

Psammosilene tunicoides (Caryophyllaceae) a new generic and species record for Thailand

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ABSTRACT

Psammosilene tunicoides, a new generic and species record for Thailand, is reported. The new record was discovered on a degraded calcareous substrate mountain in the western part of Thailand near the Thai-Myanmar border. The species was previously reported to be endemic to SW China. This occurrence in Thailand greatly extends the distribution of the species. A lectotype is designated here.

KEYWORDS: degraded calcareous substrate mountain, Doi Hua Mot, insufficiently known genus, lectotypification, medicinal plant, monotypic genus, taxonomy, Umphang District.

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INTRODUCTION

Psammosilene W.C. Wu & C.Y. Wu (Caryophyllaceae), first described in 1945 (Wu & Wu, 1945), is a monotypic genus distributed in temperate montane regions in south-west China (Bittrich, 1993). Bittrich (1993) suggested the genus has a close relationship with *Dianthus* L., *Kohlruschia* Kunth, *Petrorhagia* (Ser.) Link and *Velezia* L. in the subfamily Caryophylloideae according to seed morphology, but also stated that the genus is insufficiently known and needs further study. An account of the family Caryophyllaceae in Thailand was revised by Phuphathanaphong (1992) with eight genera recognised but did not record *Psammosilene* in the account. The genus is characterised by the long conical subfleshy root, several prostrate stems, subsessile leaves, glandular and tubular-campanulate and 15-veined calyx tube, spatulate petals, and the two styles (Wu & Wu, 1945; Bittrich, 1993; Lu *et al.*, 2001). There are two genera in Thailand that have sepals connate, *Silene* L. and *Vaccaria* Wolf, but these genera otherwise have quite different morphologies compared to *Psammosilene*.

Psammosilene tunicoides W.C. Wu & C.Y. Wu has been widely used as a medicinal plant in China to check bleeding, relieve pain and promote blood circulation, and has also been used as an important ingredient in some well-known Chinese traditional medicine formulations (Lian *et al.*, 2011). Long-term uncontrolled exploitation has caused a reduction in geographic range and population size of *P. tunicoides* and now the species is at great risk of extinction: the species was listed in the China Plant Red Data Book as rare and endangered (Fu, 1992; Qu *et al.*, 2010) and over-exploitation has led to the destruction of many wild *P. tunicoides* populations (Zhang *et al.*, 2018). The discovery in Thailand means that the species is not as narrowly distributed as once thought which could be good news for its long-term survival.

This new record was discovered during a plant collecting trip to Doi Hua Mot, a unique ‘Bald-Headed’ degraded calcareous substrate mountain in Umphang District, Tak Province, western part of Thailand. Several new species have been reported from this botanically unique area which is mostly covered

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with short grasses and herbs (Craib, 1926; Imlay, 1939; Barnett, 1961; Pedersen *et al.*, 2003; Suddee & Paton, 2009; Esser & Jebb, 2010; Kidyoo & Watthana, 2012; Triboun & Middleton, 2012; de Wilde & Duyfjes, 2013; Gale *et al.*, 2014; Soh *et al.*, 2014; Suddee *et al.*, 2014; Paton *et al.*, 2016; Mattapha *et al.*, 2017, 2018; Chantanaorrapint & Suddee, 2018; Pornpongrungrueng *et al.*, 2019; Nansai *et al.*, 2020); see Table 1.

MATERIALS AND METHODS

The description and illustrations of this new generic and species record are based on both fresh materials and herbarium specimens collected from Doi Hua Mot. The new record was compared to images of herbarium specimens available online. The provisional conservation assessment was made following the IUCN Standard and Petitions Committee (2019).

DESCRIPTION

Psammosilene tunicoides W.C.Wu & C.Y.Wu in L.P.King *et al.*, Icon. Pl. Medic. Libro Tien-Nan-Pen-Tsao Lanmaoano. 1: t. 1. 1945; Lu *et al.*, Fl. China 6: 108. 2001.—*Silene cryptantha* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 180. 1912, nom. illeg. non Viviani (1824). Type: China, NW Yunnan, eastern flank of the Lichiang range, July 1906, *Forrest 2783* (lectotype **E** [E00301701, online image seen], designated here; isolectotype **P** [P04985835, online image seen]). Fig. 1 & 2.

