NOTE

Cyperus surinamensis Rottb., A Newly Naturalized Sedge Species in Taiwan

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ABSTRACT: *Cyperus surinamensis* Rottb., a sedge species of tropical and subtropical American origins, has recently been naturalized in the northern part of Taiwan. The present study provides taxonomic description, line drawings and other relevant information. In addition, a comparison with similar species *C. eragrostis* Lam. is given.

KEY WORDS: *Cyperus*, *Cyperus eragrostis*, *Cyperus surinamensis*, naturalized plant, Taiwan, Taxonomy, weeds.

INTRODUCTION

In the last three years we have witnessed three alien species of *Cyperus*, *C. alternifolius* L., *C. eragrostis* Lam., and *C. esculentus* L., naturalized to Taiwan (Chen and Wu, 2007; Chen et al., 2008). In the course of a taxonomical study of sedges in Taiwan, an additional adventive species *C. surinamensis* Rottb. was found in northern Taiwan. It is a widespread species in the New World tropics and subtropics, which resembles *C. eragrostis* in habit and habitat but differs in several characters. The present study gives the species description and illustrations, based on live plant materials from Taiwan (Figs. 1 & 2). Furthermore, a comparision of the diagnostic characters between this species and *C. eragrostis* is made (Figs. 2 & 3, Table 1).

TAXONOMIC TREATMENTS

Cyperus surinamensis Rottb., Descr. Pl. Progr. 20. 1772; Mc Giveny, Catholic Univ. Amer., Biol. Ser. 26: 30. Pl. 5. 1938; Svenson, Ann. Missouri Bot. Gard. 30(3): 196.1943; Kolstad, *Cyperus* in Great Plains Fl. Assoc., Fl. Great Plains, 1097. 1986; Tucker, Syst. Bot. Monogr. 43: 27, f. 5. a-d. 1994; Acevedo-Rodriguez, Fl. St. John, U. S. Virgin Isl. (Memoirs) 485. 1996; Correll & Correll, Fl. Bah. Arch. 222. 1996; Wunderlin, Guid. Vasc. Pl. Florida 157. 1998; Tucker, *Cyperus* in Berry et al., Fl. Venez. Guayana 4: 533. f. 432. 1998; Tucker et al., *Cyperus* in Fl. N. Amer. Ed. Comm., Fl. N. Amer. 23: 153. 2002; Govaerts et al., World Checklist of Cyperaceae 362. 2007.

刺桿莎草 Figs. 1 & 2

Perennial herbs, tufted, 20-100 cm tall, rhizomes short, brown; roots fibrous, reddish brown. Culms trigonous, scabrous, sparsely with retrorse prickles, dark green, 2-3 mm wide. Leaves 3-5, 10-60 cm long, 2-6 mm wide, blades elongated linear,with antrorse prickles on distal margins, basally scattered with transverse septa between the nerves, V-shaped; sheath 3-10 cm long, whitish green, flushed with brown at base.

Anthela compound to decompound, leafy bracts 3-9, very unequal, spreading or reflexed, 3-40 cm long, 1-6 mm wide, with antrorse prickles on margins, V-shaped; primary rays 6-10, very unequal, 0-5 cm long, scabrous with retrorse prickles. Spikelets 15-60 clustered in a globose head 1.5-2 cm across at apex of raylets, ovate to lanceolate-ovate, flattened, 2-7 mm long, 1.5-2 mm wide, densely 16-30 flowered; rachilla slightly zigzag. Glumes ovate, 1.4 mm long, 0.6 mm wide, 3-nerved, pale-green, the midrib green, apex mucronulate. Stamen 1, filaments 0.5 mm long, white, anthers yellow, 0.5 mm long, linear with a subulate appendage at apex. Styles pale-brown, 0.5 mm long, stigmas 3, 0.6 mm long, pale-brown, ovary yellowish green, trigonous, 0.6 mm long, 0.2 mm wide. Achenes 3-angled, narrowly ellipsoid, 0.8 mm long, 0.4 mm wide, slightly stipitate, acute and apiculate at apex, reddish brown, reticulate and papillae on surfaces.

Specimens examined: Taipei City: Taipei Botanical Garden, at pond margins, 10 Mar 2007, Weng 12 (NHU); near Bai-ling Park, on roadsides along Keelong River, 22 Nov 2008, Weng 132 (NHU). Taoyuan Co.: Guishan Hsiang, Fengshu Village, 28 Sep 2002, Chen 471 (TAIF). Miaoli Co.: Tunglo, 14 Jul 2001, Lin 315 (TAIF).

