

## New Naturalized Grasses in Taiwan

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**ABSTRACT:** *Holcus lanatus* L., *Phalaris canariensis* L. and *Festuca arundinacea* Schreb. are new naturalized grasses which have been found recently in Taiwan. Descriptions and line drawings are provided for each species.

**KEY WORDS:** *Festuca arundinacea* Schreb., *Holcus lanatus* L., *Phalaris canariensis* L., Poaceae, Taiwan.

### INTRODUCTION

Gramineae (Poaceae) is one of the large families of vascular plants in the world as well as in Taiwan. Hsu (1978) treated 5 subfamilies (excluding Bambusoideae), 27 tribes, 118 genera, 289 species, one subspecies, 39 varieties and 8 forms of grasses in Taiwan. In the course of preparing the revision of Taiwanese Gramineae, some recent collections on loan from the herbaria of HAST, NCKU and TAI, representing three new naturalized grasses in Taiwan were found. There were *Holcus lanatus* L., *Phalaris canariensis* L. and *Festuca arundinacea* Schreb. respectively.

### TAXONOMIC TREATMENT

**Holcus lanatus** L., Sp. Pl. 1048. 1753; Koyama, Grass. Jap. Neighb. Reg. 161. 1987; Osada, Illustrated Grasses of Japan-Enlarged Edition 258. 1993. 絨毛草 Fig. 1

Cespitose, tufted perennial. Culms 30-80 cm tall, sometimes decumbent at the base; blades linear-lanceolate, soft pubescence on both surfaces, 10-20 cm long, 5-10 mm wide; ligules 2-4 mm long, truncate, erose-ciliate, puberulent. Panicles erect, 5-16 cm long, branches 3-5 clustered per node. Spikelets compressed, 4-6 mm long, 2-flowered; glumes as long as spikelets, sharply keeled on back; lower glumes 1-nerved; upper glumes 3-nerved, both tomentose and ciliate on the keels; florets glabrous, glossy; lower florets bisexual, lemmas awnless; upper florets staminate, lemmas awned on apex, awn short and curved; paleas shorter than lemmas, 2-nerved. Anthers 2 mm long.

Native to Europe and Western Asia. Introduced and widespread in non-tropical regions of the world.

It was found only at median altitude in Nantou County of central Taiwan.

**Specimen examined:** NANTOU: Yingfeng, C. M. Wang 2757. (National Museum of Natural Science Taichung).

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Fig. 1. *Holcus lanatus* L. 1. habit; 2. part of leaf; 3. spikelet; 4. florets; 5. lower glume; 6. upper glume; 7. lemma of upper floret; 8. palea and its apex; 9. lodicules; 10. lemma of lower floret; 11. palea; 12. anthers; 13. lodicules. (Bar = 1 mm unless noted).

***Phalaris canariensis* L.** Sp. Pl. 54. 1753; Koyama, Grass. Jap. Neighb. Reg. 225. 1987; Osada, Illustrated Grasses of Japan-Enlarged Edition 284. 1993. 加拿麗鵲草 Fig. 2

Robust annual. Culms loosely tufted, 30-70 cm tall, branching frequently. Blades broadly linear, 10-30 cm long, 4-10 mm wide, glabrous; ligules 3-8 mm long, truncate to rounded. Panicles greatly contracted, ovoid to cylindric-ovoid, 1.5-3.5 cm long, 1.2-2 cm wide, greenish-white. Spikelets much compressed, obovate, 6-9 mm long, 3-florets, the first 2 sterile and the third perfect; glumes subequal, as long as spikelet, strongly keeled on back, with crescent wings on the keels, 3-nerved, pale-white, nerves green; fertile lemmas 3.5-5 mm





Fig. 2. *Phalaris canariensis* L. 1. habit; 2. part of leaf; 3. rhachis; 4. spikelet; 5. one perfect floret subtending by two reduced florets; 6. anther. (Bar = 1 mm unless noted).

long, lanceolate, densely appressed-pubescent, faintly 5-nerved, paleas 3-4 mm long; the 2 subtending sterile lemmas 3 mm long, linear, chaffy. Anthers 3 mm long.

Widely distributed in Eurasia Continent. Adventing widely in the world through cultivation for birdseed.

It was found in Nantou and Chiayi County at high elevation ca. 2,000 to 3,000 m. in Taiwan.

**Specimen examined:** NANTOU: en route from Kuankao to Patungkuan, Ching-I Peng 8123 (HAST); CHIAYI: Alishan, *Leong s. n.* 28, Oct. 2000 (NCKU).

***Festuca arundinacea*** Schreb., Spic. Fl. Lips. 57. 1771; Osada, Illust. Grass. Jap. 124, 1993.

葦狀羊茅 Fig. 3

*Festuca elatior* L., nom. rejic.; Kuo, Taiwania 24: 22. 1979.

*Festuca elatior* L. subsp. *arundinacea* (Schreb.) Hackel, Monogr. Festuc. Eur. 152. 1882; Koyama, Grass. Jap. Neighb. Reg. 79. 1987.

Perennial, culms erect, tufted, 40-180 cm tall, unbranched. Blades glabrous, 10-60 cm long, 5-15 mm wide, nerves prominent above; sheaths with narrow crescent auricles at the mouth; auricles usually ciliate on margins; ligules 1-2 mm tall. Panicles 10-30 cm long;



Fig. 3. *Festuca arundinacea* Schreb. 1. inflorescence; 2a. part of leaf; 2b. part of ligule; 3. spikelet; 4. lower glume; 5. upper glume; 6. lemma; 7. palea; 8. lodicules; 9. anther; 10. caryopsis. (Bar = 1 mm unless noted).

branches usually paired, the longer one with more spikelets than the shorter one. Spikelets 3-10-flowered, 8-17 mm long; glumes unequal; the lower 1-nerved, 3-6 mm long, the upper 3-nerved, 5-7 mm long; lemmas 5-nerved, 6-7 mm long, back obtusely keeled, apex mucicous or awned, awn straight, 1-4 mm long; paleas as long as lemmas. Anthers 3-4(-6) mm long.

Native to Eurasian. Naturalized in Japan, Korea, China, and North and South America.

It was found at high elevation ca. 2,500 to 3,000 m. in central Taiwan.

**Specimen examined:** MIAOLI: Sishishan, *Kuo* 8534. TAICHUNG: Anmashan 210 Line, 16K, *Kuo* 9665. NANTOU: Tatchia, *Kuoh* s. n. 17, Sept. 2000.

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## 台灣新歸化禾草記錄

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### 摘 要

本文報導絨毛草 (*Holcus lanatus* L.)、加拿麗鷓草 (*Phalaris canariensis* L.) 及葦狀羊茅 (*Festuca arundinacea* Schreb.) 為最近發現於台灣之新歸化禾本科植物 (Gramineae)。文中並給予描述及手繪圖。

關鍵詞：葦狀羊茅，絨毛草，加拿麗鷓草，禾本科，台灣。

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