

Merremia quinquefolia (Convolvulaceae), a Newly Naturalized Plant in Taiwan

台灣旋花科新歸化植物—五葉菜欒藤

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Abstract

Merremia quinquefolia (L.) Hallier f. is reported as a newly naturalized species in Taiwan. It is native to tropical America and recently found in southern Taiwan. *M. quinquefolia* can be distinguished from other congeners by the combination of palmately compound leaves with serrate margins and glabrous surfaces, and white to pale yellowish white corolla.

摘要

本文報導台灣新歸化的旋花科植物—五葉菜欒藤。其原生於熱帶美洲，近來發現歸化於台灣南部。五葉菜欒藤可依下述特徵與台灣其他同屬物種區分：掌狀複葉；小葉不裂，表面光滑，具齒緣；及花冠白色至淡黃白色。

Key words: Convolvulaceae, *Merremia*, naturalized plant, Taiwan

關鍵詞：旋花科、茛藤屬、歸化植物、台灣

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Introduction

Merremia Dennst. ex Endl. (Convolvulaceae: Marremieae, Convolvuloideae) is a pantropical genus of ca. 100 currently recognized species (Staples 2010; Simoes *et al.* 2015). Morphologically, this genus shows close affinity to *Ipomoea* but can be distinguished mainly by having non-spinulose pollen grains and generally but not absolutely also by having white or yellow corollas and twisted anthers (Austin 1975; Fang and Staples 1995; Staples 2010). Recent molecular studies have shown that *Merremia* is apparently polyphyletic (Stefanovic *et al.* 2001; 2003; Simoes *et al.* 2015). However, the traditional concept of *Merremia* (Fang and Staples 1995; Staples and Yang 1998; Staples 2010) is still adopted in this article since the overall systematic reconstruction of this group have not been published. In Taiwan, nine *Merremia* species have been recorded, including six native and three naturalized species (Staples and Yang 1998; Tsai *et al.* 2010; Wu *et al.* 2010; Ko and Liu 2011).

Recently, we found that *M. quinquefolia* (L.) Hallier f., a neotropical species, has naturalized

in southern Taiwan. So far it was only found around Hsiwei village of Liouguei District, Kaohsiung City, along roadside slopes of the Southern Cross-Island Provincial Highway at an elevation of ca. 250 m. It was first collected in 2016 and has successfully established its population and expanded to nearby areas. This paper provides its taxonomic description and illustrations.

Taxonomic treatment

***Merremia quinquefolia* (L.) Hallier f., Bot. Jahrb. Syst. 16: 552. 1893.** 五葉茛藤 Figs. 1, 2.

Basionym: *Ipomoea quinquefolia* L., Sp. Pl. 162. 1753.

Type: Plukenet, Phytographia: t. 167, f. 6. 1692 [lectotype designated by Austin (1975)].

Morphology: Stem twining or prostrate, densely pilose. Leaves palmately compound, leaflets 5, glabrous, middle leaflet larger than lateral ones, 3.4–5.7 × 0.7–1.4 cm, leaflets margin serrate, petiolules 1–2 mm long, petioles 0.5–4.0 cm long. Cymes 1–4 flowered, axillary, pubescent; peduncles 2.5–3.2 cm long; pedicels

ca. 0.8 cm long; sepals ovate to oblong, outer ones smaller, 5–8 mm long, ca. 3 mm wide, persistent and enlarged in fruit; corolla white to pale yellowish white, funnel form, 1.5–2 cm long, 2–2.6 cm across; stamens attached to the base of the corolla tube, filaments 5–6 mm long, hairy at base; anthers ca. 3 mm long; pistil 8.5–9.5 mm long; ovary 1 mm long. Capsules globular, 8–9 mm long, papery; seeds up to 4 per fruit, each seed shaped like a quarter of a sphere, ca. 6 × 4 mm, pubescent.

Distribution and ecology: *M. quinquefolia* is native to tropical America (Davidse *et al.* 2012) and has naturalized in several places in Africa, tropical Asia and the Pacific Islands (Johnson 2009; Staples 2010). It is reported to grow in disturbed areas, on roadsides and in pastures at lower elevations (Acevedo-Rodríguez 2012). In Taiwan, *M. quinquefolia* is only found at the roadside open grassy and shrubby area along Southern Cross-Island Provincial Highway, about 250 m in elevation. Flowering and fruiting were observed from December to February.

Voucher specimens in Taiwan: Kaohsiung: Liouguei, Hsiwei (新威), 17 Dec 2016, S.W. Chung 12771; 12772. (TAIF).

