

Research paper

Neptunia plena (L.) Benth. (Leguminosae), a newly naturalized plant in Taiwan

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【Abstract】 A newly naturalized plant, *Neptunia plena* (L.) Benth. (Leguminosae), native to America and Asia, has recently been found in low elevations of southern Taiwan. *Neptunia plena* differs from the other Taiwanese *Neptunia* spp. in erect stem, bracts on the lower half of the peduncle and with a suppressed gland between or just below the lowest pair of pinnae. A detailed description, line-drawings, photographs and geographic distribution are provided for identification of this species.

【Key words】 Leguminosae, naturalized plant, *Neptunia plena*, Taiwan

研究報告

臺灣新歸化豆科植物—直立水含羞草

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【摘要】 本文記錄一種臺灣新歸化豆科植物直立水含羞草 (*Neptunia plena* (L.) Benth.)，原產於美洲及亞洲，最近被發現歸化於臺灣南部低海拔地區。它與臺灣同屬其他植物主要的差異在於莖直立、花梗下方具苞片及最下方羽片著生處具有腺體。本文描述其形態特徵、地理分佈及生育地環境，並提供彩色圖片與線畫圖以資辨識。

【關鍵詞】 豆科、直立水含羞草、歸化植物、臺灣

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INTRODUCTION

The genus *Neptunia* (Mimosaeae, Leguminosae) consists of 11 species, distributed in tropical and warm temperate regions of the world, usually occurring in open areas (Windler, 1966; McVaugh, 1987). Non species of *Neptunia* is previously recorded in the second edition of Flora of Taiwan (Huang & Ohashi, 1993). *N. gracilis* Benth. has naturalized to Hengchun Peninsula, southern Taiwan (Huang *et al.*, 1996; Boufford *et al.*, 2003 and Wang *et al.*, 2011). This documented the first confirmed report of both the naturalized genus and species in Taiwan. Another aquatic legume introduced for vegetable, *N. oleracea* Lour. inhabits at warm, slow-moving, and frequently stagnant waters in tropical Asia, Africa, and Central and South America (Windler, 1966), which was misidentified as *N. plena* by Ying (1993). Recently, *N. pubescens* Benth. has naturalized to seasonal wetlands at lakesides and coastal grasslands in southern Taiwan (Jung and Kao, 2013). In our botanical exploration in southern Taiwan, we found *N. plena* (L.) Benth. as a weed distributed in low elevations of southern Taiwan. *N. oleracea* characterized by floating habit, spike is obovoid in bud, lack of a gland on the petiole, and legume with 4-8 seeds. In outline, *N. plena* is similar to the other *Neptunia* species found in Taiwan, but differs in habit, presence of bracts on the peduncle and gland on leaves. Stems of *N. plena* are erect or ascending while those of Taiwanese *Neptunia* spp. are prostrate. The new naturalized species has bracts on the lower half of the peduncle, and with a suppressed gland located between or just below the lowest pair of pinnae while those are absent in the others.

TAXONOMIC TREATMENT

Neptunia plena (L.) Benth., J. Bot. Hook. 4: 355.

1842.

Mimosa plena L., Sp. Pl. 519, 1753.

直立水含羞草 Fig. 1-3

Herbs, perennial, terrestrial. Stems erect or ascending, branched. Tap-root thick, becoming woody. Stems to 2m tall, terete, glabrous or forming a spongy indumenta when in water. Stipules persistent, 4-12 mm long, 3-6.5 mm broad, lanceolate, with the base obliquely cordate, glabrous, with the margins entire. Leaves bipinnate with 2-4(-5) pairs of pinnae; petioles 1-4 cm long, angled, glabrous, with a gland just below the lowest pair of pinnae; stipels none; rachis angled, glabrous, glandless, prolonged into a linear leaf-like projection 1.5-5.5 mm long, the projection glabrous; pinnae rachis distinctly winged, extended beyond the attachment of the terminal pair of leaflets, sparsely ciliate on the margins, the cilia occasionally absent; leaflets 9 -36 pairs per pinna, 4-14(-18) mm long, 1-3 mm broad, oblong, obtuse to broadly acute, occasionally mucronulate, asymmetrical, glabrous or sparsely ciliate on the margins, the surface appearing minutely punctuate, the venation consisting of 1 main vein with the lateral veins obscure. Inflorescence a spike, nodding, 1-1.8 cm long, pedunculate, borne solitary in the axils of the leaves, axillary. Spikes obovoid in bud. Peduncles 3~10 cm long, glabrous, with 2 bracts in the lower half, bracts 5-12 mm long. Flowers 20-40 per spike, sessile, each subtended by a single bract 1-2.7 mm long. Lower flowers sterile, sessile; calyx campanulate, 0.6 mm long, 5-lobed, yellow, broadly acute; petals 5, regular, free, yellow, 1.1 mm long, triangular, apex acute.; stamens 10, sterile, petal-like, yellow, 6-7 mm long, 0.8 mm broad, yellow; gynoecium absent. Upper flowers perfect, sessile, each subtended by a campanulate, green calyx, 1.2 mm long, 5-lobed, lobes broadly acute, marginally

