

Research note

***Carex echinata* Murray (section *Stellulatae*: Cyperaceae), a Newly Recorded Sedge in Taiwan**

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[Summary]

Carex echinata Murray (Cyperaceae) is reported as a newly recorded species for the flora of Taiwan. This species occurs mostly in moist alpine regions around marshes and was only found at Mt. Hehuan. Taxonomic comments, line drawings, and distribution notes for the species are provided.

Key words: *Carex echinata*, *Carex nubigena*, Mt. Hehuan, plant taxonomy.

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研究簡報

台灣新紀錄種莎草科薹屬植物—刺苞薹

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摘要

本文報導於台灣中部合歡山區發現的一種新紀錄莎草科薹屬植物-刺苞薹(*Carex echinata* Murray)。該種生育地為高海拔地區的濕地或沼澤。本文提供該種的分類描述、線繪圖及分布圖。

關鍵詞：刺苞薹、聚生穗序薹、合歡山、植物分類。

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Carex L. is the largest genus of the Cyperaceae in Taiwan with a total of 61 taxa already recorded (Koyama et al. 2000, Hsieh 2003). During an investigation at Mt. Hehuan, 1 species identified to the genus *Carex* was collected. After detailed assessments of the species, it was determined to be *C. echinata*, belonging to the section *Stellulatae* (Teruo 2005, Hipp 2008, Hoshino et al. 2011). This species was first collected in early summer of 2000 by Shih-Wen Chung (collection number: 8266, TAIF) at Mt. Hehuan. But it was identified as *C. nubigena* D. Don ex Tilloch Taylor. Now we confirmed that this species is a newly recorded sedge in Taiwan.

Taxonomic description

Carex echinata Murray, Prodr. Stirp. Gott. 76. 1770. -*Carex stellulata* Gooden. Trans. Linn. Soc. Lond. 2:144. 1794.-Type: Oeder, Pl. 284 in Flora Danica. 刺苞薹(Fig. 1)

Perennial herb, densely caespitose. Rhizomes short or inconspicuous. Culms slender, 20~40 cm tall, ca. 1 mm thick, triquetrous, smooth and slightly scabrous above. Leaves basal, blades linear, 20~40 cm long, 1~2 mm wide, flat or plicate, apex acuminate, mem-

branous, smooth, base clothed with dark-brown bladeless sheaths. Lower involucral bracts leaf-like, 1~2.5 cm long, sheathless; upper ones scale-like, setaceous. Inflorescences oblong, spikes 3~4, 1.5~3 cm long, 5~10 mm thick, gynecandrous. Spikes sessile, obovoid, 5~7 mm long, 3~5 mm wide, gynecandrous with a few basal staminate flowers and densely disposed 8~15 pistillate flowers. Staminate glumes pale-green, ovate, ca. 2 mm long, ca. 1.5 mm wide, acute at apex. Anthers 3. Pistillate glumes pale-green, ovate, 2~2.5 mm long, membranous, white-hyaline on margins, green 1-veined, apex acute, awnless. Utricles erect to reflexed, longer than pistillate glumes, ovoid, plano-convex, 2~2.5 mm long, ca. 1.3 mm wide, membranous, many-veined on both faces, lower part pale-brown, glabrous, base rounded, with slightly spongy, upper part brownish-green, upper margins serrulate, apex gradually narrowing into a long weakly incurved beak, orifice minutely bidentate. Achenes pale-brown, tightly enveloped, widely ovoid, lenticular, 1.4~1.6 mm long, 1.2~1.4 mm wide. Style not thickened. Stigmas 2.

