

Poa szechuensis var. *debilior* (Poaceae): a new record for India

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Abstract: *Poa szechuensis* Rendle var. *debilior* (Hitc.) Soreng & G.H.Zhu, previously known only from China and Inner Mongolia, has been collected from Sikkim Himalaya recently, representing its first-ever record from India. An elaborate description, together with illustration, phenology, habitat information, global and Indian distribution, details of specimens examined and notes, is provided. Additionally, a key to the varieties of *Poa szechuensis* is provided for easy identification.

Keywords: Himalaya, Pooideae, Poeae, Sikkim.

Introduction

Poa L., the type genus of the grass family Poaceae (Pooideae: Poeae) comprises 582 species distributed in subarctic and subantarctic to temperate and tropical mountains of the world (Gillespie & Soreng, 2005; POWO, 2026). Only a few critical micro-morphological characters, viz. callus structure, glumes, lemmas, paleas and stamens, are generally used to diagnose members of this genus. However, polyploidy, hybridization and apomixis make this genus taxonomically challenging (Clausen, 1961; Hunziker & Stebbins, 1987; Rajbhandari, 1991; Gillespie & Soreng, 2005). In India, the genus is represented by 61 species, 4 subspecies and 3 varieties, occurring predominantly at the high altitudes in the Himalaya, Khasi hills and Western Ghats (Bhadra, 2024).

During floristic investigations in the Sikkim Himalaya, two small populations of *Poa* was located

along the roadside and inside the *Abies* dominated forest. After critical examination of the collected specimens and a thorough review of the relevant taxonomic literature, the taxon was identified as *Poa szechuensis* Rendle var. *debilior* (Hitc.) Soreng & G.H.Zhu, which was previously known only from China and Inner Mongolia and had not hitherto been reported from India (Stapf, 1896; Bor, 1960; Rajbhandari, 1991; Zhu *et al.*, 2006; Kellogg *et al.*, 2020; Bhadra, 2024; POWO, 2026). Therefore, the present collections constitute a new distributional record of *P. szechuensis* var. *debilior* for the Indian grass flora.

Materials and Methods

During the monsoon of 2025, several botanical expeditions were undertaken across the mountainous terrains of Sikkim to study the grass flora of temperate to alpine pastures. The present paper is based on observations made during fieldwork conducted in July in the Lachung-Yumthang-Chhuabhakha area, from where several interesting specimens of dwarf blue grass (*Poa* L.) were collected. Among these, the vouchers specimens collected from *Abies* dominated forest near Yumthang valley and from roadside forest along the route from Dombung (Dambung) to Chhubhakha attracted particular attention.

A detailed examination of all the morphological characters, both vegetative and reproductive traits critical for species identification, was carried out under a stereomicroscope (Leica EZ4, Germany), and detailed botanical illustrations

were prepared. Based on these observations, along with a thorough study of the protologue (Hitchcock, 1930) and other relevant literature (Stapf, 1896; Bor, 1952a, 1952b, 1960; Cope, 1982; Rajbhandari, 1991; Zhu *et al.*, 2006; Bhadra, 2024; Saha & Maity, 2024; Saha *et al.*, 2024), the identity of the species was confirmed as *Poa szechuensis* var. *debiliior*. The specimens were mounted on herbarium sheets following standard herbarium techniques (Jain & Rao, 1977) and voucher specimens are deposited at CUH for future reference.

Taxonomic Treatment

Poa szechuensis* Rendle var. *debiliior (Hitchc.) Soreng & G.H.Zhu, Fl. China. 22: 295. 2006. *Poa debiliior* Hitchc., Proc. Biol. Soc. Washington 43: 93. 1930. *Type*: CHINA, Ning-wu Hsien, Shansi, watery crevice, 2000 m, 21.08.1929, T. Tang 1435 (Holo, US [US00141061, digital image!]).

