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Short communication

Phalaris canariensis L. (Poaceae): A new alien plant record for Kashmir Himalaya, IndiaShugufta Rasheed^a, Anzar Ahmad Khuroo^{a,*}, Maroof Hamid^a, Aijaz Hassan Ganie^b, Akhtar Hussain Malik^a, Ghulam Hassan Dar^c^aCentre for Biodiversity and Taxonomy, Department of Botany, University of Kashmir, Srinagar, India^bDepartment of Botany, University of Kashmir, Srinagar, India^cCentre for Biodiversity Studies, Baba Ghulam Shah Badshah University, Rajouri, India

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ABSTRACT

The correct taxonomic identification assumes first and foremost priority in the scientific documentation of biodiversity. The Kashmir Himalaya, located in the north-western side of the Himalayan biodiversity hotspot, is well-known for its diverse flora which merits immediate scientific documentation. In this context, the present study reports *Phalaris canariensis* L. (Poaceae) as a new alien plant record to the flora of Kashmir Himalaya, India. In this paper, a detailed description, photographs, and comparison of diagnostic characters with allied species are provided to scientifically validate this alien plant record for this Himalayan region.

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Introduction

In recent times, scientific documentation of biodiversity has assumed immediate research priority (Singh 2012). To this end, the first and foremost research priority is to scientifically record the taxonomic diversity and distribution of life forms at local, regional, and global scales (Khuroo et al 2007). In particular, the correct taxonomic identification of the biota becomes crucial for scientific documentation of biodiversity (Dar et al 2012).

In India, the Himalayas represent one of the global biodiversity hotspots with a rich repository of floristic and faunal wealth (Zachos and Habel 2011). The Kashmir Himalaya, located in the north-western side of the Indian Himalayas, is well-known for its diverse flora with an appreciable proportion of endemics (Dar et al 2012; Dar and Khuroo 2013). It is estimated that the region harbors circa 3000 plant species (Dar and Khuroo 2013). In fact, from time to time, new additions to the flora of the Kashmir Himalaya are continuously being recorded (Arshid et al 2011; Ganie et al 2015; Muzafar et al 2015). It is in this context that the present study, for

the first time, reports *Phalaris canariensis* L. as a new alien plant record for Kashmir Himalaya, India.

World-over, the genus *Phalaris* L. (Poaceae) comprises of circa 22 species, most of which grow primarily in temperate regions; most of these species prefer moist disturbed areas (Anderson 1961). The species in this genus typically possess terminal panicles with 10–200 spikelets borne singly or in clusters, the spikelets being homogamous in species with single spikelets, heterogamous in species with the spikelets in clusters, the lower spikelets in the clusters staminate (rarely sterile), and the terminal spikelets bisexual or pistillate (Baldini 1995). From India, five species of this genus have been reported (Hooker 1897; Bor 1960). Until now, this genus was represented by a single species of *P. arundinacea* L. in the Kashmir Himalaya (Stewart 1972). However, during recent botanical surveys in the Kashmir Himalaya, the authors collected hitherto unknown specimens of a wild-growing *Phalaris* species from the region. On detailed investigation of diagnostic characteristics of the fresh plant material, herbarium specimens, and perusal of taxonomic literature, the species was identified as *P. canariensis* L.—an alien plant species native to the Mediterranean region, which is a new plant record for this Himalayan region.

In order to scientifically validate this alien plant record for this Himalayan region, the present paper provides a detailed taxonomic description and microphotographs of diagnostic characteristics of *P. canariensis* (Figures 1A–K), and key delimiting characters with its