Distribution and notes: *Cyperus surinamensis* Rottb. is probably of tropical American origin, but is now widespread from the southern United States and Mexico, through Central America, to the West Indies and South

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Fig.1. ***Cyperus surinamensis*** **Rottb. A: Roots and culm. B: Inflorescence. C: Portion of culm. D: Portion of leaf showing antrorse prickles on distal margins. E: Spikelet. F: Floret. G: Glume. H: Pistil and stamen. I: Achenes.**

Table 1. Comparison between ***Cyperus surinamensis*** **Rottb. and** ***C. eragrostis*** **Lam.**

Characters	*C. surinamensis* Rottb.	*C. eragrostis* Lam.
Culms and rays	Scabrous and with retrorse prickles, dark green (Fig. 2B)	Glabrous, green (Fig. 3B)
Spikelets	Ovate to lanceolate-ovate, densely flowered (Fig. 2C)	Elliptic, loosely flowered (Fig. 3C)
Achenes	Narrowly ellipsoid (Fig. 2D)	Obovate to broadly ellipsoid (Fig. 3D)
Pericarp of achene	Cells with much-raised margins, papillae small (2-3 μm) (Fig. 2E)	Cells with raised margins, papillae larger (3-5 μm) (Fig. 3E)

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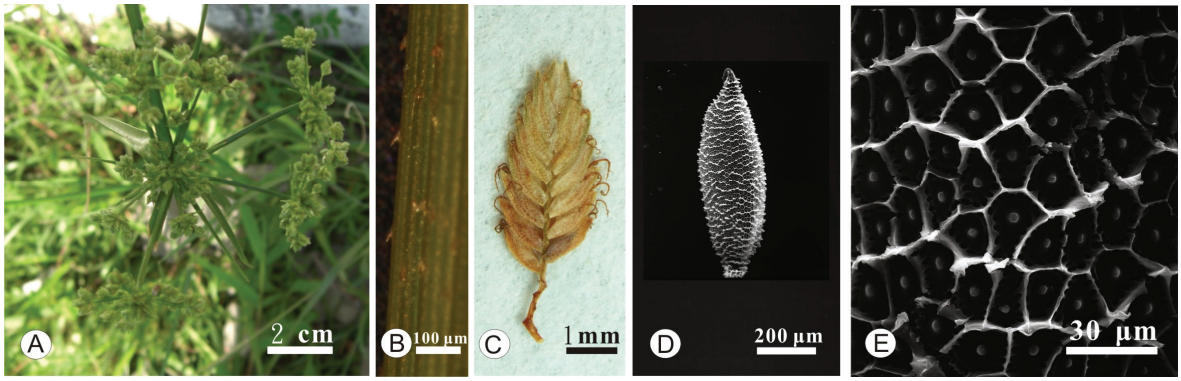


Fig. 2. *Cyperus surinamensis* Rottb. A: Inflorescence. B: Portion of dark green culm showing the surface with retrorse prickles. C: Spikelet. D: Achene. E: Pericarp of achene (D, E, SEM photographs).

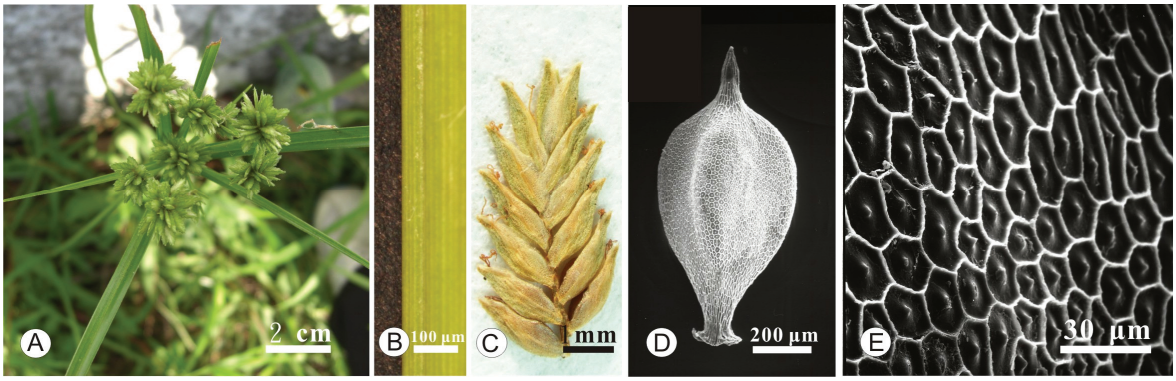


Fig. 3. *Cyperus eragrostis* Lam. A: Inflorescence. B: Portion of green culm showing the glabrous surface. C: Spikelet. D: Achene. E: Pericarp of achene (D, E, SEM photographs).