P. declinata Keng ex L.Liu., Fl. Reipubl. Popularis Sin. 9(2): 390. 2002.

Figs. 1–3

Annuals or short-lived, slender, tufted perennials. Culms weak and flaccid, 10–60 cm tall, retrorsely scaberulous, nodes 3–5. Leaf sheaths uppermost 4–15 cm long, smooth or retrorsely scabrous; ligule 0.5–5 mm long, truncate to acute, minutely dentate, scabrid abaxially; leaf blades flat, 5–8 cm × 0.9–1 mm. Panicles open, lax, 7–20 cm long, longest internode 2–5 cm long; branches capillary, mostly solitary, sometimes 2 at lower nodes, flexuous, ascending to spreading or reflexed, bearing spikelets nearing the tips, longest branches 2–8 cm long. Spikelets ovate, 2.5–4.1 × c. 1.2 mm, green or purple tinged. Glumes narrow, acute, margin membranous, hyaline; lower c. 1.8 × 0.7 mm, 1-veined; upper c. 2.8 × 1 mm, 3-veined. Florets 2–3(–5), bisexual; callus glabrous or with few hairs at least in basal florets; rachilla internodes 0.5–0.7 mm long, smooth, glabrous. Lemma elliptic, 2–3 × c. 1.3 mm long, obtuse to acute, 5-veined, 1-keeled, usually pubescent for up to $\frac{1}{2}$ of length along keel and $\frac{1}{4}$ of length along marginal veins (at least in lower

florets), intermediate veins prominent, glabrous. Palea oblong, 2.5–2.7 × c. 0.4 mm, 2-veined, 2-keeled, glabrous; keels semipilose. Lodicules 2, ovate, c. 0.5 × 0.4 mm, hyaline. Stamens 3; anthers 0.2–0.8 × 0.2–0.3 mm, yellow; filaments 0.2–0.5 mm long. Ovary ellipsoid, c. 0.5 × 0.2 mm; style 2, very short; stigma 2, c. 0.9 mm long, plumose.

Flowering & fruiting: Flowering and fruiting from June to August.

Habitat: Shady moist places in ravines, streamsides on mountain slopes, in *Abies* forest, thickets, subalpine meadows, grassy slopes (2000–4500 m AMSL).

Distribution: India: Sikkim (present report), China, Inner Mongolia.

Specimens examined: INDIA, Sikkim, North Sikkim (Mangan district), Yumthang valley, *Abies* forest, 3700 m, 24.07.2025, Saha & Chakroborty 29012; on the way from Dombung (Dambung) to Chhubhakha, 3554 m, 25.07.2025, Saha & Chakroborty 29093 (CUH).

Notes: Generally, the very slender weak spindly habit and small spikelets readily distinguish this mid-elevation variety of *P. szechuensis* from the other two known varieties including the typical one (*P. szechuensis* Rendle var. *szechuensis* and *P. szechuensis* var. *rossbergiana* (K.S.Hao) Soreng & G.H.Zhu) of this species in the field. Furthermore, the lemma and callus indumentum make *P. szechuensis* var. *debiliior* unique. The combination of pubescent keels and marginal veins, together with a callus that is glabrous or sparsely hairy, at least in the lower florets, provides strong support for the recognition of *Poa szechuensis* var. *debiliior* as a distinct variety.

Key to the varieties of *Poa szechuensis*

1. Lemmas and callus glabrous throughout var. *szechuensis*
1. Lemmas hairy on keel and along marginal veins; callus glabrous or often with few dorsal hairs..... 2