Perennial herb. *Roots* brownish-yellow, long conical, 7–15 cm long, subfleshy. *Stems* several, prostrate, purplish-green, 10–30 cm long, branched or not, pubescent. *Leaves* subsessile, ovate to ovate-lanceolate, 0.6–2.5 × 0.5–1 cm, apex acute, base broadly cuneate to rounded, margin entire, glabrous above, thinly pubescent otherwise glabrous below, lateral veins obscure. *Inflorescence* a terminal thyrse,

Table 1. New species reported from Doi Hua Mot, Umphang District, Tak Province.

Species	Family	Publication Year
<i>Impatiens patula</i> Craib	Balsaminaceae	1926
<i>Strobilanthes graminea</i> J.B.Imlay	Acanthaceae	1939
<i>Dichiloboea glandulifera</i> Barnett [= <i>Paraboea glandulifera</i> (Barnett) C.Puglisi]	Gesneriaceae	1961
<i>Sirindhornia mirabilis</i> H.A.Pedersen & Suksathan	Orchidaceae	2003
<i>Teucrium scabrum</i> Suddee & A.J.Paton	Lamiaceae	2009
<i>Schefflera poomae</i> Esser & Jebb	Araliaceae	2010
<i>Hoya lithophytica</i> Kidyoo	Apocynaceae	2012
<i>Paraboea siamensis</i> Triboun	Gesneriaceae	2012
<i>Paraboea takensis</i> Triboun	Gesneriaceae	2012
<i>Lagerstroemia huamotensis</i> W.J. de Wilde & Duyfjes	Lythraceae	2013
<i>Nervilia umphangensis</i> Suddee, Rueangr. & S.W.Gale	Orchidaceae	2014
<i>Buxus sirindhorniana</i> W.K.Soh, von Sternb., Hodk. & J.Parn.	Buxaceae	2014
<i>Porpax thaithongiae</i> Suddee, Promm. & Watthana	Orchidaceae	2014
<i>Scutellaria tenasserimensis</i> A.J.Paton	Lamiaceae	2016
<i>Flemingia sirindhorniae</i> Mattapha, Chantar. & Suddee	Fabaceae	2017
<i>Sophora huamotensis</i> Mattapha, Suddee & Rueangr.	Fabaceae	2018
<i>Thismia thaithongiana</i> Chantanaorr. & Suddee	Burmanniaceae	2018
<i>Phyllanthus huamotensis</i> Pornp., Chantar. & J.Parn.	Phyllanthaceae	2019
<i>Viola umphangensis</i> S.Nansai, Srisanga & Suwanph.	Violaceae	2020

