

## *STIPA GLAREOSA* (POACEAE) IN THE REPUBLIC OF BURYATIA (RUSSIA)

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**Abstract.** *Stipa glareosa* P. A. Smirn. (sect. *Smirnovia* Tzvel.) is reported for the first time from the Republic of Buryatia (Russia). Its stations are located at the northern limit of its general distribution range. The taxonomy, distribution and habitat preferences of the species are given, along with its population size at each new locality.

**Key words:** distribution, habitat, limit range, new records, *Stipa*

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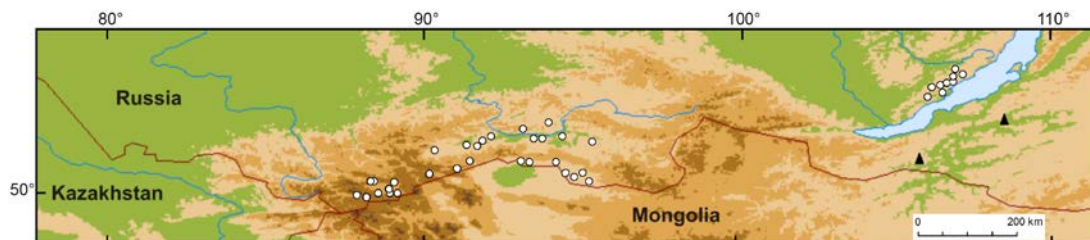
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The Republic of Buryatia is located in two south-eastern Siberian provinces: Transbaikal and Cisbaikal (Gvozdetzky & Mikhailov 1978). The majority of its area is covered by forest vegetation. Steppe and forest-steppe vegetation occur mainly in the southern part of the region. In the western Transbaikal province (Transbaikal subregion), steppe areas are distributed like islands within broad valleys of tectonic origin, bordered by mountain ranges (Reshchikov 1961). An analysis of the isolated steppe associations as well as information on species composition outside of their main distribution range can be used to reconstruct the history of the vegetation (Banzragch *et al.* 1975). From this point of view, the localities of *Stipa glareosa* P. A. Smirn., which has been found in the western Transbaikal, are of particular interest. *Stipa glareosa* was not previously listed from the territory of Buryatia (Lomonosova 1990;

Badmaeva 2001). The species was first found in the vicinity of Inzagatui village in 2009 (Namzalov *et al.* 2011) but it was erroneously determined as *S. klemenzii* Roshev. (specimen revised by P. Gudkova). *Stipa glareosa* clearly differs from that species by having a pubescent (vs. glabrous) lower part of the awn, an anthercium with a well developed ring of hairs at the apex (vs. anthercium with a glabrous apex), and a dorsal line of hairs at the anthercium, ending in its upper half (vs. dorsal line of hairs at the anthercium, ending in the lower half) (Pazij 1968; Tzvelev 1968, 1976; Gonzalo *et al.* 2011; Nobis 2011, 2014).

*Stipa glareosa* belongs to section *Smirnovia* Tzvel. The species is morphologically close to *S. caucasica* Schmalh., but it clearly differs by having longer ligules of vegetative leaves, the scabrousness of leaves, glume length, callus length and shape, the length of hairs in the lower part of the awn, as well as its more northeastern general distribution pattern and different habitat preferences.

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**Fig. 1.** Distribution map of *Stipa glareosa* P. A. Smirn. in southern Siberia. ○ – locality known from literature (Lomonosova 1990), ▲ – new locality in Buryatia.

Despite these differences, there are still conflicting opinions about the taxonomic position of *Stipa glareosa*; some authors treat it as a separate species (Smirnov 1929a, b; Roshevitz 1934; Tzvelev 1968, 2012; Pazij 1968; Lomonosova 1990; Gudkova *et al.* 2013; Nobis 2013) while others, treat it as a subspecies of *S. caucasica* (Tzvelev 1974, 1976; Freitag 1985; Wu & Phillips 2006; Gonzalo *et al.* 2011). A taxonomic revision of the *S. caucasica* group in its entire distribution range, including the use of molecular methods, is needed.