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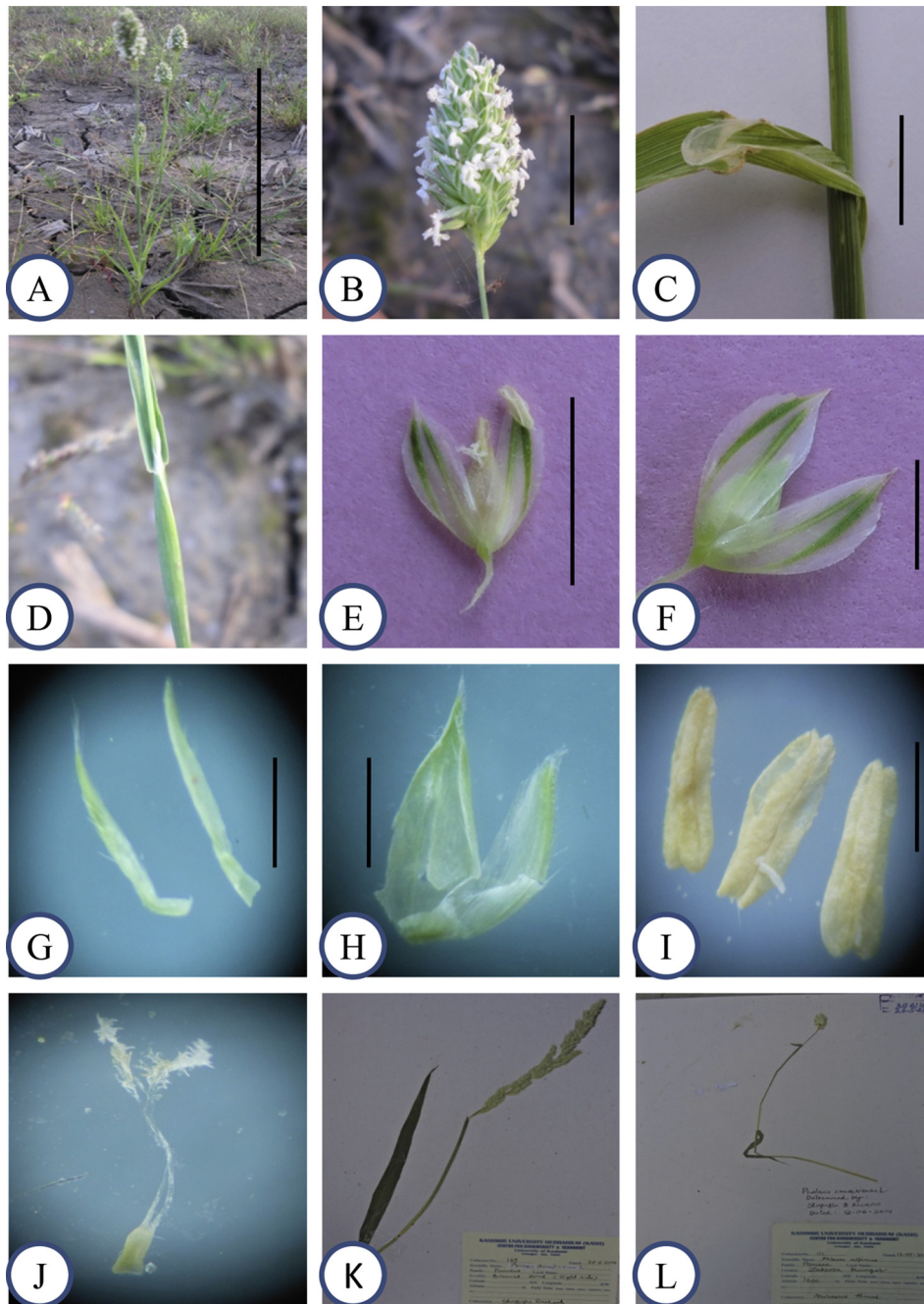


Figure 1. *Phalaris canariensis* L. A, habit (scale = 3 cm); B, inflorescence (scale = 3.5 cm); C, ligule (scale = 0.6 mm); D, inflated leaf sheath; E, spikelet (scale = 0.6 mm); F, glumes (scale = 0.6 mm); G, sterile lemmas (scale = 0.5 mm); H, fertile lemma (scale = 0.8 mm) and palea; I, three anthers (scale = 0.4 mm); J, ovary; K, *Phalaris arundinacea* L.; L, correctly determined specimen of *P. canariensis* L., previously misidentified as *Phleum alpinum* L.

allied species *P. arundinacea* in the region (Table 1), which in turn will facilitate its easier field identification.

