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Notes on Two Newly Naturalized Plants in Taiwan

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ABSTRACT: *Hypochaeris glabra* L. (Asteraceae) was recently collected in central Taiwan, and *Kyllinga polyphylla* Willd. ex Kunth. (Cyperaceae) was found in northern Taiwan. Both two species were considered as naturalized plants to the flora of Taiwan. Herein, the authors provide line drawings, distribution maps and descriptions of these two alien plants.

KEY WORDS: Asteraceae, Cyperaceae, flora, *Hypochaeris glabra*, *Kyllinga polyphylla*, Taiwan.

INTRODUCTION

Two alien plants were considered as naturalized in Taiwan, and were described in this article. *Hypochaeris glabra* L. (Asteraceae) was found in central Taiwan (Fig. 1) and considered as naturalized by the authors. Many naturalized members of Asteraceae in Taiwan were reported in recent (Chang et al., 2002; Chen, 2007; Chung et al., 2007; Hsu et al., 2006; Jung et al., 2005, 2006; Wang and Chen, 2006; Yang and Hsieh, 2006). Nearly half of naturalized species of Asteraceae were considered as invasive in Taiwan (Wu and Wang, 2005). These reports about alien and naturalized plants are necessary and benefit for biological conservation and agricultural development (Chen, 2007).

About 178 species in Cyperaceae were recorded in Taiwan, including three naturalized *Cyperus* species and one newly recorded *Carex* species (Chen and Wu, 2007; Hsieh, 2003; Yang and Chen, 2005). Lin (2000, 2002, and 2005) published a *Kyllinga sp.*, which could be found in wetland in northern Taiwan, but didn't confirm the scientific name of the sedge. Herein, the authors identified the newly sedge to the flora of Taiwan as *Kyllinga polyphylla* Willd. ex Kunth., which naturalized in low elevations, northern Taiwan (Fig. 1). Distribution map, descriptions and illustrations of these two naturalized species, *Hypochaeris glabra* L. and *Kyllinga polyphylla* Willd. ex Kunth., were offered.

TAXONOMIC TREATMENTS

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1. ***Hypochaeris glabra*** L. Sp. Pl. 2: 811. 1753. Barkley et al., 2006. Asteraceae. In: Baillargeon G. et al. (eds.), Flora of North America 19: 297-299; DeFilipps R. A., 1976. In: Tutin, T. G. et al. (eds.), Flora Europaea 3: 308-309; Koyama, H., 1995. In: Iwatsuki, K. et al. (eds.), Flora of Japan III b: 2-3. 光貓兒菊 Figs. 1 & 2

Herb, annual or perennial, taproot one or roots several, stems erect, basal leaves oblanceolate, toothed, glabrous to hispidulate, hispid 0.3-0.5 mm long. Inflorescence corymbs, of several heads terminating branches, receptable paleate, ligules yellow, involucral bracts lanceolate, apex acute or acuminate, margin hyaline, glabrous, ca. 7-nerved, outer bracts 3-5.5 mm long, inner bracts 8.5-12 mm long; chaff linear, apex acuminate, membranous, 1-nerved, 9.5-10 mm long. Achene ellipsoid, longitudinally ribbed, ca. 16 ribs per achene, ribs scabrid, marginal achene unbeaked; central achene beaked or not, unbeaked achene ca. 2.7 mm long, beaked achene ca. 7.5 mm long; pappus plumose sparingly, ca. 7.5 mm long, branch ca. 2 mm long.

Specimens examined: TAIWAN. Taichung Co., Chinshui Town, Taichung Harbor Park, 30 Mar 2007, *M.-J. Jung 1611* (TAIF).

