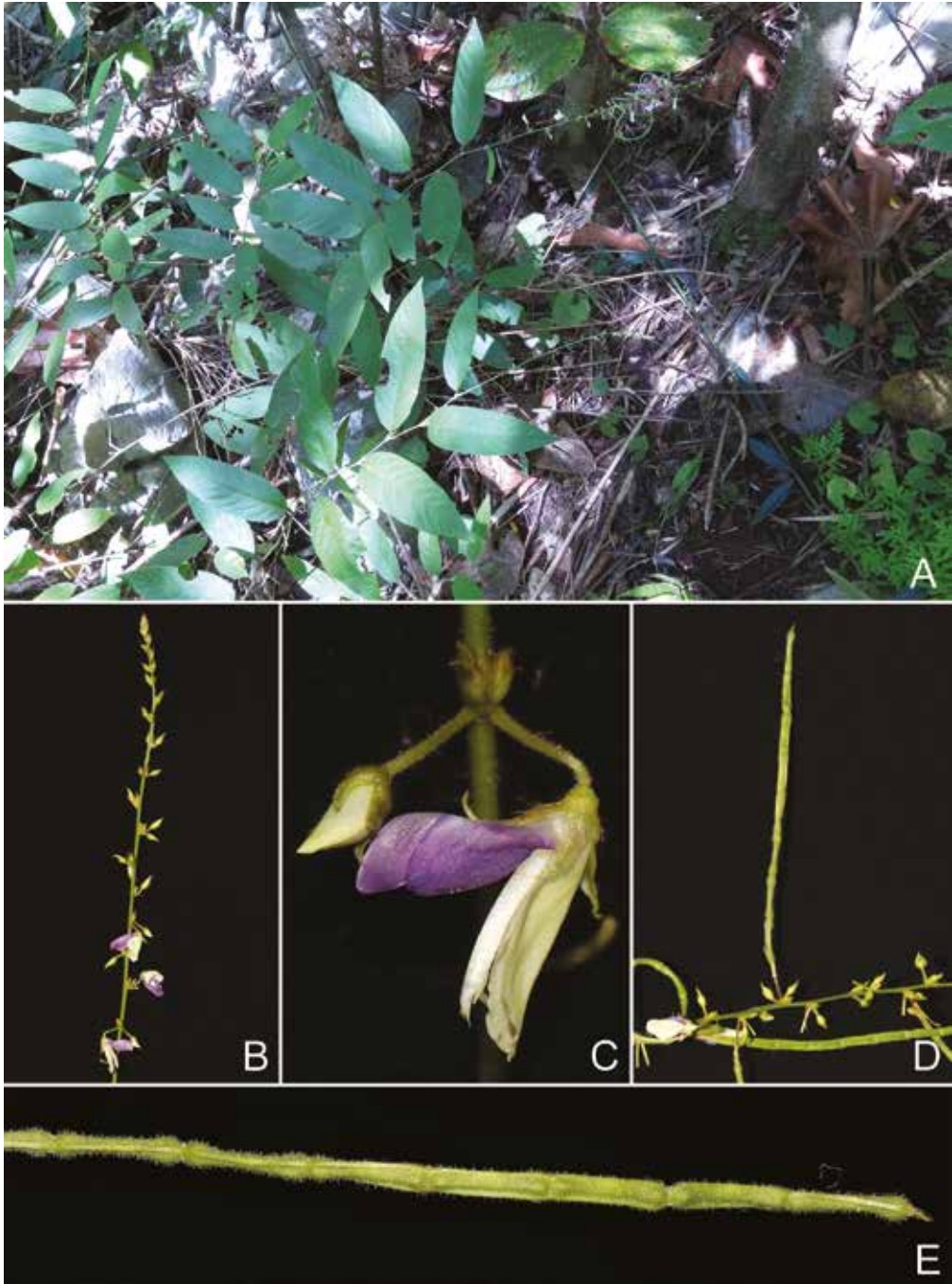
***Sohmaea teres*** (Wall. ex Benth.) H. Ohashi & K. Ohashi, J. Jap. Bot. 93(3): 163, fig. 4C, 5C (2018). – *Desmodium teres* Wall. ex Benth. in Miquel, Pl. Jungh. 225 (1852); Ohashi, Ginkgoana 1: 105 (1973); Ohashi in Dy Phon et al., Fl. Cambodge, Laos & Vietnam 27: 81, t. 16 (1994); Ohashi, J. Jap. Bot. 79(2): 130 (2004). – TYPE: *N. Wallich 974* [EIC 5694], [Myanmar], Taong Dong (lectotype K [K001121790], designated here; isolectotypes CAL, K [K001121791]). (Fig. 1)

