

Occurrence of the Vietnamese endemic *Grona harmsii* (Leguminosae, subfamily Papilionoideae) in Singapore

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ABSTRACT. A population of *Grona harmsii* (Schindl.) H.Ohashi & K.Ohashi is discovered in Singapore. The species was previously known only from the coastal areas in Vietnam, and this is the first known occurrence outside its native range. The discovery, albeit non-native, represents a new species record to Singapore.

Keywords. Casual, Desmodieae, *Desmodium*, Fabaceae, new distribution

Introduction

The genus *Desmodium* Desv., along with its recently segregated genera in the tribe Desmodieae of Singapore have recently been reviewed, including three non-native species: *D. scorpiurus* (Sw.) Poir., *D. tortuosum* (Sw.) DC. and *Pleurolobus gangeticus* (L.) J.St.-Hil. ex H.Ohashi & K.Ohashi (Ho et al., 2021; Ho & Ong, 2023). The *Desmodium* group is most easily distinguished by the trifoliolate leaves, fruit which typically breaks into one-seeded segments on maturity—a loment—and the presence of hooked hairs (Ohashi, 1973).

Recently, an unrecorded species belonging to the *Desmodium* group was discovered by the second author during our on-going survey of the non-native flora of Singapore (Chen et al., 2018a, 2018b, 2019a, 2019b, 2020, 2021; Choo et al., 2020, 2022; Middleton et al., 2022). The present paper reports and describes the first occurrence of a distinctive species *Grona harmsii* (Schindl.) H.Ohashi & K.Ohashi as a first non-native member in the genus *Grona* Lour. for the Flora of Singapore.

Materials and methods

Identification of *Grona harmsii* is based on relevant published accounts and comparison with specimen images of types and non-types available on online databases (JSTOR Global Plants, continuously updated; GBIF, continuously updated; e-ReColNat, continuously updated) and specimen images from the herbarium at the University of Science, Ho Chi Minh City, Vietnam National University (PHH). Description and

photographs (Fig. 1) of the species are given based only on the Singapore material. A voucher specimen of the new record is deposited in the herbarium of the Singapore Botanic Gardens (SING). All specimens have been seen by the authors unless otherwise indicated; specimens examined via digital images are indicated with an asterisk (*).

Taxonomic treatment

Grona harmsii (Schindl.) H.Ohashi & K.Ohashi, J. Jap. Bot. 93: 112 (2018). – *Desmodium harmsii* Schindl., Bot. Jahrb. Syst. 54(1): 54 (1916 [‘1917’]); Gagnepain in Lecomte, Fl. Indo-Chine 2, fasc. 5: 604 (1920); Ohashi, Ginkgoana 1: 209, fig. 62: 6, pl. 27 (1973); Dy Phon et al., Fl. Cambodge, Laos & Viêtname 27: 123, pl. 25 (1994). – TYPE: [Vietnam], Cochinchina, Bà Rịa-Vũng Tàu Province, Cap Tiwan, *L. Pierre* 5821, August 1866 (lectotype P [P02142446], here designated; isolectotypes L [L0537799], P [P02142447, P02142448, P02142449]). (Figs 1, 2)