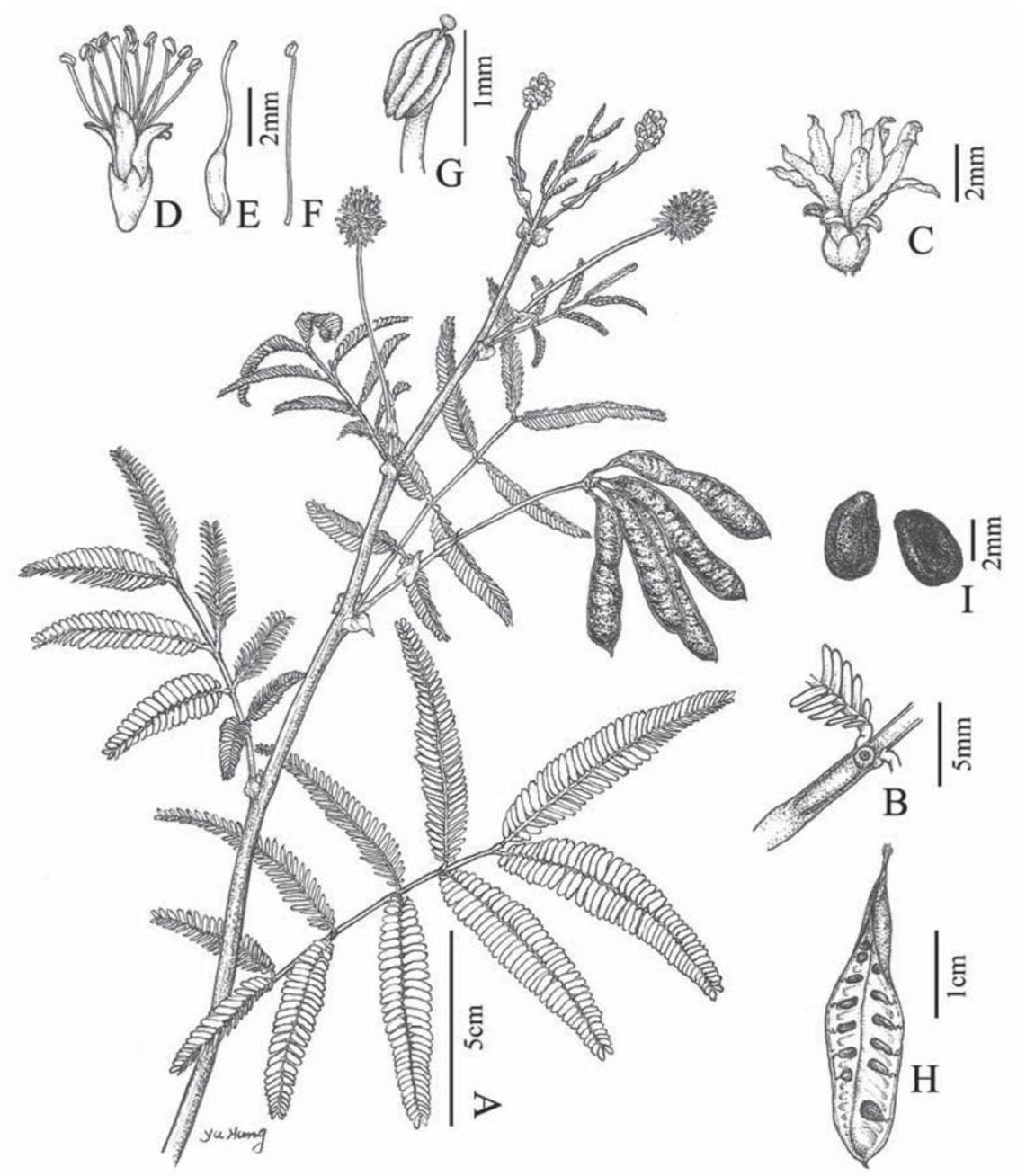


Fig. 1. *Neptunia plena* (L.) Benth. A. habit; B. gland on leaf; C. sessile flower; D. perfect flower; E. pistil; F. stamen; G. anther; H. legume; I. seeds.

