

植物分類著作電子叢書 (e-books)

# 新植物及新名稱

(NEW TAXA & NEW NAMES)

(第六卷, Volume Six)

應紹舜 (Shao-shun Ying) 著



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# 新植物及新名稱

(NEW TAXA & NEW NAMES)

(第六卷, Volume Six)

應紹舜著

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*Anoectochilus lalashanensis* S.S. Ying *sp. nov.*





*Conjugatovarium* S.S. Ying, gen. nov.



*Launaea taiwanensis* S. S. Ying sp. nov.



## Preface

*Conjugatovarium*, the new genus of family Rubiaceae which I established in this volume of the e-book, it is characterized by its a minute smooth herb, only two flowers on the top of branchlets; minute 4-lobed calyx and the ovaries of two flowers conjoined each other. The type species *Conjugatovarium lalashanianum* was collected at Lalashan (拉拉山), which growing under the *Chamaecyparis formosensis* forests, usually mixed with mosses and other shade-loving herbs. As I wrote at last volume of this e-book, the Lalashan is a paradise for botanical researchers. *Chrysosplenium taiwanianum* is characterized by its solitary and unopened flower; sepals 4, spreading, rounded and emarginate at apex; stamens and pistil all included at united sepals and equal capsule-lobes. Other new species which I collected and described from the mountain in this volume are *Pilea yingshaoyaoensis*, *Callicarpa lalashanensis* and *Hydrangea lalashanensis*, *Viscum taiwanianum* and *Anoectochilus lalashanensis* etc.

Focus on botanical studies and collections at Guanwu (觀霧) and Shouca (壽卡) this year.

Guanwu (觀霧) is located at the junction of the Wu-feng township (五峰鄉), Hsinchu County and Taian township (泰安鄉), Miaoli County, contains a variety of terrains from 1,800 to 2,600 meters in altitude. Guanwu National Forest Recreation area was designated by Forestry and Nature Conervation Agency, Ministry of Agriculture, Executive Yuan in 1995. This luxuriant forest here with various of rare, precious and valuable species, the most famous tree is *Chamaecyparis formosensis*, there are 5 ancient and huge trees interspersal the area, showcasing their vigorous postures over thousands years; another notable tree is *Sassafras randaiense*, a relict species from Tertiary Period and one of three species of Genus *Sassafras* of the world, intersperses along either side of Madara river (馬達拉溪) this area.

*Pyrus alpinotaiwaniana*, the holotype was collected between Guanwu (觀霧) and Tapachienshan Trailhead (大霸尖山登山口), the exacted altitudes where the holotype was collected is 2,481 meters above sea level; the place as a part of National Forests and Sheipa National Park, there are have no orchards but natural forests. it is recognized by its woody caltrops are developed at trunks and base of main branches very well; flowers 5-7

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fascicled at a short peduncles, pink firstly and then becoming white, 1.8-2.5 cm in diameter when opened, scentless, racemose in arrangement; fruit a pome, it is hard like a stone, no animal like and eat it. I confirm that the species growing the highest altitude of the genus in Taiwan.

*Tripterospermum shaolinchianum* is recognized by its red purple, cylindrical fruits, elongate fruit gynophore being 2.5-3 cm long and pale green to white sometimes with purple, 8-12 mm in diameter flowers. It was collected at Zhenshan (榛山) of the area.

Orchid species are luxuriant at this area, *Platanthera alboflora* was collected at mountain slope where water running always and it is mixed with mosses and other water-loving plants at elevations of 2,180-2,350 meters of the area. It is readily recognized by its solitary leaf and 5-7 white flowers and 3-lobed lip. *Gastrochilus shaolinchianus* was discovered at forest at elevations of 2,100-2,350 meters of the area, which epiphytic on tree-trunk, it is readily recognized by its ovate leaves, solitary to 2 racemose flowers, yellow sepals and petals with purple plaques and rectangular, 8-9 mm long, 4-5 mm wide lip, which emarginate at apex, and dentate at margins of lip-epichile. Two more new *Bulbophyllum* species were also described from this area in this e-book.

A lot of new species were described and collected at Guanwu area, due to space limitations, no more detailed description here.

Shouka (壽卡), the uppermost part of Hengchun peninsular, as one of caudal end ridge (尾稜) of Central Mountains, 460 meters above sea level in elevations, the highest point of South Link Highway (南迴公路), it is a trient point for the mountain pass, one way to Fengkiang (楓港), other to Dajen (達仁) and Tawu (大武), the third to Tungyuan (東源) and Mutan (牡丹). The forest around Shouka and Tungyuan is still keep in primary condition only, plant species are sumptuous and diversified, it is a good place for botanical study, I visited the area nearly once a month this year.

*Begonia shoukaensis* is characterized by its by its large perennial herb with much branches and 3-6 monoecious flowers in axillary cymose, tepals 5 of pistillate and 4 in staminate flowers; and its terrestrial habitat. It's flowering all the year round, an extraordinary species of Taiwan *Begonia*.

*Hydrangea pingtungensis*, a creeping to erect small shrub, is recognized by its

oblong to ovate-oblong leaves and yellowish green small flower with 6-7 petals and many stamens, without petaloid sepal in the marginal of inflorescence, occurs on the broad-leaved forests but somewhat rare.

*Mussaenda acalycophylla* is a distinctive new species of Taiwan *Mussaenda*, readily recognised by its 14-21 flowered in a terminal cymose and 4-6 cymoses to form a compound cymose; flowers without calycophyll.

*Sida austrotaiwaniana* readily recognized by its a prostrate shrub with elongate branches which creeping around; small ovate to ovate-rouned 8-14mm long, 4.5-6.5 mm wide leaves and solitary yellow, axillary flower. It is significantly different from other species of Taiwan *Sida*.

Other new species which I described at Shouka area such as *Eurya citruofolia*, *Smilax tungyuanensis*, *Maesa hengchunensis*, *Callicarpa hengchunensis*, *Ilex hengchunensis*, *Symplocos taiwanensis*, *Stauntonia hengchunensis*, *Trichosanthes taiwanensis* and *Aspidistra shoukaensis* etc. each have its own characteristic.

*Aglaiia taiwaniana*, this new species was collected at coastal region of Fangliao (枋寮), a small fishing village of southern Taiwan, it's characterized by its medium-sized tree, with 5-7 leaflet pinnate; flowers small, white, in an axillary panicle; calyx 5 and petals 5, stamens included, stamen-tube shorter than petals; ovary one locular and fruit not dehiscent. It is very rare at the coastal region and a surviving species for over development of community and fishery, it is in an endangered state, extinction probability is very high, protective action can not wait. Other species such as *Commelina bicaeruloflora* and *Ipomoea fangliaoensis* which I collected and described at same area are in equivalent situation.

Thanks to professor Hung-Yun Hsieh (謝宏昀教授) and his team, especially Mr. Tze-ziang Zeng (曾子翔同學), Computer and information Networking Center, National Taiwan University, for their kindly help and taught me to establish cloud system of website. Thanks to Paching and many anonymous who gave me a hitchhike convenience on the way of field study.

Total together with 623 pages and 768 pictures of this e-book to discuss, explain and describe of one new genus, 87 new species and 6 new combinations; among those, the

genera *Conjugatovarium* and *Launaea* are the new records of flora of Taiwan. It is a bumper harvest year for me, however, mostly new matters proposed in this e-book are very rare in the wild, I hope that this e-book will stimulate interest in the intriguing group of plants which mentioned in the book, whilst at the same time encourage more effort to help to protect the more species in the wild.

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*Platostoma taiwanense* S.S. Ying, *sp.nov.* 台灣頂頭花

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1.A New Genus *Conjugatovarium* S. S. Ying (Rubiaceae) and A New Species

*Conjugatovarium lalashanianum* S.S. Ying in Taiwan)

*Conjugatovarium* S.S. Ying, gen.nov. 聯體草屬



Fig. 001. *Conjugatovarium* S. S. Ying, gen. nov.

Mind the ovaries of plants conjoined each other

**Morphology** : Annual to biennial small herbs ° taproot none , fibrous roots slender, from creeping stem ; stem creeping to pendulous, somewhat fleshy, green to pale purple, glabrous ° Leaves simple, opposited, small; stipules minute , petioles inconspicuous ° Flowers paired, terminal on the branchlet; pedicle erect or ascending, glabrous, two conjoined ovaries at apex; bracts lanceolate, cauduous or no; calyx lobes 4, minute ; corolla funelform, 4 lobed at apex; the tube slender; lobes conspicuous and acute at apex ; stamens 4 , included ; filaments slender, glabrous; anthers oblong; style slender,

exserted; stigma 4; ovaries inferior, globose, usually 2 conjoined each other, glabrous °  
Fruits fleshy berry, ovaries fused each other and forming one fruit, broadly globose, calyx  
2, persistent; each with 4-lobed. Seeds 1-2 in each fruit °

**Type species :** *Conjugatovarium lalashanianum* S.S. Ying °

**TYPE:**TAIWAN. Taoyuan City , Fuhsin District (復興區) , Lalashan (拉拉山), 2150 m  
alt. S. S. Ying , s.n. June 03, 2023 ° (holotype, NTUF) °

The generic name *Conjugatovarium* means that two flowers on the top of branchlet,  
and the ovaries of which conjoined each other.

**Diagnosis.** The genus is somewhat like the genus *Damnacanthus* C.F. Gaertner, but our  
plant is a minute smooth herb; flowers only 2 on the top of branchlets; calyx minute, 4-  
lobed; ovaries of two flowers conjoined each other.



Fig.002. *Conjugatovarium lalashanianum* S. S. Ying, plants growing in situ



*Conjugatovarium lalashanianum* S.S. Ying, 拉拉山聯體草

*Conjugatovarium lalashanianum* S.S. Ying, *sp.nov.* 拉拉山聯體草

**TYPE:**TAIWAN. Taoyuan City , Fuhsin District(復興區) , Lalashan (拉拉山), 2150 m alt. S. S. Ying , *s.n.* June 3, 2023 ° (holotype, NTUF) °



Fig. 003. *Conjugatovarium lalashanianum* S. S. Ying, stem and leaves

**Morphology :** Annual to biennial small smooth herbs ° taproot none , fibrous roots slender, from creeping stem ; stem creeping to pendulous, 12-25 cm long, somewhat fleshy, pale purplish, glabrous ° Leaves simple, opposited, ovate to ovate-triangular, 0.7-1.3 cm long, 6-9 mm wide at base, acute at apex, truncate and slightly cordate at base, thinly coriaceous, entire and slightly wavy at margins, lustrous green to dark green surface

and pale green beneath, glabrous on both surfaces, midrib impressed surface and elevated beneath, lateral veins 2-3 per side, somewhat inconspicuous. Petioles very short, 1-2 mm long, fleshy, purplish, groove, glabrous.

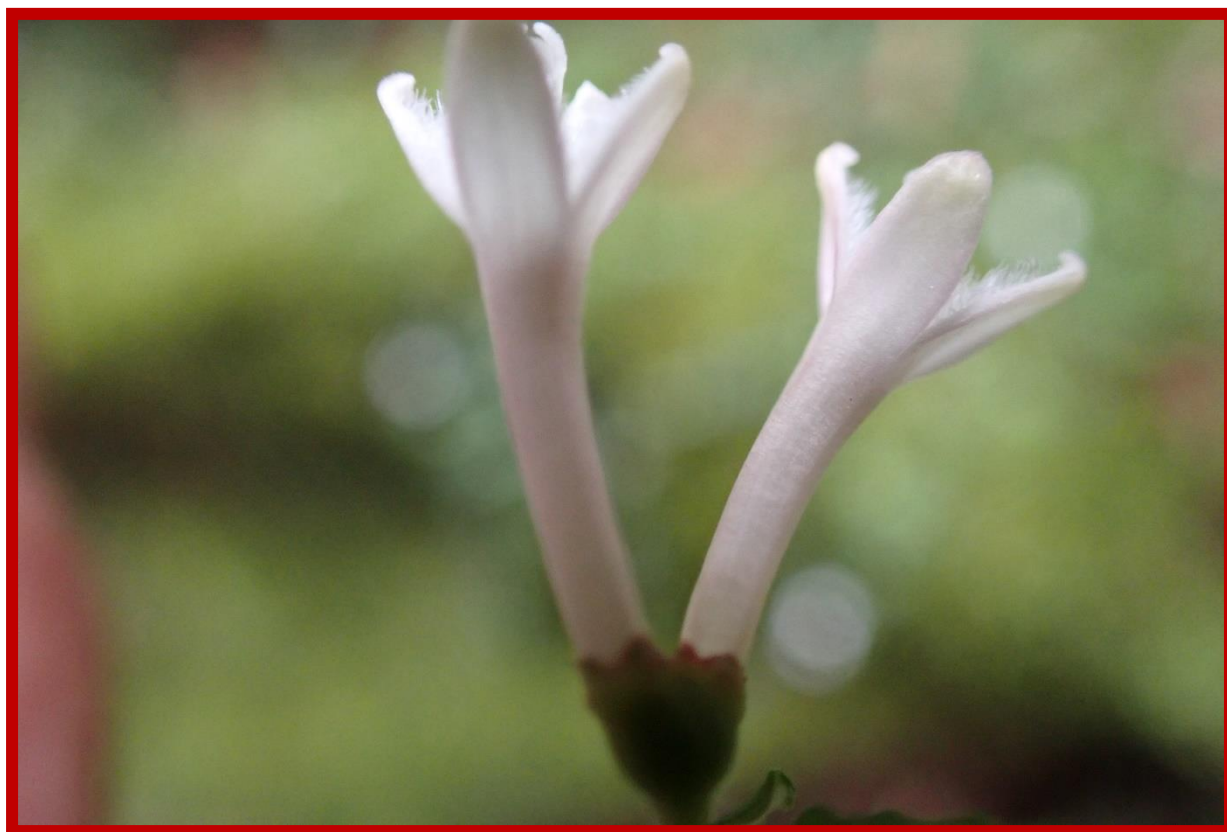


Fig. 004. *Conjugatovarium lalashanianum* S. S. Ying, flowers

Flowers 2, white, 5-7 mm in diameter when opened, terminal on the branchlets, scentless; pedicels always share by two flowers, 6-8 mm long, erect or nearly so, green to pale green, glabrous; bracts minute, triangular, 1-1.5 mm long, cauduous; calyx tubular, smaller, 1.5-2 mm long, pale yellow with purplish red margins, 4-lobed at apex; the lobes minute, 0.3-0.5 mm long, acute at apex, glabrous; corolla funnelform, white, corolla-tube 9-12 mm long, 2-3 mm wide, 4-lobed at apex; lobes oblong, 5-6 mm long, 3-4 mm wide, acute at apex, spreading, glabrous outside and densely white villose inside; stamens 4, included; filaments 5-7 mm long, glabrous, white; anthers oblong, 0.7-1 mm long; style elongate, 13-16 mm long, white, glabrous; stigmas 4, 1.5-2.5 mm long, transparent white;

ovaries inferior, globose, 1.5-2 mm diameter, green, usually 2 conjoined each other, glabrous.

Fruits fleshy berry, ovaries fused each other and forming one fruit, broadly globose, smaller, 2.5-3.5 mm long, 3-3.5 mm wide, arranged red when mature; calyx 2, persistent; each with 4-lobed; lobes triangular, 0.3-0.4 mm long, acute at apex. Seeds 1-2 in each fruit °



Fig. 005. *Conjugatovarium lalashanianum* S. S. Ying, corolla lobes

#### Diagnosis.

The species is recognized by its small smooth herbs, smaller triangular opposite leaves; flowers only 2 on the top of each branchlets; calyx minute, 4-lobed; corolla white, funnellform, 4-lobed at apex, glabrous outside and lobg villose inside; ovaries of two flowers conjoined each other

#### Distribution and phenology.

*Conjugatovarium lalashanianum* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山),, under the *Chamaecyparis formosensis* forests, usually mixed



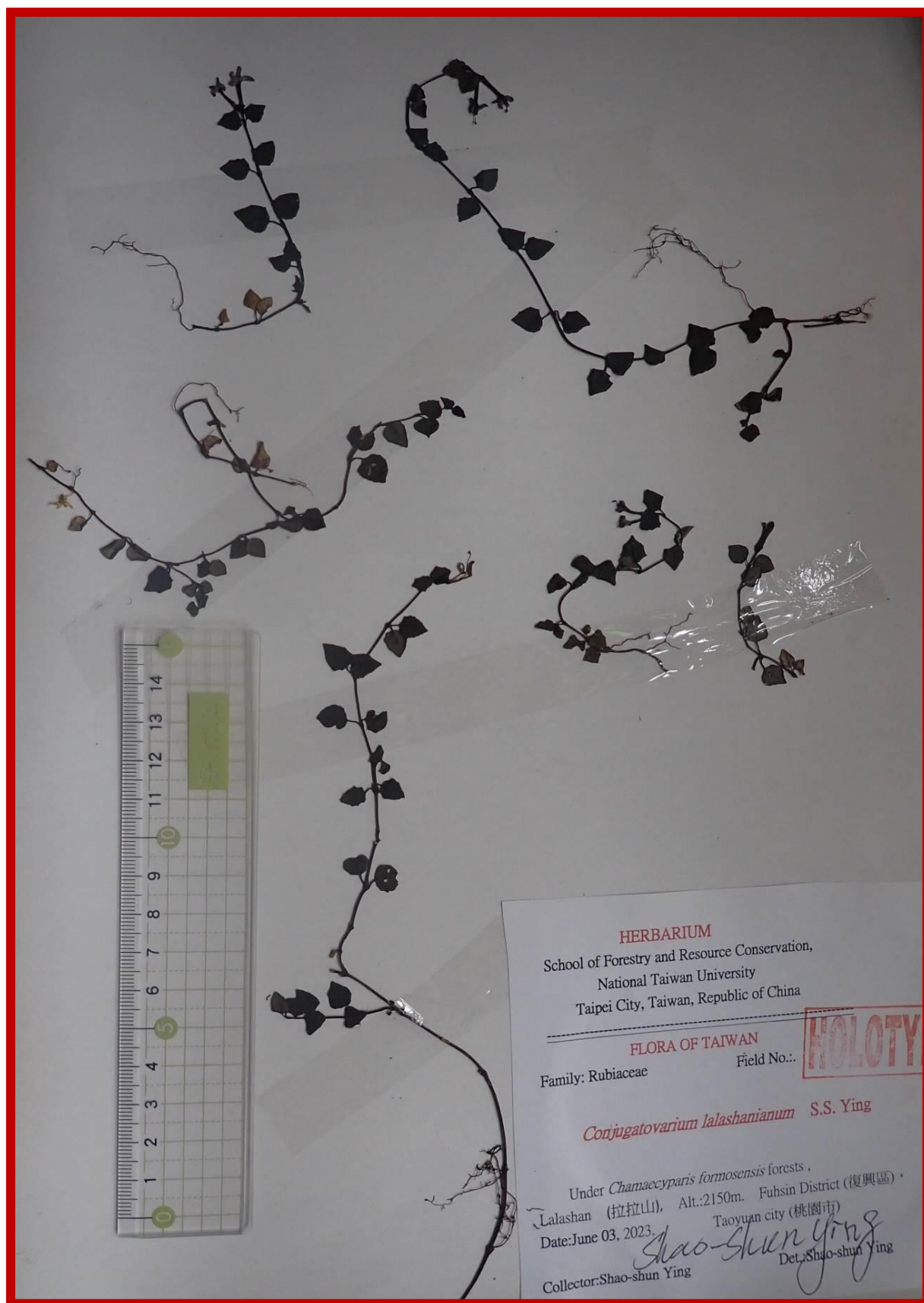


Fig. 006. *Conjugatovarium lalashanianum* S. S. Ying, the holotype NTUF-112-001

with mosses and other shade-loving herbs, Fuhsin District (復興區), Taoyuan city, northern Taiwan. It was collected under the *Chamaecyparis formosensis* forests between 1950 and 2200 m altitudes; and flowering times is from June to July and fruiting times from July to August.



Fig. 007. *Conjugatovarium lalashanianum* S. S. Ying, habit with fruit



Fig. 008. *Conjugatovarium lalashanianum* S. S. Ying, close-up of fruit

## 2. Two New species of genus *Shaolinchiana* (Rubiaceae) in Taiwan

A. *Shaolinchiana tuncyanshaniana* S.S. Ying, 東眼山邵氏草

*Shaolinchiana tuncyanshaniana* S.S. Ying, *sp. nov.* 東眼山邵氏草

TYPE: TAIWAN. Taoyuan city, Fushin District (復興區), Tuncyanshan (東眼山), 1192 m alt. S. S. Ying, *s.n.* May 10, 2023. (holotype, NTUF).



Fig. 009. *Shaolinchiana tuncyanshaniana* S. S. Ying, inflorescence and immature fruits

**Morphology :** Annual to biennial herbs about 15-20cm high, usually epiphytic on mossy rocks. taproot none, fibrous roots slender, from base of stem; stem erect to ascending, 12-16 cm long, somewhat fleshy, pale purplish, pubescent when young and glabrous adult. Leaves simple, opposite, lanceolate to lanceolate-oblong, 6.5-12 cm long, 2.5-3.5 cm wide, acuminate at apex, attenuate at base, thinly coriaceous, remotely dentate to wavy at margins, green surface and nearly whitish green beneath, glabrous on both surfaces, midrib



impressed surface and elevated beneath, lateral veins 5-7 per side impressed surface and elevated beneath. Petioles 10-18 mm long, fleshy, purplish, groove, glabrous or nearly so.



Fig. 010. *Shaolinchiana tungsaniana* S. S. Ying, leaves



-9- Fig. 011. *Shaolinchiana tungsaniana* S. S. Ying, leaf beneath

Flowers 15-20, green, not widely opened, 2.5-3.5 mm in diameter when opened, erect, in a terminal compound cymes; usually forming by 2-4 cymes; the inflorescence peduncles 1.8-2.2 cm long, purplish, fleshy, glabrous or nearly so, erect to ascending; bracts linear to ovate-triangular, 2.5-3.5 mm long, about 1.5 mm wide, acute at apex, purplish; peduncles 6-8mm long, purple, fleshy; pedicels 2.5-4.5 mm long, fleshy, pale purplish, glabrous; calyx lobes 5, attached with apex of ovary, linear to linear-lanceolate, 1.3-2.0 mm long, 1 mm wide, acuminate at apex, glabrous; corolla tubular, 3.2-4.2 mm long, 2.5-3 mm in diameter, green in colour, glabrous, scattered with chondrions, 5-lobed at apex; lobes minute, triangular, 0.3 mm long, acute at apex; stamens 5, included, filaments slender, 2-3.2 mm long; anthers ovoid, 0.5 mm long; ovary inferior, globose, 2.0 mm across, scattered with chondrions, green; style slender, 2.5 mm long; stigma capitate.



Fig. 012. *Shaolinchiana tungsiana* S. S. Ying, flowers and young fruits

Fruits a capsule, somewhat like a gold ingot (金元寶), 5-6.5 mm long, 3.5-4.5 mm wide, fleshy, green, glabrous, scattered with chondrions; exocarp larger, obtuse at both



ends, calyx lobes persistent at apex; endocarp extended, subtend by exocarp, smaller, obtuse at apex, opened when mature; calyx lobes minute, 0.4-0.5.5 mm long, acute at apex, purple. Seeds few, compressed ovoid, 0.2-0.3 mm across, brownish; pedicels 5-8 mm long, fleshy, glabrous, green.



Fig. 013. *Shaolinchiana tungyanshaniana* S. S. Ying, young fruits

#### **Diagnosis.**

The species is recognized by its tubular, not widely opened, 3.2-4.2 mm long, 2.5-3 mm in diameter, 5 lobed at apex corolla, corolla-lobes minute, acute at apex and somewhat like a gold ingot (金元寶) capsule which exocarp larger, obtuse at both ends, calyx lobes persistent at apex; endocarp extended, subtend by exocarp, smaller, obtuse at apex, opened when mature.



Fig. 014. *Shaolinchiana tungsaniana* S. S. Ying, the holotype, NTUF-112-002



**Distribution and phenology.**

*Shaolinchiana tungyanshaniana* S.S. Ying is endemic to Taiwan. It is known from Tungyanshan (東眼山), Fuhsin District (復興區), Taoyuan city, northern Taiwan. It was discovered the species on mossy rock under the forest at elevations of 1100-1500 meters. Its flowering time is May to June; and fruying time is May to July.



Fig. 015. *Shaolinchiana tungyanshaniana* S. S. Ying, plants growing in situ.



*B.Shaolinchiana taiwaniana* S.S. Ying, 台灣邵氏草

*Shaolinchiana taiwaniana* S.S. Ying, *sp.nov.* 台灣邵氏草

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 350 m alt. *S. S. Ying*, *s.n. June 09, 2023* ° (holotype, NTUF) °



Fig. 016. *Shaolinchiana taiwaniana* S. S. Ying, plants growing in situ.

**Morphology** : Annual to biennial terrestrial herbs about 20-35 cm high, taproot none, fibrous roots slender, from base of stem; stem erect to ascending, 18-30 cm long, branched upward, somewhat fleshy, green, pubescent when young and glabrous adult ° Leaves simple, opposited, ovate to ovate-oblong, 9.5-15 cm long, 4.5-5.5 cm wide, acute at apex, attenuate at base, thinly coriaceous, entire and ciliate at margins, green surface and nearly whitish green beneath, hairy on both surfaces, midrib impressed surface and elevated

beneath, lateral veins 4-6 per side impressed surface and elevated beneath. Petioles 1.5-2.5 cm long, fleshy, green, groove, hairy or nearly so.



Fig. 017. *Shaolinchiana taiwaniana* S. S. Ying, leaves and inflorescences

Flowers numerous, white, not widely opened, 2.4-3.2 mm in diameter when opened, erect, in a terminal compound cymes; usually forming by 4-6 cymes; the inflorescence peduncles 6.5-8.5 cm long, green, fleshy, hairy, erect to ascending; bracts oblong to ovate-oblong, 1.5-2.5 cm long, 7.5-13 mm wide, acute at apex, green; peduncles 12-18mm long, green to whitish yellow, fleshy, hairy; pedicels 2.5-4.5 mm long, fleshy, pale green, hairy; calyx lobes 5, attached on apex of ovary, triangular, 1.0-1.6 mm long, 1 mm wide, acute at apex, hairy; corolla campanulate, 3.5-4.5 mm long, 2.5-3.5 mm in diameter, white in colour, glabrous, 5-lobed at apex; lobes minute, round to ovate, 1.3-1.5 mm long, 1.2-1.5 mm wide, obtuse at apex; stamens 5, included, filaments slender, 2-3.2 mm long; anthers



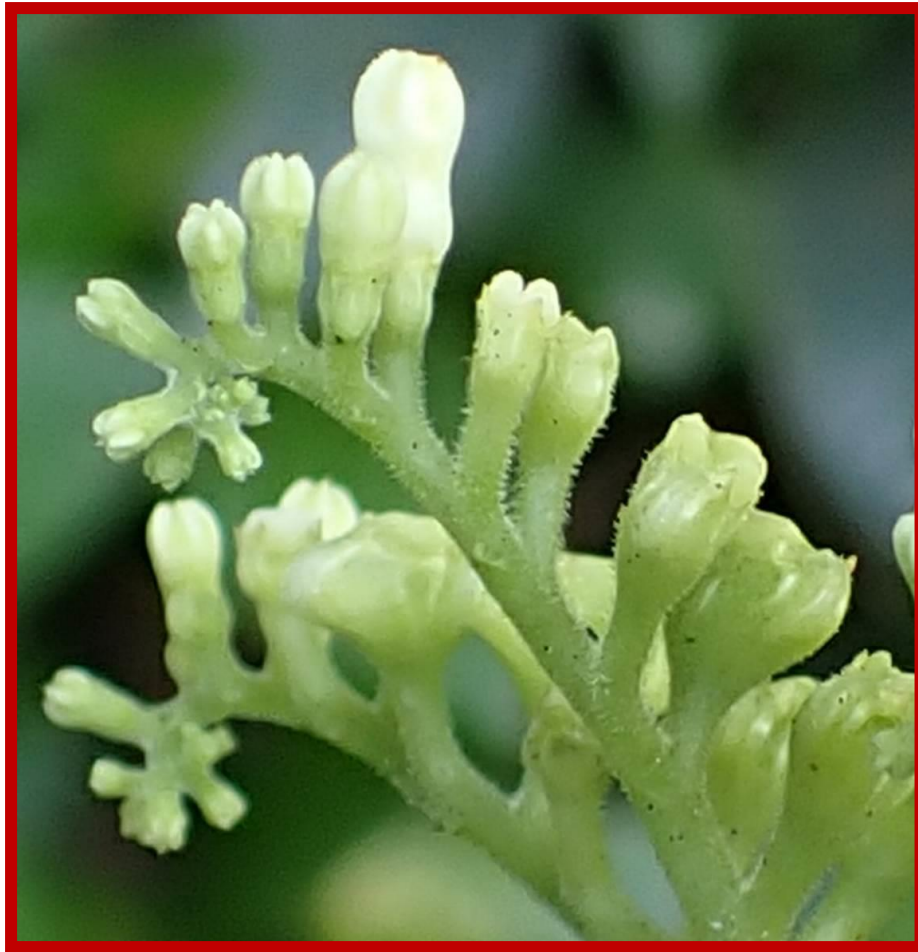


Fig. 018. *Shaolinchiana taiwaniana* S. S. Ying, inflorescences



Fig. 019. *Shaolinchiana taiwaniana* S. S. Ying, opening flowers



Fig. 020. *Shaolinchiana taiwaniana* S. S. Ying, close-up of opening flowers

ovoid, 0.5 mm long; ovary inferior, globose, 2.5 mm across, pale green; style slender, 2.5 mm long; stigma capitate.

Fruits a capsule, somewhat like a gold ingot (金元寶), 4.5-5.5 mm long, 3.5-4.5 mm wide, fleshy, green, glabrous, smooth; exocarp larger, obtuse at both ends, calyx lobes persistent at apex; endocarp extended, subtended by exocarp, smaller, obtuse at apex, opened when mature; calyx lobes minute, 0.4-0.5 mm long, acute at apex, brownish. Seeds few, compressed ovoid, 0.2-0.4 mm across, brownish; pedicels 5-8 mm long, fleshy, hairy, pale green.



Fig. 021. *Shaolinchiana taiwaniana* S. S. Ying, close-up of fruits

### **Diagnosis.**

The species is recognized by its campanulate, widely opened, 3.5-4.5 mm long, 2.5-3.5 mm in diameter, 5 lobed at apex corolla, corolla-lobes minute, round to ovate, 1.3-1.5 mm long, 1.2-1.5 mm wide, obtuse at apex and somewhat like a gold ingot (金元寶), green, smooth capsule which exocarp larger, obtuse at both ends, calyx lobes persistent at apex; endocarp extended, subtend by exocarp, smaller, obtuse at apex, opened when mature.





Fig. 022. *Shaolinchiana taiwaniana* S. S. Ying, the holotype NTUF-112-003



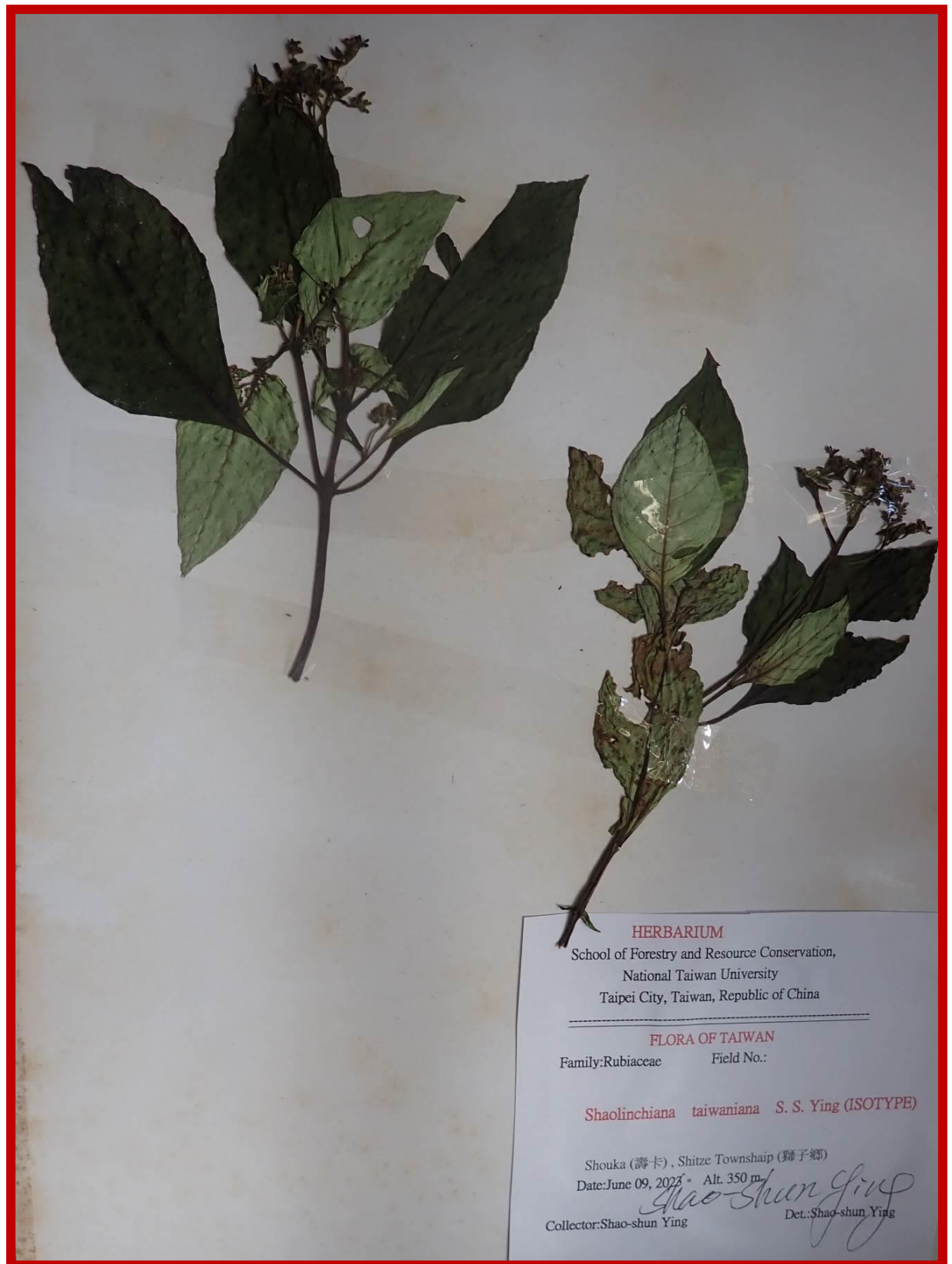


Fig. 023. *Shaolinchiana taiwaniana* S. S. Ying, the isotype NTUF-112-004

**Distribution and phenology.**

*Shaolinchiana taiwaniana* S.S. Ying is endemic to Taiwan ° The species is endemic in Taiwan, It is known from lower altitude of 320-450 m. of Shouka (壽卡) area, Shitze Township (獅子鄉) , Pingtung County, southern Taiwan ° It is a terrestrial plant and was collected at edge of the forest. Its flowering time is June to July, and fruiting time from July to August.



Fig. 024. *Shaolinchiana taiwaniana* S. S. Ying, inflorescences and fruits



Fig. 025. *Shaolinchiana taiwaniana* S. S. Ying, inflorescences

### 3. Two New Species of Genus *Begonia* (Begoniaceae) from Taiwan

#### A. *Begonia shoukaensis* S.S. Ying 壽卡秋海棠

*Begonia shoukaensis* S.S. Ying, *sp. nov.* 壽卡秋海棠

TYPE: TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 460 m alt. S. S. Ying, *s.n.* December 15, 2022. (holotype, NTUF).



Fig. 026. *Begonia shoukaensis* S. S. Ying, habit

**Morphology :** Perennial terrestrial herbs, stem short, purple, much branched, glabrous; branches spreading, 25-40 cm long, purplish red, glabrous. Leaves simple, alternate, distichous, lanceolate to oblong-lanceolate, 6.5-13 cm long, 2.5-4 cm wide, acuminate at apex, obliquely cordate and asymmetric at base, thinly fleshy, remotely serrate with a





Fig. 027. *Begonia shoukaensis* S. S. Ying, branches and leaves

macro at apex at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, midrib impressed surface and elevated beneath, usually purplish red in color; lateral veins 4-6 per side, impressed and elevated beneath, green in color. Petioles terete, 1-3.5 cm long, fleshy, purplish red, glabrous. Stipules smaller, usually cauduous.

Flowers momoecious, pink, 1.5-2.5 cm in diameter when opened, 3-6 in a axillary cymose; peduncles from leaf axils, 1.5-3.5 cm long, ascending to somewhat pending, glabrous, purplish red; bracts ovate, 3-5 mm long, 2.3-4 mm wide, obtuse at apex, glabrous, cauduous; pedicels slender, 3-5 mm long, purplish red, pink to white, glabrous ; staminate flowers: tepal 4, 2 large and 2 smaller; the larger ones ovate to rounded, 8-12 mm long, 5-6.5 mm wide, pink to white, obtuse to rounded at apex, glabrous; the smaller ones spatulate, 7-10 mm long, 3-4.5 mm wide, obtuse at apex, pink to white, glabrous; stamens numerous, filaments short, 2.5-3.5 mm long, yellow shortly fused at base; anthers 2-celled, rounded, 0.6 mm across, yellow; pistillate flowers: tepals 5 in 2 series, the outer 2



Fig. 028. *Begonia shoukaensis* S. S. Ying, inflorescences and infructescences



Fig. 029. *Begonia shoukaensis* S. S. Ying, male flowers





Fig. 030. *Begonia shoukaensis* S. S. Ying, female flower

ones somewhat larger, ovate, 7-9.5 mm long, 6-8 mm wide, obtuse at apex, pink to white, glabrous; inner 3 tepals oblong, 8-9.5 mm long, 4.5-6 mm wide, obtuse at apex, pink to white, glabrous; ovary trigonous-subspherical, body 4.5-4.5 mm long, 3.5-4 mm wide, green, 3-winged; wings subequal, triangular, 3.5-5 mm long, 4-6 mm wide; locules 3, placenta one per locule; styles 3, fused at base, 3.5 mm long, stigmas in a spiral and papillose.

Fruit a capsule, nodding, green to purplish red when fleshy, 1.0-1.2 cm long, 7-9 mm wide; wings unequal, oblong, the longest one 1.5-2 cm long, 8.5-11 mm wide, truncate at apex, green tinged with purplish red at apex; seeds numerous, ellipsoid, 0.2 mm long.

### **Diagnosis.**

*Begonia shoukaensis* is characterized by its large perennial herb with much branches and 3-6 monoecious flowers in axillary cymose, tepals 5 of pistillate and 4 in staminate flowers; and its terrestrial habitat.

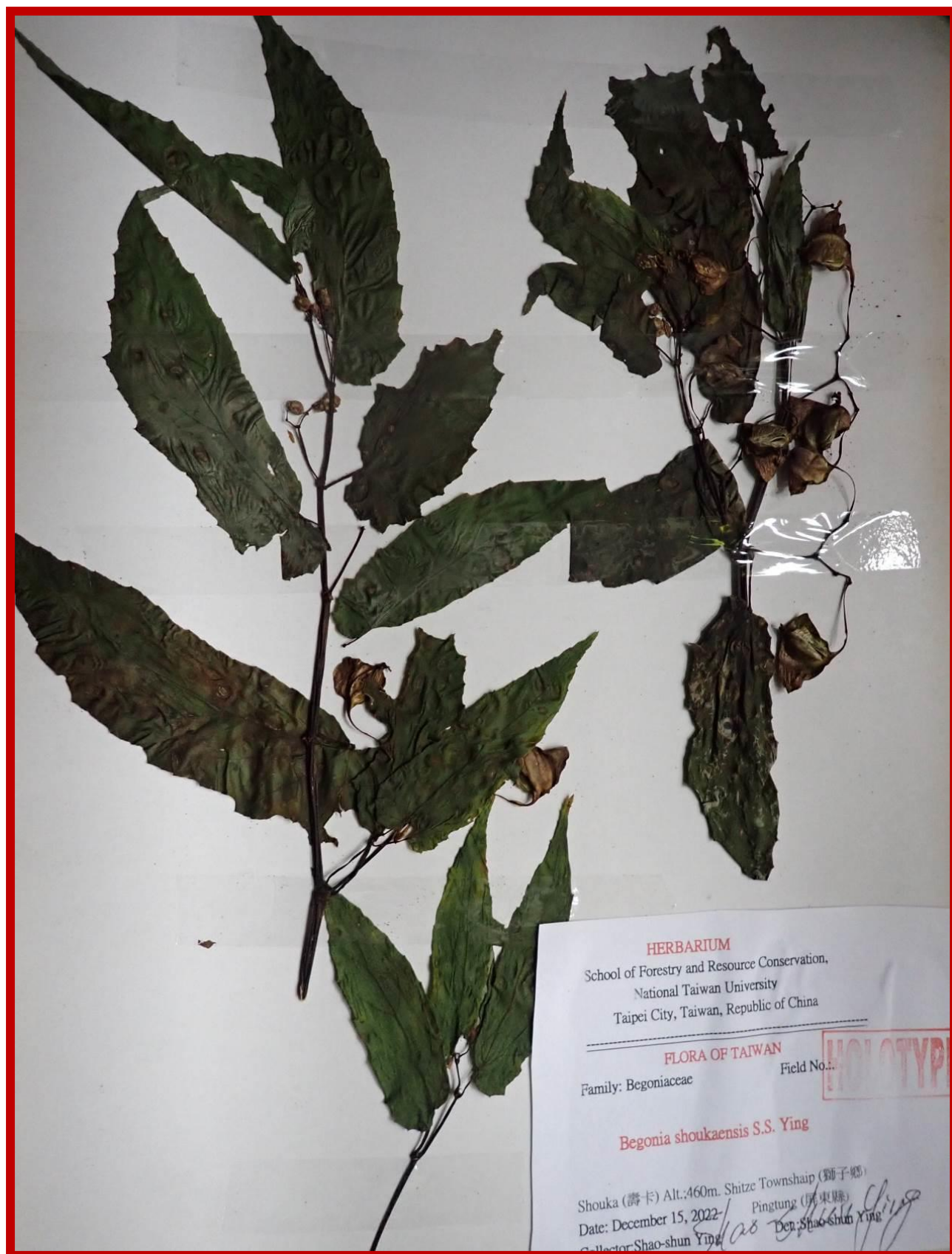


Fig. 031. *Begonia shoukaensis* S. S. Ying, the holotype NTUF-112-005



Fig. 032. *Begonia shoukaensis* S. S. Ying, the isotype NTUF-112-006





Fig. 033. *Begonia shoukaensis* S. S. Ying, fruits



Fig. 034. *Begonia shoukaensis* S. S. Ying, habitat





Fig. 035. *Begonia shoukaensis* S. S. Ying, habitat



Fig. 036. *Begonia shoukaensis* S. S. Ying, fruits and beneath of leaves



### **Distribution and phenology.**

The species is endemic in Taiwan, It is known from lower altitude of 400-550 m. of Shouka (壽卡) area, Shitze Township (獅子鄉) , Pingtung County, southern Taiwan . It was collected at edge of the forest. Its flowering time is November to December. June to July, and fruiting time from November to January and July to August, respectively.



Fig. 037. *Begonia shoukaensis* S. S. Ying, habit



Fig. 038. *Begonia shoukaensis* S. S. Ying, habitat

*Begonia tuncyanshanensis* S.S. Ying 東眼山秋海棠

*Begonia tuncyanshanensis* S.S. Ying, *sp. nov.* 東眼山秋海棠

TYPE:TAIWAN. Taoyuan city, Fushin District (復興區), Tuncyanshan (東眼山), 1093 m alt. S. S. Ying, *s.n.* January 27, 2023. (holotype, NTUF).



Fig. 039. *Begonia tuncyanshanensis* S. S. Ying, inflorescence

**Morphology :** Water-loving perennial terrestrial herbs, rhizome robust, horizontal, fleshy, 4-10 cm long, 5-6.5 mm across, brownish; fibrous roots many, slender, short, 2.5-3.5 cm long; stolon absent. Stemless. ,Leaves simple, larger, with elongate petioles, rounded to ovate-rounded, 20-26 cm long, 23-25 cm wide, acute at apex, cordate and slightly asymmetric at base, fleshy to coriaceous, entire to slightly wavy at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, pinnate-nerved usually impressed and slightly elevated beneath. Petioles terete, 22-30 cm long, fleshy, pale



green, glabrous, Stipules smaller, usually cauduous.



Fig. 040. *Begonia tungyanshanensis* S. S. Ying, leaves, rather larger



Fig. 041. *Begonia tungyanshanensis* S. S. Ying, male flowers, mind bracts

Flowers 5-6 in a cymose, momoecious, rather larger, white, 3-3.5 cm in diameter when opened; scape from the rhizome, 8-20 cm long, erect to ascending, green to pale green, glabrous; bracts 2, opposite, ovate to ovate-lanceolate, 6-8 mm long, 3-3.5 mm wide, white tinged with pink, acute at apex, glabrous, cauduous; pedicels slender, 12-19 mm long, white to pale pink, glabrous; staminate flowers: tepal 4, unequal, 2 larger and 2 smaller; the large ones broadly ovate, 15-18 mm long, 8-12 mm wide, white to few white tinged with pale pink, acute at apex, entire at margins, glabrous; the smaller ones ovate, 8-11 mm long, 5-6.5 mm wide, obtuse at apex, entire and plicate at margins, white; stamens numerous, filaments slender, 4.5-6 mm long, yellow, shortly fused at base; anthers 2-celled, rounded, 0.9 mm across, yellow; pistillate flowers: tepals 5 in 2 series, the outer 3 tepals somewhat larger, ovate, 10-12.5 mm long, 12-14 mm wide, obtuse at apex, white, glabrous; inner 2 tepals oblong, 10-11.5 mm long, 7.5-8 mm wide, obtuse at apex, white, glabrous; ovary trigonous-subspherical, body 10.5-12.5 mm long, 5.5-6 mm wide, pink, 3-winged; wings subequal, triangular, 12.5-15 mm long, 8-9 mm wide, entire at margins; locules 3, placenta one per locule; styles 3, fused at base, 3.5 mm long, stigmas in a spiraland papillose.



Fig. 042. *Begonia tungyanshanensis* S. S. Ying, close-up of male flowers





Fig. 043. *Begonia tuncyanshanensis* S. S. Ying, the holotype NTUF-112-007



Fig. 044. *Begonia tuncyanshanensis* S. S. Ying, the isotype NTUF-112-008





Fig. 045. *Begonia tungyanshanensis* S. S. Ying, close-up of female flowers

Fruit a capsule, nodding, pale brownish when mature, 1.2-1.5 cm long, 8-10 mm wide; wings unequal, oblong, the longest one 1.8-2.1 cm long, 2-2.2 cm wide, obtuse at apex, pale green turning to brownish; seeds numerous, ellipsoid, 0.15 mm long.

#### **Diagnosis.**

Near to *Begonia chitouensis* T.S. Liu et M.C. Lai in general appearance, but our species differs it by having larger plant and leaves, different shape and size of tepals both staminate and pistillate flowers.

#### **Distribution and phenology.**

The species is endemic in Taiwan, It is known from lower altitude of 900-1100 m. of Tungyanshan (東眼山) area, Fuhsin District (復興區) , Taoyuan city, northern Taiwan . It was collected at the edges around a creek of the forest. Its flowering time is December to January, and fruiting time from January to March.



Fig. 046. *Begonia tungschanensis* S. S. Ying, fruits



Fig. 047. *Begonia tungschanensis* S. S. Ying, habitat





合歡山秋海棠 (*Begonia hohuanensis* S.S. Ying)

The species was described in 1995, and acceptable by  
[Begonia hohuanensis S.S. Ying | Plants of the World Online | Kew Science](#)

#### 4. One New Species of Genus *Asarum* (Aristolchiaceae) from Taiwan

*Asarum shoukaense* S.S. Ying 壽卡細辛

*Asarum shoukaense* S.S. Ying, *sp. nov.* 壽卡細辛

TYPE: TAIWAN. Pingtung County, Shitze Townshap (獅子鄉), Shouka (壽卡) 412 m alt. S. S. Ying, *s.n.* December 15, 2022. (holotype, NTUF).



Fig. 048. *Asarum shoukaense* S. S. Ying, habitat

**Morphology :** A perennial herb, about 10-15 cm tall, rhizome creeping, horizontal, 3-3.5 mm in diameter, fleshy, pale brownish. Leaves 2-3 from the rhizome, cordate-triangular, 4.5-7 cm long, 3-5 cm wide, acuminate at apex, deeply cordate at base, thinly coriaceous, dark green, without any pale green to white or other color plaques surface, pale green beneath, scattered short pubescent surface, glabrous beneath, palmate veins at base



impressed surface and elevated beneath. Petioles elongate, 4-7 cm long, terete, fleshy, pubescent, tinged with pale brownish.



Fig. 049. *Asarum shoukaense* S. S. Ying, rhizome, roots, leaves, petioles and flower

Flowers 1, from rhizome, pale yellow, 1-1.5 cm in diameter when opened; cataphylls ovate, 1.5. × 1 cm; pedicles 6-9 mm long, pale brown, pubescent; calyx-tube 6-8 mm long .3-4.5 mm wide, scattered short hairs, light brown outside, dark brown inside, 3-4 series of brown protrusions at calyx-tube orifice, 3-lobed at apex; lobes ovate-triangular, 5-7 mm long, 4-5.1 mm wide, acute at apex, ciliate and entire at margin, pale yellow with brownish hairs all over, veins inconspicuous; stamens 8, filaments longer than anthers; connectives extended beyond anthers, ligulate; ovary half-inferior, 6-loculed; styles connate, 6-clefted at apex, stigmas terminal.

### **Diagnosis.**

*Asarum shoukaense* is recognized by its small leaves without any color plaques on both surface, smaller flowers and pale yellow calyx-lobes which with brownish pubescent.





Fig. 050. *Asarum shoukaense* S. S. Ying, plant with flower



Fig. 051. *Asarum shoukaense* S. S. Ying, close-up of flower





Fig. 052. *Asarum shoukaense* S. S. Ying, close-up of flower



Fig. 053. *Asarum shoukaense* S. S. Ying, habitat



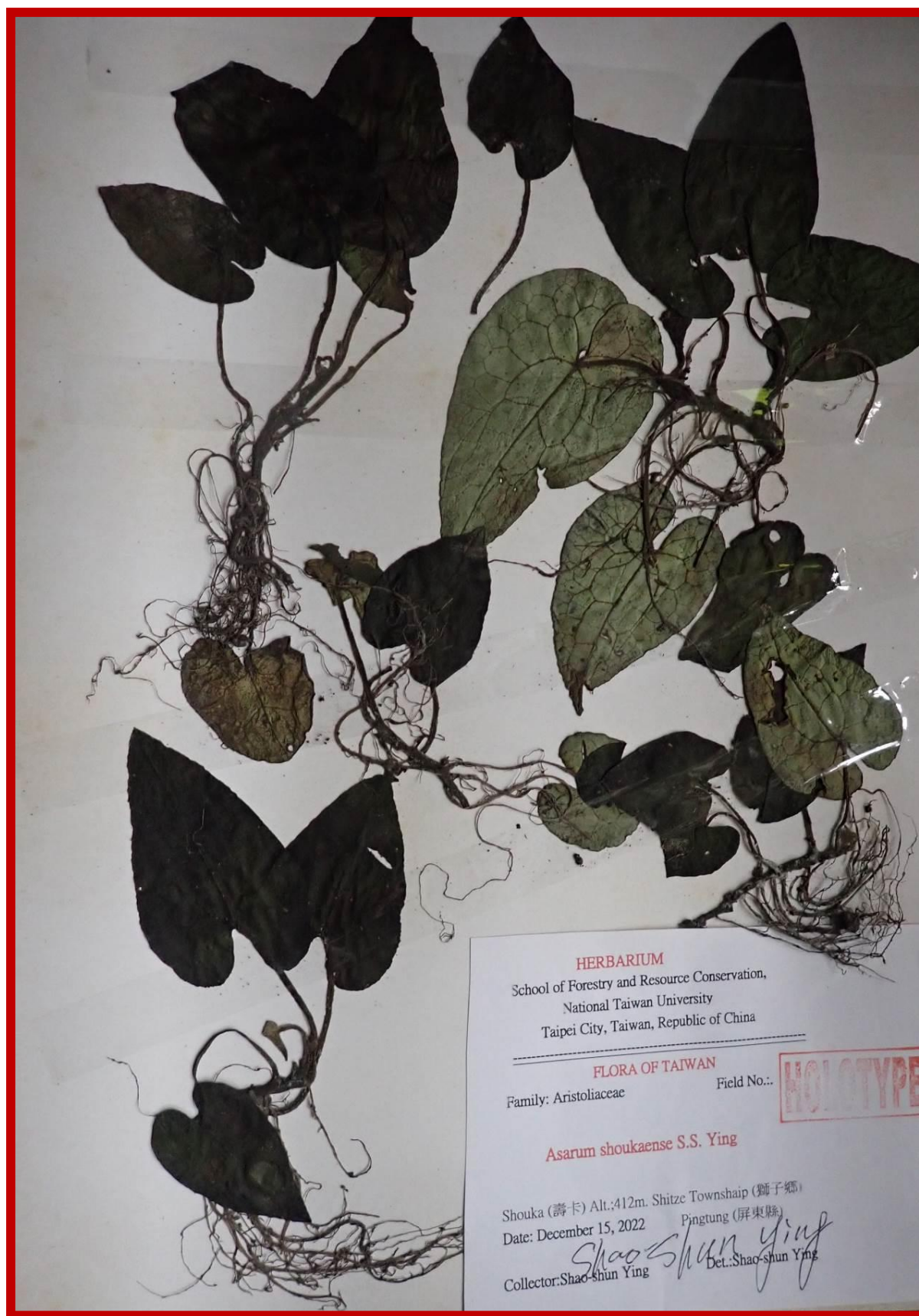


Fig. 054. *Asarum shoukaense* S. S. Ying, the holotype NTUF-112-009





Fig. 055. *Asarum shoukaense* S. S. Ying, habitat

**Distribution and phenology.**

*Asarum shoukaense* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), on the way between Shouka (壽卡), and Shuangliu (雙流), Shitze Township (獅子鄉), Pingtung county, southern Taiwan ° It was collected on roadsides, between 465 and 380 m altitudes; and flowering times is from December to January and fruiting times from January to February.

## 5. Two New Species of Genus *Pilea* (Urticaceae) in Taiwan

### *A. Pilea yingshaoyaoensis* S. S. Ying

*Pilea yingshaoyaoensis* S.S. Ying, *sp. nov.* 應氏冷水麻

TYPE: TAIWAN. Taoyuan city, Fuhsin District (復興鄉), Lalashan (拉拉山), Between Entrance of trail (步道入口) and Giant trees group (巨木群), 1958 m alt. *S. S. Ying*, *s.n.* October 09, 2023. (holotype, NTUF).



Fig. 056. *Pilea yingshaoyaoensis* S. S. Ying, a monoecious plant

**Morphology : Flowers monoecious:** Annual terrestrial herbs, rootstock corm-like, globose, 4-5 mm in diameter, fleshy, uneven; roots many, slender, fibrous, Stem few, produced from rootstock, slender, simple, creeping to ascending, 7-18 cm long, pale purplish, glabrous or nearly so, terete, slightly fleshy, sometimes branched at upper part. Leaves simple, opposite, usually on the top of stem, oblong to ovate-oblong, 3.2-6.5 cm long, 1.8-3.2 cm wide, acute to acuminate at apex, attenuate at base, chartaceous, dentate and ciliate at margins, scattered hirsute on both surfaces, 3-nerved impressed surface and elevated

beneath, lateral veins 1-2 per side also impressed surface and elevated beneath. Petioles 2.2-3.2 cm long, fleshy, pale purplish, grooved above, glabrous..



Fig. 057. *Pilea yingshaoyaoensis* S. S. Ying, stem and leaves

Flowers moecious. Male flowers smaller, numerous, 2.1-2.6 mm in diameter when opened; 8-15 flowers to form a head-like inflorescence, axillary; peduncle elongate, 3-4 cm long, fleshy, green to pale green, glabrous; all flowers subtended by a calyx-like involucre; involucre disc-like, 3-4 mm across, green, 5-minuted lobes at apex; pedicels no or sessile; bracts ovate 1.5-1.8 mm long, 0.7 mm wide, acute at apex, glabrous; perianth lobes 4-5, equal to subequal, ovate, 0.6-0.8 mm long, about 0.6 mm wide, red outside and pale red inside, obtuse at apex, entire; stamens 4-5, filaments slender, white, transparent, 0.5-0.7 mm long, glabrous; anthers basifixied, white, 2-elled, opened by longitudinal; rudimentary ovary small, inconspicuous.

Female flowers numerous, immerse in a fleshy discoid inflorescence, 0.3-0.6 mm in diameter when opened; peduncles 1.5-3 cm long, erect to ascending, scattered few hairs; inflorescence discoid, 0.8-1.2 cm in diameter, subtended by a calyx-like involucre;





Fig. 058. *Pilea yingshaoyaoensis* S. S. Ying, close-up of male inflorescence

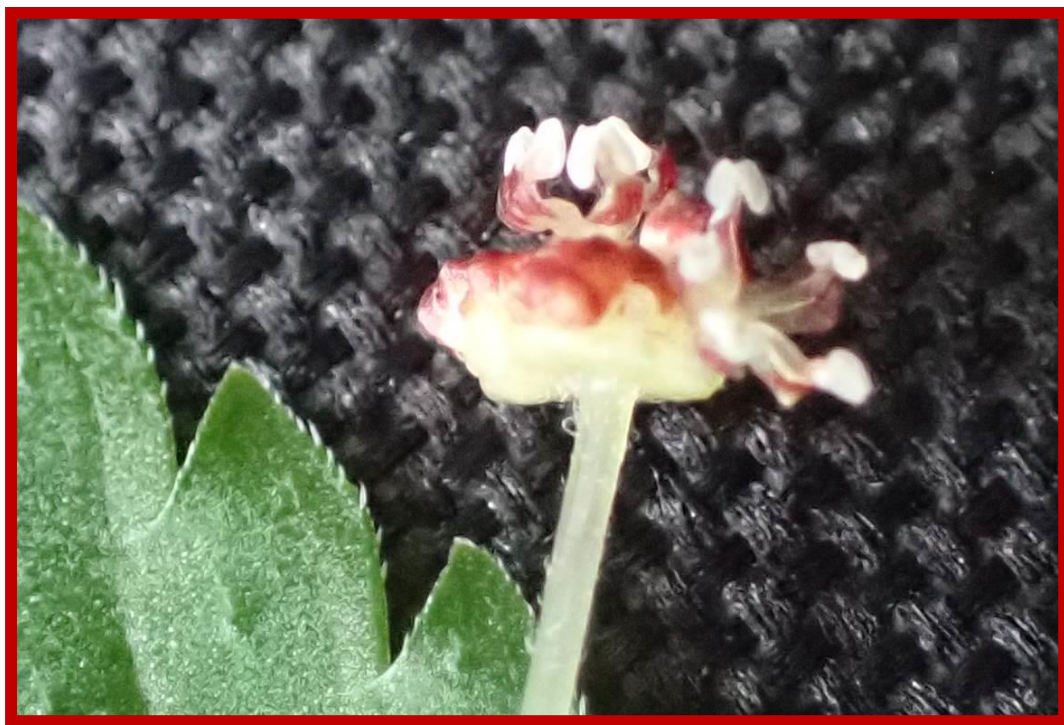


Fig. 059. *Pilea yingshaoyaoensis* S. S. Ying, close-up of male flowers



Fig. 060. *Pilea yingshaoyaoensis* S. S. Ying, close-up of female inflorescence

Involucre 1.1-1.5 cm in diameter, green, 15-20 lobed at apex, glabrous; lobes linear to linear-lanceolate, 5.5-6.5 mm long, about 1.2-1.5 mm wide, acute to obtuse at apex, green; each inflorescence with numerous flowers; pedicels 0; bracteoles linear, 0.2-0.3 mm long, about 0.1 mm wide; sepals 4-5, ovate-triangular, 1.2-1.5 mm long, 0.4-0.5 mm wide, obtuse at apex, green; ovary ovoid to ellipsoid, 0.25-0.3 mm long, glabrous, stigma 1-2 haired, 0.2-0.3 mm long, caudate.

### **Diagnosis.**

*Pilea yingshaoyaoensis* is recognized by its monoecious plants, with corm-like rootstock, ovate to ovate-oblong leaves; 8-15 male flowers to form a head-like inflorescence, axillary; involucre disc-like, 3-4 mm across, green, 5-minuted lobes at apex; stamens 4-5; female flowers numerous, immerse in a fleshy discoid inflorescence, 0.3-0.6

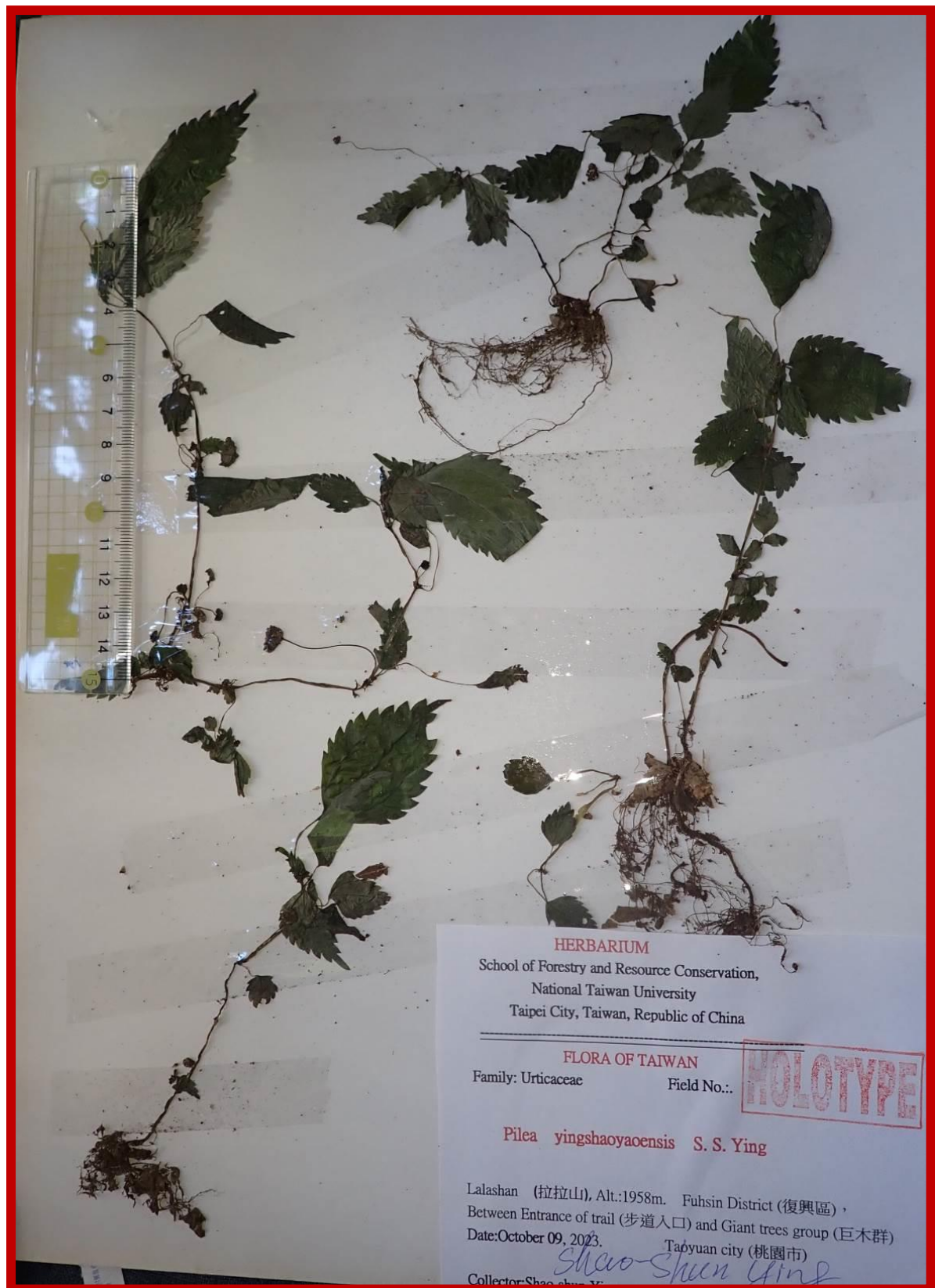


Fig. 061. *Pilea yingshaoyaoensis* S. S. Ying, the holotype NTUF-112-010



mm in diameter when opened; peduncles 1.5-3 cm long; inflorescence discoid, 0.8-1.2 cm in diameter, subtended by a calyx-like involucre; sepals 4-5, ovate-triangular; ovary ovoid to ellipsoid.

Specific name is after Dr. Shao-yao Ying, Professor of Southern California University, my brother, for his valuable help to me.



Fig. 062. *Pilea yingshaoyaoensis* S. S. Ying, the monoecious plants

#### **Distribution and phenology.**

*Pilea yingshaoyaoensis* S.S. Ying is endemic to Taiwan. It is known from Lalashan (拉拉山), Between Entrance of trail (步道入口) and Giant trees group (巨木群) Fuhsin District (復興區), Taoyuan city, northern Taiwan. It was collected on roadsides, between 1800 and 1953 m in altitudes; and flowering times is from October.

*B.Pilea loshanensis* S. S. Ying

*Pilea loshanensis* S.S. Ying , *sp. nov.* 樂山冷水麻

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉) , Guanwu (觀霧), Loshan Forest Road (樂山林道), 2550 m alt. *S. S. Ying* , *s.n. October 26, 2023* ° (holotype , NTUF) °



Fig. 063. *Pilea loshanensis* S. S. Ying, plants growing in situ

**Morphology : Flowers dioecious:** Annual terrestrial herbs, rootstock somewhat corm-like, ovoid, 4.5-5.5 mm in diameter, fleshy; roots many, slender, fibrous, Stem many, produced from rootstock, slender, branched, ascending to erect, 10-21 cm long, pale purplish, fleshy. glabrous, angular; branches ascending to erect, 5-10 cm long, glabrous. Leaves simple, opposite, usually on the top of stem, ovate to ovate-oblong, 1.5-3.5 cm long, 1.2-2.2 cm wide, acute to a caudate at apex, obtuse at base, chartaceous, dentate at





Fig. 064. *Pilea loshanensis* S. S. Ying, branches and leaves

margins, glabrous on both surfaces, 3-nerved impressed surface and elevated beneath, lateral veins 2-3 per side also impressed surface and elevated beneath. Petioles 1.5-3.5 cm long, fleshy, pale purplish, grooved above, glabrous.

Flowers dioecious: female flowers, green, rather larger, 3-5 mm in diameter when opened, usually 10-15 in a raceme, 4-5 racemes radial arrangement from leaf-axil and stem; each raceme 1.5-2.5 cm long, green, glabrous; pedicels 1.2-2.5 mm long, green to pale green, glabrous; bracts ovate, 1.5-2 mm long, 0.6-0.8 mm wide, acute at apex; sepals 4, ovate-lanceolate, 2.5-3.5 mm long, 1.4-1.7 mm wide, acute at apex, green; ovary ovoid to ellipsoid, 0.45-0.6 mm long, glabrous, stigma 1-2 haired, 0.4-0.6 mm long, cauduous. Staminate flowers unknown.





Fig. 065. *Pilea loshanensis* S. S. Ying, inflorescences



Fig. 066. *Pilea loshanensis* S. S. Ying, close-up of inflorescences



Fig. 067. *Pilea loshanensis* S. S. Ying, close-up of flowers

#### Diagnosis.

*Pilea loshanensis* is recognized by its dioecious plants, with corm-like rootstock, smaller leaves and ovate to ovate-oblong leaves; rather larger flowers which usually 10-15 in a raceme, 4-5 racemes radial arrangement from leaf-axil and stem; sepals 4, ovate-lanceolate, 2.5-3.5 mm long, 1.4-1.7 mm wide, acute at apex, green; ovary ovoid to ellipsoid, 0.45-0.6 mm long, glabrous, stigma 1-2 haired.

#### Distribution and phenology.

*Pilea loshanensis* S.S. Ying is endemic to Taiwan ° It is known from Loshan





Fig. 068. *Pilea loshanensis* S. S. Ying, the holotype NTUF-112-011



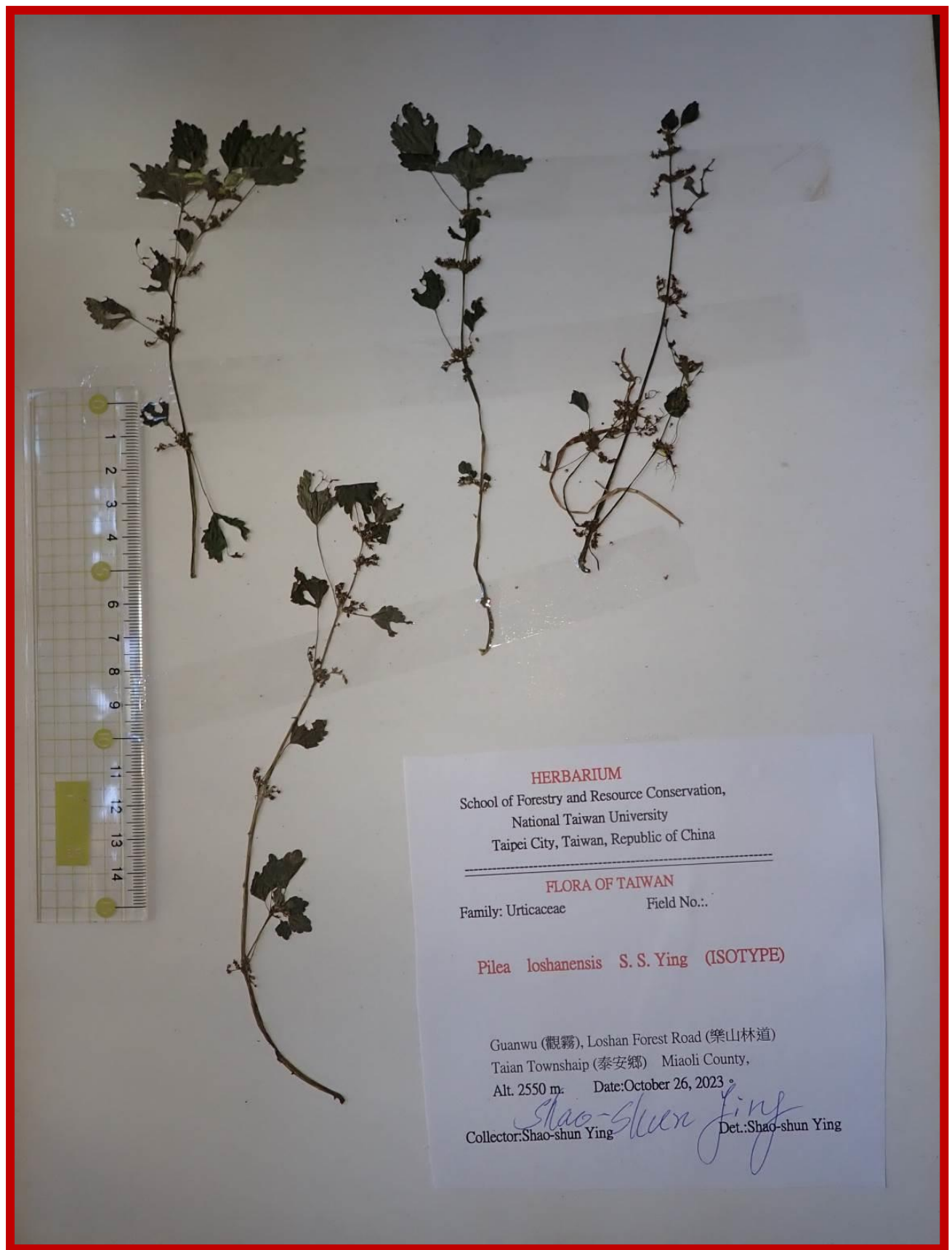


Fig. 069. *Pilea loshanensis* S. S. Ying, the isotype

NTUF-112-012

Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. ◦ It was discovered the species on edges of forests at the elevations of 2,400-2,610 meters. Its flowering time is October and fruiting time is October to November.



Fig. 070. *Pilea loshanensis* S. S. Ying, plants is growing in situ



Fig. 071. *Pilea loshanensis* S. S. Ying, close-up of inflorescences-

## 6.Four New Species of Genus *Eurya* (Pentaphylacaceae) from Taiwan

*A.Eurya citruofolia* S. S. Ying 類橘葉柃木

*Eurya citruofolia* S.S. Ying , *sp. nov.* 類橘葉柃木

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉) , Shouka (壽卡) 442 m alt. *S. S. Ying* , *s.n. January 05, 2023* . (holotype , NTUF) .

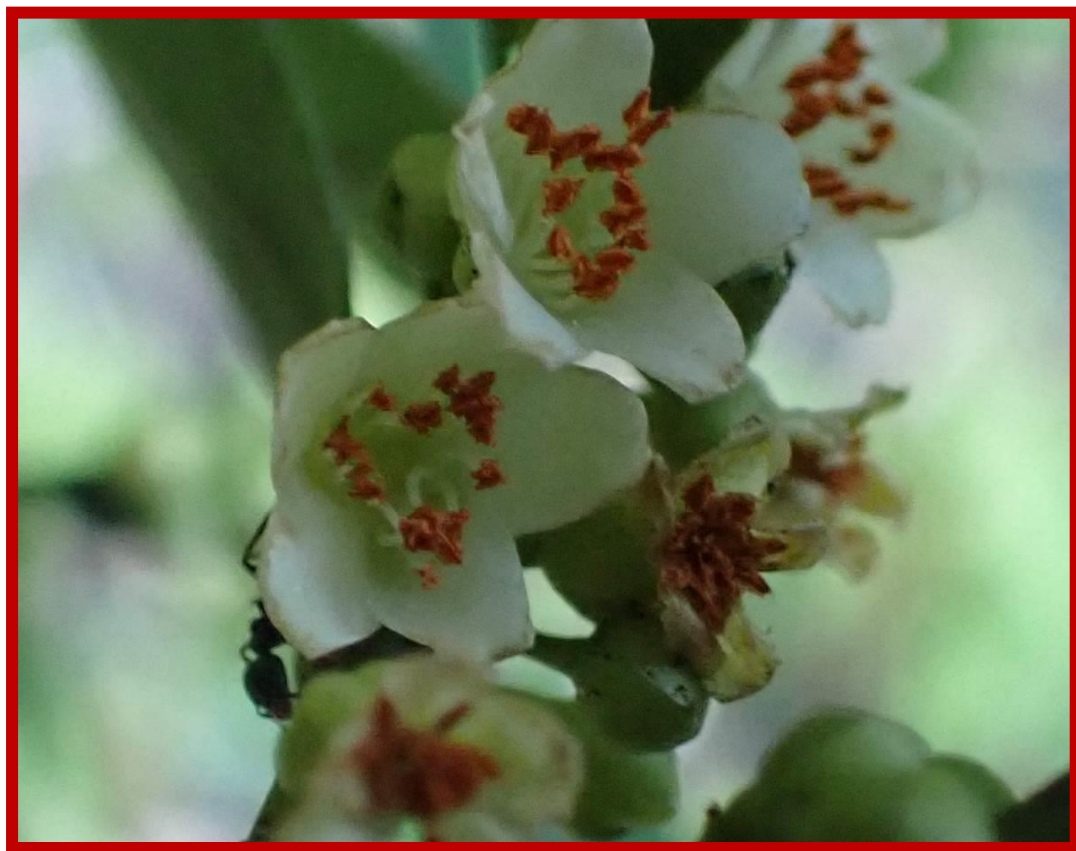


Fig. 072. *Eurya citruofolia* S. S. Ying, close-up of male flowers

**Morphology** : Small trees, about 4 m high, much-branched; branches erect to ascending, green to dark green in color firstly and then becoming greenish gray, glabrous. Leaves simple, alternate, somewhat *citrus* leaf-like, oblong to oblong-lanceolate, 3.5-5.5 cm long, 1.8-2.5 cm wide, acuminate to a short caudate at apex, obtuse at base, coriaceous, lustrous green surface, pale green beneath, glabrous on both surfaces, dentate upward and





Fig. 073. *Eurya citruofolia* S. S. Ying, branches and leaves

entire at base at margins, midrib impressed surface and elevated beneath, lateral veins 5-8 per side, impressed surface and elevated beneath. Petioles short, 5-12 mm long, green, grooved above, glabrous.



Fig. 074. *Eurya citruofolia* S. S. Ying, inflorescence

Flowers dioecious, small, solitary, 2.5-3.5 mm in diameter when open, white, widely opened, borne on the leaf-axils and branchlets each; pedicels short, 3-4 mm long, glabrous; bracts 2-3, small, ovate, 0.5-0.8 mm long, 0.5 mm wide, cauduous; sepals 5, ovate, 2.5-3.5 mm long, 1.5-2 mm wide, obtuse to acute at apex, glabrous, glabrous; petals 5, extend, not reflexed, ovate, 3.5-4.2 mm long, about 2.5 mm wide, obtuse at apex, glabrous; stamens many, 15-20 in a male flower, white; filaments short, slender, linear, about 1.7 mm long, connected at base, anthers basifixed, brownish, 1.5 mm long, longitudinal dehiscent; female flowers unknown.



Fig. 075. *Eurya citruifolia* S. S. Ying, close-up of a flower, mind anther base connected

Fruits compressed globose, 3-4 mm across, 3 mm long, emarginate at apex with persistent short style, green when young, glabrous, with persistent not accrescent calyx; pedicels terete, 3.5-4 mm long, glabrous.

#### **Diagnosis.**

The species is characterized by its small tree, leaves somewhat like *citrus* leaf, dioecious flower, white, widely opened flowers, 15-20 stamens and basifixed anthers which often longitudinal dehiscent.



Fig. 076. *Eurya citruofolia* S. S. Ying, fruits

Distribution and phenology.

*Eurya citruofolia* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽



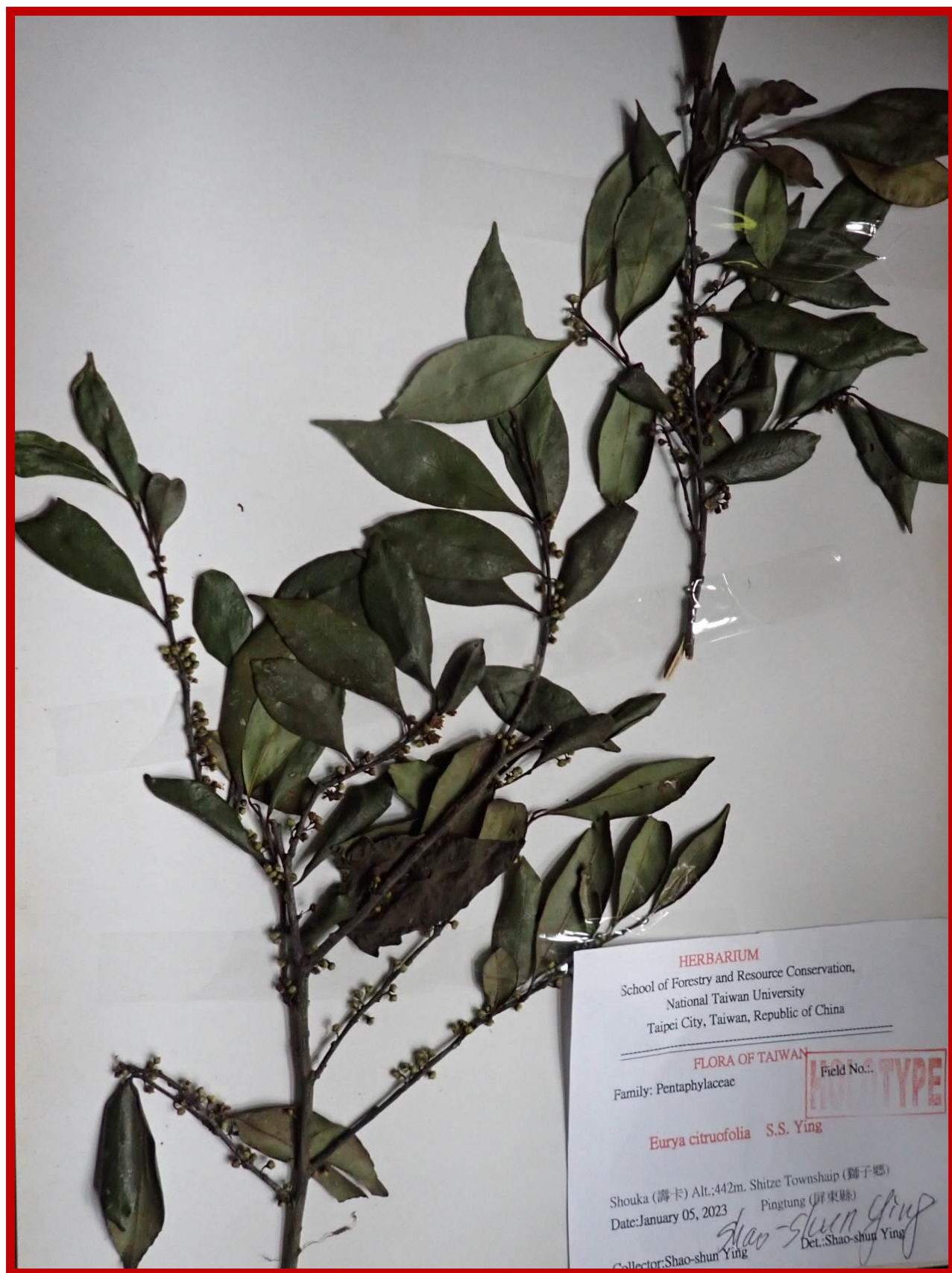


Fig. 077. *Eurya citruofolia* S. S. Ying, the holotype NTUF-112-013

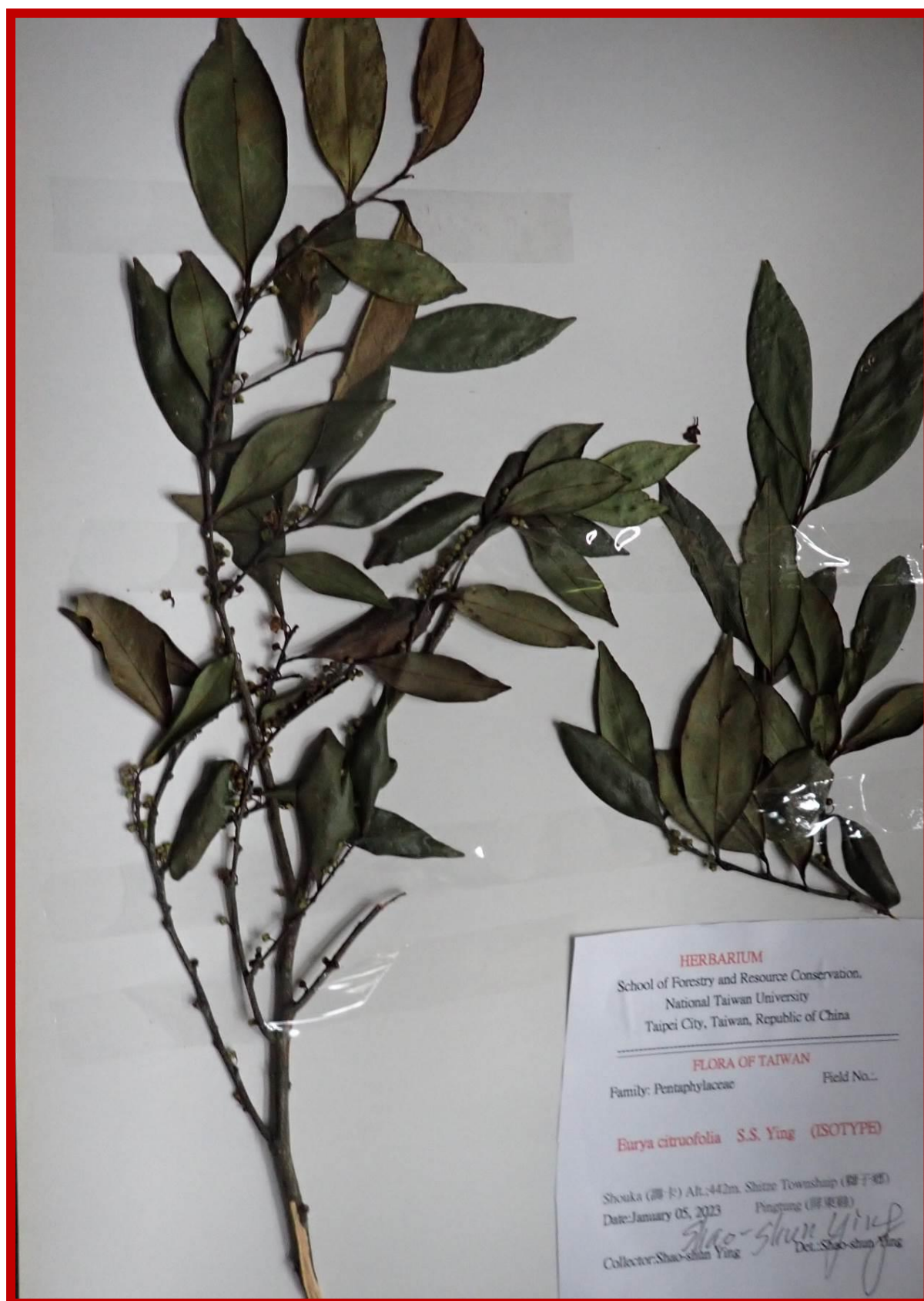


Fig. 078. *Eurya citruofolia* S. S. Ying, the isotype

NTUF-112-014



卡), on the roadside thickets near to Shouka (壽卡), Shitze Township (獅子鄉), Pingtung county, southern Taiwan. It was collected on roadsides thickets, between 465 and 420 m altitudes; and flowering times is from January to February and fruiting times from February to March.



Fig. 079. *Eurya citruofolia* S. S. Ying, inflorescence



Fig. 080. *Eurya citruofolia* S. S. Ying, close-up of male flowers



*B. Eurya guanwuensis* S. S. Ying 觀霧桫欏木

*Eurya guanwuensis* S.S. Ying, *sp. nov.* 觀霧桫欏木

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2218 m alt. S. S. Ying, *s.n. February 09, 2023* ° (holotype, NTUF) °



Fig. 081. *Eurya guanwuensis* S. S. Ying, close-up of male flowers

**Morphology** : Small trees to shrubs, about 2 m high, much-branched; branches erect to ascending, green to dark green in color firstly and then becoming brownish gray, short pubescent. Leaves simple, alternate, oblong to oblong-ovate, 1.5-3.2 cm long, 0.8-1.5 cm wide, obtuse at apex, obtuse at base, coriaceous, lustrous green surface, pale green beneath, glabrous on both surfaces, serrate at margins, midrib impressed surface and elevated beneath, lateral veins 6-9 per side, impressed surface and elevated beneath. Petioles short, 1.5-2 mm long,



Fig. 082. *Eurya guanwuensis* S. S. Ying, branchlet and leaves with female flowers



Fig. 083. *Eurya guanwuensis* S. S. Ying, branchlet, leaves and female flower-buds



green, grooved above, glabrous.

Flowers dioecious, small, solitary, usually borne on the branchlets. Male flowers 2.5-3.2 mm in diameter when open, white, widely opened; pedicels short, 2-3 mm long, green, glabrous; bracts 2-3, small, lanceolate, 0.6-0.7 mm long, 0.5 mm wide, cauduous; sepals 5, ovate to oblong, 2.2-3.2 mm long, 1.5-2 mm wide, obtuse to acute at apex, glabrous; petals 5, extend, not reflexed, ovate, 3.5-4.5 mm long, about 2.5-3 mm wide, obtuse at apex, white, glabrous; stamens 5-8; filaments short, slender, linear, about 1.5 mm long, connected at base, white to pale green; anthers basifixed, brownish, 1.3 mm long, longitudinal dehiscent.



Fig. 084. *Eurya guanwuensis* S. S. Ying, close-up of male flowers

Female flowers solitary, borne on branchlets, 3.2-3.9 mm in diameter when open, white tinged with pale purple at apex, widely opened; pedicels short, 1.5-2 mm long, green, glabrous; bracts 2-3, small, triangular, 0.5-0.7 mm long, 0.5 mm wide, acute at apex, cauduous; sepals 5, ovate to oblong, 2.5-3.5 mm long, 1.5-2 mm wide, acute at apex, glabrous; petals 5, extend, ovate, 3.2-3.9 mm long, about 2.3-3 mm wide, obtuse and



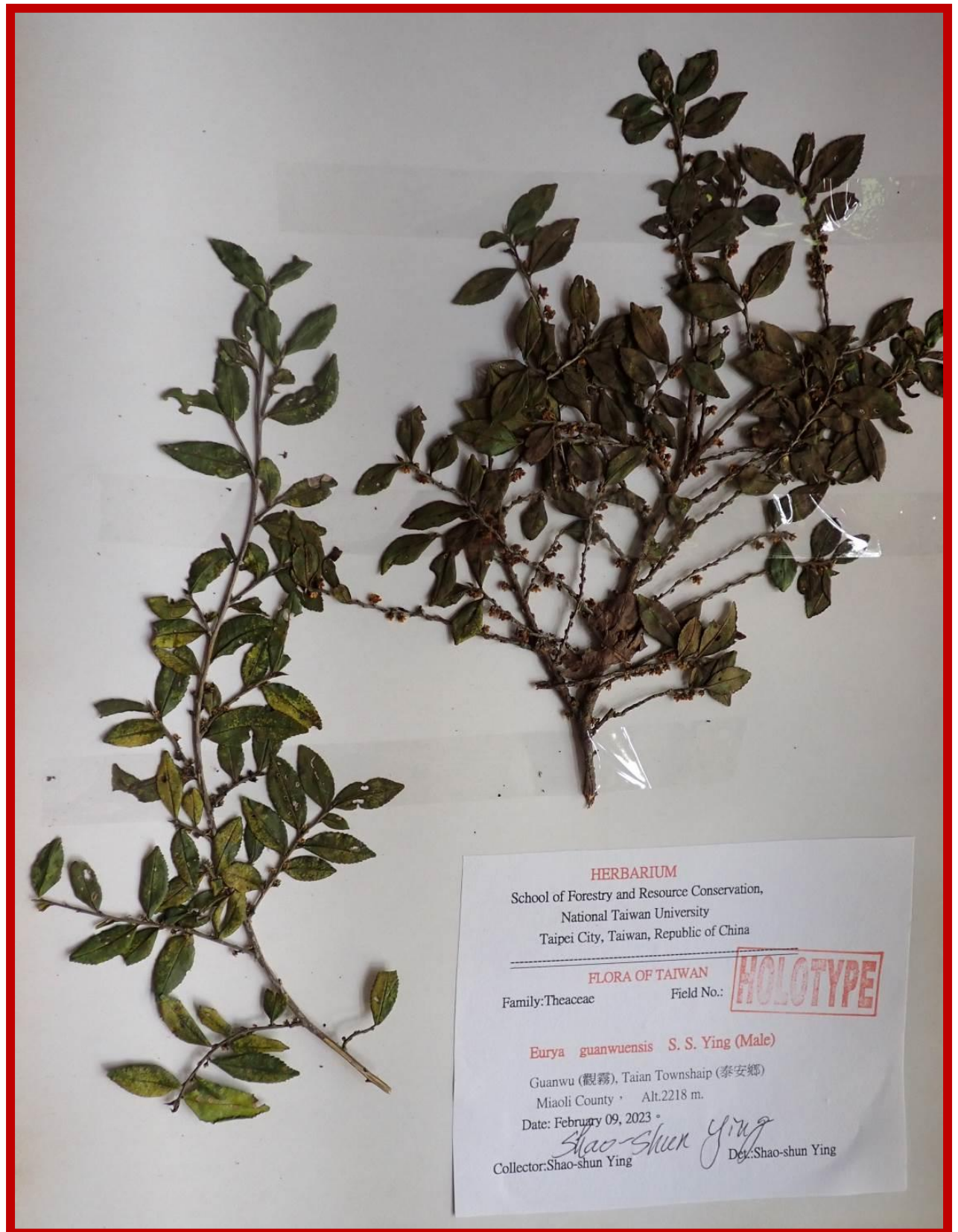


Fig. 085. *Eurya guanwuensis* S. S. Ying, the holotype (male flowers) NTUF-112-015



Fig. 086. *Eurya guanwuensis* S. S. Ying, close-up of female flowers

slightly reflexed at apex, white tinged with pale purple or red at apex, glabrous; staminodes absent; style short, 1.5-2 mm long; stigmas 3, 0.6 mm long, white tinged purple at apex; ovary globose, 0.6 mm across. glabrous, pale yellow.