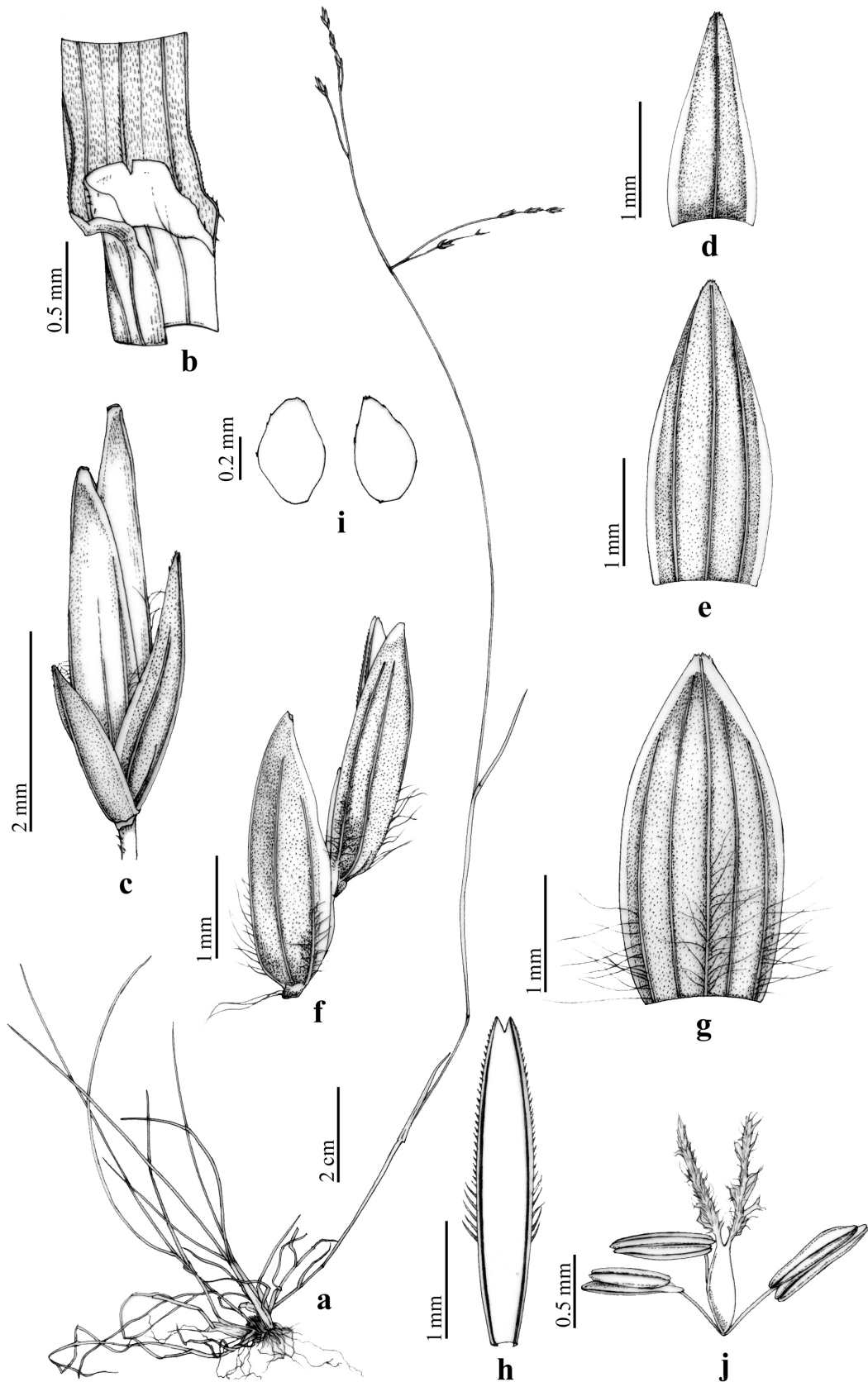


Fig. 1. *Poa szechuensis* Rendle var. *debilior* (Hitchc.) Soreng & G.H.Zhu: **a.** Habit; **b.** Leaf base showing ligule; **c.** Spikelet; **d.** Lower glume; **e.** Upper glume; **f.** Florets with glumes removed; **g.** Lowest lemma; **h.** Lowest palea; **i.** Lodicules; **j.** Stamens and pistils (drawn by Suparna Saha from Saha & Chakraborty 29093).