*Stipa glareosa* has a Central Asian type of distribution. It occurs in southern Russia (Altai, Tyva and Irkutsk regions), Mongolia, China, Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, Pakistan and India (Smirnov 1929a, 1929b; Roshevitz 1934; Tzvelev 1976; Freitag 1985; Wu & Phillips 2006; Gonzalo *et al.* 2011; Gudkova *et al.* 2013). The species is one of the main components of the Central Asian desert steppes of the *Stipetea glareosogobicae* (Hilbig 2000). It is considered a tertiary steppe relict in southern Siberia (Peshkova 1972).

New locations of *Stipa glareosa* (Fig. 1) were found on three hills in the Maliy Khamar-Daban foothills (Inzagatui creek valley), on southwestern and southeastern slopes facing the basin, in the Borgoiskoi steppe, as well as on the slopes of a hill on the left bank of the Kurba River in the Ulan-Burgasi foothills (Fig. 2).

### *Stipa glareosa* P. A. Smirn.

Byull. Moskovsk. Obsch. Isp. Prir. Otd. Biol. **38**(1–2): 12. 1929.

TYPE CITATION: Gobi. Steppum glareosum in depressione lac. Orok-nor, 7.IX.1924. *lg. N. Pavlov 169.*

TYPE (original label): [label 1] Plantae Mongoliae, *Stipa caucasica* Schmalh., Gobi, shchebnistaya, galechnaya step v kotlovine oz. Orok-nor. 7–IX–24. N. 169, *leg. et det. N. Pavlov*; [label 2] *Stipa glareosa* P. Smirn. sp. n., typus speciei 1929.III. det. P. Smirnov (HOLOTYPE MW!; ISOTYPES LE!).

≡ *Stipa caucasica* subsp. *glareosa* (P. A. Smirn.) Tzvel.

Plant perennial, densely tufted; culms 10–25(–35) cm, 2–3 noded, somewhat pubescent under nodes. Leaves of vegetative shoots: sheaths usually somewhat pubescent, less often with spinules; ligules short, up to 0.7 mm long, densely covered with long hairs; blades glaucous, usually shorter than stem, convolute (0.3–)0.4–0.5(–0.6) mm in diameter, abaxial surface along the entire length or only on the lower part covered with spinules or rarely glabrous, smooth, adaxial surface covered with short hairs up to 0.25 mm long. Cauline leaves: sheaths shorter than internodes, ciliate at margins, lower sheaths somewhat pubescent, rarely almost glabrous, upper sheaths up to 12 cm long, inflated or not, glabrous or slightly scabrous, leaves scabrous to glabrous. Glumes 20–30 mm long. Anthercium 9–10 mm long with line of hairs usually terminating below top, ring of hairs at base of awn well developed. Callus 1.7–2.8 mm long, shortly pilose. Awn 5–7 cm long, unigeniculate, pilose along its whole length, lower part (column) 1.2–1.5 cm long, upper part (seta) 4–6 cm long. Longest hairs in middle part of column 1.5–2 mm, hairs on seta 4–4.5 mm long.