#### **Diagnosis.**

The species is characterized by its small tree to shrub, leaves somewhat smaller, oblong to oblong-ovate, dioecious flower, male flowers 5-8 stamens without pistil and female flowers without staminodes.

#### **Distribution and phenology.**

*Eurya guanwuensis* S.S. Ying is endemic to Taiwan ° It is known from Zhenshan (榛山), Guanwu (觀霧), Taian Townshap (泰安鄉), Miaoli County, Central Taiwan. ° It was discovered the species at edge of thickets at elevations of 2100-





Fig. 087. *Eurya guanwuensis* S. S. Ying, the holotype (female flowers) NTUF-112-016



2250 meters. Its flowering time is February to March and fruiting time is April to June.



Fig. 088. *Eurya guanwuensis* S. S. Ying, female flowers

*C.Eurya taianensis* S. S. Ying 泰安柃木

*Eurya taianensis* S.S. Ying, *sp. nov.* 泰安柃木

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2218 m alt. S. S. Ying, *s.n.* March 10, 2023. (holotype, NTUF).



Fig. 089. *Eurya taianensis* S. S. Ying, branch with young fruits

**Morphology** : Medium-size trees up to 5 m high, much-branched; bark smooth, grayish black; branches erect to ascending, 1.5-2.5 m long, grayish brown, glabrous when adult; branchlets elongate, 50-140 cm long, densely covered with brownish hirsute when young and turned to glabrous or nearly so adult. Leaves simple, alternate, distichous, widely lanceolate to oblong-lanceolate, 8.5-13.5 cm long, 1.5-3.5 cm wide, acuminate at apex, obtuse and slightly obliquely at base, thickly coriaceous, lustrous green surface, pale green beneath, glabrous on both surfaces, serrate at margins, midrib impressed surface and elevated beneath, lateral veins 6-9 per side, impressed surface and elevated beneath. Leaf



bud usually with densely brownish hairs but glabrous when adult. Petioles sessile.



Fig. 090. *Eurya taianensis* S. S. Ying, branch and distichous leaves

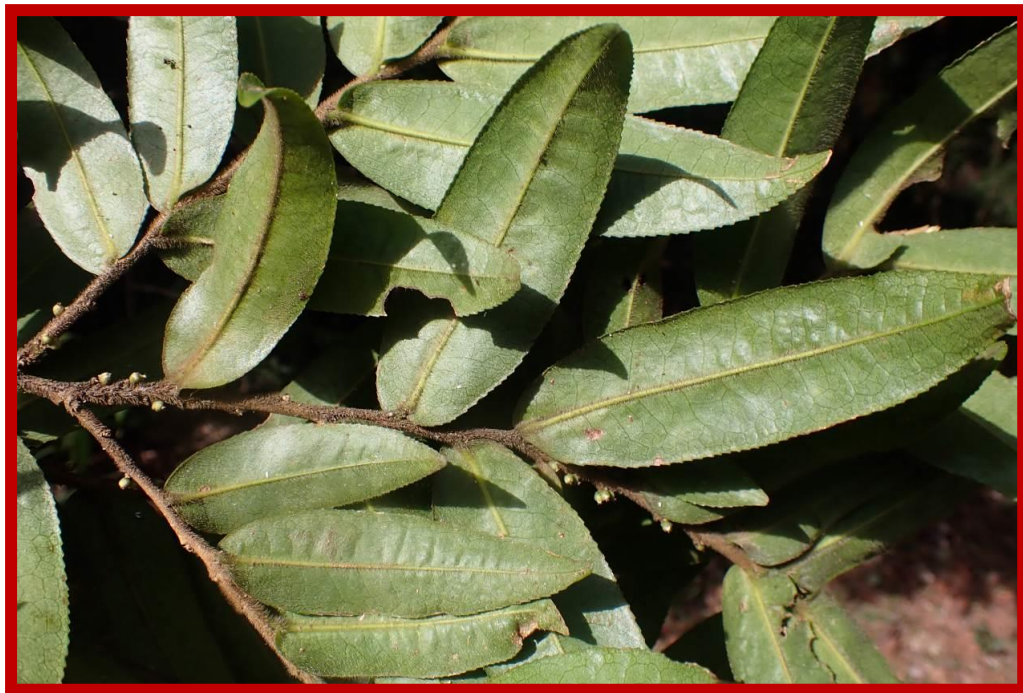


Fig. 091. *Eurya taianensis* S. S. Ying, branch and leaf beneath





Fig. 092. *Eurya taianensis* S. S. Ying, female flowers and young fruits on a branch

Flowers dioecious, small, solitary, usually borne on the branchlets and leaf-axils. Male flowers unknown. Female flowers 2.2-2.9 mm in diameter when open, white tinged with pink at apex; pedicels short, 0.5-1.2 mm long, green, hairy; bracts 2-3, small, triangular, 0.5-0.7 mm long, 0.5 mm wide, acute at apex, densely covered with brown hirsute; sepals 5, ovate 2.5-3.5 mm long, 1.5-2 mm wide, obtuse to acute at apex, glabrous; petals 5, ovate to oblong, 2.2-2.9 mm long, about 1.5-2.2 mm wide, acute and slightly reflexed at apex, white tinged with pink at apex, glabrous; staminodes absent; style 2-3, 1.5-2.5 mm long; stigmas sot-like; ovary hairy, 0.4-0.8 mm across. pale green.





Fig. 093. *Eurya taianensis* S. S. Ying, young fruits on a branch mind leaf sessile)



Fig. 094. *Eurya taianensis* S. S. Ying, fruits on branches





Fig. 095. *Eurya taianensis* S. S. Ying, habit and habitat





Fig. 096. *Eurya taianensis* S. S. Ying, the holotype NTUF-112-017



Fig. 097. *Eurya taianensis* S. S. Ying, the isotype NTUF-112-018





Fig. 098. *Eurya taianensis* S. S. Ying, the isotype NTUF-112-019

Fruits globose, 2.5-3.8 mm across, 3 mm long, obtuse at apex with persistent short style, yellowish green when young, hairy, with persistent not accrescent calyx; pedicels terete, 1.5-2.5 mm long, hairy.

### Diagnosis.

The species is characterized by its medium size tree, leaves sessile, one of the largest leaf species of the genus *Eurya* in Taiwan; flowers dioecious, the female flowers without staminodes with a hairy ovary and fruit. .

### Distribution and phenology.

*Eurya taianensis* S.S. Ying is endemic to Taiwan ° It is known from on the way between Guanwu (觀霧) to Sheipa Jia-Cao Leisure Farm(雪霸觀霧加草休閒農園), Taian Townshaip (泰安鄉) , Miaoli County, central Taiwan. ° It was discovered the species at the edge of forests at elevations of 1980-2250 meters. Its flowering time is January to February and fruiting time is March to April.



Fig. 099. *Eurya taianensis* S. S. Ying, habit



*D.Eurya chichaoyangensis* S. S. Ying 志佳陽桫欏木

*Eurya chichaoyangensis* S.S. Ying , *sp. nov.* 志佳陽桫欏木

TYPE:TAIWAN. Taichung City,Hoping District (和平區) , Chichaoyangtashan (志佳陽大山) 1880 m alt. *S. S. Ying* , *s.n. March 23 2023* . (holotype , NTUF) .



Fig. 100. *Eurya chichaoyangensis* S. S. Ying, yang fruits

**Morphology :** Small trees up to 4.5 m high, much-branched; branches erect to ascending, gray in color, smooth, glabrous. Leaves simple, alternate, ovate, oblong to oblong-ovate, 3.2-5.5 cm long, 1.5-2.5 cm wide, acuminate at apex, obtuse at base, coriaceous, lustrous green surface, pale green beneath, glabrous on both surfaces, serrate at margins, midrib impressed surface and elevated beneath, lateral veins 5-7 per side, impressed surface and elevated beneath (somewhat inconspicuous). Petioles short, 1.5-2.5 mm long, glabrous, green. Leaves on male tree somewhat smaller.



Fig. 101. *Eurya chichaoyangensis* S. S. Ying, branches and leaves



Fig. 102. *Eurya chichaoyangensis* S. S. Ying, male flowers



Flowers dioecious, small, usually solitary, borne on the branchlets and leaf-axils. Male flowers 1.5-2.2 mm in diameter when open, white, not widely opened; pedicels short, 1.52-2.3 mm long, green, glabrous; bracts 1-2, small, ovate-lanceolate, 0.5-0.8 mm long, 0.5 mm wide, cauduous; sepals 5, ovate, 2.5-3.5 mm long, 1.5-2.3 mm wide, obtuse at apex, glabrous; petals 5, erect, not reflexed, ovate, 3.8-4.7 mm long, about 2.8-3.3 mm wide, obtuse and slightly wavy at apex, white, glabrous; stamens 5; filaments short, slender, linear, about 2.5-3 mm long, connected at base, brownish; anthers basifixed, brownish, 1.3 mm long, awn-like at apex, longitudinal dehiscent.

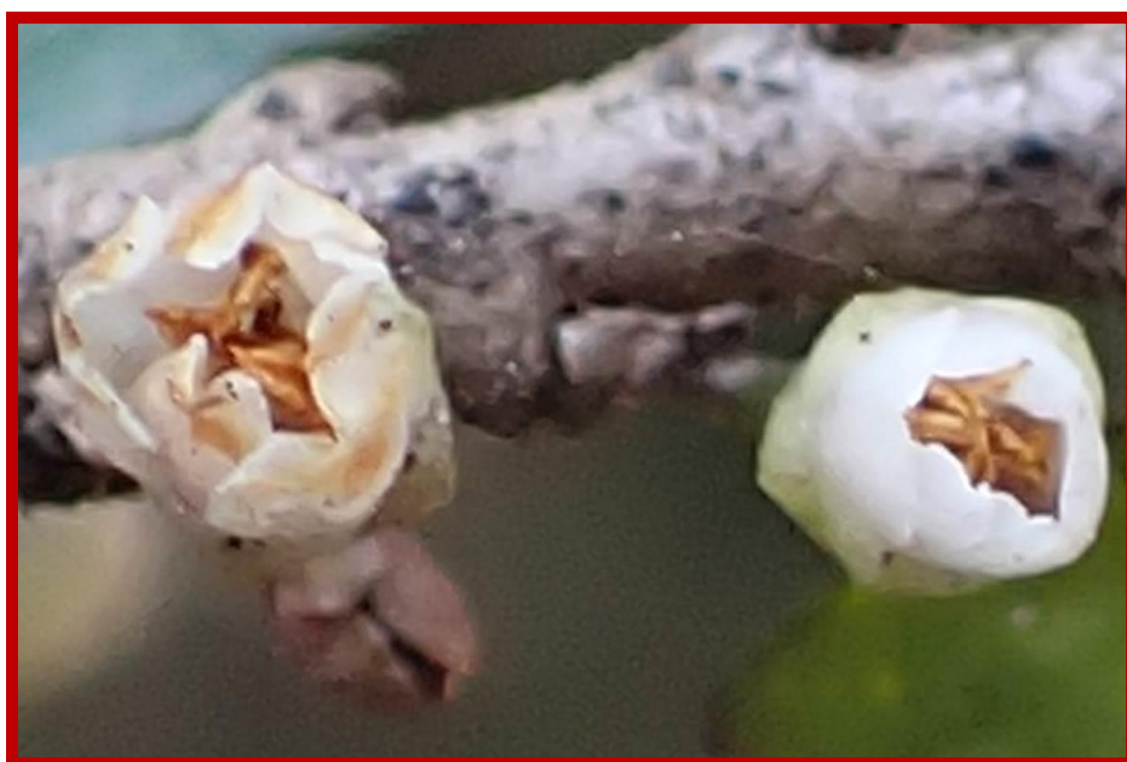


Fig. 103. *Eurya chichaoyangensis* S. S. Ying, close-up of male flowers

Female flowers solitary to 2-4 fascicled, borne on branchlets and leaf-axils, 2.5-3.2 mm in diameter when open, white at apex, widely opened; pedicels short, 2.5-3 mm long, green, glabrous; bracts 2-3, small, triangular, 0.6-0.8 mm long, 0.6 mm wide, obtuse at apex, cauduous; sepals 5, ovate to oblong, 2.5-3.5 mm long, 1.5-2 mm wide, acute at apex, glabrous; petals 5, extend, ovate, 3.2-3.9 mm long, about 2.5-3 mm wide, obtuse at apex, white, glabrous; staminodes absent; style short, 1.5-2 mm long, black; stigmas 3, 0.5 mm long, white tinged purple at apex; ovary globose, 0.6 mm across. glabrous, green.



Fig. 104. *Eurya chichaoyangensis* S. S. Ying, young fruits, few wither petals persistent



Fig. 105. *Eurya chichaoyangensis* S. S. Ying, close-up of young fruits, with a protrude apex



Young fruits globose, 1.5-2.8 mm across, 3.5-4 mm long, obtuse with a protrude apex and with persistent style, green when young, glabrous, with persistent not accrescent calyx; pedicels terete, 1.5-2.6 mm long, green, glabrous.



Fig. 106. *Eurya chichaoyangensis* S. S. Ying, young fruits and leaf-beneaths

#### **Diagnosis.**

The species is characterized by its small tree, glabrous leaves; dioecious flowers and the male flowers with 5 stamens without pisti, the petals with obtuse and wavy apex; the female flowers without staminodes, black style and 3-very short stigma; fruits usually with a protrude apex.

#### **Distribution and phenology.**

*Eurya chichaoyangensis* S.S. Ying is endemic to Taiwan ◦ It is known from

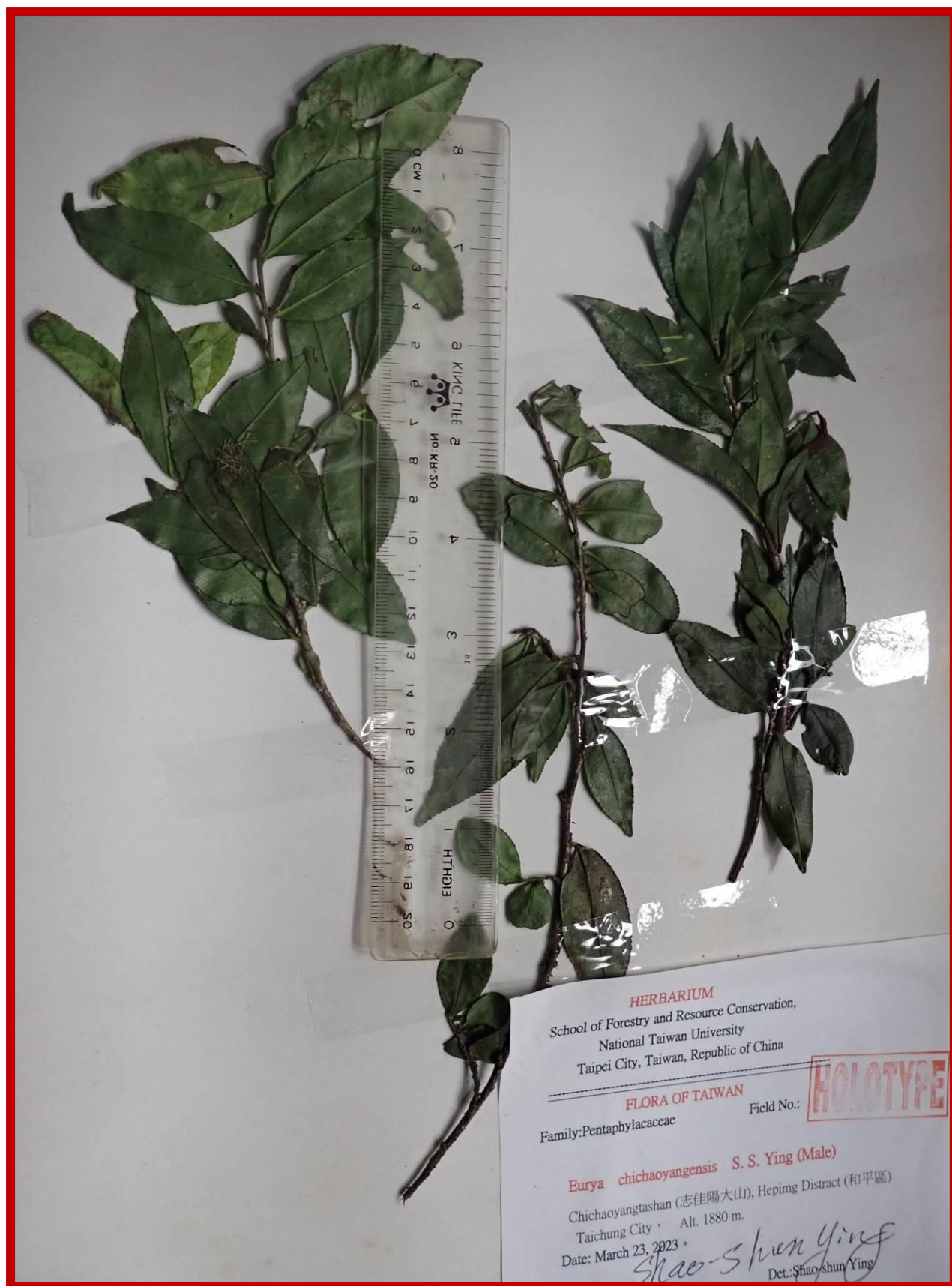


Fig. 107. *Eurya chichaoyangensis* S. S. Ying, the holotype NTUF-112-020



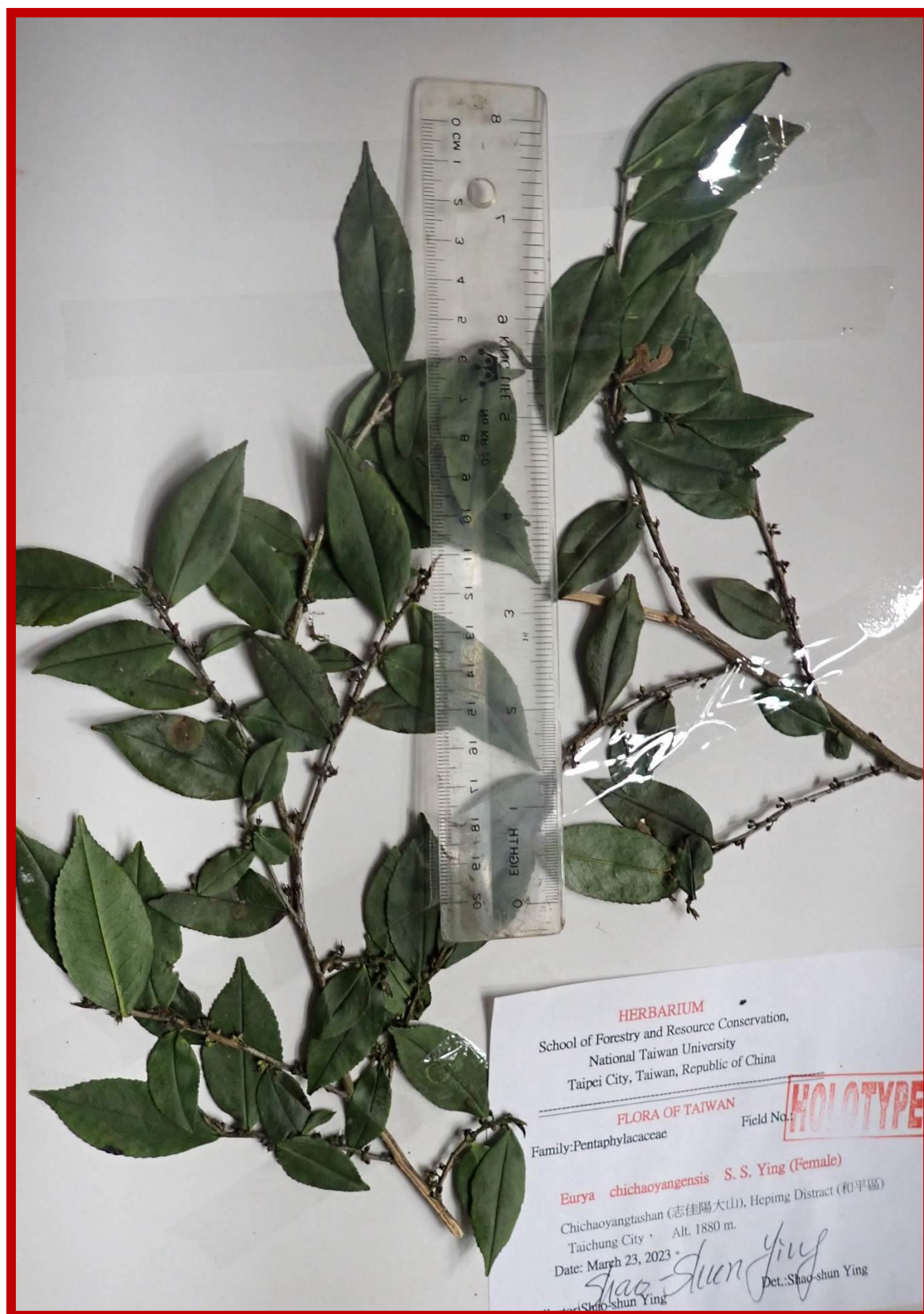


Fig. 108. *Eurya chichaoyangensis* S. S. Ying, the holotype NTUF-112-021



Fig. 109. *Eurya chichaoyangensis* S. S. Ying, the isotype

NTUF-112-022



Chichaoyangtashan (志佳陽大山) , Heping Distract (和平區) , Taichung City, , Central Taiwan. ° It was discovered the species at edge of thickets at elevations of 1700-1900 meters. Its flowering time is February to March and fruiting time is April to June.



Fig. 110. *Eurya chichaoyangensis* S. S. Ying, habitat



## 7. Two New species of Genus *Mussaenda* (Rubiaceae) in Taiwan

A. *Mussaenda darensis* S.S. Ying 達仁玉葉金花

*Mussaenda darensis* S.S. Ying, *sp. nov.* 達仁玉葉金花

TYPE: TAIWAN. Taitung County, Daren Townships (達仁鄉), Between Guiten (歸田) and Sonyung (森永) 312 m alt. *S. S. Ying*, *s.n. January 05, 2023*. (holotype, NTUF).



Fig. 111. *Mussaenda darensis* S. S. Ying, the habit, mind smaller leaves

**Morphology** : A liana, stem elongate, 1.5-2.5 m long, dark purplish, glabrous, branched; branches elongate, 1-2 m long, horizontal, ascending to erect, terete, green turning to brownish, glabrous. Leaves simple, opposite, oblong to ovate-oblong, 6.5-8.5 cm long, 3.5-4 cm wide, acuminate to obtuse at apex, obtuse at base, chartaceous, entire, slightly wavy at margins, lustrous green surface and pale green beneath, glabrous on both surfaces,



midrib and lateral vein (5-7 per side) impressed surface and elevated beneath. Petioles 1-1.5cm long, glabrous.



Fig. 112. *Mussaenda darenensis* S. S. Ying, branches and leaves



Fig. 113. *Mussaenda darenensis* S. S. Ying, inflorescence

Flowers 4-8, 5-6 mm in diameter when opened, yellow, terminal simple cymose, inflorescence peduncle 1-1.5 cm long, green, glabrous; peduncles 8-12 mm long, green to pale green, glabrous; pedicels 3-4.5 mm long, green, glabrous; bracts ovate, somewhat leaf-like, 1.5-2 cm long, 8-10 mm wide, acute at apex, chartaceous, green; calyx tube short, urceolate, 1-1.5 mm long, 1.5-2 mm wide, glabrous; calyx lobes 5-6, linear, 8-10 mm long, 0.3-0.4 mm wide, acute at apex, glabrous; one calyx-lobe of 1-2 outer flower per inflorescence enlarged and petaloid, white on both surfaces, blade ovate to ovate-oblong, 2.5-3.1 cm long, 1-1.5 cm wide, chartaceous, acute to acuminate at apex, obtuse at base; stipe 10-15 mm long, grooved, pubescent; corolla salverform 5-6 mm in diameter, corolla tube pale green outside and yellow inside, 9-12 mm long, glabrous; lobes 5 reduplicate-valvate in bud, yellow to brightly yellow on upper surface, greenish yellow on lower surface, ovate-triangular, 4-4.8 mm long, 2.5-3.5 mm wide at base, caudate at apex, pubescent on lower surface, glabrous to rare hairy upper surface; stamens 5, inserted in middle to upper part of the corolla tube, included; filaments adnate to the tube, 5-6 mm long, white; anthers oblong to ovoid, 3-3.5 mm long, dorsifixied; style 2 kinds, one kind long-style 7-9 mm long, white, glabrous; the other short-style, 5.5-6.5 mm long. stigma 2-lobed, 2.5-3.5 mm long, included.



Fig. 114. *Mussaenda darenensis* S. S. Ying, inflorescence





Fig. 115. *Mussaenda darenensis* S. S. Ying, close-up of corolla

Fruit pale green when young, baccate, ellipsoid, 6-9 mm long, 5-6 mm in diameter, glabrous, with straight calyx lobed when young and calyx lobes cauduous adult; seeds numerous, pale brownish, 0.4-0.5 mm long, 0.2-0.25 mm wide, about 0.2 mm thick, lenticular; testa foveolate to smooth.

#### **Diagnosis.**

*Mussaenda darenensis* S.S. Ying is characterized by its glabrous smaller leaves, 4-8 flowered in terminal laxly cymes; 1-2 calyx-lobe of one outer flower per inflorescence enlarged and petaloid and styles with long and short 2 styles.

#### **Distribution and phenology.**

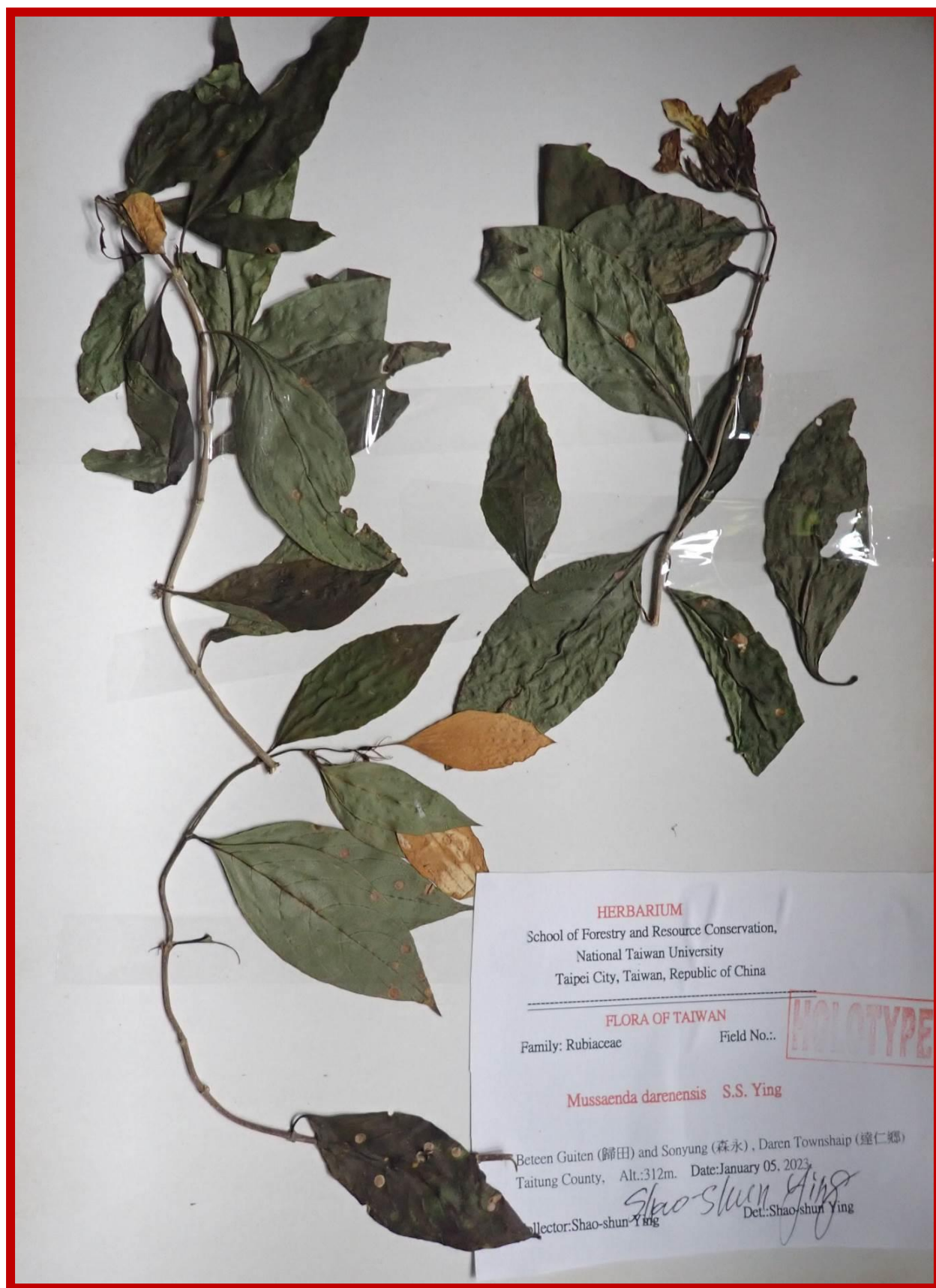


Fig. 116. *Mussaenda darenensis* S. S. Ying, the holotype NTUF-112-023





The species is endemic in Taiwan, It is known from low altitude of 300-450 m. between Guiten (歸田) and Sonyung (森永). It grows at edge of thickets, at Daren Townshaip (達仁鄉) , Taitung County. Its flowering time is January to February, and fruiting time from March to April..



Fig. 118. *Mussaenda darenensis* S. S. Ying, habitat





Fig. 119. *Mussaenda darensis* S. S. Ying, habitat

B. *Mussaenda acalycophylla* S.S. Ying 壽卡玉葉金花

*Mussaenda acalycophylla* S.S. Ying, *sp. nov.* 壽卡玉葉金花

TYPE: TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 460 m alt. S. S. Ying, *s.n.* April 13, 2023. (holotype, NTUF).



Fig. 120. *Mussaenda acalycophylla* S. S. Ying, inflorescence

**Morphology :** A large liana, stem elongate, 2.5-3.5 m or more long, green turn to grayish brown, glabrous, branched; branches elongate, 1.5-2 m long, horizontal, ascending to erect, terete, green turning to grayish brownish, glabrous. Leaves simple, opposite, broadly lanceolate to oblong-lanceolate, 8.5-10.5 cm long, 2.8-3.5 cm wide, acuminate to a short caudate at apex, obtuse and slightly oblique at base, chartaceous, entire, slightly wavy at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, midrib and lateral vein (5-7 per side) impressed surface and elevated beneath. Petioles 0.9-1.6 cm long, glabrous.





Fig. 121. *Mussaenda acalycophylla* S. S. Ying, branches and leaves

Flowers 14-21, 6-9 mm in diameter when opened, white, in a terminal 4-6 cymoses to form a compound cymose, inflorescence peduncle 3-4.5 cm long, green, glabrous; each cymose consist of 4-5 flowers; peduncles 2-3 cm long, green, glabrous; pedicels 6-7.5 mm long, green, glabrous; bracts linear, 6.5-8 mm long, 1-2 mm wide, acute at apex, green; calyx tube short, urceolate, 1-1.5 mm long, 1.5-2 mm wide, glabrous; calyx lobes 5, triangular-linear, 4-5 mm long, 1.3-1.6 mm wide, acute at apex, glabrous; none of sepal of outer flowers of inflorescence enlarged and petaloid (**calycophyll absent**); corolla salverform 7-9 mm in diameter, corolla tube pale green outside and yellow inside, 8-9 mm long, glabrous; lobes 5 valvate in bud, pale yellow to white, ovate-triangular, 3.5-4.5 mm long, 2.5-3.0 mm wide at base, obtuse at apex, somewhat fleshy, glabrous but ciliate at margins; stamens 5, inserted in middle to upper part of the corolla tube, included; filaments adnate to the tube, 4-5 mm long, white; anthers oblong to ovoid, 3-3.5 mm long, dorsifixied; style 2 kinds, one kind long-style 6-8 mm long, glabrous; the other short-style, 4.5-5.5 mm long. stigma 2-lobed, 2.5-3.5 mm long, included.



Fig. 122. *Mussaenda acalycophylla* S. S. Ying, inflorescence



Fig. 123. *Mussaenda acalycophylla* S. S. Ying, close-up of inflorescence



Fruit pale green when young, baccate, cylindric to ellipsoid, 7-10 mm long, 4.5-5.5 mm in diameter, glabrous, truncate and somewhat bulge at apex, with straight calyx lobed when young and calyx lobes cauduous adult; seeds numerous, brownish, 0.4-0.5 mm long, 0.2-0.25 mm wide, about 0.1 mm thick, lenticular; testa foveolate to smooth.



Fig. 124. *Mussaenda acalycophylla* S. S. Ying, young fruits

**Diagnosis.**

*Mussaenda acalycophylla* S.S. Ying is characterized by its large linnas with numerous branches, 14-21 flowered in a terminal 4-6 cymoses to form a compound cymose; flowers without calycophyll and a baccate, cylindric to ellipsoid, 7-10 mm long, 4.5-5.5 mm in diameter, glabrous, truncate and somewhat bulge at apex fruit.

**Distribution and phenology.**



Fig. 125. *Mussaenda acalycophylla* S. S. Ying, the holotype NTUF-112-025





Fig. 126. *Mussaenda acalycophylla* S. S. Ying, the isotype NTUF-112-026





Fig. 127. *Mussaenda acalycophylla* S. S. Ying, habitat, mind calycophyll absent



Fig. 128. *Mussaenda acalycophylla* S. S. Ying, habitat, mind calycophyll absent



**Distribution and phenology.**

The species is endemic in Taiwan, It is known from lower altitude of 350-450 m. of Shouka (壽卡) area, Shitze Township (獅子鄉) , Pingtung County, southern Taiwan . It was collected at edge of the forest, somewhat common in the forest at the area. Its flowering time is April to May, and fruiting time from May to June.



Fig. 129. *Mussaenda acalycophylla* S. S. Ying, close-up of flowers



Fig. 130. *Mussaenda acalycophylla* S. S. Ying, habitat, mind calycophyll absent



Fig. 131. *Mussaenda acalycophylla* S. S. Ying, habitat, fruits



Fig. 132. *Mussaenda acalycophylla* S. S. Ying, habitat, fruits



## 8.A New species of Genus *Elaeagnus* (Elaeagnaceae) in Taiwan

*Elaeagnus darenensis* S.S. Ying 達仁胡頹子

*Elaeagnus darenensis* S.S. Ying, *sp. nov.* 達仁胡頹子

TYPE:TAIWAN. Taitung County, Daren Township (達仁鄉), Between Guiten (歸田) 312 m alt. S. S. Ying, *s.n.* January 05, 2023. (holotype, NTUF).



Fig. 133. *Elaeagnus darenensis* S. S. Ying, inflorescence

**Morphology :** An evergreen erect subshrub about 1.5 m high, stem short, much-branched at base; branches thick, spines absent, erect to ascending, densely covered with brownish scales. Leaves simple, alternate, oblong to ovate-oblong, 4-7 cm long, 2.5-3.5 cm wide, obtuse to slightly emarginate at apex, obtuse at base, coriaceous, entire and slightly recurved at margins, lustrous green and scattered with white spot- scales, especially when young, densely scattered with grayish white scales beneath, glabrous on both surfaces;

midrib impressed surface and elevated beneath, lateral veins 5-6 per side impressed surface and elevated beneath. Petioles 8-12 mm long, terete, densely scattered with brownish scales.



Fig. 134. *Elaeagnus darenensis* S. S. Ying, leaves



Fig. 135. *Elaeagnus darenensis* S. S. Ying, leaves (beneath)



Flowers solitary to 2-6 in a fascicle, axillary, pale yellow to white, 8-12 mm in diameter when opened; pedicels 4-6 mm long, slightly scattered with white scales,

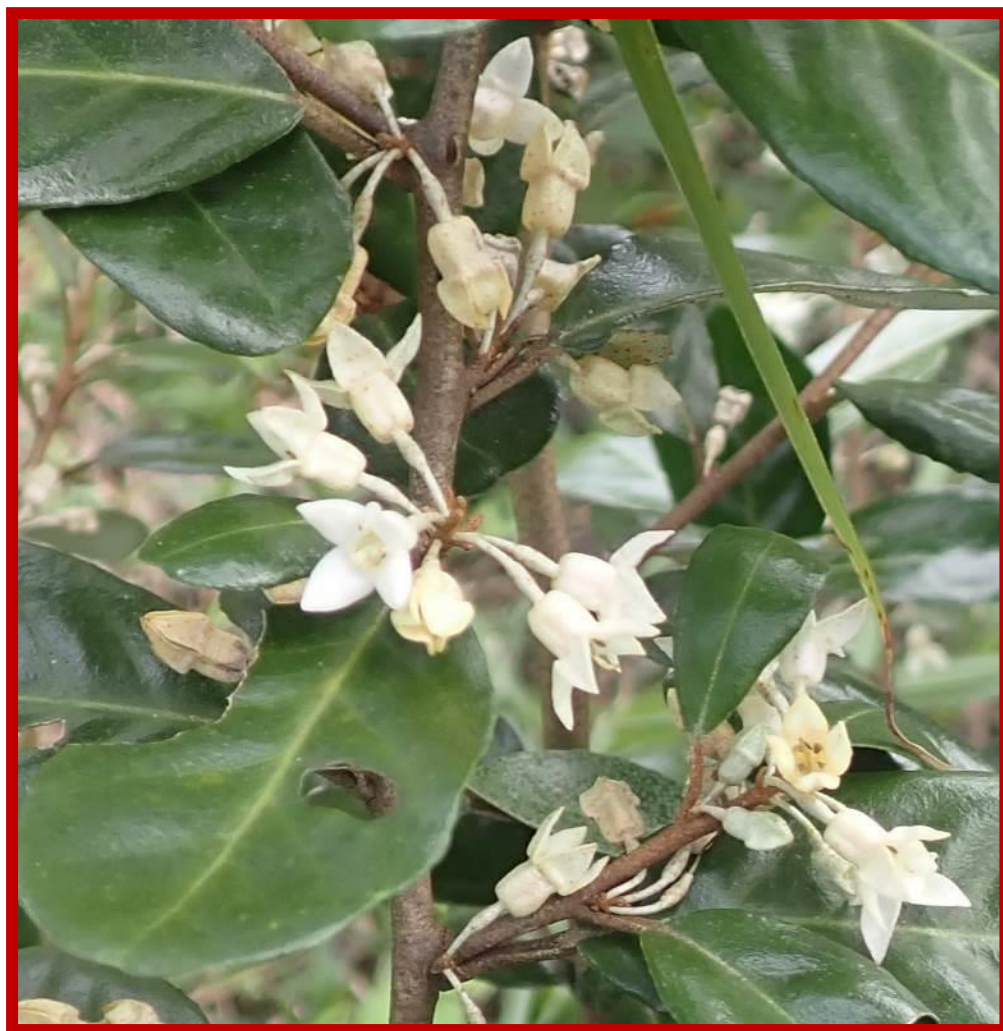


Fig. 136. *Elaeagnus darenensis* S. S. Ying, inflorescences

white, glabrous; calyx tubular, 4-5 mm long, about 2.5 mm across, pale yellow, constricted above ovary, 4-lobed at apex; lobes ovate-triangular, 2.5-3 mm long, about 2.5 mm wide at base, acute at apex, spreading; stamens 4, alternate to calyx-lobe, slightly exserted, inserted in mouth of calyx-tube; anthers cylindrical, blackish; ovary globose, densely scattered white scales; style slender, includes; stigma spot-like.

Fruit a drupe, globose, 10-15 mm long, 4-5 mm across, red and covered with white to grayish scales, only one seed; seed fusiform, 7-8 mm long, 2.5-3 mm wide, 7-8-ribbed.



Fig. 137. *Elaeagnus darenensis* S. S. Ying, flowers

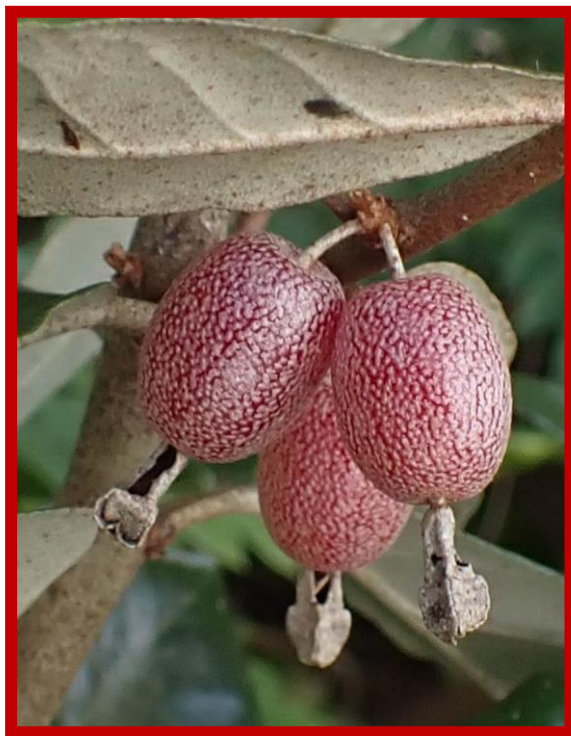


Fig. 138. *Elaeagnus darenensis* S. S. Ying, fruits



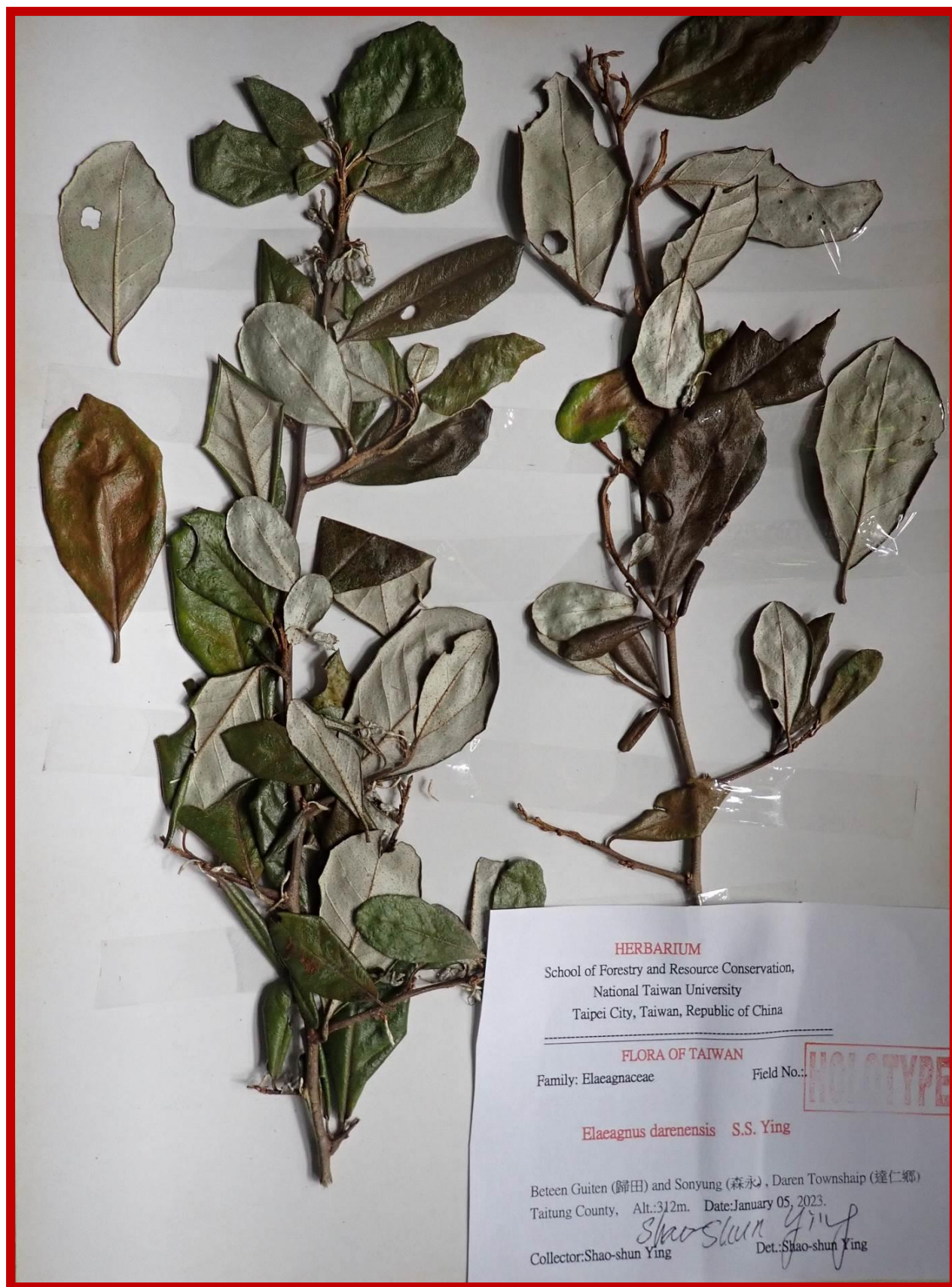


Fig. 139. *Elaeagnus darenensis* S. S. Ying, the holotype NTUF-112-027

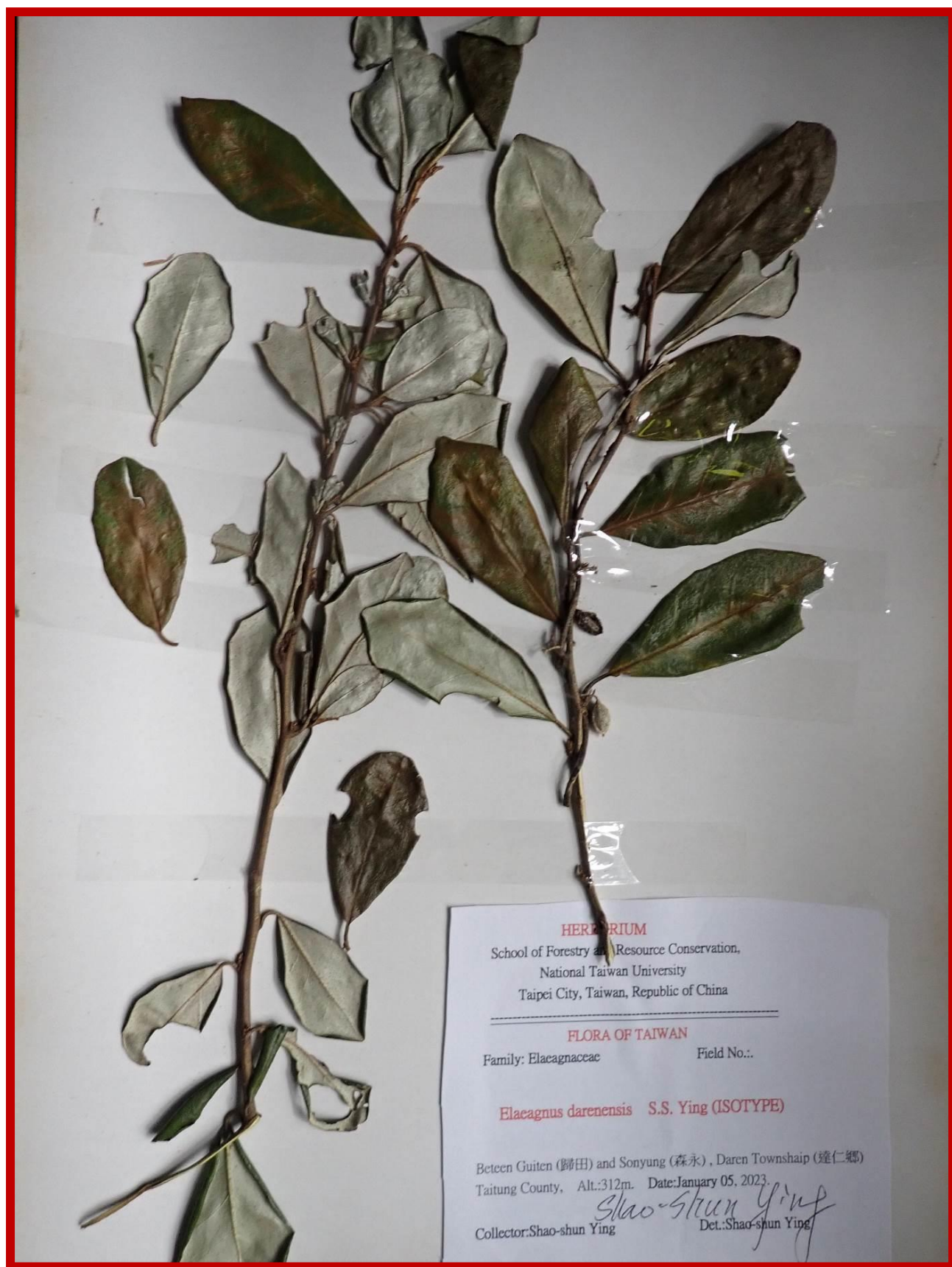


Fig. 140. *Elaeagnus darenensis* S. S. Ying, the isotype NTUF-112-028



**Diagnosis.**

*Elaeagnus darenensis* S.S. Ying is characterized by its subshrub erect shrubs about 1.5 m high, much branched from base, oblong to ovate-oblong, obtuse to slightly emarginate at apex, obtuse at base, lustrous green and scattered with white spot- scales, especially when young, densely scattered with grayish white scales beneath leaves, solitary to 2-6 a fascicled flower and globose fruit with one seed. ,

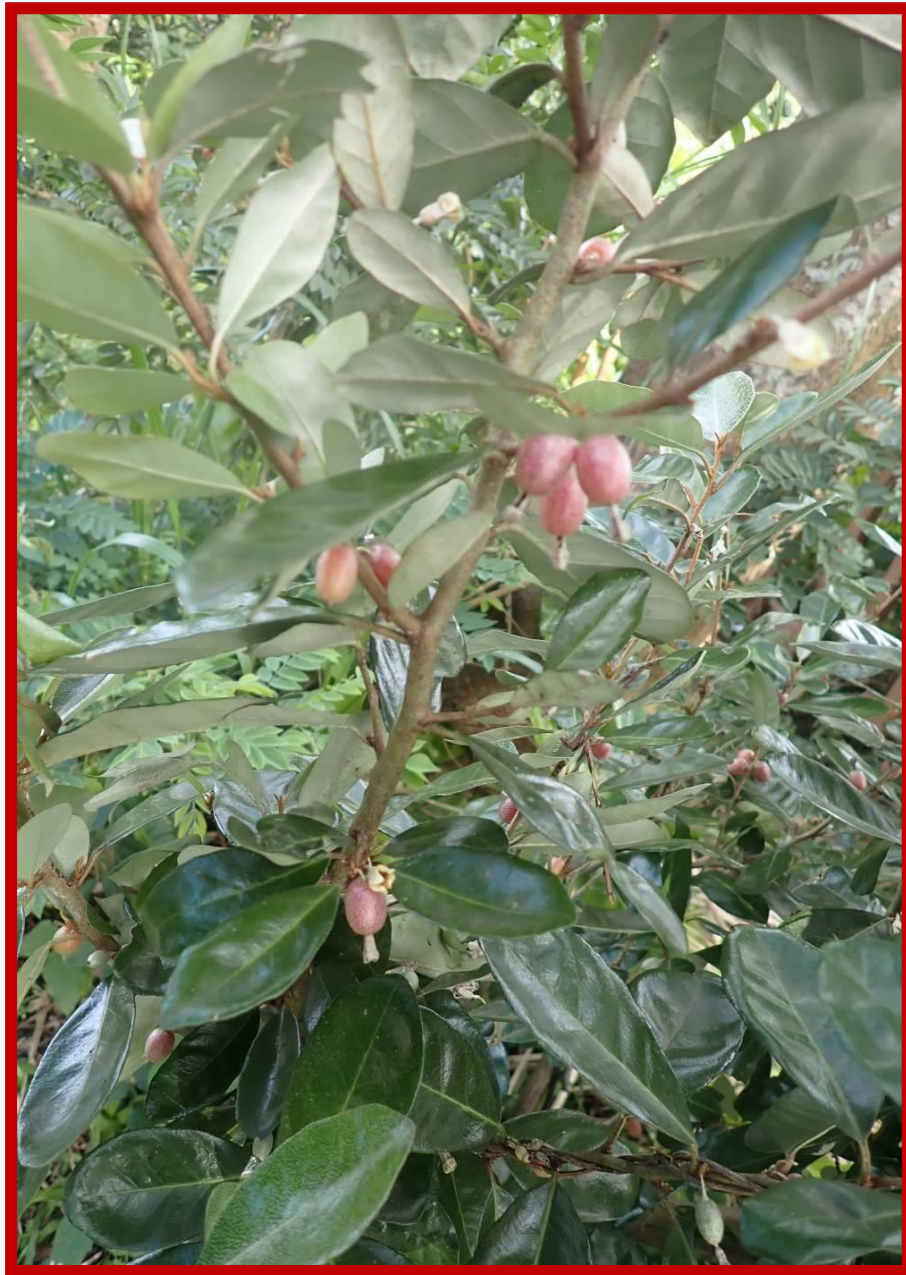


Fig. 141. *Elaeagnus darenensis* S. S. Ying, habit

**Distribution and phenology.**

The species is endemic in Taiwan, It is known from low altitude of 350-450 m. between Guiten (歸田). It grows at edge of thickets, at Daren Township (達仁鄉), Taitung County. Its flowering time is January to February, and fruiting time from March to April..

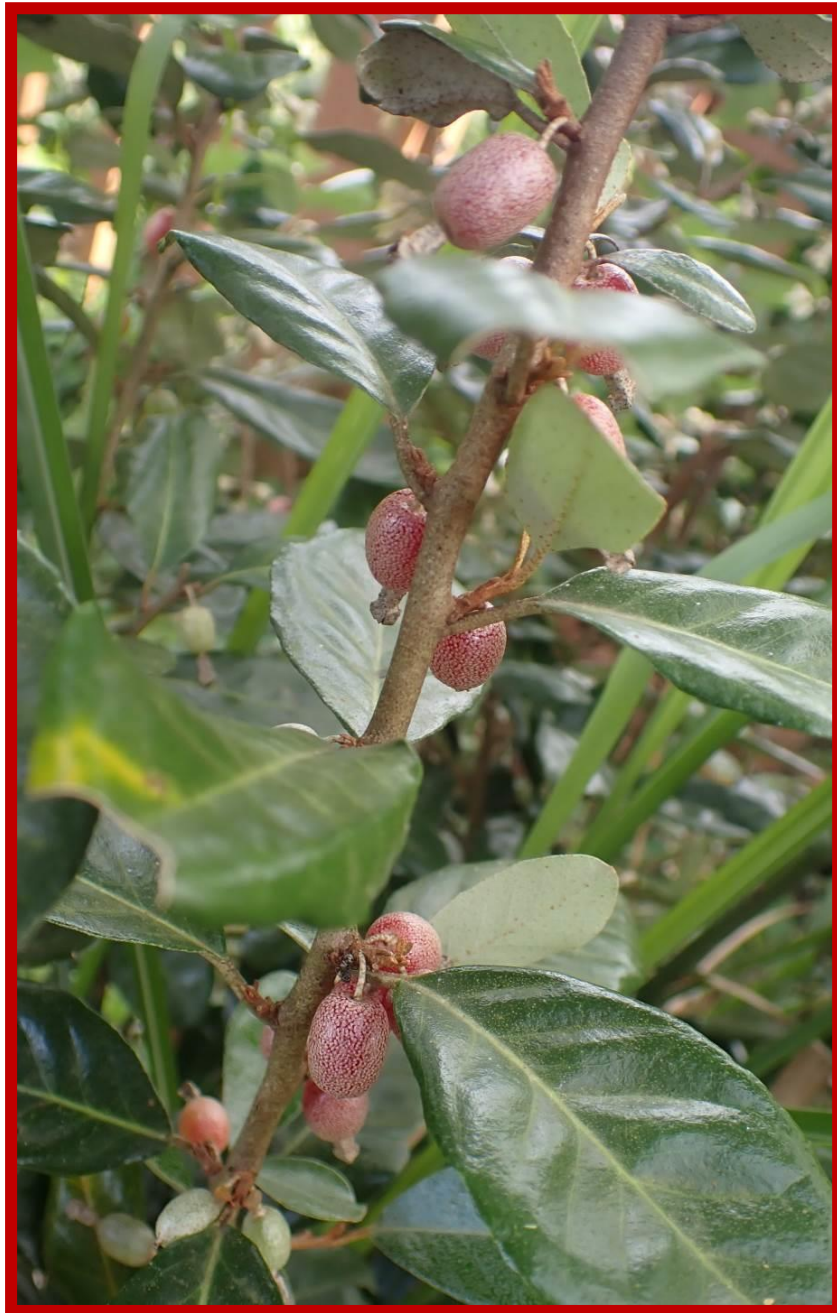


Fig. 142. *Elaeagnus darenensis* S. S. Ying, plant with fruits



## 9. Two New species of Genus *Tripterospermum* (Gentianaceae) in Taiwan

### A. *Tripterospermum shaolinchianum* S.S. Ying 邵氏肺形草

*Tripterospermum shaolinchianum* S.S. Ying, *sp. nov.* 邵氏肺形草

TYPE: TAIWAN. Miaoli County, Taian Townshai (泰安鄉), Guanwu (觀霧) 2211 m alt. S. S. Ying, *s.n.* January 12, 2023. (holotype, NTUF).



Fig. 143. *Tripterospermum shaolinchianum* S. S. Ying, mind corolla persisted at fruits

**Morphology :** Perennial herbs, stems spirally twisted; twining, slender, terete, up to 1.5 m long, commonly with few secondary branches. Leaves simple, opposite, lanceolate to ovate-lanceolate, 4.5-6 cm long, 1.2-1.8 cm wide, acuminate at apex, obtuse to slightly cordate at base, chartaceous, entire or crenulate at margins, green surface and pale green beneath, glabrous on both surfaces; 3-nerved at base, nerves impressed surface and elevated beneath. Petioles 4-6 mm long, pale green, grooved above, glabrous.



Fig. 144. *Tripterospermum shaolinchianum* S. S. Ying, branches and leaves

Flowers pale green to white sometimes with purple, 8-12 mm in diameter when opened, solitary to 2-3 in terminal to axillary cymes; bracts 1-3 pairs, leaf-like, 1-1.7 cm long, 4-5 mm wide, acuminate at apex; pedicel 2-4 mm long, glabrous; calyx campanulate; tube 5-6 mm, with 5-slightly elevated ribs, 5-lobed at apex, glabrous; lobes linear, 8-10 mm long, 1.5-2 mm wide, acute to acuminate at apex; corolla narrowly campanulate, not widely opened, 2.5-3.2 cm long, 8-12 mm wide, 5-lobed at apex; lobes triangular, 3-4 mm long, acuminate





Fig. 145. *Tripterospermum shaolinchianum* S. S. Ying, calyx and wither corolla

to acute at apex; plicae obliquely triangular, 1.5-2 mm long, white; stamens 5, included, filaments slender, linear, 1.8-2.5 cm long; anthers ellipsoid, ca. 1 mm long; disc 1.5-2.5 mm long; ovary cylindrical, 8-9 mm long; gynophore somewhat elongate, 3-4 mm long; style linear, ca. 8-12mm long.

Fruit a berry, cylindrical, 1.8-2.8 cm long, 6-7 mm across, red-purple when mature, lustrous, glabrous; fruit gynophore slender, 2.5-3 cm long, red-purple, glabrous. Seeds many in a fruit, ellipsoid to ovoid, triquetrous, 0.8-1 mm long, wingless, black to dark brown in color.

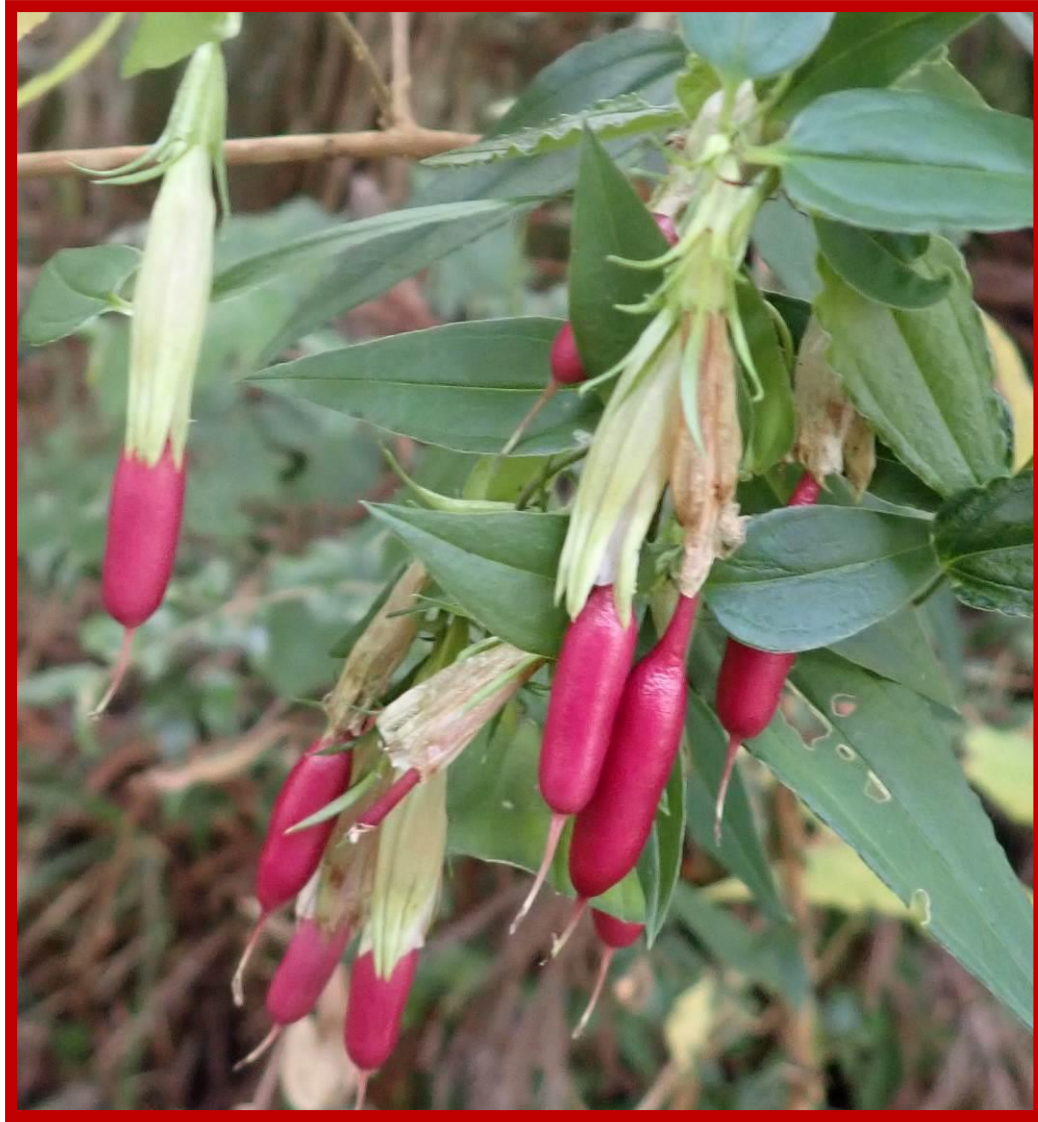


Fig. 146. *Tripterospermum shaolinchianum* S. S. Ying, calyx, corolla and fruits

#### Diagnosis.

The species is recognized by its red purple, cylindrical fruits, elongate fruit gynophore being 2.5-3 cm long and pale green to white sometimes with purple, 8-12 mm in diameter when opened flowers.

#### Distribution and phenology.

*Tripterospermum shaolinchianum* S.S. Ying is endemic to Taiwan ° It is known from Zhenshan (榛山) , Guanwu (觀霧), Taian Townshaip (泰安鄉) , Miaoli County,





Fig. 147. *Tripterospermum shaolinchianum* S. S. Ying, fruits



Fig. 148. *Tripterospermum shaolinchianum* S. S. Ying, the holotype NTUF-112-029



central Taiwan. ° It was discovered the species at the edges of the forests at elevations of 2190-2350 meters. Its flowering time is September to December and fruiting time is January to February. .



Fig. 149. *Tripterospermum shaolinchianum* S. S. Ying, habitat



Fig. 150. *Tripterospermum shaolinchianum* S. S. Ying, close-up of seeds



Fig. 151. *Tripterospermum shaolinchianum* S. S. Ying, close-up of seeds



B.*Tripterospermum guanwuense* S.S. Ying 觀霧肺形草

*Tripterospermum guanwuense* S.S. Ying, *sp. nov.* 觀霧肺形草

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 1980 m alt. S. S. Ying, *s.n.* March 10, 2023. (holotype, NTUF).



Fig. 152. *Tripterospermum guanwuense* S. S. Ying, habit

**Morphology :** Perennial herbs, stems spirally twisted; twining, slender, terete, up to 50.5 cm long, commonly with few secondary branches. Leaves simple, opposite, ovate - lanceolate, 2.5-4.5 cm long, 1.5-2.5 cm wide, acuminate at apex, obtuse to slightly cordate at base, chartaceous, entire or crenulate at margins, lustrous green surface and pale purple to green tinged with purple beneath, glabrous on both surfaces; 3-nerved at base, nerves impressed surface and elevated beneath. Petioles 9-16 mm long, pale green, grooved above, glabrous.



Fig. 153. *Tripterospermum guanwuense* S. S. Ying, branches and leaves

Flowers solitary, 7-9 mm in diameter when opened, solitary in terminal to axillary at leaf-axil; bracts 1 pairs, leaf-like, 9-13 mm long, 2-5 mm wide, acuminate at apex; pedicel 8-12 mm long, glabrous; calyx campanulate; tube 4-5 mm, with 5-slightly elevated ribs, 5-lobed at apex, glabrous; lobes linear, 5-7 mm long, 1.5-2 mm wide, acute to acuminate at apex; corolla campanulate, not widely opened, 2.0-2.6 cm long, 8-12 mm wide, 5-lobed at apex; lobes triangular, 3-4 mm long, acuminate to acute at apex; plicae obliquely triangular, 1.6-2 mm long, white; stamens 5, included, filaments slender, linear, 1.5-2.2 cm long; anthers ellipsoid, ca. 1 mm long; disc 1.5-2.5 mm long; ovary globose, 4-4.5 mm long; gynophore somewhat short, 1.5-2 mm long; style linear, ca. 3-4 mm long.

Fruit a berry, globose, 1.0-2.0 cm long, 9-12 mm across, red-purple when mature, smooth, lustrous, glabrous, emarginate and with 2 grooves at apex; corolla persistent, usually opened by one side and covered the fruit; fruit gynophore slender, 6.5-7 mm long, black, glabrous. Seeds many in a fruit, fusiform to ovoid, triquetrous, 0.8-1 mm long, wingless, black to dark brown in color.





Fig. 154. *Tripterospermum guanwuense* S. S. Ying, calyx, corolla and fruits  
(mind corolla usually opened one side when fruit adult)



Fig. 155. *Tripterospermum guanwuense* S. S. Ying, fruits with emarginate and grooved apex





Fig. 156. *Tripterospermum guanwuense* S. S. Ying, part of specimen



Fig. 157. *Tripterospermum guanwuense* S. S. Ying, fruits and seeds



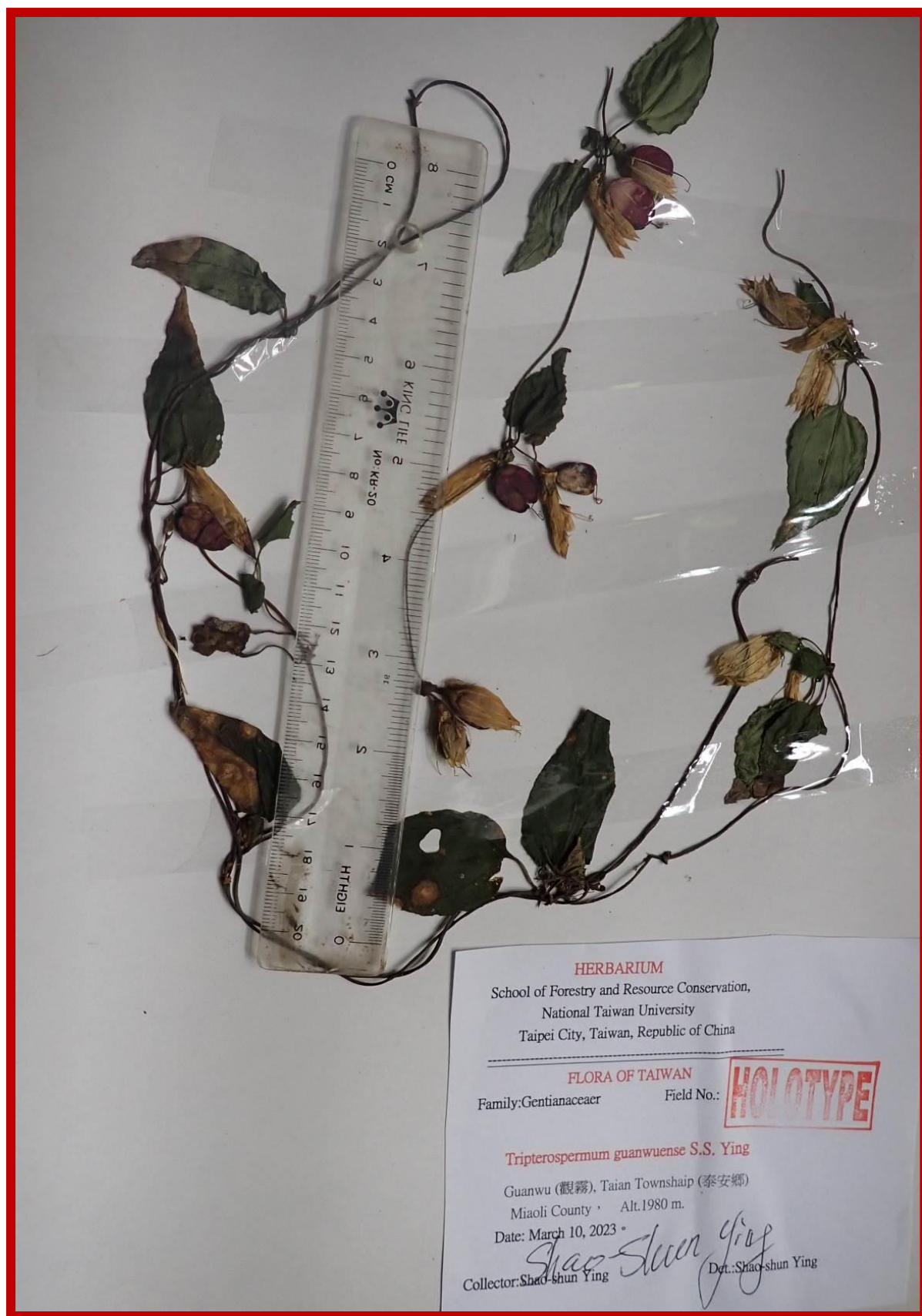


Fig. 158. *Tripterospermum guanwuense* S. S. Ying, the holotype NTUF-112-030

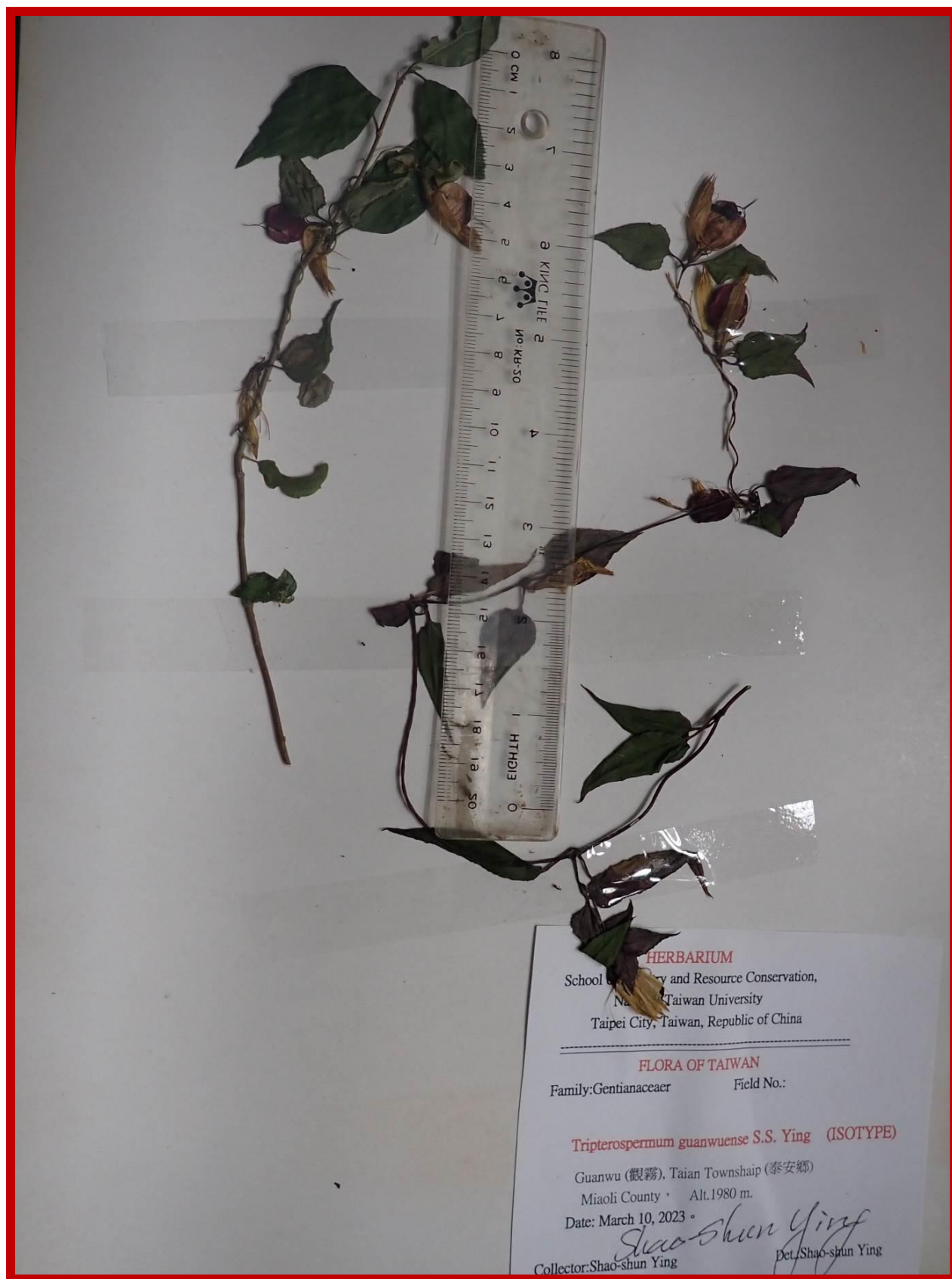


Fig. 159. *Tripterospermum guanwuense* S. S. Ying, the isotype NTUF-112-031



### Diagnosis.

The species is recognized by its red purple, globose fruits, which with emarginate and grooved apex; short fruit gynophore being 6.5-7 mm long and persistent corolla which usually opened by one side and covered the fruits.

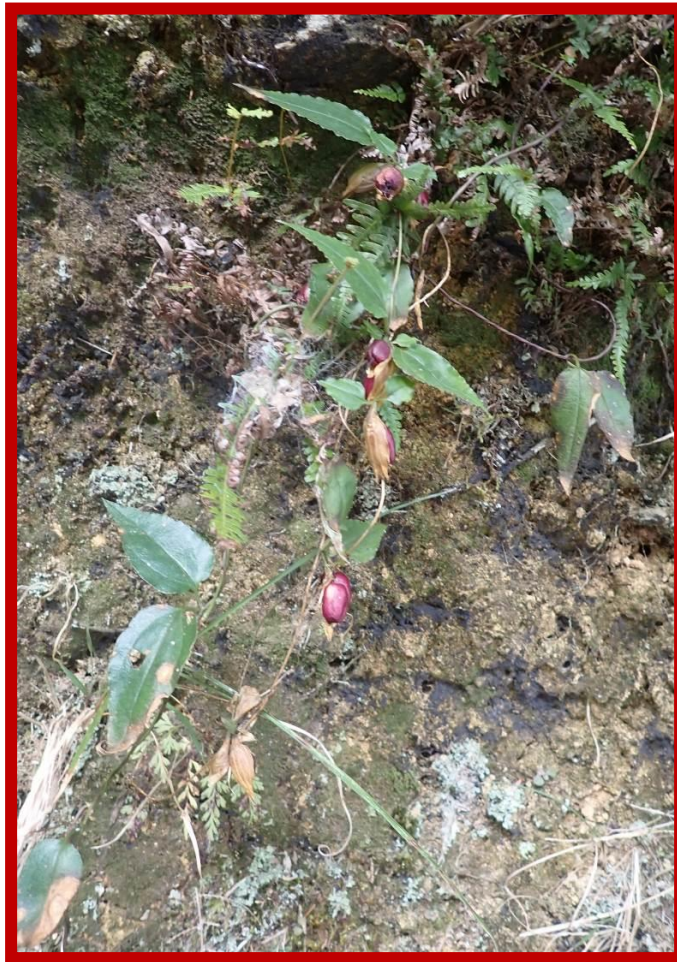


Fig. 160. *Tripterospermum guanwuense* S. S. Ying, habitat

### Distribution and phenology.

*Tripterospermum guanwuense* S.S. Ying is endemic to Taiwan. It is known from on the way between Guanwu (觀霧) to Sheipa Jia-Cao Leisure Farm (雪霸觀霧加草休閒農園), Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species at the roadsides at elevations of 1900-2150 meters. Its flowering time is January to February and fruiting time is March to April.

## 10. Two New species of Genus *Smilax* (*Smaliaceae*) in Taiwan

### A. *Smilax tungyuanensis* S.S. Ying 東源拔葵

*Smilax tungyuanensis* S.S. Ying, *sp. nov.* 東源拔葵

TYPE: TAIWAN. Pingtung County, Mutan Townshaip (牡丹鄉), Tungyuan (東源) 352 m alt. S. S. Ying, *s.n.* February 02, 2023. (holotype, NTUF).



Fig. 161. *Smilax tungyuanensis* S. S. Ying, a female inflorescences

**Morphology :** Lianas, stem elongate, 1.5-2 m long, much branches, green to brown, glabrous; branches, somewhat hang down to horizontal, rarely ascending, 60-100 cm long, terete, green, smooth, prick absent, glabrous. Leaves simple, alternate, ovate to broadly





Fig. 162. *Smilax tungyuanensis* S. S. Ying, leaves



Fig. 163. *Smilax tungyuanensis* S. S. Ying, inflorescences

ovate, 8-10 cm long, 3.5-5.5 cm wide, acuminate to acute at apex, obtuse and slightly cordate at base, coriaceous, entire at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, 3-main veins impressed surface and elevated beneath. Petioles 8-12 mm long, terete, glabrous, green; stipular tendrils born on the basal portion of petioles, 4-7 cm long, greenish to grayish brown.



Fig. 164. *Smilax tungyuanensis* S. S. Ying, close-up of flowers

Flowers dioecious, smaller, pale yellow to greenish yellow, 4-5.5 mm in diameter when opened, scentless, usually 11-14 to form a umbel; 3-4 umbels to form an racemose-



inflorescence; inflorescence peduncles 2-4 cm long, slender, pale purple to red, glabrous; umbel peduncles 1.5-2.5 cm long, red, glabrous; rays 1.2-1.9 cm long, red, glabrous; inflorescence bracts 2, opposite, ovate, 3.5-4.5 mm long, 2.5-3 mm wide, obtuse at apex; umbel bracts lanceolate, 3.5-4.5 mm long, 2-3 mm wide, greenish yellow, glabrous; bracteoles minute, 1-1.5 mm long, 0.5-0.7 mm wide, cauduous; tepals 6 in two series, the outer ones oblong, 2.5-3.5 mm long, about 2.5 mm wide, obtuse at apex, somewhat tinged with purple; inner ones linear, 2.6-3.6 mm long, about 1.8-2 mm wide, obtuse at apex, pale greenish yellow; ovary globose, 1.5 mm across, green, glabrous; styles 3, 1.5 mm long, 0.4-0.5 mm wide, white, with a groove in the middle; staminodes absent.



Fig. 165. *Smilax tungyuanensis* S. S. Ying, close-up of flower-buds

Fruits 8-12 in an axillary umbel, fleshy, berry-like, ellipsoid, somewhat pear-like, 6-9 mm long, 4-4.5 mm across, glabrous, lustrous, greenish in colour becomes red to dark red when ripe; peduncles 3.5-4.5 cm long, glabrous; pedicels 1.5-2.5 cm long, glabrous, green to pale purple. Seeds 1-3, flat, 3.5-4 mm long.



Fig. 166. *Smilax tungyuanensis* S. S. Ying, infructescences



Fig. 167. *Smilax tungyuanensis* S. S. Ying, close-up of infructescence



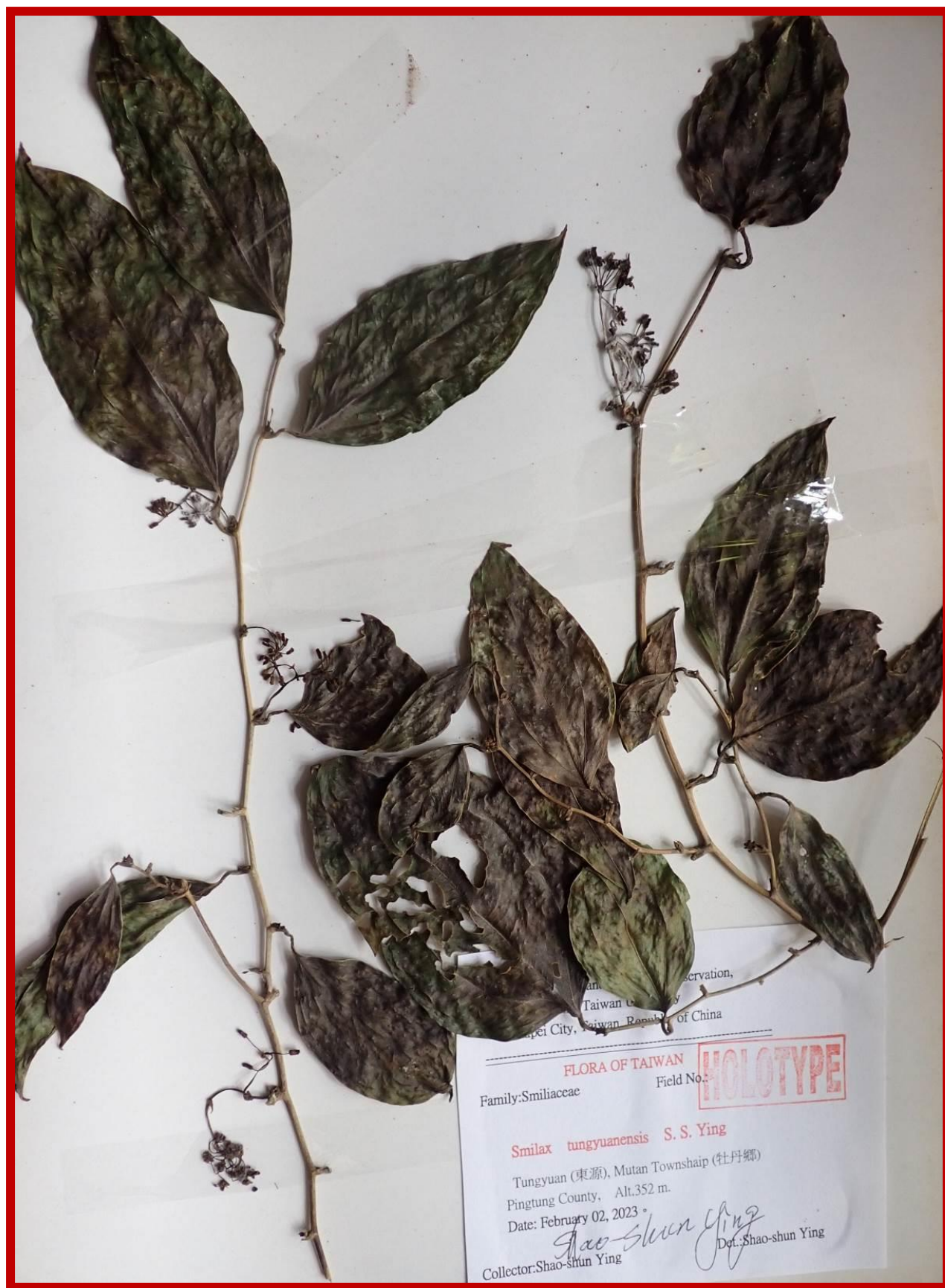


Fig. 168. *Smilax tungyuanensis* S. S. Ying, the holotype NTUF-112-032



Fig. 169. *Smilax tungyuanensis* S. S. Ying, the isotype      NTUF-112-033



### Diagnosis.

The species is recognized by its dioecious flowers, tepals in two series, the outer ones larger and inner ones linear; 3 white styles with a groove in the middle part and staminodes absent.

### Distribution and phenology.

*Smilax tungyuanensis* S.S. Ying is endemic to Taiwan ° It is known from Tungyuan (東源), Mutan Townshaip (牡丹鄉) , Pingtung County, southern Taiwan. ° It was discovered the species at the edges of the forests at elevations of 350-450 meters. Its flowering time is February to March and fruiting time is March to April. .



Fig. 170. *Smilax tungyuanensis* S. S. Ying, Habitat



**B. *Smilax taiwanensis* S.S. Ying 台灣拔堇**

*Smilax taiwanensis* S.S. Ying, *sp. nov.* 台灣拔堇

TYPE: TAIWAN. Taichung City, Hoping District (和平區), Between Tayulin (大禹嶺), 2650 m. S. S. Ying, *s.n.* Aug. 05, 2023. (holotype, NTUF).



Fig. 171. *Smilax taiwanensis* S. S. Ying, plant colony

**Morphology :** Low shrubs about 60-100 cm tall, branched at base, usually forming a compact plant colony; branches elongate, prickled, somewhat hang down to horizontal, or ascending, 45-100 cm long, terete, green, glabrous; prickles needle-like, 2.5-3.5 mm long. Leaves simple, alternate, lanceolate to linear-lanceolate, 4-6 cm long, 9-12 mm wide, acute at apex, obtuse at base, coriaceous, entire at margins, lustrous green surface and pale green and glaucous beneath, glabrous on both surfaces, 3-main veins impressed surface and



elevated beneath. Petioles 2-4 mm long, terete, glabrous, green; stipular tendrils born on the basal portion of petioles, 1-1.7 cm long, greenish.



Fig. 172. *Smilax taiwanensis* S. S. Ying, branches and leaves

Flowers dioecious, smaller; the female flower solitary, axillary, pale yellow to greenish yellow, 3-3.5 mm in diameter when opened, scentless; pedicels slender, 5-6 mm long, green; bracts ovate, 2.5-3.5 mm long, 1.2-2 mm wide, greenish yellow, glabrous; tepals 6 in two series; ovary globose, 1.8 mm across, green, glabrous; styles 3, 1.5 mm long, 0.4-0.5 mm wide, white; staminodes absent.

Fruits solitary, fleshy, berry-like, globose, somewhat larger, 6-8 mm across, glabrous, lustrous, greenish in colour becomes red to dark red when ripe; pedicels 1.5-2.5 cm long, glabrous, green to pale purple. Seeds 1-3, flat, 2.5-3.5 mm long, 2-2.5 mm wide, glabrous.





Fig. 173. *Smilax taiwanensis* S. S. Ying, plant colony with fruits



Fig. 174. *Smilax taiwanensis* S. S. Ying, close-up of fruit





Fig. 175. *Smilax taiwanensis* S. S. Ying, the holotype NTUF-112-034



Fig. 176. *Smilax taiwanensis* S. S. Ying, the isotype      NTUF-112-035



### Diagnosis.

The species is recognized by its an under shrub with numerous branches and forming a compact plant colony, not climbing other tree or plants; with solitary axillary female flowers and somewhat larger globose fruits.

### Distribution and phenology.

*Smilax tiawanensis* S.S. Ying is endemic to Taiwan ° It is known from between Tayulin (大禹嶺)), Central Cross-Island Highway Hoping District (和平區) , Taichung City , central Taiwan ° It was collected on the Edge of forests , between 2550 and 2650 m elevation and flowering time from July, fruiting time from August to October °



Fig. 177. *Smilax taiwanensis* S. S. Ying, the plant colony



## 11.A New species of Genus *Dichocarpum* (Ranunculaceae) in Taiwan

*Dichocarpum uniflorum* S.S. Ying 單花人字果

*Dichocarpum uniflorum* S.S. Ying, *sp. nov.* 單花人字果

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2012 m alt. *S. S. Ying*, *s.n. February 09, 2023* ° (holotype, NTUF) °



Fig. 178. *Dichocarpum uniflorum* S. S. Ying, Habit, mind each plant with only one flower

**Morphology** : Small aquatic herbs mixed with moss and *Marchantia* on running water, about less than 10 cm high; rhizomes somewhat corm-like, globose, 8-9 mm long, 9-10 mm wide, fleshy, with scales and stolon; scales few, ovate, 2-3 mm long, 1.5-2 mm wide, obtuse at apex; stolon short, 1.5-2.5 cm long, green, glabrous. Stemless. Leaves 3-5, basal, 3-foliolate; the terminal leaflet simple, fan-like, 9-12 mm long, 1.5-2 cm wide, obtuse at





Fig. 179. *Dichocarpum uniflorum* S. S. Ying, leaves

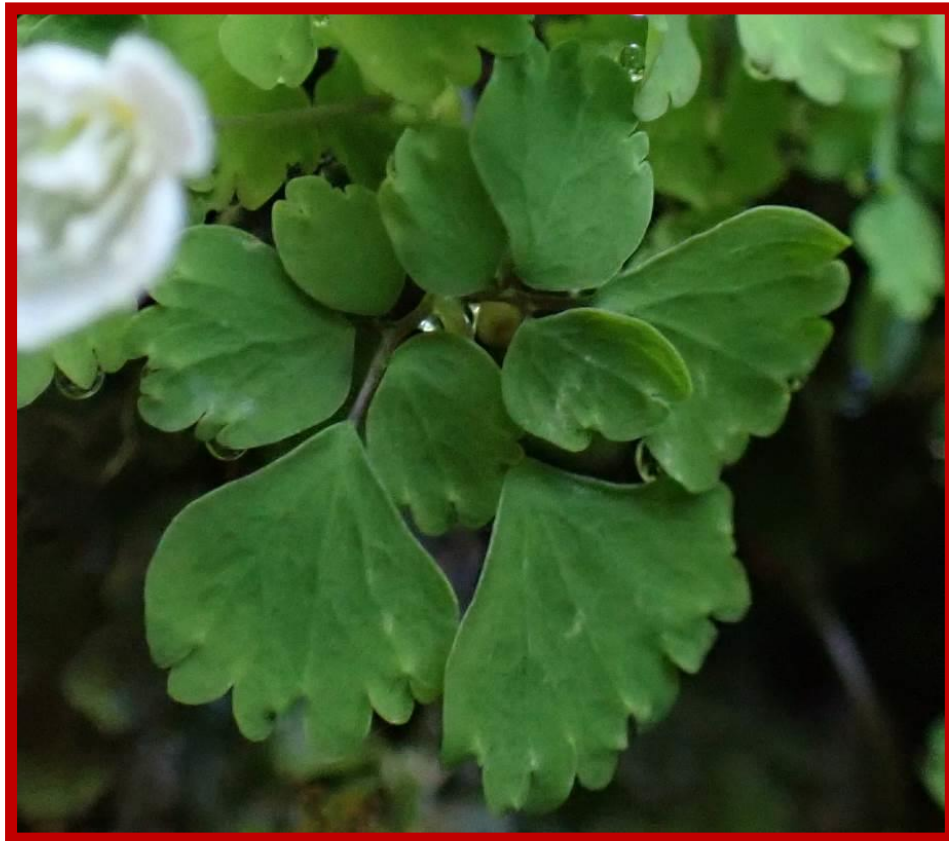


Fig. 180. *Dichocarpum uniflorum* S. S. Ying, leaves

apex, cuneate at base, chartaceous, dentate to shallowly lobed at upward, entire below, lustrous green surface, pale green beneath, glabrous on both surface, palmate-nerved impressed surface and elevated but somewhat inconspicuous; petioles 8-12 mm long, glabrous, purple; lateral two leaflets opposite, with 3-foliate; the terminal one fan-like, 7-9 mm long, 8-10 mm wide; lateral ones 4.5-5 mm long, 4-5 mm wide; perianth short, 1.5-3.5 mm long, glabrous; pedicels 3-4.5 cm long, pale purple, glabrous.

