

NOTES ON THE FLORA OF TAIWAN (13)

—A new indigo from Taiwan⁽¹⁾

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Abstract: Based on a close examination of morphological features of plant body, seed coat and pollen grains, we hereby, propose, *Indigofera taiwaniana* T. C. Huang & M. J. Wu, a new indigo to the flora of Taiwan.

INTRODUCTION

During our field collection in July 23, 1990, we collected one decumbent small indigo at Maopitou, one of the beautiful tourist centers, Kentin National Park, The dwarf plant grows in the coral meadow as a carpet of grass at the parking lot. It has an alternate, pinnate leaflets and quadrangular pods as that of *Indigofera spicata* Forsk. (Huang & Huang, 1987). As the whole plant is small, we considered it as an infraspecific taxon for *I. spicata* at first. After our comparative studies (Table 1, Plates 1-4) of these taxa with the aid of LM-, SEM-, and TEM-microscopes, we find it with small sizes of leaves and pods, round pits on seed coat and different ornamentation and structure of pollen grains. These characters are great enough to be considered as a separate new taxon. Our taxonomic account is as below. This taxonomic treatment intends only to indicate the main morphological criteria, the detailed taxonomic and palynological description of all Taiwan indigo will follow in the future issue of *Taiwania*.

TAXONOMIC TREATMENT

Indigofera taiwaniana T. C. Huang and M. J. Wu *sp. nov.* 臺灣木藍 Pl. 1

Indigoferae spicatae Forsk. folioliis alternatis similis sed folioliis parvis, seminibus faveis sphericis, pollinia structura et ornamento differt.

Herba annua vel perennis decumbens ramosa ad 30 cm longa, pilis furcatis aequalis indutis. *Folia* imparipinnata alterna, 4~6-foliis; foliola alterna, oblanceolata vel oblonga aut obovata 8~18 mm longa 2.5~5 mm lata, apice abtuso mucronato, basi cuneata vel acuta, margine integro, veins obscuris, membranaceis, ad marginem supra pilis furcatis vestitis. *Inflorescentia* axillaris racemosa, 30-floribus, 18~45 mm longa, pedunculis 9~10 mm longis, bracteis anguste triangulatis 1.8 mm longis 0.7 mm latis. Flos 5~6 mm longus; calyx 5-lobatus, lobis anguste triangulatis 2~2.5 mm longis 0.5~0.6 mm latis; vexillum sanguineum late ellipticum 4.5~5 mm longum 4~4.5 mm latum, pilis intus indutum; ala 5~5.6 mm longa 1.5~1.7 mm lata,

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Table 1. A comparative study of main features between *Indigofera spicata* Forsk. and *I. taiwaniana* Huang & Wu

Characters		<i>I. spicata</i>	<i>I. taiwaniana</i>
Stipule	length	(2.5)–6–7 mm	1.5–3 mm
	width	1.2–2 mm	0.8–1 mm
Leaflet	number	8–10	4–6
	shape	obovate	oblanceolate or oblong to obovate
	length	6.5–28 mm	7–18 mm
	width	4.0–11 mm	2.5–5 mm
	upper-surface	glabrous	pubescent at margin
Inflorescence			
	arrangement	dense	distant
	flowers	68–80	20–30
Endocarp		dotless	yellowish dots
Seed	coat	pitless	rounded pits
	shape	cylindric	quadrangular
Pollen grains			
	tectum	0.4–0.6 μm	0.2–0.4 μm
	rugulae	compact	distant
	pores	prominent	hidden
	granula	thick, 0.3 μm	thin, 0.1 μm
	foot layer	thin, <0.1 μm	thick, 0.3 μm

pilis ad marginem infra indutae; carina 5~6 mm longa 1~1.2 mm lata ciliata, calari 0.5~0.6 mm longi; stamina 10 diadelpha 3~3.5 mm longa; antherae ellipticae 0.35 mm longae 0.25 mm latae; stylus penicillatus; stigma capitatum; ovula 9~10. *Legumen* quadrangulatum rectum 21~23 mm longum 1.8~2 mm latum, pilo indutum, rostro 1~1.5 mm longo, endocarpa punctata flavo-fusca, 7~10-seminibus; semina flava hexagona 1.2~1.5 mm longa 1 mm lata, foveis sphaericis.