Distribution and notes: *Hypochaeris* L. (Asteraceae) has about 60 species in Asia, Europe, North and South America, and *H. radicata* L. is broadly naturalized in middle and high elevations in Taiwan (Barkley et al., 2006; Ou et al., 1981; Peng et al., 1998). *Hypochaeris glabra* L. (smooth catsear) is native to Europe and naturalized in Japan, North America, and Mexico (Barkley et al., 2006; DeFilipps, 1976; Koyama, 1995; Villasefior and Espinosa-Garcia, 2004). Mature achenes of central florets in *Hypochaeris glabra* and *H. radicata* are both beaked. Achenes apex of marginal florets in *Hypochaeris glabra* are truncate, rather than that of

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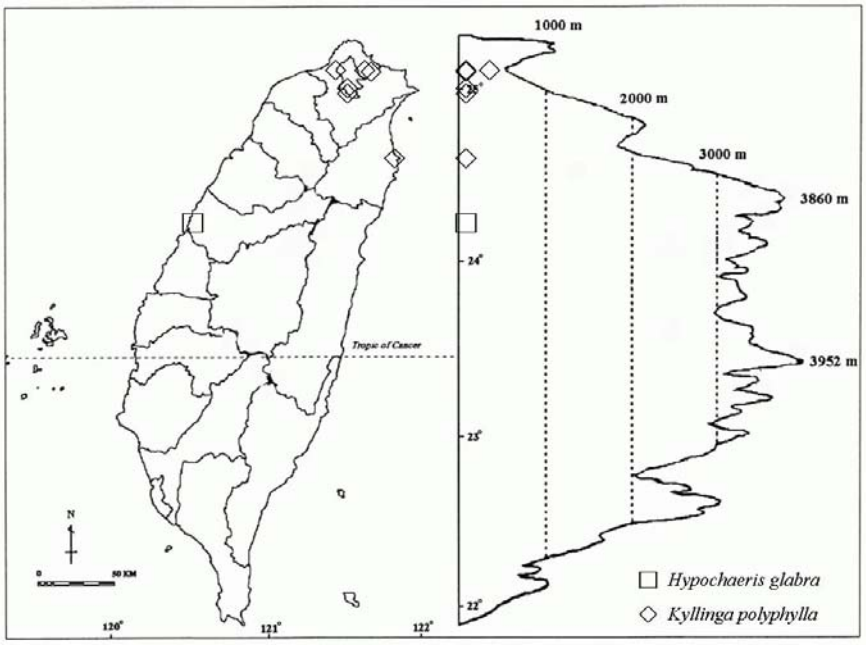


Fig. 1. Distribution map of *Hypochaeris glabra* (□) and *Kyllinga polyphylla* (◇).

H. radicata are long or short-beaked. Midribs of involucral bracts in *Hypochaeris glabra* are glabrous, rather than the midribs of involucral bracts of *H. radicata* are usually pubescent. In Taiwan, *Hypochaeris glabra* broadly occurred at roadside and waste places in park of Taichung Harbor. Mature achenes of smooth catsear could be found on plants in wild and specimen we examined.

2. ***Kyllinga polyphylla*** Willd. ex Kunth. Enum. Pl. 2: 134. 1837. Lye K. A., 1995. Cyperaceae. In: Thulin M., 1995. Flora of Somalia 4: 112-145.
多葉水蜈蚣 Figs. 1 & 3

Perennial herb, rhizome short, ca. 1 cm long, 1 cm wide; culms alternate, erect, 30-50 cm tall, cross section deltoid, leaf 1-2, basal, linear, apex acute, boated, margin entire, blade flaten, central vein dominant; bract similar to leaf blade, 3-5. Inflorescence a terminal single globose head, ca. 15 mm long and as wide, densely bearing numerous spikelets. Spikelet laterally compressed, 1- floreted; glumes 5, lowest glumes 2, membranous, apex round, ca. 1.5 mm long; abaxial one ellipse, 1-nerved, adaxial one ovate, 3-nerved; middle glumes 2, membranous, ca. 4 mm long, apex acute, one short awn rising from apex, midrib keeled, hispidulate, abaxial one 7-nerved, adaxial one 5-nerved; inner glume 1, linear, apex acute to bifid, membranous, 1-nerved, 3.5-4 mm long; stamen 3, filament membranous, to 6 mm long, anther ca. 2 mm long; ovary ellipsoid, ca. 1.3 mm long, style ca. 2 mm long, stigma bifid. Achene obovoid, compressed, glabrous, ca. 1.5 mm long, 0.8 mm wide, 0.5 mm thick, cross section of upper part ellipse, cross section of basal part deltoid.