Discussion

Merremia quinquefolia can be distinguished from other congeners by the combination of palmately compound leaves with serrate margins and glabrous surfaces, and white to pale yellowish white corollas. Among the *Merremia* species in Taiwan, *M. quinquefolia* is similar to *M. cissoides* (Lam.) Hallier f., *M. dissecta* (Jacq.) Hallier f., *M. quinata* (R. Br.) Ooststr., *M. tuberosa* (L.) Rendle and *M. vitifolia* (Burm. f.) Hallier f. in sharing palmately 5–7-lobed or palmately compound leaves with 5–7 leaflets, flat calyx with sepals adnate to the corolla, glabrous corolla, spirally twisting anthers and chartaceous four-valved capsules. A key and a comparison plate (Fig. 3) of these species are provided to aid identification. Except for *M. vitifolia*, other five mentioned species are also genetically closely related as they locate in the same monophyletic clade (“Clade 4”) in the latest phylogenetic study (Simoes *et al.* 2015). If *Merremia* is eventually segregated due to its genetic polyphyly, *Davenportia* R. W. Johnson will possibly become the available name for this clade at genus rank (Simoes *et al.* 2015).

Key to the *Merremia* species with palmately 5–7-lobed or palmately compound leaves in Taiwan

1. Leaves palmately lobed; corolla yellow or white with purple to violet throat.....2
- 1a. Leaves palmately compound; corolla white to pale yellowish white throughout.....4
2. Leaf deeply lobed nearly to base; leaf lobes irregularly pinnately lobed to parted; corolla white with purple to violet throat.....*M. dissecta*
- 2a. Leaf angled to deeply lobed; leaf lobes entire or serrate; corolla yellow.....3
3. Plant hairy; leaves angled to moderately lobed, margin serrate.....*M. vitifolia*
- 3a. Plant glabrous; leaves deeply lobed, margin entire.....*M. tuberosa*

4. Leaflets entire; corolla 3–5 cm long.....*M. quinata*
 4a. Leaflets serrate; corolla 1.5–2.5 cm long.....5
 5. Leaflets densely short tomentose; sepals 15–20 mm long.....*M. cissoides*
 5a. Leaflets glabrous; sepals 5–8 mm long.....*M. quinquefolia*

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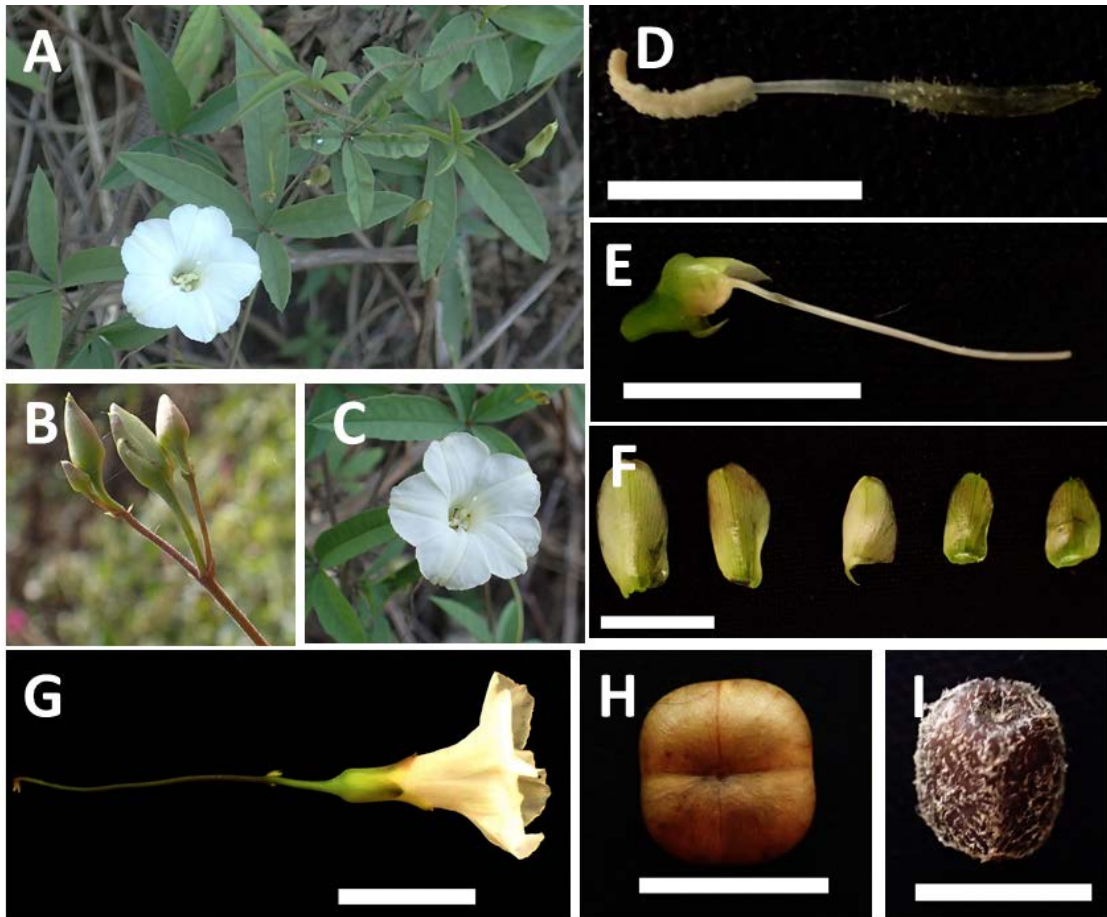