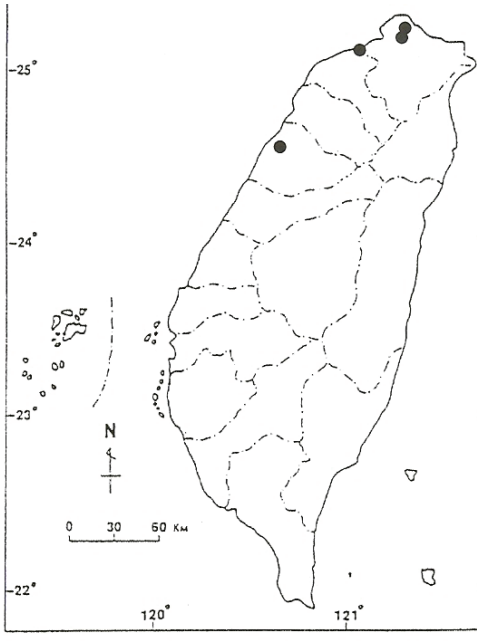


Fig. 4. Distribution map of *Cyperus surinamensis* Rottb. (●) in Taiwan.

America (Svenson, 1943; Correll and Correll, 1996; Acevedo-Rodriguez, 1996; Tucker, 1998; Tucker et al., 2002). It occurs in the lowlands of northern Taiwan (Fig. 4) as a weed distributed in sunny, wet, disturbed sites, in shallow water, on edges of streams and ponds, and is usually associated with other wetland plants such as *Cuphea cartagenesis* (Jacq.) Macbride, *Cyperus iria* L., *Eclipta prostrata* (L.) L., *Ludwigia octovalvis* (Jacq.) P. H. Raven, and *Veronica undulata* Wall.

This plant is superficially similar to *C. eragrostis* Lam. and may be confused with that completely separate taxon at first sight. The differences between the two taxa are as appear from the characters tabulated in Table 1.

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LITERATURE CITED

Acevedo-Rodriguoz, P. 1996. Flora of St. John, U. S. Virgin Islands. New York Bot. Gard., Bronx, New York, USA. p. 485.

Chen, S.-H. and M.-J. Wu. 2007. Notes on four newly naturalized plants in Taiwan. Taiwania **52**: 59-69.

Chen, S.-H., S.-H. Weng and M.-J. Wu. 2008. The umbrella sedge in Taiwan. Taiwania **53**: 311-315.

Correll, D. S. and H. B. Correll. 1996. Flora of the Bahama Archipelago. A. R. G. Gantner Verlag K. G. (repr.), Florida, USA. p. 222.

Svenson, H. K. 1943. Cyperaceae. In: Woodson, R. E. and R. W. Schery. (eds.), Flora of Panama. Ann. Missouri Bot. Gard. **30**: 281-325.

Tucker, G. C. 1998. *Cyperus*. In: Berry, P. E., B. K. Holst, and K. Yatskievych (eds.), Flora of Venezuelan Guayana **4**: 523-541. Missouri Bot. Gard. Press, St. Louis, USA.

Tucker, G. C., B. G. Marks and J. R. Carter. 2002. *Cyperus*. In: Flora of North America Editorial Committee (ed.). Flora of North America **23**: 141-191. Oxford Univ. Press. New York, USA.

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摘要：刺桿莎草 (*Cyperus surinamensis* Rottb., 新擬中名) 為新歸化於台灣北部之莎草科植物。本文描述其分類特徵、分佈、生長環境，並與相似種－頭穗莎草 (*Cyperus eragrostis* Lam.) 做比較，提出桿、穗枝、小穗，及瘦果在 SEM 下的差異。

關鍵詞：莎草屬、頭穗莎草、刺桿莎草、歸化植物、臺灣、分類學、雜草。

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