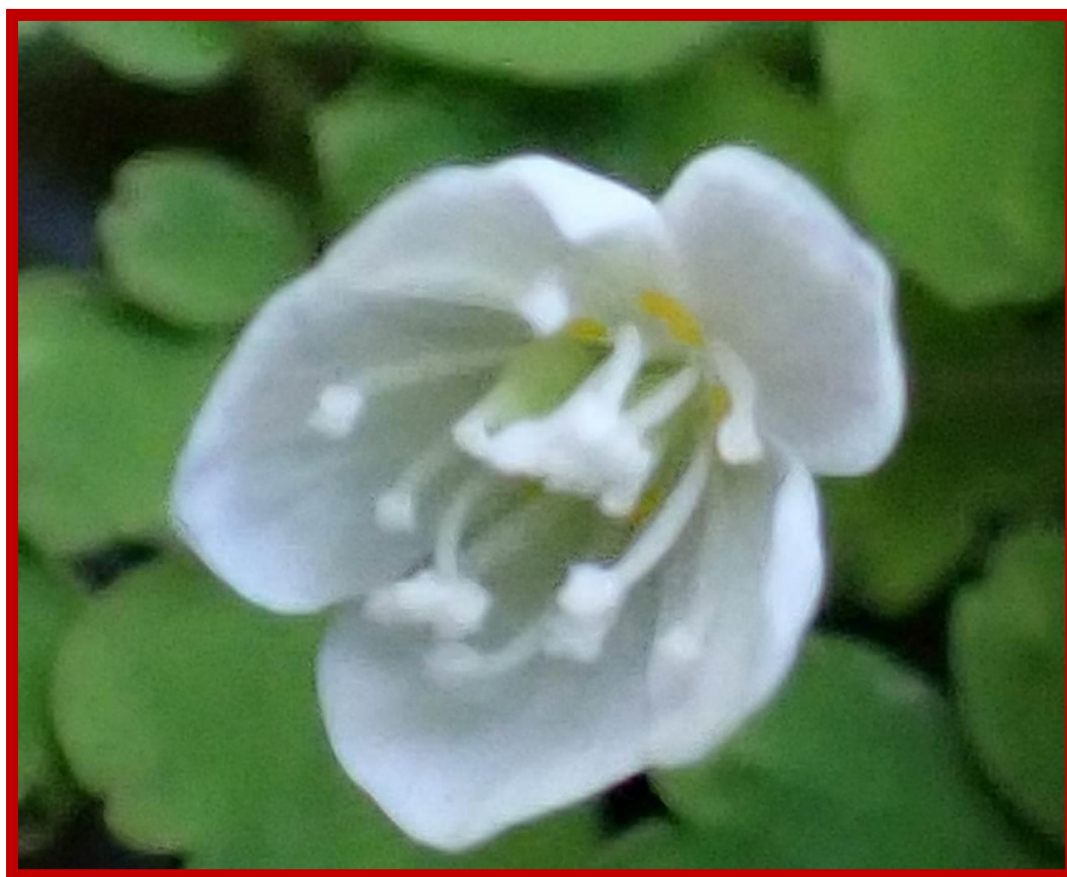


Fig. 181. *Dichocarpum uniflorum* S. S. Ying, close-up of flower

Flower solitary, white, 5-6 mm in diameter, scentless; pedicel from apex of petioles, slender, 1.5-2 cm long, green, glabrous; bracts linear, 1.5-2 mm long, 0.9 mm wide; sepals 5, white, oblong to ovate-oblong, 6-7 mm long, 3-4 mm wide, obtuse at apex; petals smaller, at base of stamens, clavate, 1 mm long, yellow; stamens 12-15, filaments slender, 4-5 mm long, white; anthers ellipsoid, 0.7 mm long, white when young; carpels 2, connate at base, oblong, 3.5-4.2 mm long, green, glabrous, many ovuled; style short, white,



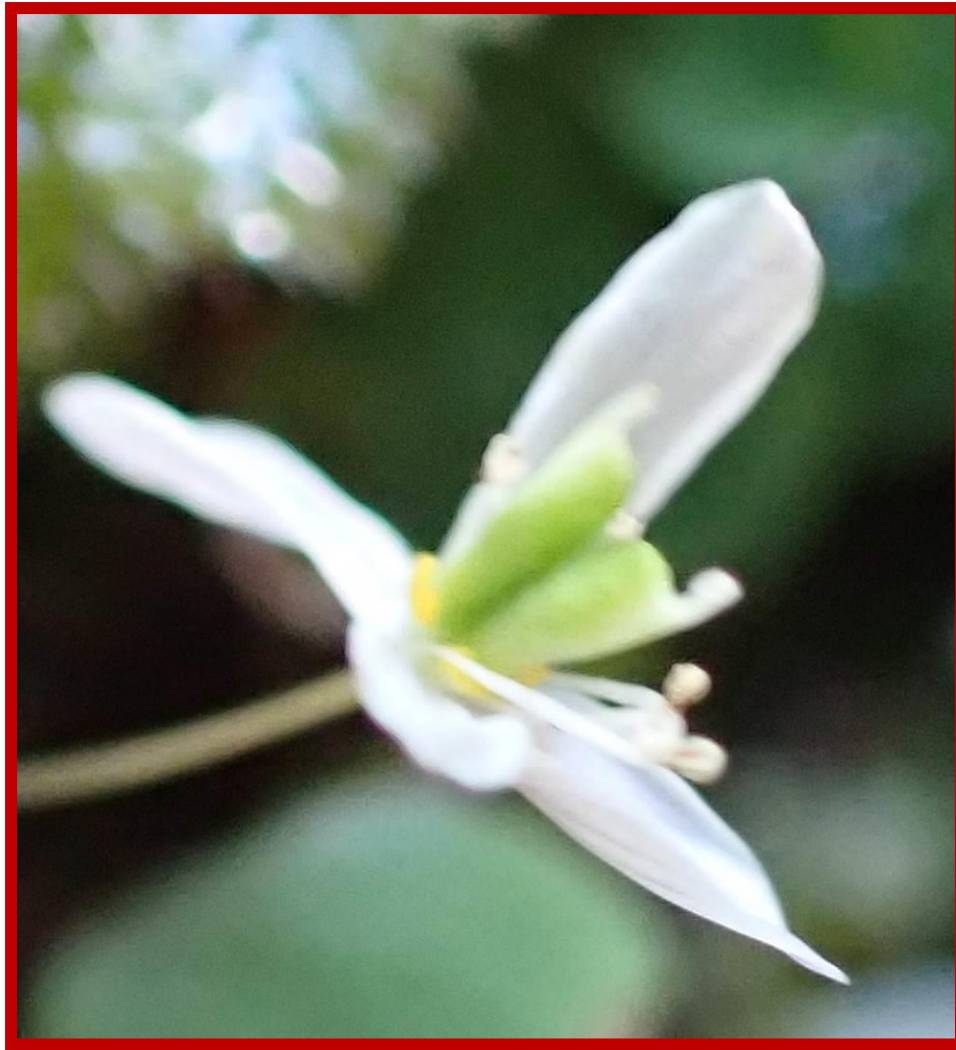


Fig. 182. *Dichocarpum uniflorum* S. S. Ying, close-up of flower, sepals, petals stamens and carpels

persistent.

Follicles 2, linear, divaricate, 9-12 mm long, 1-1.5 mm wide, persistent style about 2 mm long; seeds ellipsoid to ovoid, 1.5-1.6 mm long, 0.9-1 mm across, slightly costate.

### **Diagnosis.**

The species is recognized by its rhizome corm-like, with scale and stolon, stemless, 3-5 trifoliate leaves; terminal leaf simple, lateral 2 leaf 3-foliate; flower solitary, white, produce from apex the petioles; sepals oblong and petals smaller, clavate, yellow.

### **Distribution and phenology.**

*Dichocarpum uniflorum* S.S. Ying is endemic to Taiwan ◦ It is known from



Fig. 183. *Dichocarpum uniflorum* S. S. Ying, the holotype NTUF-112-036





Fig. 184. *Dichocarpum uniflorum* S. S. Ying, close-up of young fruits



Fig. 185. *Dichocarpum uniflorum* S. S. Ying, habit

Kuaishan (檜山), Guanwu (觀霧), Taian Townshaip (泰安鄉), Miaoli County, ,  
Central Taiwan. ◦ It was discovered the species on the mountain slope where it mixed  
with moss and *Marchantia* on running water at elevations of 2090-2200 meters. Its  
flowering time is February and fruiting time is February to March. .



Fig. 186. *Dichocarpum uniflorum* S. S. Ying, habit



## 12. Two New species of Genus *Camellia* (Theaceae) in Taiwan

### A. *Camellia guanwuensis* S.S. Ying, 觀霧山茶花

*Camellia guanwuensis* S.S. Ying, *sp. nov.* 觀霧山茶花

TYPE: TAIWAN. Miaoli County, Taian Townshai (泰安鄉), Guanwu (觀霧) 2012 m alt. S. S. Ying, *s.n.* February 09, 2023. (holotype, NTUF).



Fig. 187. *Camellia guanwuensis* S. S. Ying, close-up of flower

**Morphology:** A dwarf shrub, about 1-1.5 m high, much branched; branches and branchlets erect to ascending, pale grayish, pubescent when young and glabrous adult. Leaves simple, alternate, lanceolate, 2.5-3.5 cm long, 9-12 mm wide, acuminate at apex, obtuse to attenuate at base, coriaceous, serrulate at margins, glabrous on both surfaces, lustrous green surface and pale green beneath, midrib elevated on both surfaces, lateral veins inconspicuous. Petioles 2-3.5 mm long, terete, green, pubescent when young and turned glabrous when adult.



Fig. 188. *Camellia guanwuensis* S. S. Ying, brachlets and leaves

Flowers white, solitary, scentless, 8-10 mm in diameter when opened, terminal of branchlet and axillary on the leaf-axil of upward branch; pedicels terete, short, 2-3 mm long, slightly pubescent; bracts 2-3, linear, 1.5-3 mm long, 1mm wide, acute at apex, pubescent, caducous; sepals 5, ovate, 2.5-3 mm long, 2-3 mm wide, acute at apex, green, glabrous; petals 5-6, ovate to ovate-oblong, 9-12 mm long, 4.5-6 mm wide, obtuse with a reflexed mucro at apex, narrowed at base, glabrous; stamens 12-17 only, united at base; filaments slender, 5-8 mm long, 2-3 mm wide, white, glabrous; anthers rounded or nearly so, yellow, 1 mm long and wide, 2-celled; ovary ovoid, about 1.2 mm in diameter, style short, included, 3-4 mm long, 3-fided at apex.





Fig. 189. *Camellia guanwuensis* S. S. Ying, close-up of flower, see from lateral side



Fig. 190. *Camellia guanwuensis* S. S. Ying, close-up of flower, mind few stamens



Fig. 191. *Camellia guanwuensis* S. S. Ying, 15-17 stamens



Fig. 192. *Camellia guanwuensis* S. S. Ying, branchlets with flowering buds



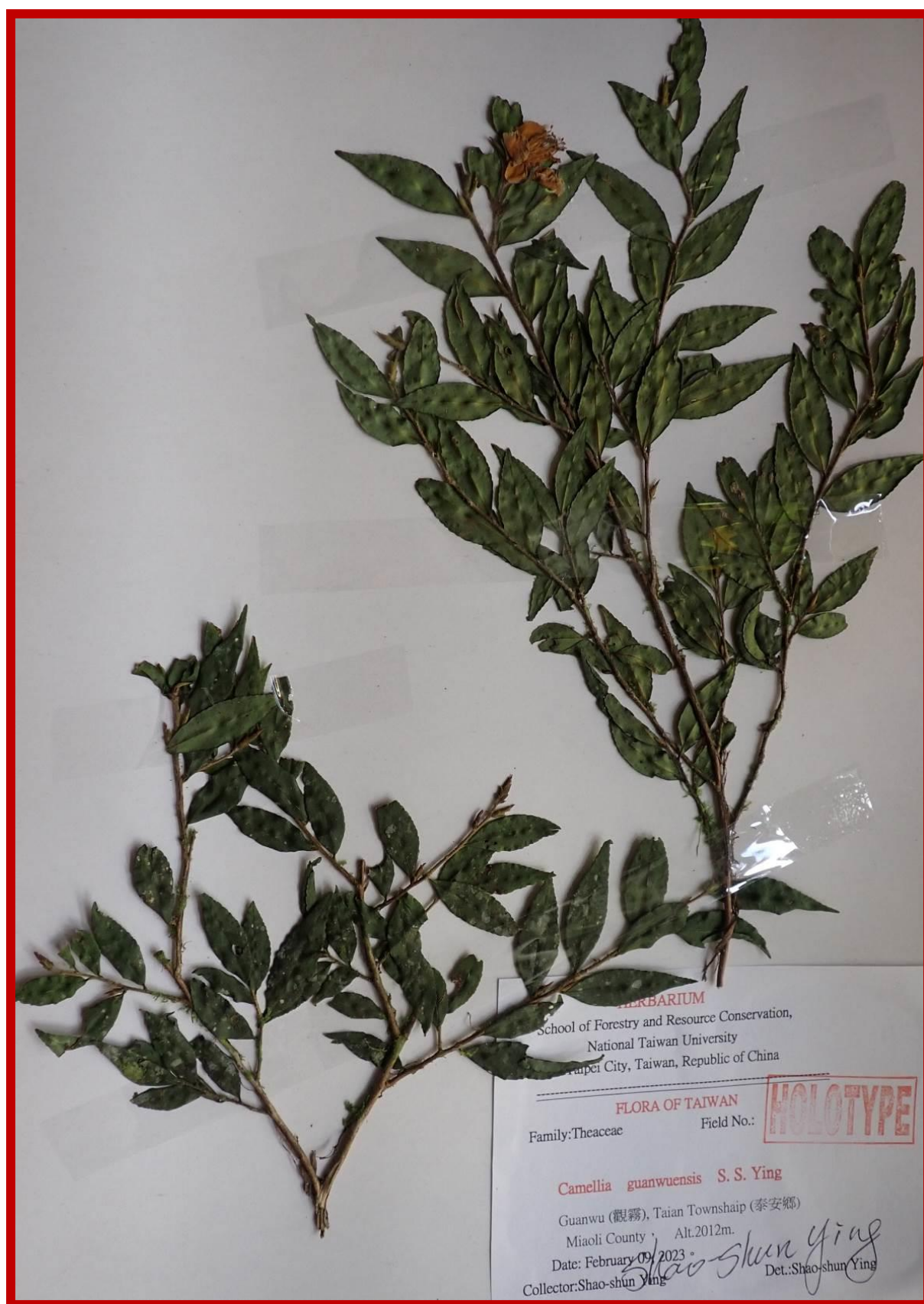


Fig. 193. *Camellia guanwuensis* S. S. Ying, the holotype NTUF-112-037



Fig. 194. *Camellia guanwuensis* S. S. Ying, the isotype NTUF-112-038



### Diagnosis.

The species is recognized by its dwarf shrubs, small leaves which somewhat like *Eurya*-leaf, flowers solitary, white, rather smaller and with 15-17 stamens only.



Fig. 195. *Camellia guanwuensis* S. S. Ying, close-up of flowering buds

### Distribution and phenology.

*Camellia guanwuensis* S.S. Ying is endemic to Taiwan. It is known from Kuaishan (檜山), Guanwu (觀霧), Taian Townshap (泰安鄉), Miaoli County, Central Taiwan. It was discovered the species around the huge *Chamaecyparis formosensis* forest areas (檜山巨木群周圍) at elevations of 2000-2100 meters. Its flowering time is February to March and fruiting time is May to July.

(The species is one of late flowering species of genus *Camellia* in Taiwan)

**B.***Camellia tungschanensis* S.S. Ying, 東眼山茶花

*Camellia tungschanensis* S.S. Ying, *sp. nov.* 東眼山茶花

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Tungschan (東眼山),  
1445 m alt. S. S. Ying , *s.n.* September 14, 2023 ° (holotype, NTUF) °



Fig. 196. *Camellia tungschanensis* S. S. Ying, close-up of flowering branches

**Morphology:**A shrub, about 4 m high, much branched; branches and branchlets erect to ascending, pale brownish, glabrous. Leaves simple, alternate, oblong to ovate-oblong, 3.2-4.5 cm long, 1.5-2.5 cm wide, acute at apex, obtuse at base, coriaceous, serrulate at margins, glabrous on both surfaces, lustrous green surface and pale green beneath, midrib elevated on both surfaces , lateral veins inconspicuous. Petioles 4-5.5 mm long, terete, green, grooved above, glabrous.

Flowers white, several fascicled on axillary on the leaf-axil of upward branches, usually opened one by one, scentless, 7-11 mm in diameter when opened; pedicels 0





Fig. 197. *Camellia tungyanshanensis* S. S. Ying, leaves and flower buds



Fig. 198. *Camellia tungyanshanensis* S. S. Ying, close-up of a flower

Or nearly sordid; bracts 2-3, ovate, 2.5-4 mm long, 2-3.5 mm wide, obtuse at apex, glabrous, caducous; sepals 5, ovate, 3.2-4.5 mm long, 2.5-3.5 mm wide, acute at apex, green, glabrous and slightly ciliate at margins; petals 5, ovate to ovate-oblong, 11-15 mm long, 6.5-8 mm wide, obtuse and emarginate at apex, narrowed at base, glabrous; stamens 15-21 only, united at base; filaments lanceolate, 4-7 mm long, 3-3.5 mm wide, white, glabrous, inflexed; anthers rounded or nearly so, yellow, 1 mm long and wide, 2-celled; ovary ovoid, about 1.2 mm in diameter, hairy; style short, included, 3-4 mm long, 3-fid at apex.



Fig. 199. *Camellia tungyanshanensis* S. S. Ying, flower buds

Fruit a capsule, globose, 9-10 mm long, 10-12 mm in diameter, pale brownish, shortly hairy all over, rounded at apex. Seeds only one, large, globose, 8-9 mm long, 10 mm in diameter, black, glabrous.

#### **Diagnosis.**

The species is recognized by its small shrubs, small flowers several to one fascicled on top of branches; pedicel sessile; filaments somewhat wider than other species and with a globose one seed capsule.





Fig. 200. *Camellia tungyanshanensis* S. S. Ying, the holotype NTUF-112-039



Fig. 201. *Camellia tungyanshanensis* S. S. Ying, fruits



Fig. 202. *Camellia tungyanshanensis* S. S. Ying, fruit and seed



### Distribution and phenology.

The species is endemic in Taiwan, It is known from Tungyuanshan (東眼山) , Fuhsin District (復興區) , Taoyuan city , northern Taiwan. ° It was discovered the species in thickets along ridge at elevations of 1100-1450 meters. Its flowering time is July to September, and fruiting time September to November.



Fig. 203. *Camellia tungyanshanensis* S. S. Ying, habit



Fig. 204. *Camellia tungyanshanensis* S. S. Ying, seed

### 13. Two species of Genus *Hydrangea* (Hydrangeaceae) in Taiwan

A. *Hydrangea pingtungensis* S.S. Ying, 屏東八仙花

*Hydrangea pingtungensis* S.S. Ying, *sp. nov.* 屏東八仙花

TYPE: TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 440 m alt. S. S. Ying, *s.n.* February 02, 2023. (holotype, NTUF).



Fig. 205. *Hydrangea pingtungensis* S. S. Ying, flowering branchlets

**Morphology:** A creeping on ground to erect small shrub, about 25-135 cm long, much branched; branches and branchlets erect to ascending, pubescent when young and glabrous adult, green turn to purple. Leaves simple, opposite, oblong to ovate-oblong, 5-8 cm long, 2-3.5 cm wide, coriaceous, serrulate with a mucro at apex at margins, glabrous but villose along midrib surface, glabrous beneath; midrib and lateral veins (4-6 per side) impressed



surface and elevated beneath, lustrous green surface and pale green beneath. Petioles 1-2 cm long, pubescent, pale purple, grooved above.



Fig. 206. *Hydranges pingtungensis* S. S. Ying, habit

Flowers many, small yellowish green, 5-6 mm in diameter when opened, in a terminal compound corymbose; sterile flowers usually absent, inflorescence peduncle 1-2.5 cm long, pubescent, green; peduncles 8-1.5 cm long, pubescent, green; pedicels 3-5 mm long, pubescent, green; calyx tube adnate to ovary, turbinate, 2-2.5 mm across, 5-7 lobed at apex; lobes ovate-triangular, 1-1.5 mm long, acute at apex; petals 6-7, spathulate to ovate-spathulate, valvate, 3.5-4 mm long, 1.6-2.2 mm wide, obtuse at apex; stamens many, filaments short, 2.5-3 mm long, pale yellow, glabrous; anthers ovoid, 2-locular, dehiscent by longitudinal slits; ovary inferior, ovule numerous; style short, 0.3 mm long; stigmas 5-7-lobed.



Fig. 207. *Hydrangea pingtungensis* S. S. Ying, the holotype NTUF-112-040





Fig. 208. *Hydrangea pingtungensis* S. S. Ying, the isotype NTUF-112-041

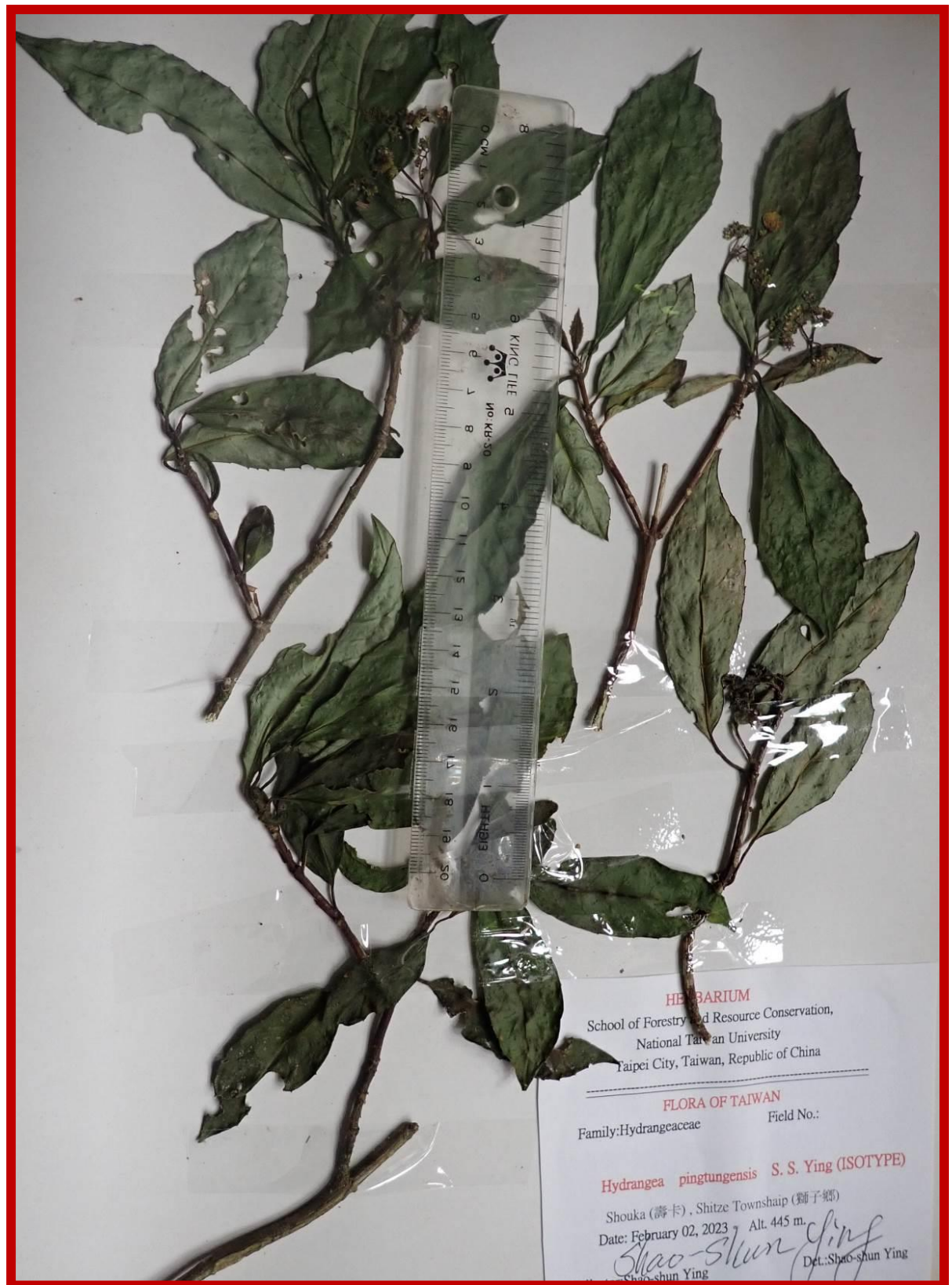


Fig. 209. *Hydrangea pingtungensis* S. S. Ying, the isotype NTUF-112-042





Fig. 210. *Hydrangea pingtungensis* S. S. Ying, inflorescence

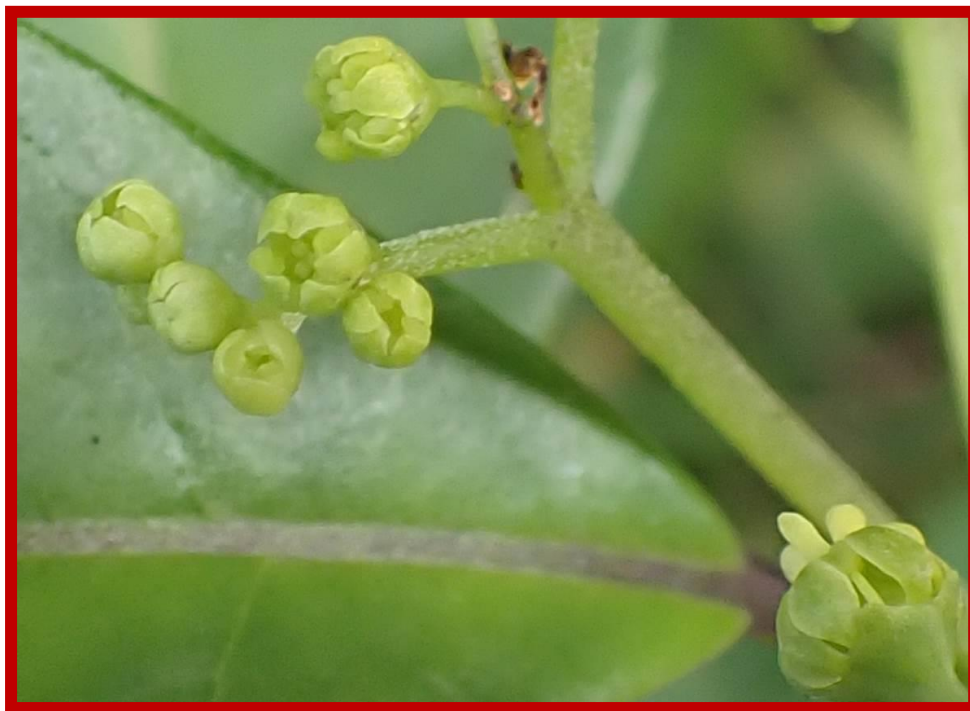


Fig. 211. *Hydrangea pingtungensis* S. S. Ying, close-up of flowers

### Diagnosis.

The species is recognized by its creeping on ground small shrub, oblong to ovate-oblong leaves and yellowish green small flower with 6-7 petals and many stamens.



Fig. 212. *Hydrangea pingtungensis* S. S. Ying, habitat

### Distribution and phenology.

*Hydrangea pingtungensis* S.S. Ying is endemic to Taiwan. It is known from Shouka (壽卡), Shitze Township (獅子鄉), Pingtung county, southern Taiwan. It was collected on roadsides, between 405 and 460 m altitudes; and flowering times is from February to March.



**B.***Hydrangea lalashanensis* S.S. Ying, 拉拉山八仙花

*Hydrangea lalashanensis* S.S. Ying, *sp. nov.* 拉拉山八仙花

**TYPE:**TAIWAN. Taoyuan City , Fuhsin District (復興區) , Lalashan (拉拉山), 2150 m alt. *S. S. Ying* , *s.n. June 03, 2023* ° (holotype, NTUF) °



Fig. 213. *Hydrangea lalashanensis* S. S. Ying, inflorescence

**Morphology:**A erect small shrub, about 1.5-2.5 m tall, much branched; branches and branchlets erect to ascending, gray, glabrous. Leaves simple, opposite, lanceolat, 6-9 cm long, 1.5-2.2 cm wide, chartaceous, serrulate at margins, glabrous but villose along midrib surface, glabrous beneath; midrib and lateral veins (4-5 per side) impressed surface and elevated beneath (lateral veins somewhat inconspicuous), lustrous darkgreen surface and pale green beneath. Petioles 1.5-2.5 cm long, glabrous, grooved above.

Flowers many, small yellowish green, 4-5 mm in diameter when opened, in a terminal laxly compound corymbose; inflorescence peduncle 2.5-4.5 cm long, pubescent,



Fig. 214. *Hydrangea lalashanensis* S. S. Ying, branches and leaves



Fig. 215. *Hydrangea lalashanensis* S. S. Ying, inflorescence



pale yellow; peduncles 1.5-2.5 cm long, pubescent; sterile flowers on elongate peduncles, with sepals 3, rarely 4, ovate, unequal, 1.5-2.5 cm long, 7-9 mm wide, white, obtuse at apex, entire to dentate at margins; fertile flowers hermaphrodite, pedicellate; pedicel 5-9 mm long, pubescent; calyx tube cupular, 1.5-2 mm long; lobes 4, triangular, 1-1.5 mm long, acute at apex; corolla not see; stamens 4, filaments linear, 1.5-2 mm long, white, glabrous; anthers rounded, brownish; ovary 2/3 superior, 4-locular; styles 4, 0.8-1.2 mm long; stigmas terminal.



Fig. 216. *Hydrangea lalashanensis* S. S. Ying, close-up of bisexual flowers

Fruit a capsule, ellipsoid, 2.5-3 mm long, 1.8-2.5 mm in diameter, dehiscing apically among style. Seeds numerous, small, 0.8-0.9 mm long, seed coat thin, with reticulate veins. ,





Fig. 217. *Hydrangea lalashanensis* S. S. Ying, plant growing in situ



Fig. 218. *Hydrangea lalashanensis* S. S. Ying, habitat  
(under *Chamaecyparis formosensis* forests)





Fig. 219. *Hydrangea lalashanensis* S. S. Ying, the holotype, NTUF-112-043



Fig. 220. *Hydrangea lalashanensis* S. S. Ying, the isotype, NTUF-112-044



### Diagnosis.

The species is recognized by its small shrub under *Chamaecyparis formosensis* forests, lanceolate leaves and with 3 white unequal sepals in sterile flowers and 4-merous in bisexual flowers.



Fig. 221. *Hydrangea lalashanensis* S. S. Ying, plant growing in situ

### Distribution and phenology.

*Hydrangea lalashanensis* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山), Under *Chamaecyparis formosensis* forests, Fuhsin District(復興區) , Taoyuan city , northern Taiwan ° It was collected under forests, at between 1900 and 2250 m elevation and flowering time from June to July, fruiting time July to September.

#### 14. One New species of Genus *Galium* (Rubiaceae) in Taiwan)

*Galium* *guanwuense* S.S. Ying, 觀霧豬殃殃

*Galium guanwuense* S.S. Ying, *sp. nov.* 觀霧豬殃殃

TYPE: TAIWAN. Miaoli County, Taian Townshap (泰安鄉), Guanwu (觀霧) 2025 m alt. S. S. Ying, *s.n.* March 10, 2023. (holotype, NTUF).



Fig. 222. *Galium guanwuense* S. S. Ying, habitat

**Morphology :** A prostrate herb, stems elongate, 40-85 cm long, much-branched, pale purple, pubescent, smooth when touch ; the branches 4-angled, 1-1.5 mm in diameter, pubescent, grooved. Leaves 4-6, mostly 4, verticillate, oblong, 0.7-1.1 cm long, 3-4 mm wide, obtuse and with short-acicular at apex, narrowed at base, chartaceous, entire and ciliate at margins, hairy on both surfaces, green tinged with pale purple surface and purple beneath, midrib impressed surface and elevated on beneath, lateral veins inconspicuous. Petioles 1.5-2 mm long, pale purple, pubescent.

Flowers few, pale yellow, 2.5-3 mm in diameter when opened, 4-6 in a





Fig. 223. *Galium guanwuense* S. S. Ying, branches and leaves



Fig.224. *Galium guanwuense* S. S. Ying, inflorescence

simple axillary raceme; peduncles 8-17 mm long, slender, green tinged with purple, grooved, short pubescent; bracts 2-3, terminal on peduncle, minute, ovate, 1.5-2.5 mm long, about 1.5 mm wide, acute at apex, pale purple, hairy; pedicels slender, 3.5-4.5 mm long, green, terete, glabrous or nearly so; calyx 4-lobed, terminal on the ovary, the lobes triangular to ovate-triangular, 1-1.5 mm long, acute at apex, glabrous; corolla 0.5-1.1 mm long, 4-lobed at apex; the lobes ovate, 1.5-2.2 mm long, 1.5 mm wide, acute at apex, glabrous; stamens 4, alternate to the corolla-lobed; filaments short than lobed, included; anthers dorsifixed, pale yellow; ovary inferior, didymous, globose to ovoid, pale green, glabrous, without trichomes; style short, stigma 2-lobed, short, cauduous.



Fig.225 *Galium guanwuense* S. S. Ying, close-up of flowers

**Diagnosis.**

*Galium guanwuense* is recognized by its 4-6 verticillate leaves, few flowers to form an terminal to axillary raceme; flowers pale yellow with 4 ovate corolla-lobes and with an globose to ovoid didymous, without trichomes ovary.



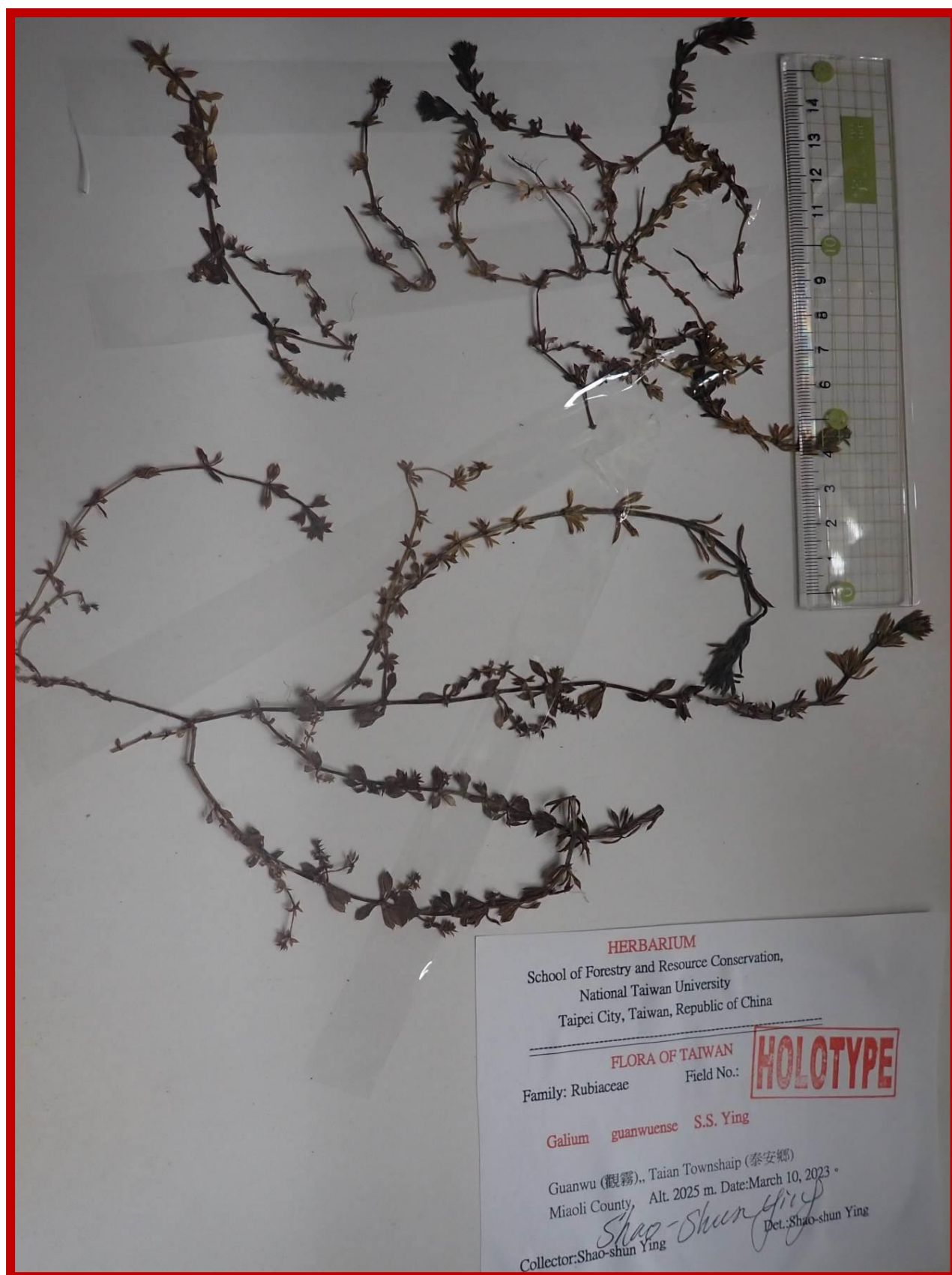


Fig. 226. *Galium guanwuense* S. S. Ying, the holotype

NTUF-112-045

**Distribution and phenology.**

*Galium guanwuense* S.S. Ying is endemic to Taiwan. It is known from on the way between Guanwu (觀霧) to Sheipa Jia-Cao Leisure Farm(雪霸觀霧加草休閒農園), Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species at the roadsides at elevations of 1950-2150 meters. Its flowering time is March to April and fruiting time is April to May.



Fig. 227. *Galium guanwuense* S. S. Ying, habit



## 15.A New species of Genus *Maesa* (Primulaceae) in Taiwan)

*Maesa hengchunensis* S.S. Ying, 恆春山桂花

*Maesa hengchunensis* S.S. Ying, *sp. nov.* 恆春山桂花

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 440 m alt. *S. S. Ying*, *s.n. March 03, 2023*. (holotype, NTUF).



Fig. 228. *Maesa hengchunensis* S. S. Ying, habit

**Morphology** : Small shrubs up to 1.5 m high, much branched, glabrous, brownish, lenticels conspicuous; branches ascending to pendulous, slender, green, grooved, lenticels present; pith solid . Leaves simple, alternate, lanceolate, 6-8.5 cm long, 2.2-2.6 cm wide, acuminate at apex, attenuate at base, chartaceous, serrate at margins, lustrous green surface and pale green beneath; midrib elevated surface and impressed beneath, the lateral veins



Fig. 229. *Maesa hengchunensis* S. S. Ying, branches, leaves and young inflorescences

(4-6 per side) impressed surface and elevated beneath, glabrous on both surfaces. Petioles slender, 8-12 mm long, terete, slightly grooved above.

Flowers numerous in an elongate panicle, bisexual, white, 1.5-2.2 mm in diameter when opened, scentless; the panicles usually 3-5 racemes formed, 3-4.2 cm long, erect, axillary, glabrous; racemes 1.5-1.8 cm long, 14-18 flowers formed, erect, glabrous; bracts ovate-triangular, 0.4-0.7 mm long, acute at apex, pale green; pedicels short, about 1.5-2.5 mm long, green to pale green, glabrous; calyx campanulate, adnate to ovary, 1.5-2 mm wide, green, glabrous, 5-lobed at apex; lobes triangular, 0.6-0.8 mm long, acute at apex, green; corolla white, widely campanulate, 1.4-2.1 mm long, about 2.5 mm wide, 5-lobed at apex; the lobes ovate, 0.4-0.6 mm long, obtuse at apex; stamens 5, included, opposite to corolla-lobe; filaments slender, 0.5-0.6 mm long, white; anthers reniform, yellow; ovary globose, 0.45 mm across, green, glabrous; style slender, 0.5-0.6 mm long; stigma entire, disc-like, pale brownish.





Fig. 230. *Maesa hengchunensis* S. S. Ying, young inflorescences



Fig. 231. *Maesa hengchunensis* S. S. Ying, close-up of inflorescences



Fig. 232. *Maesa hengchunensis* S. S. Ying, the holotype NTUF-112-046





Fig. 233. *Maesa hengchunensis* S. S. Ying, the isotype NTUF-112-047

**Diagnosis.**

*Maesa hengchunensis* is recognized by its lanceolate leaves with a panicle inflorescence which composed by 3-5 racemes, each raceme with 14-18 flowers.



Fig. 234. *Maesa hengchunensis* S. S. Ying, close-up of flowers



Fig. 235. *Maesa hengchunensis* S. S. Ying, habitat



**Distribution and phenology.**

*Maesa hengchunensis* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), Shitze Township (獅子鄉) , Pingtung county , southern Taiwan ° It was collected on the edge of forests, between 425 and 490 m altitudes; and flowering times is from March to April, and fruiting times from May to July.



Fig. 236. *Maesa hengchunensis* S. S. Ying, close-up of inflorescences



Fig. 237. *Maesa hengchunensis* S. S. Ying, young infructescences

## 16. Two New species of Genus *Callicarpa* (Lamiaceae) in Taiwan)

A. *Callicarpa*    *hengchunensis*    S.S. Ying, 恆春紫珠

*Callicarpa hengchunensis*    S.S. Ying, *sp. nov.*    恆春紫珠

TYPE: TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 415 m alt. S. S. Ying, *s.n.* March 03, 2023. (holotype, NTUF).



Fig. 238. *Callicarpa hengchunensis* S. S. Ying, inflorescence

**Morphology :** Small shrubs, about 1.8 m high; trunk short, much branched; branches erect to ascending, terete, brownish, glabrous. Leaves simple, opposite, lanceolate, 8-12 cm long, 2.5-3.2 cm wide, acuminate to caudate at apex, attenuate at base, rough coriaceous, somewhat like that of *Quercus*-leaf, lustrous green surface and pale green with slightly glaucous beneath, midrib and lateral veins (7-9 per side) impressed surface and elevated beneath, glabrous on both surfaces; fine serrulate at margins. Petioles 7-10 mm long, grooved above, green, glabrous.





Fig. 239. *Callicarpa hengchunensis* S. S. Ying, branches and leaves

Flowers small, white, numerous, 2.5-3.5 mm in diameter when opened, axillary, in a compound- cymose on the upper ward of leaf-axils; main inflorescence peduncle 1.2-1.6 cm long, green to pale green, covered with short white hairs, with 2-4 cymose; the peduncle 6-11 mm long, greenish, hairy; each peduncle with 8-12 flowered in each cymose; pedicels 1.2-1.8 mm long, hairy; calyx small, cup-like, 1.2-1.5 mm long, 4-lobed at apex, pale green to white, persistent; lobes minute, triangular, 0.4-0.5 mm long, acute at apex, white hairy outside; corolla tubular, white, 2.5-3.1 mm long, 4-lobed at apex; lobes obtuse at apex, slightly reflexed; stamens 4, filaments slender, 3-4 mm long, glabrous; anthers round, yellow; ovary ovoid, about 1.5 mm across, green, glabrous; style slender, white, same length with stamens, glabrous; stigma disc-like, white.

Fruits small, rounded, 2-2.5 mm in diameter, green at first and then turned to purple, glabrous, lustrous, 1-2 seed inside; pedicels 6.5-10 mm long, green turning to brown, glabrous.



Fig. 240. *Callicarpa hengchunensis* S. S. Ying, close-up of inflorescence



Fig. 241. *Callicarpa hengchunensis* S. S. Ying, inflorescence





Fig. 242. *Callicarpa hengchunensis* S. S. Ying, inflorescence and fruits



Fig. 243. *Callicarpa hengchunensis* S. S. Ying, habitat



Fig. 244. *Callicarpa hengchunensis* S. S. Ying, the holotype NTUF-112-048



### Diagnosis.

*Callicarpa hengchunensis* is characterized by its small shrubs with leaf texture somewhat like that of *Quercus*-leaf, flowers white, with a compound- cymose on the upper ward of leaf-axils and purple fruits.

### Distribution and phenology.

*Callicarpa hengchunensis* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), Shitze Township (獅子鄉) , Pingtung county , southern Taiwan ° It was collected on the edge of forests, between 400 and 490 m altitudes; and flowering times is from March to April, and fruiting times from June to September.



Fig. 245. *Callicarpa hengchunensis* S. S. Ying, habitat

*B.Callicarpa lalashanensis* S.S. Ying, 拉拉山紫珠

*Callicarpa lalashanensis* S.S. Ying, *sp. nov.* 拉拉山紫珠

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Lalashan (拉拉山), Between Entrance of trail (步道入口) and Giant trees group (巨木群) , 1833 m alt. *S. S. Ying* , *s.n. June 03, 2023* ° (holotype, NTUF) °



Fig. 246. *Callicarpa lalashanensis* S. S. Ying, inflorescences

**Morphology :** Small shrubs, about 1.5 m high; trunk short, much branched; branches erect to ascending, terete, green when young and pale brownish at adult, glabrous. Leaves simple, opposite, lanceolate to narrowly lanceolate, 4.5-8.5 cm long, 1.5-1.6 cm wide, acuminate to caudate at apex, attenuate at base, chartaceous, lustrous green surface and pale green beneath, midrib impressed surface and elevated beneath, lateral veins inconspicuous; glabrous to scattered hairy on both surfaces; serrate at margins. Petioles 5-6 mm long, grooved above, green, scattered chaff-like hairs (米糠狀毛茸) .





Fig. 247. *Callicarpa lalashanensis* S. S. Ying, branches and leaves



Fig. 248. *Callicarpa lalashanensis* S. S. Ying, close-up of flowers

Flowers rather larger, violet to lavender, 5-7 in a terminal and axillary cyme, 3.8-4.2 mm in diameter when opened; inflorescence peduncle 1.2-1.5 cm long, pale yellow, covered with chaff-like hairs (米糠狀毛茸); pedicels 2.2-3.5 mm long, pale green, somewhat transparent, with chaff-like hairs; calyx small, cup-like, 1.3-1.6 mm long, 4-lobed at apex, pale green, with chaff-like hairs, persistent; lobes minute, triangular, 0.2-0.3 mm long, acute at apex; corolla tubular, violet to lavender, 5.5-6.5 mm long, 4-lobed at apex; lobes rounded, 0.5-0.6 mm long and wide, obtuse at apex, not reflexed; stamens 4, exserted, filaments slender, 6-7 mm long, lavender, glabrous; anthers hippocrepiform, 1.5-2 mm long, yellow; ovary ovoid, about 1.6 mm across, green, glabrous; style slender, exserted, white, longer than the length of stamens, glabrous, transparent; stigma capitate-like, white.



Fig. 249. *Callicarpa lalashanensis* S. S. Ying, close-up of inflorescences

Fruits small, rounded, 2.5-3.2 mm in diameter, green at first and then turned to purple, glabrous, lustrous, 1-2 seed inside; pedicels 4.5-7 mm long, green turning to greenish brown, glabrous.





Fig. 250. *Callicarpa lalashanensis* S. S. Ying, fruiting branchlets



Fig. 251. *Callicarpa lalashanensis* S. S. Ying, close-up of fruits



Fig. 252. *Callicarpa lalashanensis* S. S. Ying, the holotype NTUF-112-049



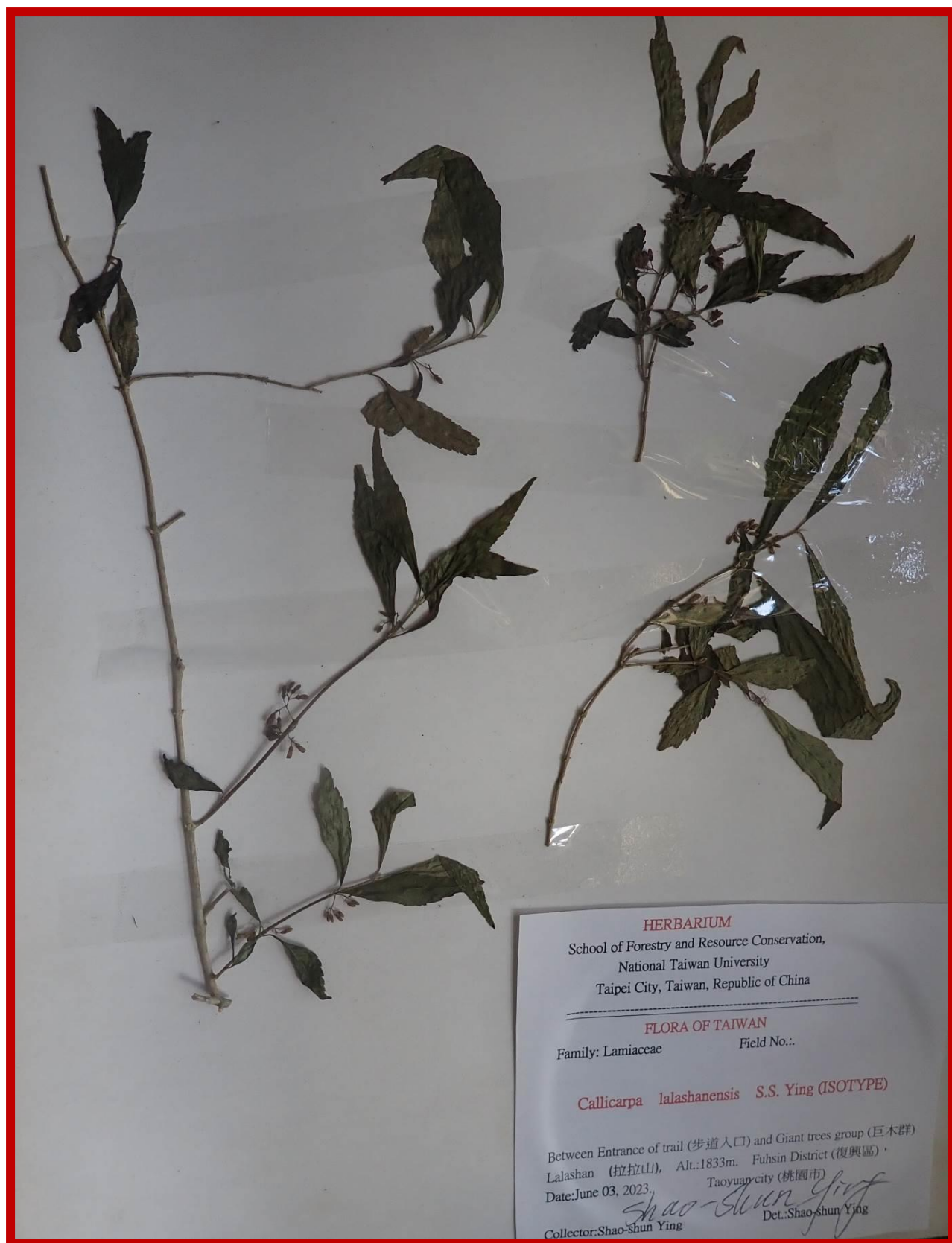


Fig. 253. *Callicarpa lalashanensis* S. S. Ying, the isotype NTUF-112-050



Fig. 254. *Callicarpa lalashanensis* S. S. Ying, plant growing in situ

#### Diagnosis.

*Callicarpa lalashanensis* is characterized by its lanceolate to narrowly lanceolate chartaceous leaves; flowers rather larger, violet to lavender, 5-7 in terminal and axillary cyme; peduncle and pedicels scattered with chaff-like hairy; corolla 5-5-6.5 mm long; corolla-lobed rounded, obtuse at apex and stamens and style exerted out of corolla.

#### Distribution and phenology.

*Callicarpa lalashanensis* S.S. Ying is endemic to Taiwan. It is known from Lalashan (拉拉山), between Entrance of trail (步道入口) and Giant trees group (巨木群), Fuhsin District(復興區), Taoyuan city, northern Taiwan. It was collected on the edge of forests, at between 1700 and 1950 m elevation and flowering time from June to July, fruiting time from July to September.



## 17.Two New species of Genus *Ilex* (Aquifoliaceae) in Taiwan)

*A.Ilex hengchunensis* S.S. Ying, 恆春冬青

*Ilex hengchunensis* S.S. Ying, *sp. nov.* 恆春冬青

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 415 m alt. *S. S. Ying*, *s.n. March 03, 2023*. (holotype, NTUF).



Fig. 255. *Ilex hengchunensis* S. S. Ying, close-up of flowers

**Morphology** : Evergreen medium size tree to 5 m high, trunk straight; bark grayish white, smooth, much branched from upward; branches erect to ascending, elongate, 80-215 cm long, grayish brown, smooth, glabrous, lenticels inconspicuous, juvenile branchlets green; stipules ovate, 2.5-3 mm long, cauduous. Leaves simple, alternate, ovate-lanceolate to



**Fig. 256. *Ilex hengchunensis* S. S. Ying, branches, leaves and young inflorescences**

oblong, somewhat like that of *Magnolia compressa* (烏心石), 6-8.5 cm long, 2.2-2.8 cm wide, obtuse at apex, narrowly obtuse at base, coriaceous, entire to slightly wavy at margins, lustrous green surface, pale green beneath, glabrous on both surfaces; midrib impressed surface and elevated beneath, lateral veins 3-5 per side, inconspicuous; petioles short, 9-13 mm long, brownish, slightly grooved above, nearly glabrous.

Flowers unsexual, dioecious. Male flowers numerous, white, 8-10 mm in diameter when opened, usually 3 flowers to form a umbel, several umbels fascicled at leaf-axil or to form a compound umbel. Peduncles 4-7 mm long, green, glabrous; bracts ovate, 3-3.5 mm long, about 3 mm wide, obtuse and tinged with purple at apex; rays 3, short, 2-2.5 mm long, green, glabrous; bracteols minute, ovate, 0.5-0.8 mm long, 0.5 mm wide, obtuse at apex, cauduous; calyx 4-merous, campanulate, 2.5 mm in diameter, 4-lobed at apex; lobes ovate-triangular, 2.2-2.9 mm long, 1.5 mm wide, acute at apex, green to pale green, glabrous; corolla deeply 4-lobed at apex, 7.5-9.5 mm in diameter, white, glabrous; lobes oblong, 4.5-6 mm long, 2.5-3.6 mm wide, obtuse at apex; stamens 4, alternate to corolla





Fig. 257. *Ilex hengchunensis* S. S. Ying, close-up of young inflorescences

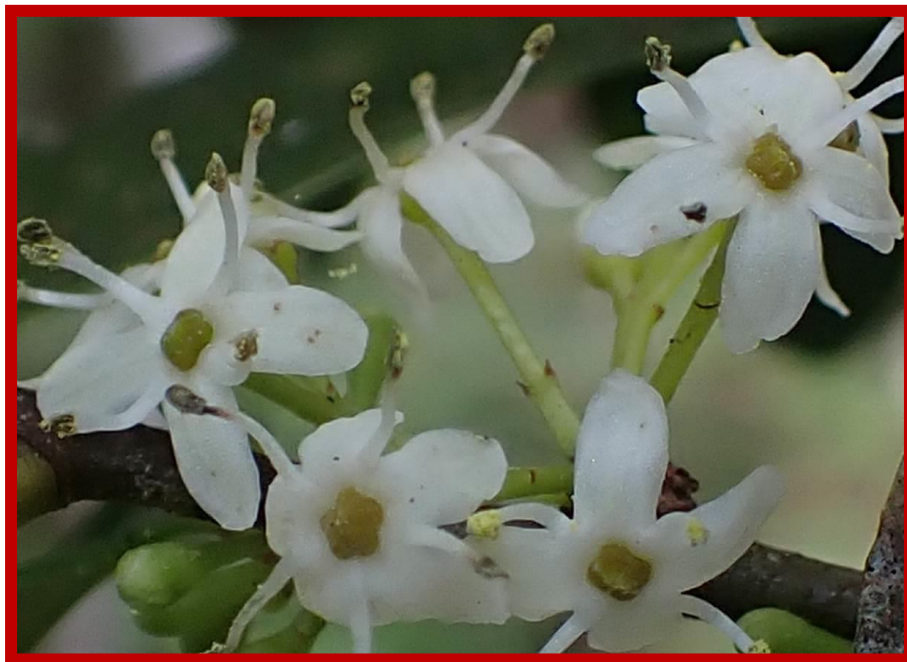


Fig. 258. *Ilex hengchunensis* S. S. Ying, close-up of flowers

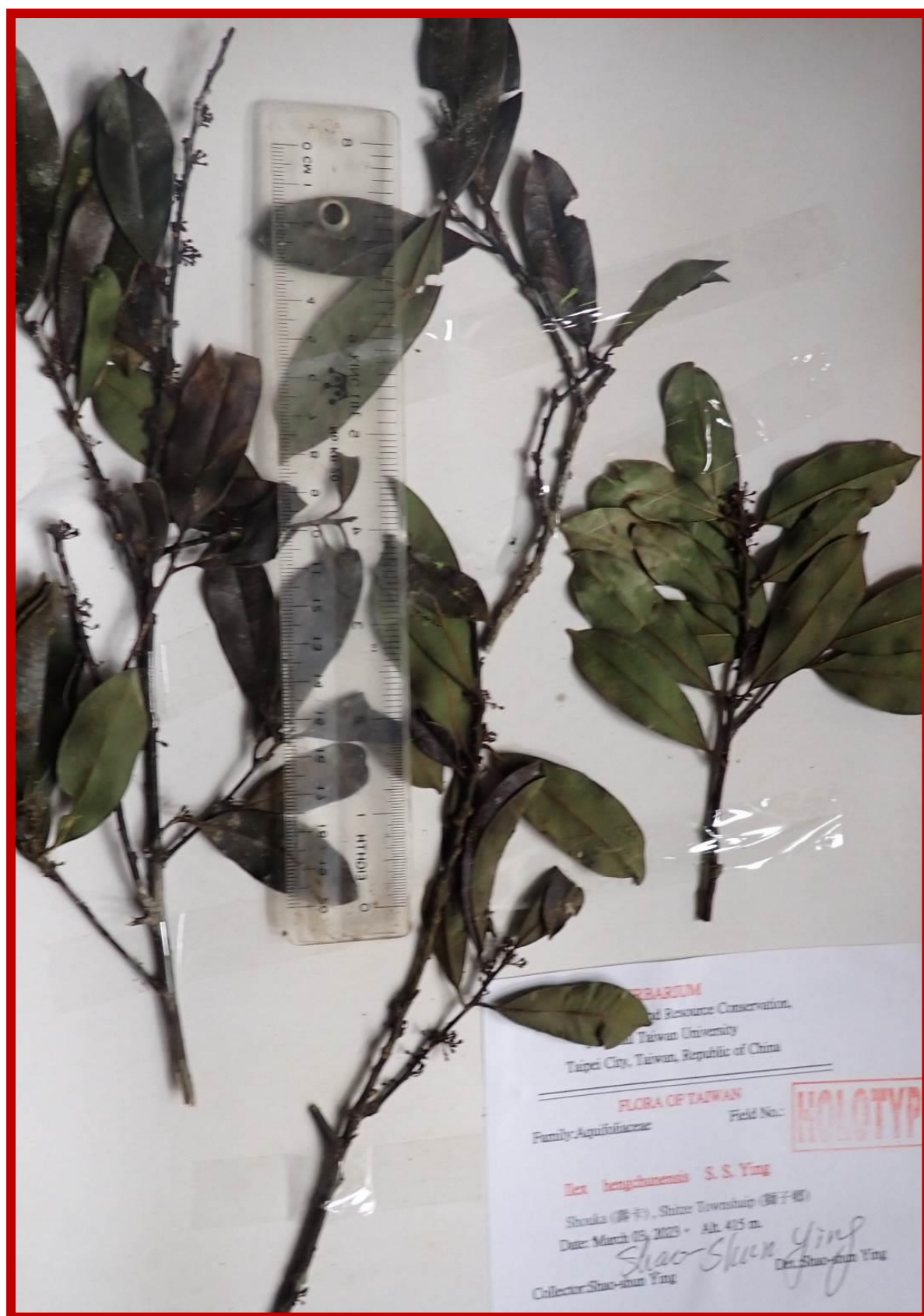


Fig. 259. *Ilex hengchunensis* S. S. Ying, the holotype NTUF-112-051





Fig. 260. *Ilex hengchunensis* S. S. Ying, the isotype NTUF-112-052

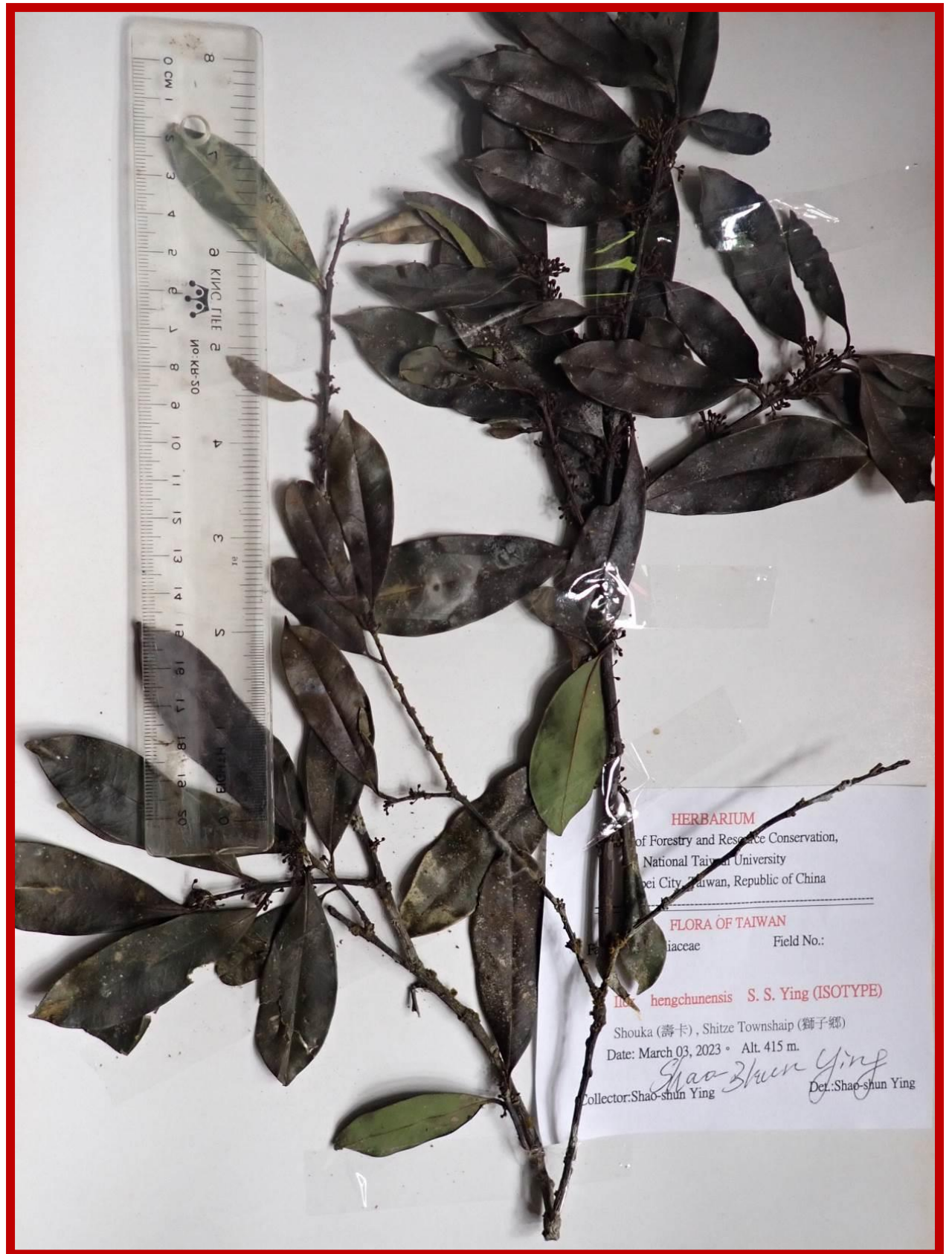


Fig. 261. *Ilex hengchunensis* S. S. Ying, the isotype

NTUF-112-053



lobes, filaments erect, elongate, 5-6.5 mm long, white; anthers oblong, 2.5-3 mm long, 1.5 mm wide, obtuse at apex, blackish yellow, 2-celled; rudimentary ovary pentagon, somewhat conspicuous, 2.5-3 mm across, yellowish green. Female not known.



Fig. 262. *Ilex hengchunensis* S. S. Ying, habit

#### Diagnosis.

*Ilex hengchunensis* is a distinctive new species of Taiwan *Ilex*, readily recognized by its male flowers 3 in a umbel and several umbels to form a compound umbel at leaf-axils; flowers white with 4 stamens and somewhat conspicuous -solitary to 2-4 fasciculate at branches and leaf-axils, and 4 conspicuous rudimentary ovary and the leaves like that of *Magnolia compressa* (烏心石).

#### Distribution and phenology.

*Ilex hengchunensis* S.S. Ying is endemic to Taiwan. It is known from Shouka (壽卡), Shitze Township (獅子鄉), Pingtung county, southern Taiwan. It was collected on the edge of forests, between 430 and 560 m altitudes; and flowering times is from March to April, and fruiting times unknown.





Fig. 263. *Ilex hengchunensis* S. S. Ying, habitat



*Ilex guanwuensis* S.S. Ying, 觀霧冬青

*Ilex guanwuensis* S.S. Ying, *sp. nov.* 觀霧冬青

TYPE: TAIWAN. Miaoli County, Taian Townshap (泰安鄉), Guanwu (觀霧) 2225 m alt. S. S. Ying, *s.n.* March 10, 2023. (holotype, NTUF).



Fig. 264. *Ilex guanwuensis* S. S. Ying, branches with fruits

**Morphology :** Evergreen shrubs to small tree to 2.5 m high, trunk short; bark grayish white, smooth, much branched at base; branches erect to ascending, elongate, 60-150 cm long, grayish brown, smooth, glabrous, lenticels inconspicuous, juvenile branchlets green; stipules ovate, 2.5-3 mm long, cauduous. Leaves simple, alternate, oblong-lanceolate to oblong, 3-4.5 cm long, 1.8-2.5 cm wide, acute to obtuse at apex, obtuse at base, thinly coriaceous, entire to slightly wavy at margins, lustrous green surface, pale green beneath, glabrous on both surfaces; midrib impressed surface and elevated beneath, lateral veins 4-6 per side, inconspicuous; petioles terete, 8-12 mm long, green, slightly grooved above, glabrous.

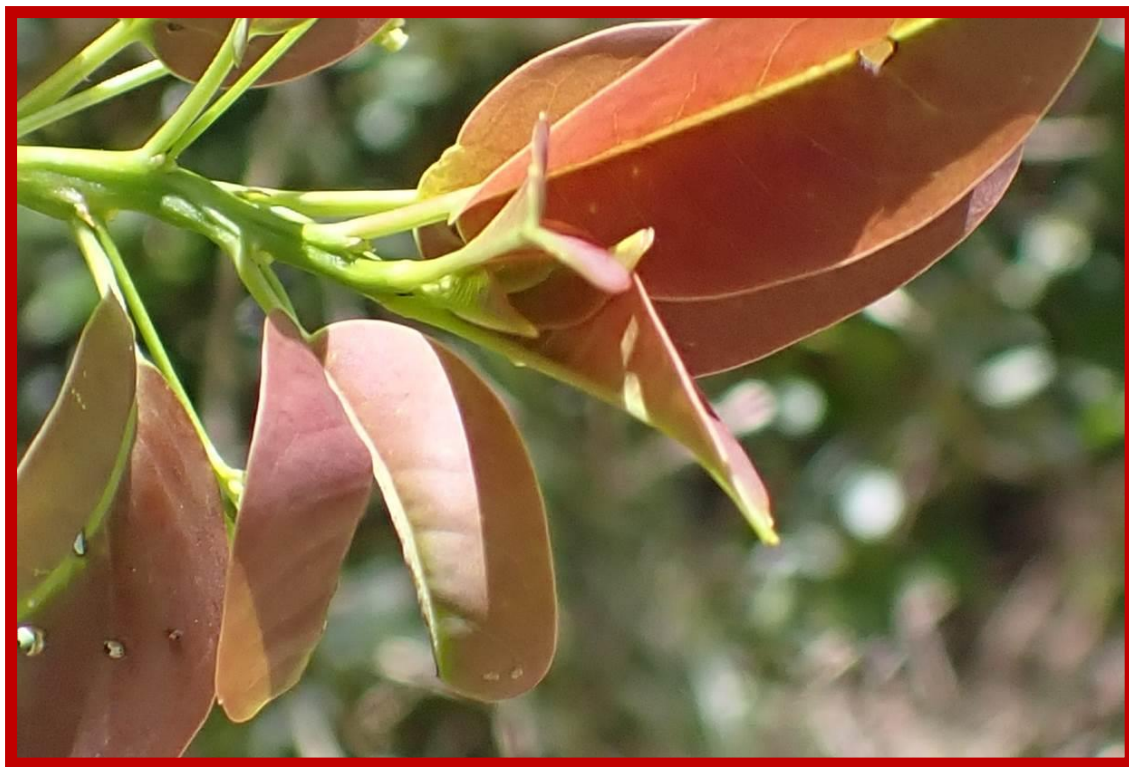


Fig. 265. *Ilex guanwuensis* S. S. Ying, young leaves



Fig. 266. *Ilex guanwuensis* S. S. Ying, adult and young leaves





Fig. 267. *Ilex guanwuensis* S. S. Ying, male flowers



Fig. 268. *Ilex guanwuensis* S. S. Ying, female flower

Flowers unisexual, dioecious. Male flowers 7-9, white, 3-4 mm in diameter when opened, in axillary at leaf-axil and branchlets cymose. Peduncles 3-5.5 cm long, green, glabrous; bracts ovate, 2-2.5 mm long, about 2 mm wide, caudate; pedicels short, 2.5-3.5 mm long, green, glabrous; bracteoles minute, ovate, 0.5-0.8 mm long, 0.4 mm wide, obtuse at apex, caudate; calyx 4-merous, campanulate, 2.2 mm in diameter, 4-lobed at apex; lobes triangular, 1.5-1.9 mm long, 1.2 mm wide, acute at apex, green to pale green, glabrous; corolla deeply 4-lobed at apex, 3.0-4.1 mm in diameter, white, glabrous; lobes oblong, 2.5-3 mm long, 2.2-2.6 mm wide, obtuse at apex; stamens 4, alternate to corolla lobes, filaments erect, elongate, 3-3.5 mm long, white; anthers oblong, 1.5-2 mm long, 1 mm wide, obtuse at apex, yellow, 2-celled; rudimentary ovary pentagon, somewhat inconspicuous, 1.2-1.8 mm across, yellowish green. Female usually solitary, white 4-5 mm in diameter when opened, scentless; pedicels 1.2-1.5 cm long, slender, green, glabrous; calyx 4-merous, campanulate, 2.5-3.2 mm in diameter, 4-lobed at apex; lobes triangular, 1.6-2.2 mm long, 1.5 mm wide, acute at apex, green, glabrous; corolla deeply 4-lobed at apex, 3.2-4.3 mm in diameter, white, glabrous; lobes obovate, 2.6-3.2 mm long, 2.4-2.6 mm wide, obtuse at apex; staminodes 4, alternate to lobes; filaments very short; anthers minute, not function; ovary globose, 2-2.5 mm across, green, glabrous; style short, stigma capitate.



Fig. 269. *Ilex guanwuensis* S. S. Ying, fruits



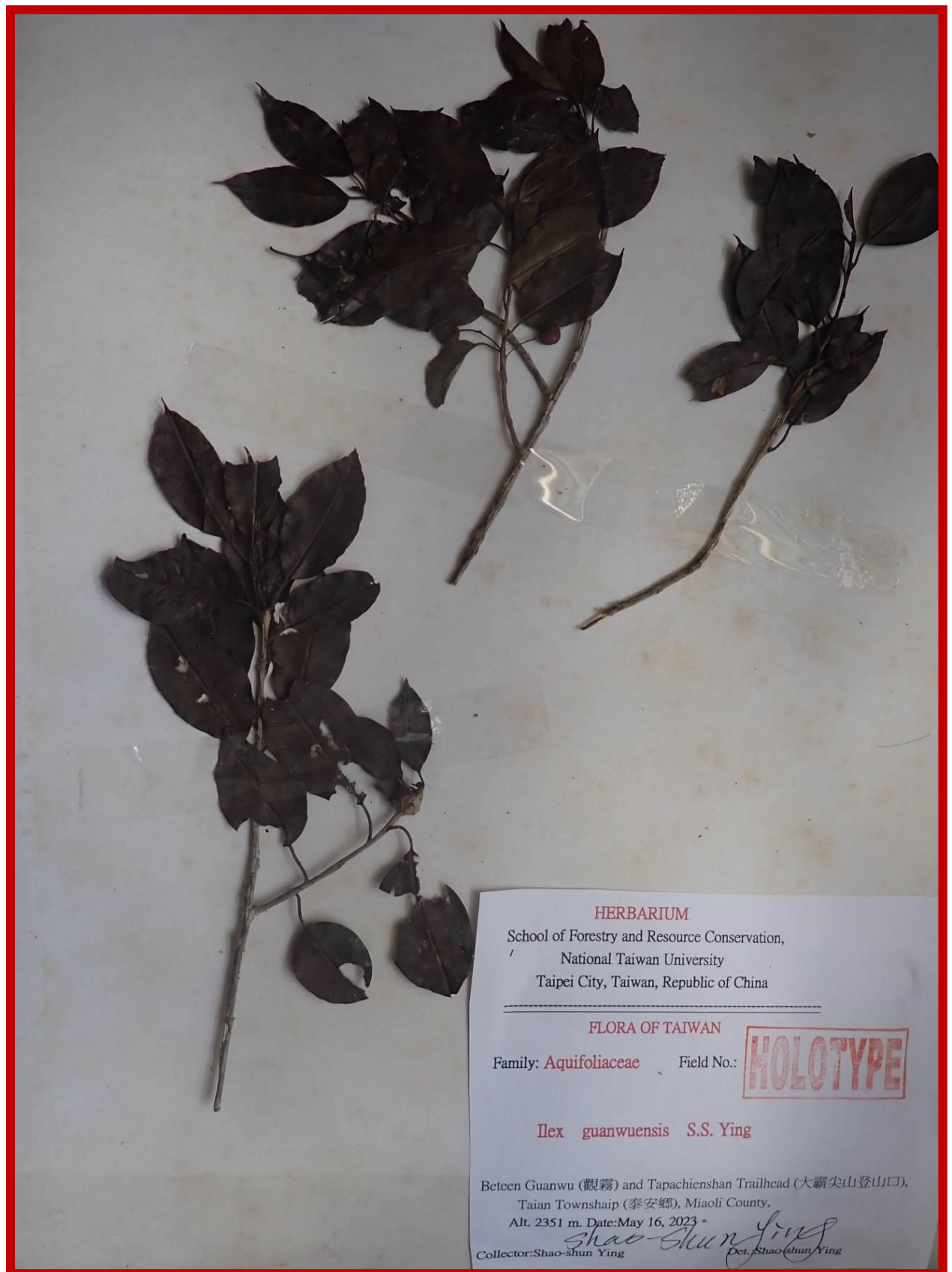


Fig. 270. *Ilex guanwuensis* S. S. Ying, the holotype NTUF-112-054

Fruits a drupe, globose, 3-3.5 mm in diameter, red when mature; calyx caudous, not see; prenes 4, ovoid, 0.8 mm across, not sulcate; endocarp leathery.



Fig. 271. *Ilex guanwuensis* S. S. Ying, habit and habitat

#### **Diagnosis.**

*Ilex guanwuensis* is a distinctive new species of Taiwan *Ilex*, readily recognized by its dioecious flowers; the male flowers 7-9, white, 3-4 mm in diameter when opened, in axillary at leaf-axil and branchlets cymose; the female flower solitary.

#### **Distribution and phenology.**

*Eurya guanwuensis* S.S. Ying is endemic to Taiwan. It is known from Zhenshan (榛山), Guanwu (觀霧), Taian Townshaip (泰安鄉), Miaoli County, Central Taiwan. It was discovered the species at edge of thickets at elevations of 2100-2400 meters. Its flowering time is June to July and fruiting time is October to December.



## 18. Two New combination of Genus *Helonias* (Melanthiaceae) in Taiwan)

A. *Helonias taiwaniana* (S.S. Ying) S.S. Ying, 台灣胡麻花

*Helonias taiwaniana* (S.S. Ying) S.S. Ying, *comb. nov.* 台灣胡麻花

*Heloniopsis taiwaniana* S.S. Ying, Coloured Ill. Fl. Taiwan 1:222 (1980).



Fig. 272. *Helonias taiwaniana* (S. S. Ying) S.S. Ying, Flowers just opened on March

Since genus *Heloniopsis* A. Gray (Mem. Amer. Acad. Arts, n.s., 6: 416 1859) is a synonym of *Helonias* Linn. (Sp.Pl. 1:342 1753). So, I transferred *Heloniopsis taiwaniana* S. S. Ying to genus *Helonias* as *Helonias taiwaniana* (S.S. Ying) S. S. Ying. i



Fig. 273. *Helonias taiwaniana* (S. S. Ying) S.S. Ying, inflorescence just expand





Fig. 274. *Helonias taiwaniana* (S. S. Ying) S.S. Ying, inflorescence just opened



Fig. 275. *Helonias taiwaniana* (S. S. Ying) S.S. Ying, habitat

Tanaka N. (1998, J. Journ. Jap. 102-115) described that: (*Heloniopsis taiwaniana* was described by Ying (1980) as a new species near *H. orientalis*. But , judging from his description and colour photograph , it appears that his species is nothing but *H. umbellata*. He described *H. taiwaniana* as having greenish perianth-segments , but his specimen was collected as late as April 20 in the northern part of Taiwan at altitudes between ca. 300-1000 m. It is a general habit that the perianths of *H. umbellata* turn greenish after anthesis. The flowers of *H. taiwaniana* in his photograph are apparently after a peak of flowering. Therefore I also regard *H. taiwaniana* as conspecific with *H. umbellata*).

Tanaka did not visit Taiwan and made no field study in Taiwan I guess; his judgement just from a description and a colour photograph to made his decision as *H. taiwaniana* was conspecific with *H. umbellatum* is very arbitrary and unreasonable. However, I have more than 50 years field experience on botanical study in Taiwan, a lot of samples of *Helonias taiwaniana* had examined, I realized that the flowering time of the species is March, and the perianth segments of flowers is always in green color. Here I posted 5 photos to express that the inflorescence and flowers just opened initially and the habitat of the species, I think, our species is stand up to specific rank of genus *Helonias*.

*Helonias acutifolium* (Hayata) S.S. Ying is another species of the genus from Taiwan, it is distinctly recognized by its purple red to red perianth segment, sometimes tinged with spots, flowers usually upright after anthesis, ovary often triangular, pale red and covered with red colour spots all over, I treat it as a distinctive species here.

### **B. *Helonias acutifolia* (Hayata) S.S. Ying , 銳葉胡麻花**

#### ***Helonias acutifolia* (Hayata) S.S. Ying, *comb. nov.* 銳葉胡麻花**

*Heloniopsis acutifolia* Hayata, Icon. Pl. Formosan 9:144 (1920).

*Heloniopsis arisanensis* Hayata ex Honda in Bot.& Zool. 6(10):1679 (1938).

*Hexonix acutifolia* (Hayata) F.T. Wang & Tang in Contr. Inst. Bot. Natl. Acad.

Peiping 6:113 (1949).

*Hexonix arisanensis* (Hayata ex Honda) F.T. Wang & Tang in Contr. Inst. Bot. Natl. Acad. Peiping 6:114 (1949).



*Sugerokia acutifolia* (Hayata) Koidz. In Fl. Symb. Orient.-Asiat. 95 (1930).

*Sugerokia arisanensis* (Hayata ex Honda) Koidz. In Acta Phytotax. Geobot. 8:53 (1939).



Fig. 276. *Helonias acutifolia* (Hayata) S.S. Ying, inflorescence



Fig. 277. *Helonias acutifolia* (Hayata) S.S. Ying, habitat





Fig. 278. *Helonias acutifolia* (Hayata) S.S. Ying, mature capsules and seeds



Fig. 279. *Helonias acutifolia* (Hayata) S.S. Ying, flowers after anthesis



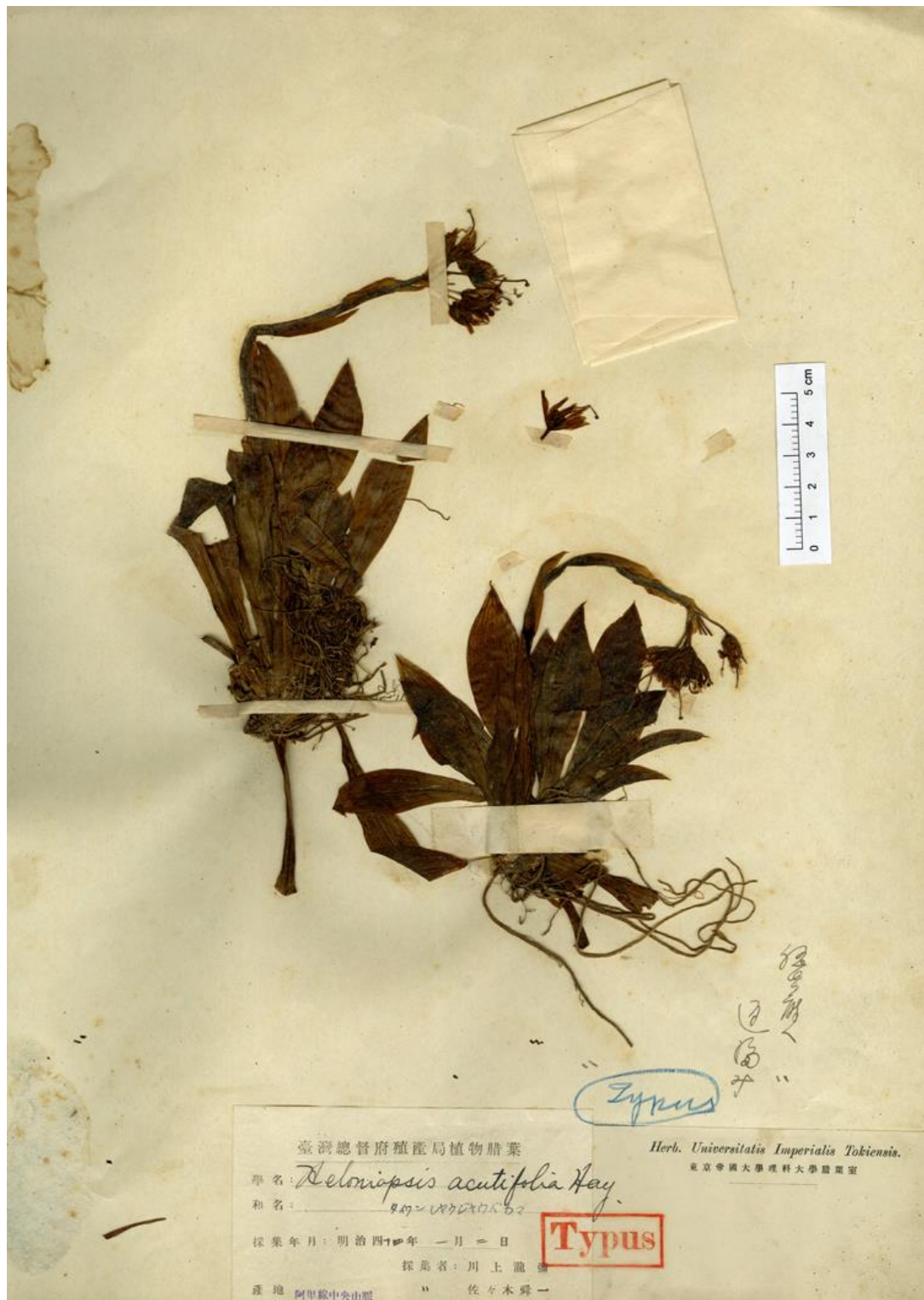


Fig. 280. *Helonias acutifolia* (Hayata) S.S. Ying, the holotype

From TAI [台灣植物資訊整合查詢系統 \(ntu.edu.tw\)](http://ntu.edu.tw)





Fig. 281. *Helonias umbellum* (Baker) N. Tanaka, habitat



Fig. 282. *Helonias umbellum* (Baker) N. Tanaka, habitat



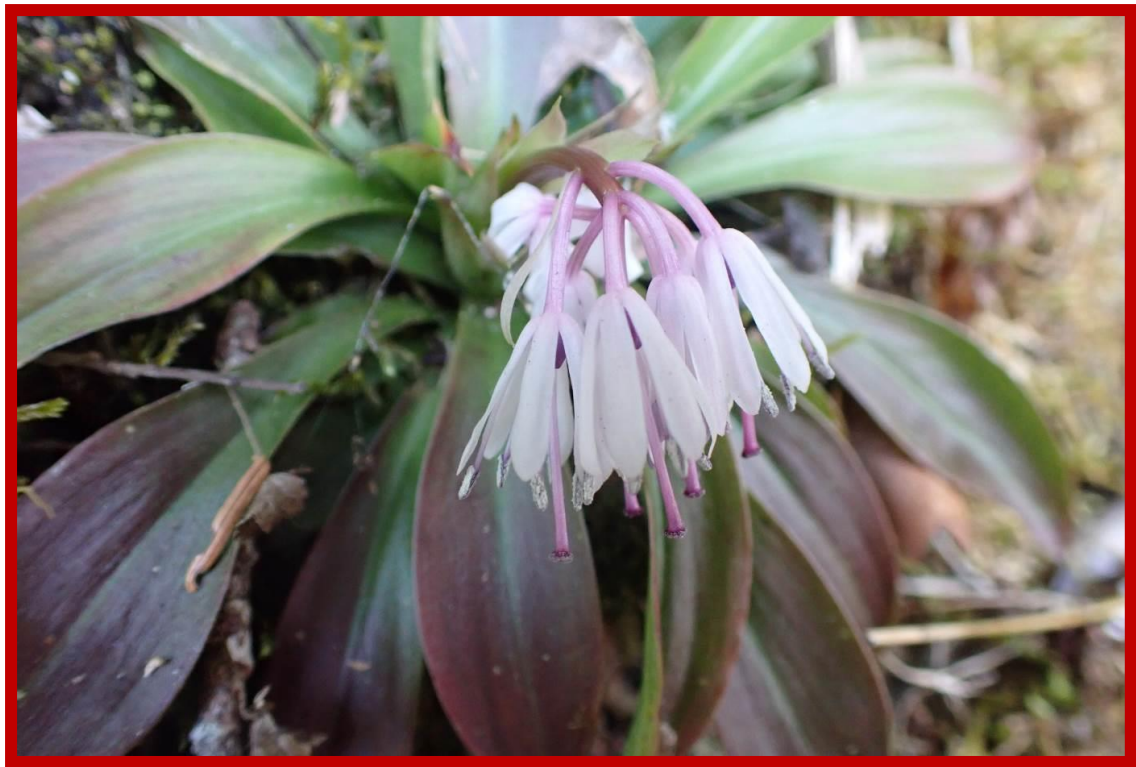


Fig. 283. *Helonias umbellum* (Baker) N. Tanaka, inflorescence

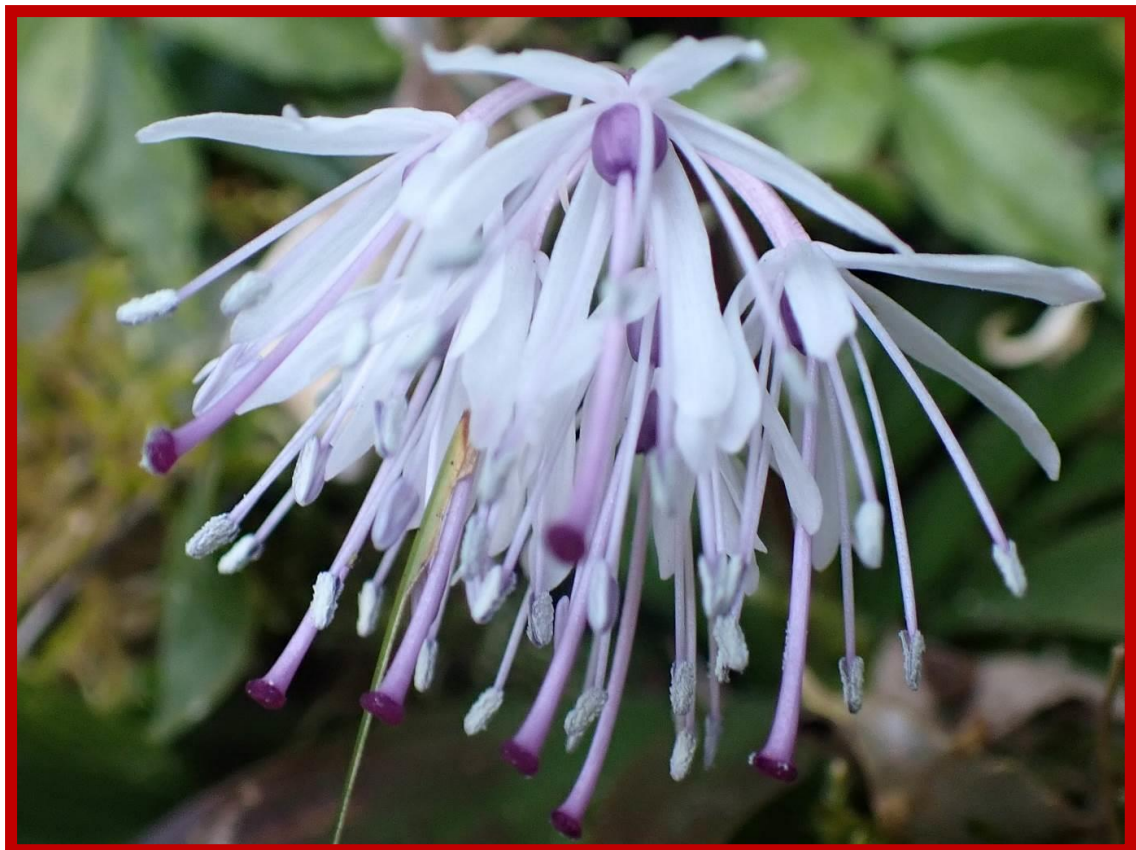


Fig. 284. *Helonias umbellum* (Baker) N. Tanaka, flowers



Fig. 285. *Helonias umbellum* (Baker) N. Tanaka, flowers, mind shape of ovary



Fig. 286. *Helonias umbellum* (Baker) N. Tanaka, close-up of flowers



19. A New Species of Genus *Chrysosplenium* (Saxifragaceae) from Taiwan

*Chrysosplenium taiwanianum* S. S. Ying 台灣貓眼草

*Chrysosplenium taiwanianum* S.S. Ying, *sp. nov.* 台灣貓眼草

**TYPE:**TAIWAN. Taoyuan City, Fuhsin District(復興區), Lalashan (拉拉山), 1895 m alt. S. S. Ying, *s.n.* April 04, 2023. (holotype, NTUF).