Shrub with strong tap root, stems erect standing, up to 20 cm tall, sparsely branched, main branches bearing almost no leaves except near the tips, short lateral branches bearing crowded leaves, young shoot surface smooth, covered with dense appressed white hairs when young, becoming fissured and almost glabrous. **Leaves** alternate and crowded on short branches, unifoliate; stipules persistent, obliquely narrowly triangular, $2\text{--}4 \times c. 1$ mm, striate, appressed white-hairy when young, stiff (coriaceous), base connate to petiole, apex acuminate/long-attenuate; petiole very short, up to 1 mm long, appressed white-hairy; blade thick coriaceous, obtrullate to obtriangular, $9\text{--}20 \times (3\text{--})4\text{--}6$ mm, base acute, apex cuspidate, c. 1 mm long, upper lamina surface glabrous, lower surface sparsely appressed-hairy. **Inflorescences** racemose, terminal, up to 18 cm long; peduncle and rachis densely pubescent with short patent hooked-hairs, bracts broadly ovate or nearly orbiculate with a cuspidate tip, c. 3.5 mm long, persistent, bracteole absent, flowering sparse, usually 2-flowered at each node; pedicels 2–2.5 mm long, becoming c. 3 mm and reflexed at fruiting stage, minutely hairy. **Calyx** campanulate, persistent at fruiting stage, c. 2 mm long, 4-lobed; all lobes almost the same length, c. 1 mm long, narrowly triangular, upper lobe bifid at the apex. **Corolla** yellow; standard broadly obovate, $3.5\text{--}4 \times c. 3$ mm, apex slightly emarginate, base tapering to a minute claw; wings oblong, c. 4×1.5 mm; keel obovate, c. 4.5×1.5 mm, tapering to a long claw, claw c. 2 mm long. **Stamens** diadelphous, nearly 4 mm long. **Ovary** linear, c. 4.5 mm long. **Legume** a loment, moniliform, green becoming brown at maturity, compressed, often incurved and retrorse, up to 20×3.5 mm at maturity, constricted about half the width along ventral sutures between 3–5-jointed articles; articles obovate, 4–4.5 mm long, slightly longer than wide, entirely minutely hooked-hairy and more so on both article faces.



Fig. 1. *Grona harmsii* (Schindl.) H.Ohashi & K.Ohashi. **A.** Habit. **B.** Close-up of short (secondary) branches with crowded unifoliate leaves along a leafless long (main) branch. **C.** A stiff persistent stipule (yellow arrow) on a young primary shoot. **D.** Maturing green pod which will turn brown upon maturity. All from *E.Y.X. Lew LCMJ 2024-005* (SING). (Photos: E.Y.X. Lew)

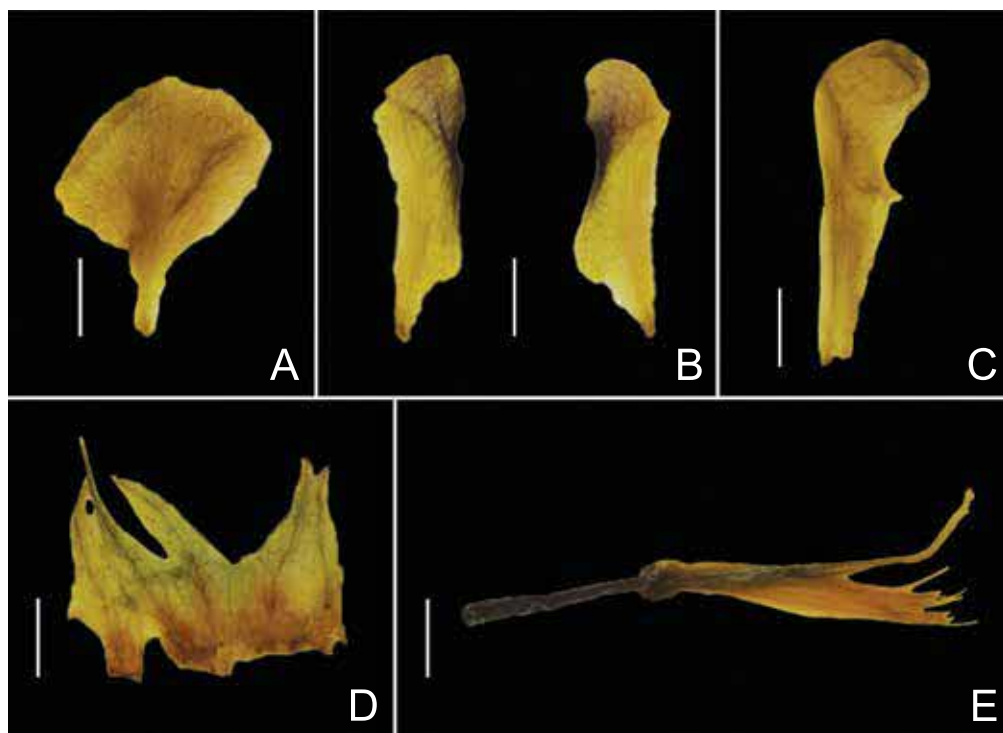


Fig. 2. Dissected flower of *Grana harmsii* (Schindl.) H.Ohashi & K.Ohashi **A.** Standard. **B.** Wings. **C.** Keel. **D.** Calyx. **E.** Diadelphous stamens and pistil. All from *E.Y.X. Lew LCMJ 2024-005* (SING). Scale bars: 1 mm. (Photos: B.C. Ho & L.M.J. Chen)