Specimens examined: Taiwan, Nantou County, Renai Township, 7 May 2000, *C. W.*

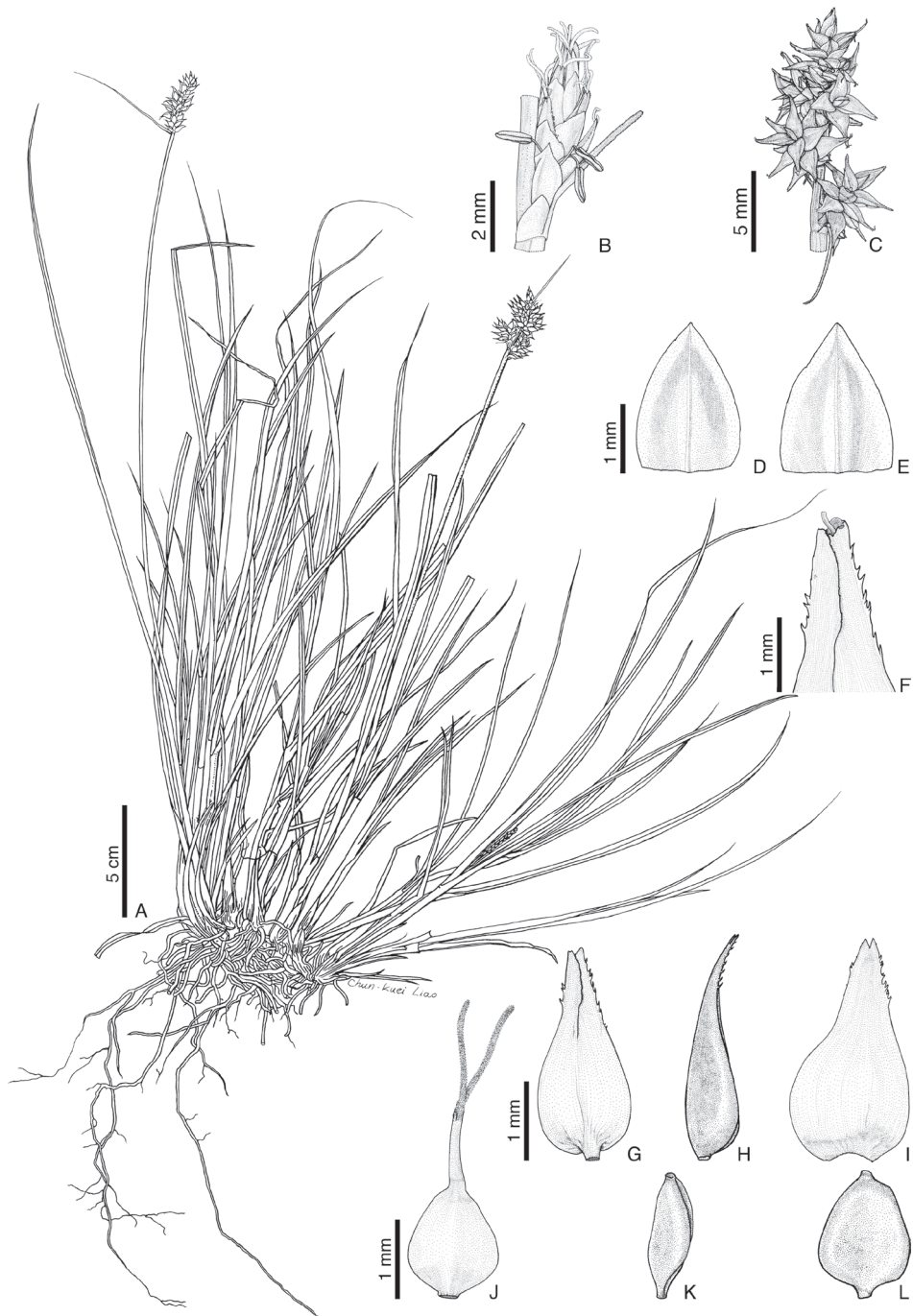


Fig. 1. *Carex echinata*. A, Habit; B, flowering spike; C, mature spikes; D, staminate glume; E, pistillate glume; F, upper beak of utricle; G-I, utricles (left to right: abaxial view, lateral view, adaxial view); J, abaxial view of achene; K, lateral view of achene (with style and stigmas removed); L, adaxial view of achene (with style and stigmas removed). Drawn by Chun-Kuei Liao from specimen *Hsu 17879*.

Chung 8266 (TAIF), same location, 13 July 2000, *C. H. Lin* 519 (HAST), same location, 7 Oct. 2012, *T. W. Hsu* 17879 (TAIE).

Distribution and habitat: *Carex echinata* is distributed in Japan, Korea, Sakhalin, Siberia, Europe, and North and Central America (Kükenthal 1909, Hipp 2008, Hoshino and Masaki 2011). This species grows in marshes in alpine regions. In Taiwan, it was only found at Mt. Hehuan, around alpine marshes and wetland regions at 3100–3200 m in elevation (Fig. 2). Its flowering and fruiting period is from May to October.

Discussion: This species is related to *C. nubigena* in Taiwan. The morphological similarities of these 2 species are a bisexual inflorescence, style with 2 stigmas, and lenticular achene. They differ in the height of the culms, the structure of the inflorescences, the structure and size of the spikes, the size of the pistillate glumes, the position of mature utricles, the upper margins of the utricles, and the length of the achenes. A comparison of morphological characters between the 2 species is given in Table 1.

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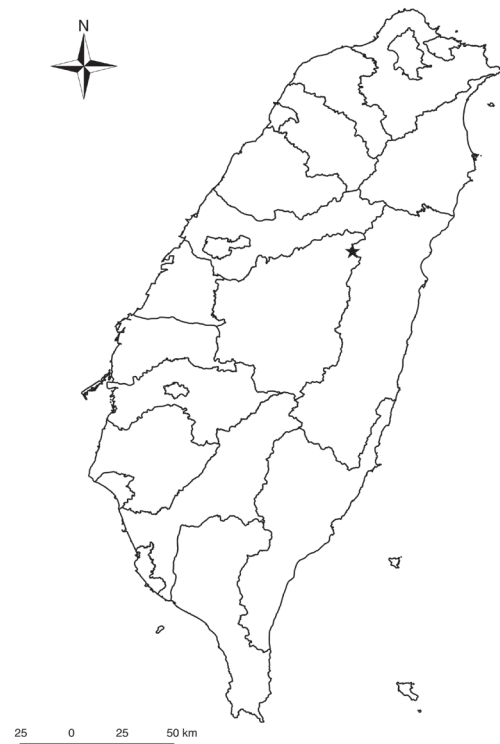


Fig. 2. Geographical distribution of *Carex echinata* in Taiwan.

Table 1. Comparison of morphological characters between *Carex echinata* and *C. nubigena*

Character	<i>C. echinata</i>	<i>C. nubigena</i>
Height of culms	20~40 cm	10~70 cm
Structure of inflorescences	3~4 spikes, loosely spread	3~5 spikes, densely contiguous
Structure of spikes	gynecandrous	androgynous
Size of spikes	5~7 × 3~5 mm	5~9 × 4~6 mm
Size of pistillate glumes	2~2.5 mm long	2.5~3 mm long
Position of mature utricles	erect to reflexed, 2~2.5 mm long	erect, 4~4.25 mm long
Upper margins of utricles	not winged, serrulate	narrowly winged, slightly serrulate
Length of achenes	1.4~1.6 mm long	1.2~1.5 mm long

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