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CONTRIBUTION TO THE FLORA OF HIMACHAL PRADESH FROM PIN VALLEY NATIONAL PARK

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A critical study of the specimens, recently collected from the Pin Valley National Park of Lahaul-Spiti district of Himachal Pradesh and perusal of literature revealed that five taxa belonging to the family Poaceae *viz., Hordeum brevisubulatum* (Trin.) Link subsp. *nevskianum* (Bowden) Tzvelev, *Poa aitchisonii* Boiss, *Poa attenuata* Trin, *Poa kanaii* Rajb. and *Stipa arabica* Trin. & Rupr., were hitherto unknown from the state of Himachal Pradesh (Chowdhery and Wadhwa, 1984; Uniyal and Mathur, 1991; Singh *& al.* 1993; Aswal and Mehrotra, 1994; Sharma and Singh, 1996; Sharma and Dhaliwal, 1997; Sharma and Kaur, 1999; Murti, 2001; Singh *& al,* 2003; Chandra Sekar *& al.,* 2003,2004; Chandra Sekar and Srivastava, 2004).

These have been enumerated in the present communication, with currently accepted name, brief citation, basionym if any, brief description, phenology, ecology, distribution in India & outside and exsiccata.

ENUMERATION

Hordeum brevisubulatum (Trin.) Link subsp. **nevskianum** (Bowden) Tzvelev in Nov. Sist. Vyssh. Rast. 1971: 66.1971; Cope in Nasir & Ali, Fl. Pakistan 143: 640. 1982. *Hordeum nevskianum* Bowden in Can. J. Genet. Cytol. 7: 396. 1965.

Perennials, tufted. Culms geniculately ascending, up to 70 cm high. Leaf-blades 12- 14 cm long, 1-3 mm wide, glabrous. Spike slender, 1.8-2 cm long; rhachis smooth, scabrid on nerves. Glumes setaceous, 2.5-4 mm long, scabrid. Lemmas lanceolate, 2.5-3.5 mm long, scabrid to puberulous, awn tipped; awn 1.8-2.2 mm long. Palea as long as the lemma. Anthers 1.8-2.2 mm long.

Fl. & Fr. : July September.

Scarce on moist slopes near streams.

Himachal Pradesh: Lahaul-Spiti; Pin Valley National Park, Therbik-Larang La, 4950 m, 25.08.2002, *K. Chandra Sekar* 100689 (BSD).

Distrib. : India: Himachal Pradesh and Jammu & Kashmir; Pakistan, Western Siberia, Afghanistan, Western China and Nepal.

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Poa aitchisonii Boiss., Fl. Orient. 5: 602. 1884; Bor, Grass. Burma, Ceylon, India & Pakistan 554.1960; Cope in Nasir & Ali, Fl. Pakistan 143: 414.1982.

Perennials, tufted. Culms geniculate below, up to 30 cm high, terete, smooth. Leaf-blades linear, 20-80 × 2-4 mm, acuminate; ligules 0.8-1 mm long. Panicle lanceolate-oblong; branches spreading, lower branches 2. Spikelets oblong, 4.5-8 mm long, 3-5-flowered. Lower glume 1.8-3 × 0.7-1 mm, subulate, I-nerved; upper glume ovate-lanceolate, 2-3.5 × 1-1.6 mm, 3-nerved. Rachillas 0.5-1 mm long. Callus glabrous. Lemmas oblong, 2.8-4 × 1.5-1.9 mm, obtuse, margins hyaline, surface glabrous, keel scabrid or sparsely ciliate on the lower part. Paleas elliptic, 2.2-3.2 × 0.6-0.7 mm, keels scabrid. Caryopsis 1.2 -1.6 mm long.

Fl. & Fr. : July September.

Scarce on moist slopes.

Himachal Pradesh: Lahaul-Spiti; Pin Valley National Park, Chhohem, 4150 m, 12.07.2003, *K. Chandra Sekar* 103221 (BSD).

Distrib. : India: Himachal Pradesh, Jammu & Kashmir and Uttaranchal; Pakistan, Iran and Afghanistan.

Poa attenuata Trin. in Mem. Acad. Sci. Petersb. Say. Etrang. 2: 327. 1835; Cope in Nasir & Ali, Fl. Pakistan 143: 417. 1982.