Distribution. Endemic and native to the coasts of central and southern Vietnam including Ninh Thuận, Bình Thuận and Bà Rịa-Vũng Tàu Provinces (Dy Phon et al., 1994). New to Singapore and Malesia as introduced. In Singapore, non-native and currently known from a patch of wasteland along a roadside in Tuas, at the western corner of Singapore where only 15 adult plants and a few seedlings were sighted. Until there are further signs of its spread beyond the immediate area, the species is designated here as ‘Casual’.

Ecology. Coastal habitats on sandy shore and sand dunes.

Vernacular name. Tràng quả, thóc lép (Vietnamese).

IUCN conservation assessment. Globally Endangered (EN B1ab(iii)+2ab(iii)) (Chadburn, 2012).

Additional specimens examined. VIETNAM: **Ninh Thuận Province:** Cà Ná beach, Phan Rang, 19 Oct. 1925, *Poilane 12342* (P [P02938880*, P02938881*]), *ibidem*, 15 Jul. 1930, *Poilane*

17874 (P [P02938878*, P02938879*]). **Bình Thuận Province:** Phan Thiết, routes to Phú Hải, 2 Nov. 1924, *Evrard 1662* (P [P02938882*, P02938883*]); Lầu Ông Hoàng, 20 Jan. 1973, *unknown collector PH-9108* (PHH [PHH1001241*]).

SINGAPORE: **Tuas:** Tuas South, spontaneous vegetation in waste area along roadside, 11 Apr. 2024, *Lew LCMJ 2024-005* (SING [SING0400903, SING0400904]).

Taxonomy. Being such a distinctive species in the *Desmodium* group, Ohashi (1973) considered that the species would need further studies to clarify its taxonomic relationships although he proposed a close affinity to *Grona heterocarpos* (L.) H.Ohashi & K.Ohashi (as *Desmodium heterocarpon* (L.) DC.) based on morphology. When *Grona* was resurrected from the synonymy of *Desmodium*, Ohashi & Ohashi (2018) must have been quite confident of this systematic relationship and transferred *G. harmsii* along with *G. heterocarpos* from *Desmodium* to *Grona*, even without any DNA sequence data from *G. harmsii*. It is likely they were unable to find recently collected specimens to extract DNA.

Notes. Although Schindler (1916) indicated “Herb. Paris” when he described *Desmodium harmsii*, there are four *Pierre 5821* specimens with almost identical information housed in Muséum National d’Histoire Naturelle, Paris (P), all indicated as seen by Schindler on 29 Nov. 1915 (JSTOR Global Plants, continuously updated). As such, all four duplicates of the collection are considered syntypes (see ICN Art. 9.1 in Turland et al., 2018), even though the physical specimens bear the word holotype or isotype on the sheets, which could have been written by someone else. Prior to 1 Jan 2001, none of the published literature bearing the name *Desmodium harmsii* has explicitly selected a lectotype, although some indicated that both “holotype and isotypes” are in P (Ohashi, 1973; Dy Phon et al., 1994). Although Ohashi & Ohashi (2018) indicated a single specimen as the “holotype”, it cannot be considered a valid typification without the phrase “designated here” or an equivalent in conformity with ICN Art. 7.11 (Turland et al., 2018). The lectotype is thus validated here following the previous choice as “holotype”.

Grona harmsii is considered a rare species endemic to Vietnam. We have found only three old collections being cited (see Dy Phon et al., 1994) and a fairly recent specimen collected in 1973. A small population of a few individuals was still observed in 2020 at the Lê Hồng Phong Protection Forest, Bình Thuận Province (Dang-Le, Mar. 2025, pers. comm.). It was rather surprising to find *Grona harmsii* in Singapore, but its identity is not in doubt. Tuas is a planning area located at the westernmost corner of Singapore with some maritime boundary. Initially swampland, it is now designated as an industrial area, and Tuas has been expanding in area by land reclamation during the 1980s and early 1990s, including the creation of a peninsula known as Tuas South (Cornelius, 2016).

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