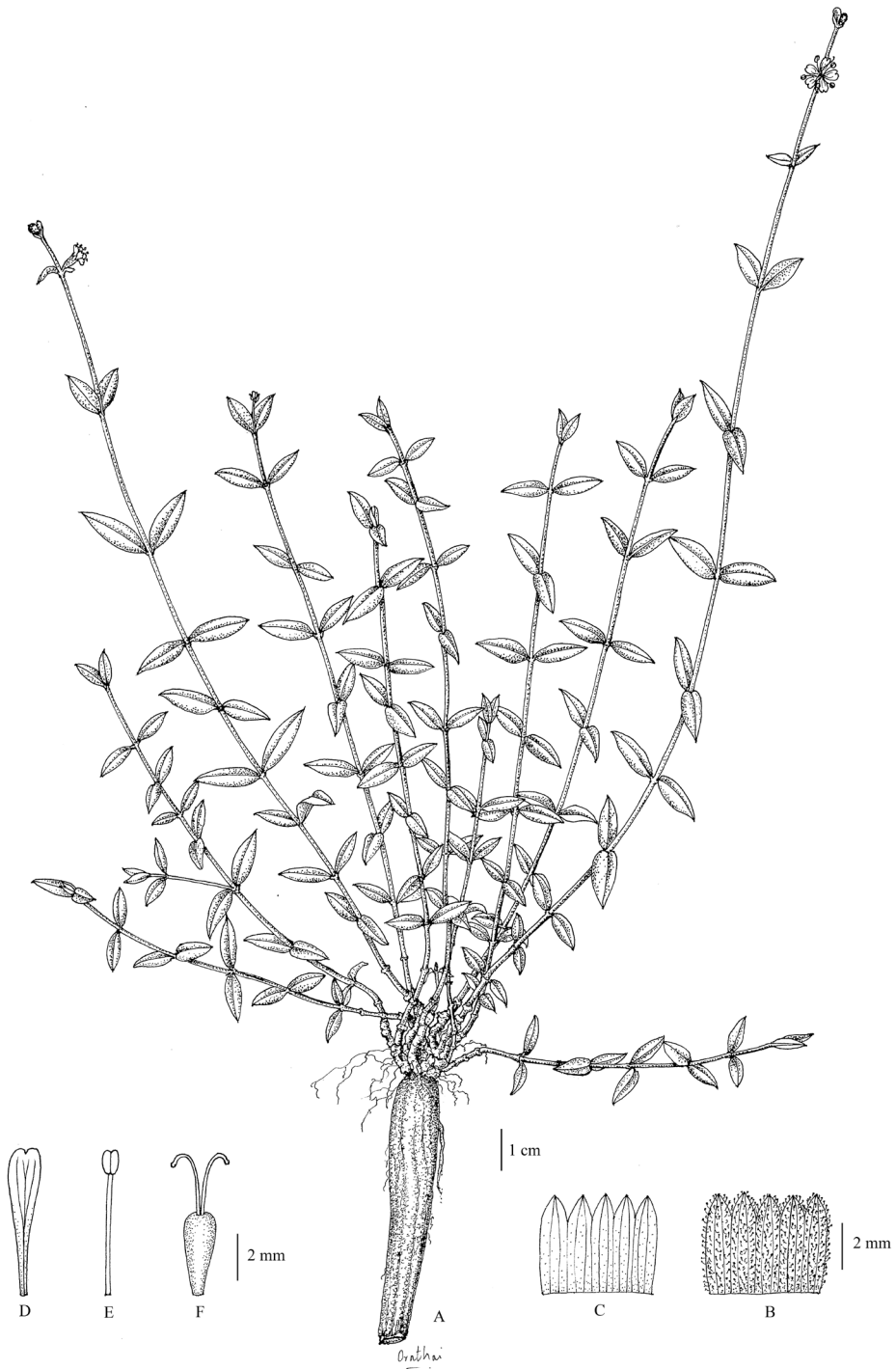


Figure 1. *Psammosilene tunicoides* W.C.Wu & C.Y.Wu: A. Habit; B. Calyx outer surface; C. Calyx inner surface; D. Petal; E. Stamen; F. Ovary and styles. Drawn by Orathai Kerdkaew.