Fig. 287. *Chrysosplenium taiwanianum* S. S. Ying, plant colony

**Morphology :** Annual terrestrial herbs, roots many, fibrous, slender, 4-9 cm long, without stolon. stems erect to to somewhat creeping, branched upward and base, 8-15 cm long, pale green, glabrous; branches 3-5.5 cm long, erect to ascending. Leaves simple, alternate, ovate to broadly ovate, 1.2-1.8 cm long, 1.3-1.8 cm wide, obtuse and rounded at apex, obtuse at base, coriaceous to fleshy, dentate at margins, green to lustrous green surface, pale green beneath, glabrous on both surfaces; the basal ones often wither when flowering. Petioles 6-8 mm long, slightly grooved above, pale green, glabrous.



Fig. 288. *Chrysosplenium taiwanianum* S. S. Ying, habit

Flower solitary, terminal on branchlet, 7-9 mm in diameter, green, not opened; pedicels 4-7 mm long, somewhat fleshy, pale green, glabrous; sepals 4, spreading, rounded, 4-5.5 mm long and wide, rounded and emarginate at apex, obtuse at base, glabrous, green, entire at margins; petals absent; stamens 4-8, included; filaments short, 2.5-3 mm long, glabrous; anthers dot-like, 2-locular, longitudinally dehiscent; ovary semi-inferior, 2-locular; style 2, short, 2-2.5 mm long; stigma short, 0.2-0.4 mm long.

Fruit a capsule, 4-5 mm long, pale green, smooth, 2-lobes; the lobes equal, broadly ovate, obtuse and with a macro at apex, dehiscent along the adaxial suture. Seeds many, ovoid, brown, with a raphe on one side, smooth to minute papillae.

### **Diagnosis.**

*Chrysosplenium taiwanianum* is characterized by its solitary and unopened flower; sepals 4, spreading rounded and emarginate at apex; stamens and pistil all included and equal capsule-lobes.





Fig. 289. *Chrysosplenium taiwanianum* S. S. Ying, flowers and fruit  
(mind flowers not opened)

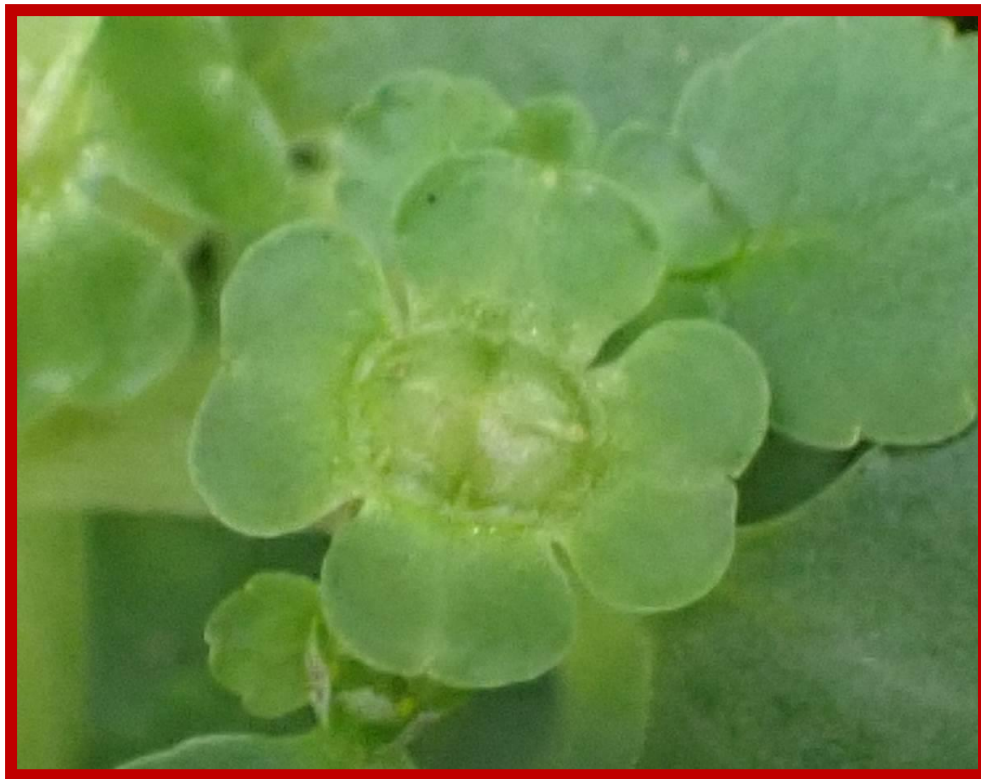


Fig. 290. *Chrysosplenium taiwanianum* S. S. Ying, close-up of flowers



Fig. 291. *Chrysosplenium taiwanianum* S. S. Ying, the holotype NTUF-112-055





Fig. 292. *Chrysosplenium taiwanianum* S. S. Ying, plant colony (2)

**Distribution and phenology.**

*Chrysosplenium taiwanianum* S.S. Ying is endemic to Taiwan. It is known from Lalashan (拉拉山), between Entrance of trail (步道入口) and Giant trees group (巨木群), Fuhsin District(復興區), Taoyuan city, northern Taiwan. It was collected on the on mountain slope of hiking trail, at between 1800 and 1950 m elevation and flowering time from April to May, fruiting time April to June. It is may be an ephemeral plant, I cannot examine the plant where I discovered it after July.

## 20. A New Species of Genus *Arisaema* (Araceae) from Taiwan

*Arisaema guanwuense* S. S. Ying 觀霧天南星

*Arisaema guanwuense* S.S. Ying , *sp. nov.* 觀霧天南星

TYPE:TAIWAN. Miaoli County, Taian Townshap (泰安鄉) , Guanwu (觀霧) 2150 m alt. S. S. Ying , *s.n.* March 30, 2023 . (holotype , NTUF) .



Fig. 293. *Arisaema guanwuense* S. S. Ying, plant with male spadix

**Morphology :** Annual dioecious herbs, tuber subglobose, 3.5-4 cm in diameter, fleshy, white; fibrous roots many, slender, 4-7 cm long; cataphylls 2, the lower one 7-8 cm long, white, membranous, acute at apex; the high one 15-17 cm long, pale brown with dark colour transverse strips, acute at apex. Leaf solitary. petioles 45-55 cm long, erect to ascending, dark brownish, glabrous. Leaf-blade 13-16, verticillate on apex of petioles,





Fig.294. *Arisaema guanwuense* S. S. Ying, tuber and roots



Fig. 295. *Arisaema guanwuense* S. S. Ying, leaf blades

equal, linear, 8-14 cm long, 2.5-3.5 mm wide, acute at apex, attenuate at base, slightly fleshy, entire and slightly wavy at margins, glabrous on both surfaces, lustrous green surface and pale green beneath, midrib impressed surface and elevated beneath, lateral veins inconspicuous; petioles absent.



Fig. 296. *Arisaema guanwuense* S. S. Ying, male spadix

Flowers unisexual , dioecious, spadix; peduncles 9-12 cm long, pale brownish, glabrous, erect to ascending; male spadix:spathe recurved, 8-11 cm long, tube infundibuliform, 6-7.5 cm long, 2.5-3 cm in diameter to throat, green with white strips; throat oblique truncate, not recurved; limb broadly ovate-triangular, incurved, 4.5-5.5 cm long, 3-3.5 cm wide, abruptly narrowed and long-caudate with 2.5-3 cm long filiform tail, green with white strips inside, pale brown with 3-4 elevated white ribs; spadix, Male: fertile portion cylindric, 2.5-3 cm long, male flowers loosely arranged, each consisting of 4 brownish anthers. dehiscent by horseshoe-shaped slits; staminal portion cylindric, 8-13 mm long; anthers dark brownish, larger than fertile ones; appendix 4-4.5 cm long, 3-4 mm in diameter, somewhat like a clavate, sessile, pale green toward to white upward, glabrous, with 6-7 8-10 mm long filiform bristles at base,





Fig. 297. *Arisaema guanwuense* S. S. Ying, the holotype NTUF-112-056

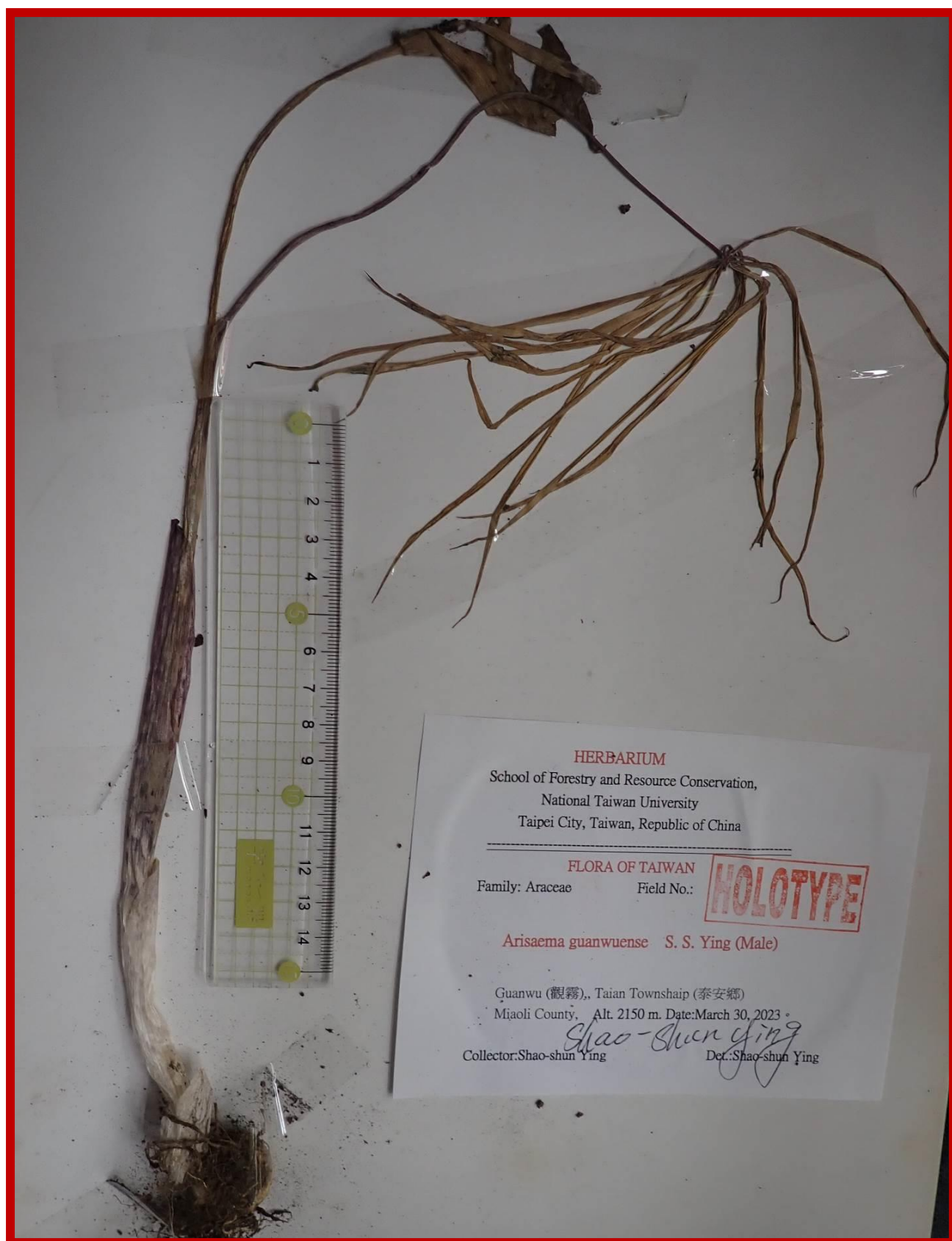


Fig. 298. *Arisaema guanwuense* S. S. Ying, the holotype

NTUF-112-057



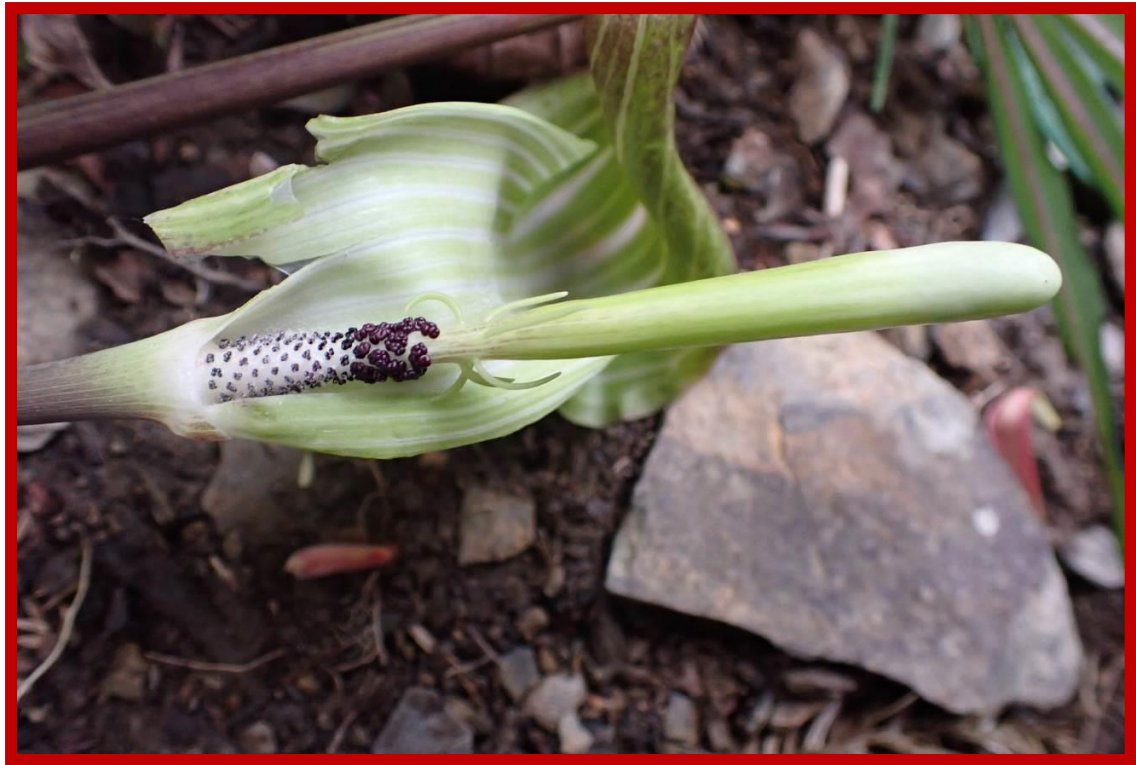


Fig. 299. *Arisaema guanwuense* S. S. Ying, male spadix



Fig. 300. *Arisaema guanwuense* S. S. Ying, close-up of male spadix





Fig. 301. *Arisaema guanwuense* S. S. Ying, habit, female plant



Fig. 302. *Arisaema guanwuense* S. S. Ying, female spadix





Fig. 303. *Arisaema guanwuense* S. S. Ying, close-up of female spadix

Female spadix: spathe somewhat like the male one but larger; fertile portion cylindric, 2.6-3.2 cm long, 7-8 mm across; pistils densely arranged; ovaries ovoid, vivid green, 2.1-2.6 mm wide at base, with a whitish stigma on a short black style which less than 0.5 mm wide; spadix appendix 4-4.5 cm long, 3.5-4 mm in diameter, somewhat like a clavate, rounded at apex, sessile, green to pale green, with 15-25, 3-7 mm long filiform bristles at base.

### **Diagnosis.**

*Arisaema guanwuense* is characterized by its verticillate linear leaves, with elongate spathe with long-caudate 2.5-3 cm long filiform tail at apex and male spadix with :fertile portion cylindric, 2.5-3 cm long, male flowers loosely arranged, each consisting of 4 brownish anthers. dehiscence by haorseshoe-shaped slits and stamidones portion cylindric, 8-13 mm long; anthers dark brownish, larger than fertile ones.

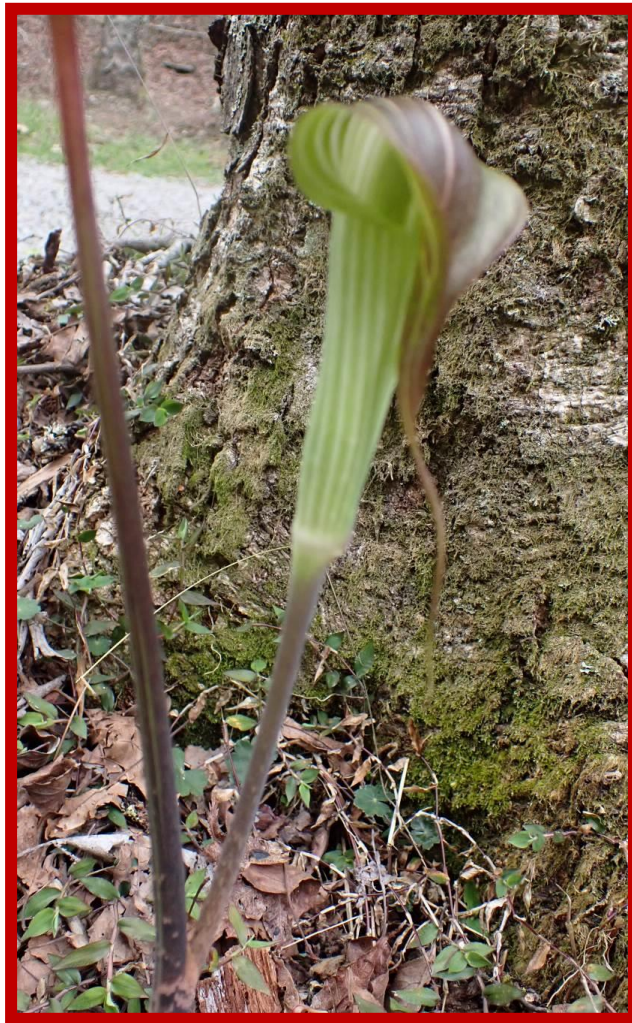


Fig. 304. *Arisaema guanwuense* S. S. Ying, inflorescence

**Distribution and phenology.**

*Arisaema guanwuense* S.S. Ying is endemic to Taiwan ° It is known from Guanwu (觀霧) area, Taian Townshaip (泰安鄉) , Miaoli County, central Taiwan. ° It was discovered the species on the forest edge at elevations of 1900-2050 meters. Its flowering time is March to April and fruiting time is May to July.



## 21. One New Species of Genus *Alpinia* (Zingiberaceae) in Taiwan

*Alpinia shoukaense* S.S. Ying 壽卡月桃

*Alpinia shoukaense* S.S. Ying, *sp. nov.* 壽卡月桃

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 385 m alt. *S. S. Ying*, *s.n. April 13, 2023* ° (holotype, NTUF) °



Fig. 305. *Alpinia shoukaense* S. S. Ying, inflorescences

**Morphology** : Perennial herbs, Pseudostems 85-135 cm high, 6-8 mm in diameter, ascending to erect, glabrous, greenish; Leaves 6-8 in a pseudostem, remotely distichous, oblong to oblong-lanceolate, 30-35cm long, 3-4.2 cm wide, acuminate and short-caudate at



Fig. 306. *Alpinia shoukaense* S. S. Ying, leaves

apex, attenuate at base, entire and strongly wavy at margins, thinly coriaceous, lustrous green surface somewhat pale green beneath, glabrous on both surfaces, midrib impressed surface and prominent elevated beneath. Petioles with sheathes 7-9 cm long, green tinged with purple upward, glabrous; ligule , 4-7 mm long, entire to 2-lobed, membranous.

Flowers 15-22, white tinged with red in bud, 2.5-3.5 cm in diameter when opened, remotely arranged in a terminal elongate raceme, usually only 1- flowers opened a time; inflorescence erect to ascending, 10-15 cm long, green to pale green, glabrous to white hairy when young; spatulate involucral bract ovate-oblong, 6-9 cm long, 3-4 cm wide, acute at apex, truncate at base, glabrous on both surface, pale brownish; brcts ovate to





Fig. 307. *Alpinia shoukaense* S. S. Ying, inflorescens, mind flowers with pedicels



Fig. 308. *Alpinia shoukaense* S. S. Ying, inflorescens with one opened flower

ovate-lanceolate, 5-8 mm long, 3-4 mm wide, obtuse at apex, membranous, cauduous;  
pedicels 2-3.5 mm long, green to pale yellow, glabrous; calyx tubular, 9-12 mm long, 4.2-  
5.0 mm wide, 2-lobed from middle; corolla-tube longer than calyx, dorsal lobe broadly



Fig. 309. *Alpinia shoukaense* S. S. Ying, close-up of flower



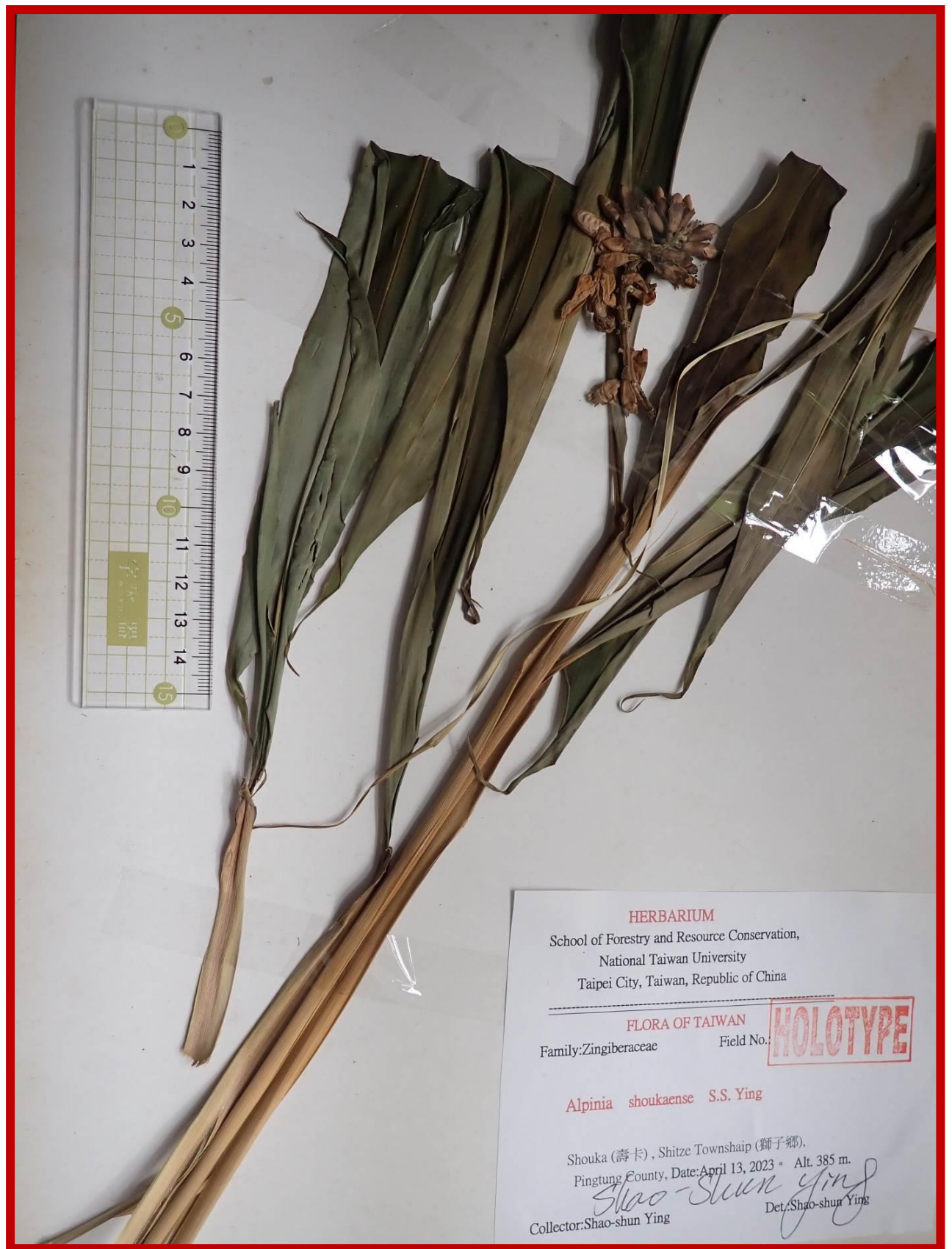


Fig. 310. *Alpinia shoukaense* S. S. Ying, the holotype NTUF-112-058



Fig. 311. *Alpinia shoukaense* S. S. Ying, the isotype NTUF-112-059



ovate, 18-22 mm long, 8-11 mm wide, obtuse at apex, white tinged with red upward, membranous; lateral lobes oblong-lanceolate, 15-18 mm long, 4.5-5.5 mm wide, obtuse at apex, white; labellum oblong-ovate, 2.5-3.5 cm long, 1.6-2.3 cm wide, slightly convolute at base and expanded upward, white with several red stripes from base extended to upward margins and apex, deeply denate at margins; stamen 2.5-3 cm long, anther 10-12 mm long, white cream; staminode inconspicuous, obtuse; stigma expanded head-like,; style slender, 3-3.5 cm long, upright and extended over anther, white; ovary globose, 2-3 mm across, glabrous, green; epyginous glands 2, at style base, 2.0-2.5 mm long.

Fruits berry-like, smaller, not dehiscent, globose, 4-5 mm in diameter, red when mature, glabrous.



Fig. 312. *Alpinia shoukaense* S. S. Ying, habitat

#### **Diagnosis.**

*Alpinia shoukaense* is characterized by:

1. A very rare species of Taiwan *Alpinia* genus which grows at upper part of Hengchun peninsula.

2. Flowers not many, remotely arranged, opened one by one, not opened simultaneously and with short pedicles.

3. inflorescence upright erect, 12-18 cm long, green, glabrous.

4. Labellum oblong-ovate, 2.5-3.5 cm long, 1.6-2.3 cm wide, slightly convolute at base and expanded upward, white with several red stripes from base extended to upward margins and apex, deeply denate at margins.



Fig. 313. *Alpinia shoukaense* S. S. Ying, fruit photo on November 09, 2023

#### **Distribution and phenology.**

*Alpinia shoukaense* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), Shitze Township (獅子鄉), Pingtung county, southern Taiwan ° It was collected on the edge of forests, between 430 and 360 m altitudes; and flowering times is from April to May, and fruiting times July to November.



## 22. A New Species of Genus *Aglaia* (Meliaceae) in Taiwan

*Aglaia taiwaniana* S.S. Ying 台灣樹蘭

*Aglaia taiwaniana* S.S. Ying, *sp. nov.* 台灣樹蘭

TYPE:TAIWAN. Pingtung County, Fangliao Townshaip (枋寮鄉), Fangliao (枋寮) 10 m alt. *S. S. Ying*, *s.n. April 13, 2023*. (holotype, NTUF).



Fig. 314. *Aglaia taiwaniana* S. S. Ying, branch with inflorescence

**Morphology** : Shrubs to small trees up to 2.5 m high, trunk short, smooth, brownish, branched at base; branches erect to ascending, terete, green turned to purple when adult, glabrous. Leaves pinnate, alternate, 8-12 cm, 4.5-5.5 cm wide, with 5-7 leaflets; leaflets opposite, ovate to ovate-oblong, 4.5-6 cm long, 2.2-2.6 cm wide, obtuse at apex, obtuse to rounded at base, coriaceous, entire at margins, glabrous on both surface, midrib impressed

Surface and elevated; the lateral veins 7-8 per side impressed and elevated beneath. Petioles 1-2 mm long, glabrous, purplish, grooved above; petioles 3-4.5 cm long, tinged with purple, glabrous, grooved above; rachis 3-4.5 cm long, slightly winged, tinged with purple.



Fig. 315. *Aglaia taiwaniana* S. S. Ying, leaves

Flowers numerous, white, scentless, 3-4 mm in diameter when opened, in axillary panicles; inflorescence peduncles 3-5.5 cm long, green, glabrous, with 3-6 racemes; racemose peduncles 1-2.5 cm long, green, glabrous, 4-9 flowers for each raceme; pedicels 2.5-3.5 mm long, green, glabrous; bracts absent or cauduous; calyx small, cup-like, 5-lobed, lobes triangular, 0.8-1 mm long, acute at apex; petals, white, ovate to rounded, 2.5-3.5 mm long, 1.5-2 mm wide, obtuse at apex, truncate at base; stamens tube cup-like with apical margin incurved, glabrous; anthers 5, ellipsoid, just protruding beyond aperture, somewhat pink in colour; ovary globose, 0.6-1 mm across, glabrous; 1-locular, 1-ovuled; style short. ,





Fig. 316. *Aglaia taiwaniana* S. S. Ying, inflorescences



Fig. 317. *Aglaia taiwaniana* S. S. Ying, close-up of inflorescences



Fig. 318. *Aglaia taiwaniana* S. S. Ying, close-up of flowers



Fig. 319. *Aglaia taiwaniana* S. S. Ying, infructescences



Fruits numerous, globose, 2.5 mm across, indehiscent, pale yellow and turn to red when mature, glabrous; infructescences 4-6 cm long, glabrous; pedicels 4-9 mm long; seed one, globose, enveloped by an aril.



Fig. 320. *Aglaia taiwaniana* S. S. Ying, fruits



Fig. 321. *Aglaia taiwaniana* S. S. Ying, branches and leaves



Fig. 322. *Aglaia taiwaniana* S. S. Ying, the holotype NTUF-112-060



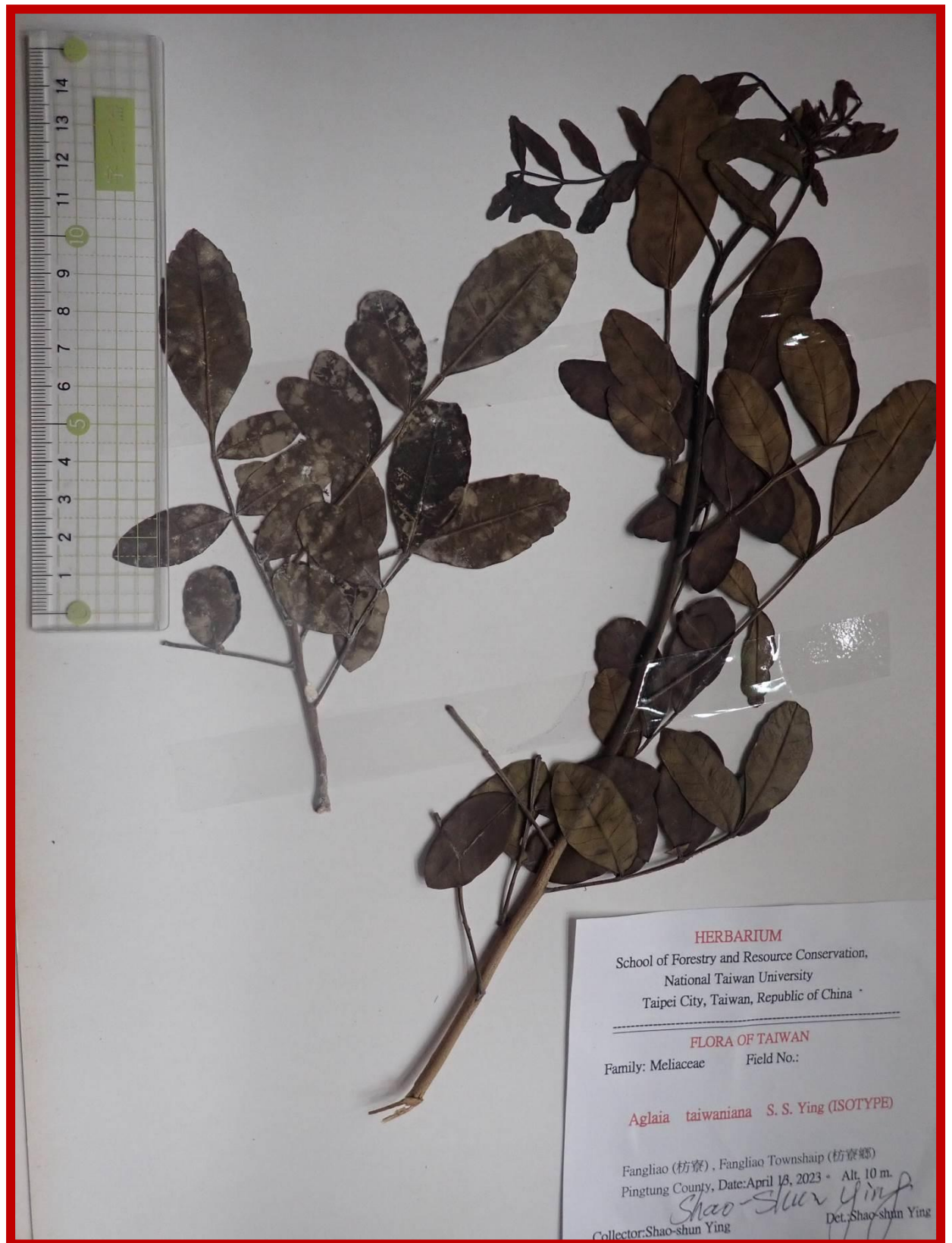


Fig. 323. *Aglaia taiwaniana* S. S. Ying, the isotype NTUF-112-061



Fig. 324. *Aglaia taiwaniana* S. S. Ying, the isotype NTUF-112-062



### Diagnosis.

*Aglaia taiwaniana* is characterized by its medium-sized tree, with 5-7 leaflet pinnate; flowers small, white, in an axillary panicle; calyx 5 and petals 5, stamens included, stamen-tube shorter than petals; ovary one locular and fruit not dehiscent.



Fig. 325. *Aglaia taiwaniana* S. S. Ying, habitat

### Distribution and phenology.

*Aglaia taiwaniana* S.S. Ying is endemic to Taiwan. It is known from Fangliao(枋寮), Fangliao Township (枋寮鄉), Pingtung county, southern Taiwan. It was collected on the coastal region, between 10 and 23 m altitudes; and flowering times is from January to May; and fruiting time February to May. .

### 23. One New Species of Genus *Flueggea* (Phyllanthaceae) in Taiwan

*Flueggea taiwanensis* S.S. Ying 台灣白飯樹

*Flueggea taiwanensis* S.S. Ying, *sp. nov.* 台灣白飯樹

TYPE: TAIWAN. Pingtung County, Fangliao Townshaip (枋寮鄉), Fangliao (枋寮) 10 m alt. S. S. Ying, *s.n.* April 13, 2023. (holotype, NTUF).



Fig. 326. *Flueggea taiwanensis* S. S. Ying, inflorescence

**Morphology :** Shrubs up to 2.5 m high, much branched; branches erect to ascending, angular, green turned to pale brown when adult, glabrous. Leaves simple, alternate, ovate to ovate-oblong, 2.5-3.5 cm long, 1.8-2.4 cm wide, obtuse at both ends, chartaceous, entire to slightly wavy at margins, lustrous green surface and pale green slightly glaucous beneath, midrib and lateral veins (5-6 per side) impressed surface and elevated beneath, glabrous on both surfaces. Petioles 5-7 mm long, not winged; stipules ovate, 1.5-2 mm long, acute at apex, cauduous.





Fig. 327. *Flueggea taiwanensis* S. S. Ying, branches , leaves and inflorescence



Fig. 328. *Flueggea taiwanensis* S. S. Ying, male inflorescence



Fig. 329. *Flueggea taiwanensis* S. S. Ying, close-up of male flowers

Flowers dioecious. Male flowers numerous, pale yellow to pale greenish yellow, 4-5 mm in diameter when opened, usually 2-5 floweres to form a fascicle, 2-5 fascicles from



the leaf-axils which enclosed by involucre bracts; involucre bracts ovate-oblong to oblong, 3-5 mm long, 3-4 mm wide, obtuse at apex, glabrous, brownish; bracteoles at base the umbel, ovate, 2-3 cm long, obtuse at apex, pale yellow; pedicels 5-8 mm long, glabrous, pale yellow; sepals 5, oblong to ovate-elliptic, 2-2.5 mm long, about 1.5 mm wide, obtuse at apex, pale yellow, entire at margins, veins inconspicuous; disc glands fleshy, 0.2-0.3 mm across; stamens 5, free; filaments elongate, 3-3.5 mm long, white, glabrous; anthers globose, didymous, 0.5-0.7 mm across, basifixied, extrorse, longitudinal dehiscent.



Fig. 330. *Flueggea taiwanensis* S. S. Ying, female flowers

Female flowers 3-6 in a fascicle, axillary, white to pale yellow, 2-3 mm in diameter when opened; pedicels 1.5-2.5 mm long, green, glabrous; sepals 5, ovate-triangular, 2-2.7 mm long, 1-1.5 mm wide, acute at apex, persistent in fruit, entire, pale green; disk flat, angled or entire, 0.6-1.2 mm across; ovary of 3 carpels; style 0.4-0.8 mm long, often basally connate into a column 0.3-0.4 mm high; stigma 3, spreading, each with 2 linear branches

Fruit a capsule, globose, 4.5-5 mm in diameter, vein absent to inconspicuous, smooth; seeds pale brown, plano-convex, faintly reticulate or verruculose, 1.5-2.4 mm long; hilum elliptic, 0.4 mm long, not invaginated.

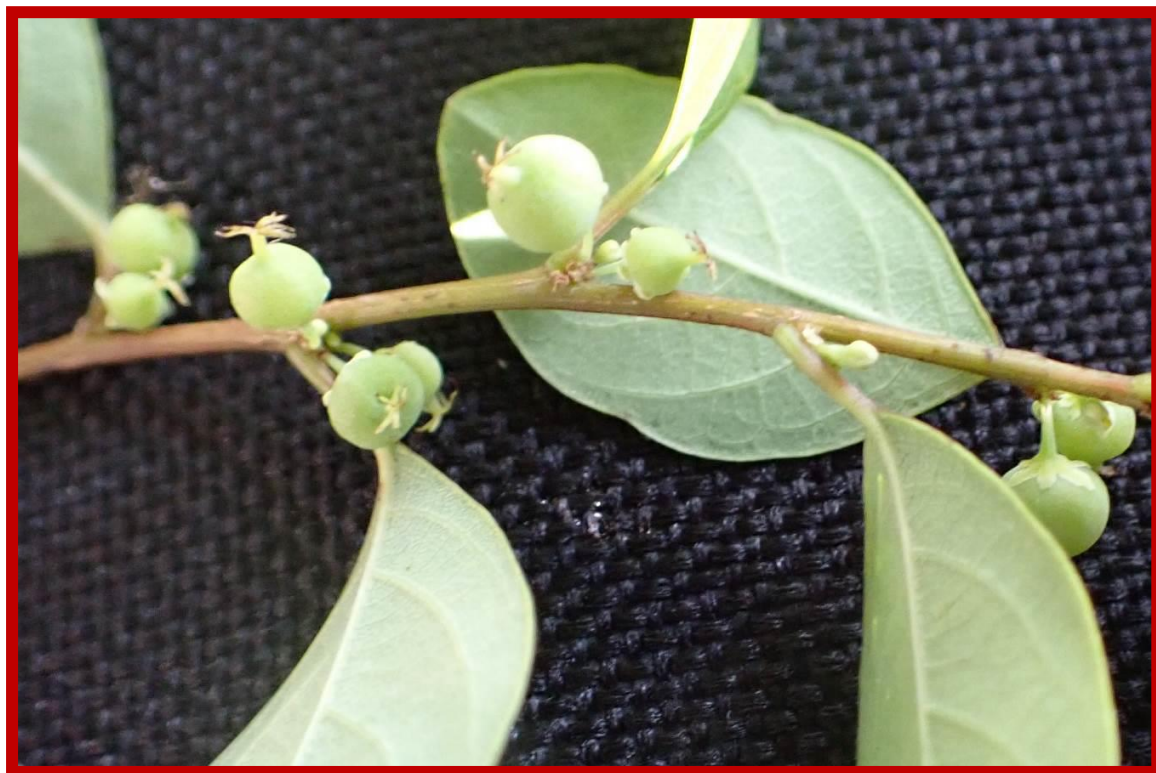


Fig. 331. *Flueggea taiwanensis* S. S. Ying, young fruits

### Diagnosis.

Webster (1994) described two species of genus *Flueggea* in Taiwan in his ( A Revision of Flueggea), one *F. suffruticosa* (Pallas) Baillon, and the other is *F. virosa* (Roxb. Ex Willd.) Voigt. The male flowers of those two species he states as follows:

***F. suffruticosa* (Pallas) Baillon:** Flowers in axillary cymose clusters; staminate flowers (5)-10-40 per cymule; pistillate flowers 1-4 (-7). Staminate flower: pedicel 2.5-5 mm long; sepals usually 5, imbricate, elliptic to ovate or suborbicular, entire or obscurely denticulate distally, 1-veined, 1-1.5 mm. long, 0.5-1.5 mm. broad; disk segments angular, 0.2-0.4 mm. across; stamens 5, free, the filaments becoming 1-2.2 mm long; the anthers 0.5-1.1 mm. long.





Fig. 332. *Flueggea taiwanensis* S. S. Ying, the holotype NTUF-112-063

*F. virosa* (Roxb. Ex Willd.) Voigt.: Flowers in axillary glomerules; bracts thin, scarious, mostly less than 1 mm. long; staminate flowers mostly 20-40 per glomerule; pistillate flowers 3-10. Staminate flower: pedicel capillary, 3-6 mm. long; sepals nearly always 5, sometimes quite unequal, ovate elliptic or suborbicular, blunt, entire to distally toothed, 0.8-1.5 mm. long, 0.6-1.2 mm. broad; disk segments 5, angular, free, c. 0.2-0.3 mm. high and broad; stamens 5, free, the filaments slender, becoming 1-2 (-3) mm. long, the anthers ellipsoidal, 0.4-mm. long; pistillode usually of 3 branches, nearly free or united up to 0.4-0.5 mm., branches erect, 0.8-1.4 mm. high, usually abruptly reflexed with distal tip 0.3-0.7 mm. long.

The male flowers of our species are not match the male flowers of those two species vvery well, so I treated it as a new species in Taiwan.

#### **Distribution and phenology.**

*Flueggea taiwanensis* S.S. Ying is endemic to Taiwan ° It is known from Fangliao(枋寮), Fangliao Township (枋寮鄉) , Pingtung county , southern Taiwan ° It was collected on the coastal region, between 10 and 23 m altitudes; and flowering times is from April to May.



Fig. 333. *Flueggea taiwanensis* S. S. Ying, young fruits, mind stigma with 2-branches





Fig. 334. *Flueggea taiwanensis* S. S. Ying, habit

**Reference**

Webster, G. L. (1984). A Revision of *Flueggea* (Euphorbiaceae) in Allertonia 3(2):259-312.



Fig. 335. *Flueggea taiwanensis* S. S. Ying, fruiting plant



24.A New Species of Genus *Ipomoea* (Convolvulaceae) from Taiwan

*Ipomoea fangliaoensis* S. S. Ying

*Ipomoea fangliaoensis* S.S. Ying, *sp. nov.* 枋寮牽牛花

TYPE:TAIWAN. Pingtung County, Fangliao Townshaip (枋寮鄉), Fangliao (枋寮) 10 m alt. S. S. Ying, *s.n.* April 13, 2023. (holotype, NTUF).



Fig. 336. *Ipomoea fangliaoensis* S. S. Ying, flowers

**Morphology :** Perennial herbs, roots without tubers, 3-6 cm long, fiber roots slender, 2-4 cm long. Stem twining, elongate, 1.5-4.5 m long, glabrous, green, much branched, usually forming a colony; branchlets many, twining, 20-65 cm long, green, glabrous. Leaves pampately 5-foliate, alternate, the leaflets unequal, the middle one largest, ovate-lanceolate to oblong, 3.5-5.5 cm long, 1.5-2.5 cm wide, acuminate at apex, obtuse at base, chartaceous, enite at margins, glabrous on both surfaces, lustrous green surface and pale green beneath, midrib and lateral veins (7-8 per side) impressed surface and elevated



Fig. 337. *Ipomoea fangliaoensis* S. S. Ying, leaves

beneath; lateral leaflets 4, oblong to ovate-lanceolate, 2.5-3.5 cm long, 1.5-2 cm wide, acuminate at apex; petioles very short, 2-3 mm long, slightly winged, green, glabrous; petioles 4-6 cm long, slender, terete, green, glabrous.

Flowers rather larger, 4.4-5.5 cm in diameter when opened, white for corolla-lobe, lightly purple for corolla-tube, 3-5 in a short racemose, axillary; peduncle 2.5-3.7 cm long, erect to ascending, green, glabrous; bracts paired, small, triangular, 2.5-4 mm long, about 2 mm wide, acute at apex, green, glabrous; pedicels terete, 1.5-3.5 cm long, green, glabrous; calyx campanulate, 3-4 mm long, green, glabrous, 5-lobed at apex; lobes triangular, 3-4 mm long, 2.5 mm wide, acute at apex; corolla white for corolla-lobe, pale purple for corolla-tube outside and dark purple for inside, funnelform, 4.5-5.5 cm in diameter, 4.5-5.5 cm long, glabrous, shallowly 5-lobed at apex; the lobes rounded 1.2-1.8 cm wide and long, obtuse and slightly wavy at apex; stamens 5, 3 short and 2 longer, included, filament slender, white, 3.5-4 cm long, white, dilated and purple, pubescent basally; anthers oblong, white, 3.5 mm long; disc ring-like; ovary globose, 2-3 mm across,





Fig. 338. *Ipomoea fangliaoensis* S. S. Ying, inflorescence and calyx



Fig. 339. *Ipomoea fangliaoensis* S. S. Ying, stamens, style and stigma

3-locular, 2-ovule in each cell; style slender, included, 3.8-4.5 cm long, white; stigma 2-lobed.



Fig. 340. *Ipomoea fangliaoensis* S. S. Ying, flowers

Fruit a capsule, globose, 5-7 mm in diameter, subtended by persistent sepals, smooth, glabrous, light brownish in color, dehiscent 3-valved when mature; 1-2 seeds in each valve ; seeds fusiform, 4-5 mm long, 2.5-3.5 mm wide, glabrous, lustrous black when mature.

#### **Diagnosis.**

A characteristics species for having larger flowers with white corolla lobe and pale purple outside and dark purple inside corolla-tube and calyx campanulate with 5 small lobed at apex and with 3-locular, 2-ovule in each cell ovary and lustrous black fusiform seeds.





Fig. 341. *Ipomoea fangliaoensis* S. S. Ying, the holotype NTUF-112-064



### Distribution and phenology.

*Ipomoea fangliaoensis* S.S. Ying is endemic to Taiwan ° It is known from Fangliao(枋寮), Fangliao Township (枋寮鄉) , Pingtung county , southern Taiwan ° It was collected on the coastal region, between 10 and 20 m altitudes; and flowering times is from all year round.

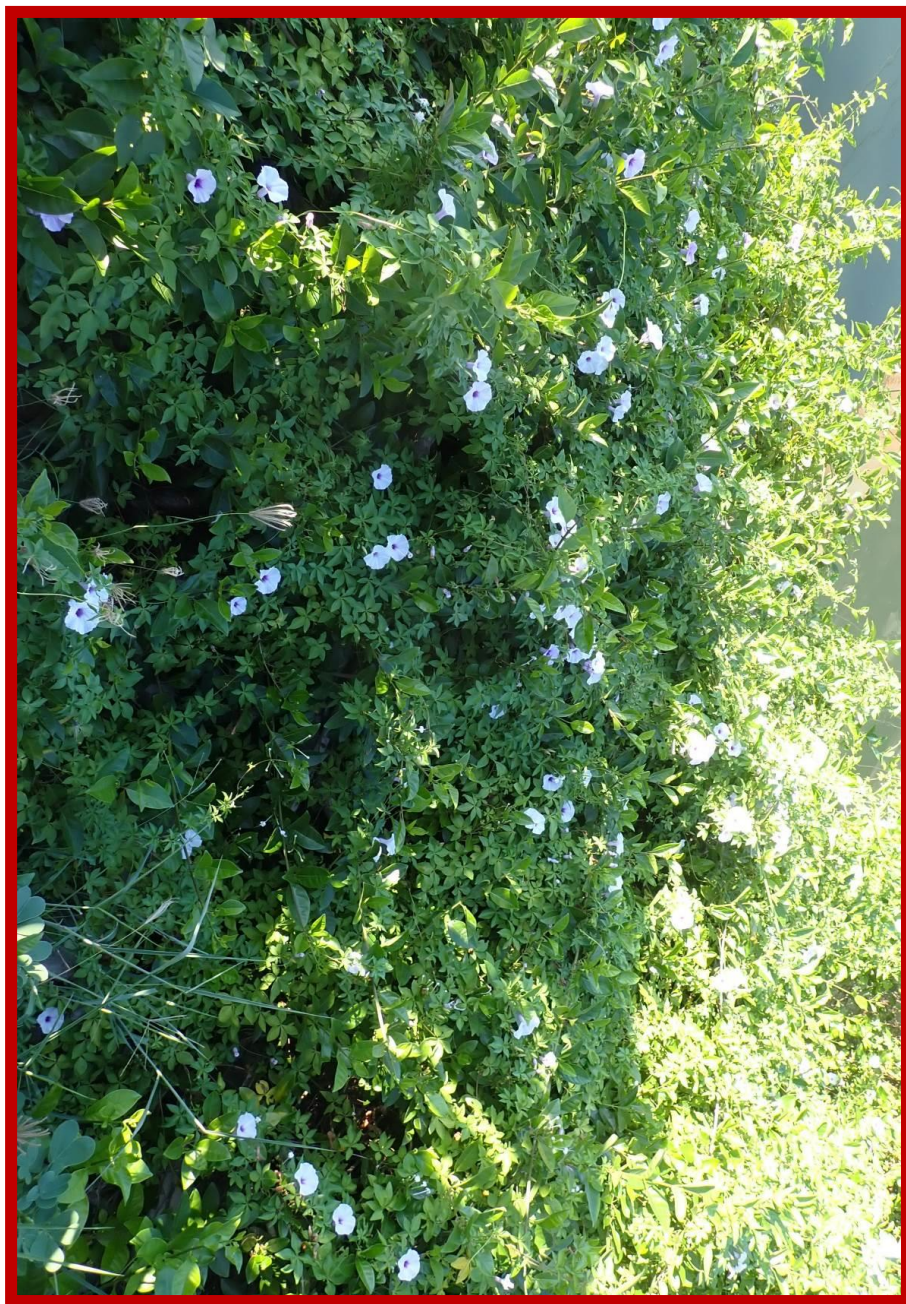


Fig. 342. *Ipomoea fangliaoensis* S. S. Ying, habitat



## 25. One New Species of Genus *Stellaria* (Caryophyllaceae) in Taiwan

*Stellaria taiwanensis* S.S. Ying 台灣繁縷

*Stellaria taiwanensis* S.S. Ying, *sp. nov.* 台灣繁縷

TYPE: TAIWAN. Miaoli County, Taian Townshai (泰安鄉), Guanwu (觀霧) 2350 m alt. S. S. Ying, *s.n.* April 24, 2023. (holotype, NTUF).



Fig. 343. *Stellaria taiwanensis* S. S. Ying, plant colony

**Morphology :** Spring annuals, roots fibrous, filiform, slender; stem elongate, 30-45 cm long, creeping, ascending to erect, terete, green to pale brown, branched, glabrous; branches erect to ascending, up to 2.5 m high, much branched; branches 15-25 cm long, erect to ascending, glabrous. Leaves simple, opposite, ovate, ovate-oblong to ovate-triangular, 1-1.5 cm long, 5-7 mm wide, acute at apex, truncate to slightly cordate at base, chartaceous, entire and ciliate at margins, glabrous on both surfaces, lustrous green surface and pale green beneath, sessile.





Fig. 344. *Stellaria taiwanensis* S. S. Ying, leaves



Fig. 345. *Stellaria taiwanensis* S. S. Ying, inflorescence





Fig. 346. *Stellaria taiwanensis* S. S. Ying, close-up of an inflorescence

Flowers numerous, smaller, 3-4 mm in diameter when opened, white, scentless, in terminal dichasia lax cymes; inflorescence peduncles 2.5-4 cm long, slender, angular, green, slightly hairy to glabrous; peduncles 1.8-3.2 cm long, hairy to glabrous, green; pedicels 8-11 mm long; bracts ovate, 3-4 mm long, 2-3 mm wide, acute at apex; sepals 5, free, oblong to oblong-ovate, 4-5 mm long, 2.5-3 mm wide, acute at apex, truncate at base, somewhat incurved at margins, green, glabrous or nearly so; petals 5, white, deeply bifid nearly to base, the lobes lanceolate, 3.4-4.5 mm long, 1.2-1.6 mm wide, obtuse at apex, attenuate to obtuse at base, shorter than sepals and opposite to its, glabrous; stamens 5, filament 3-3.5 mm long, white; anthers grain-like, 0.4 mm long, white; style 3, ascending, with only the apex revolute; ovary ellipsoid.

Fruit a capsule, ellipsoid, 4.5-5.2 mm long, longer than sepals, opening with 6 teeth. Seeds reniform, slightly compressed, mamillated with semi-rounded tubercles.



Fig. 347. *Stellaria taiwanensis* S. S. Ying, close-up of a flower



Fig. 348. *Stellaria taiwanensis* S. S. Ying, immature fruits





Fig. 349. *Stellaria taiwanensis* S. S. Ying, the holotype NTUF-112-065



Fig. 350. *Stellaria taiwanensis* S. S. Ying, the isotype

NTUF-112-066



### Diagnosis.

*Stellaria taiwanensis* is belong to *S. media* group, and is characterized by its ovate, ovate-oblong to ovate-triangular leaves, smaller flowers with terminal dichasia lax cymes; petals white, deeply bifid nearly to base, the lobes lanceolate, 3.4-4.5 mm long, 1.2-1.6 mm wide, obtuse at apex and ellipsoid fruits.



Fig. 351. *Stellaria taiwanensis* S. S. Ying, habitat

### Distribution and phenology.

*Stellaria taiwanensis* S.S. Ying is endemic to Taiwan ° It is known from Guanwu (觀霧) area, Taian Townshaip (泰安鄉) , Miaoli County, central Taiwan. ° It was discovered the species on the forest edge at elevations of 2090-2250 meters. Its flowering time is March to May and fruiting time is May to July.

## 26. Five New Species of Genus *Elatostema* (Urticaceae) in Taiwan

A.*Elatostema guanwuense* S.S. Ying 觀霧樓梯草

*Elatostema guanwuense* S.S. Ying, *sp. nov.* 觀霧樓梯草

TYPE: TAIWAN. Miaoli County, Taian Townshap (泰安鄉), Guanwu (觀霧) 2350 m alt. S. S. Ying, *s.n.* April 24, 2023. (holotype, NTUF).



Fig. 352. *Elatostema guanwuense* S. S. Ying, female plants

**Morphology :** Annual to binnial herbs, about 5-12 cm high, stem creeping or nearly so, branched, pale purple to brownish, fleshy, smooth, hairy; branches short to elongate, 4-7 cm long, erect to ascending, hairy, fleshy, terete. Leaves simple, alternate, distichous, sessile, nanophyll absent; lamina oblong to ovate-oblong, 0.8-1.5 cm long, 0.3-0.9 cm wide, herbaceous, acuminate to acute at apex, oblique and asymmetrical at base, lustrous



green become to dark green surface and pale green beneath, dentate at margins, midrib impressed surface and elevated beneath; lateral veins 2-4 per side, inconspicuous; appressed haired surface and scattered sparsely puberulent along midrib and lateral veins beneath; stipules ovate, 1.5-2.5 mm long, 1-1.8 mm wide, obtuse at apex, cauduous.



Fig. 353. *Elatostema guanwuense* S. S. Ying, leaves and female inflorescence

Flowers dioecious, small, many; the female flowers in an axillary discoid inflorescence; the peduncles sessile, 0 mm long; inflorescence discoid, 3.5-4.7 mm in diameter; bracts 1-2 series, linear to linear-lanceolate, 3.2-4.1 mm long, about 1.5 mm wide, obtuse at apex, greenish; each inflorescence with 18-24 flowers; pedicels 0-1.2 mm long, pale green, glabrous; bracteoles linear, 0.2-0.3 mm long, about 0.1 mm wide; sepals 4-5, ovate, 1.6-2.4 mm long, 0.8-1.2 mm wide, acute to obtuse at apex, white to whitish green; ovary ovoid to ellipsoid, 0.2-0.3 mm long, glabrous, stigma 1-2 haired, 0.2-0.3 mm long, cauduous. Staminate inflorescence unknown.



Fig. 354. *Elatostema guanwuense* S. S. Ying, close-up of female inflorescence



Fig. 355. *Elatostema guanwuense* S. S. Ying, habitat



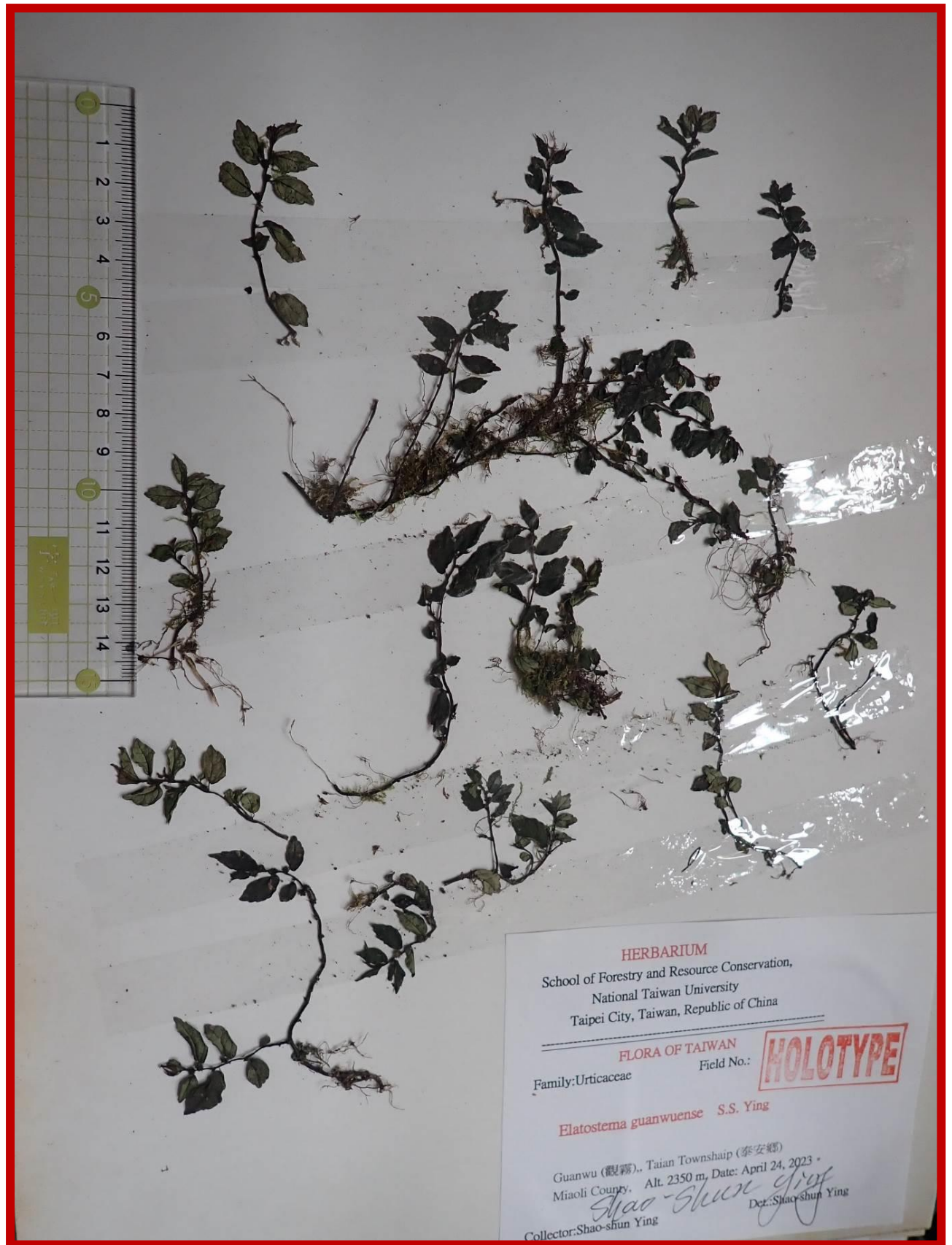


Fig. 356. *Elatostema guanwuense* S. S. Ying, the holotype, NTUF-112-067

### Diagnosis.

*Elatostema guanwuense* grows in the medium altitude of central Taiwan, The characteristics of the species states as follows:

1. The inflorescence sessile without peduncle.
2. Each inflorescence with 18-24 flowers; pedicels 0-1.2 mm long.
3. Sepals 4-5, ovate, 1.6-2.4 mm long, 0.8-1.2 mm wide, acute to obtuse at apex, white to whitish green; ovary ovoid to ellipsoid.



Fig. 357. *Elatostema guanwuense* S. S. Ying, habit

### Distribution and phenology.

*Elatostema guanwuense* S.S. Ying is endemic to Taiwan. It is known from Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the forest edge at elevations of 2190-2270 meters. Its flowering time is April to May and fruiting time is June to July.



**B.*Elatostema elongatopedunculatum* S.S. Ying 長花柄樓梯草**

*Elatostema elongatopedunculatum* S.S. Ying , *sp. nov.* 長花柄樓梯草

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Tungyanshan (東眼山) , , 1193 m alt. *S. S. Ying* , *s.n. September 14, 2023* ° (holotype, NTUF) °



**Fig. 358. *Elatostema elongatopedunculatum* S. S. Ying, habitat**

**Morphology** : Annual to binnial herbs, rootstock somewhat woody, 1-2 cm long; roots fibrous, numerous. Stem many, usually in a rosette spreading, 6-15 cm long, terete, erect, ascending to creeping, usually not branched, pale green, fleshy, smooth, glabrous, somewhat zigzag. Leaves simple, alternate, distichous, sessile, nanophyll absent; lamina



Fig. 359. *Elatostema elongatopedunculatum* S. S. Ying, stem and leaves  
(mind stem somewhat zigzag)



oblong to lanceolate-oblong, 1.5-2.5 cm long, 0.5-1.5 cm wide, herbaceous, acuminate to acute at apex, oblique and asymmetrical at base, lustrous green become to dark green surface and pale green beneath, dentate at margins, 3-nerved midrib impressed surface and elevated beneath; lateral veins 2-3 per side, inconspicuous; glabrous all over; stipules linear to lanceolate, 2.5-3.5 mm long, 1-1.8 mm wide, obtuse at apex, cauduous.



Fig. 360. *Elatostema elongatopedunculatum* S. S. Ying, plants growing in situ

Flowers dioecious, small, many; the female flowers in an axillary discoid inflorescence; the peduncles elongate, 2.5-4.5 cm long, erect to ascending, pale green, hairy; inflorescence discoid, 2.8-3.4 mm in diameter; bracts 1-2 series, lanceolate to linear-lanceolate, 2.6-3.1 mm long, about 1.5 mm wide, acute at apex, greenish; each inflorescence with 18-24 flowers; pedicels 0-1.2 mm long, pale green, glabrous; bracteoles linear, 0.3-0.4 mm long, about 0.2 mm wide; sepals 4-5, ovate-lanceolate, 1.6-2.4 mm

long, 0.8-1.2 mm wide, acute to obtuse at apex, green to pale green; ovary ovoid to ellipsoid, 0.2-0.3 mm long, glabrous, stigma 1-2 haired, 0.2-0.3 mm long, cauduous. Staminate inflorescence unknown.



Fig. 361. *Elatostema elongatopedunculatum* S. S, Ying, inflorescences

**Diagnosis.**

*Elatostema elongatopedunculatum* grows in the medium altitude of northern Taiwan, The characteristics of the species states as follows:

- 1.The inflorescencewith elongate pedunclesd.
- 2.Each inflorescence with 18-24 flowers; pedicels 0-1.2 mm long.
- 3.Sepals 4-5, ovate, 1.6-2.4 mm long, 0.8-1.2 mm wide, acute to obtuse at apex, green to pale green; ovary ovoid to ellipsoid.



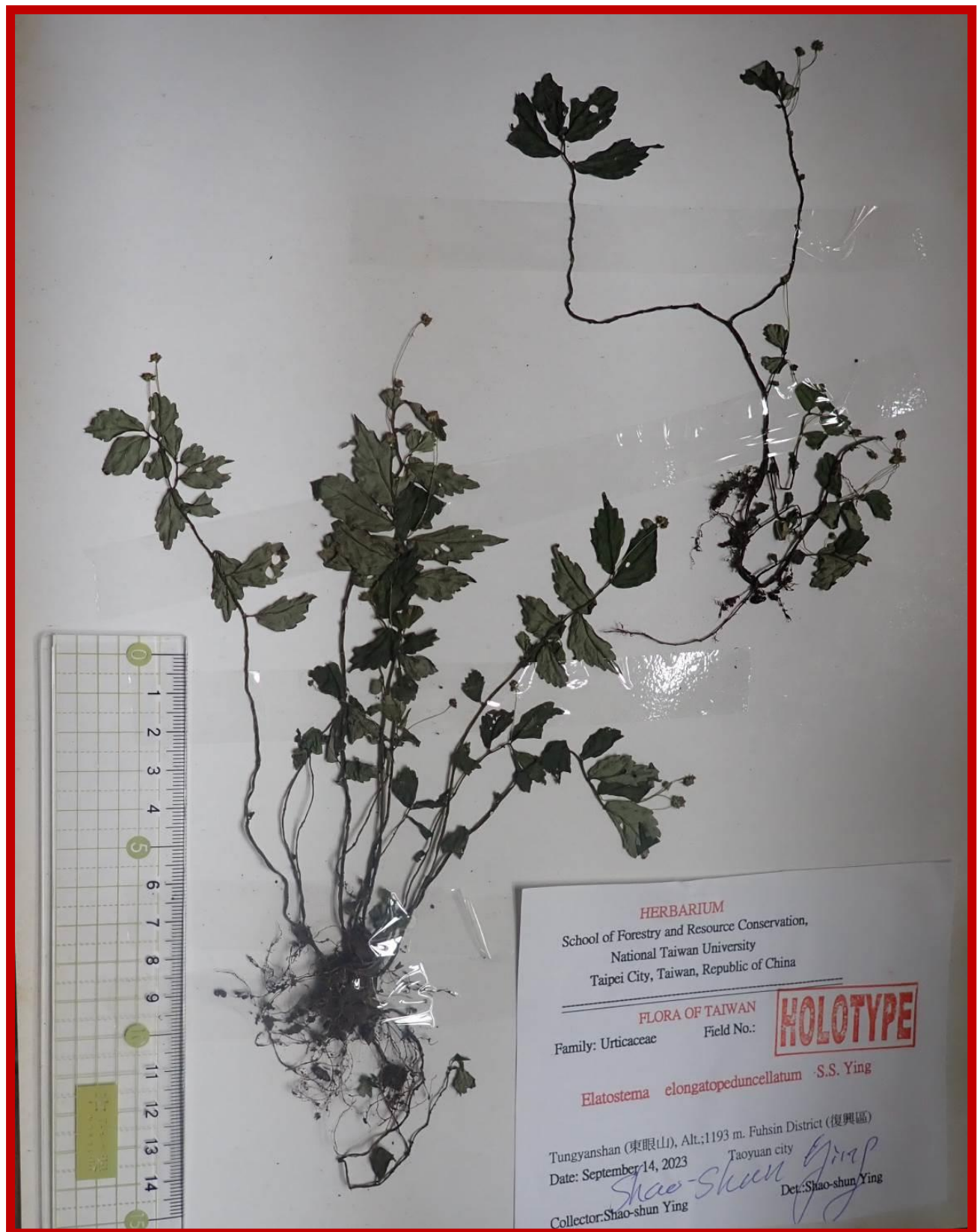


Fig. 362. *Elatostema elongatopedunculatum* S. S. Ying, the holotype NTUF-112-068



Fig. 363. *Elatostema elongatopedunculatum* S. S. Ying, the isotype NTUF-112-069



### Distribution and phenology.

The species is endemic in Taiwan, It is known from Tungyuanshan (東眼山) , Fuhsin District (復興區) , Taoyuan city , northern Taiwan. ° It was discovered the species under *Cryptomeria japonica* forests at elevations of 1200-1550 meters, especially along creek sides. Its flowering time is August to September, and fruiting time September to November.



Fig. 364. *Elatostema elongatopedunculatum* S. S. Ying, plants growing in suit

**C.***Elatostema liutangshuii* S.S. Ying 劉氏樓梯草

*Elatostema liutangshuii* S.S. Ying , *sp. nov.* 劉氏樓梯草

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興鄉) , Lalashan (拉拉山),  
Between Entrance of trail (步道入口) and Giant trees group (巨木群) , 1983 m alt. *S.*  
*S. Ying* , *s.n. September 30, 2023* . (holotype, NTUF) .



Fig. 365. *Elatostema liutangshuii* S. S. Ying, plants growing in situ

**Morphology** : Lithophytic to terrestrial annual herbs, about 15-30 cm long, stem simple, ascending to horizontal, sometimes branched at base, green to pale green, fleshy, smooth, terete, glabrous, without winged. Leaves 5-9 on a stem, simple, alternate, remotely distichous; nanophyll absent; lamina oblong to oblong-ovate, uppermost largest and



smaller gradually to base, 9.5-4.5 cm long, 1.5-2.8 cm wide, herbaceous, acuminate and caudate at apex, slightly oblique and asymmetrical at base, lustrous green surface and pale green beneath, dentate at margins, obliquely 3-nerved impressed surface and elevated beneath; lateral veins (5-7 per side) impressed surface and elevated beneath, scattered very short hairs on both surfaces; stipules minute, ovate-lanceolate, 1.3-1.8 mm long, 0.5-0.8 mm wide, acute at apex, caudous. Petioles very short, 2.5-3.5 mm long, green, fleshy, glabrous or nearly so.



Fig. 366. *Elatostema liutangshuii* S. S. Ying, leaves

Flowers green, dioecious, small; female flowers numerous immerse in a fleshy discoid inflorescence, 0.8-1.5 mm in diameter when opened; peduncles 0, sessile; inflorescence discoid, 0.9-1.4 cm in diameter, subtended by a calyx-like involucre; involucre somewhat larger than inflorescence, green, 5-9 lobed at apex, glabrous; lobes linear to linear-lanceolate, 4.5-5.2 mm long, about 1.2-1.5 mm wide, acute at apex, green to dark greenish; each inflorescence with numerous flowers; pedicels 0; bracteoles linear,



Fig. 367. *Elatostema liutangshuii* S. S. Ying, inflorescences



Fig. 368. *Elatostema liutangshuii* S. S. Ying, close-up of inflorescences



0.2-0.3 mm long, about 0.1 mm wide; sepals 4-5, ovate-triangular, 1.2-1.6 mm long, 0.5-0.6 mm wide, obtuse at apex, green; ovary ovoid to ellipsoid, 0.25-0.3 mm long, glabrous, stigma 1-2 haired, 0.2-0.3 mm long, cauduous. Staminate inflorescence unknown.



Fig. 369. *Elatostema liutangshuii* S. S. Ying, close-up of an inflorescences

**Diagnosis.**

*Elatostema liutangshuii* is characterized by its dioecious flowers, only female inflorescences were found, stem simple, few branched at base; female inflorescence in a in a fleshy, sessile, discoid, which is subtended by a calyx-like involucre; involucre 5-9 lobed at apex; lobes linear to linear-lanceolate, acute at apex.



Fig. 370. *Elatostema liutangshuii* S. S. Ying, the holotype NTUF-112-070





Fig. 371. *Elatostema liutangshui* S. S. Ying, the isotype NTUF-112-071

**Distribution and phenology.**

*Elatostema liutangshuii* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山),, Between Entrance of trail (步道入口) and Giant trees group (巨木群) Fuhsin District (復興區) , Taoyuan city , northern Taiwan ° It was collected on roadsides, between 1800 and 1953 m in altitudes; and flowering times is from September to October.



Fig. 372. *Elatostema liutangshuii* S. S. Ying, plants growing in situ



**D.*Elatostema amoenum* S.S. Ying 美麗樓梯草**

*Elatostema amoenum* S.S. Ying , *sp. nov.* 美麗樓梯草

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興鄉) , Lalashan (拉拉山),  
Between Entrance of trail (步道入口) and Giant trees group (巨木群) , 1968 m alt. *S.*  
*S. Ying* , *s.n.* October 09, 2023 ° (holotype, NTUF) °



Fig. 373. *Elatostema amoenum* S. S. Ying, female inflorescences

**Morphology** : Annual herbs, about 10-24 cm high, stem somewhat creeping, branched at base, pale green, fleshy, smooth, villose; branches short to elongate, 3-7 cm long, erect to ascending, white villose, fleshy, terete. Leaves simple, alternate, distichous, sessile; nanophyll single, opposite to leaf, oblong to oblongvate, 5-7 mm long, 3.5-4 mm wide, obtuse at apex, dentate and ciliate at margins, scattered hirsute both surfaces, persistent when flowering; lamina flacate to oblong-falcate, 1.8-4.2 cm long, 0.5-0.9 cm wide,



Fig. 374. *Elatostema amoenum* S. S. Ying, branches and leaves

herbaceous, acuminate at apex, oblique and asymmetrical at base, green surface and pale green beneath, dentate at margins, obliquely 3-nerved impressed surface and elevated beneath; appressed haired surface and scattered sparsely puberulent along veins beneath; stipules minute, ovate, 0.9-2.5 mm long, 0.3-0.6 mm wide, obtuse at apex, caudous.

Flowers dioecious, small, many; the female flowers in an axillary discoid inflorescence; the peduncles mostly sessile to very few shorter, if have being 0.7-2.8 mm long, pale green, hairy; inflorescence discoid, 5.5-6.5 mm in diameter; bracts 1-2 series, ovate to oblong, 3.8-4.5 mm long, about 3.1-3.6 mm wide, obtuse and 3-5 lacerate at apex, pale greenish, hairy, caudous; each inflorescence with 13-24 flowers; pedicels 0; sepals 4, ovate-triangular, 1.4-2.5 mm long, 0.8-1.5 mm wide, obtuse at apex, white, transparent; ovary ovoid to ellipsoid, 0.3-0.4 mm long, glabrous, stigma 1-2 haired, 0.2-0.3 mm long, caudous.

The male flowers in an axillary discoid inflorescence; the peduncles mostly short, 2.5-3.8 mm long, pale green, hairy; inflorescence discoid, 4.5-4.8 mm in diameter; bracts 1-2 series, lanceolate to ovate-lanceolate, 2.3-3.2 mm long, 1.5-2.2 mm wide, acute at





Fig. 375. *Elatostema amoenum* S. S. Ying, female inflorescences and bracts



Fig. 376. *Elatostema amoenum* S. S. Ying, close-up of mature female inflorescences and anthers



Fig. 377. *Elatostema amoenum* S. S. Ying, close-up of a female inflorescence  
(mind some female flowers opened)

apex, pale greenish; each inflorescence with 9-12 flowers; pedicels 0 ; sepals 5, ovate to ovate-triangular, 1.8-.2.7 mm long, 0.9-1.3 mm wide, acute to obtuse at apex, white, transparent; stamens 5, filaments spread, 1.4-1.8 mm long, glabrous, white, transparent ; anthers 0.6 mm long, white, transparent, ellipsoid, basifixied.

Achenes ellipsoid, 1.2-1.6 mm long, 0.6 mm wide, pale brownish when mature, obtuse at both ends, smooth.

### **Diagnosis.**

*Elatostema amoenum* is characterized by its dioecious flowers, female plant:stem simple, few branched at base; female inflorescence in a in a fleshy, sessile, discoid, 5.5-6.5 mm in diameter; bracts 1-2 series, ovate to oblong, obtuse and 3-5 lacerate at apex, cauduous; sepals 4, ovate-triangular, white, transparent; ovary ovoid to ellipsoid. Male plants: male flowers in an axillary discoid inflorescemce, 4.5-4.8 mm in diameter; bracts 1-2 series, lanceolate to ovate-lanceolate, sepals 5, ovate to ovate-triangular, stamens 5.





Fig. 378. *Elatostema amoenum* S. S. Ying, male inflorescences,



Fig. 379. *Elatostema amoenum* S. S. Ying, close-up of a male flower



Fig. 380. *Elatostema amoenum* S. S. Ying, plants growing in situ

#### **Distribution and phenology.**

*Elatostema amoenum* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山), Between Entrance of trail (步道入口) and Giant trees group (巨木群) Fuhsin District (復興區), Taoyuan city, northern Taiwan ° It was collected on roadsides, between 1800 and 1953 m in altitudes; and flowering times is from September to October and fruiting from September to November.



**E.*Elatostema caudifolium* S.S. Ying 尾葉樓梯草**

*Elatostema caudifolium* S.S. Ying, *sp. nov.* 尾葉樓梯草

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Tungyanshan (東眼山), , 1193 m alt. *S. S. Ying* , *s.n. May 10, 2023* ° (holotype, NTUF) °



Fig. 381. *Elatostema caudifolium* S. S, Ying, female inflorescences

**Morphology** : Annual to binnial herbs, about 20-42 cm high, stem erect to ascending, branched upward, woody at base, hairy to glabrous, pale greenish purple, smooth; branches elongate, 12-25 cm long, erect to ascending, hairy to glabrous, fleshy, terete. Leaves simple, alternate, remotely distichous, sessile, nanophyll absent; lamina lanceolate to lanceolate-oblong, 4.8-9.5 cm long, 1.3-2.9 cm wide, herbaceous, acuminate to an caudate to cuspidate-caudate at apex, attenuate and slightly asymmetrical at base, lustrous green surface and pale green beneath, remotely dentate at margins, midrib impressed surface and elevated beneath; lateral veins 3-5 per side, conspicuous, glabrous on both surfaces; stipules ovate, 1.5-2.5 mm long, 1-1.8 mm wide, obtuse at apex, cauduous soon.



Fig. 382. *Elatostema caudifolium* S. S. Ying, branches and leaves

Flowers dioecious, small, many; the female flowers in an axillary discoid inflorescence; the peduncles short, 1.5-2 mm long; inflorescence discoid, 3.8-4.3 mm in diameter; bracts 1-2 series, linear to linear-lanceolate, 2.6-3.4 mm long, about 1.2 mm wide, acute at apex, greenish; each inflorescence with 25-34 flowers; pedicels 0-1.5 mm long, pale green, glabrous; bracteoles linear, 0.8-0.9 mm long, about 0.2 mm wide; sepals 4-5, linear, 2.6-3.4 mm long, 0.8-1.5 mm wide, acute to obtuse at apex, pale green; ovary ovoid to ellipsoid, 0.2-0.3 mm long, glabrous, stigma 1-2 haired, 0.2-0.3 mm long, cauduous. Staminate inflorescence unknown.





Fig. 383. *Elatostema caudifolium* S. S. Ying, close-up of inflorescence

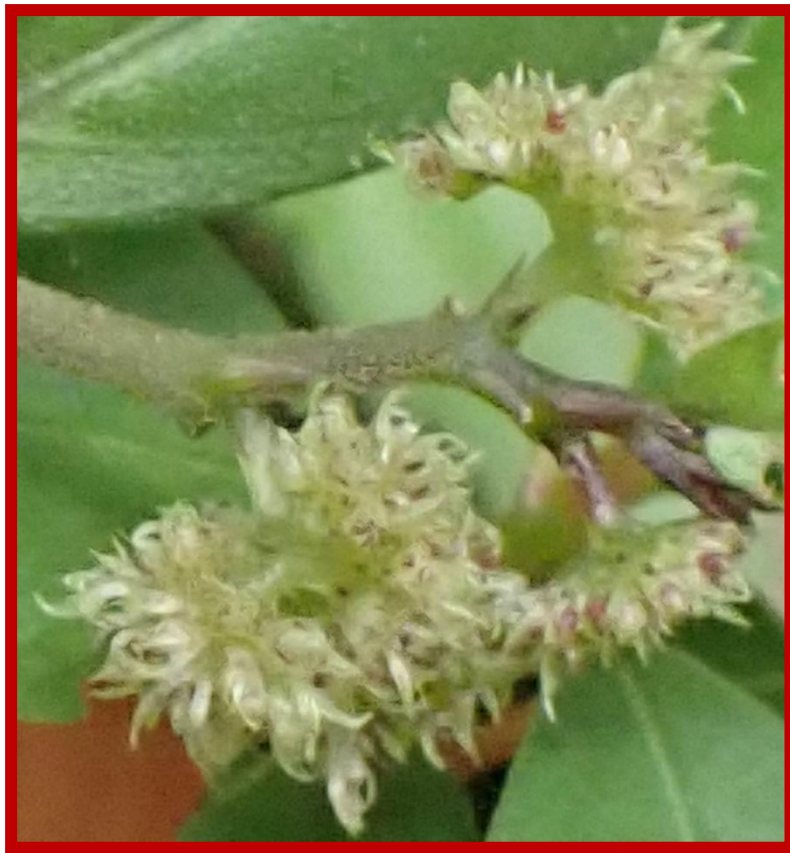


Fig. 384. *Elatostema caudifolium* S. S. Ying, close-up of inflorescence

Fruits achenes, ellipsoid, 0.4-0.5 mm long, 5-6-ribbed.



Fig. 385. *Elatostema caudifolium* S. S. Ying, habitat

**Diagnosis.**

*Elatostema caudifolium* grows in the medium altitude of northern Taiwan, The characteristics of the species states as follows:

- 1.The inflorescence with 1.5-2 mm long peduncle.
- 2.Each inflorescence with 25-34 flowers; pedicels 0-1.5 mm long.
- 3.Sepals 4-5, linear, 2.6-3.4 mm long, 0.8-1.5 mm wide, acute to obtuse at apex; ovary ovoid to ellipsoid.





Fig. 386. *Elatostema caudifolium* S. S. Ying, the holotype, NTUF-112-072

### Distribution and phenology.

*Elatostema caudifolium* S.S. Ying is endemic to Taiwan. It is known from Tungyanshan (東眼山), Fuhsin District (復興區), Taoyuan city, northern Taiwan. It was discovered the species on the forest edge at elevations of 1050-1270 meters. Its flowering time is May to June and fruiting time is June to July.

### 27. A New combination of Genus *Aristolochia* (Aristolochiaceae) from Taiwan

*Aristolochia pahsienshanianum* (C.T. Lu & C.L. Yang & J. C. Wang) S.S. Ying,  
八仙山馬兜鈴

*Aristolochia pahsienshanianum* (C.T. Lu, C.L. Yang & J. C. Wang) S.S. Ying, comb. nov.  
八仙山馬兜鈴

*Isotrema pahsinshanianum* C.T. Lu, C.L. Yang & J.C. Wang in *Taiwania* 67(3):400  
(2022).

Since the genus *Aristolochia* Linn. is a valid generic name, and *Isotrema* is a synonym of *Aristolochia*, I transferred the species of *Isotrema pahsinshanianum* to the genus *Aristolochia* as above.



## 28. A New Species of Genus *Solanum* (Solaniaceae) in Taiwan

*Solanum chingchunensis* S.S. Ying 清泉茄

*Solanum chingchunensis* S.S. Ying , *sp. nov.* 清泉茄

TYPE:TAIWAN. Hsinchu County, Wufeng Townshaip (五峰鄉) , Chingchun (清泉) 550 m alt. *S. S. Ying* , *s.n.* May 16, 2023 ° (holotype , NTUF) °



Fig. 387. *Solanum chingchunense* S. S. Ying, close-up of flower, mind the villose plant

**Morphology :** Villose without prickled subshrub about 80-120 cm high, stem short, erect to ascending, branched at base, woody, pale greenish, smooth; branches elongate, 20-45 cm long, erect to ascending, somewhat fleshy, terete. Leaves simple, alternate, ovate to ovate-oblong, 8-14 cm long, 4-5 cm long, acuminate to a short tail, attenuate at base, chartaceous, entire to slightly wavy and ciliate at margins, villose on both surface, green surface and pale green beneath, midrib and lateral veins (3-5 per side) impressed surface and elevated beneath. Petioles 1.2-1.8 cm long, slightly winged, terete, villous.

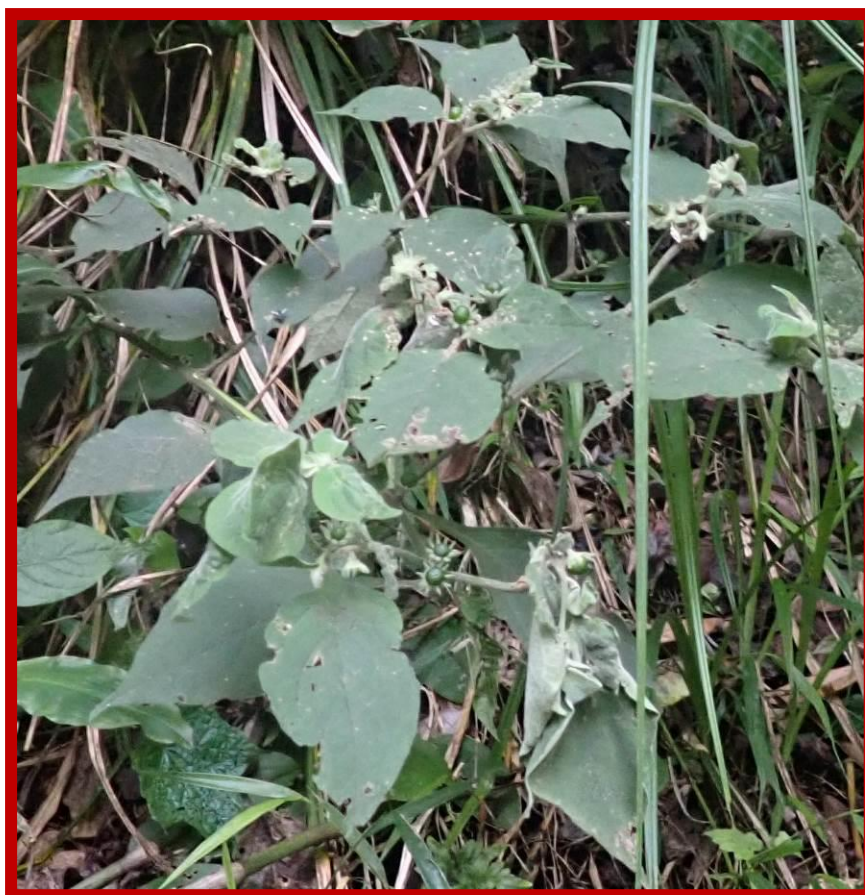


Fig. 388. *Solanum chingchunense* S. S. Ying, branches and leaves

Flower solitary to 2-3 in a terminal to axillary raceme, white, 8-12 mm in diameter, scentless; peduncles short, 8-17 mm long, terete, villous; pedicels 3-4.5 mm long, villous, green; calyx tubular, 2-2.5 mm long, green, villous, 10-12 lobed at apex; lobes linear, 6-7 mm long, about 1 mm wide, villous all over, obtuse at apex; corolla deeply 5-lobed, 8-12 mm in diameter; lobes ovate to oblong, 6-7 mm long, 3-4 mm wide, acute at apex, white with a green plaque and forming a green ring at base, glabrous; stamens 5, opposite to the lobes, filaments short, 1-2 mm long; anthers 2-celled, 2.5-3.2 mm long, yellowish, connate around style, dehiscing by later splitting longitudinally; style elongate, 4-5 mm long, white; stigma capitate, green, glabrous; ovary globose, 1.5 mm diameter, green, glabrous.

Fruit a berry, depressed globose, 7-8.57 mm long, 6-7.5 mm wide, glabrous, emarginate at apex, smooth; calyx-lobes persistent, villous; seeds ovoid, 1.5-2 mm long, slightly compressed.





Fig. 389. *Solanum chingchunense* S. S, Ying, flowers solitary to 2-3 in a raceme.



Fig. 390. *Solanum chingchunense* S. S, Ying, inflorescences and fruit



Fig. 391. *Solanum chingchunense* S. S. Ying, young fruit

### Diagnosis.

*Solanum chingchunense* grows in the lower altitude of northern Taiwan, The characteristics of the species states as follows:

1. A villous and smooth plant without prickled.
2. Flower solitary to 2-3 in a terminal and axillary raceme
3. Calyx tubular, 2-2.5 mm long, green, villous, 10-12 lobed at apex; lobes linear, 6-7 mm long, about 1 mm wide, villous all over,
4. Corolla deeply 5-lobed, 8-12 mm in diameter; lobes ovate to oblong, 6-7 mm long, 3-4 mm wide, acute at apex, white with a green plaque and forming a green ring at base,

### Distribution and phenology.

*Solanum chingchunense* S.S. Ying is endemic to Taiwan. It is known from Chingchun (清泉), Wufeng Townshap (五峰鄉), Hsinchu County, northern Taiwan. It was discovered the species on the forest edge at elevations of 500-700 meters. Its





Fig. 392. *Solanum chingchunense* S. S. Ying, the holotype, NTUF-112-073

flowering time is April to May and fruiting time is June to July.



Fig. 393. *Solanum chingchunense* S. S. Ying, plants growing in situ.

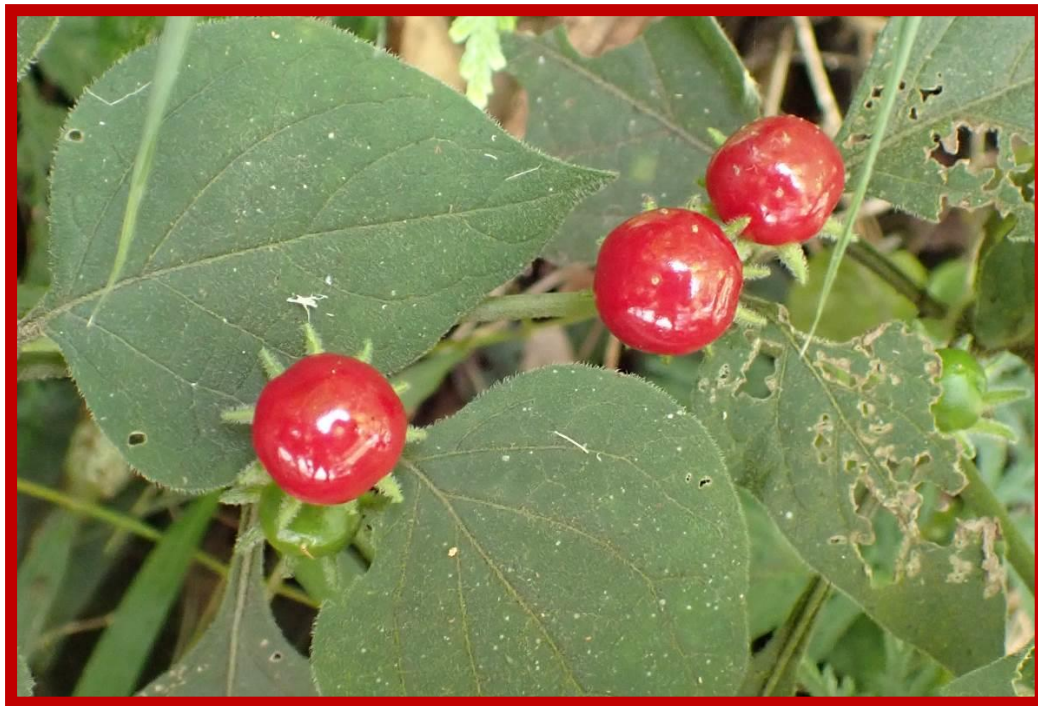


Fig. 394. *Solanum chingchunense* S. S. Ying, fruits





Fig. 395. *Solanum chingchunense* S. S. Ying, fruits



Fig. 396. *Solanum chingchunense* S. S. Ying, fruits

## 29. A New Species of Genus *Rhamnus* (Rhamnaceae) in Taiwan

*Rhamnus salixiophylla* S.S. Ying 柳葉鼠李

*Rhamnus salixiophylla* S.S. Ying, *sp. nov.* 柳葉鼠李

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2281 m alt. S. S. Ying, *s.n.* June 20, 2023. (holotype, NTUF).