Specimens examined: TAIWAN. Taipei City, Daan District, NTU campus, 13 Nov 2007, *T.-C. Hsu 1059* (TAI); Wenshan District, Jingmei Stream Riverside Park, 11 Nov 2007, *M.-J. Jung 1826* (TAIF). Taipei Co., Sijhih City, Hsinshan-menghu, 13 Jan 2008, *M.-J. Jung 2182* (TAIF); Wuku Hsiang, Wuku Wetland, 14 Nov 2007, *T.-C. Hsu 1067* (TAIF). Ilan Co., Juangwoi Hsiang, Juangwoi, 14 Nov 2000, *C.-C. Lin 49* (TAIF); Suao Town, Suao, 14 Nov 2007, *M.-J. Jung 1838* (TAIF). Keelung City, Cidu District, Maling, 15 Feb 2008, *M.-J. Jung 2322* (TAIF).

Distribution and notes: *Kyllinga polyphylla* Willd. ex Kunth. (= *Cyperus aromaticus* (Ridl.) Mattf. & Kukenth.) (Navua sedge) is native to tropical Africa (Lye, 1995), and naturalized in Malaysia, Singapore, Australia and Pacific Islands. The genus *Kyllinga* Rottb. (Cyperaceae) has ca. 40 species in tropical and temperate of both hemispheres, and 3 species has been reported in Flora of Taiwan, 2nd ed. (Boufford et al., 2003; Koyama et al., 2000). *Kyllinga* is considered a subgenus of *Cyperus* in a broad circumscription in sometimes (Tucker, 1994). The genus *Kyllinga* is considered as a separate genus by its two-scaled and one-flowered spikelets (Tucker, 1994). Besides, inflorescences of *Kyllinga spp.* are dense and sessile spikes, rather than open and branched inflorescences in most species of *Cyperus* (Tucker, 1994). Occurrence of Navua sedge was firstly reported by Lin (2000) as *Kyllinga sp.*, and Lin repeated the occurrence in his publishes (Lin, 2002; 2005). In Taiwan, *Kyllinga polyphylla* was found in wetlands and waste places in low elevations of

