

## SPECIES NOVO

**Tragopogon kashmirianus** Gurcharan Singh sp. nov. Fig. 4.

Species *Tragopogon mirus* Ownbey subsimilis sed distat: ligulae purpureo striatae, phyllariis 8-11 margine scariosus, pappus setis cervino, plume cinereo.

Herba biennis, 25-60 cm alta, glabriuscula. Folia linearie basi dilatata, sensim angustata, ad 25 cm longa. Calathia pedunculis inflatis. Phyllariis lineari-lanceolatis, margine scariosus, 8-11, 4-6 cm longa. Ligulae 20-25 mm longae, luteae, purpureo-striatae. Antherae 3-4 mm longae, basi luteae, parte superiore violacea. Achaenia cinereo-brunnia, 13-16 mm longa, in rostrum 12-20 mm longum sensim abeuntia, exteriora interiora glabra. Pappus 25-40 mm longis, cervino, basi connatis annulum lanatum formantibus, plume cinereo,

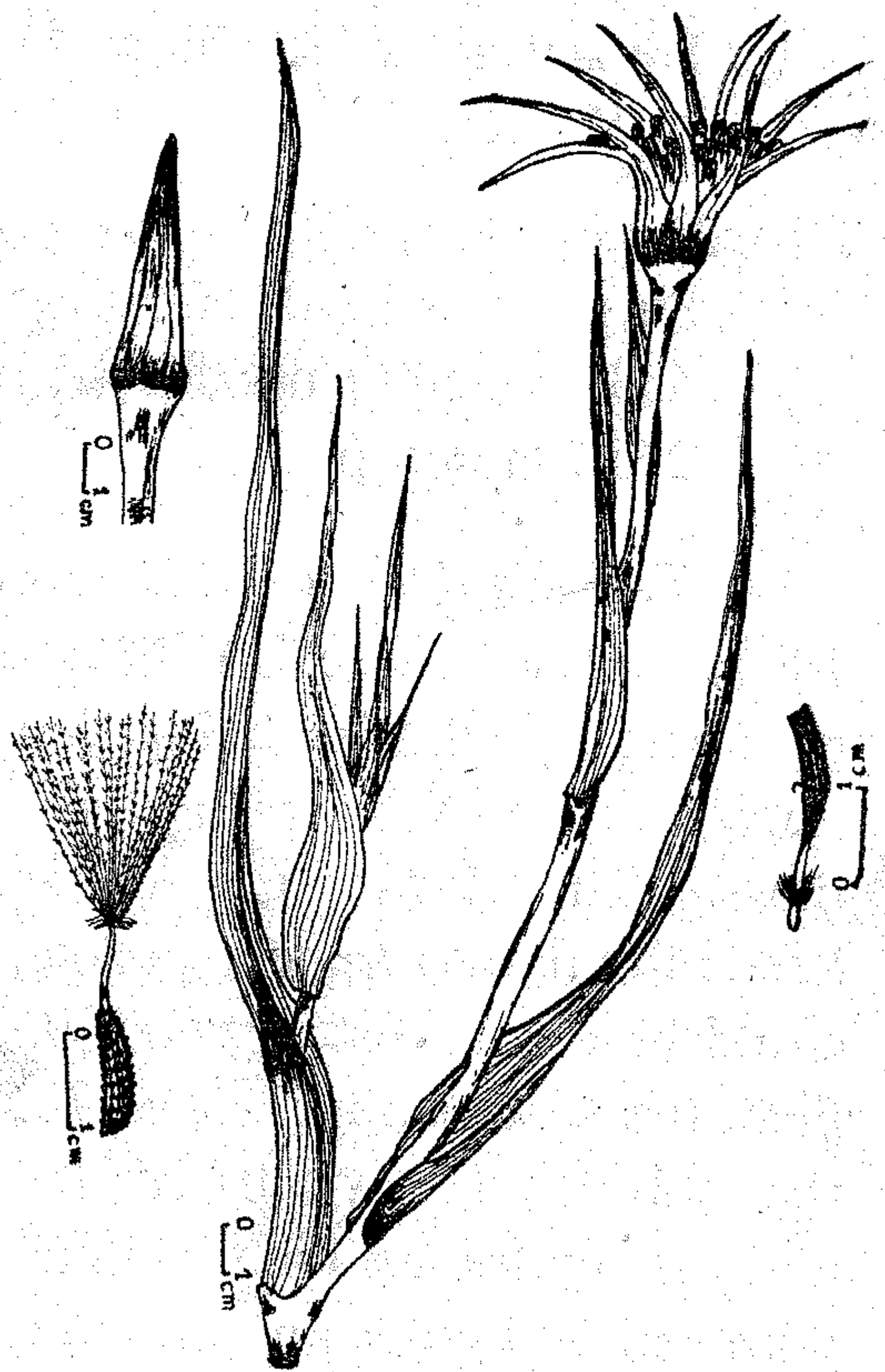


Fig. 4. *Tragopogon kashmirianus* Singh

**Holotypus :** In silva Dachhigam, Kashmir, alt. 1,700 m. Gurcharan Singh No. 2552. In Herbario Departmenti Phytologiae, Universitatis Kashmiriensis, Srinagar conservatur.