Fig. 397. *Rhamnus salixiophylla* S. S. Ying, flowers

**Morphology** : Shrubs without prickled about 180-250 cm high, trunks short, much branched at base, pale greenish to gray, smooth; branches elongate, 120-185 cm long, often pendulous or nearly so, terete, greenish gray to gray, glabrous. Leaves simple, alternate, lanceolate to lanceolate-oblong, 6-8.5 cm long, 8-11 mm wide, acuminate at apex, attenuate at base, chartaceous to thin coraceous, serrulate at margins, glabrous on both surface, lustrous green surface and pale green beneath, midrib and lateral veins (4-5 per side) impressed surface and elevated beneath. Petioles 8-13 mm long, not winged, terete, slightly groove above, glabrous.





Fig. 398. *Rhamnus salixiophylla* S. S. Ying, branches and leaves

Flowers 3-7 in a fascicle, axillary, 4-merous, greenish yellow, 8-10 mm in diameter when opened, scentless; pedicels 4.5-5.5 mm long, green, glabrous; calyx campanulate, about 1 mm long, 4-lobed at apex; the lobes triangular, 3.5-4 mm long, 1.5 mm wide at base, acuminate at apex, truncate at base, pale yellow to greenish yellow, glabrous; petals 0; stamens 4, alternate to calyx-lobed, filament 1.5-1.8 mm long, white; anthers ovoid, 0.5 mm long; ovary globose, 2.5-3 mm across, pale green, glabrous; style tub-like, erect, white, 4-5 mm long, glabrous; stigmas 3, somewhat reflexes, black inside and white outside.

Drupes globose, 4-5 mm in diameter, black at maturity, usually 2-3 stones, with persistent calyx-tube at base; fruiting pedicels 5.5-6.5 mm long, glabrous; seeds obovoid, 2.5-3 mm long, blackish to brown.



Fig. 399. *Rhamnus salixiophylla* S. S. Ying, close-up of flowers



Fig. 400. *Rhamnus salixiophylla* S. S. Ying, close-up of flowers and fruits





Fig. 401. *Rhamnus salixiophylla* S. S, Ying, close-up of immature fruits



Fig. 402. *Rhamnus salixiophylla* S. S, Ying, wither flowers, a mature fruit at bottom side

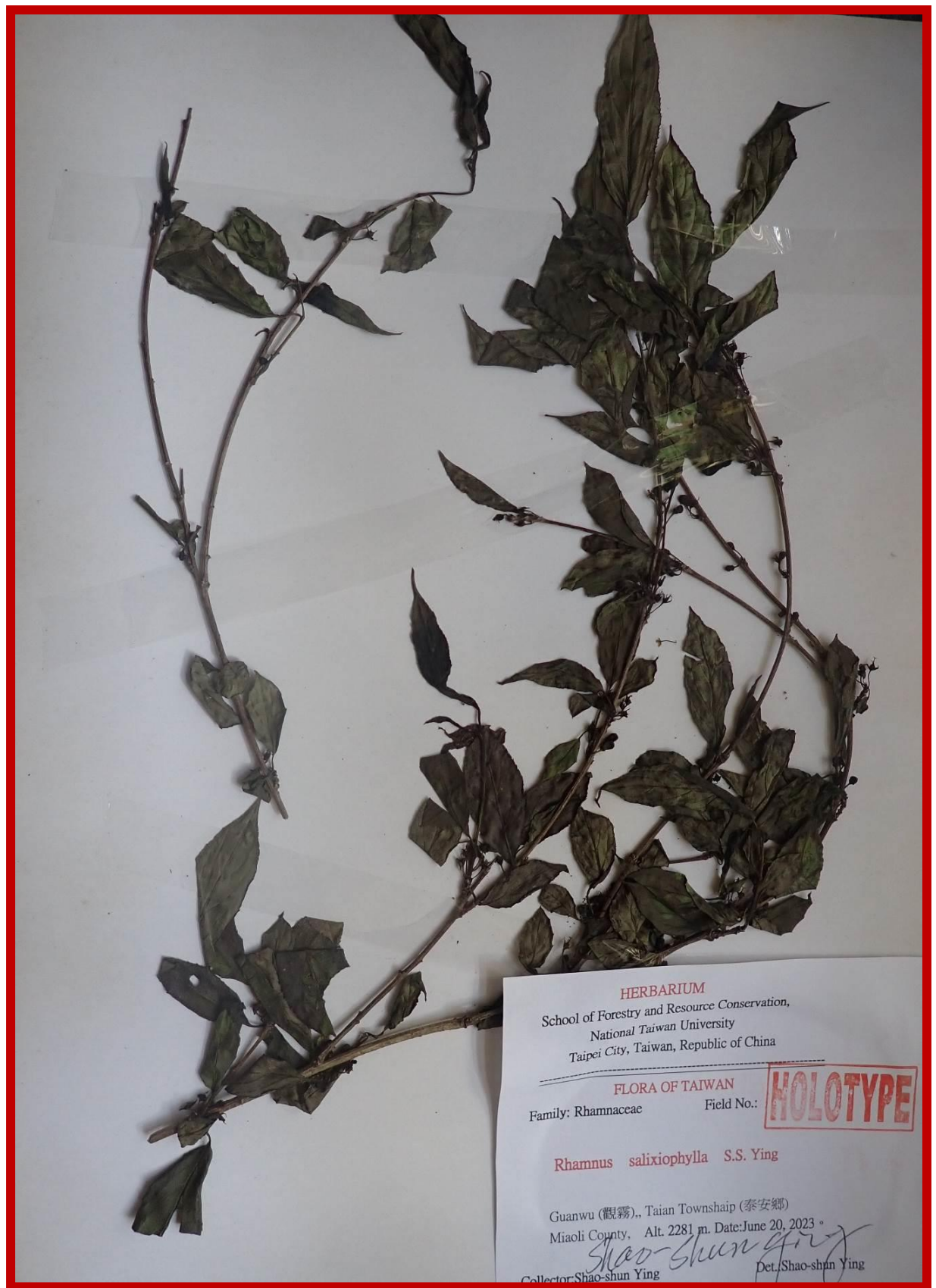


Fig. 403. *Rhamnus salixiophylla* S. S. Ying, the holotype NTUF-112-074





Fig. 404. *Rhamnus salixiophylla* S. S. Ying, the isotype NTUF-112-075

### Diagnosis.

*Rhamnus salixiophylla* is characterized by its low smooth shrub about 180-250 cm high, with much pendulous branches; lanceolate to lanceolate-oblong, 6-8.5 cm long, 8-11 mm wide leaves; 3-7 in a fascicled, 4-merous flowers; triangular, 3.5-4 mm long, 1.5 mm wide at base, acuminate at apex calyx-lobed; petals absent and black globose drupes.



Fig. 405. *Rhamnus salixiophylla* S. S. Ying, habit and habitat

### Distribution and phenology.

*Rhamnus salixiophylla* S.S. Ying is endemic to Taiwan. It is known from Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the forest edge at elevations of 2100-2350 meters. Its flowering time is June to July and fruiting time is July to September.



### 30. A New Species of Genus *Pyrus* (Rosaceae) in Taiwan

*Pyrus alpinotaiwaniana* S.S. Ying 台灣高山梨

*Pyrus alpinotaiwaniana* S.S. Ying , *sp. nov.* 台灣高山梨

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉) , Beteen Guanwu (觀霧) and Tapachienshan Trailhead (大霸尖山登山口), 2481 m alt. *S. S. Ying* , *s.n. June 20, 2023* . (holotype , NTUF) .



Fig. 406. *Pyrus alpinotaiwaniana* S. S, Ying, blooming flower tree

**Morphology** : Medium-sized deciduous tree up to 7 m high, trunk robust, 15-20 cm DBH, short, scattered with woody caltrops, branched at base; branches erect to ascending, scattered with woody caltrops at base; bark grayish, longitudinal fissure, lenticels





Fig. 407. *Pyrus alpinotaiwaniana* S. S. Ying, trunk and branches with woody caltrops

inconspicuous; 2-3 years old branches spreading, bluish gray, smooth, lenticels inconspicuous; 1 year branches widely spreading, grayish, few lenticels. Leaves simple, alternate, usually open with flowers, ovate to ovate-elliptic, 4.5-10.5 cm long, 3.5-6.5 cm





Fig. 408. *Pyrus alpinotaiwaniana* S. S. Ying, young leaves with blooming flowers



Fig. 409. *Pyrus alpinotaiwaniana* S. S. Ying, adult leaves

wide, obtuse and short caudate at apex, slightly cordate at base, chartaceous, serrulate at margins, glabrous on both surfaces, lustrous green surface and pale green beneath; midrib impressed surface and elevated beneath, lateral veins 6-8 per side, somewhat inconspicuous. Petioles 6-8 cm long, green, glabrous.



Fig. 410. *Pyrus alpinotaiwaniana* S. S. Ying, blooming flowers

Flowers 5-7 fascicled at a short peduncles, pink firstly and then becoming white, 1.8-2.5 cm in diameter when opened, scentless, racemose in arrangement; peduncles 1.5-2.5 cm long, green, glabrous or nearly so; pedicels 4-5 cm long, green, hairy; receptacle globose, 5-6 mm in diameter, green, hairy; sepals 5, ovate-triangular, 5-6 mm long, 3.5-4.2 mm wide, acute at apex, ciliate at margins; petals 5, pink firstly and then turning to white, rounded to ovate-rounded, 6.5-7.8 mm long, 5.6-6.5 mm wide, obtuse at apex, entire and slightly wavy at margins; stamens 18-22, filaments slender, 4.5-6.5 mm long, white, glabrous; anthers reniform, 0.3 mm long, purple firstly and then turning to black; styles 3, elongate, 6-7.5 mm long

Fruit a pome, globose, 1.5-2 cm in diameter, green, hairy, with numerous brownish tumors, and look like a brownish fruit in general appearance; calyx frequently deciduous; peduncels 4-6 cm long, green, scattered with few brownish tumors.





Fig. 411. *Pyrus alpinotaiwaniana* S. S, Ying, flowers after petals dropped down



Fig. 412. *Pyrus alpinotaiwaniana* S. S, Ying, calyx and stamens





Fig. 413. *Pyrus alpinotaiwaniana* S. S. Ying, fruits



Fig. 414. *Pyrus alpinotaiwaniana* S. S. Ying, close-up of one fruit



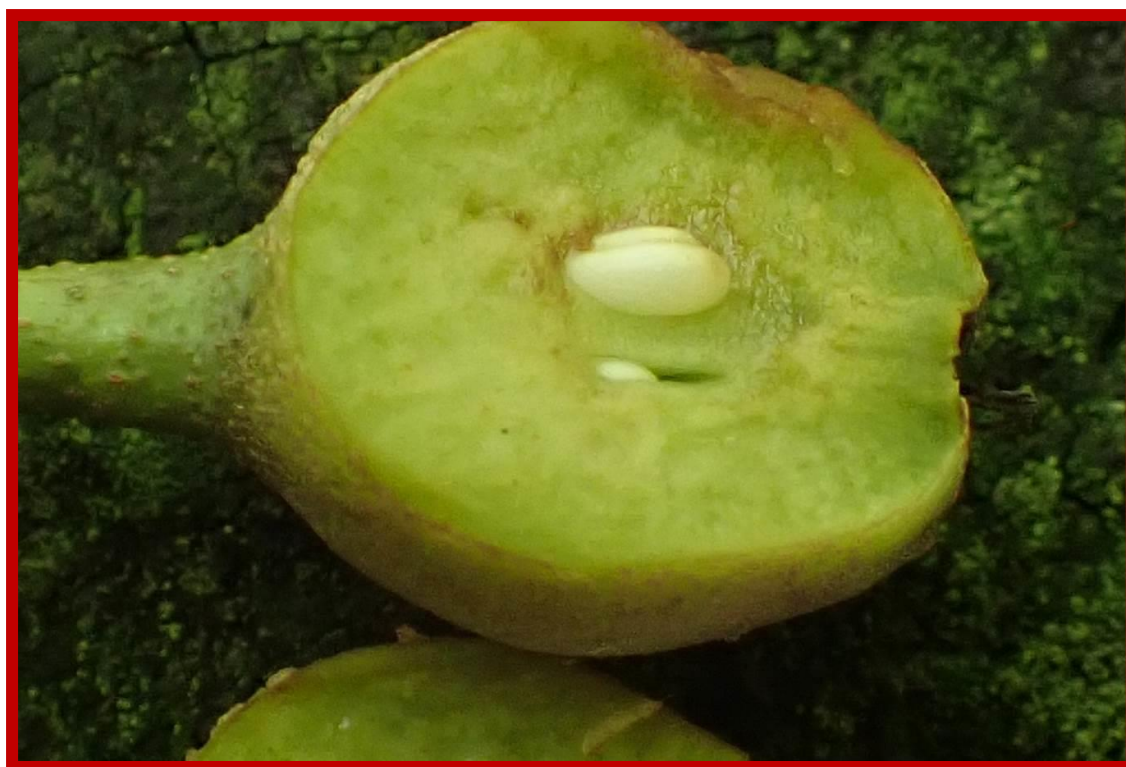


Fig. 415. *Pyrus alpinotaiwaniana* S. S. Ying, longitudinal section of one fruit

### Diagnosis.

1. The holotype of *Pyrus taiwanensis* Iketani et Ohashi (1993) was collected at Toukoshan (頭嵙山), Taken (大坑) Taichung county (Taichung City, now) alt. 500-850m Sept. 29, 1984 by Y. Tateishi, Y. Endo and T. Nemoto (21302 fr.), however the place is a popular place for hiking of Taichung City, there are have 12 hiking trails to the Mt. Toukoshan, and the place is developed by agriculture and orchards very well. Judge to the holotype of *Pyrus taiwanensis* was collected at altitudes of 580-850 meters, they did not give a precise elevations of the holotype they had collected. I agree with Ku and S. A. Spongberg ' s (2003) treatment, the species might be an allied species or an ecotype of *P. calleryana*. and Kew Science is placed it as unplaced.

2. *Pyuus alpinotaiwaniana* S.S. Ying, the holotype was collected beteen Guanwu (觀霧) and Tapachienshan Trailhead (大霸尖山登山口), the exacted altitudes where the holotype was collected is 2481 meters; the place as a part of National Forests and Sheipa National Park, there are have no orchards but natural forests.

3. Woody caltrops are developed at trunks and base of main branches very well.



Fig. 416. *Pyrus alpinotaiwaniana* S. S. Ying, the holotype NTUF-112-076





Fig. 417. *Pyrus alpinotaiwaniana* S. S. Ying, the syntype      NTUF-112-077





Fig. 418. *Pyrus alpinotaiwaniana* S. S. Ying, habit and habitat



4. Flowers 5-7 fascicled at a short peduncles, pink firstly and then becoming white, 1.8-2.5 cm in diameter when opened, scentless, racemose in arrangement.

5. Fruit a pome, it is hard like a stone, I observed the species about one year, I guess the fruit is loved by monkey and other small rodent, but I am wrong, the fruits keep on tree very well, no animal like and eat it.



Fig. 419. *Pyrus alpinotaiwaniana* S. S. Ying, blooming flower tree

#### **Distribution and phenology.**

*Pyrus alpinotaiwaniana* S.S. Ying is endemic to Taiwan. It is known from between Guanwu (觀霧) and Tapachienshan Trailhead (大霸尖山登山口), Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the forest at elevations of 2200-2550 meters. Its flowering time is February to March and fruiting time is June to August.

#### **References**

1. Iketani, H. & H. Ohashi (1993). Taxonomy of Native Species of *Pyrus* in Taiwan, J. Jap. Bot. **68**:38-43.
2. Gu, C.Z. & S. A. Spongberg (2003), *Pyrus* in Flora of China **9**:173-179.

### 31. A New Species of Genus *Berchemia* (Rhamnaceae) in Taiwan

*Berchemia paniculata* S.S. Ying 圓錐花黃鱗藤

*Berchemia paniculata* S.S. Ying, *sp. nov.* 圓錐花黃鱗藤

TYPE:TAIWAN. Taichung City , Hoping District (和平區) , Between Tayulin (大禹嶺) and Songchuangang (松泉崗), 2550 m . *S. S. Ying* , *s.n. July 01, 2023* . (holotype, NTUF) .



Fig. 420. *Berchemia paniculata* S. S, Ying, blooming flower large liana

**Morphology** : A large liana about 3-5 m long, spreading, numerous branches and branchlets, glabrous; branches spreading, erect to ascending, 1-2.5 m long, pale yellow, glabrous; branchlets erect to ascending, 40-60 cm long, green to pale yellow, glabrous. Leaves simple, alternate, oblong to elliptic, 3.5-5.5 cm long, 1.5-2.5 cm wide, obtuse at





Fig. 421. *Berchemia paniculata* S. S. Ying, branches, branchlets and leaves

both ends, entire and slightly wavy at margins, glabrous on both surface, lustrous green surface, pale green and slightly glaucous beneath, midrib impressed surface and elevated beneath; lateral veins 7-9 per side, impressed surface and elevated beneath. Petioles 1-1.5 cm long, slender, green tingues with purple, terete, glabrous.

Flowers numerous, yellow, not widely opened, 3-4 mm in diameter when opened, scentless, somewhat densely arranged, in a terminal and axillary panicle; inflorescence peduncles 4.5-5.5 cm long, yellow to pale yellow, glabrous; racemose peduncles 1.5-2.5 cm long, with 5-9 flowers, erect to ascending; pedicles short, 2-3 mm long; calyx tube shallowly dish-shaped, glabrous; sepals narrowly triangular, 1.5-1.7 mm long, 0.8 mm wide at base, acute or shortly acuminate at apex; Petals ovate, 0.9-1.2 mm long, 0.5 mm wide at base, acute at apex; stamens 5, opposite to petals, slightly shorter than petals; filaments flat, broadened below; anthers oblong, yellow; disk thick, fleshy, centrally distinctly convex; ovary immersed in and adnate to the disc, glabrous; style cylindric, stout, undivided; stigma capitate, 2- or 3-lobed.



Fig. 422. *Berchemia paniculata* S. S. Ying, inflorescences



Fig. 423. *Berchemia paniculata* S. S. Ying, inflorescences



Fruit a drupe, oblong, 6-8.5 mm long, 4-5 mm across, pink when young, turning black at maturity, with stylar beak, obtuse at apex, mesocarp thin; fruiting pedicels 1.5-2 mm long. 1-seeded; seed oblong, 5.5-6.5 mm long, smooth.



Fig. 424. *Berchemia paniculata* S. S. Ying, infructescence



Fig. 425. *Berchemia paniculata* S. S. Ying, infructescence

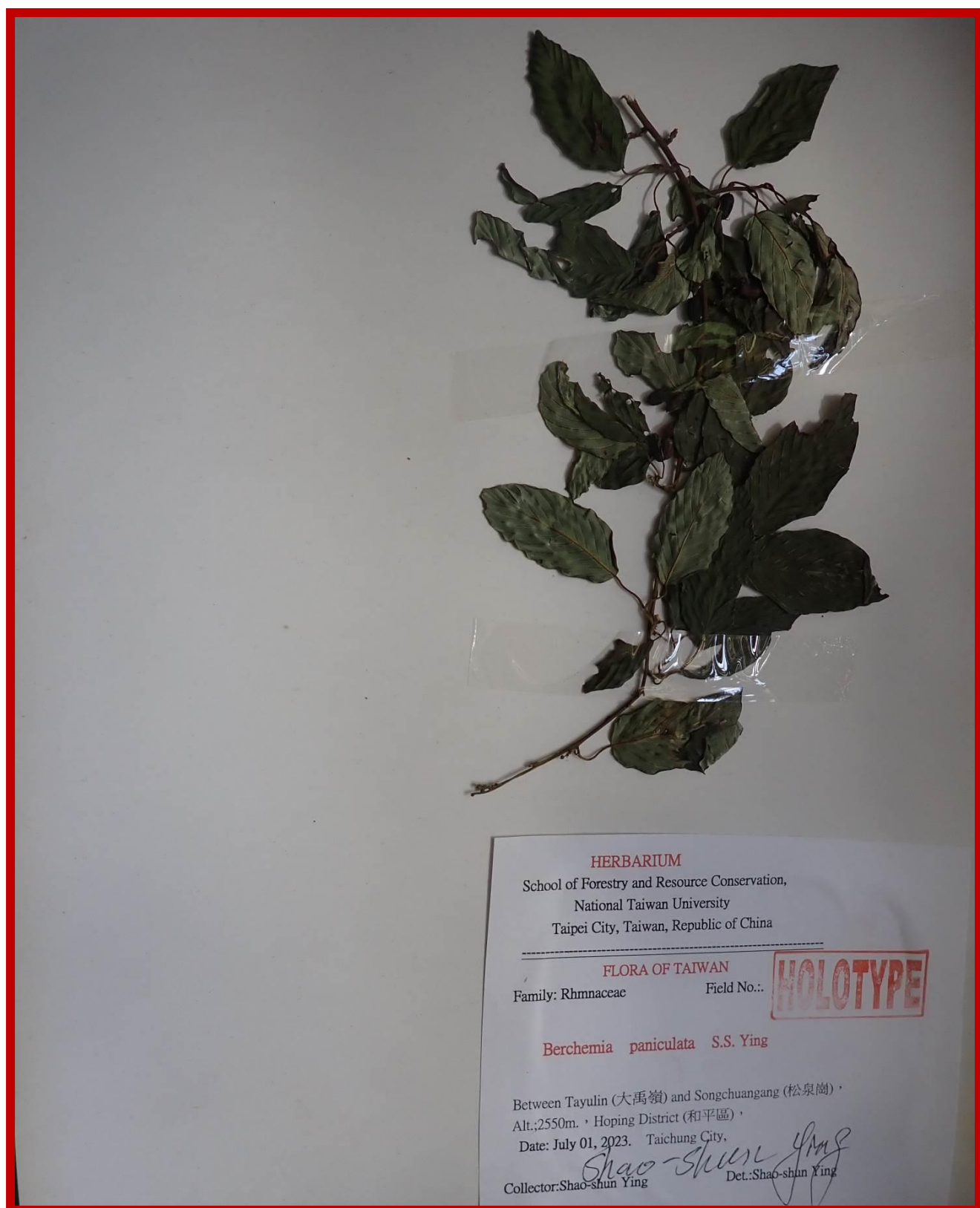


Fig. 426. *Berchemia paniculata* S. S. Ying, the holotype NTUF-112-078



### Diagnosis.

*Berchemia paniculate* readily recognized by its large woody lians with numerous flowers in a terminal and axillart panicle inflorescence; flowers yellow, petals shorter than sepals and oblong, 6-8.5 mm long, 4-5 mm across, pink when young, turning black at maturity, with stylar beak fruits.



Fig. 427. *Berchemia paniculata* S. S. Ying, habitat

### Distribution and phenology.

*Berchemia paniculata* S.S. Ying is endemic to Taiwan ° It is known from between Tayulin (大禹嶺) and Songchuangang (松泉崗), Central Cross-Island Highway Hoping District (和平區), Taichung City, central Taiwan ° It was collected on the edge of forests, between 2550 and 2650 m elevation and flowering time from May to July, fruiting time from July to August °

### 32. A New Species of Genus *Sida* (Malvaceae) in Taiwan

*Sida austrotaiwaniana* S.S. Ying 南台灣金午時花

*Sida austrotaiwaniana* S.S. Ying, *sp. nov.* 南台灣金午時花

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 438 m alt. S. S. Ying, *s.n.* September 07, 2023. (holotype, NTUF).



Fig. 428. *Sida austrotaiwaniana* S. S. Ying, flower

**Morphology** : Small prostrate shrubs, stems spreading, extend around, 50-70 cm long, green, terete, glabrous, branched; branches elongate, creeping, 25-40 cm long, green, glabrous. Leaves simple, alternate, ovate to rounded ovate, 8-14mm long, 4.5-6.5 mm wide, obtuse at both ends, coriaceous, dentate at margins, glabrous on both surfaces, midrib and lateral veins (3-5 per side) impressed surface and elevated beneath. Petioles 4-5 mm long, green, glabrous, slightly grooved above.





Fig. 429. *Sida austrotaiwaniana* S. S, Ying, branches and leaves



Fig. 430. *Sida austrotaiwaniana* S. S, Ying, habitat

Flower solitary, yellow, axillary, scentless, 7-9 mm in diameter when opened; pedicel 5-6 mm long, terete, green, glabrous; calyx widely campanulate, 5-6 mm in diameter, 4-5 mm long, 5-veined, glabrous on both surfaces, pale green but the vein dark green, 5-lobed at apex; lobes deltoid, 2-3 mm long, about 3 mm wide, acute at apex; petals 5, imbricate in bud, obovate to ovate-obovate, 7-8.5 mm long, 6-7 mm wide, obtuse at apex, attenuate at base, ciliate at margins, hairy outside and glabrous inside; staminal tube 3-4.5 mm long; filaments numerous, unequal, slender, 2.5-4 mm long, yellow; anthers reniform, 0.3 mm long, yellow; ovary ovoid, 3.5-4.5 mm across; style short, inconspicuous, not exerted the filaments; stigma capitate.



Fig. 431. *Sida austrotaiwaniana* S. S. Ying, close-up of flowers, seen from side





Fig. 432. *Sida austrotaiwaniana* S. S. Ying, close-up of flowers, seen from upside

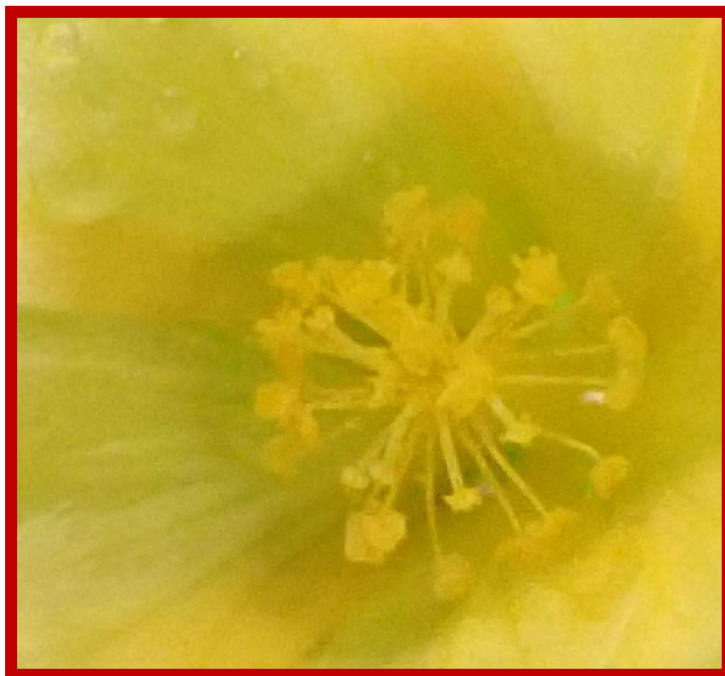


Fig. 433. *Sida austrotaiwaniana* S. S. Ying, close-up of staminal tube

Fruit a schizocarp, broadly ovoid, 5-6 in diameter; mesocarp 7-9, radially compressed, 2.5-3 mm long, 2 mm wide, slightly rugose on bak, reticulate or alveolate on side, glabrous, divergent-mucronate at apex. Seeds reniform, 1.5-2 mm long, 1 mm wide, brownish.;

### Diagnosis.

*Sida austrotaiwaniana* readily recognized by its a prostrate shrub with elongate branches which creeping around; small ovate to ovate-rouned 8-14mm long, 4.5-6.5 mm wide,leaves and solitary yellow, axillary flower.



Fig. 434. *Sida austrotaiwaniana* S. S. Ying, habitat

### Distribution and phenology.

*Ixora taiwanensis* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), Shitze Township (獅子鄉) , Pingtung county , southern Taiwan ° It was collected on sunny roadsides, between 360 and 420 m altitudes; and flowering times is from September, and fruiting times from October to November.





Fig. 435. *Sida austrotaiwaniana* S. S. Ying, the holotype NTUF-112-079



Fig. 436. *Sida austrotaiwaniana* S. S. Ying, the isotype      NTUF-112-080





Fig. 437. *Sida austrotaiwaniana* S. S. Ying, habitat



### 33. A New Species of Genus *Symplocos* (Symplocoaceae) in Taiwan

*Symplocos taiwanensis* S.S. Ying 台灣灰木

*Symplocos taiwanensis* S.S. Ying, *sp. nov.* 台灣灰木

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 428 m alt. *S. S. Ying*, *s.n.* July 13, 2023. (holotype, NTUF).



Fig. 438. *Symplocos taiwanensis* S. S. Ying, flowering branches

**Morphology :** Evergreen trees up 8 m high, trunks straight, smooth, grayish, much branched upward; branches elongate, 220-385 cm long, erect to ascending, terete, greenish gray to gray, glabrous; young branches terete, glabrous. Leaves simple, alternate, lanceolate 6-9.5 cm long, 2.2-2.8 cm wide, acuminate and caudate at apex, attenuate at base, thinly coriaceous, entire to slightly crenate at margins, glabrous on both surface, lustrous green surface and pale green beneath, midrib and lateral veins (5-8 per side)



impressed surfaced and elevated beneath, lateral veins somewhat inconspicuous. Petioles 1-2 mm long, terete, grooved above, glabrous, green.



Fig. 439. *Symplocos taiwanensis* S. S. Ying, branchlet, leaves and flowers

Flowers solitary to 4-7 in a fascicle, white, 4-5 mm in diameter when opened, scentless, borne on leaf-axil and branchlets, sessile or nearly so; bracts ovate, 2.5-3 mm long, about 2.5 mm wide, obtuse at apex, pubescent; sepals 5, somewhat connated at base, ovate, 3-3.2 mm long, 3-3.4 mm wide, obtuse at apex, pale yellow, glabrous; corolla deeply 5-lobed, the tube very short, 1.5-2 mm long; the lobes oblong, 4.5-5.7 mm long, 4-5 mm wide, obtuse at apex, glabrous; entire at margins; stamens numerous; filaments slender, 5-7 mm long, white, glabrous; anthers ovoid, 0.4 mm long, white; disc intrastaminal, dome-shaped, glabrous; style slender, shorter than filaments, white, glabrous, elongate after anthesis; stigma capitate, about 1 mm across, green; ovary inferior, .

Fruit a drupe, oblong to ellipsoid, 6-7 mm long, 5-8 mm wide, calyx-lobed persistent at apex, smooth; seeds 2-3, ovoid.



Fig. 440. *Symplocos taiwanensis* S. S. Ying, close-up of flowers

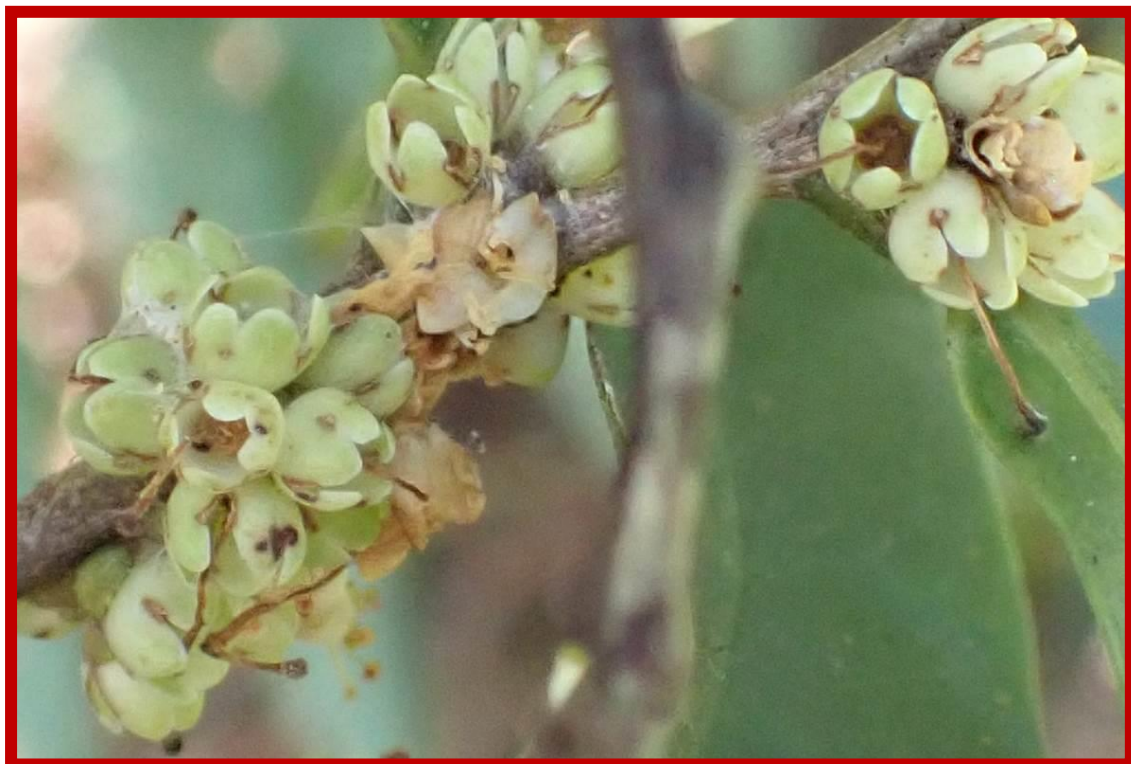


Fig. 441. *Symplocos taiwanensis* S. S. Ying, corolla dropped down, showing calyx



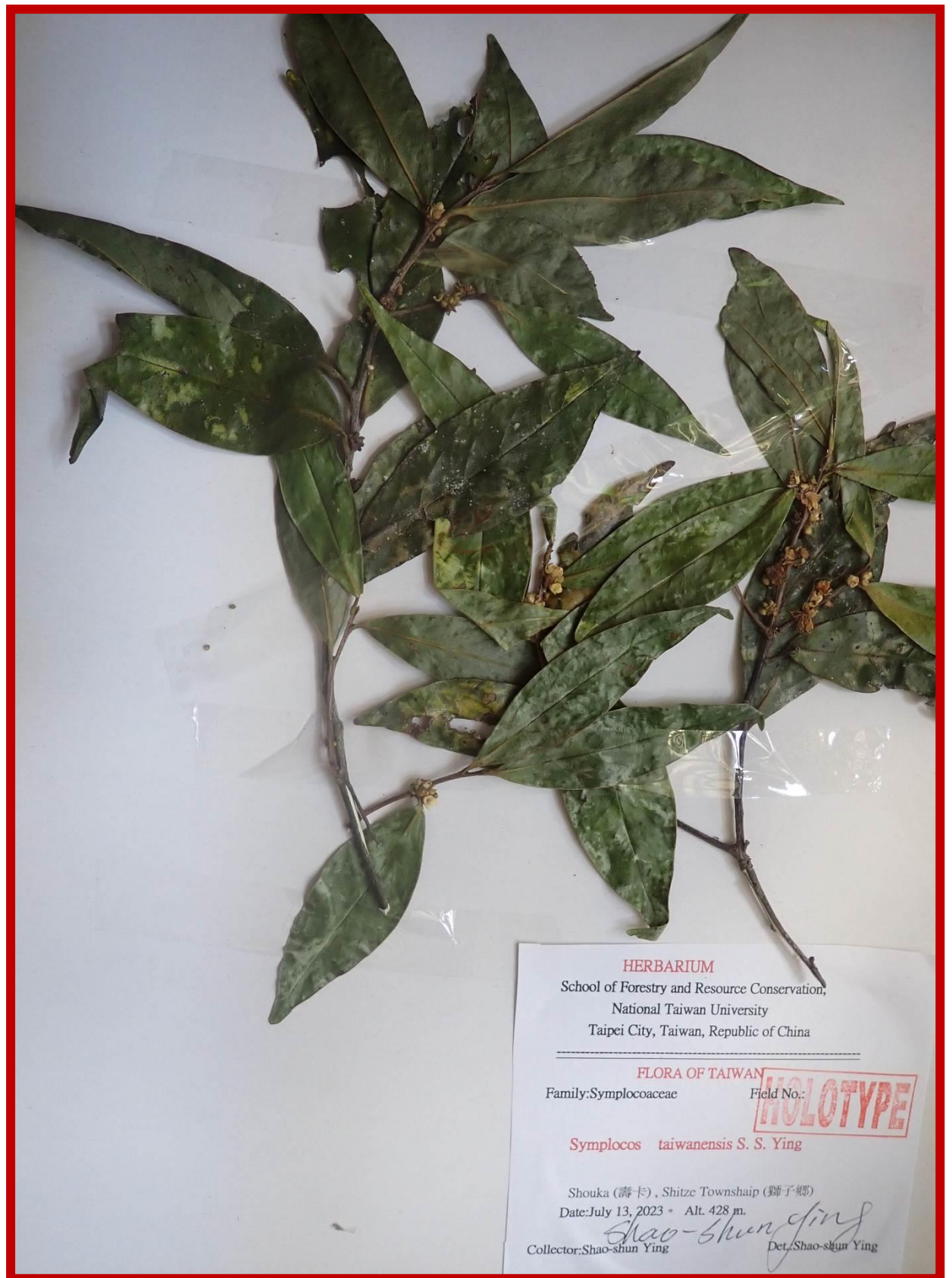


Fig. 442. *Symplocos taiwanensis* S. S. Ying, the holotype NTUF-112-081



Fig. 443. *Symplocos taiwanensis* S. S. Ying, the isotype NTUF-112-082



### Diagnosis.

*Symplocos taiwanensis* readily recognized by its a medium tree with solitary to 4-7 fascicled white flowers on leaf-axils and branchlets; calyx with very short tube and deeply 5-lobed; calyx-lobes ovate, obtuse at apex, pale yellow, glabrous; corolla deeply 5-lobed, the tube very short, 1.5-2 mm long; the lobes oblong, 4.5-5.7 mm long, 4-5 mm wide, obtuse at apex; stamens numerous, filaments and anthers white in colour. ,



Fig. 444. *Symplocos taiwanensis* S. S. Ying, blooming flowers in July

### Distribution and phenology.

*Symplocos taiwanensis* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), Shitze Township (獅子鄉) , Pingtung county , southern Taiwan ° It was collected on under of natural forests, between 350 and 450 m altitudes; and flowering times is from July to August, and fruiting times from July to September.

### 34. A New Species of Genus *Cotoneaster* (Rosaceae) in Taiwan

*Cotoneaster tetrapetalus* S.S. Ying 四花瓣爬地蜈蚣

*Cotoneaster tetrapetalus* S.S. Ying, *sp. nov.* 四花瓣爬地蜈蚣

TYPE: TAIWAN. Miaoli County, Taian Townshap (泰安鄉), beteen Guanwu (觀霧) and Tapachienshan Trailhead (大霸尖山登山口), 2281 m alt. *S. S. Ying*, *s.n.* May 16, 2023. (holotype, NTUF).



Fig. 445. *Cotoneaster tetrapetalus* S. S. Ying, blooming flowers in late April

**Morphology :** Evergreen lithophytic lower spreading shrubs, somewhat prostrate on ground, about 35-60 cm long; stem short, much branched at base; branches spreading, horizontal to pendulous, terete, 25-45 cm long, red when young and brownish adult, usually pubescent when young and glabrous adult, with lenticels. Leaves simple alternate, ovate to ovate-oblong, 6-8 mm long, 5-6.5 mm long, obtuse and slightly



emarginate at apex, obtuse and slightly cordate at base, coriaceous, ciliate when young and becoming entire adult, lustrous green surfaces, pale green to slightly brown and pubescent beneath; midrib and lateral veins (2-3-4 per side) impressed surface and elevated beneath, glabrous surface.      petioles short, 2-3 mm long, groove above, glabrous or nearly so.



Fig. 446. *Cotoneaster tetrapetalus* S. S. Ying, branches and leaves



Fig. 447. *Cotoneaster tetrapetalus* S. S. Ying, branches and leaves beneath



Fig. 448. *Cotoneaster tetrapetalus* S. S. Ying, branches and leaves beneath

Flowers solitary, white, terminal on the short-branched to axillary to leaf-axil, smaller, 4.5-5.5 mm in diameter when widely opened; pedicels short, 4-6 mm long, brownish pubescent; bracts ovate to oblong, minute, 3.5-4 mm long, 2.5-3 mm wide, deciduous, brownish pubescent; hypanthium brownish green tinged with red, campanulate, adnate to ovary; sepals 5, ovate, 3.5-4.5 mm long, 2.5-3.5 mm wide, acute at apex, truncate at base, green with pubescent outside and scattered villose inside, ciliate at margins; petals 5, alternate to sepals, erect to spreading, broadly ovate, 4.5-5.5 mm long, 3.5-4 mm wide, obtuse at apex, clawed at base, white, glabrous; stamens 10-15, shorter than petals; filament slender, 2.5-3 mm long, red to pink; anthers oblong, purplish brown; ovary oblong, villous; style 3, not exceeding stamens.

Fruit a drupe-like pome, pear-like, 4-5.5 mm long, 3-4 mm wide, red when mature, scattered with pubescence, with 5 persistent, not enlarged sepals at apex, containing pyrenes; pyrenes 1 to 2, bony, 1-seeded; seeds oval, 0.5-0.7 mm across, somewhat compressed.





Fig. 449. *Cotoneaster tetrapetalus* S. S. Ying, close-up of fruit

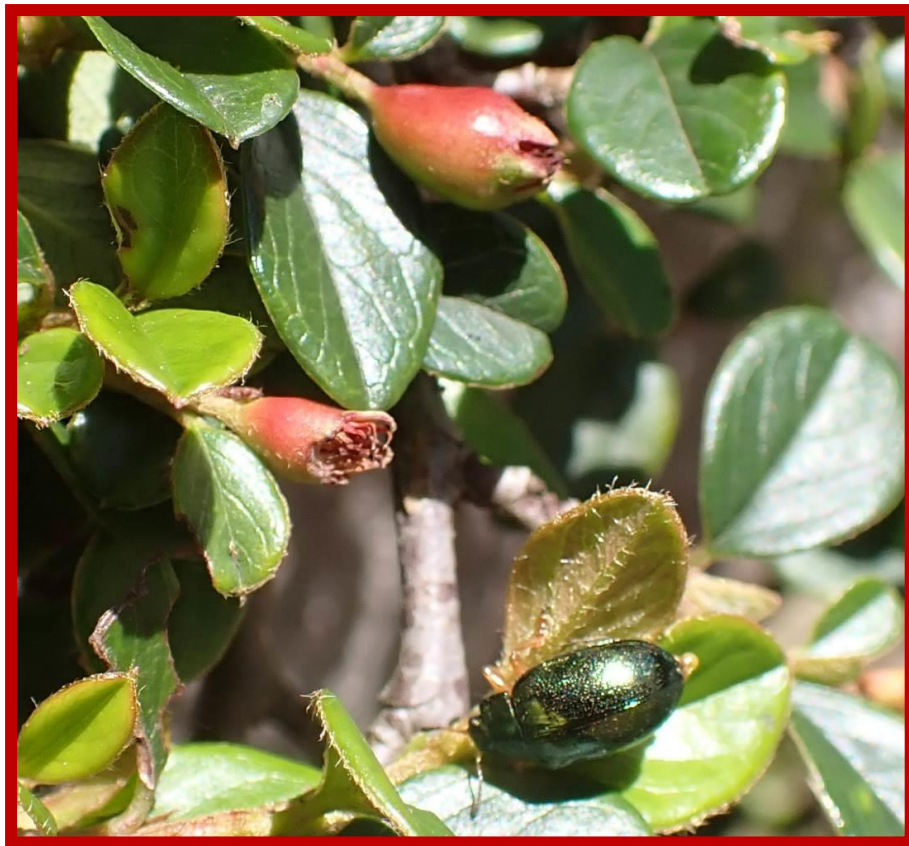


Fig. 450. *Cotoneaster tetrapetalus* S. S. Ying, fruits and leaf beneath



Fig. 451. *Cotoneaster tetrapetalus* S. S. Ying, the holotype NTUF-112-083



**Diagnosis.**

*Cotoneaster tetrapetalus* is characterized by its small lower spreading somewhat prostrate shrubs, smaller leaves and smaller flowers with 4 white petals and smaller red fruits



Fig. 452. *Cotoneaster tetrapetalus* S. S. Ying, habit

**Distribution and phenology.**

*Cotoneaster tetrapetalus* S.S. Ying is endemic to Taiwan. It is known from between Guanwu (觀霧) and Tapachienshan Trailhead (大霸尖山登山口), Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the rocky places at elevations of 2100-2450 meters. Its flowering time is April to May and fruiting time is June to August.



Fig. 453. *Cotoneaster tetrapetalus* S. S. Ying, habit



### 35. A New Species of Genus *Stauntonia* (Lardizabalaceae) in Taiwan

*Stauntonia hengchunensis* S.S. Ying 恆春石月

*Stauntonia hengchunensis* S.S. Ying , *sp. nov.* 恆春石月

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉) , Shouka (壽卡) 440 m alt. *S. S. Ying* , *s.n.* March 03, 2023 . (holotype , NTUF) .



Fig. 454. *Stauntonia hengchunensis* S. S. Ying, inflorescence

**Morphology** : Evergreen woody climbers, stem elongate, about 6-10 m long, cling to other trees, much branches; branches elongate, 1.5-3.5 m long, green to purplish red, glabrous. Leaves alternate, palmately 4-5-foliate; leaves obovate, 3.5-6.5 cm long, 2-3 cm wide, obtuse with a short caudate at apex, obtuse at base, coriaceous, entire at margins,



Fig. 455. *Stauntonia hengchunensis* S. S. Ying, leaves

glabrous on both surfaces, lustrous green surface and pale green with slightly glaucous beneath, midrib impressed surface and prominent elevated beneath; petioles 3-5 cm long, green to pale purplish, glabrous; petioles 1.5-2.5 cm long, green to purple, glabrous.

Flowers dioecious, 4-5, pale yellow to white, not widely opened, 4-5.5 mm in diameter when opened, in a pendulous remotely raceme; the inflorescences terminal to upward of branches, 8-12 cm long, pendulous, glabrous, green; pedicels 1.2-1.8 cm long, slender, glabrous, pale green to pale yellow; bracts absent; male flowers: sepals in 2 series, the outer series lanceolate to lanceolate-oblong, 6.5-7.5 mm long, 2.5-3 mm wide, obtuse at apex, entire to few dentate upward at margins, pale green yellow, glabrous; inner series lanceolate to linear-lanceolate, obtuse at apex, entire at margins, white, glabrous; petals absent; stamens 6, included, filaments connate into a tube, 1-2 mm long; anthers free; connective apical appendage hornlike; pistillodes 3, filiform, slightly longer than filament-tube. Female flowers unknown.





Fig. 456. *Stauntonia hengchunensis* S. S, Ying, inflorescence



Fig. 457. *Stauntonia hengchunensis* S. S, Ying, close-up of flowers

**Diagnosis.**

*Stauntonia hengchunensis* is characterized by its palmately 4-5 foliate, leaflet obovate, 3.5-6.5 cm long, 2-3 cm wide, obtuse with a short caudate at apex; flowers dioecious; male flowers with 2-seriate sepals, the outer series lanceolate to lanceolate-oblong, 6.5-7.5 mm long, 2.5-3 mm wide, obtuse at apex, entire to few dentate upward at margins, and inner series lanceolate to linear-lanceolate, obtuse at apex, entire at margins, white, glabrous; petals absent.



Fig. 458. *Stauntonia hengchunensis* S. S. Ying, habitat





Fig. 459. *Stauntonia hengchunensis* S. S. Ying, the holotype NTUF-112-084



Fig. 460. *Stauntonia hengchunensis* S. S. Ying, the isotype NTUF-112-085



**Distribution and phenology.**

*Stauntonia hengchunensis* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), Shitze Township (獅子鄉) , Pingtung county , southern Taiwan ° It was collected on under of natural forests, between 350 and 450 m altitudes; and flowering times is from March to April.



Fig. 461. *Stauntonia hengchunensis* S. S, Ying, habitat

36. A New species of Genus *Rhynchoechum* (Gesneriaceae) in Taiwan

*Rhynchoechum uniflorum* S.S. Ying 單花線柱苣苔

*Rhynchoechum uniflorum* S.S. Ying, *sp. nov.* 單花線柱苣苔

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Tungyuanshan (東眼山), 1345 m alt. *S. S. Ying* , *s.n. July 06, 2023* ° (holotype, NTUF) °



Fig. 462. *Rhynchoechum uniflorum* S. S. Ying, flowers

**Morphology** : Lithophytic annual herb, without stolon and rhizomatous, usually on mossy rocks. Stem simple, 1.5-2.5 cm long, erect, rust-brown woolly. Leaves simple, opposite, 3-5 paired, oblong to oblong-lanceolate, 6-12.5 cm long, 2.5-4.5 cm wide, acuminate to acute at apex, narrowed to petioles at base, chartaceous, gland-serrate at margins, lustrous green surface, somewhat pale rust- brown beneath, scattered some hirsute surface and rust-brown villoses especially on midrib and lateral veins beneath, midrib impressed surface



and elevated beneath; lateral veins 4-7 per side impressed surface and elevated beneath. Petioles short, 2-3.5 cm long, slender, slightly groove surface, rust-brown hairy.



Fig. 463. *Rhynchotechum uniflorum* S. S. Ying, plants growing in situ

Flowers solitary, white, 7-9 mm in diameter when opened, scentless, axillary; usually 1-5 flowers fascicled at leaf-axils; pedicels 4-12 mm long, rusty villous hairs; bracts linear, 4-5 mm long, about 1.5 mm wide, obtuse at apex, hairy; calyx campanulate, 2.5-3.5 mm long, 3.5 mm wide, brown hairy, 5-lobed at apex; the lobes lanceolate, 4.5-5.5 mm long, about 2-2.5 mm wide, green, acute at apex, villouse-hairy outside, glabrous inside; corolla white, glabrous; tube campanulate, 1.5-2 mm long, about 2.5-3 mm wide, limb indistinctly 2-lipped; upper lip 2-lobed, oblong to oblong-ovate, 4.5-5.2 mm long, 3.5-3.8 mm wide, obtuse to rounded at apex; lower lip 3-lobed, lobes equal to slightly longer than the upper ones, 4.6-5.4 mm long, 3.5-3.9 mm wide, obtuse at apex; stamens 4, inserted near the base of corolla tube, filaments 2.5-3.5 mm long, white, glabrous; anthers pale yellow, 0.9-1.2



Fig. 464.*Rhynchotechum uniflorum* S. S, Ying, flowers at leaf-axils



Fig. 465.*Rhynchotechum uniflorum* S. S, Ying, close-up of flower





Fig. 466.*Rhynchotechum uniflorum* S. S. Ying, habit

mm across, glabrous; staminodes none or inconspicuous; ovary ovoid, 2.5-3.5 mm long, 2mm across, glabrous, green; style shorter than ovary, 2-3 mm long, glabrous, pale green; stigma capitate, grayish.



Fig. 467. *Rhynchoechum uniflorum* S. S. Ying, plant with flower-buds

#### Diagnosis.

*Rhynchoechum uniflorum* is characterized by:

1. It is an annual herb, it is appeared on limestones on June, and it is flowering on July and fruiting on September to October.
2. Leaves 3-5 paired, oblong to oblong-lanceolate, 6-12.5 cm long, 2.5-4.5 cm wide.
3. Flowers solitary, white, 7-9 mm in diameter when opened, scentless, axillary; usually 1-5 flowers fascicled at leaf-axils.
4. Calyx campanulate, 2.5-3.5 mm long, 3.5 mm wide, brown hairy, 5-lobed at apex; the lobes lanceolate.
5. corolla white; tube campanulate, 1.5-2 mm long, about 2.5-3 mm wide, limb indistinctly 2-lipped.





Fig. 468. *Rhynchotechum uniflorum* S. S. Ying, the holotype, NTUF-112-086

### Distribution and phenology.

The species is endemic in Taiwan, It is known from Tungyuanshan (東眼山) , Fuhsin District (復興區) , Taoyuan city , northern Taiwan. ° It was discovered the species on the mossy limestone cliffs at elevations of 1300-1500 meters. Its flowering time is July to August, and fruiting time September to October.



Fig. 469. *Rhynchoechum uniflorum* S. S. Ying, plant with flower-buds



### 37. Two New Species of Genus *Prunus* (Rosaceae) from Taiwan

*A.Prunus guamwuensis* S. S. Ying

*Prunus guanwuensis* S.S. Ying , *sp. nov.* 觀霧野櫻

TYPE:TAIWAN. Miaoli County, Taian Townshap (泰安鄉) , Guanwu (觀霧) 2351 m alt. *S. S. Ying* , *s.n. March 30, 2023* . (holotype , NTUF) .

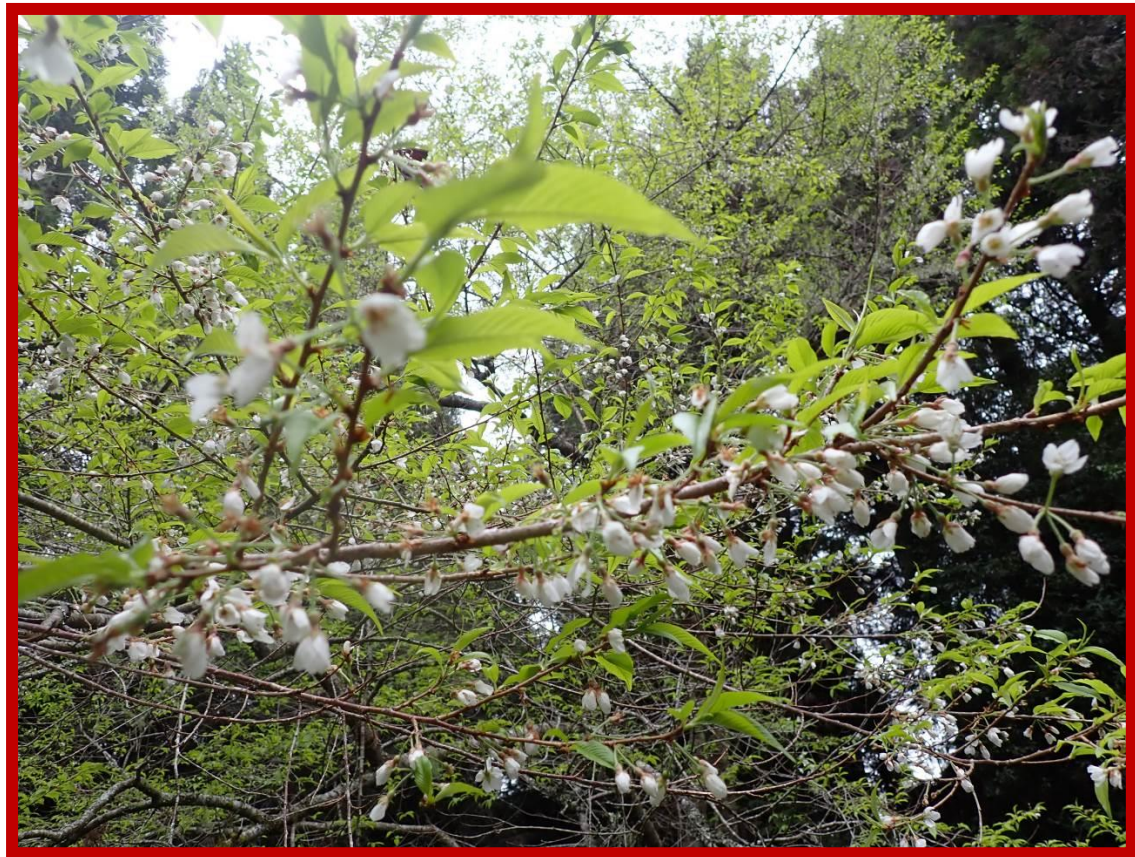


Fig. 470. *Prunus guanwuensis* S.S. Ying, flowering with leaves

**Morphology** : Medium sized trees, up to 12 m high, trunk staight, bark gray to blacking gray, smooth, much branched; bark often peeling off; branchlets erect to ascending, terete, green to turn brownish, glabrous; lenticels inconspicuous. Leaves simple, alternate, 2-3 in a fascicle, oblong, to lanceolate-oblong, 3.5-4.5 cm long, 1.8-2.2 cm wide, chartaceous, acuminate at apex, obtuse at base, simple serrulate, glabrous on both surfaces, midrib

impressed surface and elevated beneath, lateral veins 7-9 per side impressed and elevated beneath. Petioles 5.5-6.5 mm long, slightly groove surface, glabrous, green to pale green, 2 red nectaries at apex; stipules linear, with distant dark purple glands at margins, soon cauduous.



Fig. 471. *Prunus guanwuensis* S.S. Ying, leaves usually 3 in a fascicle

Flowers white, usually opening at same time with leaves, 7-9 mm in diameter when flowering, not widely opened, 2-3-flowered in a fascicle, base often with an involucre formed by floral bud scales; scales 3-5, ovate to oblong, 4.5-6 mm long, 2.5-4 mm wide, obtuse at apex, serrulate at margins, red to reddish purple, glabrous; pedicels 1.5-2.5 cm long, green, white pubescent; hypanthium tubular, 4.5-6 mm long, pale purple, pubescent; sepals 5, ovate, 5-6.5 mm long, 2.4-3 mm wide, acuminate at apex, erect, slightly hairy on both surfaces; petals 5, oblong to ovate-oblong, 7-8.5 mm long, 3.5-5.5 mm wide, obtuse and emarginate to slightly 2-lobed at apex, obtuse and without claw at base, glabrous; stamens 10-15, unequal; filaments slender, 3.5-6 mm long, white, glabrous; anthers





Fig. 472. *Prunus guanwuensis* S.S. Ying, flowering with leaves



Fig. 473. *Prunus guanwuensis* S.S. Ying, 2-3 flowers in a fascicle

rounded, 0.5 mm across; carpel 1, ovary superior, oblong, 1.5-2mm long, 0.8 mm across, obtuse at apex; style slender, shorter than petals, pink to pale green, glabrous; stigmas disc-like, emarginate at base, pale green, glabrous.



Fig. 474. *Prunus guanwuensis* S.S. Ying, close-up of flower

Fruits drupe, smaller, ovoid, 4-5 mm long, 3-3.8 mm across, dark red when mature, glabrous, without a longitudinal groove; mesocarp thin, fleshy; endocarp globose, smooth, 1-seeded.

#### **Diagnosis.**

*Prunus guanwuensis* readily recognized by its small, oblong to lanceolate-oblong, 3.5-4.5 cm long, 1.8-2.2 cm wide and 2-3 leaves in a fascicled, 2-3 flowers in a fascicled; pedicels with white hair all over and not widely opened flowers.





Fig. 475. *Prunus guamwuensis* S.S. Ying, the holotype, NTUF-112-087



Fig. 476. *Prunus guamwuensis* S.S. Ying, the isotype, NTUF-112-088





Fig. 477. *Prunus guanwuensis* S.S. Ying, the isotype,

NTUF-112-089

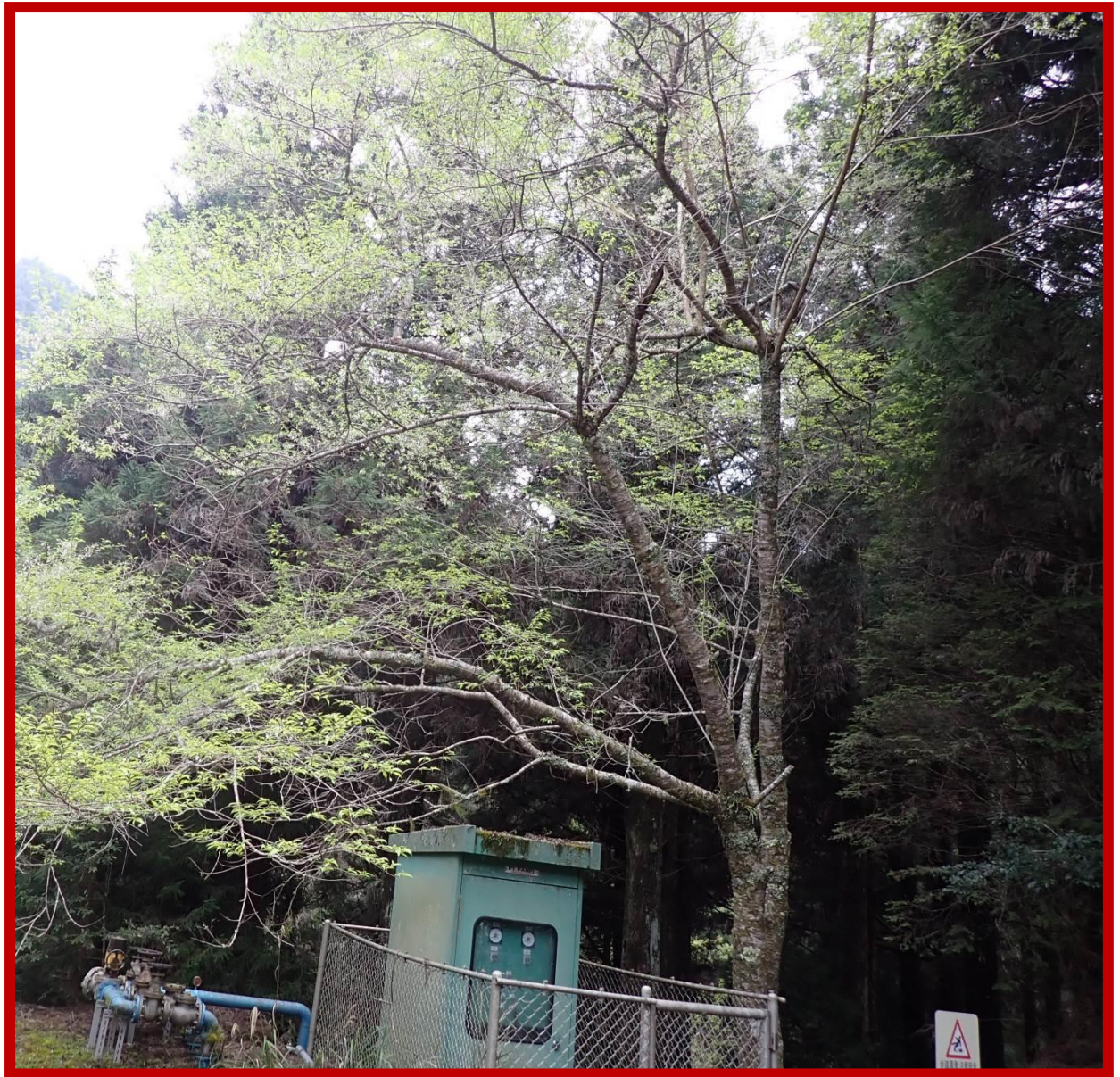


Fig. 478. *Prunus guanwuensis* S.S. Ying, type tree

**Distribution and phenology.**

*Prunus guanwuensis* S.S. Ying is endemic to Taiwan. It is known from Zhenshan (榛山), Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the forest edge at elevations of 2000-2150 meters. Its flowering time is March to April and fruiting time is June to September.





Fig. 479. *Prunus guanwuensis* S.S. Ying, flowers and young fruits



Fig. 480. *Prunus guanwuensis* S.S. Ying, flowers

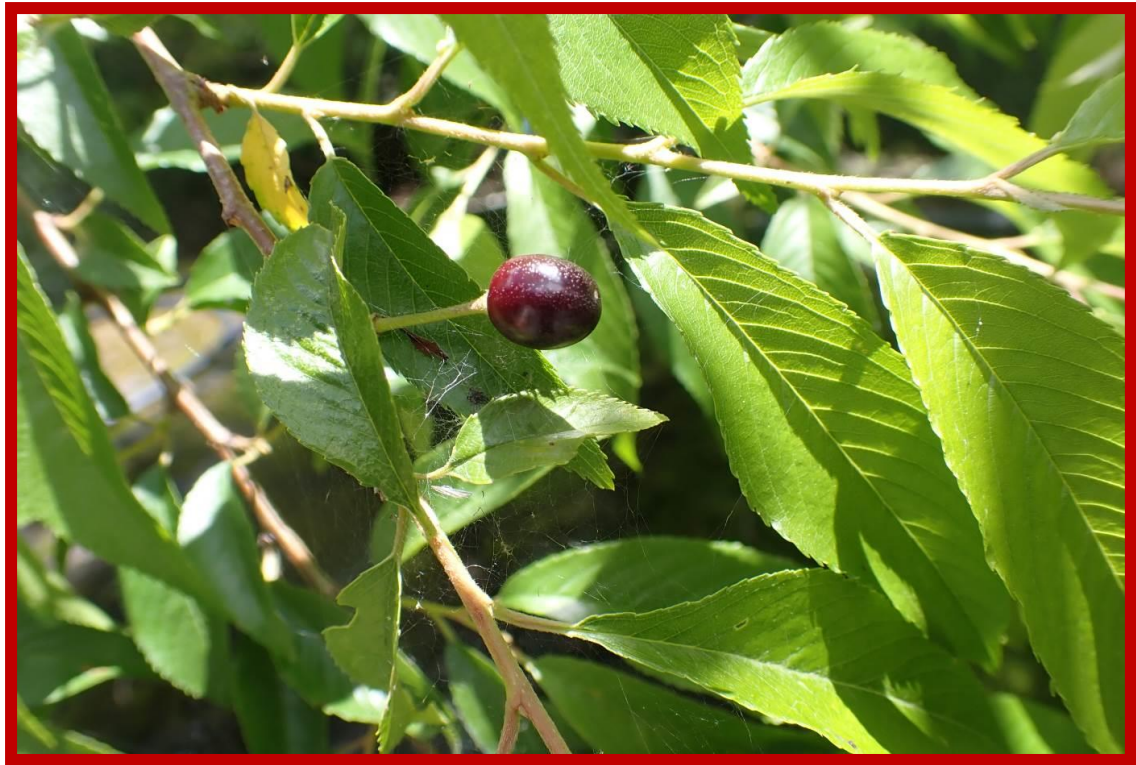


Fig. 481. *Prunus guanwuensis* S.S. Ying, fruit



Fig. 482. *Prunus guanwuensis* S.S. Ying, fruit



*B.Prunus tayulinensis* S. S. Ying

*Prunus tayulinensis* S.S. Ying, *sp. nov.* 大禹嶺野櫻

TYPE:TAIWAN. Taichung City , Hoping District (和平區) , Between Tayulin (大禹嶺) and Songchuangang (松泉崗), 2530 m . *S. S. Ying* , *s.n. July 01, 2023* . (holotype, NTUF) .



Fig. 483. *Prunus tayulinensis* S.S. Ying, flowers

**Morphology** : Shrubs to small tree, up to 2.5 m high, trunk short, smooth, blackish brown, much branched; bark not peeling off, smooth; branchlets erect to ascending, terete, green to turn brownish, glabrous; lenticels few, conspicuous. Leaves simple, alternate, lanceolate to lanceolate-oblong, 5.5-7.5 cm long, 1.2-1.8 cm wide, thinly coriaceous, acuminate and short caudate at apex, attenuate at base, crenated, glabrous on both surfaces, dark lustrous green surface and pale green beneath; midrib impressed surface and elevated beneath,

lateral veins 5-7 per side impressed and elevated beneath. Petioles 4.5-5.5 mm long, slightly groove surface, glabrous, green to pale green; stipules linear, soon cauduous.



Fig. 484. *Prunus tayulinensis* S.S. Ying, branches and leaves

Flowers white, usually opening at same time with leaves, 4-5.5 mm in diameter when opened, 5-8-flowered in an axillary raceme; peduncles 3-4.5 cm long, green to pale green, glabrous; bracts ovate, 3-4 mm long, 2.5-3 mm wide, acute at apex, pink, cauduous; pedicels 3.5-5 mm long, pale green, glabrous or nearly so; hypanthium tubular, 3.5-4 mm long, pale green, glabrous; sepals 5, ovate, 2.5-3.5 mm long, 1.5-2 mm wide, obtuse at apex, erect, glabrous on both surfaces; petals 5, oblong to ovate-oblong, 4.5-5.5 mm long, 2.5-3.5 mm wide, obtuse and slightly emarginate at apex, obtuse and without claw at base, glabrous; stamens numerous, unequal; filaments slender, 6.5-7.5 mm long, white to pale yellow, glabrous; anthers rounded, 0.6 mm across; carpel 1, ovary superior, ovoid, 1.5-2 mm long, 0.8 mm across, obtuse at apex; style slender, longer than petals, 8-9 mm long, pink to pale green, glabrous; stigmas rounded to disc-like, pale green, glabrous.





Fig. 485. *Prunus tayulinensis* S.S. Ying, inflorescence, flowers in bud



Fig. 486. *Prunus tayulinensis* S.S. Ying, close-up of inflorescence, flowers in bud



Fig. 487. *Prunus tayulinensis* S.S. Ying, inflorescence, flowers withered



Fig. 488. *Prunus tayulinensis* S.S. Ying, close-up of inflorescence, flowers withered



Fruits drupe, smaller, ovoid, 4.5-5.5 mm long, 3.5-4.2 mm across, dark red when mature, glabrous, smooth; mesocarp thin, fleshy; endocarp globose, smooth, 1-seeded.



Fig. 489. *Prunus tayulinensis* S.S. Ying, withered inflorescence, young fruits can be seen



Fig. 490. *Prunus tayulinensis* S.S. Ying, plant growing in situ



Fig. 491. *Prunus tayulinensis* S.S. Ying, the holotype NTUF-112-090



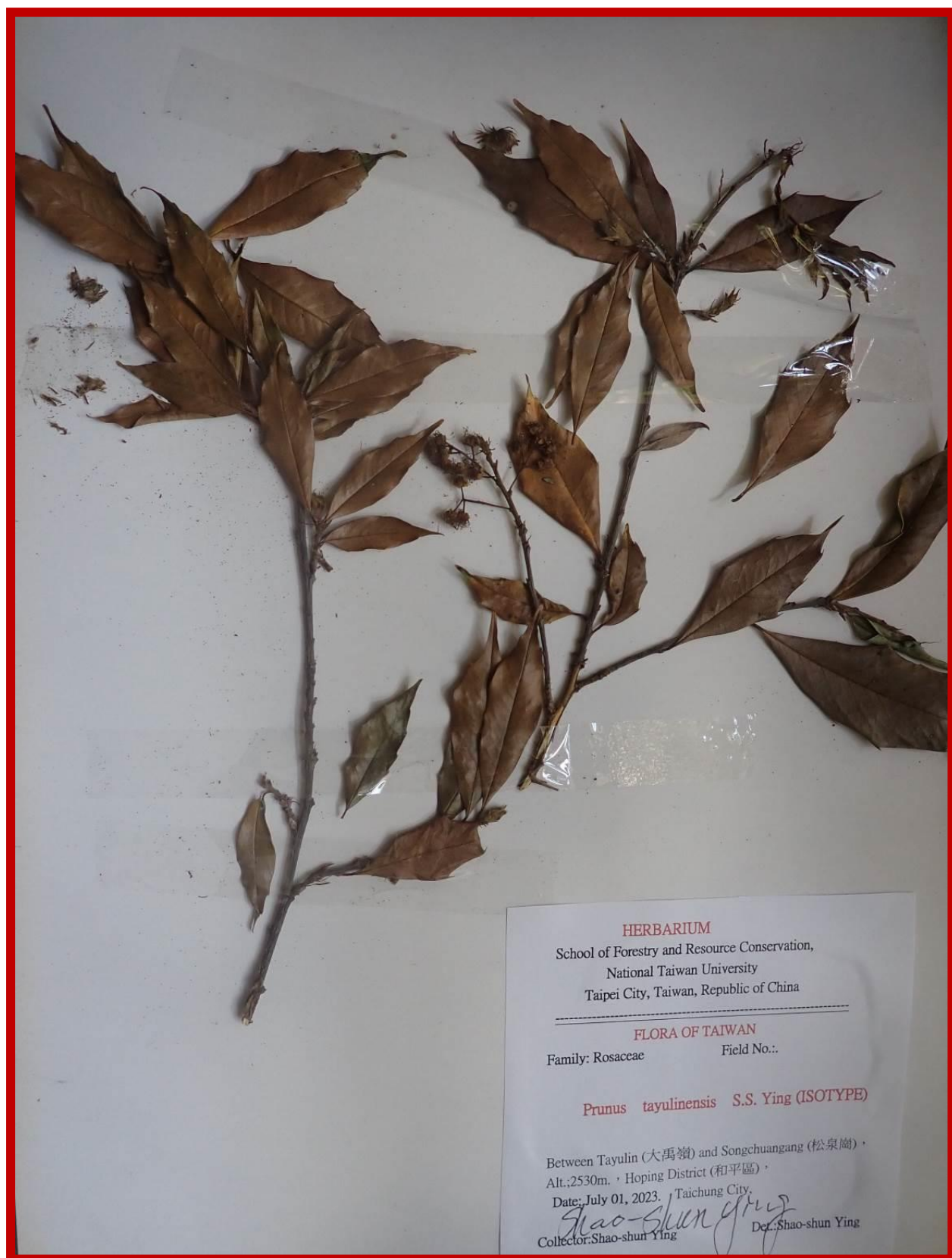


Fig. 492. *Prunus tayulinensis* S.S. Ying, the isotype

NTUF-112-091

### Diagnosis.

*Prunus tayulinensis* readily recognized by its shrub to small tree with lanceolate to lanceolate-oblong, 5.5-7.5 cm long, 1.2-1.8 cm wide, thinly coriaceous and crenated leaves; 5-8-flowered in an axillary raceme; oblong to ovate-oblong, 4.5-5.5 mm long, 2.5-3.5 mm wide, obtuse and slightly emarginate at apex petals and numerous stamens.



Fig. 493. *Prunus tayulinensis* S.S. Ying, habitat

### Distribution and phenology.

*Prunus tayulinensis* S.S. Ying is endemic to Taiwan ° It is known from between Tayulin (大禹嶺) and Songchuangang (松泉崗), Central Cross-Island Highway Hoping District (和平區), Taichung City, central Taiwan ° It was collected on the Edge of forests, between 2450 and 2650 m elevation and flowering time from May to June, fruiting time from July to August °



### 38. A New species and A New Combination of Genus *Chamabainia*

(Urticaceae) in Taiwan

*Chamabainia* *guanwuensis* S.S. Ying, 觀霧蟲蟻麻

*Chamabainia* *guanwuensis* S.S. Ying, *sp. nov.* 觀霧蟲蟻麻

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧), Kuaishan trail (檜山步道), 2341 m alt. *S. S. Ying*, *s.n.* July 20, 2023. (holotype, NTUF).



Fig. 494. *Chamabainia guanwuensis* S. S. Ying, female inflorescence

**Morphology** : Annual herbs, about 8-15 cm high, stem simple to branched at base, smooth, green, hairy, erect to ascending. Leaves simple, alternate to subopposite and opposite upper of stem, ovate to ovate-oblong, 9-20 mm long, 6-10 mm wide, acute to acuminate at apex, obtuse and slightly cordate at base, chartaceous, dentate and ciliate at margins, lustrous green surface, pale green beneath, white pubescent on both surface, espically on veins, 3-nerved at base, impressed surface and elevated beneath; stipules

absent. Petioles 2.5-3.5 mm long, terete, white pubescent.



Fig. 495. *Chamabainia guanwuensis* S. S. Ying, branches and leaves

Flowers minute, dioecious, 1-2 mm across when opened, pale yellow to transparent white, 8-12 to form a head on leaf-axila; the head globose or nearly so, 4.5-6.5 mm in diameter, sessile, enclosed by several bracts when young and cauduous adult; bracts 4-6, oblong, 0.5-0.6 mm long, 0.4-0.5 mm wide, obtuse at apex, transparent white, glabrous; bracteoles at base of each female flower, ovate, 1-2 mm long, 1.5 mm wide, lacerate or long-ciliate at margins; perianth lobes 4, minute, ovate, 0.2-0.25 mm long, acute at apex, membranous, glabrous;; ovary globose, 0.5 mm across, glabrous; style short; stigma somewhat large, penicillate, 0.25-0.3 mm long, transparent brownish, glabrous or nearly so.

Male flowers 3-4 to form a head on leaf-axila; the head globose or nearly so, 3.5-4.5 mm in diameter, sessile, enclosed by 4-5 bracts when young and cauduous adult; bracts oblong, 0.35-0.4 mm long, 0.25-0.35 mm wide, obtuse at apex, transparent white with





Fig. 496. *Chamabainia guanwuensis* S. S, Ying, female inflorescences



Fig. 497. *Chamabainia guanwuensis* S. S, Ying, close-up of female inflorescence  
(mind bracts enclosed the inflorescence and bracteols at base of flowers)



Fig. 498. *Chamabainia guanwuensis* S. S, Ying, male inflorescences



Fig. 499. *Chamabainia guanwuensis* S. S, Ying, close-up of male inflorescence



one green vein; bracteoles minute to absent; pedicels 0.4-0.5 mm long, white, transparent; perianth tube campanulate, 0.3 mm long, 4-lobed at apex; lobes triangular, 0.3 mm long, obtuse at apex, hairy outside; stamens 4, filaments exerted, 0.4 mm long, white; anthers ovoid, white to yellow.

Achenes ovoid, 0.8-1.1 mm long, smooth, glabrous, somewhat lustrous black when mature.

### Diagnosis.

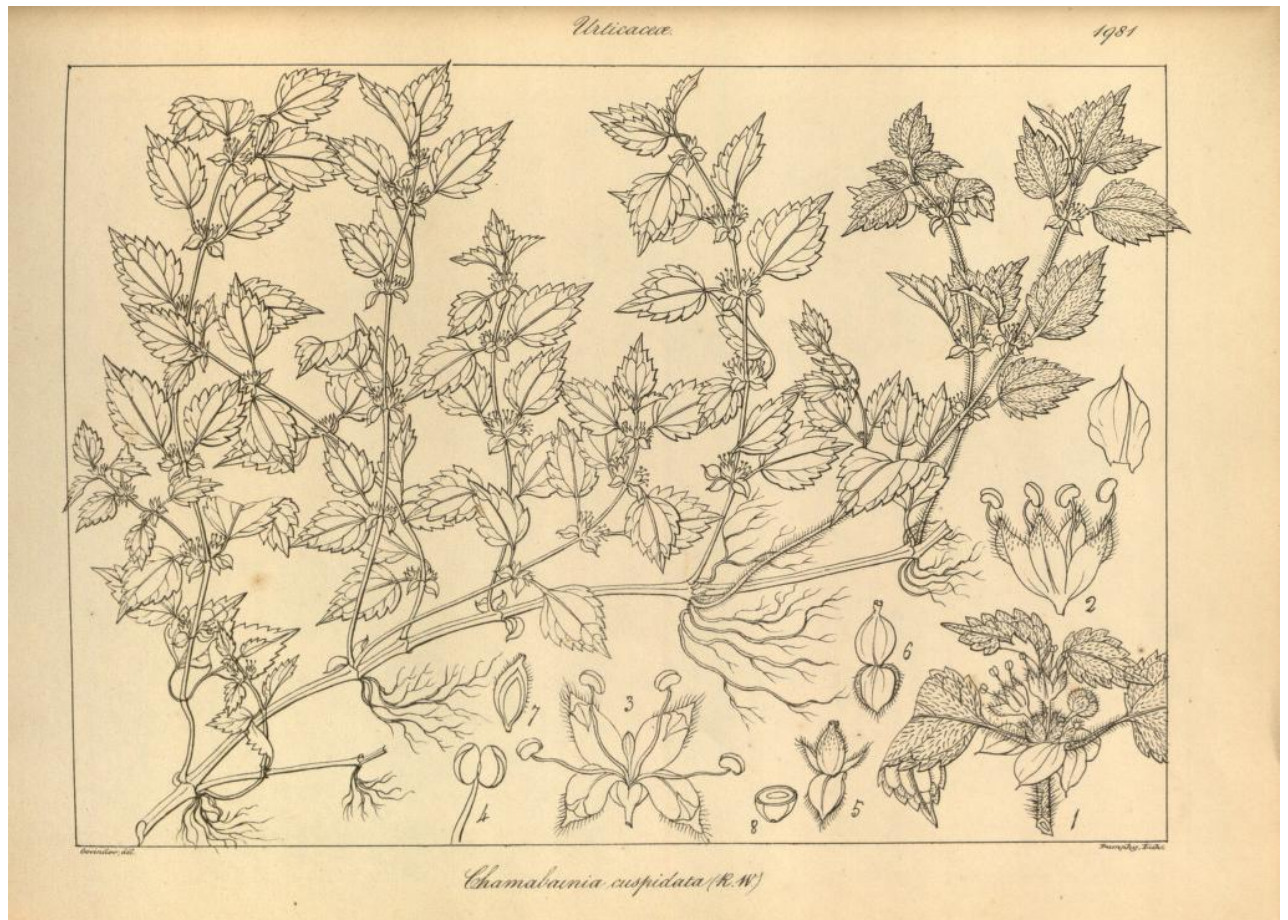
*Chamabainia guanwuensis* is characterized by its dioecious flowers; which the 8-12 female flowers to form a head on the leaf-axils, which enclosed by several bracts; bracts oblong, 0.5-0.6 mm long, 0.4-0.5 mm wide, obtuse at apex; bracteoles at base of each flowers. Male flowers 3-4 to form a head on leaf-axila; the head globose or nearly so, 3.5-4.5 mm in diameter, sessile, enclosed by 4-5 bracts; bracteoles minute to absent; pedicels 0.4-0.5 mm long, white, transparent; perianth tube campanulate, 0.3 mm long, 4-lobed at apex; lobes triangular, 0.3 mm long, obtuse at apex; stamens 4.

Examined the original fig of *Chamabainia cuspidata* Wight from *Icon. Pl. Ind. Orient. 6: 11 (1853)* very carefully, I am sure that our species is much different from it. Our species the flowers usually to form a head, enclosed by several bracts; the female flowers with bracteoles at each flower; the bracteoles usually lacerate or long-ciliate at margins; the male flowers with pedicels and perianth-tube, the perianth lobes triangular, hairy outside.

Of course, *Chamabainia cuspidata* Wight also occurs in Taiwan too.

### Distribution and phenology.

*Chamabainia guanwuensis* S.S. Ying is endemic to Taiwan. It is known from Zhenshan (榛山), Guanwu (觀霧) area, Taian Township (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the forest edge at elevations of 1,900-2350 meters. Its flowering time is August to September and fruiting time is September to October.



*Chamabainia cuspidata* Wight, Icon. Pl. Ind. Orient. 6: 11 (1853)

<https://www.biodiversitylibrary.org/item/1861#page/118/mode/1u> pl. 1982



*Chamabainia cuspidata* Wight, from India [Chamabainia cuspidata – eFlora of India](#)





Fig. 500. *Chamabainia guanwuensis* S. S. Ying, the holotype NTUF-112-092



Fig. 501. *Chamabainia guanwuensis* S. S, Ying, plants growing in suit

B.A New Combination of Genus *Chamabainia* (Urticaceae) in Taiwan

*Chamabainia meifenggensis* (S.S. Ying) S.S. Ying, comb. nov. 梅峰蟲蟻麻

*Chamabainia meifenggensis* (S.S. Ying) S.S. Ying, *comb. nov.* 梅峰蟲蟻麻

*Boehmeria meifenggensis* S. S. Ying, New Taxa & New Names 2:143 2022  
(2019).



### 39. A New species of Genus *Anneslea* (Theaceae) in Taiwan

*Anneslea taiwanensis* S.S. Ying, 台灣茶梨

*Anneslea taiwanensis* S.S. Ying, *sp. nov.* 台灣茶梨

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧), Loshan Forest Road (樂山林道), 2540 m alt. *S. S. Ying*, *s.n. August 24, 2023* ° (holotype , NTUF) °



Fig. 502. *Anneslea taiwanensis* S. S. Ying, flowers mind hiars on the whole plant

**Morphology :** Evergrteen trees up to 10 m high, trunks short, smooth, grayish, much branched; branches numerous, somewhat pendulous to ascending, pubescent, especially when young, grayish black. Leaves simple, alternate, lanceolate, 3.5-6.5 cm long, 1-1.5 cm wide, acute at apex, attenuate at base, thinly coriaceous, entire and shortly ciliate at margins, lustrous green surface, pale green beneath, glabrous surface and pubescent

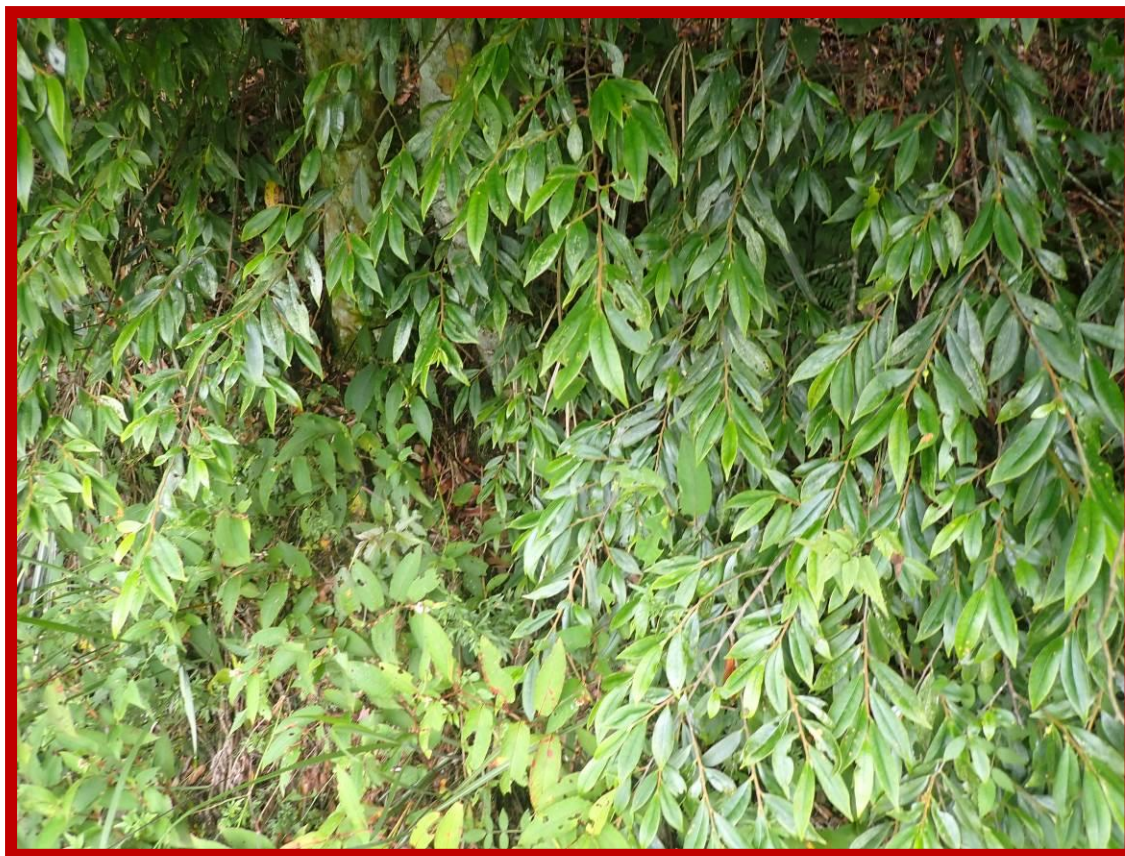


Fig. 503. *Anneslea taiwanensis* S. S. Ying, branches and leaves

beneath, especially along midrib and lateral veins; midrib imperessed surface and elevated beneath; lateral veins inconspicuous but elevated beneath. Petioles 5-8 mm long, terete, pubescent.

Flower pale yellow, solitary or 2 fascicled, bear on branchlet and leaf-axil, not widely opened, 5-6 mm in diameter when opened; pedicels 6-8 mm long, hirsute all over; bracts 2, oblong, 3-4 mm long, 2.5-3 mm wide, obtuse at apex, pale brownish; sepals 5, imbricate in bud, ovate, 5-6 mm long, 3.5-5 mm wide, obtuse at apex, densely hirsute outside and glabrous inside, entire at margins pale yellowish green to pale green; petals 5, white, oblong to ovate-oblong, 8-13 mm long, 5.5-7 mm wide, obtuse at apex, basally connate for 1 mm long, hirsute outside especially at middle part, glabrous inside; stamens many, filament short, basally connated, 2.5-3 mm long; anthers ovoid, hairy outside, 1.8-2.6 mm long, with a caudate at apex, orange red; style somewhat robust, column-like, 3.5-3.5 mm long, green, hairy basally; stigma capitate, not branched.





Fig. 504. *Anneslea taiwanensis* S. S. Ying, inflorescences



Fig. 505. *Anneslea taiwanensis* S. S. Ying, flowers

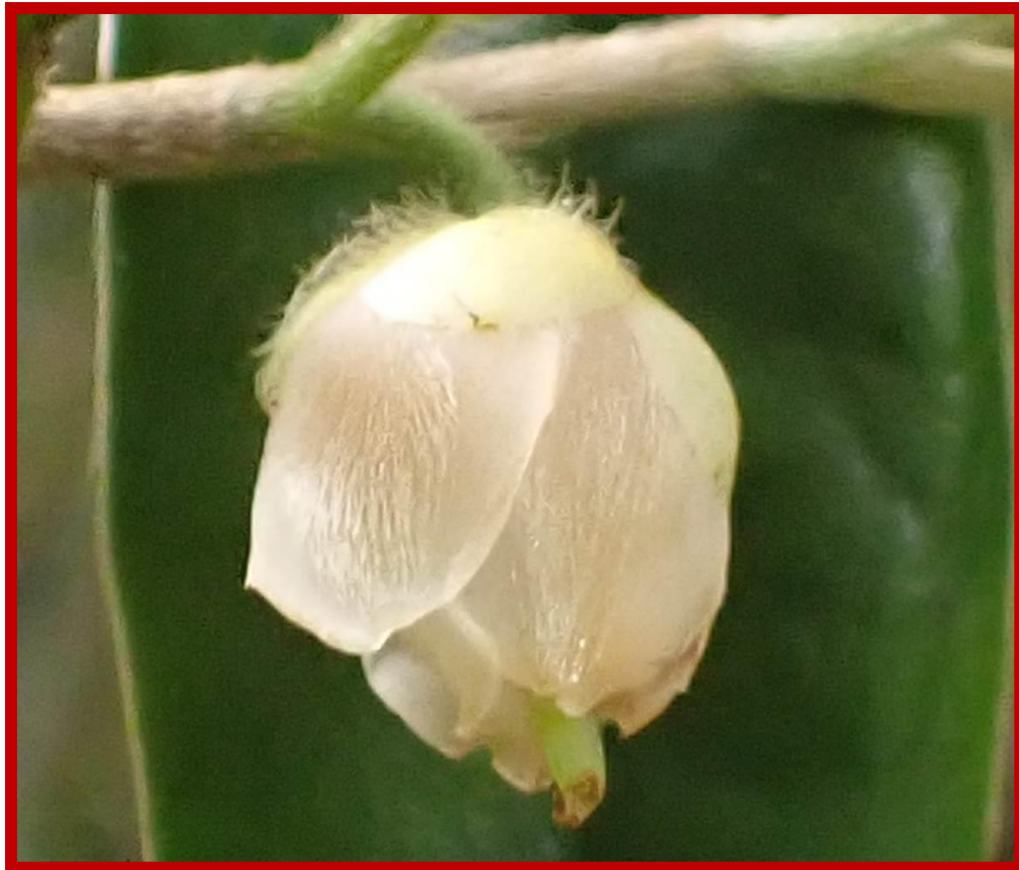


Fig. 506. *Anneslea taiwanensis* S. S. Ying, close-up of a flower

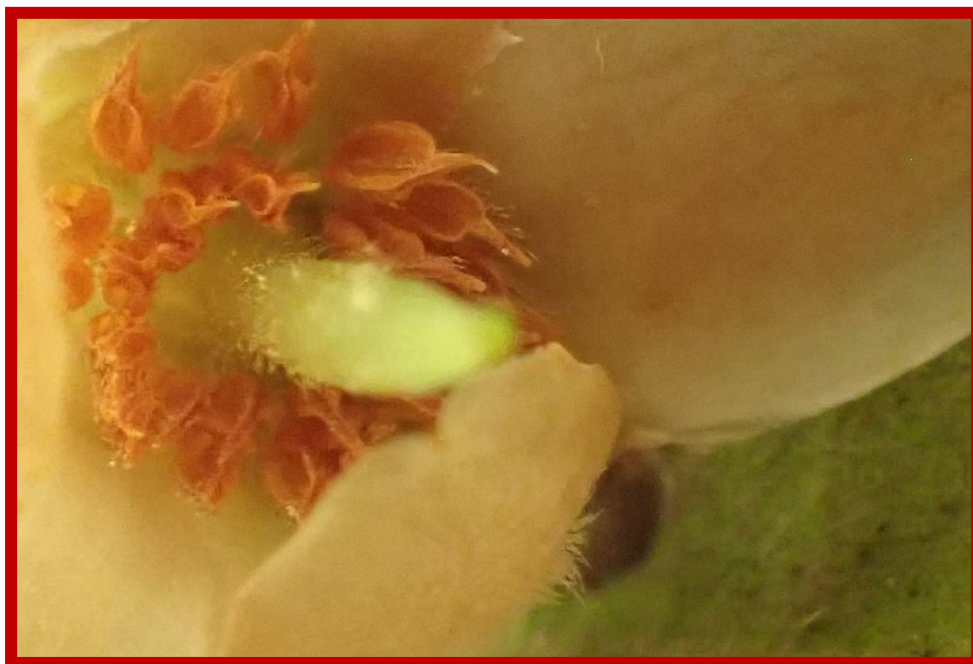


Fig. 507. *Anneslea taiwanensis* S. S. Ying, close-up of anthers and style





Fig. 508. *Anneslea taiwanensis* S. S. Ying, the holotype NTUF-112-093



Fig. 509. *Anneslea taiwanensis* S. S. Ying, the isotype NTUF-112-094





Fig. 510. *Anneslea taiwanensis* S. S. Ying, close-up of petal and stamens



Fig. 511. *Anneslea taiwanensis* S. S. Ying, close-up of filaments and anthers

Fruit ellipsoid, 1.5-2 cm long, 1.3-1.8 in diameter, dehiscent between persistent enlarged sepals; seeds obovoid, 6-7 mm long, 3-5 mm wide, with a fleshy outer layer.