Collectio: *T. C. Huang et al.* 14662, Juli 23, 1990 (Holotypus, TAI; isotypus, TAI, TUS), *M. J. Wu* 1357, 1358, 1369, 1360, *S. F. Huang & H. C. Chen* 4353 (Paratypus).

A decumbent, branched annual or perennial herb, up to 30 cm long, with equal size of biforked hairs. Leaves imparipinnate, alternate, with 4~5 leaflets; leaflets alternate, oblanceolate, oblong or obovate, 8~18 mm long, 2.5~5 mm wide, the apex obtuse, mucronate, the base cuneate or acute, the margin entire, the veins obscure, membranaceous, at margin of upper surface biforked hairy. Inflorescences of axillary racemes, 30-flowered, 18~45 mm long, the peduncles 9~10 mm long, the bracts narrowly triangular, 1.8 mm long, 0.7 mm wide; flowers 5~6 mm long; calyx 5-lobed, the lobes narrowly triangular, 2~2.5 mm long, 0.5~0.6 mm wide; standard bloodish red, broadly elliptic, 4.5~5 mm long, 4~4.5 mm wide, hairy inside; wings 5~5.5 mm long, 1.5~1.7 mm wide, ciliate at basal part of margin; keels 5~6 mm long, 1~1.2 mm wide, ciliate, with spur 0.5~0.6 mm long; stamens 10, diadelphous, 3~3.5 mm long; anthers elliptic, 0.35 mm long, 0.25 mm wide; style penicillate; stigma capitate; ovules 9~10. Pods quadrangular, straight, 21~23 mm long, 1.8~2 mm wide, hairy, beaked, 1~1.5 mm long at end; endocarp dotted with yellowish brown, 7~10-seeded; seeds yellow, hexagonal, with rounded pits, 1.2~1.5 mm long, 1 mm wide.

Similar to *Indigofera spicata* Forsk. by alternate leaflets but differs from it by