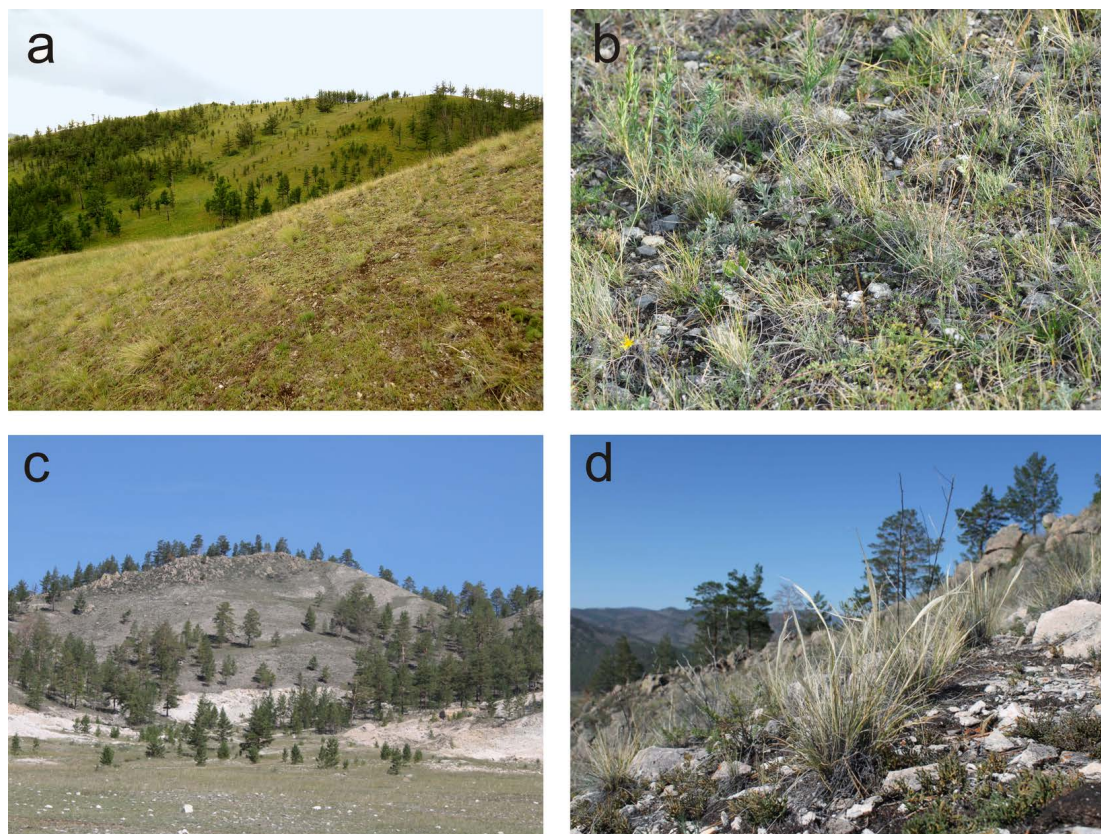
SPECIMENS EXAMINED: RUSSIA. REPUBLIC OF BURYATIA: Dzhidinsky district, surroundings of Inzagatui village (5 km to NW), 50°53'02" N, 105°42'05" E, alt. 1010 m, 31 July 2014, *P.D. Gudkova, M. Nobis,*

*A.L. Ebel, A.V. Verkhovina* (TK, KRA, IRK); Zai-graivskii district, surroundings of Unegetei village (9 km to NE), Belaya Gora, 52°10'42" N, 108°36'07" E, alt. 691 m, 28 Aug. 2014, *D.G. Chimitov, D.V. Sandanov* (UUDE).

**HABITAT.** At the site near Inzagatui village, steppe grassland with *Stipa glareosa* occur at 980–1100 m a.s.l. on gravelly insolated slopes (SSW-S-SSE exposure) with a 5–25% gradient. The general projective coverage of plants is 50–65%. These communities are quite rich in plant species; 27–43 taxa were noted on the examined plots (5 m × 5 m). Together with *S. glareosa*, which was most abundant in these patches, *Thymus serpyllum* L. s.l., *Artemisia commutata* Bess., *Koeleria macrantha* (Ledeb.) Schult. and *Orostachys spinosa* (L.) C. A. Mey. were also noted as numerous. Among the permanent species (registered in all five

examined patches with *S. glareosa*) were *Alyssum obovatum* (C. A. Mey.) Turcz., *Bupleurum bicaule* Helm, *Carex pediformis* C. A. Mey., *Chamaerhodos altaica* (Laxm.) Bunge, *Festuca pseudovina* Hack. ex Wiesb., *F. sibirica* Hack. ex Boiss., *Gypsophyla patrinii* Ser. and *Silene jensseensis* Willd. Down the hill there is a steppe area with *Stipa grandis* P. Smirn., *S. baicalensis* Roshev. and *S. krylovii* Roshev. as the dominant plants.