Fig. 512. *Anneslea taiwanensis* S. S. Ying, inflorescences

### Diagnosis.

*Anneslea taiwanensis* is characterized by its pubescent plant especially at branches, branchlets, leaves beneath, pedicels, sepal and petals; flowers solitary to 2 fascicled and orange red anthers with caudate at apex.

### Distribution and phenology.

*Anneslea taiwanensis* S.S. Ying is endemic to Taiwan. It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the forest edge at elevations of 2,400-2,650 meters. Its flowering time is August to September and fruiting time is October to November.





Fig. 513.*Anneslea taiwanensis* S. S. Ying, plants growing in situ





Fig. 514.*Anneslea taiwanensis* S. S, Ying,fruits, photo on September 21, 2023

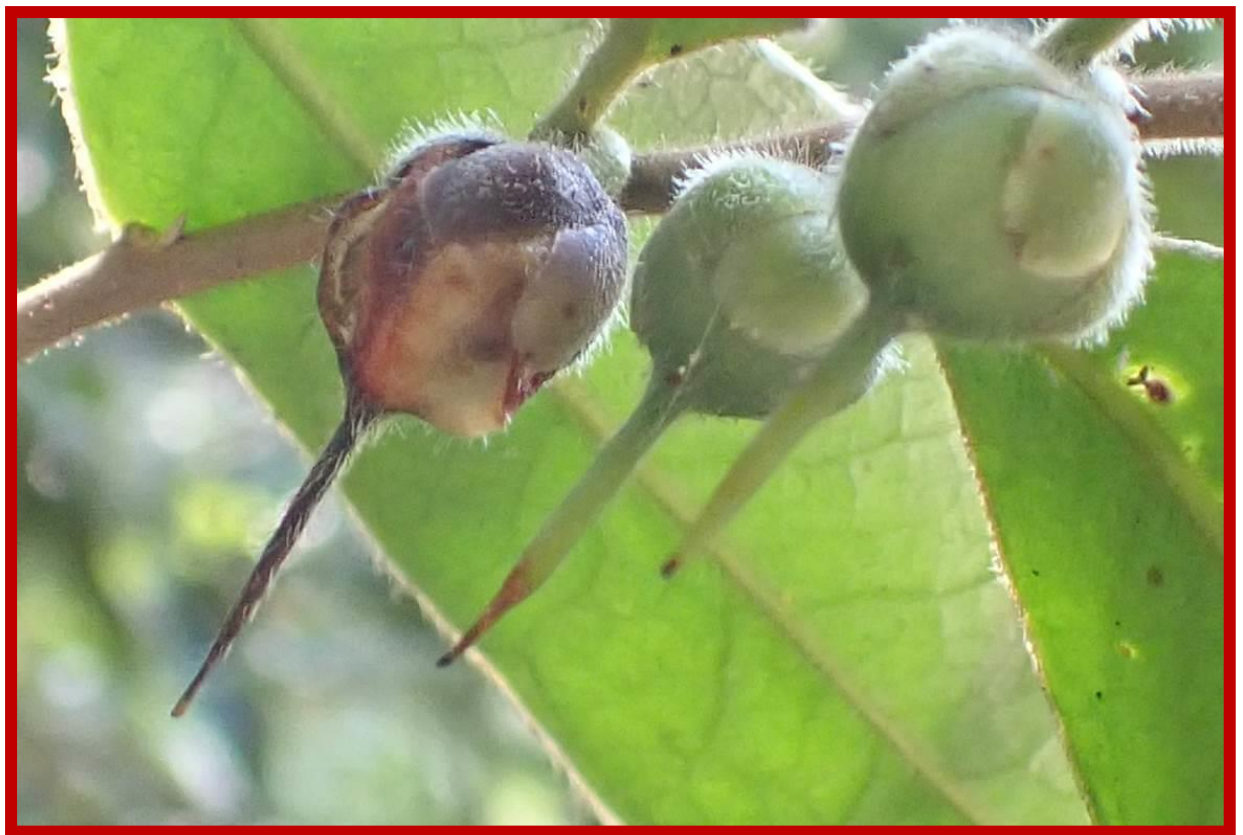


Fig. 515.*Anneslea taiwanensis* S. S, Ying,fruits, photo on Octoberr 26, 2023



#### 40. A New species of Genus *Strobilanthes* (Acanthaceae) in Taiwan

*Strobilanthes taiwanensis* S.S. Ying, 台灣山藍

*Strobilanthes taiwanensis* S.S. Ying, *sp. nov.* 台灣山藍

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧), Loshan Forest Road (樂山林道), 2560 m alt. *S. S. Ying*, *s.n. August 24, 2023* ° (holotype , NTUF) °



Fig. 516. *Strobilanthes taiwanensis* S. S. Ying, plants growing in suit

**Morphology** : Annual herbs, somewhat prostrate in habit, usually to form a plant colony on ground. Stem elongate 15-30 cm long, prostrate to ascending, angular, white hairy; branchlets many, prostrate to creeping, 7-15 cm long, hairy. Leaves simple, opposite, ovate to ovate-oblong, 2.5-4 cm long, 9-16 mm wide, acuminate to a short caudate at apex,



Fig. 517. *Strobilanthes taiwanensis* S. S, Ying, branchlets, leaves and flower-buds

obtuse to slightly cordate at base, chartaceous, dentate and short ciliate at margins, hairy on both surfaces, midrib and lateral veins (3-5 per side) impressed surface and elevated beneath. Petioles 9-15mm long, slightly winged, grooved above, pubescent.



Fig. 518. *Strobilanthes taiwanensis* S. S, Ying, flower-buds



Flowers usually 3, rarely 2 or 4 fascicled at upper part leaf-axil of brachlets, light blue to violet, 2-2.5 cm in diameter when opened, usually opened one by one, not opened at same time; pedicels short, 5-7 mm long, hairy; each flower subtended by 4-5 bracts at



Fig. 519. *Strobilanthes taiwanensis* S. S. Ying, inflorescence

top of pedicels; bracts ovate, 1-2.3 cm long, 6-1.5 cm wide, acute, obtuse at base, dentate at margins, hairy on both surfaces; calyx tubular, 9-12 mm long, 5-lobed at apex; the tube 5-7 mm long, white, glabrous; lobes lanceolate to linear-lanceolate, 4-6 mm long, acute at apex, green, glabrous; corolla campanulate, 1.8-2.4 cm long, blue-violet in color, smooth outside, white netted veins inside, glabrous outside and pubescent inside, 5-lobed at apex; lobes somewhat equal, widely elliptic, 4-5.5 mm long, 6-7 mm wide, rounded to obtuse and emarginate or slightly 2-lobed at apex, glabrous; stamens 4, included, basally attached to corolla; filaments 2 longer than other two, slender, 6-12 mm long, white, villous at base; anthers at longer filament functional, reniform, 2-2.5 mm long, pale yellow, bithecate; anthers at short filaments not functional, grain-like; ovary oblong, about 2.5 mm long, 2 mm across, glabrous, 2-locular; style, slender, 1.3-2.2 cm long, white; stigma 2-cleft with one branch longer.



Fig. 520. *Strobilanthes taiwanensis* S. S, Ying, bracts, calyx and corolla



Fig. 521. *Strobilanthes taiwanensis* S. S, Ying, close-up of a flower





Fig. 522. *Strobilanthes taiwanensis* S. S. Ying, longitudinal secn of a flower

#### Diagnosis.

*Strobilanthes taiwanensis* is characterized by its annual herbs, stem and branches somewhat prostrate with ovate to ovate-oblong leaves; flowers 3 fascicles at leaf-axil of upper part of branchlets, usually opened one by one, not open at same time; each flower subtended by 4-5 bracts; calyx tube white and lobes white with pale blue to violet corolla; smooth outside, white netted veins inside, glabrous outside and pubescent inside, 5-lobed at apex.

#### Distribution and phenology.

*Strobilanthes taiwanensis* S.S. Ying is endemic to Taiwan. It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species under the forest at elevations of 2,400-2,650 meters. Its flowering time is August to September and fruiting time is October to November.



Fig. 523. *Strobilanthes taiwanensis* S. S. Ying, the holotype NTUF-112-095





Fig. 524. *Strobilanthes taiwanensis* S. S. Ying, the isotype NTUF-112-096



Fig. 525. *Strobilanthes taiwanensis* S. S. Ying, habitat

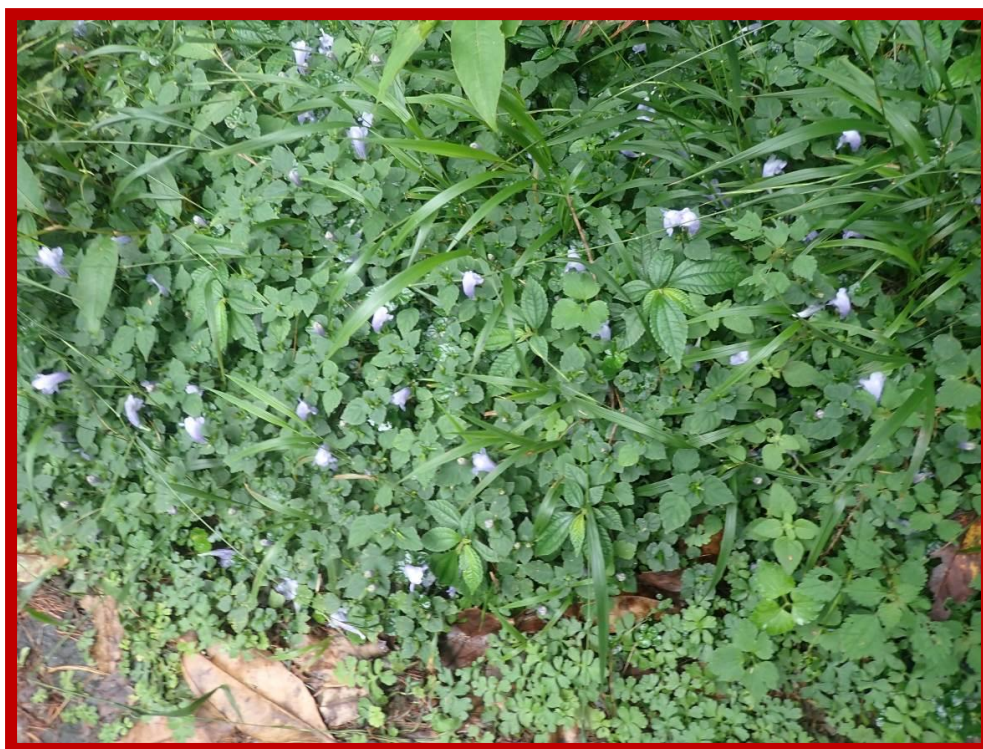


Fig. 526. *Strobilanthes taiwanensis* S. S. Ying, habitat



#### 41. Two New species of Genus *Polygonum* (Polygonaceae) in Taiwan

A. *Polygonum taiwanense* S.S. Ying, 台灣蓼

*Polygonum taiwanense* S.S. Ying, *sp. nov.* 台灣蓼

TYPE: TAIWAN. Taichung City, Hoping District (和平區), Between Tayulin (大禹嶺) and Songchuangang (松泉崗), 2530 m. S. S. Ying, *s.n.* August 05, 2023.  
(holotype, NTUF) °



Fig. 527. *Polygonum taiwanense* S. S. Ying, habit

**Morphology :** Annual herbs, prostrate in habit, spreading on ground. Stem short 8-17 cm long, prostrate, terete, red in color, hairy, branched at base; branches prostrate to creeping, 5-10 cm long, hairy. Leaves simple, alternate, oblong to ovate, 1.1-1.7 cm long, 5-6 mm wide, acute at apex, obtuse at base, chartaceous, few dentate and wavy at margins, scattered hairy on both surfaces, lustrous green surface and pale green beneath, midrib

impressed surface and elevated beneath, lateral veins inconspicuous. Petioles 2.5-3 mm long, somewhat winged, hairy; sheathes 1.5-2 mm long.



Fig. 528. *Polygonum taiwanense* S. S. Ying, branches and leaves

Flowers small, white, not widely opened, 2-3 mm in diameter when opened, 12-15 flowers fascicled on the terminal of branchlets; peduncles 1.2-3.5 cm long, red, with red gland-hairy; bracts ovate, 7-11 mm long, 3-3.5 mm wide, acute at apex, hairy; bracteoles linear, 3-4 mm long, 1 mm wide, at base of each flowers; perianth-segments 5, ovate, 3-3.5 mm long, 2-2.5 mm wide, obtuse at apex; stamens 4-5, included; filaments short, 1.2-2 mm long; anthers grain-like, 0.5 mm across, black; style 2-clefted at apex, included; ovary smooth, glabrous..





Fig. 529. *Polygonum taiwanense* S. S. Ying, inflorescences



Fig. 530. *Polygonum taiwanense* S. S. Ying, close-up an inflorescence



Fig. 531. *Polygonum taiwanense* S. S. Ying, the holotype      NTUF-112-097



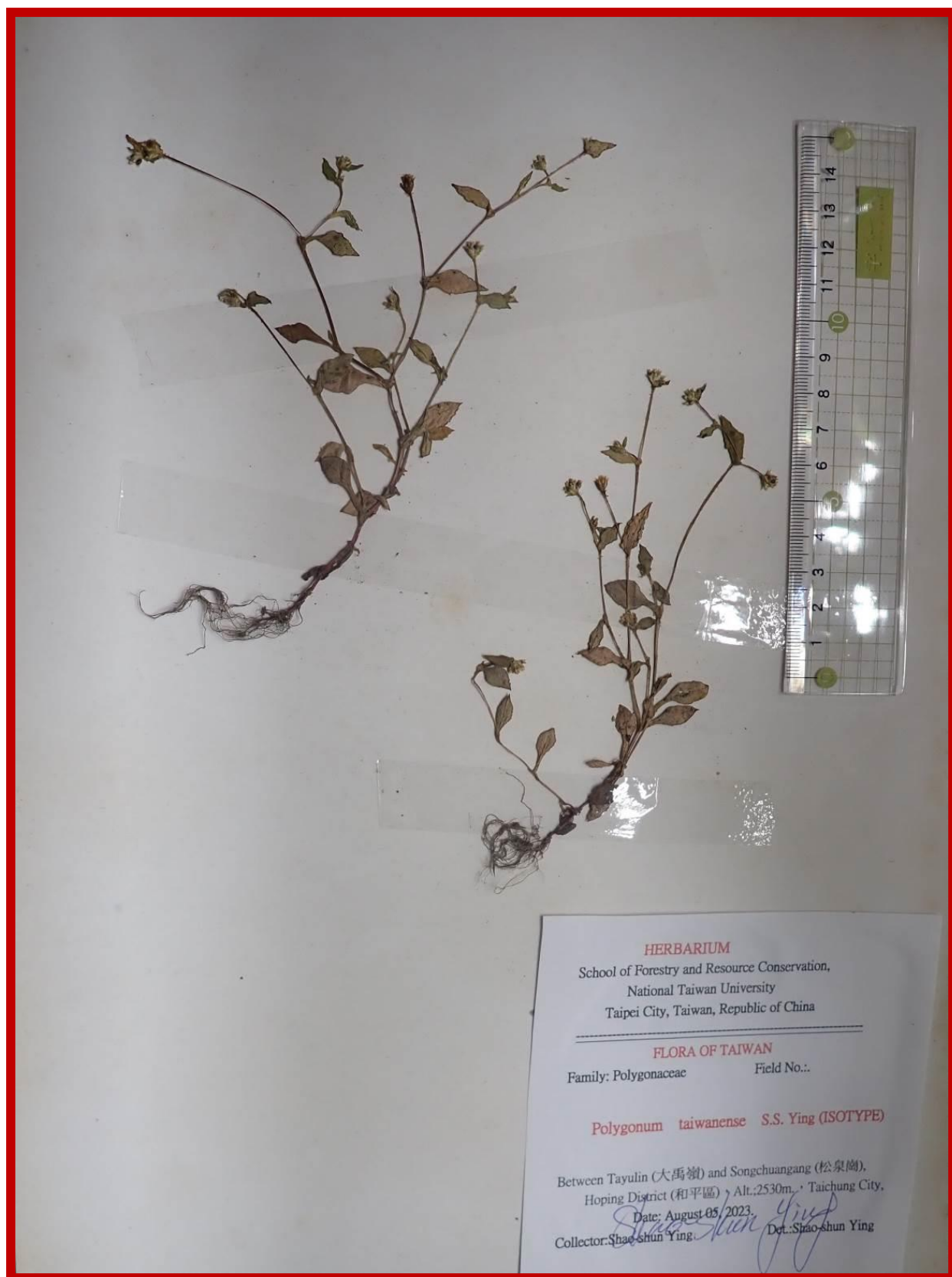


Fig. 532. *Polygonum taiwanense* S. S. Ying, the isotype NTUF-112-098



Fig. 533. *Polygonum taiwanense* S. S. Ying, close-up an inflorescence

#### Diagnosis.

*Polygonum taiwanense* is characterized by its annual herbs, stem and branches red color, prostrate in nature; leaves small, blong to ovate, 1.1-1.7 cm long, 5-6 mm wide, 12-15 flowers fascicled on the terminal of branchlets; peduncles 1.2-3.5 cm long, red, with red gland-hairy; with linear bracteoles, at base of each flowers.

#### Distribution and phenology.

*Polygonum taiwanense* S.S. Ying is endemic to Taiwan ° It is known from Tayulin (大禹嶺), Central Cross-Island Highway, Hoping District (和平區), Taichung City, central Taiwan ° It was collected on the roadsides of the highway, between 2450 and 2650 m elevation and flowering time from August to September, fruiting time from September to October °



**B.***Polygonum loshanense* S.S. Ying, 樂山蓼

*Polygonum loshanense* S.S. Ying , *sp. nov.* 樂山蓼

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉) , Guanwu (觀霧), Loshan Forest Road (樂山林道), 2340 m alt. *S. S. Ying* , *s.n. September 21, 2023* ° (holotype , NTUF) °



Fig. 534. *Polygonum loshanense* S. S, Ying, habitat

**Morphology** : Annual herbs, prostrate in habit, spreading on ground. Stem elongate, 30-50 cm long, prostrate, terete, red in color, glabrous, branched at base; branches prostrate to creeping, 25-30 cm long, glabrous. Leaves simple, alternate, ovate-triangular, 3.5-5.5 cm long, 2-2.5 mm wide, acuminate at apex, truncate at base, chartaceous, entire and slightly wavy at margins, glabrous on both surfaces, lustrous green surface and pale green beneath, -427-

midrib impressed surface and elevated beneath, lateral veins inconspicuous. Petioles 8.5-12 mm long, conspicuous winged at both sides, glabrous; sheathes 1.5-2 mm long,



Fig. 535. *Polygonum loshanense* S. S. Ying, branches and leaves

Flowers small, white tinged with pink at apex, not widely opened, 2.5-3.5 mm in diameter when opened, 16-22 flowers fascicled a clustered inflorescence, and usually 2-clustered inflorescences on the terminal of branchlets; peduncles 1.5-2.5 cm long, red, glabrous; bracts leaf-like, but much smaller, 2-3 cm long, 8-9.5 mm wide, acutminate at apex, glabrous; bracteoles ovate, 3-5 mm long, 2 mm wide, at base of each flowers; perianth-segments 4, oblong, 3-3.5 mm long, 2-2.5 mm wide, obtuse at apex; stamens 4, included; filaments short, 1.2-2 mm long; anthers grain-like, 0.5 mm across, black; style 2-clefted at apex, included; ovary smooth, glabrous.





Fig. 536. *Polygonum loshanense* S. S. Ying, inflorescences

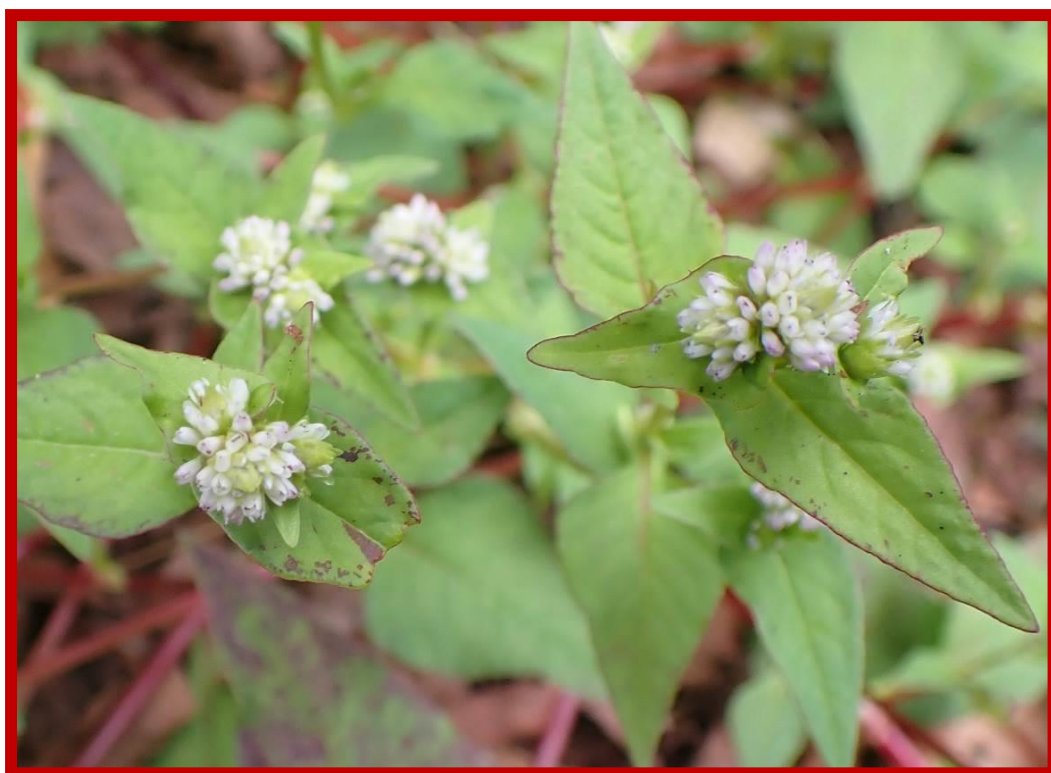


Fig. 537. *Polygonum loshanense* S. S. Ying, close-up of inflorescences

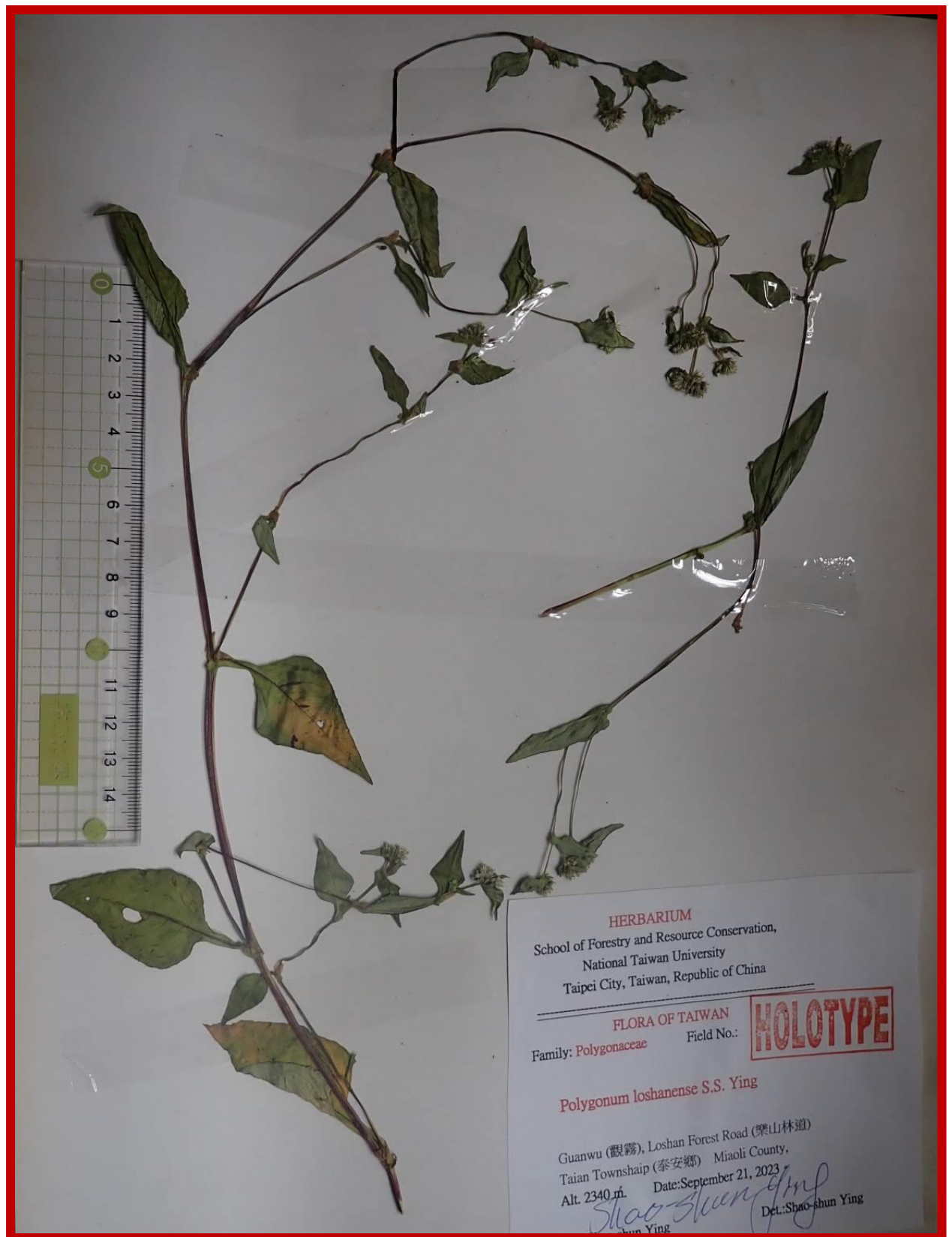


Fig. 538. *Polygonum loshanense* S. S. Ying, the holotype NTUF-112-099





Fig. 539. *Polygonum loshanense* S. S. Ying, the isotype NTUF-112-100



Fig. 540. *Polygonum loshanense* S. S. Ying, close-up of flowers

#### Diagnosis.

*Polygonum loshanense* is characterized by its annual creeping herbs, stem and branches red color; leaves ovate-triangular with conspicuous winged at both sides petioles; flowers small, white tinged with pink at apex, not widely opened, usually 16-22 flowers fascicled a clustered inflorescence, 2-clustered inflorescences on the terminal of branchlets and perianth lobes and stamens 4 in number.

#### Distribution and phenology.

*Polygonum loshanense* S.S. Ying is endemic to Taiwan. It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on sunny roadsides at the elevations of 2,300-2,650 meters. Its flowering time is September and fruiting time is October to November.





Fig. 541. *Polygonum loshanense* S. S. Ying, habitat



42. A New species of Genus *Trichosanthes* (Cucurbitaceae) in Taiwan

*Trichosanthes taiwanensis* S.S. Ying, 台灣括樓

*Trichosanthes taiwanensis* S.S. Ying, *sp. nov.* 台灣括樓

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 410 m alt. S. S. Ying, *s.n.* September 07, 2023. (holotype, NTUF).



Fig. 542. *Trichosanthes taiwanensis* S. S. Ying, plant with female flower

**Morphology :** Annual climbers, stem elongate, 10-12 m long, much branches, usually forming a plant colony, terete, green, hairy; branches 30-70 cm long, terete, green, hairy. Tendrils 10-15 cm long, slender, straight at middle to base, spring-like from middle to





Fig. 543. *Trichosanthes taiwanensis* S. S. Ying, leaves

apex, 2-branched at apex, equal, 6-8 mm long, straight. Leaves simple, alternate, ovate, 9-13 cm long, 7-9 cm long, acuminate at apex, deeply cordate at base, chartaceous, dentate to shallowly 3-lobed at margins, lustrous green surface and pale green beneath, glabrous surface and scattered hairy, especially on veins, 5-palmate veins impressed surface and elevated beneath. Petioles 4-7 cm long, terete, green, hairy.

Flower dioecious, male flowers unknown; female flower solitary, white, axillary at leaf-axil, scentless, 4-4.5 cm in diameter when opened; pedicels short, robust, 4-5 mm long, green, hairy; bracts minute, ovate, 2-3 mm long, 1.5 mm wide, acute at apex; calyx-

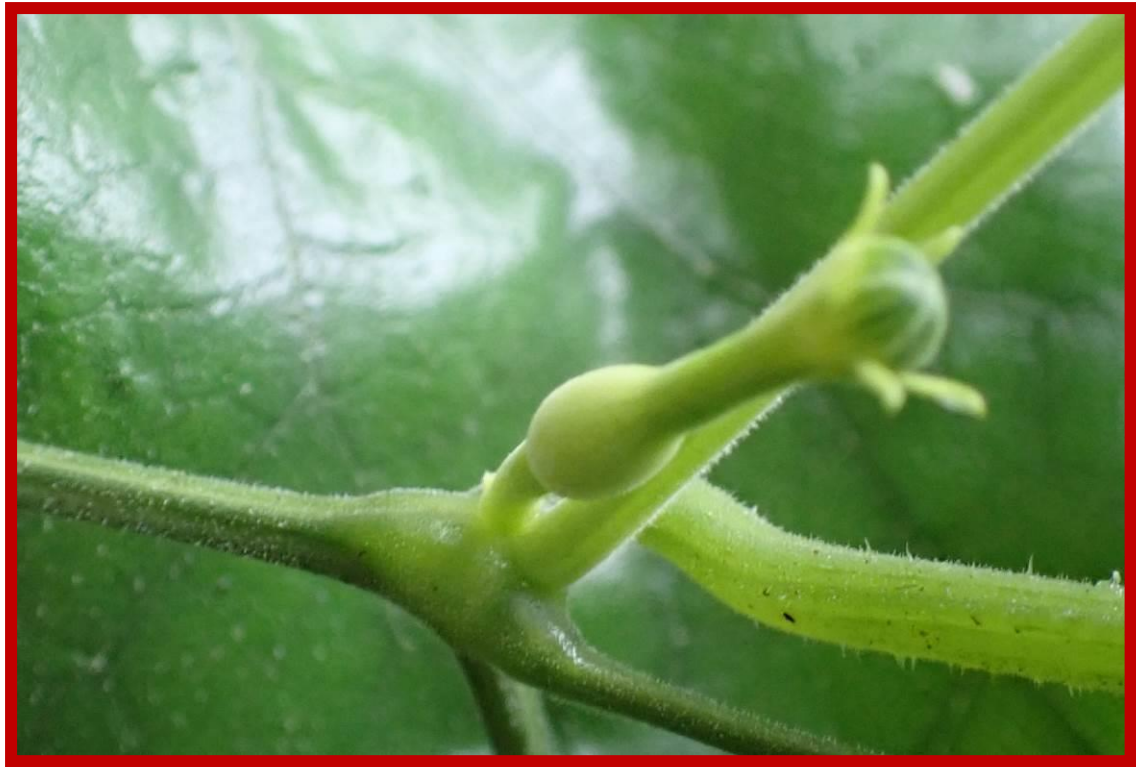


Fig. 544. *Trichosanthes taiwanensis* S. S. Ying, flower-bud, minute bracts



Fig. 545. *Trichosanthes taiwanensis* S. S. Ying, flower



tube cylindrical, 5.5-6.5 mm long, green hairy outside and glabrous inside, 5-lobed at apex; lobes linear to linear-lanceolate, 3-5 mm long, about 1.5 mm wide, obtuse at apex, hairy outside; corolla tube elongate, cylindrical, 3.5-4 cm long, 2-2.5 across, hairy outside, 5-lobed at apex; lobes ovate with an elongate cauda at apex, 1.5-2.5 cm long (with cauda), 4-5 mm wide at base; the cauda 2-2.5 mm wide, white and transparent, ciliate at margins; ovary inferior, globose, 4-5.5 mm diameter, green, glabrous or nearly so; style elongate, included, 3-3.5 cm long, white; stigma capitate.



Fig. 546. *Trichosanthes taiwanensis* S. S. Ying, flower and fruit

Fruit a berry, ellipsoid to globose, 6-7 cm long, 4-5.2 cm across, green with white longitudinally pale-striped (immature fruit), glabrescent, pulp creamy white. Seeds many, compressed, elliptic, 7-9 mm long, 6-7 mm wide, obtuse at apex. Pedicels 2-4 cm long, robust, glabrous to few hairy.

#### **Diagnosis.**

*Trichosanthes taiwanensis* is characterized by its annual herbs, leaves simple, entire

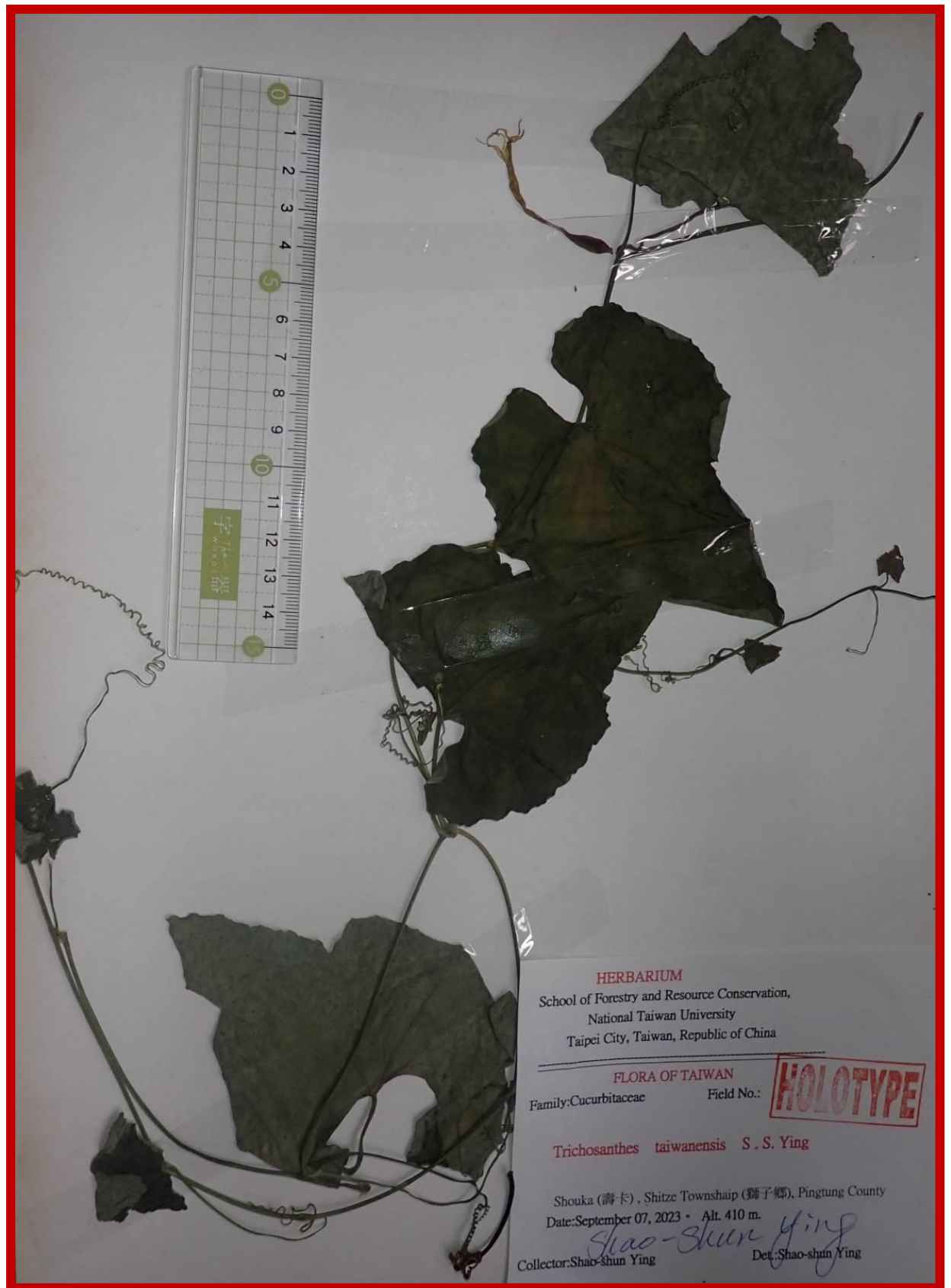


Fig. 547. *Trichosanthes taiwanensis* S. S. Ying, the holotype NTUF-112-101



to shallowly 3-lobed; flowers dioecious; bracts minute; calyx with long calyx tube and 5-lobed sepals; corolla tube elongated with 5-lobed; the lobes ovate with an elongated cauda at apex, 1.5-2.5 cm long (with cauda), 4-5 mm wide at base; the cauda white and transparent, ciliate at margins; fruit ellipsoid to globose.



Fig. 548. *Trichosanthes taiwanensis* S. S. Ying, habitat

#### **Distribution and phenology.**

*Trichosanthes taiwanensis* S.S. Ying is endemic to Taiwan ° It is known from Shouka (壽卡), Shitze Township (獅子鄉) , Pingtung county , southern Taiwan ° It was collected on under of natural forests, between 360 and 420 m altitudes; and flowering times is from September to October and fruiting times from October to November.





Fig. 549. *Trichosanthes taiwanensis* S. S. Ying, Photo on 09 November 2023



Fig. 550. *Trichosanthes taiwanensis* S. S. Ying, Photo on 09 November 2023



### 43. A New species of Genus *Aspidistra* (Asparagaceae) in Taiwan

*Aspidistra shokaensis* S.S. Ying, 壽卡蜘蛛抱蛋

*Aspidistra shoukaensis* S.S. Ying, *sp. nov.* 壽卡蜘蛛抱蛋

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉), Shouka (壽卡) 430 m alt. *S. S. Ying*, *s.n.* September 07, 2023. (holotype, NTUF).



Fig. 551. *Aspidistra shoukaensis* S. S. Ying, flower

**Morphology :** Perennial rhizomatous herb about 25-45 cm tall. Rhizomes horizontal 3-5 mm diameter, woody; roots numerous, fibrous, elongated, 5-8 cm long, somewhat rigid. Leaves solitary from rhizome, accompany with one cataphyll; cataphyll lanceolate, 2.5-3 cm long, 3-4 mm wide, acute to acuminate at apex, green, glabrous, cauducous and degrades into fibers. Leaves oblong to oblong-lanceolate, 15-35 cm long, 3-4 cm wide,



Fig. 552.*Aspidistra shoukaensis* S. S, Ying, habit



Fig. 553.*Aspidistra shoukaensis* S. S, Ying, flower see from front side



acuminate at apex, obtuse to attenuate to petiole at base, coriaceous, entire at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, midrib impressed surface and elevated beneath; lateral veins numerous visible to inconspicuous. Petioles erect to ascending, stiff, 7-14 cm long, green, slightly grooved, glabrous, slightly winged on both sides.



Fig. 554. *Aspidistra shoukaensis* S. S. Ying, close-up of a flower

Flower solitary, arising laterally from leafy part of the rhizome; peduncles very short, 2.5-4 mm long, robust, pale yellow, glabrous; bracts 2-3, subtended the flower, ovate, somewhat thickened, 5-6 mm long, 4-5 mm wide, acute at apex, pale yellow with a green apex; perigone campanulate, 9-13 mm long, 1.5-2 cm in diameter, fleshy, 8-lobed at apex, purple to red purple outside, dark purple inside, glabrous; lobes spreading, oblong, 7-11 mm long, 4-6 mm wide, obtuse at apex, fleshy, 2-fleshy dark purple keels at base, dark purple at base and pale purple at apex; stamens 16, attached on the base of perianth-lobe; filaments very short, 0.5 mm long; anthers rounded, 1.5-2 mm across, dorsifixed,



Fig. 555. *Aspidistra shoukaensis* S. S, Ying, longitudinal section of a flower

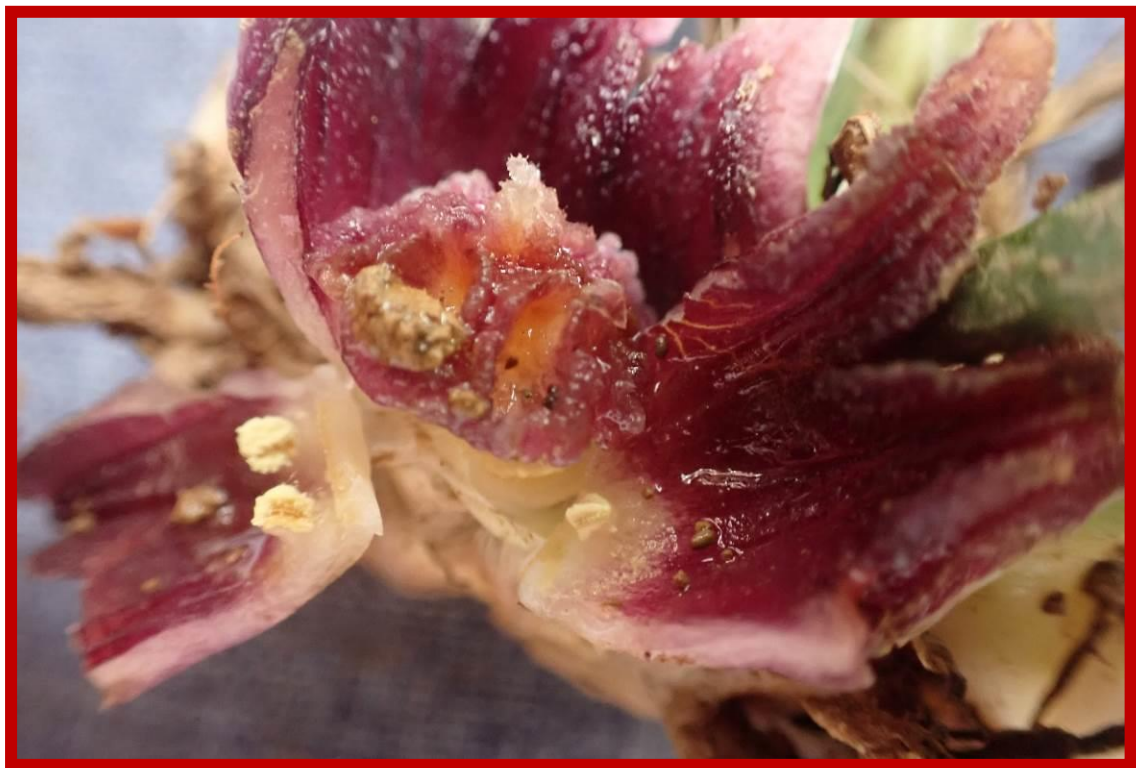


Fig. 556. *Aspidistra shoukaensis* S. S, Ying, each perianth-lobe with 2 stamens





Fig. 557. *Aspidistra shoukaensis* S. S. Ying, the holotype NTUF-112-102



Fig. 558. *Aspidistra shoukaensis* S. S. Ying, the isotype NTUF-112-103





Fig. 559. *Aspidistra shoukaensis* S. S. Ying, close-up of stamens

Pollen yellow; stigma slightly hexagon, fleshy, 6-8 mm long, 8-9 mm wide, with 8 ribs from base to apex, uneven on surface, hairy outside, juiced; style short, white, 2-3 mm long, hairy, emarginate at apex; ovary inconspicuous, superior, 6-8-locular

#### **Diagnosis.**

*Aspidistra shoukaensis* is characterized by its perennial herbs, with somewhat larger flower, which with 8 perianth-lobed, 16 stamens and 6-8 locular ovary.

#### **Distribution and phenology.**

*Aspidistra shoukaensis* S.S. Ying is endemic to Taiwan. It is known from Shouka (壽卡), Shitze Township (獅子鄉), Pingtung county, southern Taiwan. It was collected on under of natural forests, between 380 and 420 m altitudes; and flowering times is from September to October and fruiting times from October to November.

44. A New species of Genus *Paraphlomis* (Lamiaceae) in Taiwan

*Paraphlomis cauliflora* S.S. Ying, 莖花假糙蘇

*Paraphlomis cauliflora* S.S. Ying, *sp. nov.* 莖花假糙蘇

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Tungyanshan (東眼山), , 1193 m alt. *S. S. Ying* , *s.n. September 14, 2023* . (holotype, NTUF) .



Fig. 560. *Paraphlomis cauliflora* S. S. Ying, plant growing in situ

**Morphology** : Perennial herb about 50-65 cm tall. Rhizomes short; roots fibrous,





Fig. 561. *Paraphlomis cauliflora* S. S. Ying, stem and leaves

numerous, slender. Stem simple, erect, white short hairy, terete, green. Leaves simple, opposite, oblong to ovate-oblong, 14-19 cm long, 6-8.5 cm wide, obtuse at apex, broadly cuneate to obtuse at base, chartaceous, serrulate at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, midrib impressed surface and elevated beneath; lateral veins 4-7 per side, impressed surface and elevated beneath. Petioles 5-7 cm long, green, grooved above, hairy.

Flowers 2 verticillate on the leafless upper part of stem, each verticillation contains 9-14 sessile flowers; bracts not seen or absent; calyx calathiform, 5-6 mm tall, 5.5-6.5 mm wide, pale green, glabrous, 5-lobed at apex, 5-fissure between the lobes; the lobes small, ovate-triangular, 1.5-2.5 mm long, 2.6 mm wide at base, acute and apiculate, persistent; corolla unknown; stamens 4; style filiform, included, glabrous, subequal 2-lobed at apex; ovary 4-loculed, dark green, glabrous.

Nutlets 4, solid triangular, 2.5-3.5 mm long, 2.7 mm wide, thickened along margins, glabrous, dark green. Seeds few, elliptic, 1.5 mm long, pale yellow.



Fig. 562. *Paraphlomis cauliflora* S. S. Ying, inflorescences

**Diagnosis.**

*Paraphlomis cauliflora* is characterized by its 9-14 sessile, flowers verticillated at leafless, upper part of stem; calathiform calyx 5-lobed at apex and 5-fissure between the lobes.



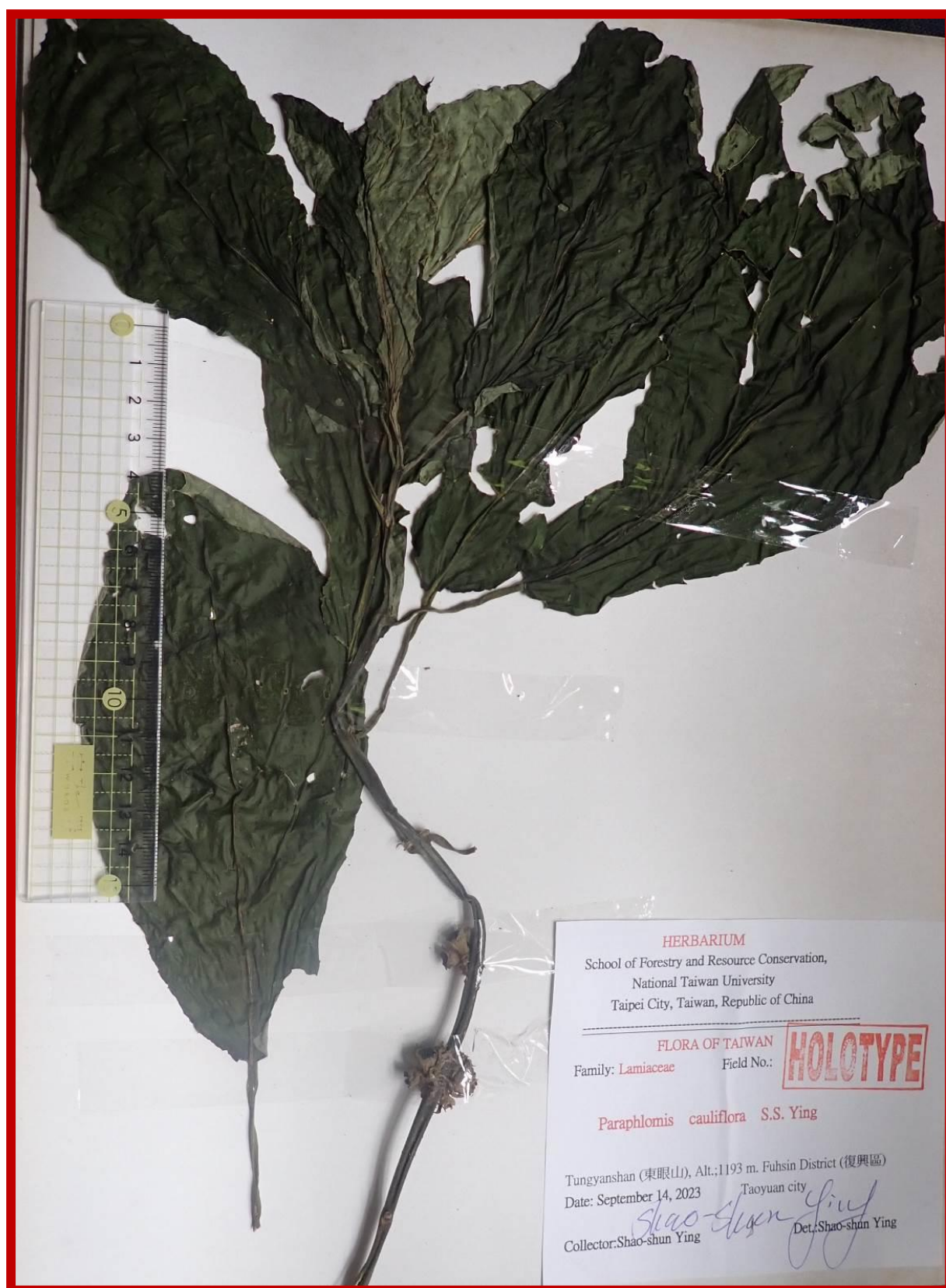


Fig. 563. *Paraphlomis cauliflora* S. S. Ying, the holotype NTUF-112-104

### Distribution and phenology.

The species is endemic in Taiwan, It is known from Tungyuanshan (東眼山) , Fuhsin District (復興區) , Taoyuan city , northern Taiwan. ° It was discovered the species under *Cryptomeria* forests at elevations of 1100-1450 meters. Its flowering time is September to October, and fruiting time Octobert to November.



Fig. 564. *Paraphlomis cauliflora* S. S. Ying, fruit and nuts

### Distribution and phenology.

The species is endemic in Taiwan, It is known from Tungyuanshan (東眼山) , Fuhsin District (復興區) , Taoyuan city , northern Taiwan. ° It was discovered the species under *Cryptomeria* forests at elevations of 1100-1450 meters. Its flowering time is Augustr to September, and fruiting time September to November.



#### 45. A New species of Genus *Clinopodium* (Lamiaceae) in Taiwan

*Clinopodium loshanense* S.S. Ying, 樂山光風輪

*Clinopodium loshanense* S.S. Ying, *sp. nov.* 樂山光風輪

TYPE:TAIWAN. Miaoli County, Taian Townshap (泰安鄉), Guanwu (觀霧), Loshan Forest Road (樂山林道), 2540 m alt. *S. S. Ying*, *s.n.* September 21, 2023 ° (holotype , NTUF) °



Fig. 565. *Clinopodium loshanense* S. S. Ying, inflorescence at upper part of stem

**Morphology** : Annual prostrate to ascending herbs, roots fibrous, slender 2-4 cm long; stem several produced from the root system, elongate, angular, 15-25 cm long, creeping to ascending, green, hairy, sometimes rooting at branched points; branches 4.5-10.5 cm long, green to green tinged with purple, hairy. Leaves simple, opposite, ovate to ovate-oblong, 1.2-2.5 cm long, 8-15 mm wide, obtust to acute at apex, obtuse to slightly cordate at base,



Fig. 566. *Clinopodium loshanense* S. S. Ying, branches and leaves

dentate at margins, chartaceous, lustrous green surface and pale green beneath; glabrous or nearly so on both surfaces; midrib impressed surface and elevated beneath; lateral veins 3-4 per side. Petioles 4-6 mm long, grooved above, hairy.

Flowers small, white to pale pink, numerous, 2-3 mm in diameter when opened, usually 15-29 flowers forming a verticillaster, 3-5 verticillaster to form the inflorescence at upper part of branches, only 1 verticillaster at leaf-axil at the lower part of branches; inflorescence erect to ascending, 3-10 cm long, scattered glandular hairs, green; bracts oblong to oblong-lanceolate, 9-15 mm long, 4.5-7.5 mm wide, acute and 3-lobed at apex, ciliate at margins; pedicels 3-4 mm long, green, scattered hairs; calyx tubular, 4.5-5 mm long, about 2.8 mm wide, usually scattered elongate-hairy outside and glabrous inside, 10-12-nerved, pale purple tinged with green; limb 2-lipped; upper lip 3-toothed, the teeth equal, triangular, 0.9-1.5 mm long, 0.6 mm wide, acute at apex, ciliate at margins; lower lip 2-toothed, linear, longer than the upper ones, 1.4-1.7 mm long, acute at apex, ciliate at margins; corolla pale pink to white, 2-3 mm in diameter when opened, 2-lipped; tube exserted, gradually dilated upward to throat, glabrous or nearly so; upper lip straight,





Fig. 567. *Clinopodium loshanense* S. S. Ying, close-up of an inflorescence

0.5-0.7 mm long, obtuse to slightly emarginate at apex; lower lip 3-lobed, 0.4-0.55 mm long, lateral lobes smaller, obtuse at apex; middle lobe somewhat large, with red spots or specks inside, obtuse at apex; stamens 4, anterior 2 longer than posterior 2, included, filaments slender, 0.8-1.6 mm long; anther cells 2, divaricate,  $\pm$  obliquely inserted on dilated connectives; style slender, included, 0.8-2.7 mm long, unequally 2-cleft; ovary globose, 0.5 mm across, glabrous. Fruit a nutlet, cylindrical, 0.3-0.4 mm long, black.

### Diagnosis.

*Clinopodium loshanense* grows in the medium altitude of central Taiwan, The characteristics of the species states as follows:

1. Annual prostrate to erect herbs, stem several produced from the root system, elongate, 15-25 cm long, creeping to ascending, angular, hairy.
2. Leaves ovate to ovate-oblong, 1.2-2.5 cm long, 8-15 mm wide, obtuse to acute at apex
3. Flowers small, white to pale pink, numerous, 2-3 mm in diameter when opened,



Fig. 568. *Clinopodium loshanense* S. S. Ying, the holotype NTUF-112-105





Fig. 569. *Clinopodium loshanense* S. S. Ying, the isotype NTUF-112-106

usually 15-29 flowers forming a verticillaster, 3-5 verticillaster to form the inflorescence at upper part of branches, only 1 verticillaster at leaf-axil at the lower part of branches;

4. Calyx tubular, usually scattered elongate-hairy outside and glabrous inside, 10-12-nerved, pale purple tinged with green.

5. corolla pink, 2-3 mm in diameter when opened, 2-lipped.



Fig. 570. *Clinopodium loshanense* S. S. Ying, habitat

#### **Distribution and phenology.**

*Clinopodium loshanense* S.S. Ying is endemic to Taiwan. It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshai (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on sunny roadsides at the elevations of 2,300-2,650 meters. Its flowering time is September and fruiting time is October to November.



#### 46. A New species of Genus *Viscum* (Loranthaceae) in Taiwan

*Viscum taiwanianum* S.S. Ying, 台灣槲寄生

*Viscum taiwanianum* S.S. Ying, *sp. nov.* 台灣槲寄生

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興鄉) , Lalashan (拉拉山),  
Between Entrance of trail (步道入口) and Giant trees group (巨木群) , 1994 m alt. *S.*  
*S. Ying* , *s.n.* September 30, 2023 . (holotype, NTUF) .



Fig. 571. *Viscum taiwanianum* S. S, Ying, habitat

**Morphology** : A dioecious, relatively small, but delicate shrub, 30-60 cm long, erect at first and then becoming somewhat pendulous. Stem numerous, fascicled, 8-15 cm long, 8-11 mm across, terete, articulate, somewhat inflated at top, yellowish green, glabrous; branches 4-6 verticillate, 4-6 cm long, 2.5-3.5 mm across, glabrous; branchlets verticillate, 3-5 cm long, 2-leaved at top. Leaves simple, opposite, narrowly oblong, 1.8-2.6 cm long,



Fig. 572. *Viscum taiwanianum* S. S. Ying, branches, branchlets and leaves

6-7 mm wide, obtuse at apex, attenuate at base, coriaceous, entire at margins, glabrous on both surfaces, yellowish green, midrib and veins inconspicuous. Petioles 0, sessile.

Flowers dioecious, male flowers unknown; female flowers mostly 3, rarely 4-5 verticillately fascicled on the top of branchlets, somewhat spike-like; bracts ovate, 2.5-3 mm long, 1.6-2 mm wide, obtuse at apex; peduncles 1.5-2 mm long, fleshy, glabrous; tepals 4, minute; style not evident; stigma somewhat expanded at summit of the ovary.

Fruit a berry, elliptic, 6-7 mm long, 1.5-2 mm across, smooth, yellowish green when young, glabrous, indehiscent, some pectin within the fruit, immersed on spike-like peduncle, without pedicels.





Fig. 373. *Viscum taiwanianum* S. S, Ying, branchlets, leaves and fruits



Fig. 574. *Viscum taiwanianum* S. S, Ying, habit

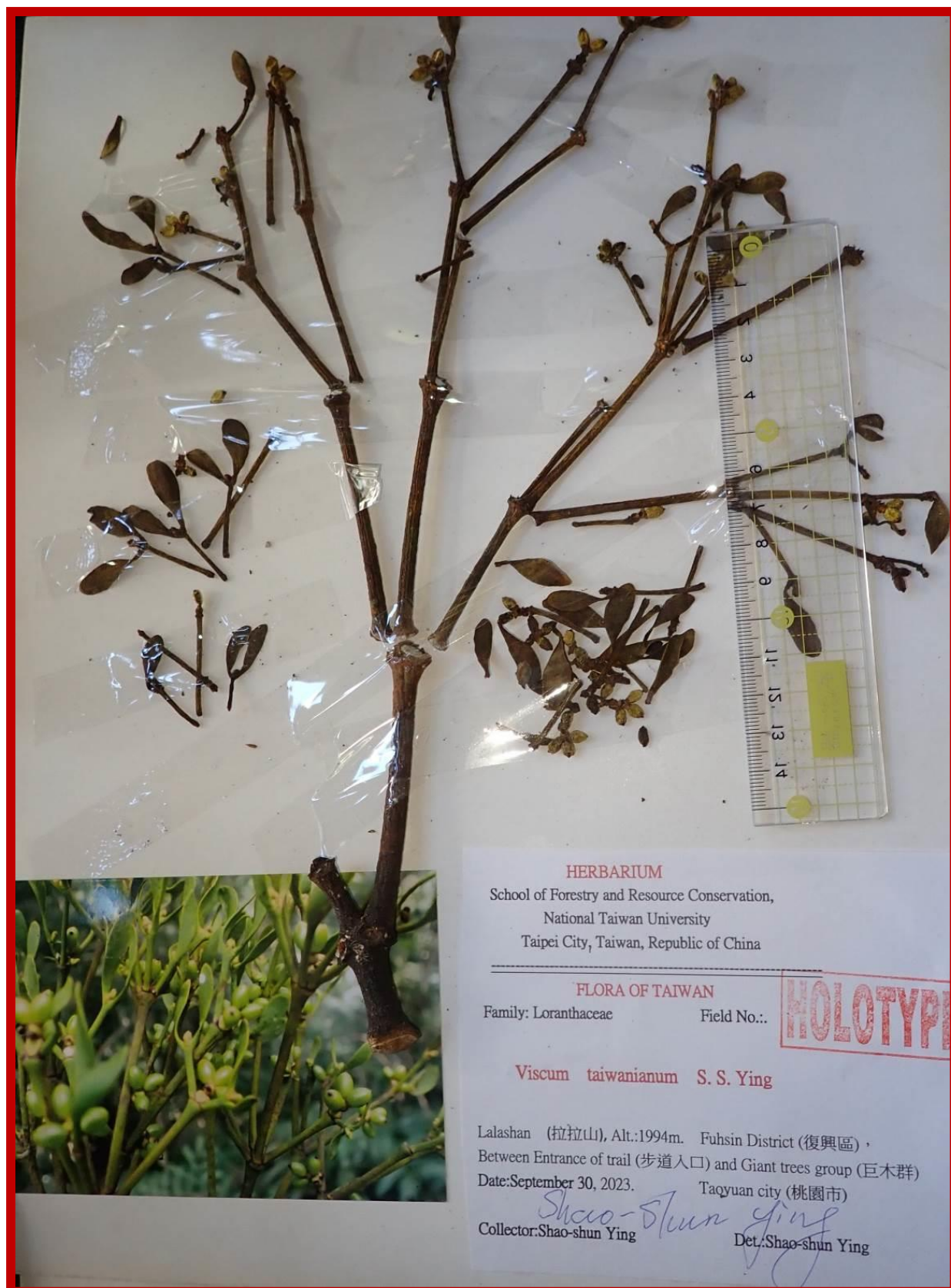


Fig. 575. *Viscum taiwanianum* S. S. Ying, the holotype NTUF-112-107



### Diagnosis.

*Viscum taiwanianum* is characterized by its verticillate branches and branchlets, leaves 2 on the top of branchlets, simple, opposite; flowers dioecious; female flowers mostly 3, rarely 4-5 verticillately fascicled on the top of branchlets, somewhat spike-like; berries elliptic smooth, yellowish green when young, immersed on spike-like peduncle, without pedicels.

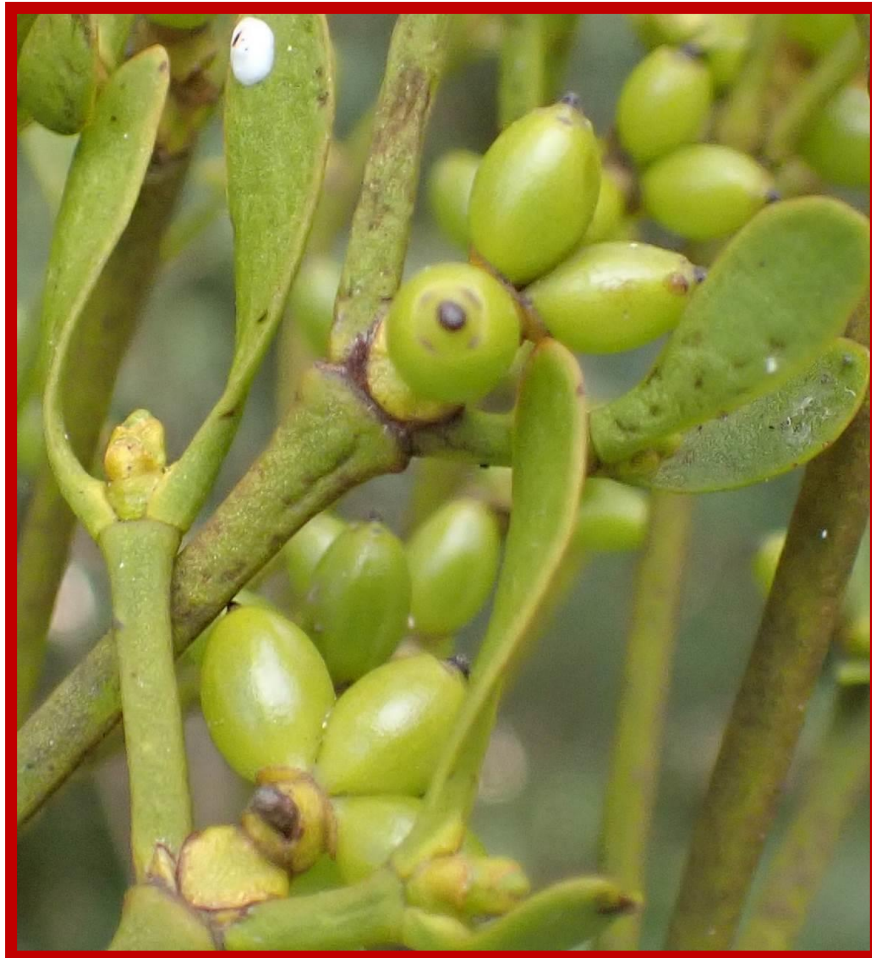


Fig. 576. *Viscum taiwanianum* S. S. Ying, close-up of fruits

### Distribution and phenology.

*Viscum taiwanianum* S.S. Ying is endemic to Taiwan. It is known from Lalashan (拉拉山), Fuhsin District (復興區), Taoyuan city, northern Taiwan. It was discovered the species on the *broad-leaved* forestst at elevations of 1800-2000 meters. Its flowering time is August to September and fruiting September to October.

47. A New species of Genus *Ophiopogon* (Asparagaceae) in Taiwan

*Ophiopogon shuangliuensis* S.S. Ying, 雙流沿階草

*Ophiopogon shuangliuensis* S.S. Ying, *sp. nov.* 雙流沿階草

TYPE:TAIWAN. Pingtung County, Shitze Townshaip (獅子鄉) , Shuangpiu Forest Recreation Area (雙流森林遊樂區) 330 m alt. *S. S. Ying* , *s.n.* *October 19, 2023* .  
(holotype , NTUF) .



Fig. 577. *Ophiopogon shuangliuensis* S. S, Ying, part of inflorescence

**Morphology** : A terrestrial perennial herb, Stemless; rhizome corm-like, tuberous, ellipsoid, fleshy, white, 5-6 mm long, 4-5 mm wide, closely approximate each other; roots many, fibrous, straight, 5-12 cm long, 2-2.5 mm across, somewhat fleshy. Leaves many, fascicled from rhizome, linear, 40-50 cm long, 2.5-3 mm wide, suberect to arching, acuminate to acute at apex, truncate at base, thinly coriaceous, entire at margins, dark





Fig. 578. *Ophiopogon shuangliuensis* S. S, Ying, rhizomes and root system



Fig. 579. *Ophiopogon shuangliuensis* S. S, Ying, leaves

green surface, pale green, midrib elevated surface and elevated beneath, other longitudinal veins inconspuous, glabrous on both surfaces; leaf sheath at base, lanceolate, 4-6 cm long, 5-6 mm wide, acute at apex, membranous, glabrous.



Fig. 580. *Ophiopogon shuangliuensis* S. S. Ying, inflorescences

Flowers many, solitary to 2-3 fascicled on the scape, 2.2-3.1 mm wide when opened, white to pale violet, scentless, drooping to horizontal at anthesis, racemose; scape from leaf-base, suberect to arching, 15-18 cm long, somewhat weak, white, glabrous; inflorescence rachis 5-8 cm long; without any bracts or sheath at base of scape; pedicels 4-6 mm long, white to pale violet, glabrous, bracts linear to ovate-linear, 3-5 mm long, 2-3 mm wide, acute at apex, white to pale violet, glabrous; perianth syntepalous at base, funnel-form, 1-2 mm long (syntepalous part), 6-lobed at apex; lobes subsimilar, ovate, 2.6-3.6 mm long, 1.5-2 mm wide, obtuse at apex, white to pale violet, glabrous; stamens 6, located at base of perianth-lobes; filaments short, 0.5 mm long, white, fleshy; anthers ellipsoid, slightly flattened, truncate at base, obtuse at apex, introrse, yellowish; pistil 1; ovary inferior, 3-locular; ovules 1-2 per locule, borne on basal part of central axis of





Fig. 581.*Ophiopogon shuangliuensis* S. S, Ying, inflorescences

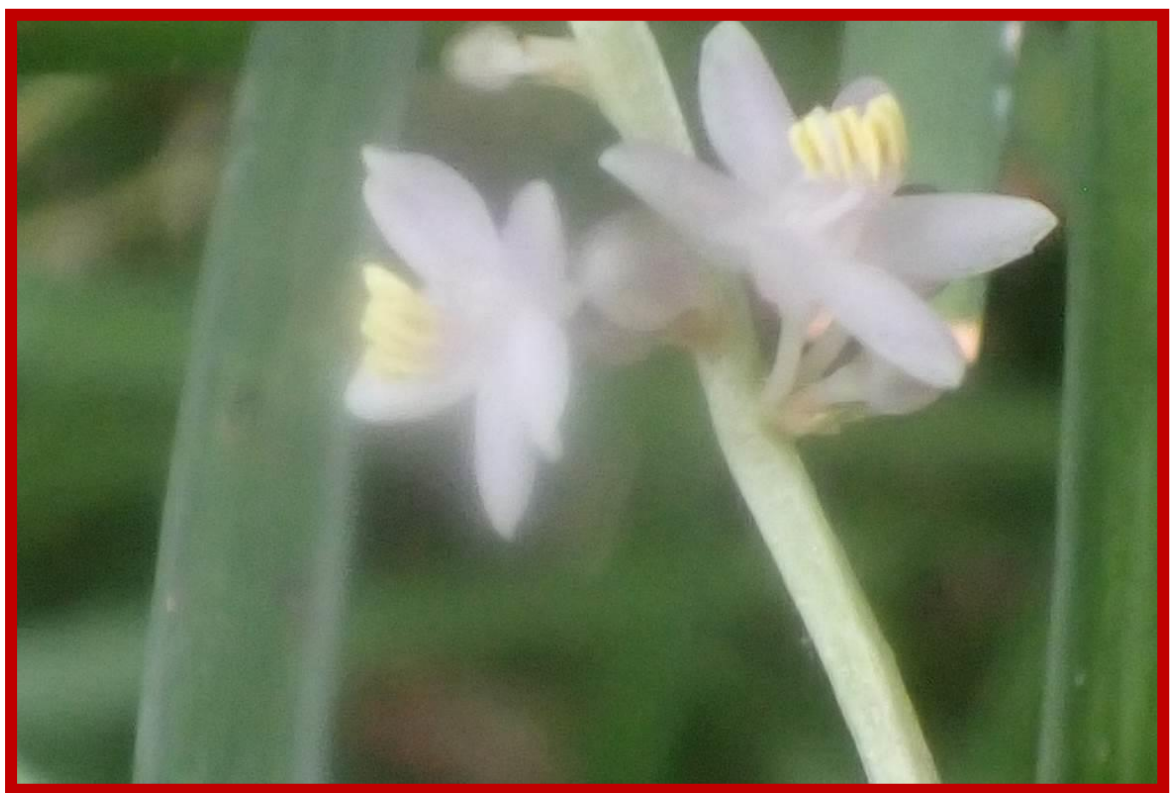


Fig. 582.*Ophiopogon shuangliuensis* S. S, Ying, close-up of flowers



ovary; style cylindrical, 2.5-3 mm long, white; stigma small, obtuse.



Fig. 583. *Ophiopogon shuangliuensis* S. S. Ying, whole plants



Fig. 584. *Ophiopogon shuangliuensis* S. S. Ying, plants growing in situ





Fig. 585. *Ophiopogon shuangliuensis* S. S. Ying, the holotype NTUF-112-108



Fig. 586. *Ophiopogon shuangliuensis* S. S. Ying, the isotype NTUF-112-109



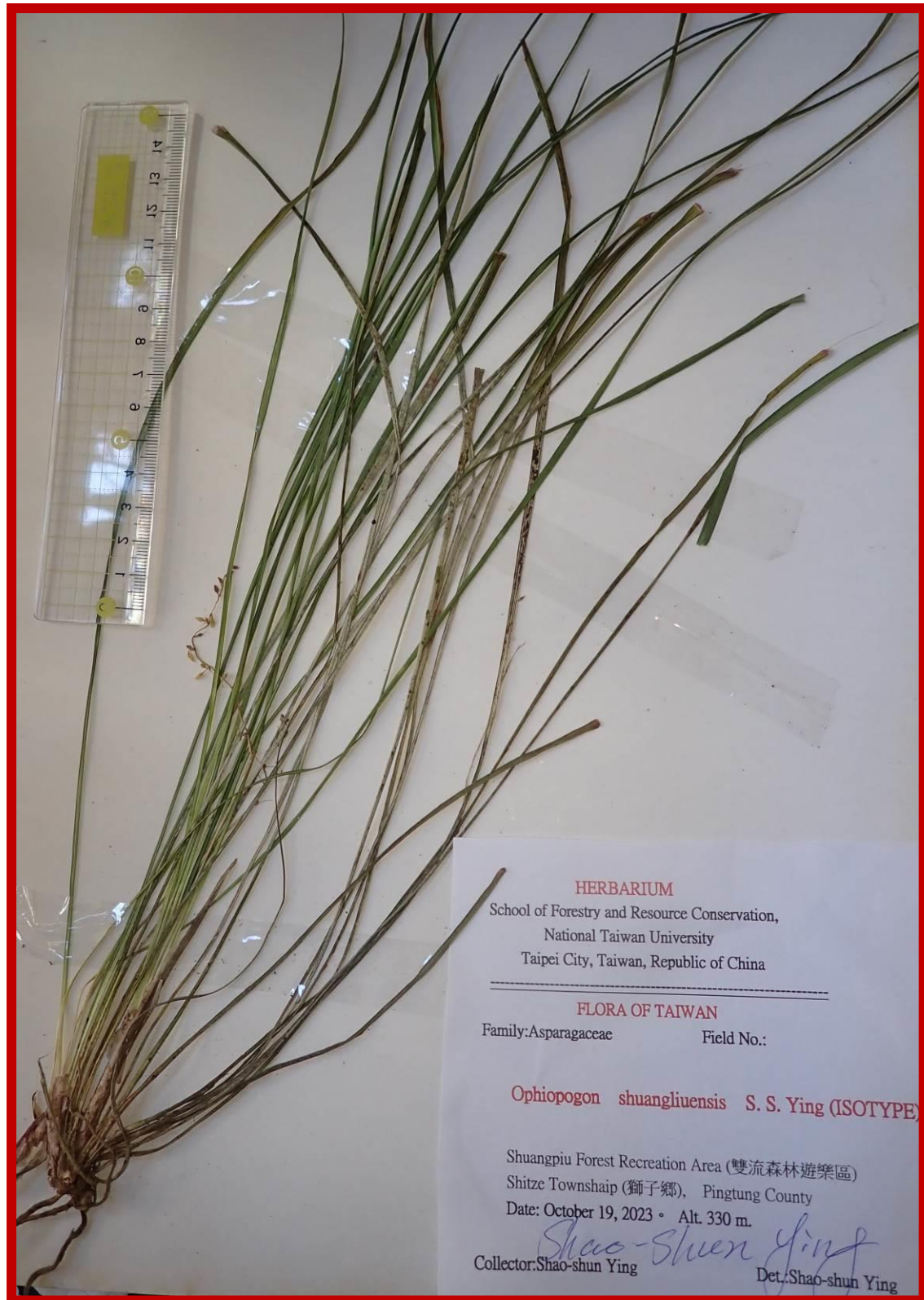


Fig. 587. *Ophiopogon shuangliuensis* S. S. Ying, the isotype      NTUF-112-110

### Diagnosis.

*Ophiopogon shuangliuensis* is characterized by its stemless, rhizome corm-like and close-approximate each other; leaves many, linear, 40-50 cm long, 2.5-3 mm wide; flowers solitary to 2-3 fascicled at scape, white to pale violet; perianth-lobes 6, ovate; stamens 6, filaments short, anthers ellipsoid, yellow.

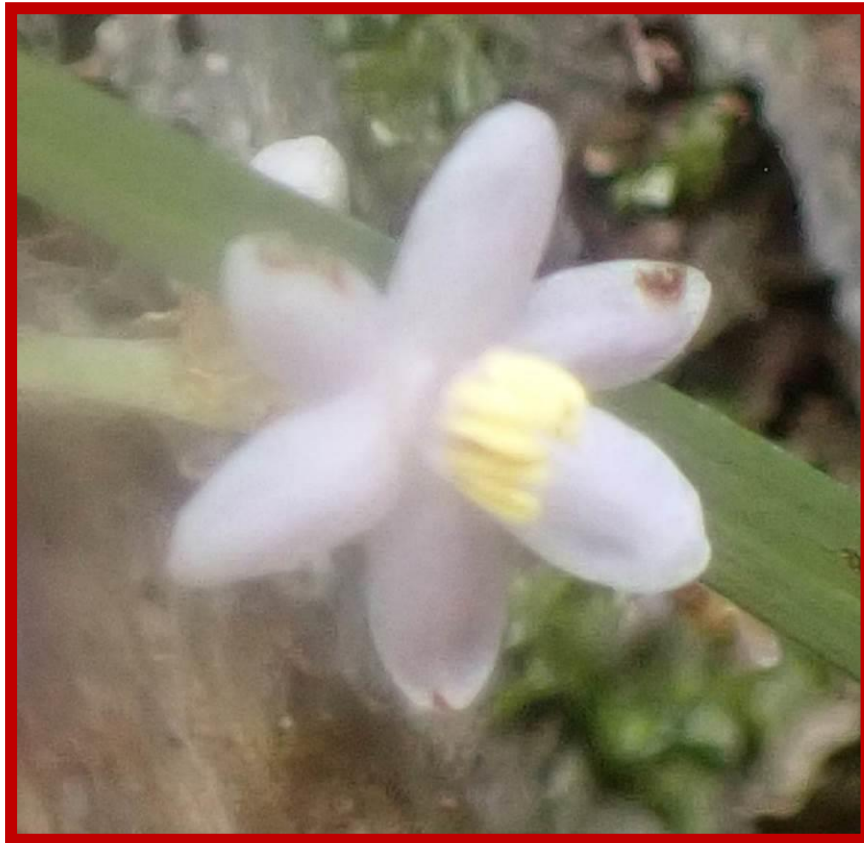


Fig. 588. *Ophiopogon shuangliuensis* S. S. Ying, close-up of a flower

### Distribution and phenology.

*Ophiopogon shuangliuensis* S.S. Ying is endemic to Taiwan. It is known from mountains of Shuangpiu Forest Recreation Area (雙流森林遊樂區), Shitze Township (獅子鄉), Pingtung county, southern Taiwan. It was collected on under of natural broad-leaved forests, between 280 and 320 m altitudes; and flowering times is from October to November and fruiting times is November.



48. A New species of Genus *Commelina* (Commelinaceae) in Taiwan

*Commelina bicaeruloflora* S.S. Ying, 雙藍花鴨趾草

*Commelina bicaeruloflora* S.S. Ying, *sp. nov.* 雙藍花鴨趾草

TYPE:TAIWAN. Pingtung County, Fangliao Townshaip (枋寮鄉), Fangliao (枋寮)  
Coastal region, 12 m alt. *S. S. Ying*, *s.n.* October 19, 2023. (holotype, NTUF).

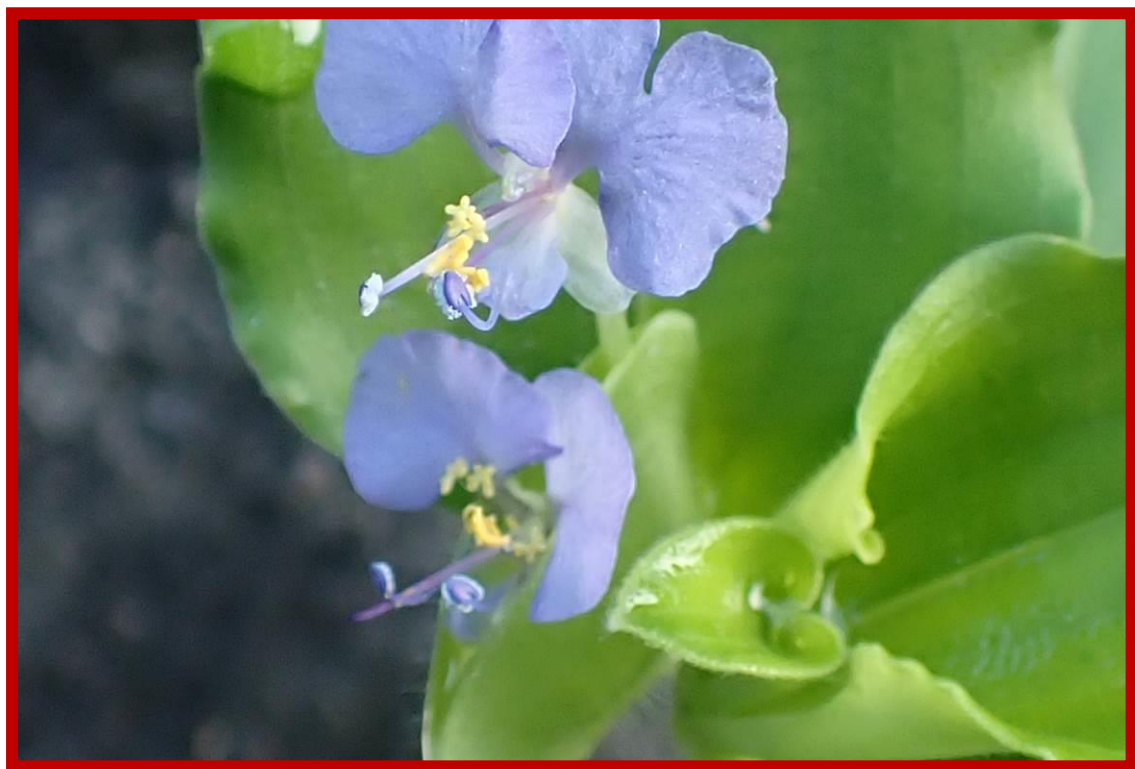


Fig. 589. *Commelina bicaeruloflora* S. S. Ying, close-up of flowers

**Morphology :** An annual terrestrial herb, root fibrous, slender, 3-5 cm long. Stem elongate, 40-100 cm long, creeping, hairy, usually forming a medium size plant colony, branched at leaf-axil; branched many, creeping to slightly ascending, hairy. Leaves simple, alternate, oblong to ovate-oblong, 4.5-6 cm long, 2.5-3.5 cm wide, obtuse to acute at apex, obtuse to a short petiole at base, chartaceous, entire, slightly wavy and ciliate at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, midrib impressed



Fig. 590. *Commelina bicaeruloflora* S. S. Ying, branches and leaves

surface and elevated beneath, 3-longitudinal lateral veins per side, somewhat inconspicuous. Petioles 6-8.5 mm long, 2 mm wide, green, glabrous; sheath 9-12 mm long, pale green, glabrous.

Flowers 2 in each spathe, 4-5 mm in diameter when opened, blue to pale blue; peduncle opposite to leaf, 0.8-2.2 cm long, hairy, green to pale green; bract one at top of peduncle, somewhat like leaf but smaller, 1.8-2.2 cm long, 9-13 mm wide, acute at apex, green, glabrous or scattered hairy surface; spathe cordate-like, 1.4-1.8 cm long, 8-11 mm wide, acute at apex, scattered with white hairs surface and glabrous beneath, entire and ciliate at margins, 2 flowers in each spathe; pedicels 2.5-3.6 mm long, with articulation at middle, below it pale green and hairy, above it white, transparent and glabrous; sepals 3 subequal, ovate, 3-4 mm long, 1.5-2.5 mm wide, obtuse at apex, pale blue to white, glabrous; upper petals 2, with claws; the claws 1.5-2 mm long, pale blue; blade semiorbicular, 7-8 mm long, 6-8 mm wide, obtuse and sometimes emarginate at apex, lower petal smaller, ovate, 1.5-2 mm long, 1-1.6 mm wide, obtuse at apex, pale blue to white; staminodes 3, subequal, filaments 2.5-3 mm long; antherodes x-shaped, distinctly 4-





Fig. 591. *Commelina bicaeruloflora* S. S. Ying, spathe and flowers



Fig. 592. *Commelina bicaeruloflora* S. S. Ying, close-up of a flower

lobed, yellow; median stamen 1, filament 3-4.8 mm long, anther saddle-like, 2.0-2.1 mm long, 1.2-1.5 mm wide, yellow; lateral stamens 2, filaments 5-7.5 mm long, curved to upside; anthers ovoid, 1.5-1.8 mm long, 1.2-1.4 mm wide, basifixied, violet to violet blue in colour; ovary superior, globose, 8-9 mm long, 7-8.5 mm wide, glabrous, 2-locular; 2 ovules in each locule; style straight, elongate, 9-13 mm long, pale purple to white; stigma 3-lobed; the lobes very short, 0.5 mm long.



Fig. 593. *Commelina bicaeruloflora* S. S. Ying, plant colony around beach

#### **Diagnosis.**

*Commelina bicaeruloflora* is characterized by its stem elongate, creeping, much branched, usually forming a medium sized plant colony at sea beach; leaves somewhat larger, oblong to ovate-oblong, 4.5-6 cm long, 2.5-3.5 cm wide; flowers rather smaller, 2 in each spathe; spathe cordate-like, hairy outside; lateral stamens with basifixied, violet to violet blue anthers.





Fig. 594. *Commelina bicaeruloflora* S. S. Ying, the holotype      NTUF-112-111



Fig. 595. *Commelina bicaeruloflora* S. S. Ying, the isotype      NTUF-112-112





Fig. 596. *Commelina bicaeruloflora* S. S. Ying, another plant colony around beach  
(mind flowers much smaller than the leaves)

**Distribution and phenology.**

*Commelina bicaeruloflora* S.S. Ying is endemic to Taiwan ° It is known from Fangliao(枋寮), Fangliao Township (枋寮鄉) , Pingtung county , southern Taiwan ° It was collected on the coastal region, between 8 and 10 m altitudes; and flowering times is from October to November and fruiting time is November.

#### 49. A New species of Genus *Platostoma* (Lamiaceae) in Taiwan

*Platostoma taiwanense* S.S. Ying, 台灣頂頭花

*Platostoma taiwanense* S.S. Ying, *sp. nov.* 台灣頂頭花

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧), Loshan Forest Road (樂山林道), 2440 m alt. *S. S. Ying*, *s.n.* October 26, 2023 ° (holotype , NTUF) °



Fig. 597. *Platostoma taiwanense* S. S. Ying, inflorescence

**Morphology** : An annual terrestrial herb, root fibrous, slender, 3-5 cm long. Stem simple, unbranched, 25-40 cm long, erect to ascending, angular, white short-hairy. Leaves simple, oppositve, oblong to elliptic-oblong, 2-4 cm long, 1-2 cm wide, acuminate at apex, obtuse and slightly oblique at base, chartaceous, dentate at margins, glabrous on both surfaces, lustrous green surface and pale green beneath; midrib impressed surface and elevated



beneath, lateral veins 4-5 per side, impressed surface and elevated beneath. Petioles 1-1.8 cm long, pale purplish, grooved above, glabrous or nearly so.



Fig. 598. *Platostoma taiwanense* S. S. Ying, stem, leaves and inflorescences

(mind a corolla left aside)

Flowers small, numerous, pink, 2-2.5 mm in diameter when opened, in a terminal densely approximately spike; inflorescence 1.5-3.5 cm long, erect to ascending, densely enclosed by verticillated many bracts; bracts ovate to ovate-oblong, 4-5 mm long, 3.5-4.5 mm wide, obtuse and with an awn at apex, truncate at base, brown-purple in colour, elongate ciliate at margins, elongate white hairs scattered outside, nearly glabrous inside, 2-5 flowers included; pedicels sessile or very short, 0.2-0.3 mm long if present; calyx tubular, 2.5-3 mm long, scattered with elongate white hairs outside and glabrous inside, pale green, 5-lobed at apex; lobes equal, oblong to lanceolate, 1.6-2 mm long, 0.5 mm wide, caudate at apex, nearly glabrous; corolla labiate, 4.5-5.5 mm long, scattered with elongate white hairs on lobes giving it a fimbriate appearance and nearly glabrous of corolla-tube; tube 2.5-3 mm long, white to pale green, curving downward, dorsally



Fig. 599. *Platostoma taiwanense* S. S, Ying, inflorescence enclosed by many bracts



Fig. 600. *Platostoma taiwanense* S. S, Ying, another side see the inflorescence





Fig. 601. *Platostoma taiwanense* S. S, Ying, close-up of flowers

gibbous; upper lip 3-lobed, median lobe emarginate, reflexed against the tube, lateral lobes vertical; lower lip 3-3.5 mm long, ovate, horizontal, obtuse at apex; stamens 4, filaments elongate, exserted, white, anterior attached at throat; posterior attached just below midpoint of corolla tube, anthers ovoid, medifixated, synthealous; disk 4-lobed with anterior lobe larger; style bifid with anterior lobe longer.

#### **Diagnosis.**

*Platostoma taiwanense* is characterized by its inflorescence which 1.5-3.5 cm long, erect to ascending, densely enclosed by verticillated many bracts; bracts ovate to ovate-oblong, elongate ciliate at margins, elongate white hairs scattered outside, nearly glabrous

inside, 2-5 flowers included; corolla labiate, 4.5-5.5 mm long, scattered with elongate white hairs on lobes giving it a fimbriate appearance and nearly glabrous of corolla-tube.