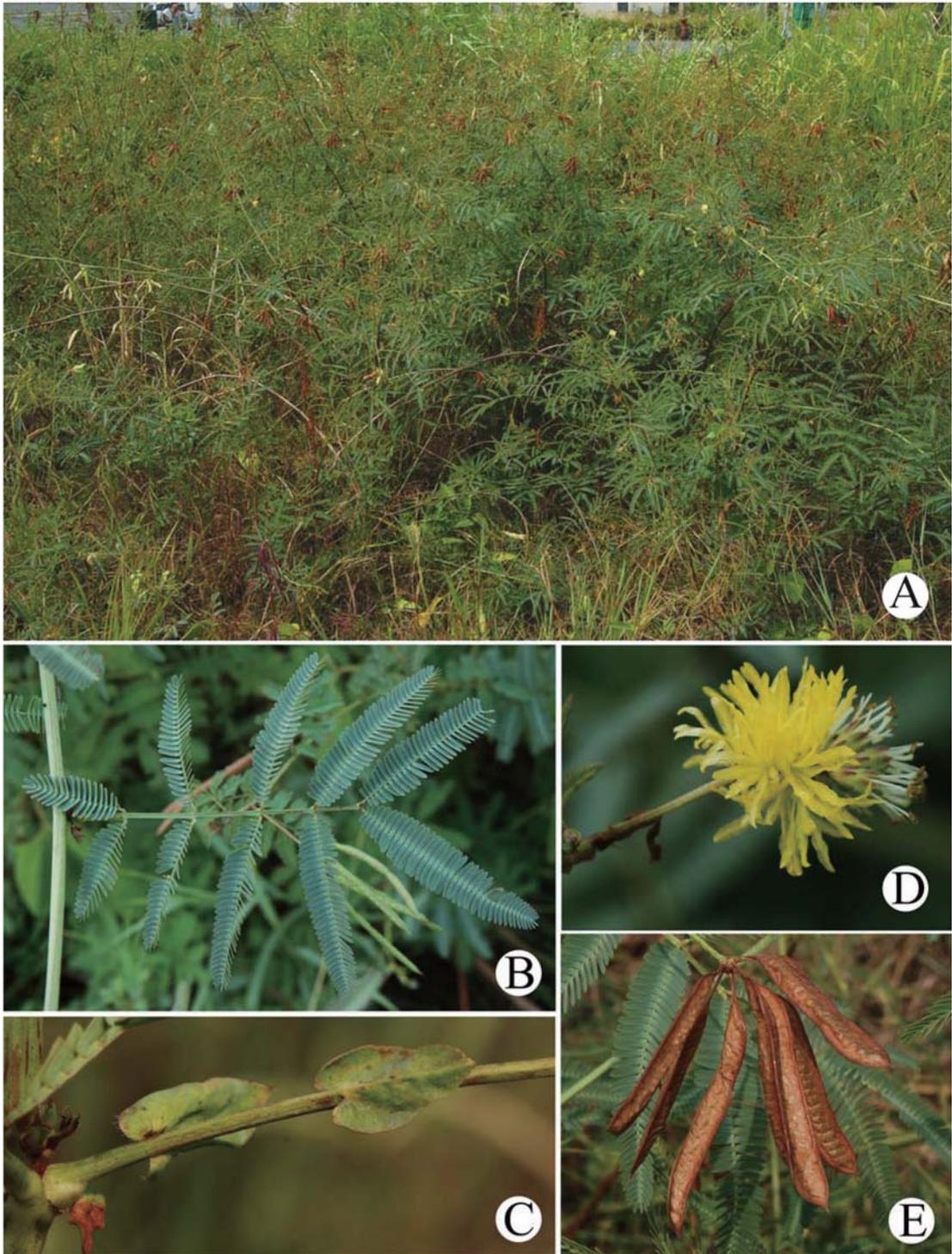


Fig. 2. *Neptunia plena* (L.) Benth. A. habitat; B. leaf; C. bracts on the lower half of the peduncle; D. flowers; E. legumes.

