



Stipa klimesii (Poaceae), a new species from Western Himalayas (India)

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Abstract

Stipa klimesii sp. nov. from the Western Himalayas (India: Ladakh) and its variety *S. klimesii* var. *pubescens* var. nov. are described. The new species is similar to *S. roborowskyi* but differs by its longer antheridium, longer ligules of vegetative shoots, longer hairs on seta and shorter awns. *Stipa klimesii* is also similar to *S. purpurea*, but differs by longer ligules of vegetative shoots, shorter awns, slightly shorter hairs on seta and by the character of the panicle, which is compressed and with straight branches in *S. klimesii* vs. lax and with flexuous branches in *S. purpurea*. Epidermal patterns of the lemma in *S. klimesii* and both above-mentioned species, were examined by scanning electron microscopy. Images of macromorphological and micromorphological structures are provided.

Key words: Distribution, Lemma micromorphology, Macromorphology, Taxonomy

Introduction

The genus *Stipa* Linnaeus (1753: 78) is one of the largest genera in the family Poaceae in the Old World. It comprises over 150 species distributed in open grasslands and steppes, with the highest species diversity in warm temperate regions of Europe, Asia and North Africa (Roshevitz 1934, Bor 1960, 1970, Tzvelev 1968, 1976, Martinovský 1980, Freitag 1985, Kotukhov 2002, Wu & Phillips 2006, Nobis 2010, 2013). New species of the genus continue to be described. Over twenty species have been described in the last fifteen years from countries such as Spain, Morocco, Italy, Turkey, Kazakhstan, Kyrgyzstan, Tajikistan, Mongolia, Bhutan and China (e.g. Noltie 1999, Vázquez & Ramos 2007, Vázquez *et al.* 2009, Nobis 2010, 2011a, 2011b, 2011c, 2012, 2013, 2014, Vázquez & Gutiérrez 2011, Zhao & Guo 2011, Cataldo *et al.* 2012, Tzvelev 2012, Nobis *et al.* 2013). Nevertheless, many regions, especially in mountains areas of Asia, still remain unexplored, and detailed studies are revealing new information on the distribution of feather grasses and new *Stipa* taxa (e.g. Kotukhov 1991, 1994, 1998a, 1998b, 2002, Noltie 1999, 2000, Gudkova 2012, Nobis 2011c, 2013, Nobis & Nowak 2011, Nobis *et al.* 2014a, 2014b).

Among such unexplored areas are the western Himalayas in northern India. To date, ca. 20 taxa of *Stipeae* Dumortier (1824: 139) are known from India (Bor 1960, 1970, Cope 1982, Freitag 1985, Dickoré 1995, Klimeš & Dickoré 2005, Nobis 2011, 2014). However, little is known about many of the taxa. *Stipa basiplumosa* Munro ex Hooker f. (1896: 229) var. *longearistata* Munro ex Hooker f. (1896: 229) from this area is known only from the type collection. Although the taxon was treated as variety of *S. basiplumosa*, on the holotype of *S. basiplumosa* var. *longearistata* (Thomson s.n., K000032087!) Munro wrote, “this looks very like a different species and if found separate would have been made a species in all probability”. *Stipa basiplumosa* var. *longearistata* was treated by Bor (1960) as a synonym of *S. purpurea* Grisebach (1868: 82), but later Cope (1982) and Freitag (1985), following Tzvelev (1968), treated it as a synonym of *S. roborowskyi* Roshevitz (1920: 1). However, Freitag (1985) stressed that the identities of both *S. basiplumosa* var. *longearistata* and *S. roborowskyi* are doubtful. In a preliminary checklist of monocots of the Karakorum Mts, Dickoré (1995) noted that the occurrence of *S. roborowskyi* in Ladakh is questionable. He also pointed out that the distribution of the species is insufficiently known and apparently disjunct between Pamirs, Kunlun, Tibet and the Himalayas. During recent field investigations conducted by Leoš Klimeš, material of *Stipa* from Ladakh has been collected and identified by him as *S. roborowskyi*. Although Klimeš did not mention this taxon in any of his papers (e.g., Klimeš

TABLE 1. A comparison of the main characters distinguishing *Stipa klimesii* from closely related taxa.

Taxon	<i>Stipa roborowskyi</i>	<i>Stipa klimesii</i>	<i>Stipa purpurea</i>
Character			
Ligules of the vegetative shoots [mm]	0.5–1.5(–2)	(2–)3.5–7.5(–9)	(0.5–)1–3
Panicle	compressed, with straight branches	compressed, with straight branches	lax, with flexuous branches
Branches of the panicle	shortly setulose	shortly setulose	sparsely and shortly setulose, sometimes only below the glumes or glabrous
Glumes [mm]	11–15	13–18	12–18(–25)
Anthecium [mm]	(6–)6.5–7.5(–7.7)	(7–)8.3–9.5(–10.5)	(7–)8–11(–15)
Ring of hairs at the top of the lemma	distinct, well developed, with numerous hairs 0.8–1.2(–1.6) mm long	poorly or well developed, with hairs 0.4–1(–1.3) mm long	absent, poorly developed or well developed
Hairs on callus [mm]	(0.8–)1–1.3	0.7–0.9(–1)	0.7–0.9(–1)
Awn [mm]	(40–)47–60(–68)	(25–)35–45(–52)	(55–)65–90(–120)
Hairs on lower segment of awn (column) [mm]	1.5–2.1	(1.3–)1.5–2(–2.4)	1.5–2
Hairs on middle segment of awn [mm]	1–1.5	(1–)1.4–2	1.6–2.2
Hairs on seta [mm]	(0.3–)0.5–1.1(–1.4)	(1–)1.3–2(–2.3)	2–3
Length of hairs on seta to the length of hairs on column	2–4 times shorter	somewhat shorter to equal	1.5–2 times longer to more or less equal

Acknowledgments

We would like to express our gratitude to the curators of FRU, GAT, GOET, KFTA, KHOR, KRAM, LE,LECB, M, MW, NY, PE, PR, PRC, TAD, TASH, TK, W, as well as to Miroslav Dvorský (Třeboň) for making the collections of the genus *Stipa* available for study. Special thanks to Jeffery M. Saarela for his valuable comments and improvements to the first version of the manuscript. The research was partially funded by the National Science Centre, project no. UMO-2013/09/B/NZ8/03287.

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