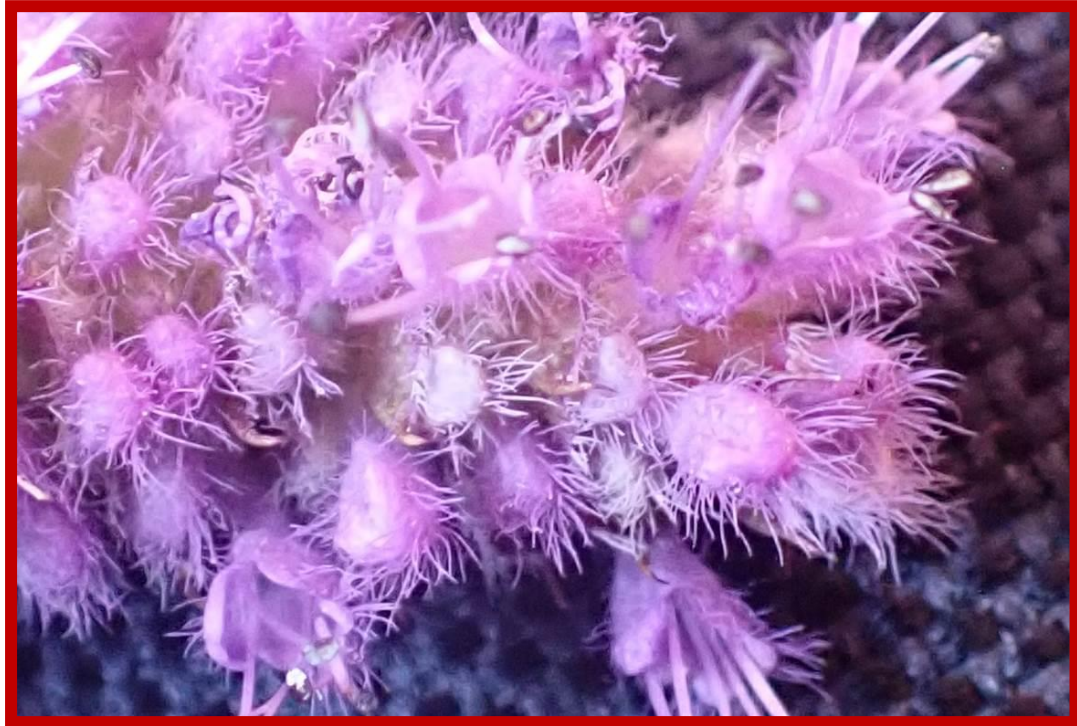


Fig. 602. *Platostoma taiwanense* S. S. Ying, close-up of inflorescence



Fig. 603. *Platostoma taiwanense* S. S. Ying, stamens and styles





Fig. 604. *Platostoma taiwanense* S. S. Ying, plant growing in situ on Loshan forest road

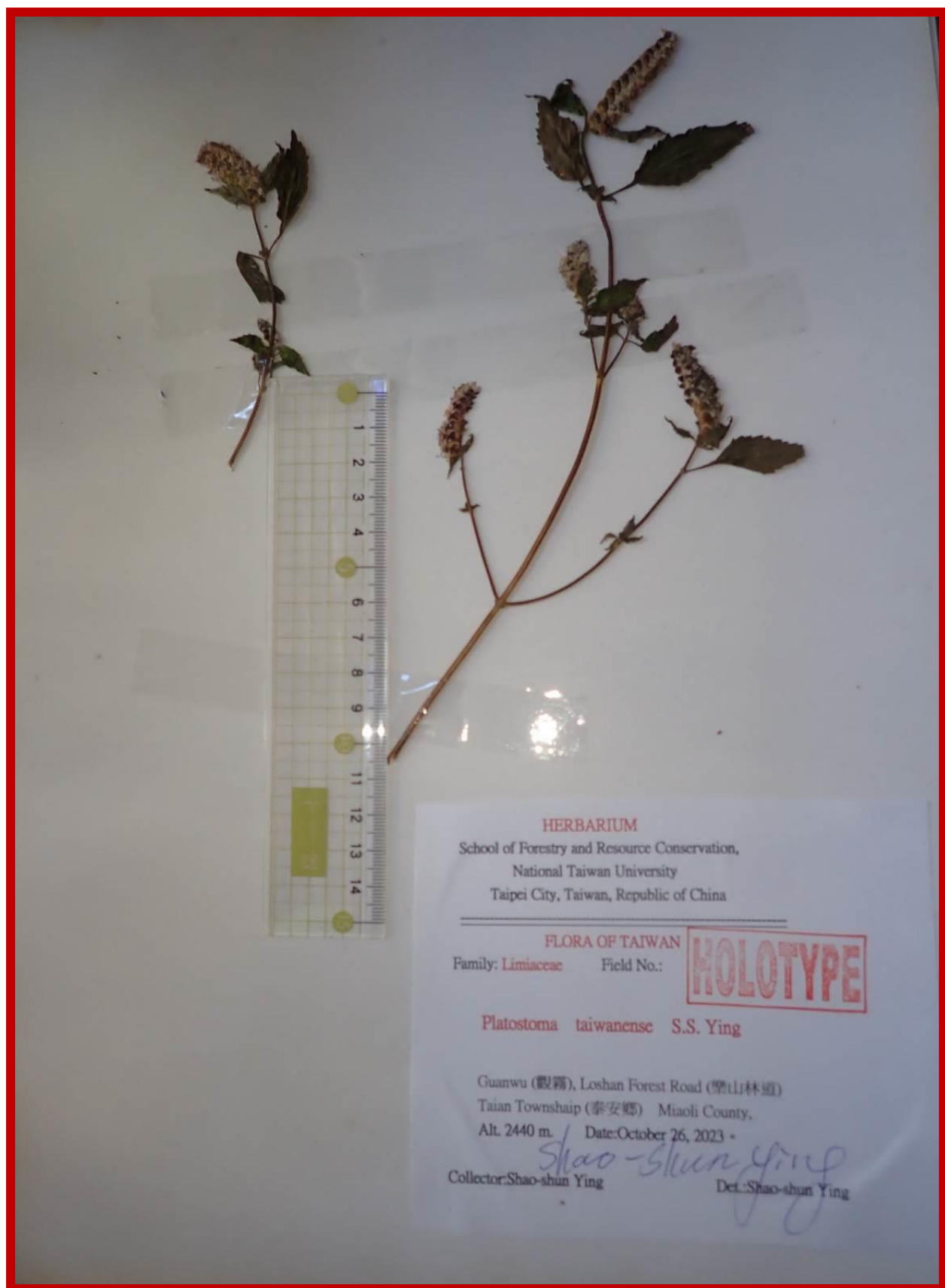


Fig. 605. *Platostoma taiwanense* S. S. Ying, the holotype NTUF-112-113



**Distribution and phenology.**

*Platostoma taiwanense* S.S. Ying is endemic to Taiwan. It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on sunny roadsides at the elevations of 2,300-2,600 meters. Its flowering time is October to November and fruiting time is November.



Fig. 606. *Platostoma taiwanense* S. S. Ying, plant growing in situ near to office area

50. A New species of Genus *Teucrium* (Lamiaceae) in Taiwan

*Teucrium guanwuense* S.S. Ying, 觀霧血見愁

*Teucrium guanwuense* S.S. Ying, *sp. nov.* 觀霧血見愁

TYPE:TAIWAN. Miaoli County, Taian Townshap (泰安鄉), Guanwu (觀霧), 2340 m alt. S. S. Ying, *s.n.* October 26, 2023. (holotype, NTUF).



Fig. 607. *Teucrium guanwuense* S. S. Ying, plant growing in situ

**Morphology** : Perennial terrestrial herbs, stem erect, branched at base, about 40-130 cm high, green, angular, pubescent when young and turn to glabrous adult; branches erect to ascending, 20-45 cm long, pubescent. Leaves simple, opposite, ovate o ovate-oblong, 7-12 cm long, 4.5-7 cm wide, acute at apex, obtuse and slightly oblique at base, coarsely chartaceous, dentate at margins, green surface and pale green beneath, glabrous on both



surfaces, midrib and lateral vein (5 per side) impressed and elevated beneath. Petioles 4-6.5 cm long, groove above, pubescent when young and glabrous in adult .



Fig. 608. *Teucrium guanwuense* S. S. Ying, leaves

Flowers smaller, pink, 2.5-3.5 mm in diameter when opened, not opened simultaneously, in terminal and axillary racemes; racemes 7.5-12 cm long, erect to ascending, densely scattered white hairs; peduncles (floral rachis) 5-9 cm long, green, pubescent to villose; bracts 2, at base of peduncle, elliptic, 3-4 cm long, 1-1.5 cm wide, acute at apex; pedicels 2-2.5 mm long, pale green, villose, somewhat fleshy; bracteoles ovate, 3.5-4.5 mm long, 2.5-2.8 mm wide, acute at apex, pale green to white, scattered with short hairs on both surfaces, caudex; calyx labiate, 5.5-6.5 mm long, 3.8-4.8 mm wide, elongate white hairy outside and glabrous inside, green; upper lip 3-lobed, the median lobe larger, triangular, 0.6-0.7 mm long, obtuse at apex; lateral lobes minute, 0.3-0.4 mm long; lower lip 2-lobes, longer than the upper lip, 1.6-2.2 mm long; lobes equal,



Fig. 609. *Teucrium guanwuense* S. S, Ying, inflorescences



Fig. 610. *Teucrium guanwuense* S. S, Ying, close-up of inflorescences





Fig. 611. *Teucrium guanwuense* S. S, Ying, close-up of clayx and corolla



Fig. 612. *Teucrium guanwuense* S. S, Ying, close-up of bracteols, clayx and corolla



Fig. 613. *Teucrium guanwuense* S. S, Ying, close-up of clayx

somewhat rangular, obtuse at apex; corolla white with a pink top, exerted, 4.5-5.5 mm long, 2.5-3 mm wide, labiate; corolla tube 1.5-2 mm long, villose inside and glabrous outside; upper lip square-like, shortly 2-lobed to emarginate at apex; lower lip somewhat longer than the upper one, 3-lobed; median lobe largest, tongue-like, obtuse at apex; lateral lobes smller, semi-orbicular, obtuse at apex; stamens 4, fertile, slightly exceeding calyx, posteriors longer than anteriors; filaments glabrous to anthers, hairy below; style short, not exceeding corolla tube, glabrous, divided to 2 branches; ovary ovoid, glabrous.

Nutlets unknown in this study.

### **Diagnosis.**

*Teucrium guanwuense* is charactized by its somewhat large perennial herb, ovate o ovate-oblong leaves, flowers smaller, pink, not opened simultaneously, in terminal and





Fig. 614. *Teucrium guanwuense* S. S. Ying, the holotype, NTUF-112-114



Fig. 615. *Teucrium guanwuense* S. S. Ying, the isotype, NTUF-112-115



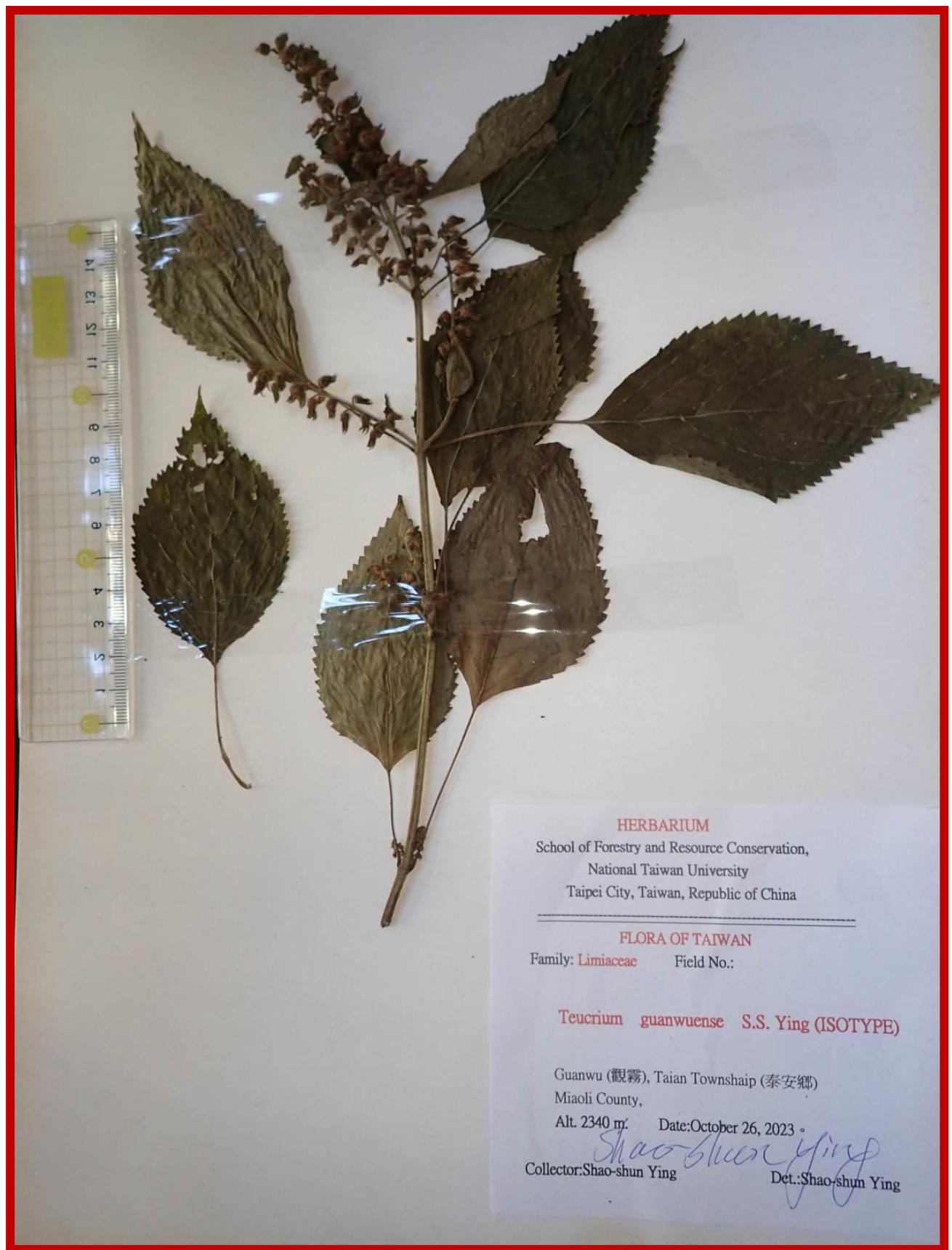


Fig. 616. *Teucrium guanwuense* S. S. Ying, the isotype, NTUF-112-116

axillary racemes; calyx labiate, elongate white hairy outside and glabrous inside, green; corolla white with a pink top, exserted, labiate; corolla tube 1.5-2 mm long, villose inside and glabrous outside; upper lip square-like, shortly 2-lobed to emarginate at apex; lower lip somewhat longer than the upper one, 3-lobed; median lobe largest, tongue-like, obtuse at apex; lateral lobes smaller, semi-orbicular, obtuse at apex.



Fig. 617. *Teucrium guanwuense* S. S. Ying, plant growing in situ

#### **Distribution and phenology.**

*Teucrium guanwuense* S.S. Ying is endemic to Taiwan. It is known from Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on edges of forests the elevations of 2,100-2,400 meters. Its flowering time is October to November and fruiting time is November.



## 51. Taxonomic Notes on the Family Orchidaceae in Taiwan (3)

### A. Two New species of genus *Gastrochilus* (Orchidaceae) in Taiwan

#### 1. *Gastrochilus shaochilinchianus* S.S. Ying 邵氏囊唇蘭, 邵氏松蘭

*Gastrochilus shaolinchianus* S.S. Ying, sp. nov. 邵氏囊唇蘭, 邵氏松蘭

TYPE: TAIWAN. Miaoli County, Taian Townshap (泰安鄉), Guanwu (觀霧) 2180 m alt. S. S. Ying, s.n. March 30, 2023. (holotype, NTUF).



Fig. 618. *Gastrochilus shaolinchianus* S.S. Ying, close-up of flowers

**Morphology :** Evergreen perennial epiphytic herbs, stem simple, branched, up to 12 cm long, about 1.5 mm in diameter, pendulous, green to pale green, glabrous, covered by leaf  
-497-

sheath. Roots few, often from leaf-axil, stout, epiphytic on tree-bark, 4-5 cm long, 2 mm in diameter, white to pale green with a green tip. Leaves distichous, sessile, ovate, 1-1.7 cm long, 9-14mm wide, obtuse to rounded at apex, obtuse at base, fleshy, smooth, without any color spots, glabrous, persistent sheath.



Fig. 619. *Gastrochilus shaolinchianus* S.S. Ying, habitat, another species on aside

Flowers solitary to 2, scentless, yellowish, 1-1.2 cm in diameter when opened, racemose in 2 flowers; peduncles 8-12 mm long, fleshy, green, without spots; floral bracts triangular, 3-4 mm long, acute at apex; pedicel with ovary 7-9 mm long, glabrous, pale yellow; dorsal sepal ovate-oblong, 6-8 mm long, 4.5-5.5 mm wide, obtuse at apex, yellow with purple plaques, slightly hooded; lateral sepals oblong, 5.5-7.5 mm long, 4-5 mm wide, obtuse at apex, yellow with 7-9 plaques, spreading; petals ovate to ovate-oblong, 5-6 mm long, 4-5 mm wide, yellow with few plaques; lip distinctly divided into hypochile and epichile; hypochile saccate, 5.5-6 mm long, about 4 mm wide, rounded at apex, scattered with purple spot and small plaques, glabrous but hairy at the orifice connected with epichile; epichile rectangular, 8-9 mm long, 4-5 mm wide, emarginate at apex, with a large pale brownish 3-3.5mm long, 2.5 mm wide large hairy plaque in center, dentate at



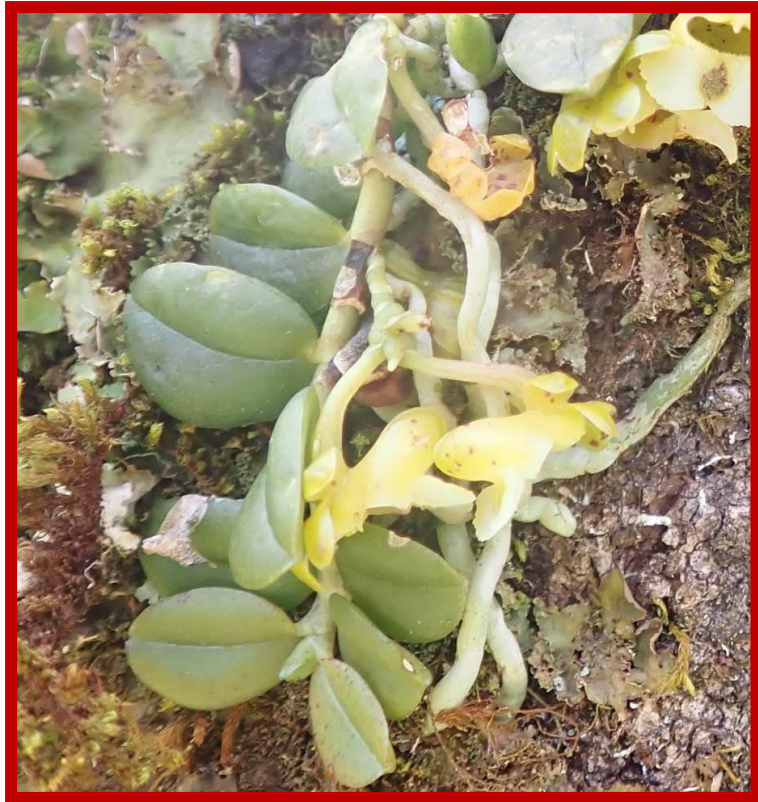


Fig. 620. *Gastrochilus shaolinchianus* S.S. Ying, flower solitary to 2 in raceme

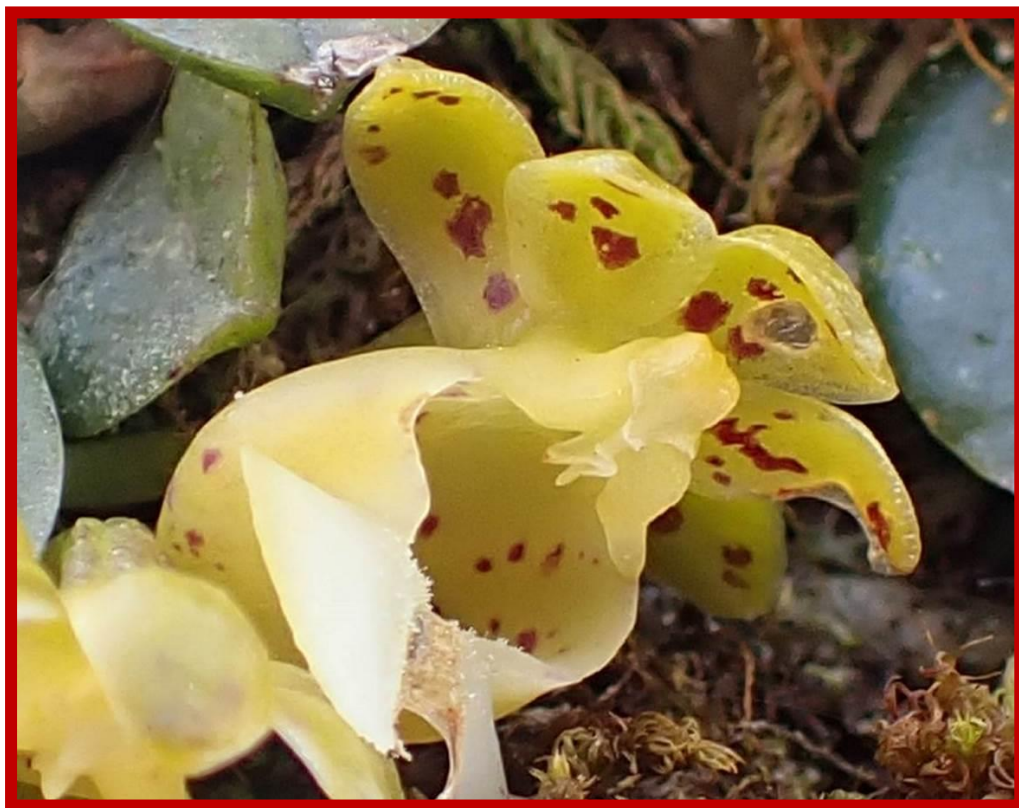


Fig. 621. *Gastrochilus shaolinchianus* S.S. Ying, close-up of flower

margins, white to pale yellow; column short, stout, 1.5 mm long; rostellum 0.8mm long, acute at apex; stigma transversely elliptic, about 1.5 mm long, 1.4 mm wide; anther cap helmet-like, 1.3 mm long, 1.5 mm wide, with a truncate beak at apex; pollinia 2, globose or nearly so, about 0.7 mm long and wide; stipe slender 2-2.5 mm long; viscidium elliptic, about 1 mm long.

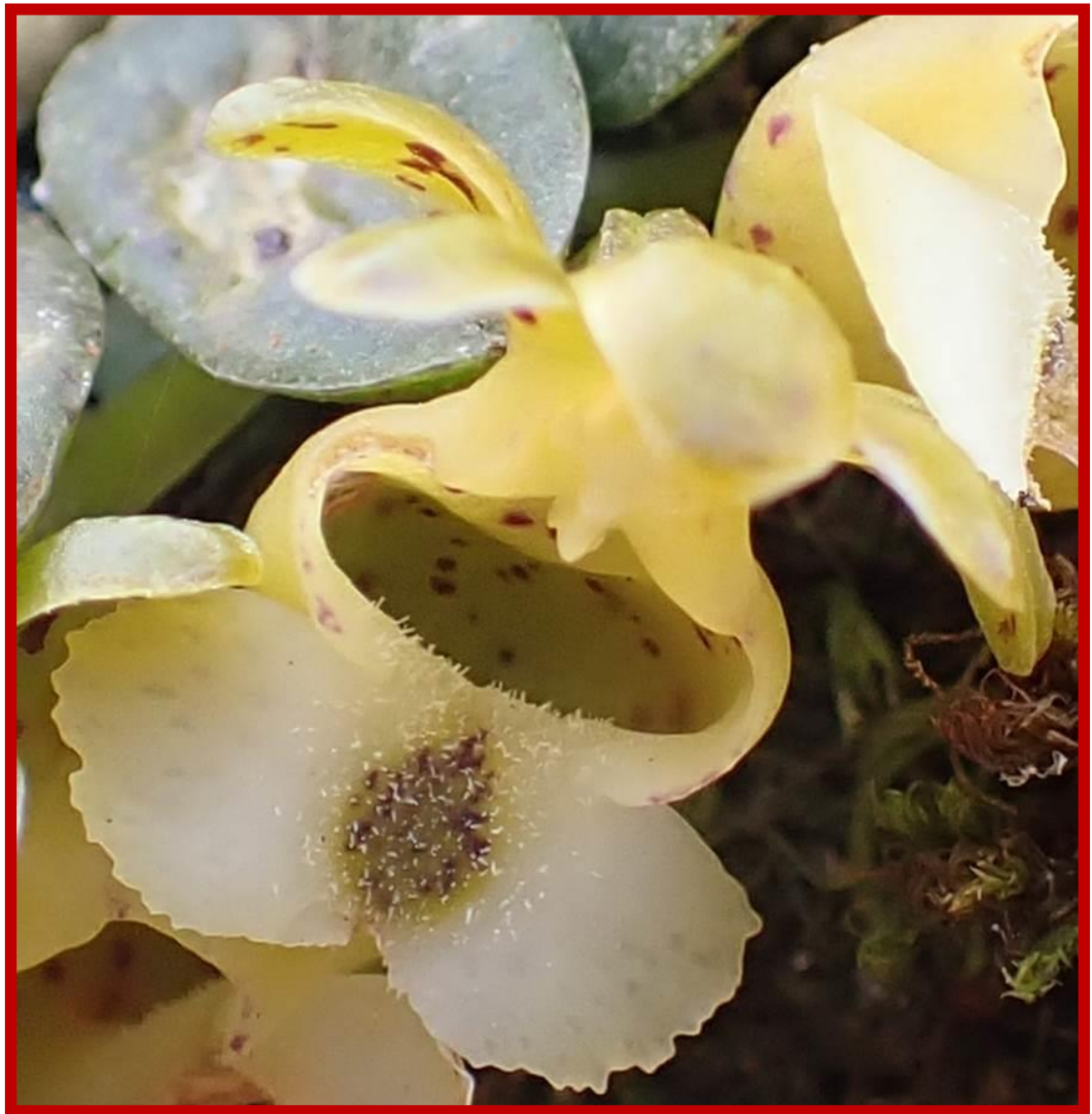


Fig. 622. *Gastrochilus shaolinchianus* S.S. Ying, close-up of flower, mind the lip

#### **Diagnosis.**

*Gastrochilus shaolinchianus* is a distinctive new species of Taiwan *Gastrochilus*. It is readily recognized by its ovate leaves, solitary to 2 racemose flowers, yellow sepals and



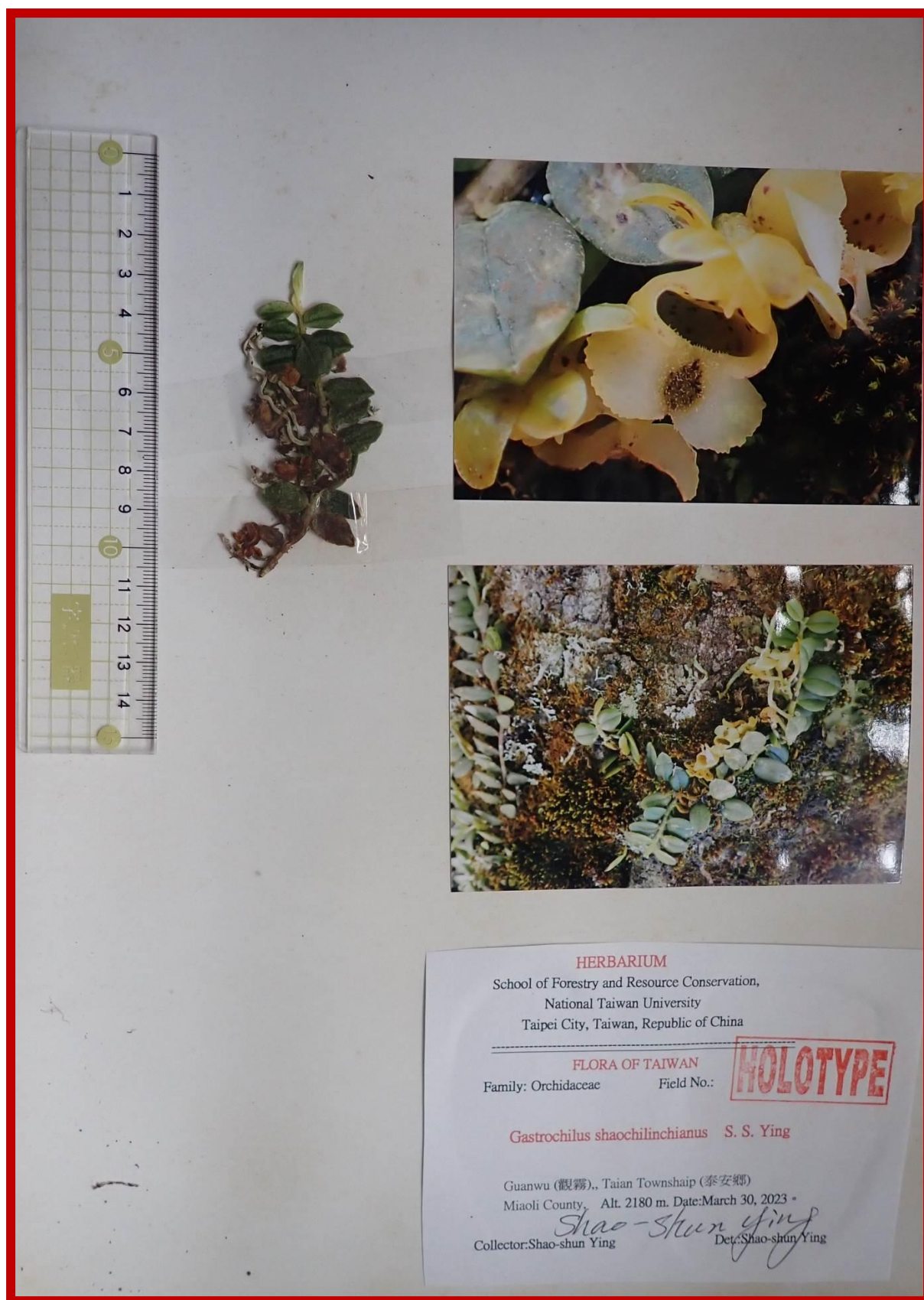


Fig. 623. *Gastrochilus shaolinchianus* S.S. Ying, the holotype NTUF-112-117

petals with purple plaques and rectangular, 8-9 mm long, 4-5 mm wide, emarginate at apex, with a large pale brownish 3-3.5mm long, 2.5 mm wide large hairy plaque in center, dentate at margins lip-epichile.



Fig. 624. *Gastrochilus shaolinchianus* S.S. Ying, habitat

#### **Distribution and phenology.**

*Gastrochilus shaolinchianus* S.S. Ying is endemic to Taiwan. It is known from Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species which epiphytic on tree-trunk at forest at elevations of 2100-2350 meters. Its flowering time is March to May and fruiting time is July to September.



## 2. *Gastrochilus guanwuensis* S.S. Ying 觀霧囊唇蘭, 觀霧松蘭

*Gastrochilus guanwuensis* S.S. Ying, sp. nov. 觀霧囊唇蘭, 觀霧松蘭

TYPE: TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2180 m alt. S. S. Ying, s.n. September 21, 2023. (holotype, NTUF).



Fig. 625. *Gastrochilus guanwuensis* S.S. Ying, inflorescence

**Morphology** : Small evergreen perennial epiphytic herbs, stem simple, up to 2-2.5 cm long, about 0.8 mm in diameter, pendulous, pale green to brwnish green, glabrous, covered by leaf sheath. Roots few, often from leaf-axil, stout, epiphytic on tree-bark, 1.7-3 cm long, 2 mm in diameter, white with a green tip. Leaves 8-10, distichous, sessile, oblong to linear-oblong, 1-1.5 cm long, 4-5mm wide, obtuse to rounded at apex, obtuse at base, fleshy, smooth, with brownish red spots on both surfaces, glabrous, persistent sheath; sheathes 4-5.5 mm long, .

Flowers 2 to 3, scentless, pink tinged with pale yellow, 5-6.5 mm in diameter when



Fig. 626. *Gastrochilus guanwuensis* S.S. Ying, root, stem and leaves

opened, racemose; peduncles 4-5.5 mm long, fleshy, green, scattered some red spots; floral bracts triangular, 2-2.8 mm long, acute at apex; pedicel with ovary 5-6 mm long, hairy, pale yellow; dorsal sepal ovate-oblong, 4.5-5 mm long, 2.5-3.5 mm wide, obtuse at apex, pink with red spots, greenish along margins, slightly hooded; lateral sepals oblong, 5.5-6 mm long, 3-3.5 mm wide, obtuse at apex, pink with red spots, greenish along margins, spreading; petals oblong, 4.5-5.5 mm long, 3-3.6 mm wide, pale yellow with few spots, glabrous; lip distinctly divided into hypochile and epichile; hypochile saccate, 3.5-4 mm long, about 3 mm wide, rounded at apex, white, glabrous inside but hairy along pink orifice, pink with purple spot and small plaques outside, glabrous but hairy at the orifice connected with epichile; epichile rectangular, 4.5-5.5 mm long, 4-5 mm wide, truncate at apex, white,





Fig. 627. *Gastrochilus guanwuensis* S.S. Ying, close-up of flowers

with a large pale green 3-3.5mm long, 2.5 mm wide large hairy plaque in center, ciliate at margins, elongate white-hairs surface, white and glabrous neneath; column short, stout, 1.2 mm long; rostellum 0.7mm long, acute at apex; stigma transversely elliptic, about 1.5 mm long, 1.3 mm wide; anther cap helmet-like, 1.2 mm long, 1.4 mm wide, with a truncate beak at apex; pollinia 2, globose or nearly so, about 0.6 mm long and wide; stipe slender 2-2.5 mm long; viscidium elliptic, about 1 mm long.

### **Diagnosis.**

*Gastrochilus guanwuensis* is a distinctive new species of Taiwan *Gastrochilus*. It is readily recognized by its small plant with simple stem, 2-3 small flowers in a raceme, epichile rectangular, 4.5-5.5 mm long, 4-5 mm wide, truncate at apex, white, with a large pale green 3-3.5mm long, 2.5 mm wide large hairy plaque in center, ciliate at margins, elongate white-hairs surface, white and glabrous neneath

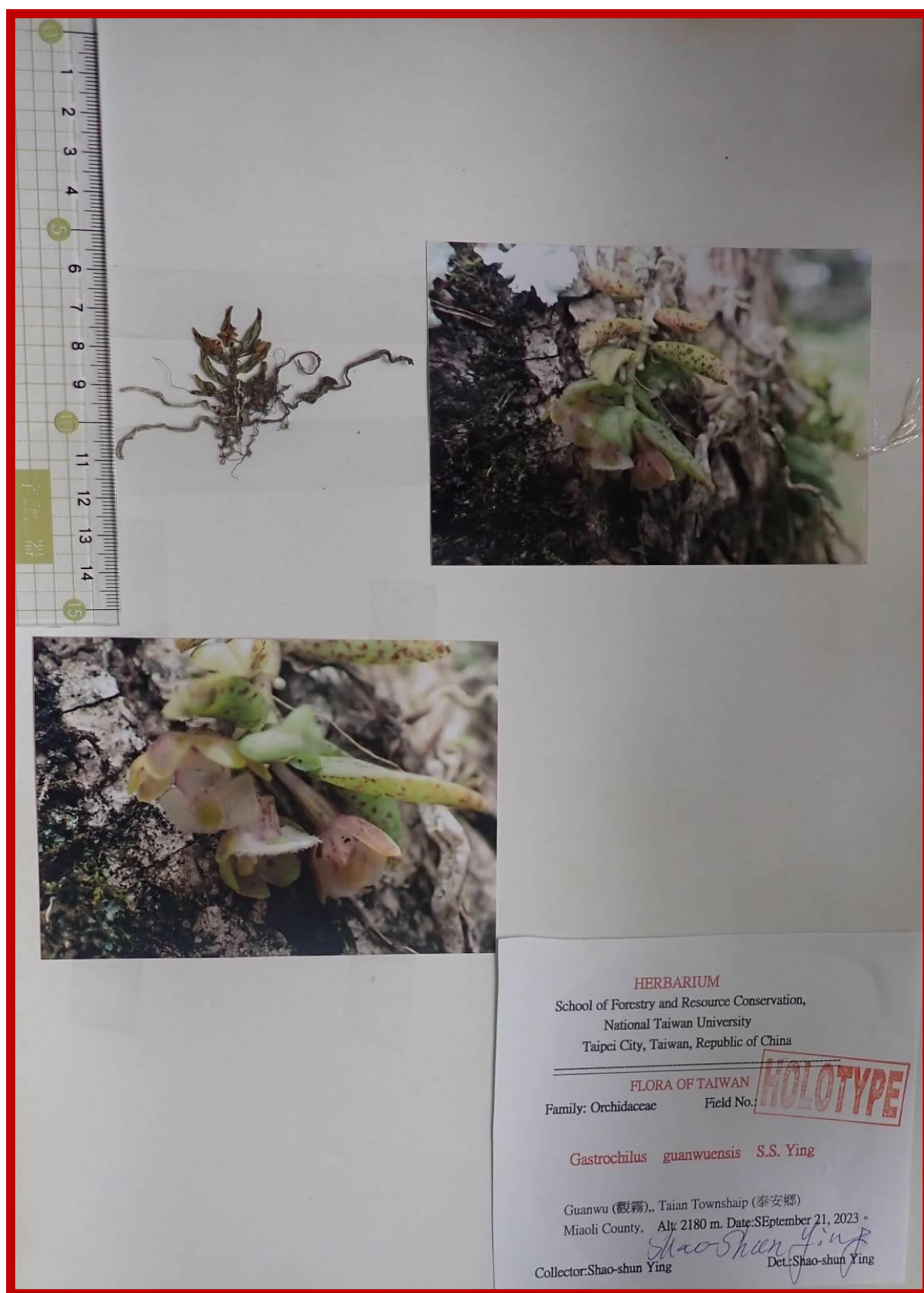


Fig. 628. *Gastrochilus guanwuensis* S.S. Ying, the holotype      NTUF-112-118



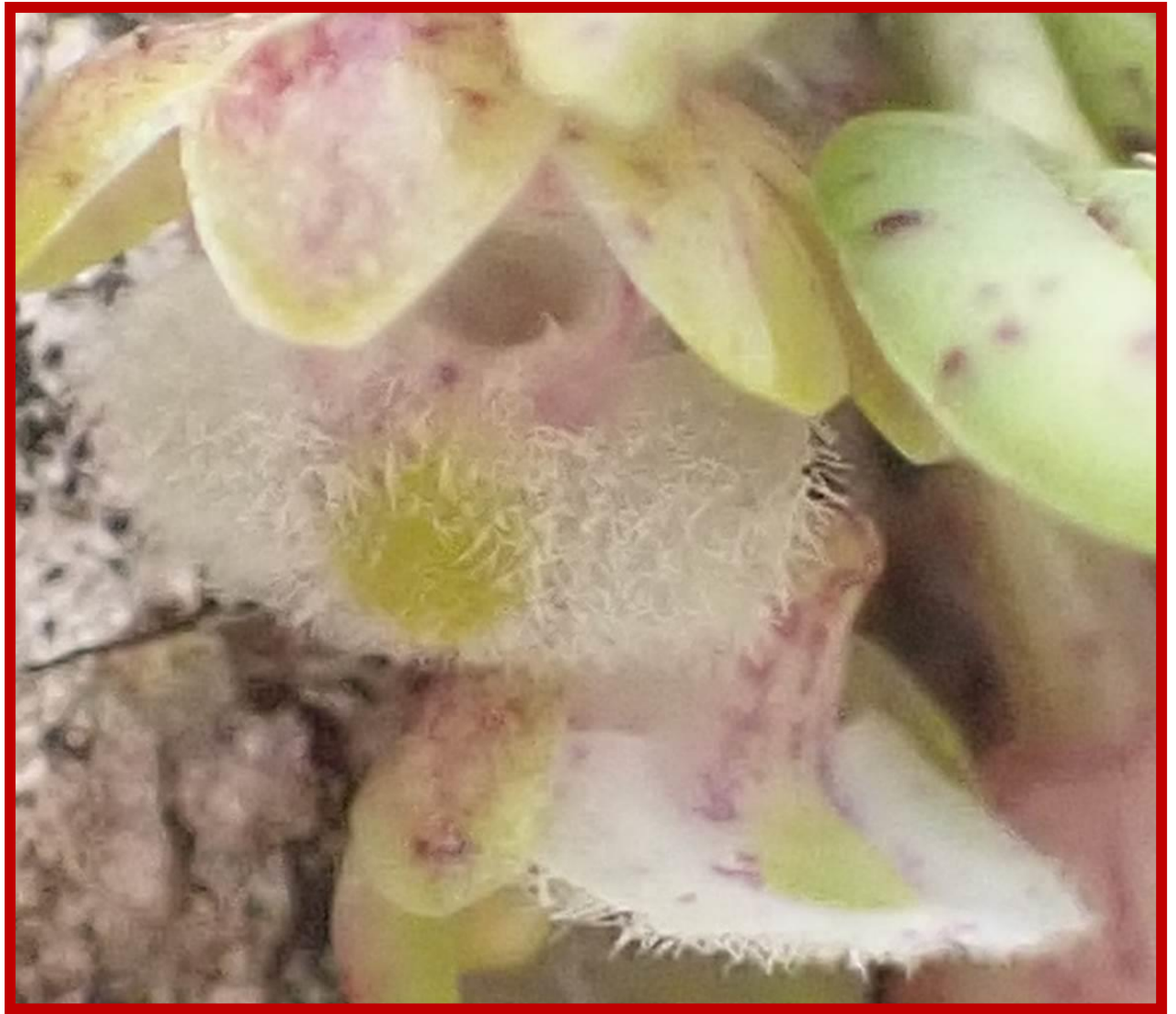


Fig. 629. *Gastrochilus guanwuensis* S.S. Ying, close-up of lip

**Distribution and phenology.**

*Gastrochilus gusanwuensis* S.S. Ying is endemic to Taiwan. It is known from Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species which epiphytic on tree-trunk at forest at elevations of 2150-2450 meters. Its flowering time is September to October and fruiting time is October to November.



Fig. 630. *Gastrochilus guanwuensis* S.S. Ying, plant growing in situ

(all pictures of this species are in close-up status)



B.One New species of genus *Platanthera* (Orchidaceae) in Taiwan

*Platanthera alboflora* S.S. Ying 白花粉蝶蘭

*Platanthera alboflora* S.S. Ying, sp. nov. 白花粉蝶蘭

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2250 m alt. *S. S. Ying*, *s.n. June 20 2023* ° (holotype, NTUF) °



Fig. 631. *Platanthera alboflora* S.S. Ying, habit

**Morphology** : Terrestrials usually mixed with moss and other herbs on running water, about less than 25 cm high; rhizomes elongate, cylindrical, fleshy, 2.5-3.5 cm long, 3-4 mm across; stem with inflorescence 15-22 cm long, erect to ascending, slender, glabrous, slightly angular, tubular sheath not appear or inconspicuous. Leaf solitary, on the basal of stem, oblong to oblong-lanceolate, 3.5-5 cm long, 1.2-1.8 cm wide, acute at apex,



attenuate and amplexicaul and forming a short tubular at base, lustrous green surface and pale green beneath, glabrous on both surfaces, midrib impressed surface and elevated beneath, lateral veins inconspicuous.



Fig. 632. *Platanthera alboflora* S.S. Ying, plants growing in situ with inflorescence bud in May

Flowers few, usually 5-7, white, scentless, 2.5-3 mm in diameter when opened, spicate; the inflorescence 12-15 cm long, erect to ascending, with 2-3 bracts from basal to upward; the bracts lanceolate, gradually small upward, acute at apex; floral bracts lanceolate, 6-8 mm long, 2-2.5 mm wide, acute at apex; pedicel and ovary cylindric, 5-7 mm long, glabrous, green; dorsal sepal connivent with petals forming a 2.8-3.5 mm wide hood; the dorsal sepal ovate, 2.5-3.5 mm long, 2.2-3.2 mm wide, acute at apex; lateral sepals spreading, spathulate, 4.5-5.3 mm long, 2.5-3.5 mm wide, obtuse at apex; petals ovate to ovate-oblong, 2.2-3 mm long, 2.5-3.1 mm wide, obtuse at apex; lip pendulous, tongue-like, 3-lobed at base; median lobe tongue-like, 5.5-6.5 mm long, 2.2-3 mm wide, obtuse at apex; lateral lobes ovate-triangular, 2-3 mm long, 1.8-2.2 mm wide, entire to few dentate





Fig. 633. *Platanthera alboflora* S.S. Ying, close-up of inflorescence



Fig. 634. *Platanthera alboflora* S.S. Ying, close-up of flowers



Fig. 635. *Platanthera alboflora* S.S. Ying, the holotype NTUF-112-119



at margins; spur pendulous, cylindric, 8-10 mm long, obtuse at apex, transparent; column short, 2-3 mm long.

#### Diagnosis.

The species is characterized by its solitary leaf and few white flowers (ca 5-7), 3-lobed lip; median lobe tongue-like, 5.5-6.5 mm long, 2.2-3 mm wide, obtuse at apex; the lateral lobes ovate-triangular, 2-3 mm long, 1.8-2.2 mm wide; and somewhat aquatic in habitat.



Fig. 636. *Platanthera alboflora* S.S. Ying, habitat

#### Distribution and phenology.

The species is endemic in Taiwan. It is known from on Guanwu (觀霧) Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species at mountain slope where water running always and it is mix with moseees and other water-loving plants at elevations of 2180-2350 meters. Its flowering time is June to July and fruiting time is July to August.

C.Two New species of genus *Bulbophyllum* (Orchidaceae) in Taiwan

1.*Bulbophyllum linearibractium* S.S. Ying 線苞石豆蘭

*Bulbophyllum linearibractium* S.S. Ying, sp. nov. 線苞石豆蘭

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2150 m alt. S. S. Ying, s.n. May 16 2023. (holotype, NTUF).



Fig. 637. *Bulbophyllum linearibractium* S.S. Ying, close-up of inflorescence

**Morphology :** Evergreen perennial epiphytic herbs, roots slender, emerging in tufts from the base of pseudobulb, adhering to the substrate, growing from the nodes beneath each pseudobulb; rhizomes creeping, woody, slender, 2-3 mm in diameter, greenish white; pseudobulbs closely approximate, elliptic to elliptic-ovoid, 1.2-1.8 cm long, 8-11 mm





Fig. 638. *Bulbophyllum linearibractium* S.S. Ying, pseudobulbs and leaves

wide, smooth, few longitudinal furrow with age, pale greenish yellow. Leaf solitary, oblong, 2-3 cm long, 1-1.5 cm wide, coriaceous, obtuse and slightly emarginate at apex, obtuse at base, glabrous, lustrous green surface and pale green beneath, midrib impressed surface and elevated beneath, lateral veins inconspicuous. Petioles 2-3 mm long, glabrous, slightly grooved above.

Flowers 5-8 in a terminal sub-umbellate, pale orange yellow in colour, 2-2.5 cm long when opened, scentless; scape produced from base of pseudobulb, erect to ascending, 11-13 cm long, pale green, glabrous; sheath-bract single, tubular, basal, 1.5-2 cm long, brownish, acute at apex; bracts linear, 9-12 mm long, 1 mm wide, acuminate to a cuspidate apex, somewhat hooded, pale brownish with veins; pedicels with ovaries 1.8-2.4 cm long, pale yellow, glabrous; dorsal sepal slightly arcuate, ovate, 8-10 mm long, 5-6 mm wide, acute and short cuspidate at apex, entire and not ciliate at margins; lateral sepals lanceolate, 2-2.5 cm long, 3-4 mm wide, slightly rolled inward and not ciliate at margins, obtuse at apex, upper edges jointed on apical portion, pale orange in colour, the base



Fig. 639. *Bulbophyllum linearibractium* S.S. Ying, close-up of flowers

attached to column-foot and forming 4-5 mm long mentum; petals oblong, 5-6.5 mm long, 3-4 mm wide, obtuse and wider than base at apex, entire and not ciliate at margin, pink with purple veins; lip mobile, tongue-like, curved, fleshy, 5-6.5 mm long, attached to the apex of the column-foot, apex rugose; column short, 2-3 mm long, creamy yellow, winged at apex, the base curved upward, bow-like, prolonged at base into a 7-8 mm long foot.

#### **Diagnosis.**

*Bulbophyllum linearibractium* readily recognized by its closely approximate, elliptic to elliptic-ovoid, 1.2-1.8 cm long, 8-11 mm wide pseudobulbs, smaller leaf, pale orange yellow flowers which arranged by a sub-umbellate, sepal and petals not ciliate at margins and lanceolate, 2-2.5 cm long, 3-4 mm wide, slightly rolled inward lateral sepals.



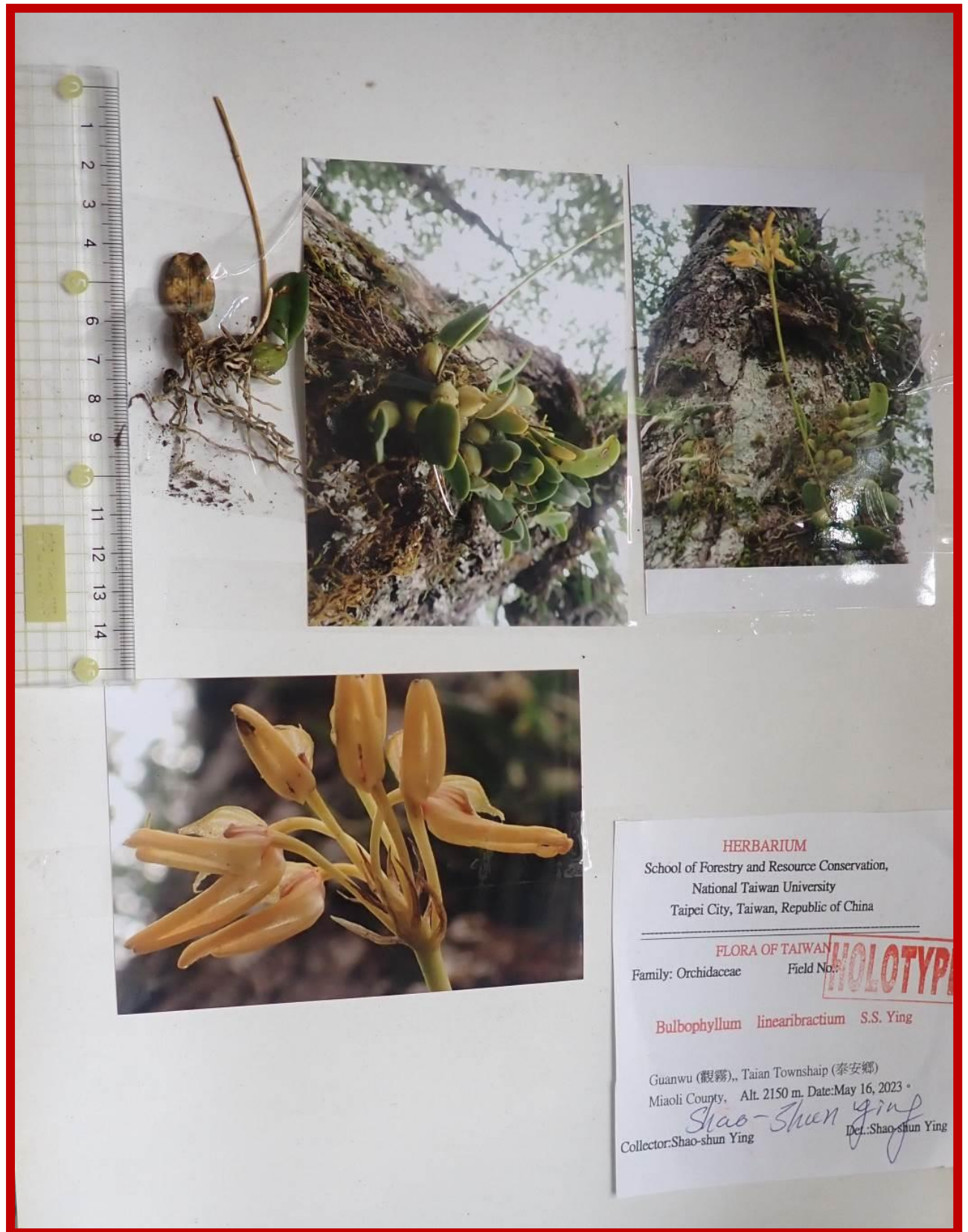


Fig. 640. *Bulbophyllum linearibractium* S.S. Ying, the holotype NTUF-112-120



Fig. 641. *Bulbophyllum linearibractium* S.S. Ying, plants growing in situ

#### **Distribution and phenology.**

*Bulbophyllum linearibractium* S.S. Ying is endemic to Taiwan. It is known from Guanwu (觀霧) area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species which epiphytic on tree-trunk at forest at elevations of 2100-2350 meters. Its flowering time is May to June and fruiting time is July to September.



## 2. *Bulbophyllum taialpinum* S.S. Ying 台灣高山石豆蘭

*Bulbophyllum taialpinum* S.S. Ying, sp. nov. 台灣高山石豆蘭

TYPE: TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2350 m alt. S. S. Ying, s.n. May 30 2023. (holotype, NTUF).



Fig. 642. *Bulbophyllum taialpinum* S.S. Ying, plants growing in situ

**Morphology :** Evergreen perennial epiphytic herbs, roots slender, emerging in tufts from the base of pseudobulb, adhering to the substrate, growing from the nodes beneath each pseudobulb; rhizomes creeping, woody, slender, 2 mm in diameter, grayish white; pseudobulbs closely approximate to 5-19 mm apart, ovoid, 3-4.5 mm long, 2.5-3.2 mm wide, smooth, few longitudinal furrow with age, green. Leaf solitary, oblong to ovate, 1.2-1.7 cm long, 0.8-1.2 cm wide, coriaceous, obtuse and slightly emarginate at apex, obtuse and somewhat rounded at base, glabrous, lustrous green surface and pale green beneath, midrib impressed surface and elevated beneath, lateral veins inconspicuous. Petioles 0 or nearly so.



Fig. 643. *Bulbophyllum taialpinum* S.S. Ying, plants with inflorescences

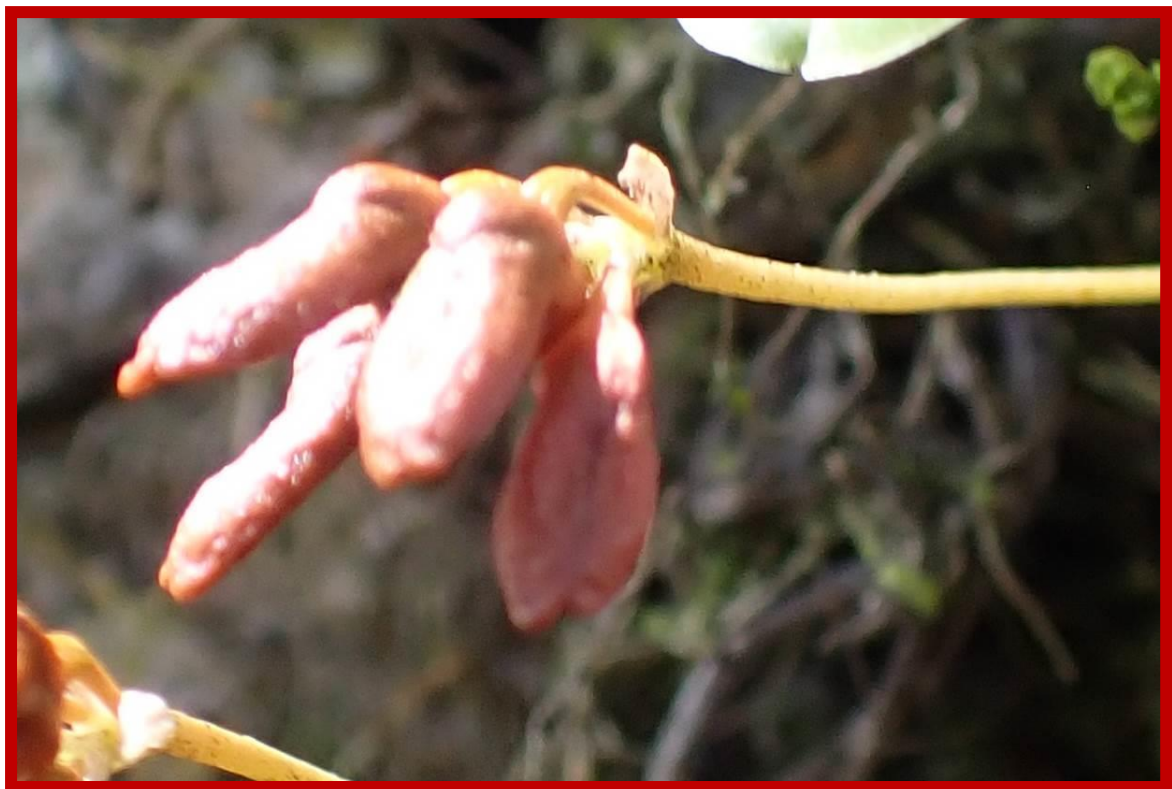


Fig. 644. *Bulbophyllum taialpinum* S.S. Ying, close-up of inflorescences



Flowers 3-4 in a terminal sub-umbellate, dark red in colour, rather smaller, 6-8.5 mm long when opened, scentless; scape produced from base of pseudobulb, erect to ascending, 3-4 cm long, pale yellow, glabrous; sheath-bract single, tubular, basal, 4.5-5.5 mm long, brownish, truncate at apex; bracts ovate, 2.5-3.5 mm long, 2.5 mm wide, acute at apex, pale brownish with veins; pedicels with ovaries 5.4-6.4 mm long, pale yellow, glabrous; dorsal sepal slightly arcuate, ovate, 3.5-4 mm long, 2.5-3 mm wide, acute at apex, few white ciliate at margins; lateral sepals ovate, 5.5-7.5 mm long, 3.5-4.5 mm wide, slightly rolled inward and not ciliate at margins, obtuse at apex, the base slightly clawed like and attached to column-foot and forming 2.6-3 mm long mentum; petals oblong, 3.5-4.2 mm long, 2.5-3 mm wide, obtuse at apex, entire and few white ciliate at margin, dark red with purple veins; lip mobile, tongue-like, curved, fleshy, 2.5-3.5 mm long, red, attached to the apex of the column-foot, apex rugose; column short, 2-3 mm long, creamy yellow, winged at apex, the base curved upward, bow-like, prolonged at base into a 3.5-4 mm long foot.



Fig. 645. *Bulbophyllum taialpinum* S.S. Ying, close-up of inflorescences



Fig. 646 *Bulbophyllum taialpinum* S.S. Ying, close-up of inflorescences



Fig. 647. *Bulbophyllum taialpinum* S.S. Ying, close-up offlowers



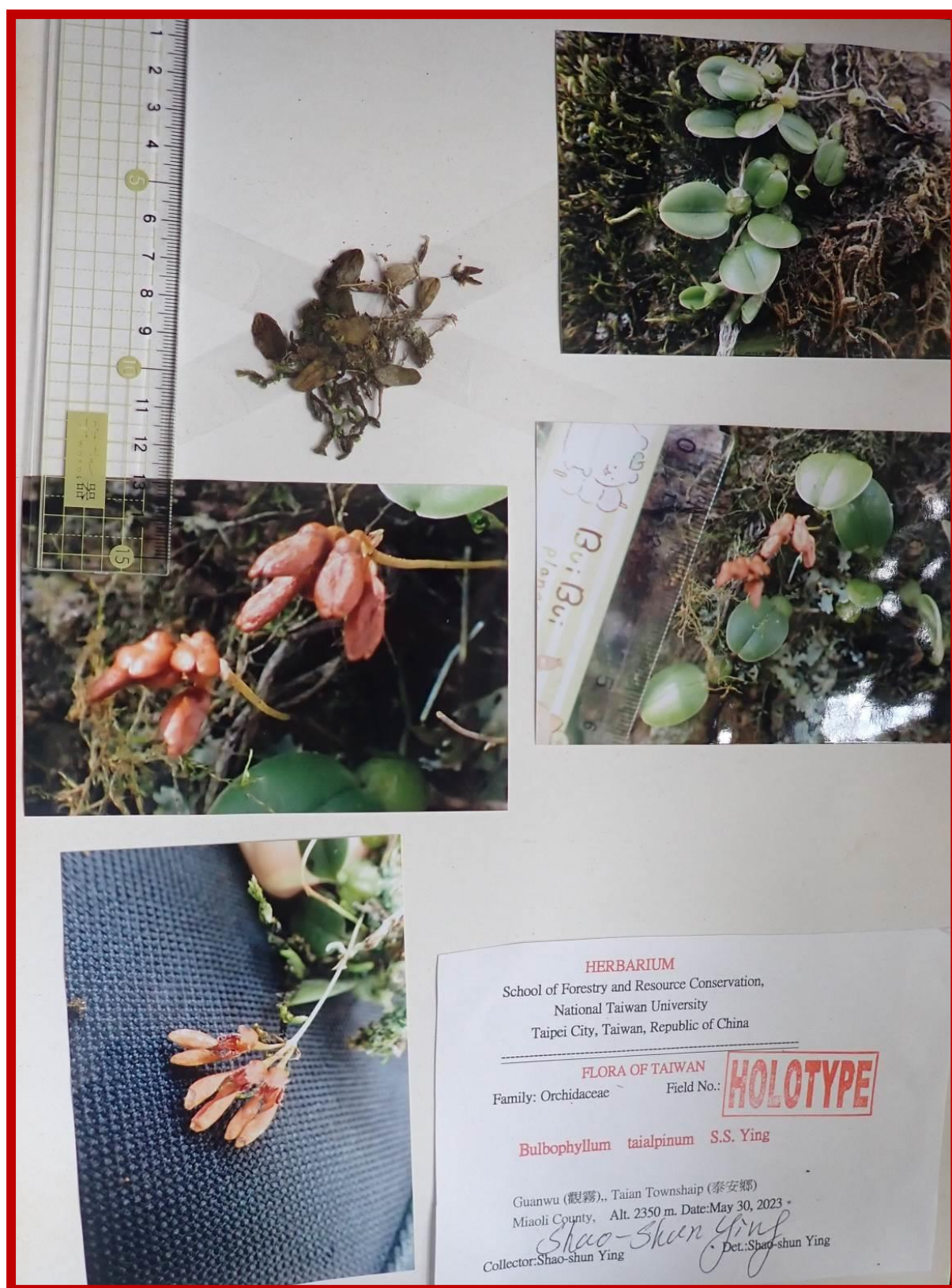


Fig. 648. *Bulbophyllum taialpinum* S.S. Ying, the holotype NTUF-112-121

### Diagnosis.

*Bulbophyllum taialpinum* readily recognized by its smaller pseudobulbs, smaller leaf, dark red flowers which arranged by a sub-umbellate, sepal and petals with few white ciliate at margins and ovate, 5.5-7.5 mm long, 3.5-4.5 mm wide, slightly rolled inward and not ciliate at margins, obtuse at apex, the base slightly clawed like lateral sepals.



Fig. 649. *Bulbophyllum taialpinum* S.S. Ying, plants growing in situ

### Distribution and phenology.

*Bulbophyllum taialpinum* S.S. Ying is endemic to Taiwan. It is known from Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species which epiphytic on tree-trunk at forest at elevations of 2100-2450 meters. Its flowering time is May to June and fruiting time is July to September.



D.One New species of genus *Odontochilus* (Orchidaceae) in Taiwan

*Odontochilus humilus* S.S. Ying 小齒唇蘭

*Odontochilus humilus* S.S. Ying, sp. nov. 小齒唇蘭

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Tungyuanshan (東眼山), 1345 m alt. *S. S. Ying* , *s.n.* September 14, 2023 ° (holotype, NTUF) °



Fig. 650. *Odontochilus humilus* S.S. Ying, plants growing in situ

**Morphology** : Terrestrial small herbs about 10-15 cm tall; rhizome horizontal, fleshy, 4-5 cm long, 3-4 mm across, pale purplish, glabrous; roots few, hairy. Stem erect to ascending, 6-8 cm long, erect to ascending, fleshy, purplish, glabrous. Leaves 5-6, arranged from base to top of stem, ovate, 1-2.5 cm long, 6-10 mm wide, acute at apex, obtuse at base, chartaceous, entire to slightly wavy at margins, lustrous green surface and pale green beneath, glabrous on both surfaces, midrib impressed surface and elevated beneath, lateral veins inconspicuous. Petioles 9-12 mm long, amplexicaul and a tubular sheath formed.



Fig. 651. *Odontochilus humilus* S.S. Ying, stem and leaves

Flowers 2, very rarely solitary, white, 7-8 mm in diameter when opened; scape terminal, erect, 4-5 cm long, white villose; bracts not seen or cauduous; pedicel with ovaries 7-8 mm long, hairy to villose; sepals subequal, hairy outside and glabrous inside; dorsal sepal appressed to petals and forming a hood, ovate, 5-6 mm long, 3-3.5 mm wide, acute at apex, green tinged with purple; lateral sepals not widely opened, elliptic, 4.5-5.5 mm long, 3-3.5 mm wide, acute at apex; petals lanceolate to broadly lanceolate, 5-5.5 mm long, 2.5-3 mm wide, acute at apex, oblique at base, white tinged with green; lip white, T-shaped, 12-15 mm long; hypochile bisaccate, sac subglobose, 1.5 mm in diameter; mesochile 5-6.5 mm long, with 3-4 fimbriate flange on each side, fimbriate linear, 4.5-6 mm long, pale green; epichile dilated to a 2 unequal blades, white; one ovate, 6-7 mm long, 5.5-6 mm wide at apex, dentate at margin; the other cuneate, 5-6 mm long, 4.5-5 mm





Fig. 652. *Odontochilus humilus* S.S. Ying, flower blooming in the wild

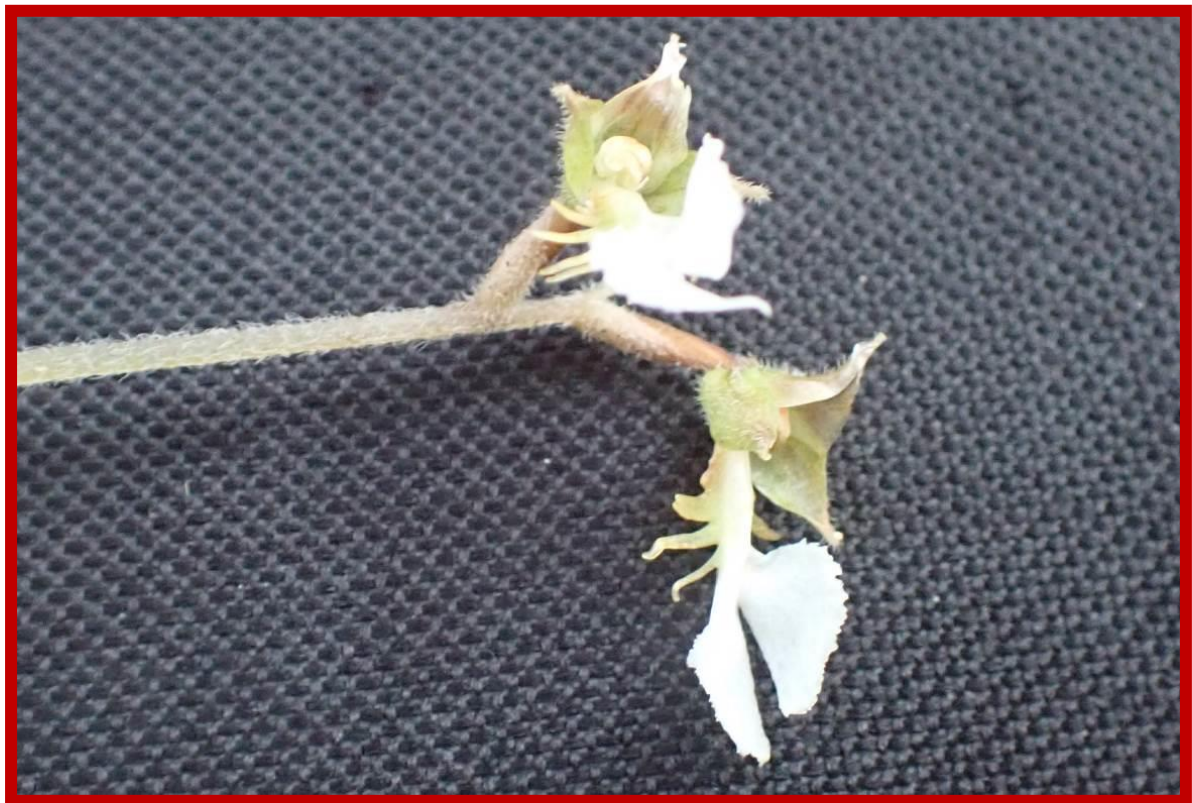


Fig. 653. *Odontochilus humilus* S.S. Ying, scape and flowers

wide, dentate at margins; column 7-8 mm long, with small wings laterally; rostellum bifid; anther acuminate in front, 3.5-4 mm long; pollinia 2, clavate; stigma lobes confluent.



Fig. 654. *Odontochilus humilus* S.S. Ying, the whole plant



Fig. 655. *Odontochilus humilus* S.S. Ying, close-up of a flower

**Diagnosis.**

*Odontochilus humilus* readily recognized by its smaller herb with 1-2 flowers,



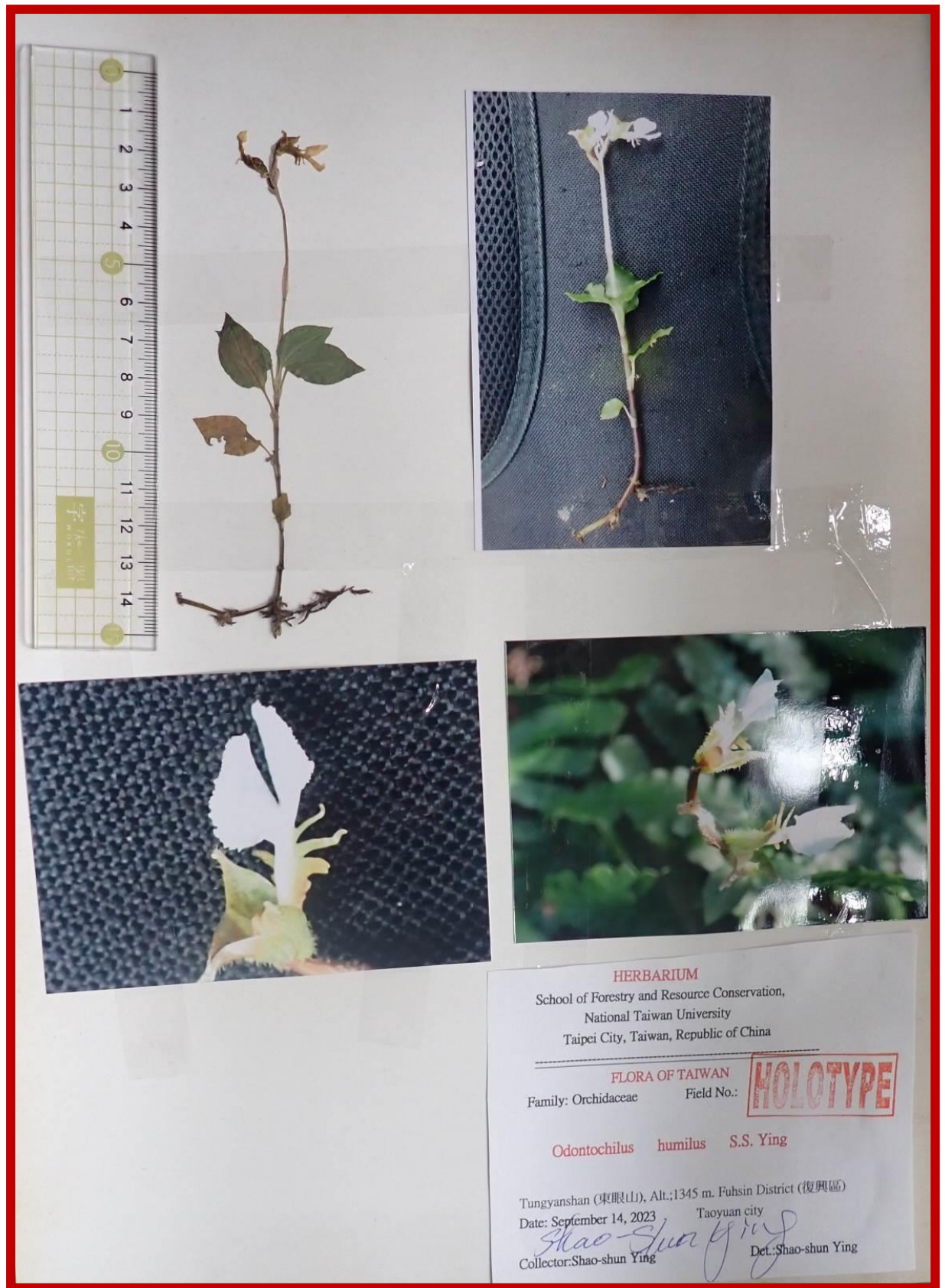


Fig. 656. *Odontochilus humilus* S.S. Ying, the holotype NTUF-112-122

and white T-shaped lip; hypochile bisaccate, mesochile 5-6.5 mm long, with 3-4 fimbriate flange on each side, fimbriate linear, 4.5-6 mm long, pale green; epichile dilated to a 2 unequal, white blades.



Fig. 657. *Odontochilus humilus* S.S. Ying, close-up of a flower

#### **Distribution and phenology.**

The species is endemic in Taiwan, It is known from Tungyuanshan (東眼山) , Fuhsin District (復興區) , Taoyuan city , northern Taiwan. ° It was discovered the species under *Cryptomeria* forests at elevations of 1100-1450 meters. Its flowering time is September to October, and fruiting time Octobert to November.



E. One New species of genus *Zeuxine* (Orchidaceae) in Taiwan

*Zeuxine lalashanensis* S.S. Ying 拉拉山線柱蘭

*Zeuxine lalashanensis* S.S. Ying, *sp. nov.* 拉拉山線柱蘭

TYPE: TAIWAN. Taoyuan city, Fuhsin District (復興鄉), Lalashan (拉拉山),  
Between Entrance of trail (步道入口) and Giant trees group (巨木群), 1994 m alt. *S.*  
*S. Ying*, *s.n.* September 30, 2023. (holotype, NTUF).



Fig. 658. *Zeuxine lalashanensis* S.S. Ying, part of inflorescence

**Morphology :** Terrestrial, roots fleshy, several, somewhat hairy; stem erect, 20-35 cm long with scape, erect to ascending, dark purpleish, glabrous or nearly so. Leaves 4-6, simple, alternate, closely approximate, oblong to oblong-ovate, 3.5- 4.5 cm long, 1.5-2.5 cm wide, chartaceous, acute at apex, sheath and amplexicaul at base, entire at margins, dark lustrous green and with one central white stripe, pale green beneath, glabrous on both surfaces, inconspicuous 3-nerved at base, lateral veins inconspicuous; sheathes 1.2-1.8 cm long, pale purplish or nearly so, slightly winged, entire, glabrous.



Fig. 659. *Zeuxine lalashanensis* S.S. Ying, stem and leaves

Flowers 15-21, smaller, not widely opened, 2-2.5 mm in diameter when opened, pink tinged with brownish purple, in a terminal spike; scape 14-24.5 cm long, erect to ascending, shortly white hairy, with 2-3 bracts at base; bracts ovate, 5-6.5 mm long, about 4 mm wide, acute at apex, purplish green, glabrous; floral bracts at base of ovaries,





Fig. 660. *Zeuxine lalashanensis* S.S. Ying, plant growing in situ



Fig. 661. *Zeuxine lalashanensis* S.S. Ying, close-up of flowers, mind ovaries had fertilized

lanceolate to ovate-lanceolate, 4.5-5.5 mm long, about 2.5 mm wide, acuminate at apex, pale purplish, villous outside and glabrous inside; ovaries cylindrical, 7-10 mm long, erect, villous; dorsal sepal concave, ovate, 4.5-5 mm long, about 2.5-2.8 mm wide at base, dark purple, acute with a mucro at apex, glabrous, with petals and a hood formed; lateral sepals attached with petals, not spreading, ovate to ovate-oblong, 3.4-4.1 mm long, 1.4-1.8 mm wide, acute with a mucro at apex; petals ovate to ovate-lanceolate, 3.5-3.8 mm long, 1.5-1.9 mm wide, acute at apex, white tinged with purple tip; lip included, ovate to oblong-ovate, 2-3.5 mm long, 1.5-1.6 mm wide, acute at apex, white tinged with purplish, not lobed, free from column; column 1.8-2.2 mm long, with 2 rectangular appendages just below stigma; stigma papillate; pollinia 2.

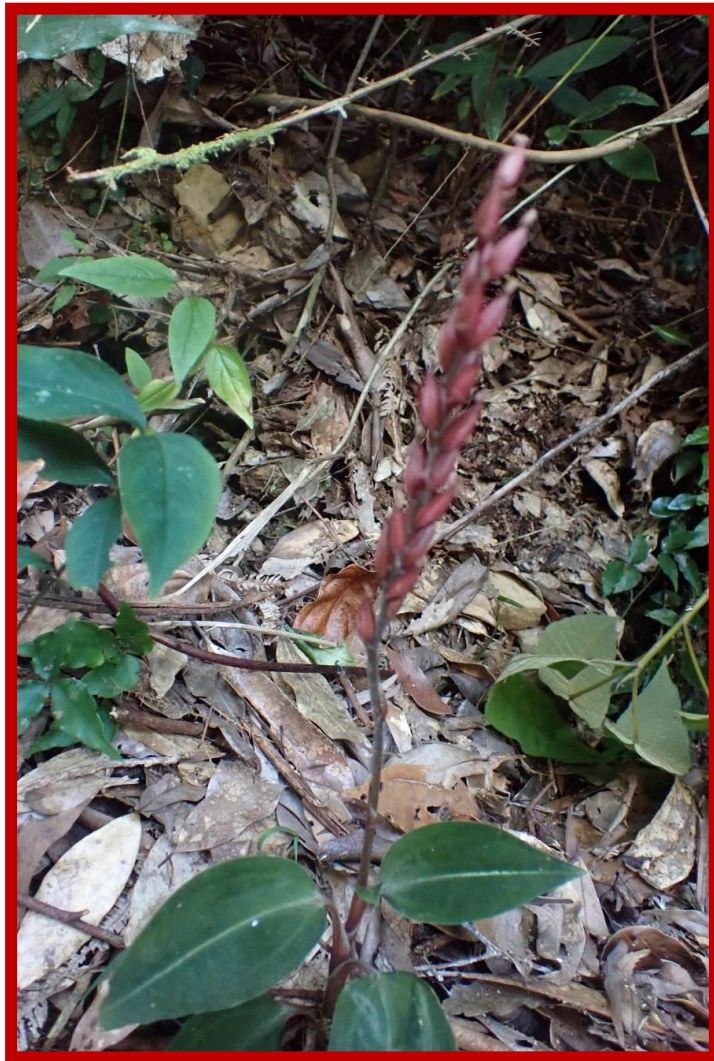


Fig. 662. *Zeuxine lalashanensis* S.S. Ying, fruiting plant



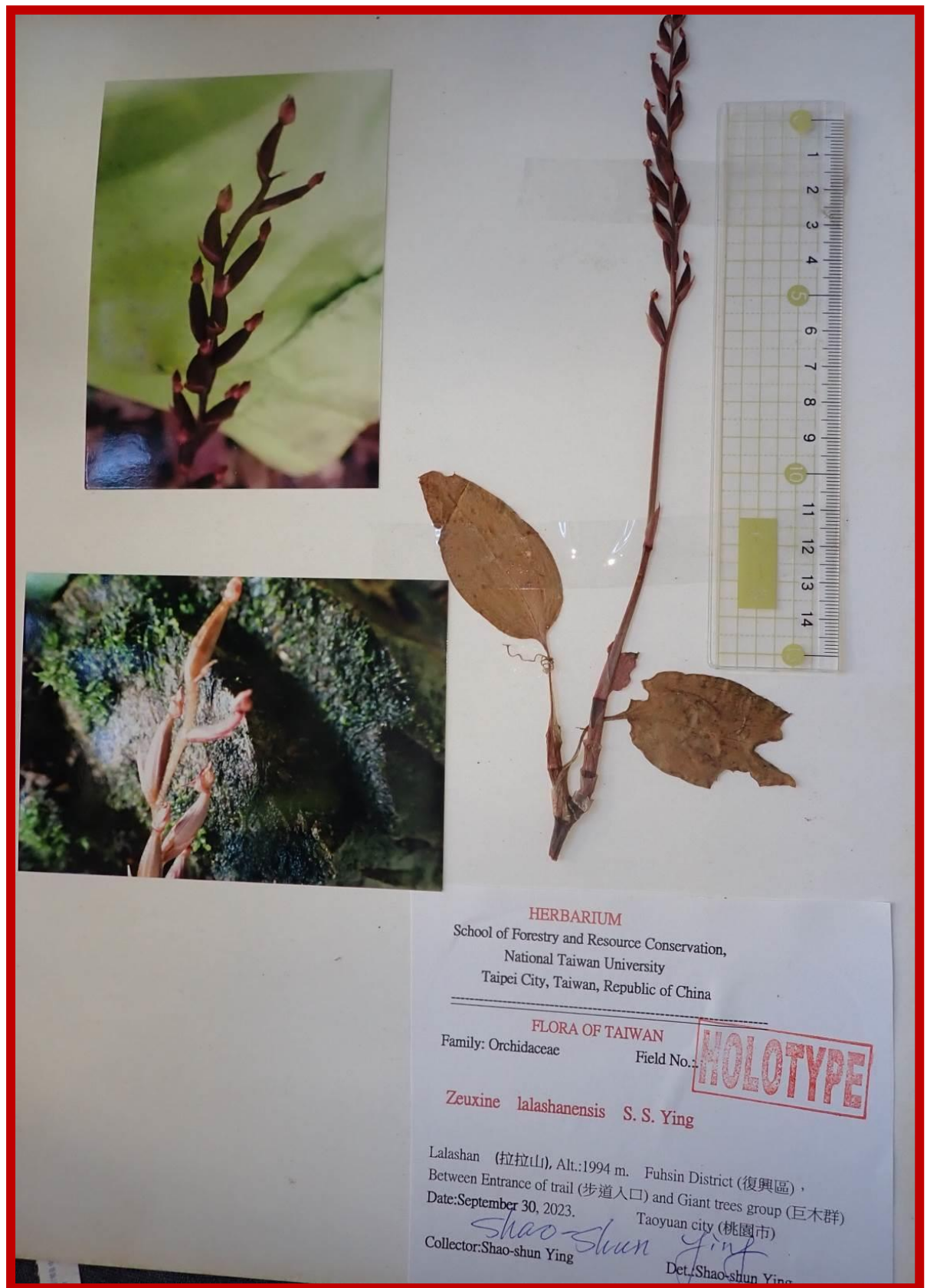


Fig. 663. *Zeuxine lalashanensis* S.S. Ying, the holotype NTUF-112-123

Fruit a capsule, cylindrical, 6-8 mm long, 2.5-3 mm across, purplish red in colour, opened when mature. Seeds numerous.

**Diagnosis.**

The species readily recognized by its 4-5 rather larger leaves and not widely opened many flowers which with not lobed lip.



Fig. 664. *Zeuxine lalashanensis* S.S. Ying, inflorescence

**Distribution and phenology.**

*Zeuxine lalashanensis* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山), Fuhsin District (復興區), Taoyuan city, northern Taiwan. It was discovered the species under *broaded-leaved* forestst at elevations of 1800-2000 meters. Its flowering time is September to October and fruiting October to November.



F.One New sprcies of genus *Anoectochilus* (Orchidaceae) in Taiwan

*Anoectochilus lalashanensis* S.S. Ying 拉拉山金線蓮

*Anoectochilus lalashanensis* S.S. Ying, *sp. nov.* 拉拉山金線蓮

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興鄉) , Lalashan (拉拉山),  
Between Entrance of trail (步道入口) and Giant trees group (巨木群) , 1989 m alt. *S.*  
*S. Ying* , *s.n.* October 09, 2023 . (holotype, NTUF) .



Fig. 665. *Anoectochilus lalashanensis* S.S. Ying, close-up of flowers  
(mind the lip very particular)

**Morphology** : Terrestrails, rhizome creeping, fleshy, 4-6 cm long, pale brownish, rooting at nodes. Stem erect to ascending, terete, 5-6.5 cm long, fleshy, pale brown to pale purple, glabrous, 4-5 leaves on the top of stem. Leaves simple, alternate, ovate to broadly ovate, 2.5-3.5 cm long, 2.2-3 cm wide, shortly scute at base, cordate at base, entire to slightly wavy at margins, velvety dark brown, with reticulate network of white nerves surface, pale  
-537-

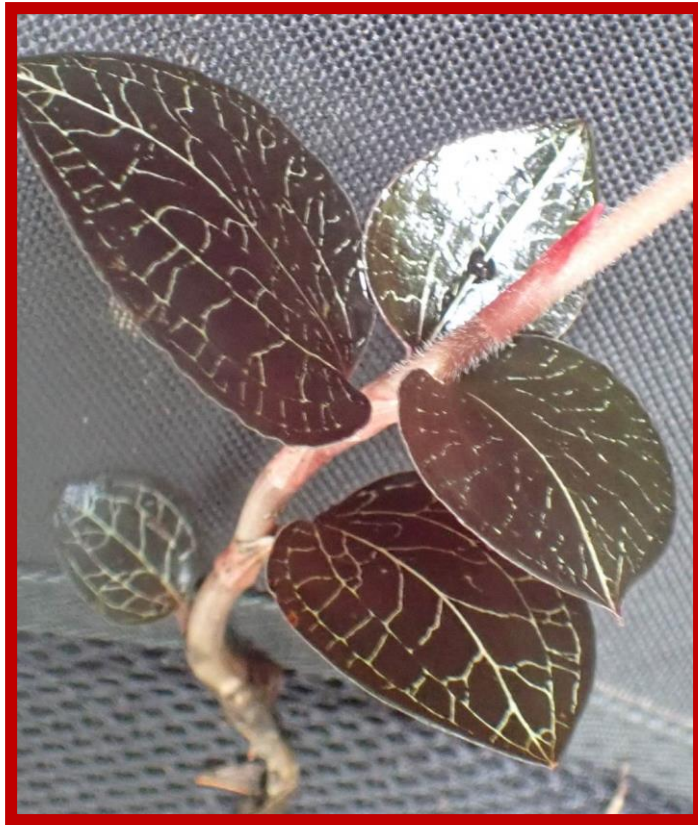


Fig. 666. *Anoectochilus lalashanensis* S.S. Ying, leaves, surface



Fig. 667. *Anoectochilus lalashanensis* S.S. Ying, leaves, beneath



purplish and 3 white nerved at base beneath, glabrous on both surfaces. Petioles with sheaths 7-8 mm long, 2.5-3.5 mm wide, pale purplish.



Fig. 668. *Anoectochilus lalashanensis* S.S. Ying, inflorescence

Flowers 5-8, 6-8 mm in diameter when opened, rather larger, in a terminal spike; scape 13-16 cm long, densely fine tomentose hairs; floral rachis 4.5-6 cm long, hairy; floral bracts lanceolate, 7-9 mm long, 1.5-2.5 mm wide, acuminate to acute at apex, hairy; pedicels with ovaries 9-12 mm long, 1.5-2 mm wide, scattered with somewhat long hairs; sepals spreading, pale purplish and hairy outside, white tinged with red at apex and glabrous; dorsal sepals ovate-triangular, 4-5 mm long, 2-3 mm wide, acute at apex; lateral sepals ovate, 4.5-6 mm long, 2.5-3.5 mm wide, acute at apex, slightly oblique at base, with slightly upward reflexed apex; petals falcately lanceolate, 4-4.8 mm long, 2-2.5 mm wide, acute at apex, oblique at base, white, densely connivent and forming a hood with the dorsal sepal; lip 3-lobed, white; lateral lobes rectangular, 4-5 mm long, about 3 mm wide, truncate at apex, with 4-shallowly lobes or filiforms at margins; midlobe with a short claw at base, 2-lobed; the claw 0.5-0.7 mm long; lobes oblong, 6-7 mm long, 3-3.6 mm wide,



Fig. 669. *Anoectochilus lalashanensis* S.S. Ying, close-up of flowers

obtuse at apex; spur pointing upward, 5.5-6.5 mm long, pale brown, bilobed at apex; lobes 1-1.5 mm long, obtuse at apex, with 2 large globose subsessile glands inside; column 4-4.5 mm long, with 2 short vertical wing at front; stigmas 2, lateral, hemisphere; anther ovate, 3-3.5 mm long; pollinia 2, powdery, yellow, attached to a viscidium by short caudicles.

### **Diagnosis.**

The species near to *Anoectochilus kosunensis* Hayata, but differs from it by its spreading sepals, especially dorsal one; 3-lobes lip and the lateral lobes rectangular, 4-5 mm long, about 3 mm wide, truncate at apex, with 4-shallowly lobes or filiforms at margins; midlobe with a short claw at base, 2-lobed. The highest elevations where Taiwan *Anoectochilus* species growing.





Fig. 670. *Anoectochilus lalashanensis* S.S. Ying, the holotype NTUF-112-124





Fig. 671. *Anoectochilus lalashanensis* S.S. Ying, plant growing in situ



**Distribution and phenology.**

*Anoectochilus lalashanensis* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山) , Fuhsin District (復興區) , Taoyuan city , northern Taiwan. It was discovered the species under *broad-leaved* forestst at elevations of 1900-2000 meters. Its flowering time isOctober and fruiting October to November.

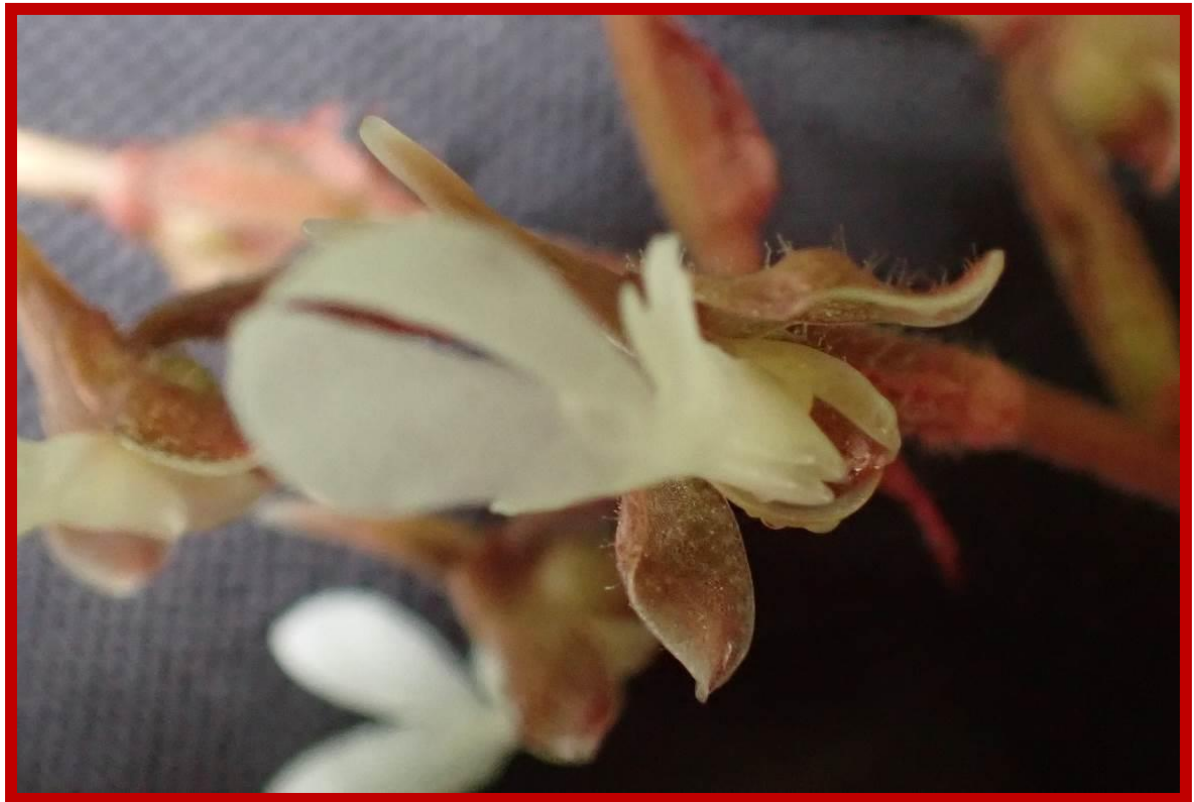


Fig. 672. *Anoectochilus lalashanensis* S.S. Ying, close-up of flower  
(Mind the sepals and petals.)

## G. Some New combination of family Orchidaceae

### 1). *Odontochilus gouanyuanensis* (S.S. Ying) S.S. Ying, *comb.nov.*

*Odontochilus gouanyuanensis* (S.S. Ying) S.S. Ying, *comb.nov.* 關原全唇蘭

*Vexillabium* (*Odontochilus*) *gouanyuanensis* S.S. Ying, New Taxa & New Names  
4:309 (2022). (2021).