The locality of *Stipa glareosa* near Unegetei village is on the south slope of Belaya Gora (Eng.: White Hill). The species is observed in steppe grassland on the southern slope of the hill. Together with *S. glareosa*, the following plants were the most abundant: *Achnatherum sibiricum* (L.) Keng ex Tzvel., *Selaginella sanguinolenta* (L.) Spring, *Thymus serpyllum*, *Artemisia frigida* Willd. and *Chamaerhodos altaica*.



**Fig. 2.** Habitat of *Stipa glareosa* P. A. Smirn. near Inzagatui village (a & b) and near Unegetei village (c & d).

Below we present selected phytosociological relevés taken in the patches with domination of *Stipa glareosa*. The nomenclature of vascular plants listed in this section was adopted from Cherepanov (1995).

1. Steppe grassland on hillside, 50°88'12"N, 105°69'66"E, 31 July 2014, area 20 m<sup>2</sup>, alt. 1090 m a.s.l., exposure S-SE, slope 20°, projective cover of herbaceous plants 50%. List of species: *Thymus serpyllum* s.l. 2–3, *Carex pediformis* 2, *Festuca sibirica* 2, *Gypsophila patrinii* 2, *Orostachys spinosa* 2, *Arctogeron gramineum* 1, *Artemisia commutata* 1, *Bupleurum bicaule* 1, *Festuca pseudovina* 1, *Filifolium sibiricum* 1, *Koeleria macrantha* 1, *Poa botryoides* 1, *Stemmacantha uniflora* 1, *Stipa baicalensis* 1, *S. glareosa* 1, *Youngia tenuifolia* 1, *Aconogonon angustifolium* +, *Allium tenuissimum* +, *Alyssum obovatum* +, *Androsace incana* +, *Aster alpinus* +, *Caragana pygmaea* +, *Chamaerhodos altaica* +, *Chrysanthemum zawadzkii* +, *Cymbaria dahurica* +, *Delphinium grandiflorum* +, *Eremogone meyeri* +, *Heteropappus altaicus* +, *Iris potaninii* +, *Oxytropis coerulea* +, *O. triphylla* +, *Patrinia rupestris* +, *Phlojodicarpus sibiricus* +, *Potentilla sericea* +, *Ptilotrichum tenuifolium* +, *Pulsatilla tenuiloba* +, *Saussurea salicifolia* +, *Scabiosa comosa* +, *Silene jenseensis* +, *Stellaria cherleriae* +, *Stipa krylovii* +, *Veronica incana* +, *Vicia nervata* +.

2. Steppe grassland on hillside; 50°53'02"N, 105°42'05"E, 31 July 2014, area 25 m<sup>2</sup>, alt. 1010 m a.s.l., exposure SSW, slope 25°, projective cover of herbaceous plants 65%, projective cover of mosses 1%. List of species: *Thymus serpyllum* s.l. 3, *Gypsophila patrinii* 2, *Koeleria macrantha* 2, *Stipa glareosa* 2, *Artemisia commutata* 1–2, *Leontopodium leontopodioides* 1–2, *Achnatherum sibiricum* 1, *Allium sp.* 1, *Androsace incana* 1, *Bupleurum bicaule* 1, *Chrysanthemum zawadzkii* 1, *Festuca pseudovina* 1, *F. sibirica* 1, *Gentiana squarrosa* 1, *Orostachys spinosa* 1, *Oxytropis sp.* 1, *Potentilla acaulis* 1, *Silene jenseensis* 1, *Youngia tenuifolia* 1, *Alyssum obovatum* +, *Amblynotus rupestris* +, *Carex pediformis* +, *Chamaerhodos altaica* +, *Delphinium grandiflorum* +, *Oxytropis triphylla* +, *Sanguisorba officinalis* +, *Stipa baicalensis* +, *S. krylovii* +, *Thalictrum squarrosum* +, *Veronica incana* +.

ACKNOWLEDGEMENTS. We are grateful to the anonymous reviewer for helpful remarks on the manuscript. The research of P. Gudkova was supported by the Russian Foundation for Basic Research, grant no. 14–04–31962 mol\_a, and the research of M. Nobis was financially

supported by the National Science Centre, Poland, on the basis of decision no. DEC-2013/09/B/NZ8/03287.

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Received 21 September 2014