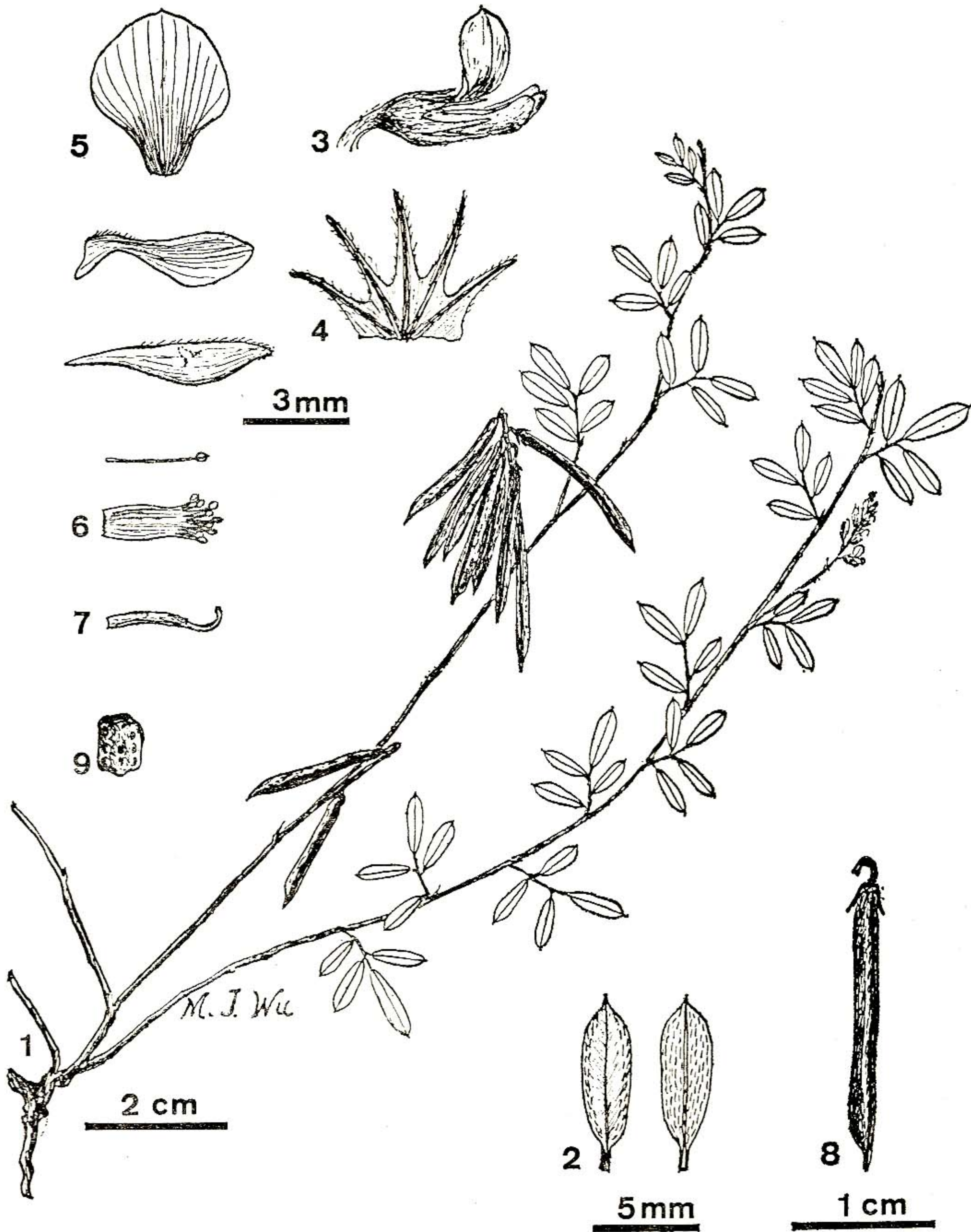


Plate 1. *Indigofera taiwaniana* T. C. Huang & M. J. Wu (*Huang et al.* 14662).
 1. Fruiting and flowering branches; 2. leaflets of both surfaces; 3. a flower; 4. calyx; 5. corolla; 6. stamens; 7. pistil; 8. pod; 9. seed.



Plate 2. *Indigofera spicata* Forsk. (Huang & Huang 13156).

1. a fertile branch; 2. leaflet of lower and upper surfaces; 3. a flower; 4. calyx; 5. corolla; 6. stamens; 7. pistil; 8. pod; 9. seeds.