Herbs. **Stem** green, ascendant, pubescent. **Stipules** brown, 5 mm long, free, narrowly triangular, shortly hairy. **Leaves** alternate, unifoliolate; petiole less than 1 cm long, hairy; petiolule c. 2 mm long, densely hairy; lamina narrowly ovate-elliptic, 8–10 cm long, 3–3.5 cm wide, in living material dark green above, pale green to greyish beneath, chartaceous, base rounded, margin entire, glabrous, apex acute, tip with indumentum; midrib pale green, prominent on both surfaces, secondary veins up to 12 pairs, touching the margin. **Inflorescences** up to 20 cm long, terminal and axillary, axes green; with bracts and bracteoles; 2–8-flowered per node. **Pedice**l 3–4 mm long. **Calyx** light green, 7–8 mm long, campanulate; tube c. 1.5 mm long, outside with minutely hooked hairs, inside glabrescent; lobes 4, to 5 mm long, prominently longer than tube length and corolla length, outside densely pubescent, inside glabrescent. **Corolla** standard obovate, purple; wings c. 5 mm long, creamy, shortly clawed, apex obtuse; keel creamy, longer than the wings, c. 7 mm long, base slightly auriculate, apex obtuse. **Stamens** diadelphous, up to 10 mm long; filaments c. 8 mm long; anthers to 1 mm long. **Pistil** 8–9 mm long; ovary sessile, laterally compressed; style c. 3 mm long, incurved, shorter than ovary; stigma capitate, hairy. **Loments** green, 4.5–5.5 mm long, with maroon stalk, 8–12-jointed, articles narrowly oblong, compressed, trichomes hooked. **Seeds** 1–3 mm long, reniform.

**Distribution.** Myanmar, Thailand, Laos, Vietnam, Peninsular Malaysia, Java and Bali. In Peninsular Malaysia recorded in Gunung Pulai, Baling, Kedah.

**Ecology.** On limestone rocks on the steep slopes of the tower karst hill, in light shade.

**Provisional IUCN conservation assessment for Peninsular Malaysia.** *Sohmaea teres* is assessed here as Critically Endangered B2ab(iii). It is known only from a single locality in Malaysia on Gunung Pulai, Baling, Kedah. The population is very small



**Fig. 1.** *Sohmaea teres* (Wall. ex Benth.) H.Ohashi & K.Ohashi. **A.** Habit. **B.** Inflorescences. **C.** Flower. **D.** Loment. **E.** Close up of articulated pod. (Photos: A, W.P. Wan Syafiq; B–E, A.R. Rafidah).

with fewer than 250 individuals estimated from our observations. Gunung Pulai is also proposed as the site of a limestone quarry (Indah Sejagat Sdn. Bhd., 2013). From herbarium specimens it can be seen that the adjacent Gunung Baling has been surveyed botanically for the last 100 years but this species has neither been encountered there nor on any other limestone hill in Peninsular Malaysia, indicating that it is a very rare and local species.

*Specimen examined.* PENINSULAR MALAYSIA: **Kedah:** Baling, Gunung Pulai, 19 Nov 2019, Wan Syafiq FRI 94405 (KEP).

*Notes.* The description above is based only on the Malaysian material which in several features is smaller than the description given in Ohashi (1973).

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