Materials and methods

Standard taxonomic methods have been used for collection, drying, and further processing of the herbarium specimens (Bridson and Forman 1998) deposited in the Kashmir University Herbarium (KASH) with a proper voucher specimen number. The fresh plant specimens have been identified using relevant taxonomic literature (Hooker 1897; Bor 1960; Stewart 1972) and online

e-floras (Flora of China, Jepson eflora). The photographs of the diagnostic characteristics were taken under a stereozoom microscope (Carl Zeiss Discovery V8, GmbH, Germany) fitted with a digital camera (Nikon P600, Tokyo, Japan).

Taxonomic accounts

***Phalaris canariensis* L.** Sp. Pl. 54 1753.

Synonyms. *Phalaris canariensis* f. *bracteata* Jansen and Wacht., *Phalaris canariensis* f. *colorata* Jansen and Wacht., *Phalaris*

Table 1. Comparison of key delimiting characters between *Phalaris canariensis* L. and *P. arundinacea* L. growing in Kashmir Himalaya, India.

Delimiting characters	<i>Phalaris canariensis</i> L.	<i>Phalaris arundinacea</i> L.
Inflorescence	Dense	Loose
Panicle length (cm)	1–6	5–40
Glume	Mucronate	Not mucronate
Sterile lemma	2	1
Anther length (mm)	3–4	3–3.5

canariensis var. *debilis* Toel and Rohlena, *Phalaris canariensis* var. *nigra* Stokes, *Phalaris canariensis* var. *subcylindrica* Thell., *Phalaris canariensis* var. *tenuis* Jansen and Wacht., *Phalaris canariensis* var. *villosula* Junge, *Phalaris canariensis* f. *vivipara* Junge.

English name. Canary grass

Description. Annual, loosely tufted. Culms 40–90 cm tall. Uppermost leaf sheaths inflated with short blade; leaf blades 1 cm long, 9 mm wide; ligule 6 mm long. Inflorescence spike-like panicle, borne singly, very dense, ovate in outline, 3.5 cm long, and 1.5 cm broad. Spikelets homogamous, obovate, strongly flattened, 12 mm, all spikelets with bisexual flower. Glumes oblanceolate, glabrous, whitish with green veins, keel broadly winged above middle, wing margin entire, apex acute, mucronate 10 mm long. Two sterile lemmas, more or less equal, narrowly elliptic, chaffy, 5 mm long, appressed-pilose, fertile lemma lanceolate, 8 mm long, densely appressed-pubescent, shiny. Anthers 3–4 mm. Ovary glabrous, two styles, plumose. Fruit caryopsis with a reticulate pericarp, falling free of the lemma and palea.

Specimens examined. Kashmir: District Srinagar, Narbal, Shugufta, and Khuroo, 73 (KASH), 27-5-2014; District Anantnag, Bijbehara, Shugufta, and Khuroo, 310 (KASH), 10-5-2015.

Flowering period. May–July.

Habitat. Grows along paddy fields and moist sites.

Global distribution. Native to Mediterranean regions of Africa and Europe; naturalized elsewhere in the world.

Remarks. Furthermore, while studying the herbarium specimens in the KASH herbarium, it was revealed that this species was

previously collected from the Kashmir Himalaya (Voucher specimen no: 111, Accession no: 38614, collected by Mubashir Ahmad from Zakoora, District Srinagar, Kashmir, dated: 12-05-2010). However, the author had misidentified it as *Phleum alpinum* L. During the present study, this misidentified specimen has been correctly determined to be *Phalaris canariensis* (Figure 1L). Based on the present study, the genus *Phalaris* is now represented by two species in Kashmir Himalaya, viz *Phalaris arundinacea* L. and *P. canariensis* L.

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