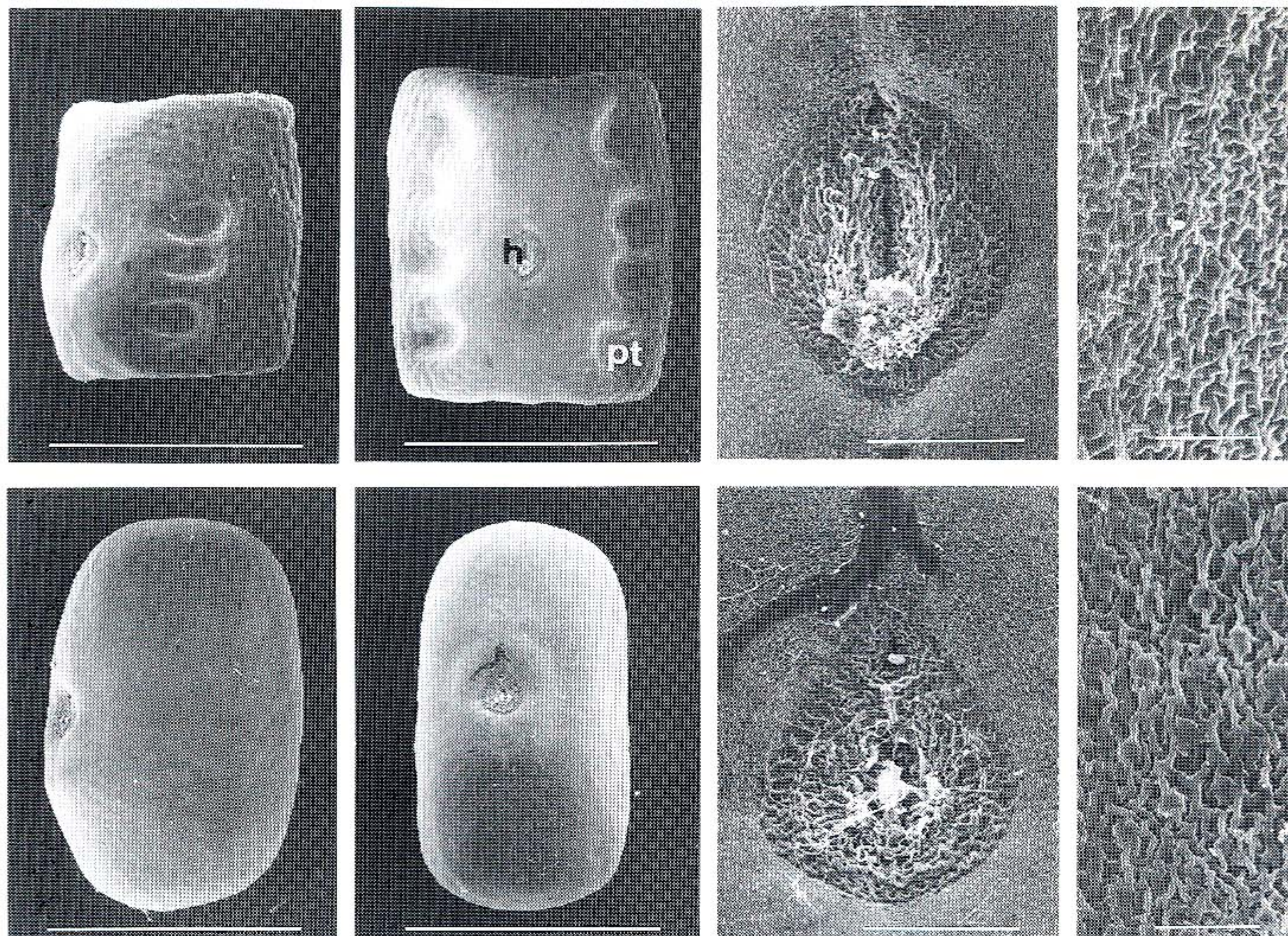


Plate 3. Seed (bar=1 mm), enlargement of hilum (bar=100 μ m) and seed coat (bar=10 μ m) of *I. spicata* Forsk. (Huang et al. 14847, lower) and *I. taiwaniana* Huang & Wu (Huang, Wu et al. 14662). pt, rounded pits on seed coat; h, hilum.

the small leaflets, rounded pits on seed coat, and ornamentation and structure of pollen grains.

This new species is also similar to *I. spicata* var. *siamensis* (Hoss.) de Kort & Thijssse of Thailand and Vietnam plant (de Kort & Thijssse. 1984; Gillett, 1958), but differs in having smaller stipules and leaflets, and in the number and shape of leaflets. Since there are no specimens of *I. spicata* var. *siamensis* available, no concrete relationship between them is given until the studies of seed coat and pollen grains.

It grows in the dry and open meadow on the coral rocks about 50 m above sea level.

PINGTUNG CO.: Maopitou, T. C. Huang, et al. 14662 (Holotype, TAI; isotypes, TAI, TUS), M. J. Wu 1357-1360, S. F. Huang & H. C. Chen 4353 (Paratypes, TAI).