*Kuhlhasseltia gouanyuanensis* (S.S. Ying) S.S. Ying, New Taxa & New Names  
5:471 (2022).



Fig.673. *Kuhlhasseltia gouanyuanensis* (S. S. Ying) S.S. Ying

### Distribution and phenology.

The species is endemic in Taiwan, It is known from on forest floor of a coniferous and broadleaved mixed forest (*Picea morrisonicola* Hayata, *Pinus taiwanensis* Hayata and *Quercus semecarpifolia* Sm.) at the elevation between 2300-2500m near to Guanyuan area( 關原) Hualien county , eastern Taiwan . Its flowering time is August to September and fruiting September to October.



2).*Bulbophyllum quangdangii* (Vuong, V.C.Nguyen & Aver.)

S.S. Ying, *comb.nov.*

*Bulbophyllum quangdangii* (Vuong, V.C. Nguyen & Aver.) S.S. Ying, *comb.nov.*

*Sunipia quangdangii* Vuong, V.C.Nguyen & Aver. in Phytotaxa 452: 96 (2020)

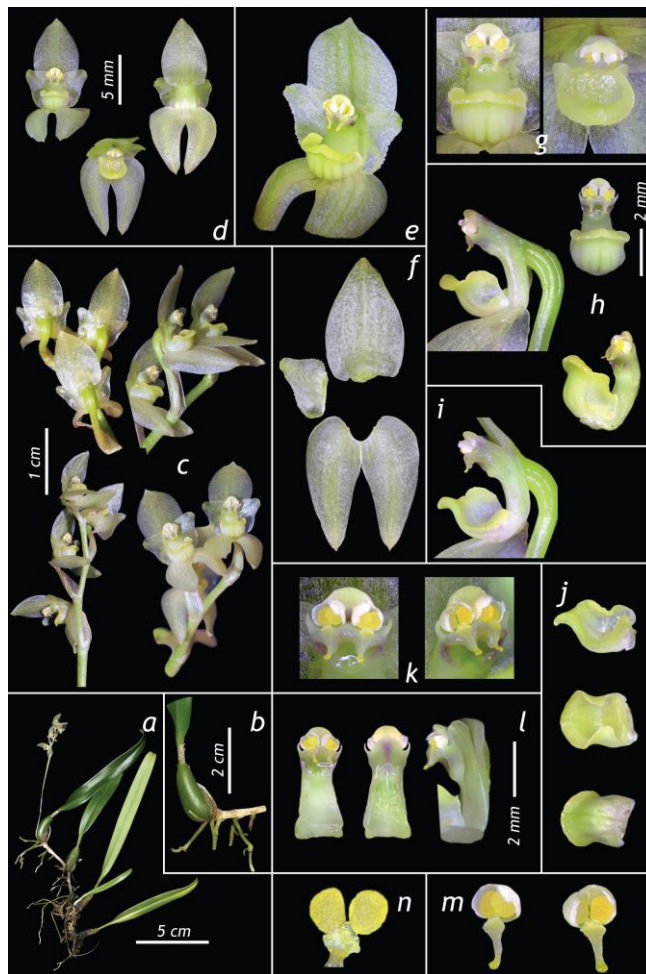
Distribution: Lam Dong Province, Da Lat City area, along Tia Stream, in evergreen broad-leaved forest at elevation 1,600-1,700 m, Southern Vietnam,

3).*Bulbophyllum saccata* (Aver.) S.S. Ying, *comb.nov.*

*Bulbophyllum saccata* (Aver.) S.S. Ying, *comb.nov.*

*Sunipia saccata* Aver. in Novosti Sist. Vyssh. Rast. 50: 36 (2019)

Distribution: Laos, Xiangkhouang Prov.



*Bulbophyllum saccata* (Aver.) S.S. Ying, *comb.nov.*

## 52.Taxonomic Notes on the Family Asteraceae inTaiwan (3)

### A.11 New Species of Asteraceae in Taiwan

#### 1. *Youngia macrophylla* S.S. Ying

*Youngia macrophylla* S.S. Ying, sp.nov. 大葉黃鵪菜

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Lalashan (拉拉山), Between Entrance of trail (步道入口) and Giant trees group (巨木群) , 1753 m alt. *S. S. Ying* , *s.n.* December 27, 2022 ° (holotype, NTUF) °



Fig. 674. *Youngia macrophylla* S. S. Ying, Habitat

**Morphology** : Annual terrestrial herbs, stems absent. Leaves simple, many in a rosette, radial arrangement, ovate to ovate-oblong in outline, 6-11 cm long, 3.5-4.5 cm wide,



obtuse at apex, attenuate at base, membranous, pinnatisect at margins, pubescent on both surfaces, especially on midrib and lateral veins, green surface and pale green beneath, midrib impressed surface and elevated beneath. lateral veins 3-4 per side impressed surface and elevated beneath; terminal lobe largest, 5.5-6.5 cm long, 3-4.5 cm wide, obtuse at apex, dentate at margins; lateral lobes 2-3 per side, alternate, smaller, triangular, 3.5-4.5 mm long, 2.5-3 mm wide, acute at apex, entire to few dentate at margins. Petioles 4.5-8.5 cm long, hirsute, without winged, densely scattered white hairs, pale purple.



Fig. 675. *Youngia macrophylla* S. S. Ying, leaves

Capitula numerous, rather smaller, orange-yellow, 6-7 mm in diameter, in a terminal compound cymose; scape 1-3, green, from leaf-fascicled, 20-25 cm long, erected to ascending, leafless, pubescent to hirsute, grooved; each cymose with 5-10 capitula; peduncles 8-12 slender, green, nearly glabrous; pedicels 2-4 cm long, nodding, glabrous; capitula with 7-10 florets; involucre cylindrical, 4-5 mm long, 1.5-2 mm across; glabrous



Fig. 676. *Youngia macrophylla* S. S. Ying, inflorescence



Fig. 677. *Youngia macrophylla* S. S. Ying, involurcal and phyllares



or nearly so, green tinged with purple at apex; outer phyllaries 7-8, ovate-triangular to lanceolate, 1.5-2.0 mm long, 0.6-1 mm wide, acute at apex; inner phyllaries 7-8, lanceolate, subequal, 6-8 mm long, 1.5-2 mm wide, green tinged with purple at apex, scarious- margined, acute at apex; ligules 9-11 mm long, 3.5-4.5 mm wide, 5-toothed; teeth 0.1-0.2 mm long, tube 2.5-3.5 mm long; anther tube 3-4 mm long; style branches ca 1.5 mm long.

Achenes 6-8 in a capitulum, cylindric, brown to pale brown, 2.5-3 mm long, 0.25 mm wide, compressed, attenuate to the narrow neck, with a white conical summit, 6-8-ribbed. Pappus white, few, 3.5-4.2 mm long, 1-seriate.



Fig. 678. *Youngia macrophylla* S. S. Ying, inflorescence

#### **Diagnosis.**

*Youngia macrophylla* is characterized by its terrestrial habitat, pinnatisected pubescent, glabrous leaves, terminal lobe largest, and lateral lobes 2-3 per side, very

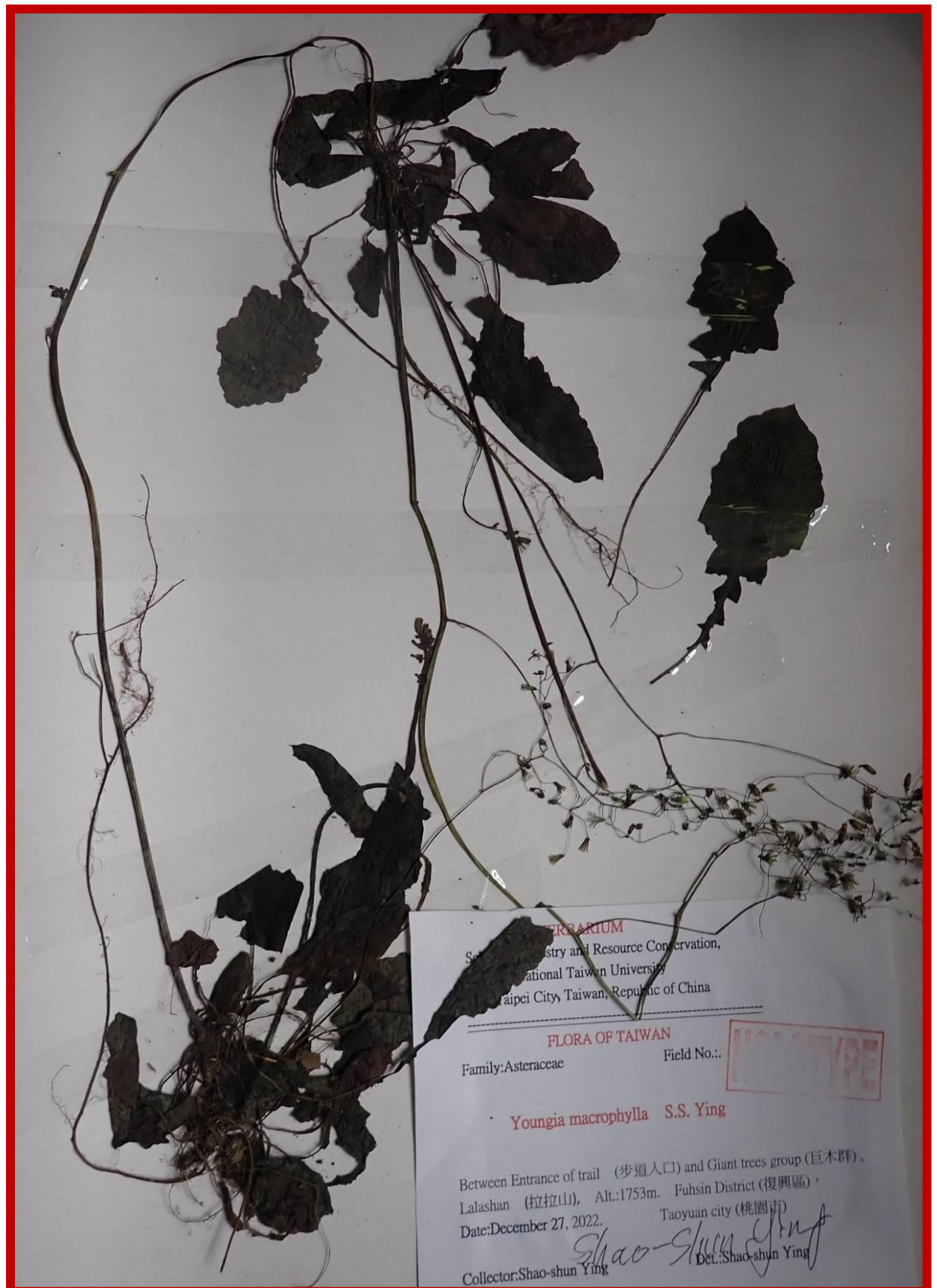


Fig. 679. *Youngia macrophylla* S. S. Ying, the holotype NTUF-112-125



smaller; capitula numerous to from a terminal compound cymose; each capitula with 7-10 florets and cylindrical, brown to pale brown achenes which with 6-8-ribbed..

**Distribution and phenology.**

*Youngia macrophylla* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山), between Entrance of trail (步道入口) and Giant trees group (巨木群) , Fuhsin District(復興區) , Taoyuan city , northern Taiwan ° It was collected on the on mountain slope of hiking trail , at between 1600 and 1750 m elevation and flowering time from December to March, fruiting time from February to June °



Fig. 680. *Youngia macrophylla* S. S. Ying, leaf-blades and petioles



Fig. 681. *Youngia macrophylla* S. S. Ying, achenes and pappi

## 2. *Launaea taiwanensis* S.S. Ying

*Launaea taiwanensis* S.S. Ying, sp.nov. 台灣栓果菊

TYPE:TAIWAN. Taichung City , Hoping District (和平區) , Between Tayulin (大禹嶺) and Songchuangang (松泉崗), 2570 m . *S. S. Ying* , *s.n.* May 27, 2023 . (holotype, NTUF) .



Fig. 682. *Launaea taiwanensis* S. S. Ying, capitulum

**Morphology** : Annual to biennial terrestrial small herbs with stolon; stolon elongate, slender, 15-25 cm long, often growing one leaf firstly and then forming a new plant; stems absent. Leaves simple, 5-8 in a rosette, radial arrangement, ovate to ovate-oblong in outline, 4-6 cm long, 1.5-1.9 cm wide, acute at apex, attenuate at base, membranous, pinnatisected and ciliate at margins, glabrous to hairy on both surfaces, especially on midrib, green surface and pale green beneath, midrib impressed surface and elevated





Fig. 683. *Launaea taiwanensis* S. S. Ying, leaves



Fig. 684. *Launaea taiwanensis* S. S. Ying, plants growing in situ



beneath. lateral veins inconspicuous; terminal lobe largest, ovate-triangular, 1.1-1.7 cm long, 1-1.3 cm wide, obtuse at apex, dentate and ciliate at margins; lateral lobes 3-5 per side, alternate to nearly opposited, smaller, triangular, 3.5-4.5 mm long, 2.5-3 mm wide, acute at apex, entire to few dentate at margins. Petioles 1.5-2.5 cm long, slightly winged, glabrous to slightly hairy, green.



Fig. 685. *Launaea taiwanensis* S. S. Ying, flowering plant

Capitula solitary, rarely to two, yellow, 1.2-1.7 cm in diameter when opened, scentless; scape 1, green, from leaf-fascicled, 5-7 cm long, erected to ascending, leafless, glabrous, smooth; pedicels 7-8 mm long, erect, glabrous; capitula with 8-11 florets; involucre cylindrical, 5-6 mm long, 1.5-2.5 mm across; glabrous or nearly so, green; outer phyllaries 5-6, ovate-triangular to lanceolate, 1.5-2.0 mm long, 0.6-1 mm wide, acute at apex; inner phyllaries 6-7, lanceolate, equal, 5.6-7.5 mm long, 1.5-2.2 mm wide, green, scarious- margined, acute at apex; ligules 7-8.5 mm long, 3.1-3.9 mm wide, 5-toothed; teeth 0.1-0.2 mm long, obtuse at apex, tube 3.5-4.5 mm long; anther tube 3-4 mm long; style elongate, branches 5.5-6.5 mm long.

Achenes 6-8 in a capitulum, cylindric, brown to pale brown, 2.5-3.2 mm long, 0.2



mm wide, compressed, 4-6-ribbed. Pappus white, few, 3.8-5.7 mm long.



Fig. 686. *Launaea taiwanensis* S. S. Ying, plants growing in situ

#### Diagnosis.

**The genus is a new record of Taiwan flora**

*Launaea taiwanensis* is characterized by its lithophytic and water-loving in habitat, plants with stolon; somewhat smaller, pinnatisect glabrous leaves, terminal lobe largest, and lateral lobes 3-5 per side, very smaller; capitula solitary to rare to two; each capitula with 8-11 florets and cylindrical, brown to pale brown achenes which with 6-8-ribbed..

#### Distribution and phenology.

*Launaea taiwanensis* S.S. Ying is endemic to Taiwan . It is known from between Tayulin (大禹嶺) and Songchuangang (松泉崗), Central Cross-Island Highway Hoping District (和平區) , Taichung City , central Taiwan . It was collected on the rocks which covered with mosses of mountain slope , between 2400 and 2650 m elevation



Fig. 687. *Launaea taiwanensis* S. S. Ying, the holotype NTUF-112-126





Fig. 688. *Launaea taiwanensis* S. S. Ying, the isotype

NTUF-112-127



and flowering time from May to June, fruiting time from June to July °



Fig. 689. *Launaea taiwanensis* S. S. Ying, plants growing in situ



### 3. *Erigeron taiwanensis* S.S. Ying

*Erigeron taiwanensis* S.S. Ying, sp.nov. 台灣飛蓬

TYPE:TAIWAN. Taichung City , Hoping District (和平區) , Between Tayulin (大禹嶺) and Songchuangang (松泉崗), 2470 m . *S. S. Ying* , *s.n. May 27, 2023* ° (holotype, NTUF) °

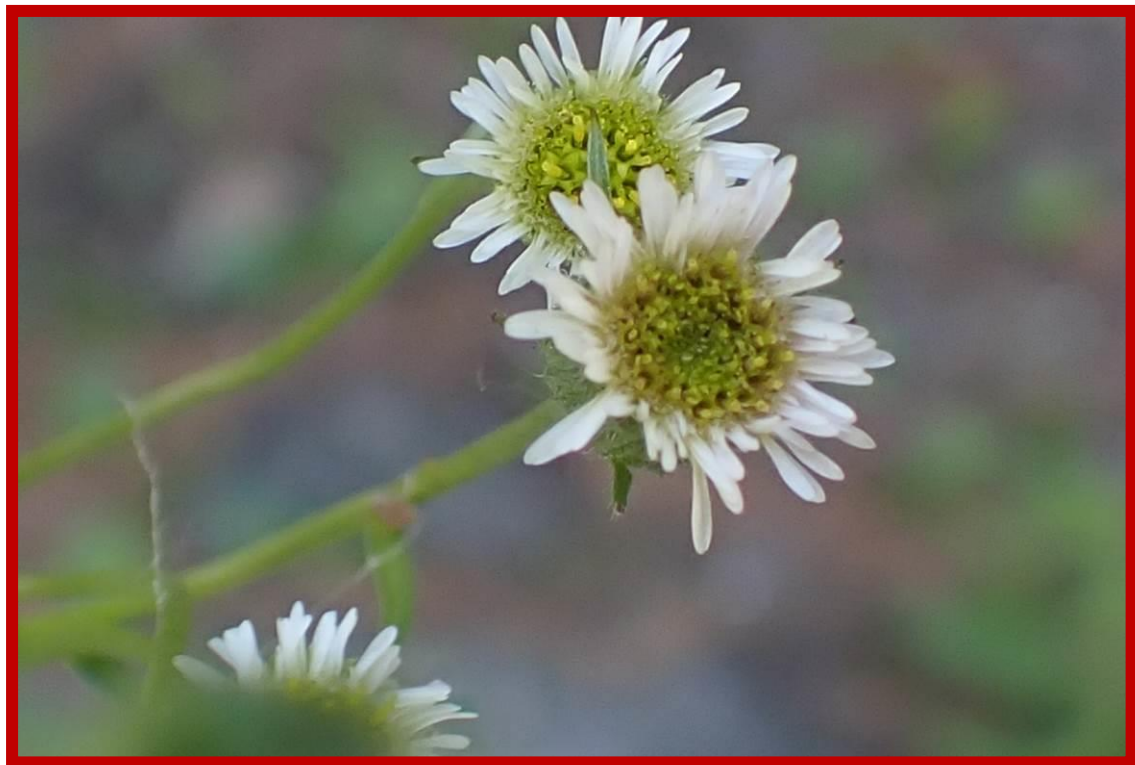


Fig. 690. *Erigeron taiwanensis* S. S. Ying, capitula

**Morphology** : Annual to biennial terrestrial herbs without stolon; stems slender, one to several, erect to ascending, 8-17 cm long, green, glabrous. Leaves simple, radicleal and cauline; the radical ones many, usuallu forming a rosette, linear, 3.5-5.5 cm long, 2.5-4 mm wide, acuminate at apex, attenuate and amplexicaul at base, membranous, entire and ciliate at margins, glabrous to slightly hairy on both surfaces, somewhat dark green surface and pale green beneath, midrib impressed surface and elevated beneath, lateral veins inconspicuous. Cauline leaves alternate, like the radical leaves, but smaller, 2.6-3.5 cm long. Petioles absent.



Fig. 691. *Erigeron taiwanensis* S. S. Ying, leaves and flower-buds

Capitula 2-5 in each stem, in a terminal racemose, white, 6-7 mm in diameter when opened, inflorescences erect to ascending, 5-7 cm long, glabrous, smooth; pedicels elongate, 3.5-5.5 cm long, erect to ascending, green, glabrous; bracts linear, 6-7 mm long, 1.5 mm wide, acute at apex; involucre campanulate, 5-7 mm long, 3.5-4.5 mm across; hairy or nearly so, green; phyllaries 3-series, equal, lanceolate, 4.5-5.5 mm long, 1.2-1.5 mm wide, acute at apex; inner phyllaries somewhat shorter, green, scarious- margined, acute at apex; ray florets 2-seriate, white, unequal, spatulate, 4.5-5 mm long, 0.5-0.7 mm wide, obtuse at apex; tube 2-2.5 mm long, glabrous; lamina spreading; disk florets bisexual, yellow to greenish yellow, tubular, 2.6-3.2 mm long, 5-lobed at apex; lobes triangular, 0.5-0.6 mm long, yellow to pale yellow, acute at apex;

Achenes cylindrical, 0.6-1.2 mm long, flattened, brownish to dark brown, glabrous or nearly so; pappus pale brownish, 4.5-5.5 mm long, bristles inconspicuous.





Fig. 692. *Erigeron taiwanensis* S. S. Ying, inflorescence



Fig. 693. *Erigeron taiwanensis* S. S. Ying, close-up of capitula



Fig. 694. *Erigeron taiwanensis* S. S. Ying, close-up of fruit and achenes



Fig. 695. *Erigeron taiwanensis* S. S. Ying, close-up of achenes



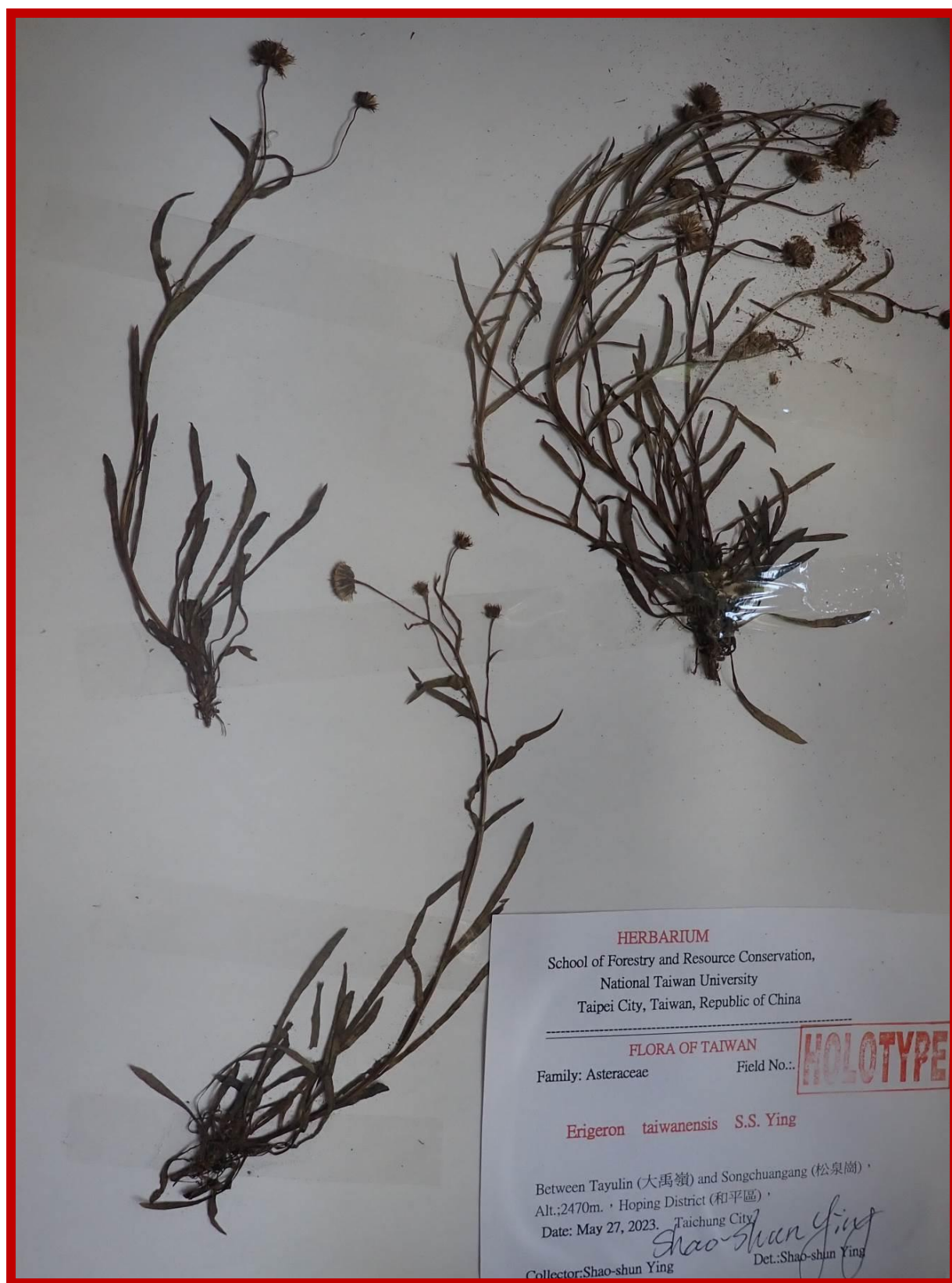


Fig. 696. *Erigeron taiwanensis* S. S. Ying, the holotype NTUF-112-128

### Diagnosis.

*Erigeron taiwanensis* is characterized by its linear leaves, smaller, 2-5 white capitula in a terminal racemose inflorescence; ray florets 2-seriate, white, unequal, spatulate, 4.5-5 mm long, 0.5-0.7 mm wide, obtuse at apex and and cylindrical, 0.6-1.2 mm long, flattened, brownish to dark brown achenes.



Fig. 697. *Erigeron taiwanensis* S. S. Ying, habitat

### Distribution and phenology.

*Erigeron taiwanensis* S.S. Ying is endemic to Taiwan ° It is known from between Tayulin (大禹嶺) and Songchuangang (松泉崗), Central Cross-Island Highway Hoping District (和平區), Taichung City, central Taiwan ° It was collected on the mossy mountain slope, between 2300 and 2550 m elevation and flowering time from May to June, fruiting time from June to July °



#### 4. *Cirsium guanwuense* S.S. Ying 觀霧薊

*Cirsium guanwuense* S.S. Ying, sp.nov. 觀霧薊

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉) , Guanwu (觀霧) 2351 m alt. *S. S. Ying* , *s.n. June 20, 2023* ° (holotype , NTUF) °



Fig. 698. *Cirsium guanwuense* S. S. Ying, capitula

**Morphology** : Annual herbs, stems erect or ascending, simple, 45-75 cm long, unwinged, with densely white appressed hairs, hollow, smooth, without prickle. Leaves simple, alternate, linear in outline, 6-9 cm long, 0.8-1.3 cm wide, acuminate and elongate spinose at apex, amplexicaul at base. shallow-pinnatisect at margins, lustrous green surface and pale green beneath, midrib impressed surface and elevated beneath, densely scattered

white hirsute surface, glabrous or nearly so beneath; pinna 3-5 per side, broadly triangular, 2.5-3 mm long, 1.6-2.5 mm wide, spinulate-serrated at apex; spines 5.5-6.5 mm long; upper cauline leaves gradually smaller.



Fig. 699. *Cirsium guanwuense* S. S. Ying, stem and leaves

Capitulum nodding, pink, cylindrical-oblong, 2.5-3 cm long, 1.5-1.8 cm wide at base, solitary on each pedicel, 5-6 on the stem upward leaf-axil; bract 2-3, linear at base of capitulum and middle of pedicels, 1.5-2.9 cm long, 2.5-3.5 mm wide, acuminate at apex; pedicels 4.2-6.5 cm long, erect to ascending, scattered with white long hairs; involucre cylindrical-campanulate, 2.5-3 cm long, 1.5-1.8 cm wide, contracted at apex; phyllaries 4-5 series, imbricate, uniform, the inner ones smaller, lanceolate, 2.2-2.5 cm long, 2.5-3 mm wide, green to pale green, acute and needle-like (which usually widely spreading, purple at



first and then becoming to green) at apex, obtuse at base, hairy; corolla pink to pale purple, 15-18 mm long, 2.5mm wide, 5-toothed at apex; the teeth minute, 0.4-0.5 mm long, acute at apex; ovary spindle-like, 1-1.5 mm long, glabrous; pappus numerous, 12-18 mm long, slender, glabrous; style elongate, white, 18-23 mm long, glabrous; stigma 2, minute, 0.4 mm long. anthers tube 4.5-6 mm long, 5-toothed at apex, included the corolla tube, anther cylindrical, about 3-4 mm long, opened on terminal.



Fig. 700. *Cirsium guanwuense* S. S. Ying, close-up of capitulum

Achenes obovoid, 3-4.5 mm long, about 1.5 mm wide, laterally compressed, smooth, sometime with 1 longitudinal ribs; apical rim forming a smooth-margined upright crown; pappus 15-22 mm long, with plumose bristles, usually forming basal ring, often shed.

#### **Diagnosis.**

*Cirsium guanwuense* is characterized by:

1. Plant erect to ascending, 45-75 cm long, stem simple.
2. Capitula solitary on pedicels, cylindrical-oblong, 2.5-3 cm long.





Fig. 701. *Cirsium guanwuense* S. S. Ying, fruits



Fig. 702. *Cirsium guanwuense* S. S. Ying, close-up of achenes and pappi



3. Involucre cylindrical-campanulate, 2.5-3 cm long, 1.5-1.8 cm wide, contracted at apex; phyllaries 4-5 series, imbricate, uniform, the inner ones smaller, lanceolate, 2.2-2.5 cm long, 2.5-3 mm wide, green to pale green, acute and needle-like (which usually widely spreading, purple at first and then becoming to green) at apex.

4. Achenes obovoid, 3-4.5 mm long, about 1.5 mm wide, smooth, sometime with 1 longitudinal rib; pappus 15-22 mm long, with plumose bristles.



Fig. 703. *Cirsium guanwuense* S. S. Ying, plant growing in situ



Fig. 704. *Cirsium guanwuense* S. S. Ying, the holotype NTUF-112-129



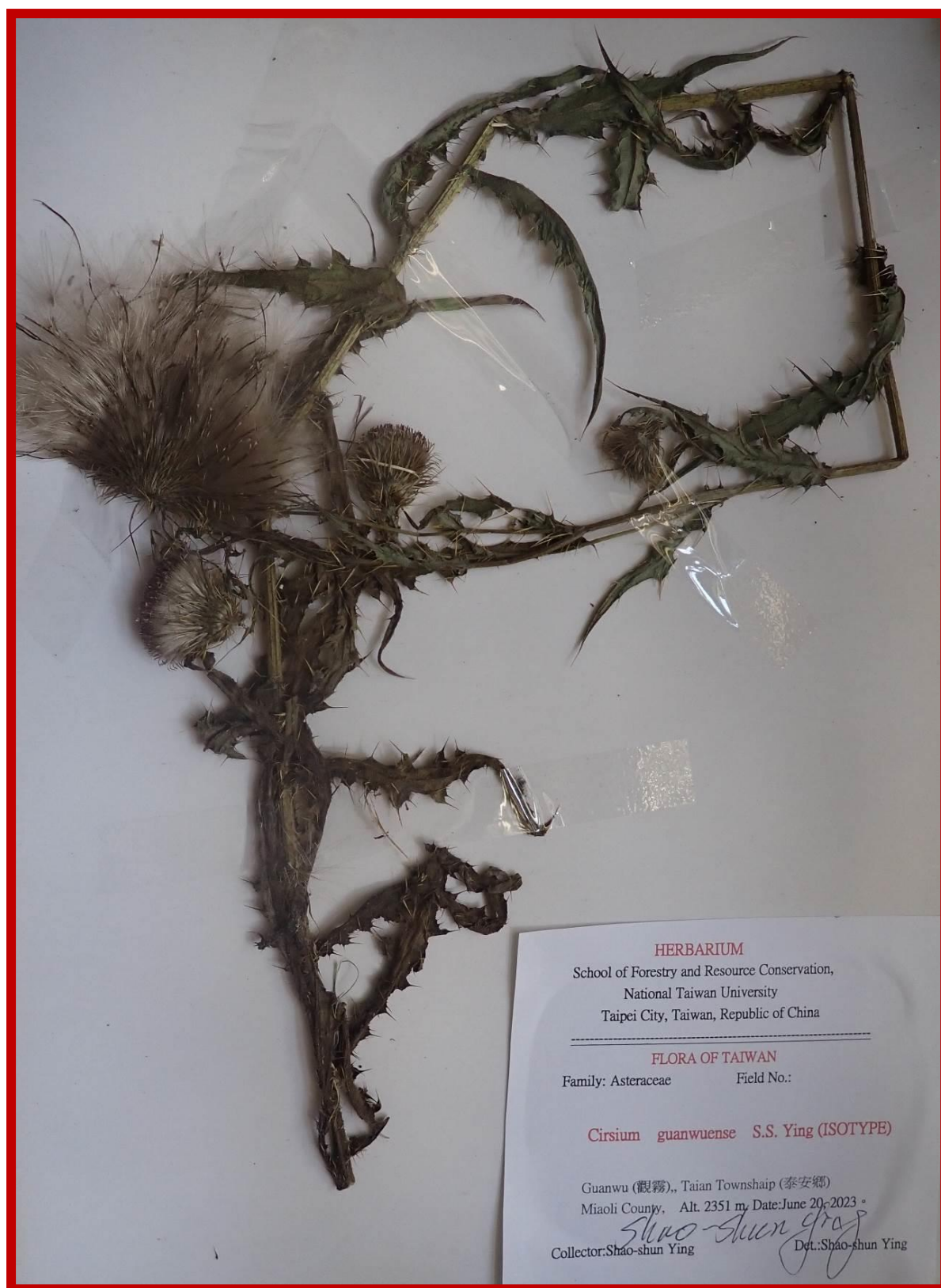


Fig. 705. *Cirsium guanwuense* S. S. Ying, the isotype NTUF-112-130

**Distribution and phenology.**

*Cirsium guanwuense* S.S. Ying is endemic to Taiwan. It is known from Zhenshan (榛山), Guanwu (觀霧), Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species at the edges of the forests at elevations of 2250-2550 meters. Its flowering time is June to July and fruiting time is July to August.



Fig. 706. *Cirsium guanwuense* S. S. Ying, mind each pedicel with one capitulum



Fig. 707. *Cirsium guanwuense* S. S. Ying, capitulum



## 5. *Ixeridium guanwunse* S.S. Ying 觀霧刀傷草

*Ixeridium guanwuense* S.S. Ying, sp.nov. 觀霧刀傷草

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2351 m alt. S. S. Ying, s.n. July 20, 2023. (holotype, NTUF).



Fig. 708. *Ixeridium guanwuense* S. S. Ying, plant growing in situ

**Morphology :** Perennia somewhat large herbs. Leaves radical, many, tufted, oblong in outline, 15-23 cm long, 3-4.5 cm wide, lyrate or pinnatisect, acuminate at apex, narrow to the petioles at base, chartaceous, lustrous green surface and pale green beneath, midrib impressed surface and elevated beneath, glabrous on surfaces and scattered pubescent beneath, especially on midrib and veins; pinnae 5-9 per side, triangular or triangularo-rectangular, the terminal one largest, 3-4.5 cm long, 1.2-1.9 cm wide, acute at apex,



Fig. 709. *Ixeridium guanwuense* S. S. Ying, leaves

truncate at base, irregularly incised at margins; lateral pinnae alternate to nearly opposite, smaller gradually. Petioles 2-4.5 cm long, grooved above, slightly winged, densely pubescent.

Capitula numerous, smaller, yellow, 4-5 mm in diameter when opened, on a sparsely corymbose arrays; scape 4-5 from leaf fascicled, 45-65 cm long, erect to ascending, green, glabrous or nearly so, much branched; bracts 1-3, at the medium of scape, leaf-like but much smaller, dentate at margins; peduncles slender, 4.5-6.5 cm long, ascending to nodding, green, glabrous, with 3-5 capitula, not bracteate; pedicels slender, 2.5-3.7 cm long, nodding to ascending, glabrous; calyculi absent; involucre cylindric, 4-5 mm long, 2-3 mm wide; phyllaries in 2-series, the outer ones smaller, conical, 1-2 mm long; the inner ones linear to lanceolate, 3.5-4.5 mm long, about 1 mm wide, acuminate at apex, glabrous; receptacles somewhat convex, pitted for borne ligulate florets; ligulate florets 14-19; corolla tube yellow, oblong, 5-7 mm long, 2.5-3 mm wide, obtuse and inconspicuous serrulate at apex; disc florets absent °





Fig. 710. *Ixeridium guanwuense* S. S. Ying, inflorescences



Fig. 711. *Ixeridium guanwuense* S. S. Ying, capitulum



Fig. 712. *Ixeridium guanwuense* S. S. Ying, the holotype NTUF-112-131



Cypselae one monomorphic, fusiform-like, **red**-brownish, 2-3 mm long, about 1 mm wide, glabrous, with 4-6 ribs, obtuse at apex; pappi numerous, silk-like, 2.5-3.0 mm long, about 0.5 mm wide, persistent, connated at base, white, barbellulate bristles absent.



Fig. 713. *Ixeridium guanwuense* S. S. Ying, cypselae and pappi

#### **Diagnosis.**

*Ixeridium guanwuense* is characterized by its larger herb up to 65 cm tall with scapes, scape 4-5 from leaf clustered and with numerous capitula on a sparsely corymbose arrays; capitula rather smaller, 4-5 mm in diameter when opened and ligulate florets 14-19; corolla tube yellow, oblong, 5-7 mm long, 2.5-3 mm wide, obtuse and inconspicuous serrulate at apex.

#### **Distribution and phenology.**

*Ixeridium guanwuense* S.S. Ying is endemic to Taiwan. ◦ It is known from Guanwu (觀霧), Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. ◦ It was discovered the species at sunny roadsides at elevations of 2150-2450 meters. Its flowering time is July to August and fruiting time is July to September. .

## 6. *Carpesium taiwanense* S.S. Ying 台灣天名精

*Carpesium taiwanense* S.S. Ying, sp.nov. 台灣天名精

TYPE:TAIWAN. Taichung City , Hoping District (和平區) , Between Tayulin (大禹嶺) and Songchuangang (松泉崗), 2470 m . *S. S. Ying* , *s.n.* August 05, 2023 ° holotype, NTUF) °



Fig. 714. *Carpesium taiwanense* S. S. Ying, close-up of capitulum

**Morphology** : Annual somewhat large herbs. without rhizome, fibrous roots numerous, from base of stem, 8-15 cm long. Stem simple, 50-65 cm long, erect to ascending, scattered with villous hairs. Leaves simple, alternate, the basal ones usually ovate to ovate-oblong, 6-8.5 cm long, 3-4.5 cm wide, acuminate to a caudate at apex, obtuse to slightly cordate at base, serrate at margins, chartaceous, lustrous green surface and pale green beneath, midrib impressed surface and elevated beneath, glabrous on surfaces and





Fig. 715. *Carpesium taiwamemse* S. S. Ying, habit



scattered villous hairs beneath, especially on midrib and veins; petioles 5-8 cm long, winged on upper half, pubescent, groove above; upper leaves linear to linear-lanceolate, 4-7 cm long, 3.5-5.5 mm wide, otherwise like the basal leaves; petioles 7-8 mm long.



Fig. 716. *Carpesium taiwamemse* S. S. Ying, upper leaves



Fig. 717. *Carpesium taiwamemse* S. S. Ying, basal leaves



Capitula solitary at each pedicel, yellow, 7-11 mm in diameter when opened, axillary at leaf-axil, usually 7-11 capitula from medium to upper part of the stem; pedicels 3-7 cm long, slender, green, covered with villose hairs, erect to ascending, subtended by 8-12 leaf like bracts; bracts linear, 1.4-2.2 cm long, 1-2 mm wide, acuminate at apex, pilose on both surfaces, dentate at margins; Involucres campanulate-disc-like, 4-5.5 mm long, 8-10 mm wide; phyllaries 3- 4-seriate, outermost shortest, ovate, 2-2.5 mm long, acuminate at apex; median oblong, denticulate, acuminate at apex; inner linear, 2.5-3 mm long, about 1 mm wide, acute at apex; corolla of marginal florets cylindric, 2-2.5 mm long, 5-dentate at apex; corolla of disk florets tubular, 2.5-3 mm long, 5-lobed at apex.



Fig. 718. *Carpesium taiwanense* S. S. Ying, close-up of capitulum

Achenes cylindric, 3-3.5 mm long, somewhat hairy, with a short glandular beak, crowned by a cartilaginous ring; pappus absent.



Fig. 719. *Carpesium taiwanense* S. S. Ying, the holotype

NTUF-112-132



### Diagnosis.

*Carpesium taiwanense* is characterized by its erect herb up to 65 cm tall, each pedicels with only one 7-11 mm in diameter capitulum which subtended by 8-12 leaf like bracts; bracts linear, 1.4-2.2 cm long, 1-2 mm wide, acuminate at apex, pilose on both surfaces, dentate at margins.



Fig. 720. *Carpesium taiwanense* S. S. Ying, habitat

### Distribution and phenology.

*Carpesium taiwanense* S.S. Ying is endemic to Taiwan ° It is known from near to Tayulin (大禹嶺), Central Cross-Island Highway Hoping District (和平區), Taichung City, central Taiwan ° It was collected on the mossy mountain slope, between 2500 and 2650 m elevation and flowering time from August to September, fruiting time from September to October °

## 7. *Hieracium taiwanense* S.S. Ying 台灣山柳菊

*Hieracium taiwanense* S.S. Ying, sp.nov. 台灣山柳菊

TYPE: TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧), Loshan Forest Road (樂山林道), 2570 m alt. *S. S. Ying*, *s.n.* August 24, 2023. (holotype, NTUF).



Fig. 721. *Hieracium taiwanense* S. S. Ying, capitulum

**Morphology** : Annual tall herbs up to 90-110 cm high; taproot somewhat woody, 6-8 cm long; fibrous roots few, slender, 2.5-3.5 cm long. Stem simple, 85-100 cm long, erect to ascending, hirsute all over, greenish. Leaves simple, alternate, linear to linear-lanceolate, 8-11 cm long, 3-4 mm wide, acute at apex, amplexicaul at base, chartaceous, remotely dentate and ciliate at margins, hirsute on both surfaces, midrib impressed surface and elevated beneath, lateral veins inconspicuous, green surface and somewhat pale green beneath.





Fig. 722. *Hieracium taiwamemse* S. S. Ying, root, stem and leaves

Capitula 5-6, yellow, 1.5-2.5 cm in diameter when opened, in a terminal remotely cymose; peduncles slender, 8-15 cm long, hirsute; pedicels 4-6 cm long, slender, hirsute; bracts at base of pedicels, linear, 1.5-2 cm long, 3-4 mm wide, acuminate to acute at apex, hirsute on both surfaces; bracteoles 1-2 at base of capitulum, linear, 5-6 mm long, 1-2 mm wide; involucre cylindrical, 9-12 mm long; phyllaries in 3 series, the outer and middle series linear to lanceolate, 4-6 mm long, about 1.5 mm wide, acuminate at apex, green, glabrous inside and somewhat long-hairy outside; inner series imbricate in arrangement, lanceolate, 8-11 mm long, 2-3 mm wide, acute at apex, green but somewhat brownish at apex, glabrous inside and long-hairy outside; flores yellow, 5-tooth at apex.

Achenes cylindric, 3-4 mm long, about 1.5 mm wide, somewhat smooth, rib inconspicuous, red brownish, apical confluent in an obscure ring, truncate at apex; pappus numerous, white, 5-6 mm long, of scabrid bristles.





Fig. 723. *Hieracium taiwanense* S. S. Ying, inflorescence



Fig. 724. *Hieracium taiwanense* S. S. Ying, bracts and phyllaries



**Diagnosis.**

*Hieracium taiwanense* is characterized by its erect herb up to 110 cm tall, with linear to linear-lanceolate leaves; capitula 5-6 in a terminal loose cymose; phyllaries in 3 series, the inner series imbricate in arrangement, lanceolate, 8-11 mm long, 2-3 mm wide, acute at apex, green but somewhat brownish at apex, glabrous inside and long-hairy outside and achenes cylindric, 3-4 mm long, about 1.5 mm wide, somewhat smooth, rib inconspicuous, red brownish.



Fig. 725. *Hieracium taiwanense* S. S. Ying, fruit



Fig. 726. *Hieracium taiwanense* S. S. Ying, achenes and pappi



Fig. 727. *Hieracium taiwanense* S. S. Ying, the holotype NTUF-112-133





Fig. 728. *Hieracium taiwanense* S. S. Ying, the isotype NTUF-112-134



Fig. 729. *Hieracium taiwanense* S. S. Ying, habitat

**Distribution and phenology.**

*Hieracium taiwanense* S.S. Ying is endemic to Taiwan ° It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. ° It was discovered the species on the roadsides, which mixed with grasses and other pioneer plants at elevations of 2,400-2,650 meters. Its flowering time is August to September and fruiting time is September to November.



## 8. *Senecio loshanensis* S.S. Ying 樂山黃苑

*Senecio loshanensis* S.S. Ying, sp.nov. 樂山黃苑

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧), Loshan Forest Road (樂山林道), 2670 m alt. *S. S. Ying*, *s.n. October 26, 2023* ° (holotype, NTUF) °



Fig. 730. *Senecio loshanensis* S. S. Ying, inflorescence

**Morphology** : Annual tall herbs with fibrous root. Stem 25-45 cm long, ascending to flexuous, branched upward; branches elongate, 14-30 cm long, green, glabrous. Leaves simple, alternate, triangular, 2.5-4 cm long, 1.5-2.5 cm wide at base, chartaceous, entire to remotely dentate at margins, glabrous surface and scattered with few hairs along veins, midrib impressed surface and elevated beneath, lateral veins 2-3 per side, inconspicuous, green surface and somewhat pale green beneath. Petioles 8-15 mm long, green, grooved above, glabrous; stipules 1-2, ovate, 8-9 mm long, 2-3 mm wide, acute at apex.



Fig. 731. *Senecio loshanensis* S. S. Ying, branches and leaves



Fig. 732. *Senecio loshanensis* S. S. Ying, close-up of leaves





Fig. 733. *Senecio loshanensis* S. S. Ying, close-up of inflorescence

Capitula many, mostly 8-15, yellow, 8-12 mm in diameter when opened, in a terminal and axillary remotely cymose; the terminal one usually forming by 3-5 cymose and axillary ones usually from leaf-axil of upper part of stem, floral rachis 6-10cm long, ascending to horizontal, green, glabrous to shortly white hairy; peduncles slender, 1.5-3 cm long, hairy; pedicels 1.2-2.5 cm long, slender, hairy, green; bracts at base of pedicels, lanceolate, 8-12 mm long, 2-3 mm wide, acuminate to acute at apex, glabrous; involucre cylindrical, 5-6.5 mm long, green, glabrous; phyllaries 8-12, lanceolate, 5-6 mm long, 0.5-0.6 mm wide, acute at apex, margin broadly scarious; ray florets 4-5, corolla tube 2.5-3 mm long; lamina oblong to spatulate, 5-6 mm long, 2.5 mm wide, obtuse at apex; without

denticulate; disc florets 8-12, corolla 4.5-5 mm long, about 3 mm wide; tube cylindrical, 2.5-3 mm long, 5-lobed at apex; lobes triangular, 0.8-1.2 mm long, acute at apex; anthers 1.5 mm long, including ovate apical appendage; filaments collar balusterform; style 3.5-4 mm long, terete, branched at apex; branches 1.5-1.7 mm long; ovary narrowly oblong, hairy; pappus bristles numerous, 4-5 mm long, white.

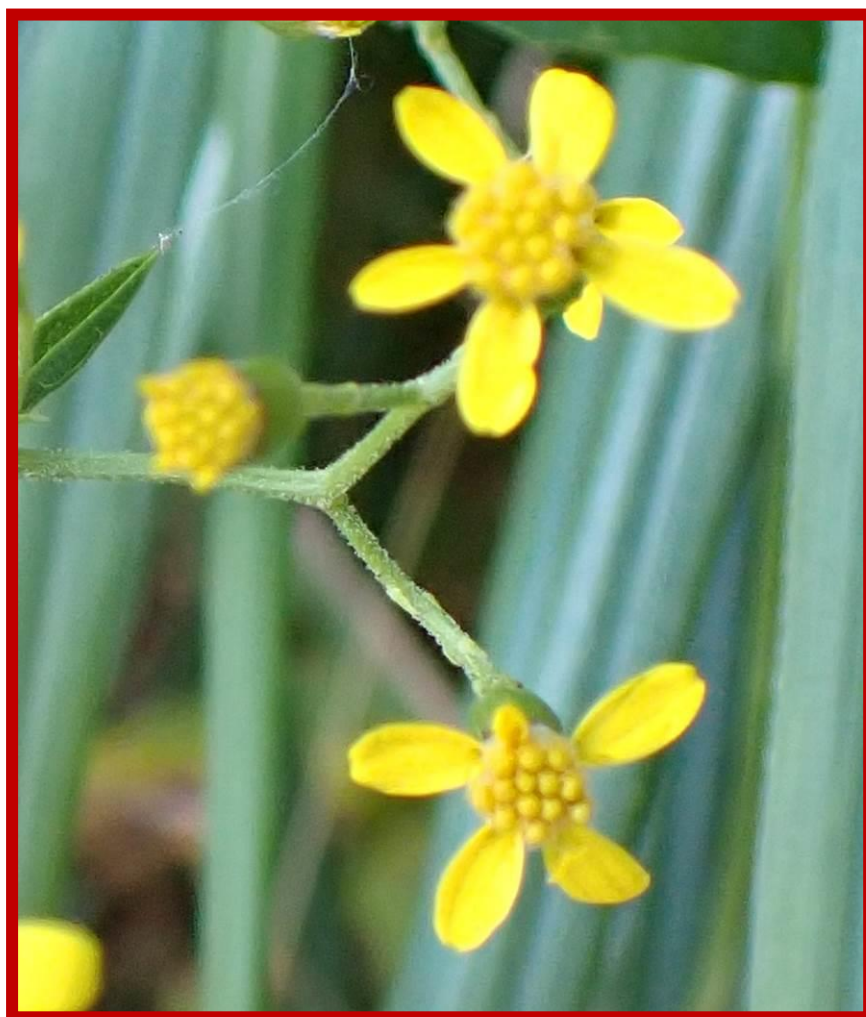


Fig. 734. *Senecio loshanensis* S. S. Ying, close-up of capitula

**Diagnosis.**

*Senecio loshanensis* is characterized by its ascending to horizontal herb with simple, alternate, triangular leaves which entire to remotely dentate at margins; phyllaries 8-12, lanceolate, acute at apex, margin broadly scarious; ray florets 4-5, corolla tube 2.5-3 mm



long; lamina oblong to spatulate, obtuse at apex; without denticulate; disc florets 8-12, corolla 4.5-5 mm long, about 3 mm wide; tube cylindrical, 5-lobed at apex; lobes triangular.



Fig. 735. *Senecio loshanensis* S. S. Ying, close-up of capitula,



Fig. 736. *Senecio loshanensis* S. S. Ying, close-up of capitula,



Fig. 737. *Senecio loshanensis* S. S. Ying, the holotype, NTUF-112-135



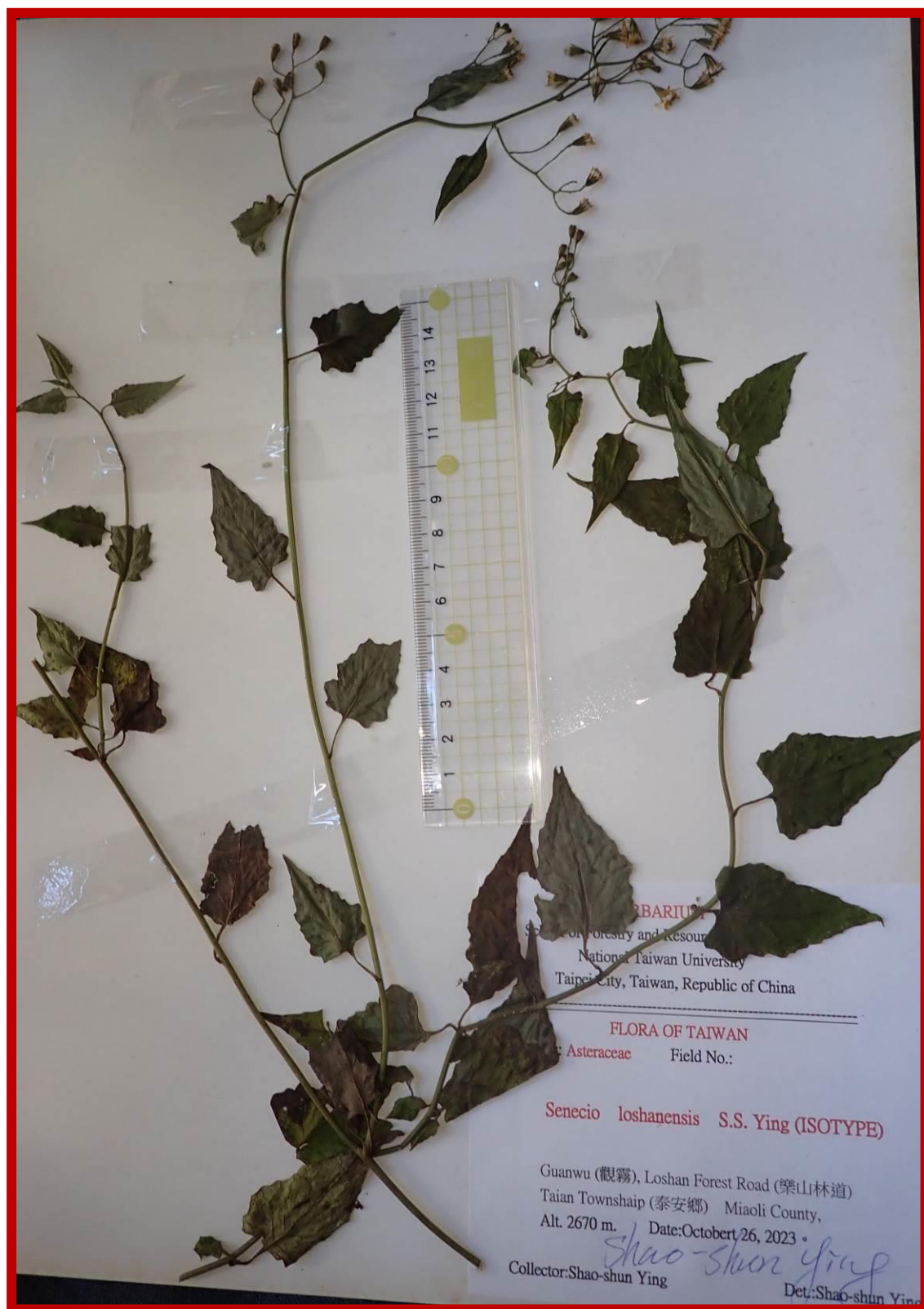


Fig. 738. *Senecio loshanensis* S. S. Ying, the isotype, NTUF-112-136

**Distribution and phenology.**

*Senecio loshanensis* S.S. Ying is endemic to Taiwan. It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on the roadsides, which mixed with *Miscanthus* and other pioneer plants at elevations of 2,400-2,650 meters. Its flowering time is Octoberto November and fruiting time is November.



Fig. 739. *Senecio loshanensis* S. S. Ying, plant growing in situ



## 9. *Eupatorium loshanense* S.S. Ying 樂山澤蘭

*Eupatorium loshanense* S.S. Ying, sp.nov. 樂山澤蘭

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧), Loshan Forest Road (樂山林道), 2690 m alt. *S. S. Ying*, *s.n. October 26, 2023* ° (holotype, NTUF) °



Fig. 740. *Eupatorium loshanense* S. S. Ying, capitula

**Morphology** : Lithophytic to terrestrial perennial herbs about 40-60 cm high, stem erect to ascending, simple, not branched upward, pale green, pubescent. Leaves simple, opposite, lanceolate to narrowly lanceolate, 6-8 cm long, 1.1-1.5 cm wide, acuminate at apex, obtuse to attenuate and slightly oblique at base, chartaceous, serrulate at margins, glabrous on both surfaces, lustrous green surface and pale green beneath, midrib and lateral veins (3-4 per side) impressed surface and elevated beneath. Petioles 5-6 mm long, green, slightly winged at margins, glabrous.



Fig. 741. *Eupatorium loshanense* S. S. Ying, leaves

Capitula numerous, pale purple, 2-3.5 mm in diameter when opened, in a terminal corymbose to corymbose-panicle; if the later usually consist of 3-4 corymboses; each corymbose usually consist of 20-42 capitula; peduncle of panicle 4-6 cm long, erect to ascending, green to pale purplish, scattered white short white hairs; peduncle of corymbose 3.5-5.5 cm long, slender, pale purplish, hairy; bracts linear, 3-4.5 mm long, 1-2 mm wide, acute at apex, glabrous or nearly so; pedicels 3-6 mm long, pale purplish, hairy; bractlets smaller, cauduous; involucre cylindrical 5-6.5 mm long, pale purplish, glabrous; pharyies 4-5-series, the outer smaller, ovate, 2-3 mm long, 1.5-2 mm wide, acute at apex, hairy outside; medial phyllaries lanceolate-oblong, 3-3.5 mm long, 2-2.5 mm wide, acuminate at apex, glabrous; inner phyllaries laneolate, 4-6 mm long, 2.5-3 mm wide, acute at apex,





Fig. 742. *Eupatorium loshanense* S. S. Ying, plants growing in situ



Fig. 743. *Eupatorium loshanense* S. S. Ying, unopened capitula



Fig. 744. *Eupatorium loshanense* S. S. Ying, unopened capitula, mind phyllaries



Fig. 745. *Eupatorium loshanense* S. S. Ying, capitula, style-branched not exerted



glabrous or nearly so; 4-5 florets in each capitula; corolla tubular-like, 5-7 mm long, 2.5-3.2 mm wide, pale purple, 5-toothed at apex; style branches short, lath-shaped, 4-6 mm long, 1.5 mm wide, lustrous white, glabrous, with short stigmatic lines.

Achenes cylindrical, blackish brown, 5.5-6.5 mm long, 4-5-nerved; pappus 20-40, whitish barbellate bristles, persistent.



Fig. 746. *Eupatorium loshanense* S. S. Ying, unopened, blooming and fruiting capitulka

#### **Diagnosis.**

*Eupatorium loshanense* is characterized by:

1. Lithophytic to terrestrial plant, stem simple, not branched upward, with lanceolate to narrowly lanceolate leaves.
2. Capitula numerous, pale purple, in a terminal corymbose to corymbose-panic; phyaries 4-5-series,
3. Capitula: corolla tubular-like, 5-7 mm long, 2.5-3.2 mm wide, pale purple, 5-toothed at apex; style branches short, lath-shaped, 4-6 mm long, 1.5 mm wide, lustrous white, glabrous, with short stigmatic lines.

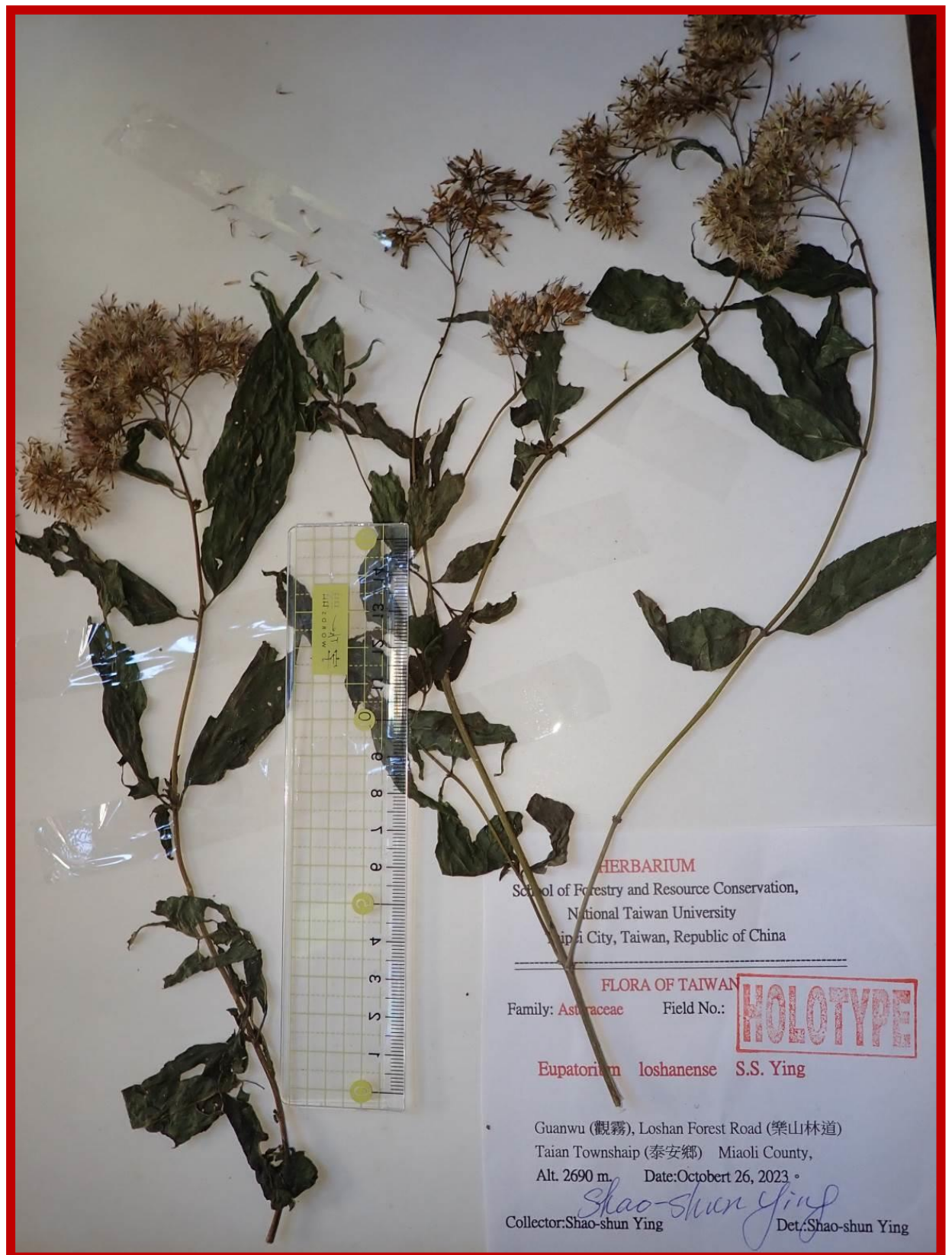


Fig. 747. *Eupatorium loshanense* S. S. Ying, the holotype NTUF-112-137



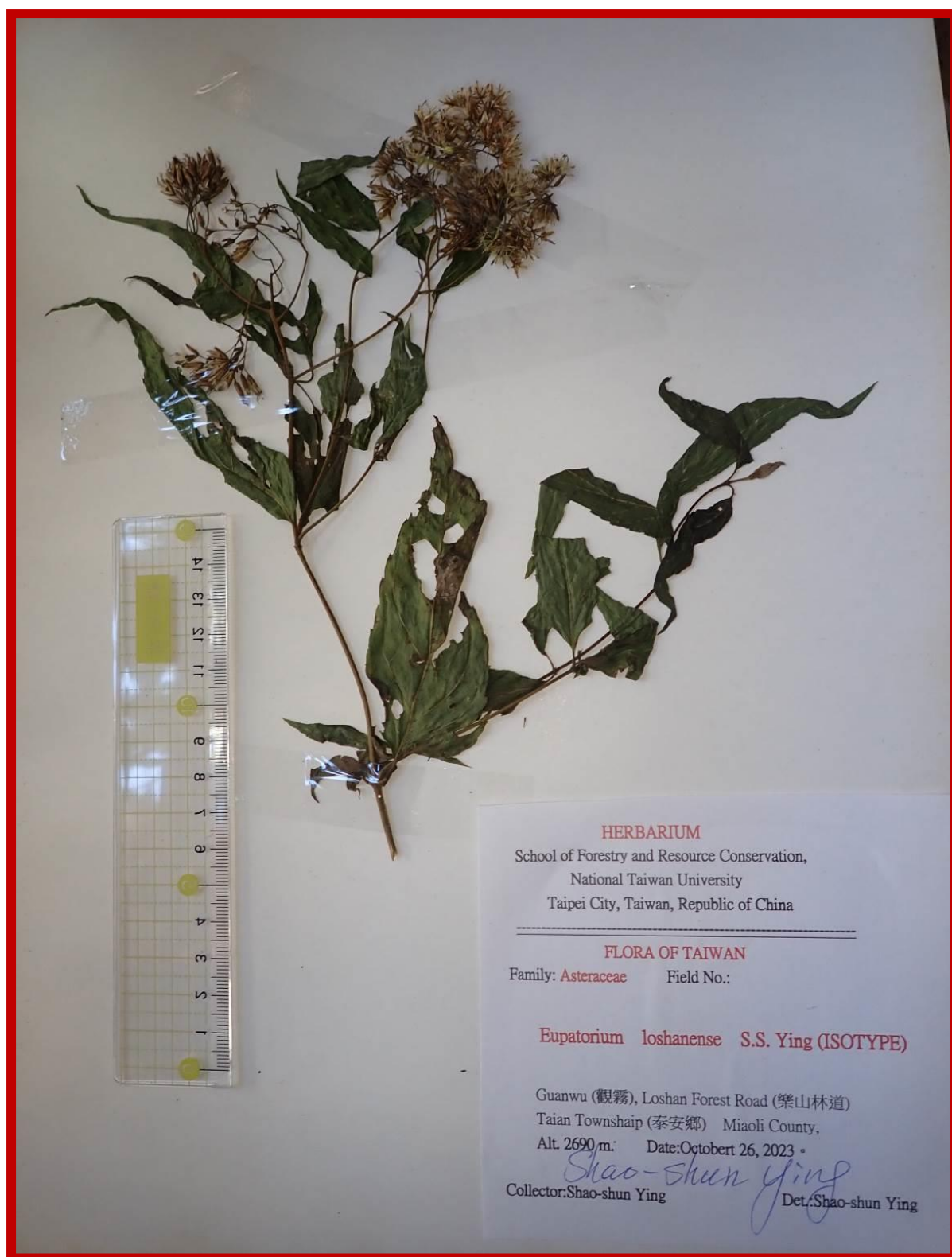


Fig. 748. *Eupatorium loshanense* S. S. Ying, the isotype NTUF-112-138

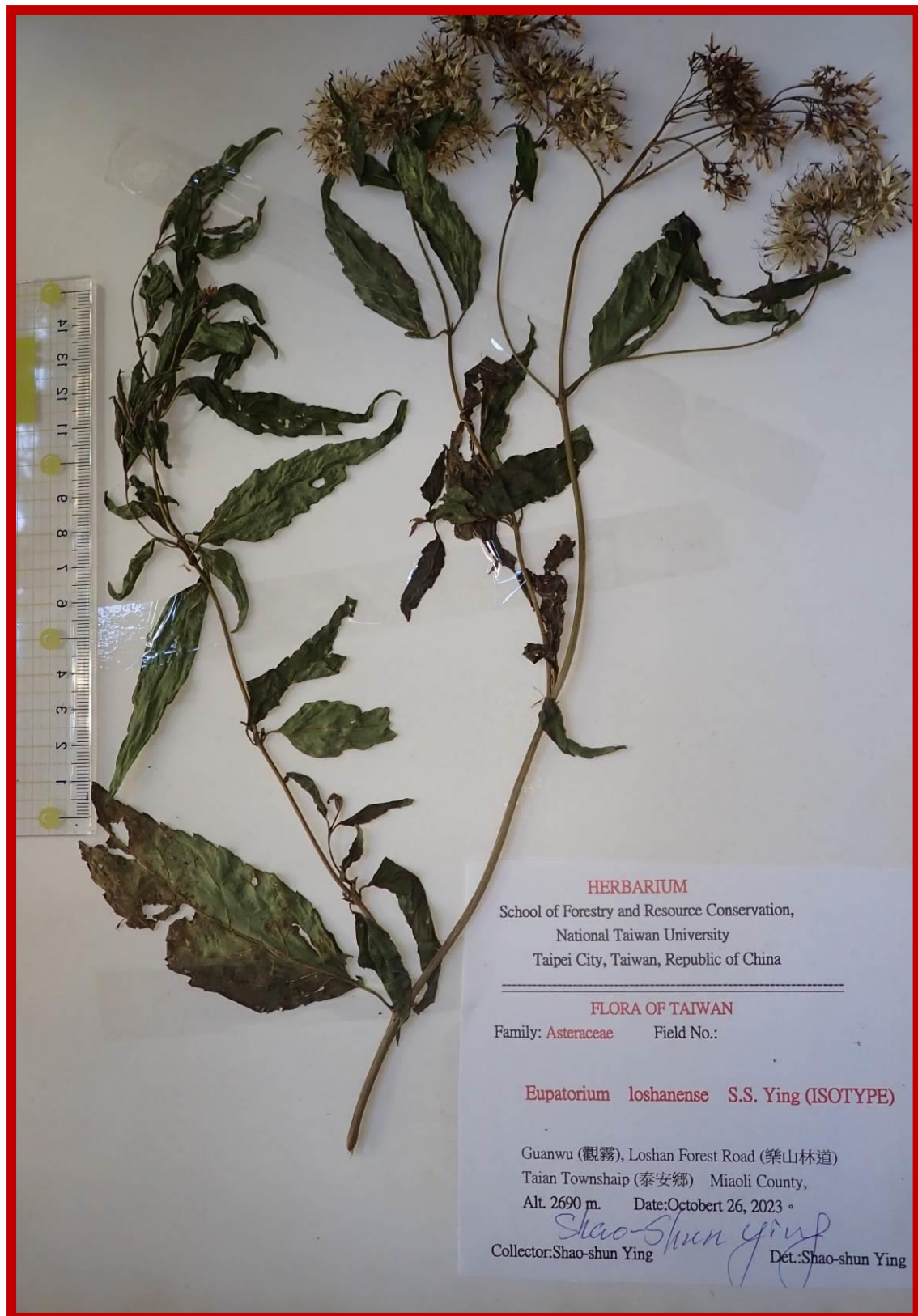


Fig. 749. *Eupatorium loshanense* S. S. Ying, the isotype      NTUF-112-139



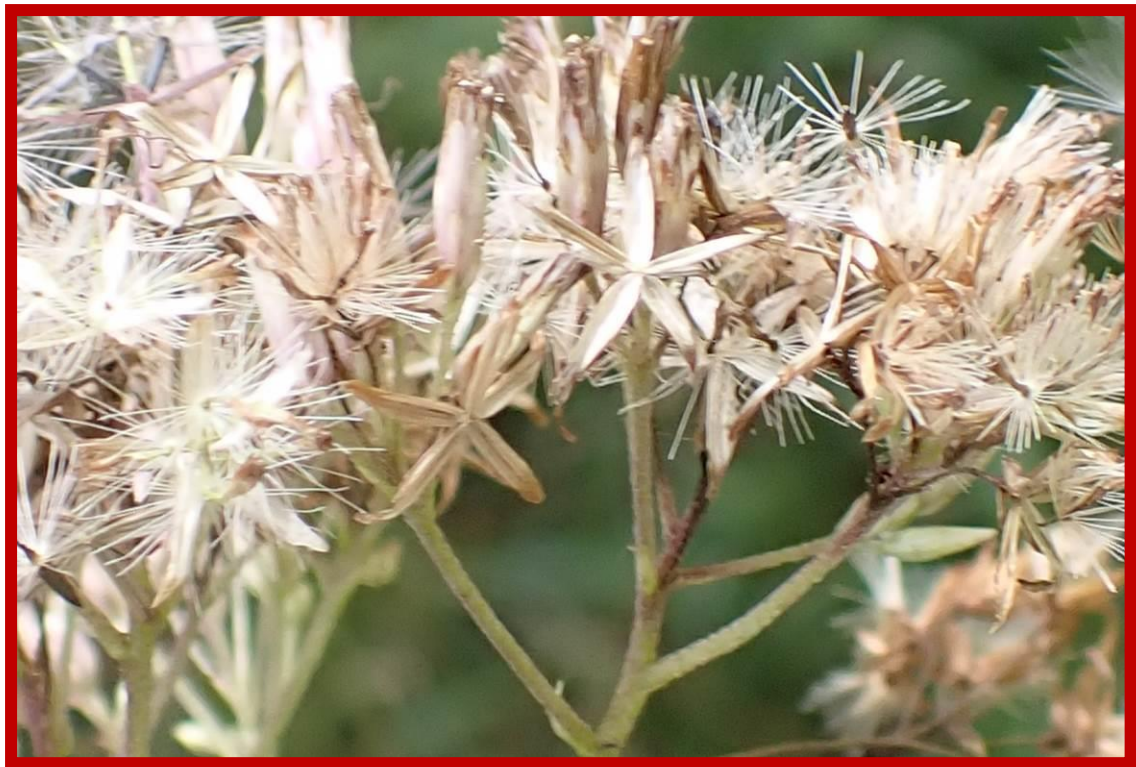


Fig. 750. *Eupatorium loshanense* S. S. Ying, fruiting capitula



Fig. 751. *Eupatorium loshanense* S. S. Ying, plants growing in situ

**Distribution and phenology.**

*Eupatorium loshanense* S.S. Ying is endemic to Taiwan. It is known from Loshan Forest Road (樂山林道), Guanwu (觀霧) area, Taian Townshaip (泰安鄉), Miaoli County, central Taiwan. It was discovered the species on rocks and the roadsides, which mixed with *Miscanthus* and other pioneer plants at elevations of 2,300-2,670 meters. Its flowering time is October to November and fruiting time is November.



Fig. 752. *Eupatorium loshanense* S. S. Ying, blooming capitula



## 10. *Carpesium parvicapitulum* S.S. Ying 小花天名精

*Carpesium parvicapitulum* S.S. Ying, sp.nov. 小花天名精

TYPE:TAIWAN. Taoyuan city , Fuhsin District (復興區) , Lalashan (拉拉山), under *Chamaecyparis formosensis* forests , 1953 m alt. *S. S. Ying* , *s.n. November 02, 2023* ° (holotype, NTUF) °



Fig. 753. *Carpesium parvicapitulum* S. S. Ying, plants growing in situ

**Morphology** : Annual somewhat small herbs. without rhizome, fibrous roots numerous, from base of stem, 8-8.5 cm long. Stem simple, 25-35 cm long, erect to ascending, scattered with white shaft villous hairs. Leaves simple, alternate, lanceolate to oblong-lanceolate, 3.5-5.5 cm long, 1.5-2.5 cm wide, acuminate to acute at apex, attenuate to petioles at base, serrate and ciliate at margins, chartaceous, lustrous green surface and pale

-609-

green beneath, midrib impressed surface and elevated beneath, scattered white short villous hairs on both surfaces; petioles 3-4.5 cm long, slightly winged on both sides, pubescent, groove above.



Fig. 754. *Carpesium parvicapitulum* S. S. Ying, stem and leaves

Capitula small, yellow, 3-4 mm in diameter when opened, solitary to 2-4 capitula in a spike; the inflorescences terminal to axillary, 3-6 cm long, erect to ascending, villous hairy; bracts 1-2 at base, lanceolate, 1.5-2.5 cm long, 5-9 mm wide, acute at apex; pedicels o; bracteoles 3-4 subtended the capitulum, lanceolate, 8-10 mm long, 2-3 mm wide, acuminate at apex, pilose on both surfaces, entire at margins; Involucres tubular-disc-like, 2.5-3.5 mm long, 2-2.8 mm wide; phyllaries 3- 4-seriate, outermost shortest, ovate, 2-2.5 mm long, acuminate at apex; median oblong, denticulate, acuminate at apex; inner linear to lanceolate, 2.2-3 mm long, about 1 mm wide, acute at apex; corolla of marginal florets cylindric, 2-2.5 mm long, 5-dentate at apex; corolla of disk florets tubular, 2.2-3.1 mm long, 5-lobed at apex; lobes triangular, 1-1.5 mm long, acute at apex. .





Fig. 755. *Carpesium parvicapitulum* S. S. Ying, inflorescence



Fig. 756. *Carpesium parvicapitulum* S. S. Ying, close-up of capitulum

Achenes cylindric, 2.5-3.2 mm long, somewhat glabrous, blackish, with a short glandular beak, crowned by a cartilaginous ring; pappus absent.

**Diagnosis.**

*Carpesium parvicapitulum* is characterized by its erect low herb up to 45 cm tall, capitulum 3-4 mm in diameter when opened, solitary to 2-3 in a terminal and axillary spike, which subtended by 1-2 small leaf like bracts; achenes cylindric, 2.5-3.2 mm long, somewhat glabrous, blackish.



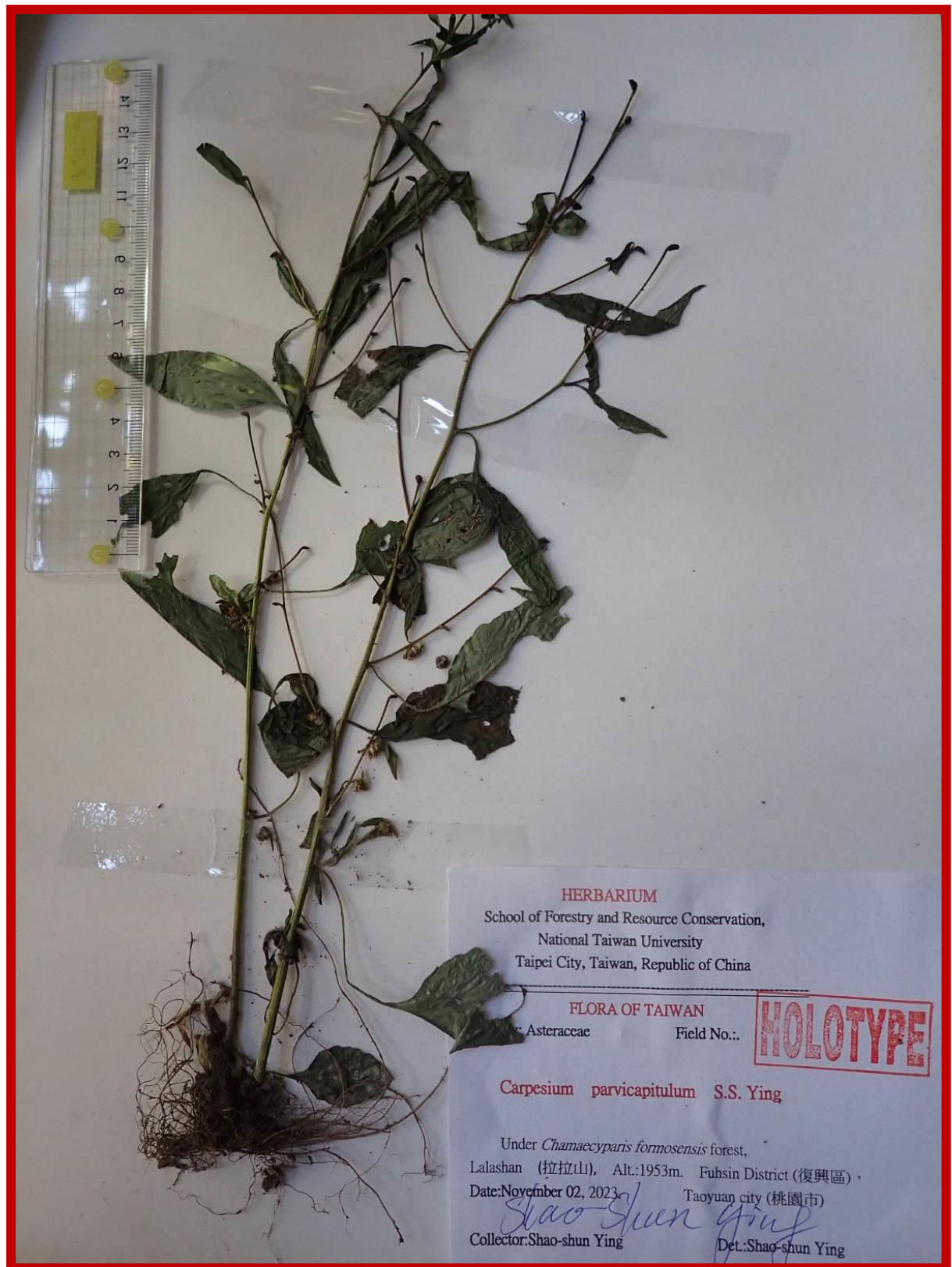


Fig. 757. *Carpesium parvicapitulum* S. S. Ying, the holotype NTUF-112-140



Fig. 758. *Carpesium parvicapitulum* S. S. Ying, the isotype NTUF-112-141





Fig. 759. *Carpesium parvicapitulum* S. S. Ying, close-up of achenes

#### **Distribution and phenology.**

*Carpesium parvicapitulum* S.S. Ying is endemic to Taiwan ° It is known from Lalashan (拉拉山), undwe *Chamaecyparis formosensis* forests , Fuhsin District(復興區) , Taoyuan city , northern Taiwan ° It was collected undwe *Chamaecyparis formosensis* forests at between 1900 and 2195 m elevation and flowering time fromSeptember to October, fruiting time October to November °

## 11. *Aster guanwuensis* S.S. Ying 觀霧千里光

*Aster guanwuensis* S.S. Ying, sp.nov. 觀霧千里光

TYPE:TAIWAN. Miaoli County, Taian Townshaip (泰安鄉), Guanwu (觀霧) 2018 m alt. S. S. Ying, s.n. November 16, 2023. (holotype, NTUF).



Fig. 760. *Aster guanwuensis* S. S. Ying, inflorescences

**Morphology** : Annual terrestrial herbs, rhizome ovoid to oblong, 1.5-2.5 cm long, 4-6 mm across, somewhat fleshy; stems erect or ascending, simple, 40-50 cm tall, unwinged, green, glabrous. Leaves simple, alternate, ovate to broadly ovate, 8.5-12 cm long, 4.2-5.5 cm wide, chartaceous, acuminate at apex, slightly cordate to obtuse at base, lustrous green surface, pale green beneath, glabrous on both surfaces, remotely denate at margins, 5-nerved impressed surface and elevated beneath; lateral veins few, impressed surface and elevated beneath. Petioles 5-6.5 mm long, green, glabrous, terete.





Fig. 761. *Aster guanwuensis* S. S. Ying, plant growing in situ





Fig. 762. *Aster guanwuensis* S. S. Ying, inflorescences



Fig. 763. *Aster guanwuensis* S. S. Ying, close-up of part inflorescences



Capitula 8-12 in a cymose, usually 3-4 cymoses to form a compound cymose, which usually terminal or axillary on upper part of leaf axil; 8-12 mm in diameter when opened, inflorescence 5-7 cm long; inflorescence rachis 3.5-5 cm long, green, glabrous; peduncles 3.5-5.5 cm long, green, glabrous; pedicels 1.5-1.8 cm long, green, glabrous; involucre tubular, 4.8-5.7 mm long, green, glabrous, green; phyllaries 2-4 series, imbricate, lanceolate, 2.6-3.8 mm long, about 1.4 mm wide, acute at apex, the basal ones short and upward ones longer; receptacles convex, 2.6-3.4 mm long, 3-4 mm wide; ray florets 8-12 in 1-series, white, tube and basal lamina glabrous, eglandular, lamina lanceolate, 5-6.8 mm long, 1.2-1.4 mm wide, obtuse at apex, glabrous; disk florets 5-7, bisexual, fertile, red to vine purple, limb campanulate, 3-3.5 mm long, 5-lobed at apex; lobes oblong, 0.5-0.7 mm long, obtuse at apex, reflexed; ovary ovoid, 2-3 mm long, green; style elongate, 6-7 mm long, pale yellow, glabrous; stigma 2-lobed, the lobes linear, 1.5 mm long, pink to purple.

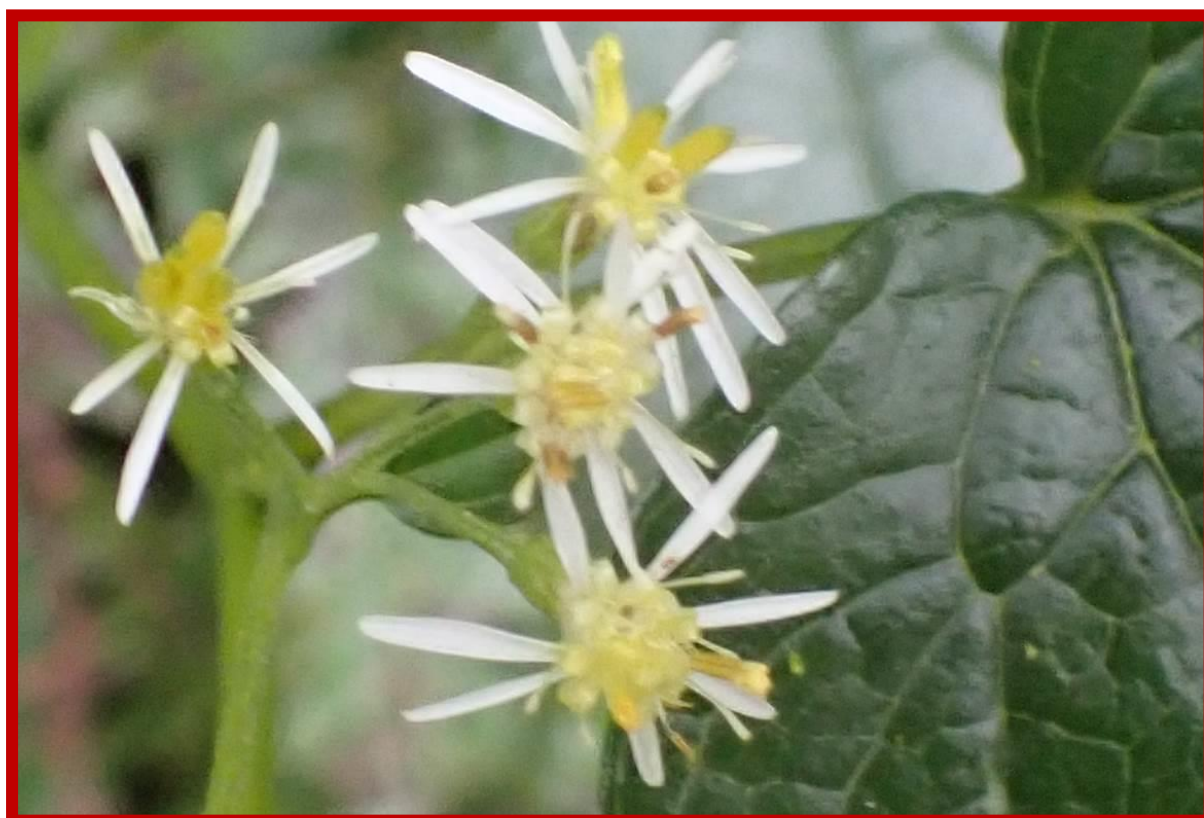


Fig. 764. *Aster guanwuensis* S. S. Ying, few capitula disk florets in yellow color.

Achenes obovoid, 2-2.5 mm long, 1-1.5 mm wide, glabrous, 3-4-ribbed, eglandular; pappus 1-seriate, white, numerous, equal to subequal, barbellate or barbellulate bristles.



Fig. 765. *Aster guanwuensis* S. S. Ying, close-up of Achenes and pappus

#### Diagnosis.

*Aster guanwuensis* is characterized by its terrestrial habitat, ovate to broadly ovate, glabrous leaves, Capitula 8-12 in a cymose, usually 3-4 cymoses to form a compound cymose, which usually terminal or axillary on upper part of leaf axil; ray florets 8-12 in 1-series; **disk florets 5-7**, bisexual, fertile, red to vine purple, limb campanulate, 3-3.5 mm long, 5-lobed at apex; lobes oblong, 0.5-0.7 mm long, **obtuse at apex, reflexed**.





Fig. 766. *Aster guanwuensis* S. S. Ying, the holotype

NTUF-112-142

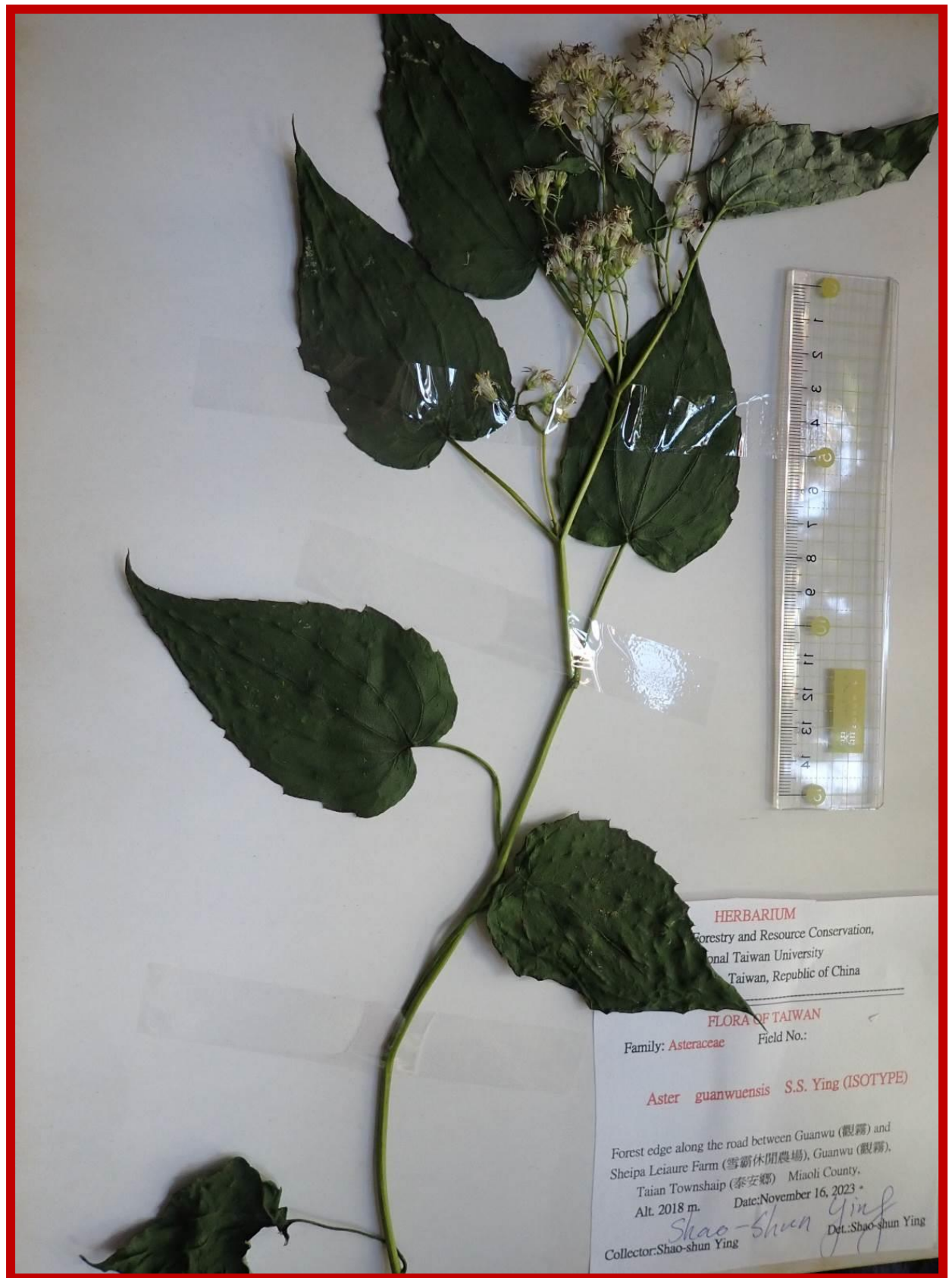


Fig. 767. *Aster guanwuensis* S. S. Ying, the isotype

NTUF-112-143



### Distribution and phenology.

*Aster goanwuensis* S.S. Ying is endemic to Taiwan. It is known on forest edge along the road between Guanwu (觀霧) and Sheipa Leiaure Farm (雪霸休閒農場), Guanwu area, Taian Townshap (泰安鄉), Miaoli County, central Taiwan. It was discovered the species under the forest edge and the roadsides, which mixed with other shade-love plants at elevations of 1,900-2,270 meters. Its flowering time is November and fruiting time is November to December.



Fig. 768. *Aster goanwuensis* S. S. Ying, plant growing in situ

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# 新植物及新名稱 (第六卷)

(NEW TAXA AND NEW NAMES)

(VOLUME Six )

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