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2. Plants mostly grow in temperate forest; culms up to 60 cm tall, weak, spindly; callus of at least lowest florets often with a few hairs..... var. *debilior*
2. Plants restricted in alpine forest; culms up to 10 cm tall, arching, never spindly; callus always glabrousvar. *rossbergiana*

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Fig. 2. a. Habitat of *Poa szechuensis* Rendle var. *debilior* (Hitc.) Soreng & G.H.Zhu; b. Spikelet.

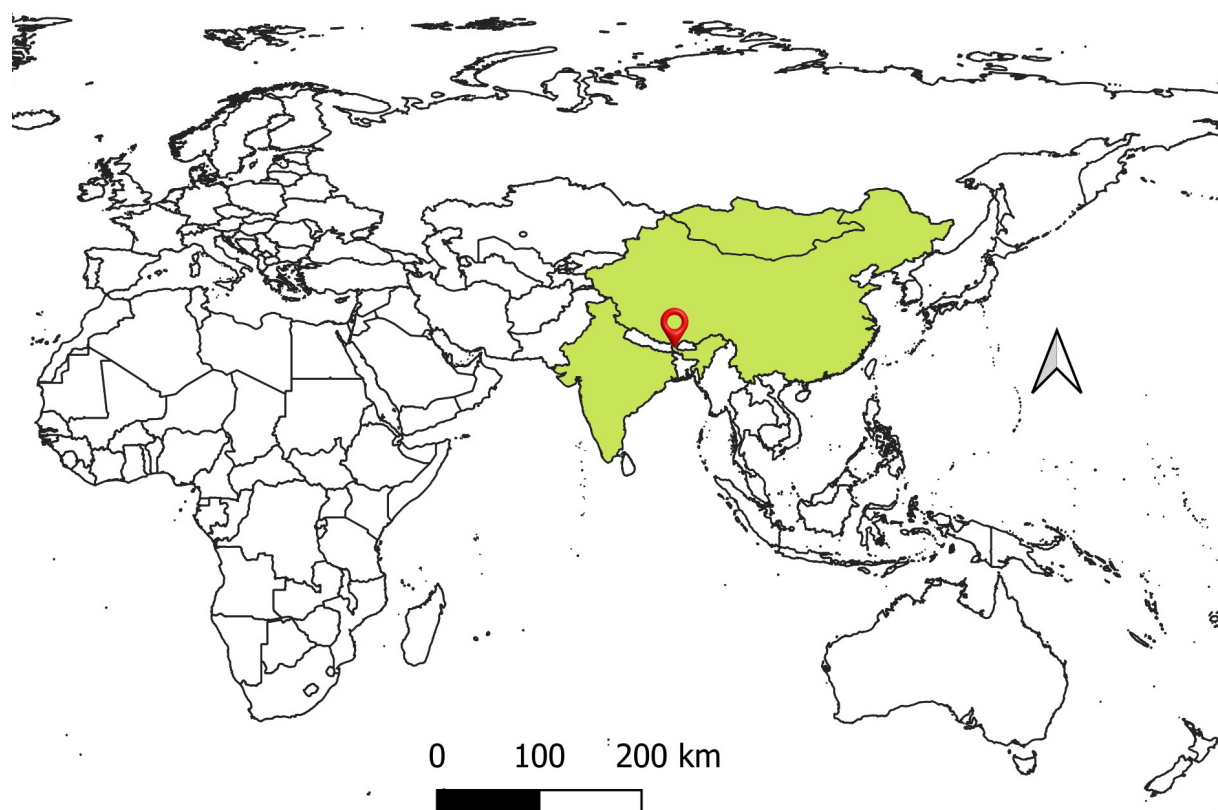


Fig. 3. Distribution of *Poa szechuensis* Rendle var. *debilior* (Hitchc.) Soreng & G.H.Zhu (green), red pin indicates recent collection locality of the taxon in Sikkim (India) (Map created using QGIS v3.34).

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