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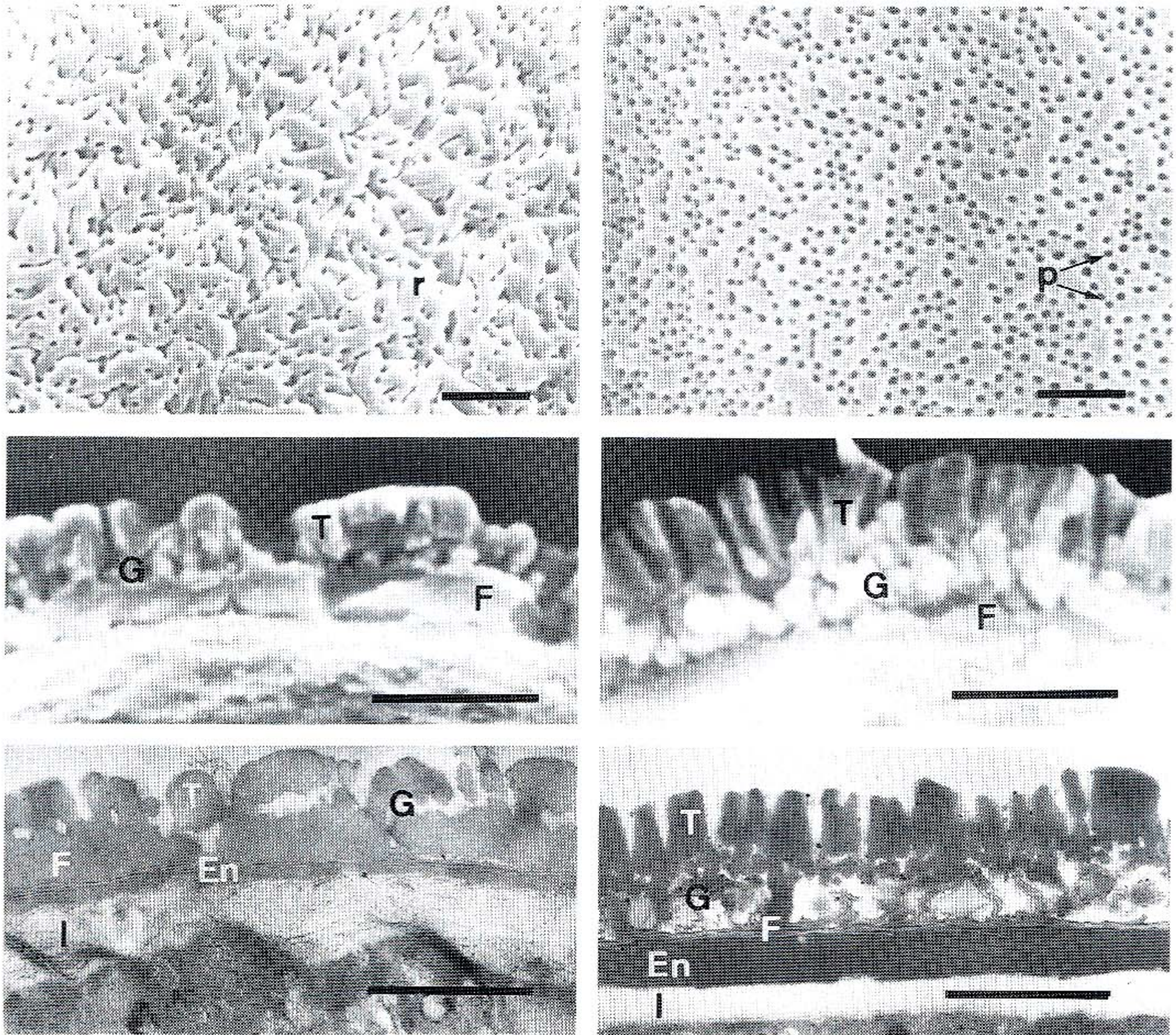


Plate 4. Pollen ornamentation and structure of *I. spicata* Forsk. (Huang et al. 14842, 14991, right) and *I. taiwaniana* Huang & Wu (Huang, Wu et al, 14662, left). r, rugulae; p, pores; T, tectum; G, granules; F, foot layer; En, endexine; I, intine; bar=1 μ m.

臺灣植物誌之觀察 (13)

—— 臺灣木藍

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摘 要

臺灣木藍屬植物中僅穗花木藍為互生小葉，其餘12種均為對生小葉。觀光勝地貓鼻頭珊瑚礁草坪上，採到矮小之互生小葉木藍，經核對比較穗花木藍之莖、葉、花、果、種子及花粉形態後，確認為差異極大之不同新種，而提出臺灣木藍之新名(*Indigofera taiwaniana* T. C. Huang & M. J. Wu)。