Perennials, tufted. Culms erect, up to 33 cm high. Leaf-blades 1.5-5 cm long; ligules 1.5-3 mm long. Panicle oblong-lanceolate, 1.5-6 × 0.5-1 cm. Spikelets elliptic, 45.5 mm long, 2-4-flowered. Lower glumes ovate, 2-3.2 × 0.9-1.1, 3-nerved; upper glumes ovate-elliptic, 2.5-3.5 × 1-1.3 mm, acute, 3-nerved. Callus glabrous. Lemmas elliptic-oblong, 2-3.2 × 1.5-1.6 mm, surface glabrous, keel ciliate on from base to about the middle. Paleas elliptic-oblong, 2.5-2.9 × 0.4-0.7 mm, keel scabrid. Anthers 1-1.2 mm long.

Fl. & Fr. : July September.

Scarce on rocky slopes.

Himachal Pradesh: Lahaul-Spiti; Pin Valley National Park, Chhohem, 4100 m, 13.07.2003, *K. Chandra Sekar* 103251 (BSD).

Distrib. : India: Himachal Pradesh, Jammu & Kashmir and Uttaranchal. Pakistan, Central Asia, Siberia and Mongolia.

Poa kanaii Rajbh. in Acta Phytotax. Geobot. 39: 58. 1988 *et* in Ohba & Malla, The Himalayan Plants 2: 213. 1991.

Perennials, loosely tufted. Culms erect, up to 18 cm high, terete, smooth. Leafblades linear, 3-4 cm long, 1-2 mm wide; ligules 2-3 mm long. Panicle ovate-oblong, 1.54 × 0.6-0.8 cm, branches sparsely

spreading. Spikelets elliptic, 4.5-4.7 mm long, 2-3 flowered. Lower glume elliptic, 2-3.8 × 1-1.5 mm, acute, 1-3-nerved; upper glume elliptic, 3-4.3 × 1.5-2 mm, acute, 3-nerved. Callus glabrous. Lemmas ovate-elliptic, 4-4.5 × 1.8-2.2 mm, surface minutely scabrid on lower part, keel ciliate on lower third. Paleas elliptic-oblong, 3-3.7 × 0.5-0.7 mm, keels scabrid. Anthers 1.2-1.8 mm long.

Fl. & Fr.: July September.

Scarce on rocky slopes.

Himachal Pradesh: Lahaul-Spiti; Pin Valley National Park, Near Mud, 3700 m, 02.08.2002, *K. Chandra Sekar* 102840 (BSD).

Distrib. : India: Himachal Pradesh and Uttaranchal; Nepal.

Note : It closely resembles *P. pagophila* Bor in ligule and floral characters, but differs in having the anthers 1.2-1.8 mm long (versus *P. pagophila* in 2-3 mm long anthers). Previously known only from Garhwal Himalaya (Gangotri) in the state of Uttaranchal (Gaur & Nautiyal, 1995).

Stipa arabica Trin. & Rupr., Sp. Gram. Strip. 77. 1842; Cope in Nasir & Ali, Fl. Pakistan 143: 420. 1982.

Perennials. Culms ascending, up to 70 cm high. Leaf-blades involute and setaceous, up to 2.5 mm wide when flattened, sparsely pubescent. Panicle linear, 15-35 cm long, partially enclosed by the slightly inflated sheath of the uppermost leaf. Glumes narrowly lanceolate, 2.5-3.5 cm long, long acuminate, 3-nerved. Lemmas, terete, 8-11.5 mm long, shortly hairy with rows of hairs not quite reaching the summit, with a crown of hairs at the tip; awn bigeniculate, 10-20 cm long, articulated at the base, column hairs 0.5-1 mm long, bristle plumose with hairs 2-4 mm long.

Fl. & Fr.: July September.

Common on moist rocky slopes.

Himachal Pradesh: Lahaul-Spiti; Pin Valley National Park, Chhohem,. 4100 m, 13.07.2003, *K. Chandra Sekar* 103274 (BSD).

Distrib. : India: Himachal Pradesh and Jammu & Kashmir; Sinai eastwards through Iran, the Caucasus and Afghanistan to Pakistan, Southern USSR.

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