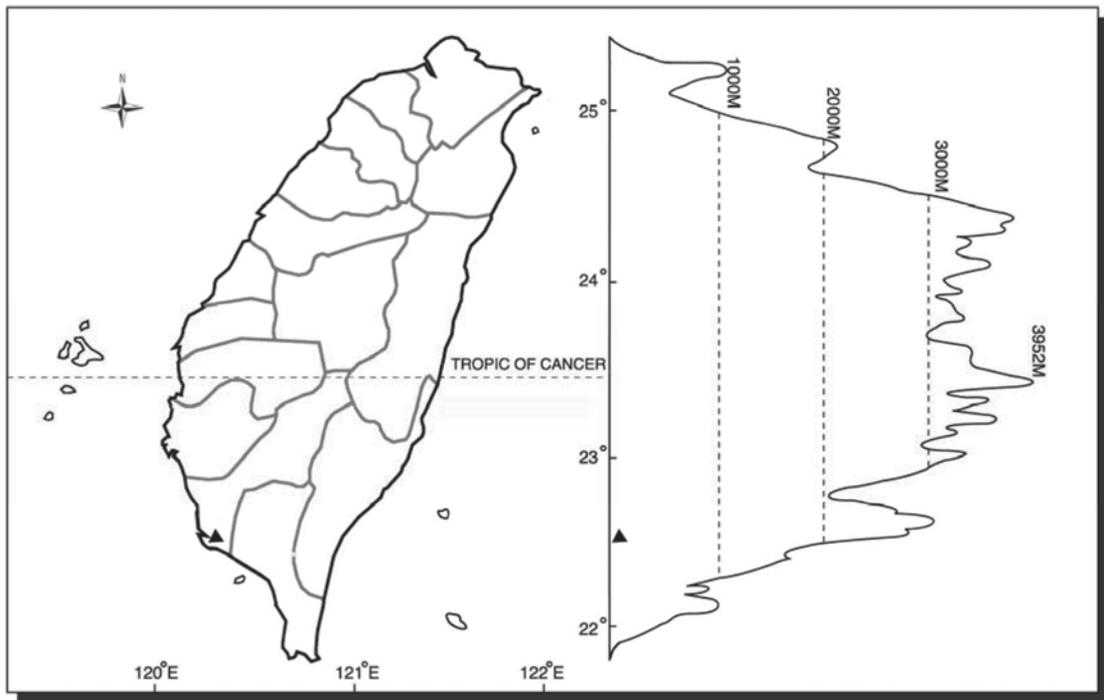


Fig. 3. Distribution of *Neptunia plena* (L.) Benth. in Taiwan.

entire; petals 5, regular, free, yellow, 2.2 mm long; stamens 10, free, 5-7 mm long, with the filaments slender, flattened, yellow-white, anthers exerted, bilocular, yellow to brown, ca. 0.7 mm long, bearing a terminal tip; pistil 5-7 mm long; ovary ca. 2 mm long, glabrous, stipitate; style slender, elongate; stigma truncate, concave. Legume oblong, flat, membranous-coriaceous, glabrous, marginally dehiscent, 1.5-5 cm long, 0.7-0.8 cm broad, tapering or rounded to the stipe. Seeds 8-20 per legume, brown, ovoid, compressed, 3.5 mm long, 2.2mm broad.

N. plena is characterized by spikes which are obovoid in bud, cordate bracts on the lower half of the peduncle, a legume with 8-20 seeds, and the presence of an appressed gland on the petiole between or just below the lowest pair of pinnae.

Distribution: *Neptunia plena* usually occurs in coastal regions of southern North America, central

America, northern South America, and tropical Asia (Windler, 1966). In China, it is planted or occasionally escaped in wet places (Chen, 1988; Wu & Nielsen, 2010). In Kaohsiung City, wild population of this erect plant was occurred at roadsides, drier grasslands and abandoned land.

Specimens examined : Kaohsiung City: Xiaogang Dist.: Kongzhai Village, C. M. Wang 15111, 15125 (TNM).

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