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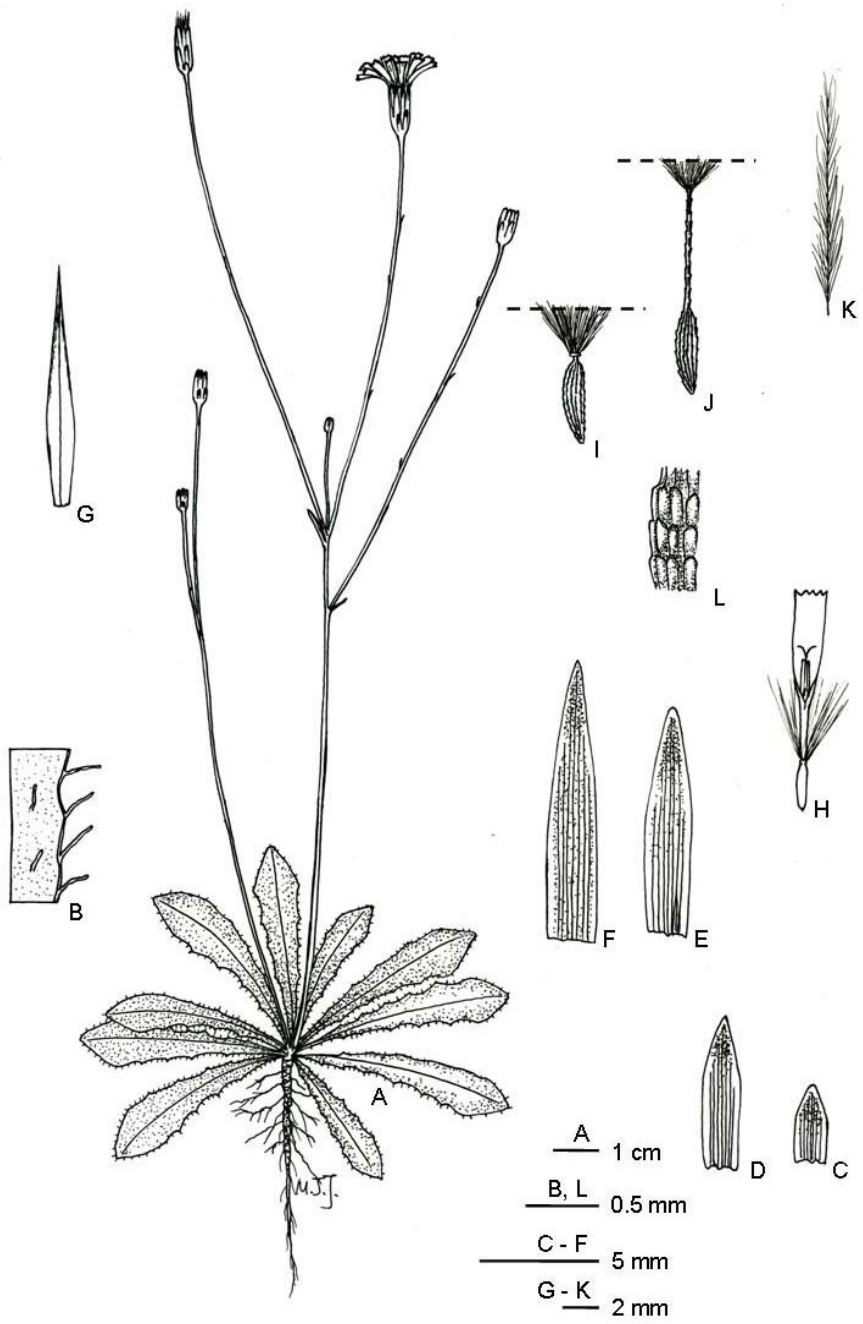


Fig. 2. *Hypochaeris glabra* L. A: Habit. B: Leaf margin. C & D: outer bracts. E & F: Inner bracts. G: Chaff. H: Floret. I: Unbeaked achene. J: Beaked achene. K: Pappus. L: Part of achene surface, showing the papilla.

northern Taiwan. Blade of three recorded *Kyllinga* species in Taiwan are flattish plicate, which is differed to the flatten blade of *K. polyphylla*. Short rhizome could be found from *Kyllinga sesquiflora* subsp. *cylindrica* and *K. polyphylla*. Short rhizome of *Kyllinga polyphylla* is much thicker than other *Kyllinga* species in Taiwan. Spikelet is much longer than other *Kyllinga* species in Taiwan. Middle glumes of *Kyllinga polyphylla* were keeled and unwinged, which is differed to keeled and winged remainig glumes of *K. nemoralis* (Koyama et al., 2000). Vein number on remaining glumes could be used to tell *Kyllinga polyphylla* (abaxial one: 7-nerved, adaxial one: 5-nerved) from *K. sesquiflora* subsp. *cylindrica* (abaxial one: 9-11 nerved, adaxial one: 5-7 nerved).

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Fig. 3. *Kyllinga polyphylla* Willd. ex Kunth. A: Habit. B: Part of culm, showing the ligule and leaf base. C: Spikelet. D: Adaxial outer glume. E: Abaxial inner glume. F: Adaxial middle glume. G: Abaxial middle glume. H: Abaxial inner glume. I: Anther. J: Pistil. K: Achene. L: Achene, lateral view.

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兩種臺灣新歸化植物

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摘　　要

本文報導近日於臺灣中部採獲的光貓兒菊(*Hypochaeris glabra* L.)，及於臺灣北部尋獲的多葉水蜈蚣 (*Kyllinga polyphylla* Willd. ex Kunth.) 等兩種歸化植物。本文提供此兩種外來植物的手繪圖、臺灣分佈圖及描述。

關鍵詞：菊科、莎草科、植物誌、光貓兒菊、多葉水蜈蚣、臺灣。

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