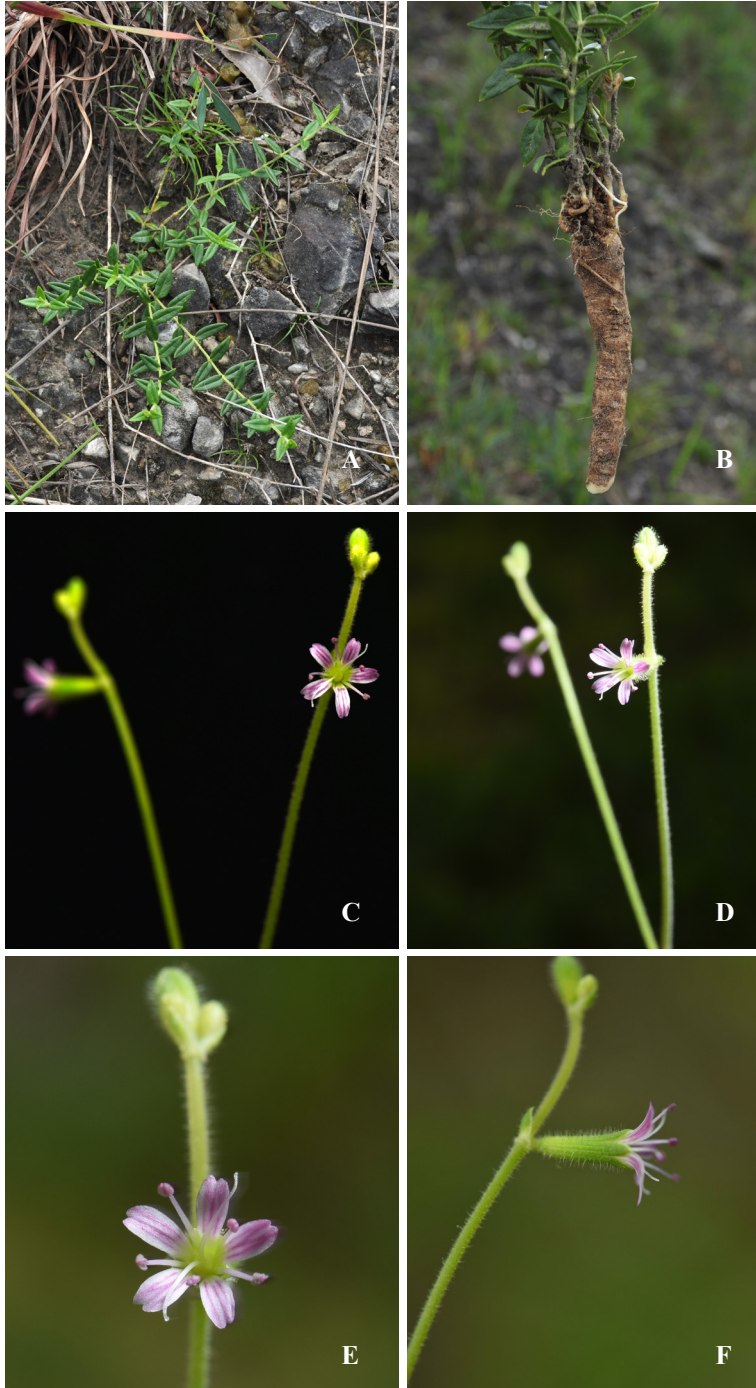


Figure 2. *Psammosilene tunicoides* W.C.Wu & C.Y.Wu: A. Habit; B. Root; C.–D. Inflorescence; E.–F. Flower. A.–B. by W. Kiewbang; C., F. by T. Phutthai; D.–E. by N. Tetsana.

densely glandular pubescent; bracts ovate, thin, 1–2 mm long, glabrous inside, glandular pubescent outside. *Flowers* 3–5 mm in diam. *Pedicels* very short or flowers sessile. *Calyx* green, tubular-campanulate, 4–6 mm, glabrous inside, densely glandular pubescent outside, 15-veined, 5-toothed; calyx teeth triangular-ovate, margin membranous, apex obtuse or acute. *Petals* 5, free, purplish-pink with 3 longitudinal purple lines, narrowly spatulate, 6–8 mm long, glabrous on both surfaces, apex retuse, margin entire, base with long yellow attenuate claw. *Stamens* 5, attached opposite calyx teeth, exerted beyond calyx, 7–9 mm long; filaments glabrous; anthers pinkish-purple. *Ovary* sessile, narrowly obovoid, ca 7 mm long, 1-locular with 2 ovules; styles 2, ca 3 mm long, separated from base. *Capsule* clavate, ca 7 mm long, membranous, indehiscent, enclosed by persistent calyx. *Seeds* not seen.

Thailand.— NORTHERN: Tak [Umphang District, Doi Hua Mot, along dirt road to Mae Lamung Khi village, 15°49'47.2"N, 98°53'39.4"E, at 864 m elev., 25 Aug. 2019, fl. & fr., *Suddee et al.* 5509 (BKF!)].

Distribution.— China.

Ecology.— Open grassland on a degraded calcareous substrate mountain with *Strobilanthes graminea* J.B. Imlay dominant, 800–900 m alt. Flowering & fruiting: recorded in August.

Vernacular.— Kamlang chang phlai (กำลั้งช้างพลาย).

Provisional Conservation Assessment.— This species is known only from one location in Umphang District with an estimated Area of Occupancy (AOO) of around 0.5 km². Only one small population of around 10 individuals was seen. The species occurs in an area that local villagers use for cattle grazing. Increased cattle numbers and forest fires in the dry season might increase disturbance in the area and this could affect the survival chances of this species. It is assessed here as nationally Critically Endangered, CR B2ab(iii); D in Thailand, following IUCN Standard and Petitions Committee (2019).

Note.— *Silene cryptantha* Diels is a later homonym of *Silene cryptantha* Viv. and, therefore, illegitimate. When describing their genus and moving this species into it, Wu & Wu (1945) realised this and gave the species a replacement name, *Psammosilene tunicoides*, which is nevertheless

typified by the type of *Silene cryptantha* Diels. The sheet at E with complete specimen, label, and with annotation by C.Y. Wu is chosen as a lectotype.

This species is easily recognised in the field by the several prostrate stems and the subsessile ovate to ovate-lanceolate leaves. The Thai plants were compared to the available online specimen images from China (GBIF, PE). The plants from Thailand are smaller than the plants from China and the petals of the Thai plants are all retuse at the apex, whereas this character varies from obtuse to retuse in China. The other morphological characters are similar.

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