Fig. 1. *Merremia quinquefolia* (L.) Hallier f. A, habit; B, inflorescence; C, flower; D, stamen; E, pistil and ovary; F, sepals; G, flower (lateral view); H, capsule (top view); I, seed. Scale bars: 5 mm in D–F & I; 1 cm in G & H. Photographed by An-Ching Chung.

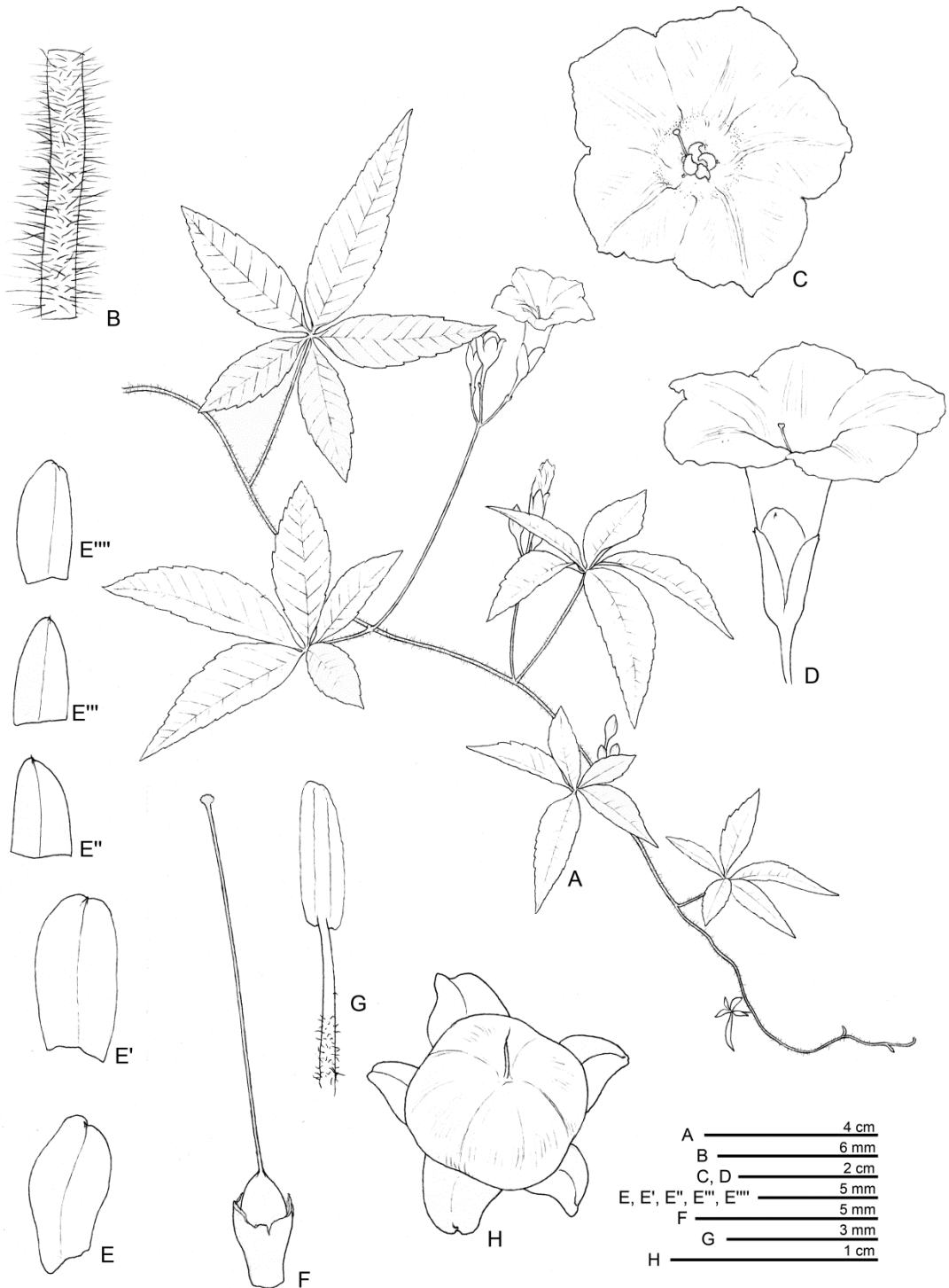


Fig. 2. *Merremia quinquefolia* (L.) Hallier f. A, habit; B, stem; C & D, flower; E, sepals; F, pistil and ovary; G, stamen; H, capsule. Illustrated by Che-Wei Lin.