Biennial herb, 25-60 cm tall, almost glabrous, simple or branched. Leaves linear, gradually narrowed above from dilated base, upto 25 cm long, upper successively smaller. Heads solitary on inflated peduncles. Phyllaries 8-11, 4-6 cm long, margins scariosus. Ligules 20-25 mm long, yellow, purple striated. Anthers 3-4 mm lower half yellow, upper violet. Flowers closing during day but open in morning and in dull weather during day. Achenes greyish brown, 13-16 mm long, gradually narrowed to 12-20 mm long beak. Pappus bristles tawny, straight, plumose except for naked distal end, 25-40 mm long, united below into a disc; disc wooly. Fruiting heads 7-9 cm across, pappus hairs ashy.  $2n = 24$ .

**Holotype:** Dachhigam forest, Kashmir, alt. 1,700 m : Gurcharan Singh No. 2552. Deposited in the Herbarium of Botany Department, Kashmir University, Srinagar. Isotype in N.Y.B.G.

**Distribution:** Kashmir University Campus, Srinagar; Gurcharan Singh No. 3580; Harwan. Kashmir: Gurcharan Singh No. 553; Dachhigam forest, Kashmir: Gurcharan Singh No. 2552 Holotype.

*T. kashmirianus* is a tetraploid species (Koul and Gohil, 1972: as *T. pratense* L.) is closer to *I. porrifolius* L. in swollen peduncles, phyllaries being longer than ligules, but differs in purple striated yellow ligules, stouter beak and ashy pappus hairs. The flowering specimens of *T. kashmirianus* of closed heads the ligules appear purple, and many a times the specimens could be missed for *T. porrifolius* L. in yellow ligules and stouter beak the species approaches *T. pratensis* L., in which, however, the peduncle is not inflated, the ligules are not purple streaked and the ligules are longer than the phyllaries. *T. dubius* Scop. with yellow ligules and inflated peduncle appears more closer to *T. kashmirianus*, but does not have purple striations on ligules, phyllaries are usually up to 13 in number, ligules often more than 30 mm long and pappus hairs are whitish. All the three species: *T. pratensis*, *T. dubius* and *T. porrifolius*, also differ in being the diploids.

Ownbey (1950) observed that as a result of natural hybridization and amphiploidy in genus *Tragopogon* two new amphiploides have arisen in southeastern Washington and adjacent Idaho and he recognised them as distinct species *T. mirus* Ownbey (*T. dubius* × *T. porrifolius*) and *T. miscellus* Ownbey (*T. dubius* × *T. pratensis*), both of which like *T. kashmirianus* are tetraploid species. *T. miscellus* is distinct species having purple margined phyllaries, upto 13 in number, yellow ligules about equalling the phyllaries in length. *T. mirus*, though much closer to *T. kashmirianus* is distinct in bicoloured ligules being lilac in upper half and yellow in lower half, phyllaries upto 13 in number and pappus being tawny coloured. *T. mirus* is an amphiploid between *T. dubius* and *T. porrifolius*, and the

combination of characters suggests that the same two species must have participated in the evolution of *T. kashmirianus*. Natural hybridization between these two diploid parents has already given rise to two distinct species: *T. phaeus* Focke (1907) and *T. mirus* Ownbey (1950), and *T. kashmirianus* may probably be another result of the same parental combination.

***Galium mahadivensis* Gurcharan Singh sp. nov.**

Proxime affinis *G. confertum* Royle, a qua tamen differt gracili repenti caudice, folia apice acutis, marginibus recurvatis, pedunculi saepissime 3 flores ed pilis fructus strictus.

Perennis, caule plures, 5-15 cm alta ex gracili repenti caudice orientes, ascendentes plus minusve suberecti, quadriangula; patente pilosa, anguli anticescabridis. Folia saepissime 4 in verticello, lanceolata, basi petiolum 1-2 mm longum contracta, uninervia, marginibus recurvatis, apice acutis, marginibus costaque subtus scabrida, 4-9 mm longa. Pedunculi axillares, 3-8 mm longi, saepissime flores 3, ad pedicellis 2-5 mm longis gerentes. Flores ca 1.5 mm in diametro, albidi. Corolla 4 loba, lobis ovato-lanceolatis acutis. Fructus siceus 1.5-2 mm latus, pilis strictus 2.5-3.5 mm longis vestitus.

Holotypus: In silva Dachhigam. Kashmir, alt. 2,200 m. Gurcharan Singh No. 3172. In Herbario Departmenti Phytologiae, Universitatis Kashmiriensis, Srinagar conservatur.

Perennial herb; stems several, 5-15 cm tall from a slender creeping rootstock, ascending to suberect, 4 angled, spreading hairy, angles anterorsely scabrid. Leaves in whorls of 4, lanceolate, single nerved, narrowed below to 1-2 mm long petiole, margins recurved, sparsely anterorsely scabrid especially on margins and midrib beneath, 4-9 mm long. Flowers on axillary usually 3 flowered peduncles, peduncles 3-8 mm long. Pedicels 2-5 mm long, scarcely curved. Flowers ca 1.5 mm across; whitish. Corolla lobes 4, ovate-lanceolate, apex acute. Stamens 4. Fruit dry, 1.5-2 mm across, covered all over with 2.5-3.5 mm long hairs with straight tips.

Holotype: Dachhigam forest, Kashmir, alt. 2,200 m: Gurcharan Singh No. 3172. Deposited in the Herbarium of Botany Department, Kashmir University, Srinagar.