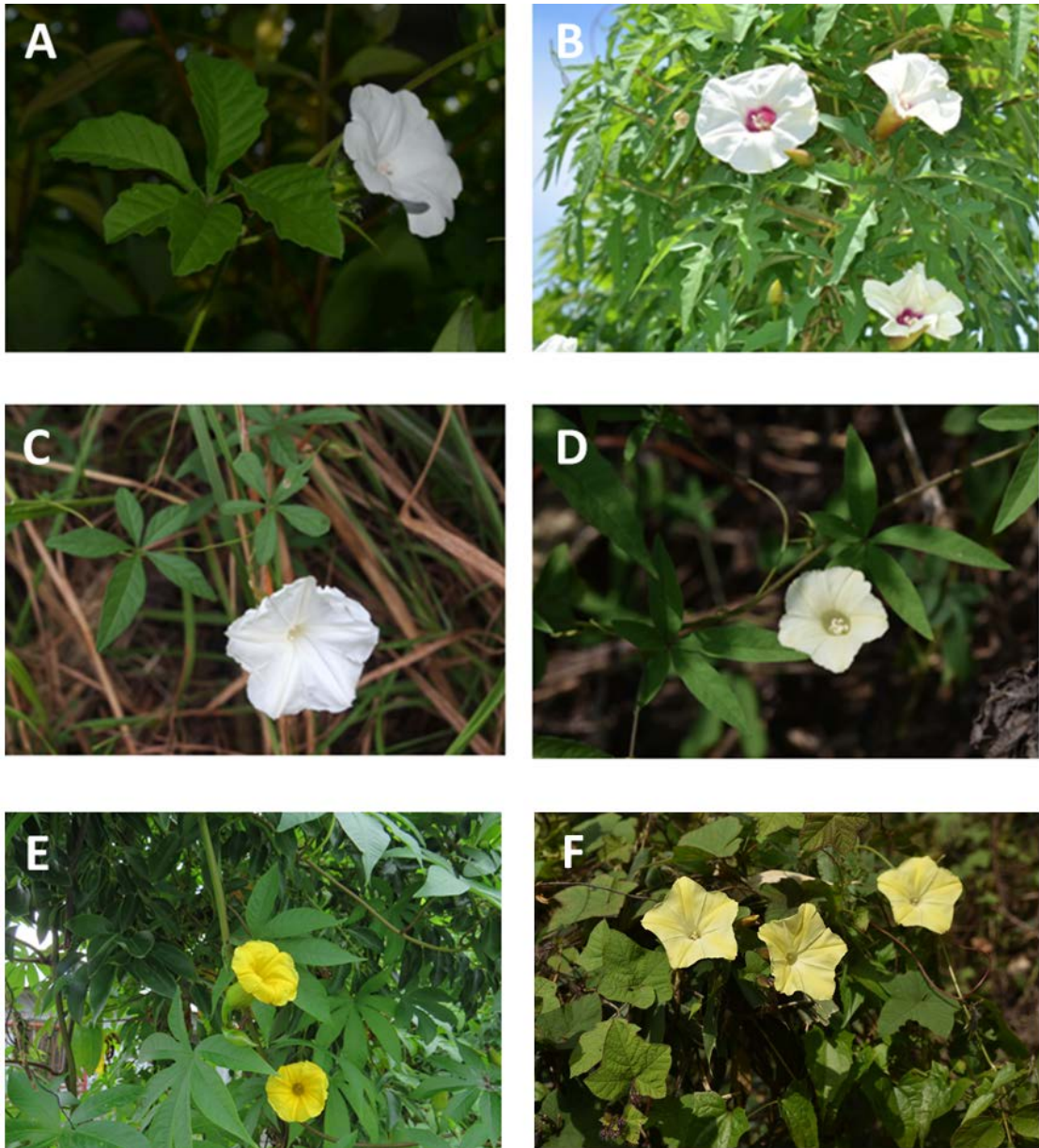


Fig. 3. Morphology of the *Merremia* species with palmately lobed or palmately compound leaves in Taiwan. A, *M. cissoides*; B, *M. dissecta*; C, *M. quinata*; D, *M. quinquefolia*; E, *M. tuberosa*; F, *M. vitifolia*. Photographed by Shih-Wen Chung (A, B, D & F), Zhi-Hao Chen (C) and Shu-Nuan Liao (E).

