

A NEW SPECIES OF TRAGOPOGON (CICHOREAE: ASTERACEAE) FROM NORTHERN BALOCHISTAN, PAKISTAN

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Abstract

A new species *Tragopogon* is described and illustrated from Northern Balochistan, Pakistan. The new species, here described and illustrated, is found in area west of Zhob city along the Afghanistan border. It comes closest to *T. leucanthus*, but differs from it, beside other characters, in its narrower leaves, number of phyllaries and a shorter cypsel a beak. We have amended the key to *Tragopogon* in the Flora Pakistan (Fasc. 222, IV) to include the new species.

Key words: *Tragopogon*, Scorzonerae, Cichorieae, Zhob, Pakistan.

Introduction

The genus *Tragopogon* L. (Scorzonerinae: Cichorieae: Asteraceae) comprises approximately 150 species (Mavrodiev *et al.*, 2005; 2012). However, this number could be an under-estimate as a study focusing on *T. porrifolius* L. (Mavrodiev *et al.*, 2007) has suggested presence of cryptic species. The genus is distributed across Eurasia from the Atlantic to the Pacific Ocean, with a centre of distribution in the Mediterranean region, the Middle East and eastern Europe (Mavrodiev *et al.*, 2005).

The majority of the *Tragopogon* species have ancient Mediterranean origins and are mainly found in south-western to central Asia, but also found in Europe, temperate Asia and North Africa (Bremer, 1994; Mavrodiev *et al.*, 2005; Lack, 2007). Although the majority of the *Tragopogon* taxa are diploids, the genus has also been associated with polyploidy (Ownbey, 1950; Mavrodiev *et al.*, 2005; Mavrodiev *et al.*, 2008).

Tragopogon is characterized by herbaceous annual, biennial and perennial habit with parallel-veined leaves, a single row of involucre bracts and typically fusiform, ribbed, scabrous and beaked achenes; pappus comprises one row of mostly plumose hairs. Characteristics of mature achenes and colour of ligules are important diagnostic characters for *Tragopogon* taxa (Borisova, 1964; Matthews, 1975; Richardson, 1976). The morphological similarities and hybridization makes it a taxonomically complicated genus (Mavrodiev *et al.*, 2012; Ownbey, 1950). The monophyly of the genus was strongly supported in a recent phylogenetic analysis (Mavrodiev *et al.*, 2004). Mavrodiev *et al.*, (2012) conducted a phylogenetic study on *Tragopogon* based on seven nuclear loci. This study revealed that traditional sections *Tragopogon*, *Brevirostris*, *Chromopappus* and *Hebecarpus* were largely monophyletic while sections *Angustissimi*, *Majores*, *Collini*, and *Profundisulcati* were non-monophyletic. The monotypic sections *Macropogon*, *Dasyopogon*, and *Dybianskya* appeared within other sections and therefore did not merit recognition.

In the Flora of Pakistan *Tragopogon* is represented by 9 species, with *Tragopogon kashmirianus* being the only endemic species (Ghafoor *et al.*, 2017). With the addition of the new species described, *Tragopogon* is now represented by 10 species, two of which are endemic.

Material and Method

During a botanical exploration of Qamardin Karez, west of Zhob city along Afghanistan border, some specimens of a *Tragopogon* species were collected. After examining species descriptions in Flora of Pakistan (Ghafoor *et al.*, 2017), Flora Iranica (Rechinger, 1977) and Flora of USSR (Borisova, 1964), these specimens did not match any known species and is therefore described here as a new species. Type specimens have been deposited in National Herbarium of Pakistan (RAW), National Agricultural Research Centre, Islamabad.

Results

Tragopogon pashtunianus N.Khan, A.Sultan & T.Khan **sp. nov.**
Figs. 1-3

Type: Balochistan, D – 5, Zhob district, Qamardin Karez, Khutkandai, 31°31'42"N, 68°16'02"E, elev. 2053 m, Nazar Khan Mandokhel, 21 April 2020 (RAW 102405).

Other specimens examined: Balochistan, D – 5, Zhob district, Qamardin Karez, near Girls High School, 31°40'01"N, 68°25'16"E, elev. 2046 m, Tahir Khan, May 2020 (RAW 102406).

Diagnosis: *Tragopogon pashtunianus* comes closest to *T. leucanthus* in having semi-amplexicaule leaves, white ligules and peduncle not thickened in fruit, but differs in width of leaves, which is up to 9 mm in *T. pashtunianus* and up to 5 mm in *T. leucanthus*. *Tragopogon pashtunianus* has 9 phyllaries (25-35 mm long in flower and 35-50 mm long in fruit and 3-5 mm wide at base), while *T. leucanthus* has 5-7 smaller phyllaries (20-25 mm long in flower and up to 35 mm long in fruit and 4-5 mm wide at base). The ligule is shorter than the involucre in *T. pashtunianus*, but is longer than involucre in *T. leucanthus*. The beak of cypsel a is up to 5-7 mm in *T. pashtunianus*, while it is up to 15 mm in *T. leucanthus*; pappus is pale brown, 20-30 mm in *T. pashtunianus* while it is brown and up to 20 mm in *T. leucanthus*.

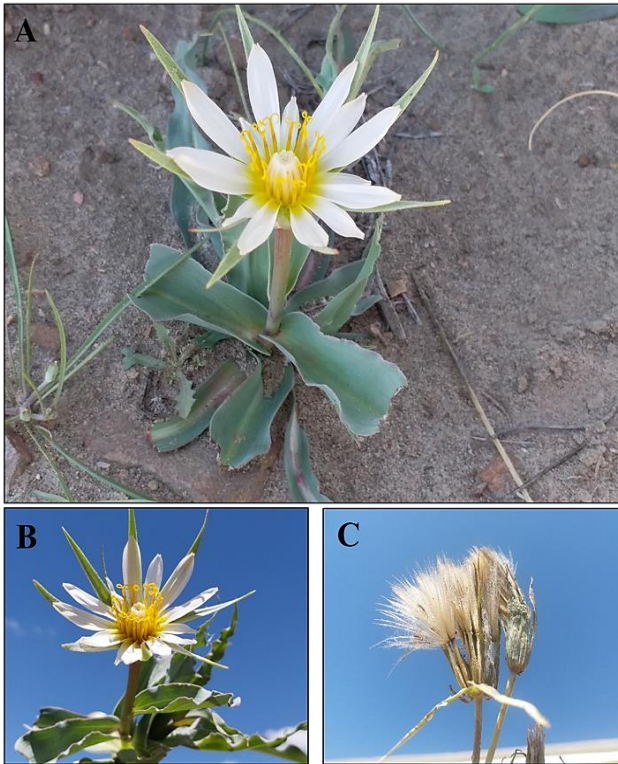


Fig. 1. *Tragopogon pashtunianus* A) habit, B) capitulum, C) fruiting capitulum (photos by Nazar Khan).

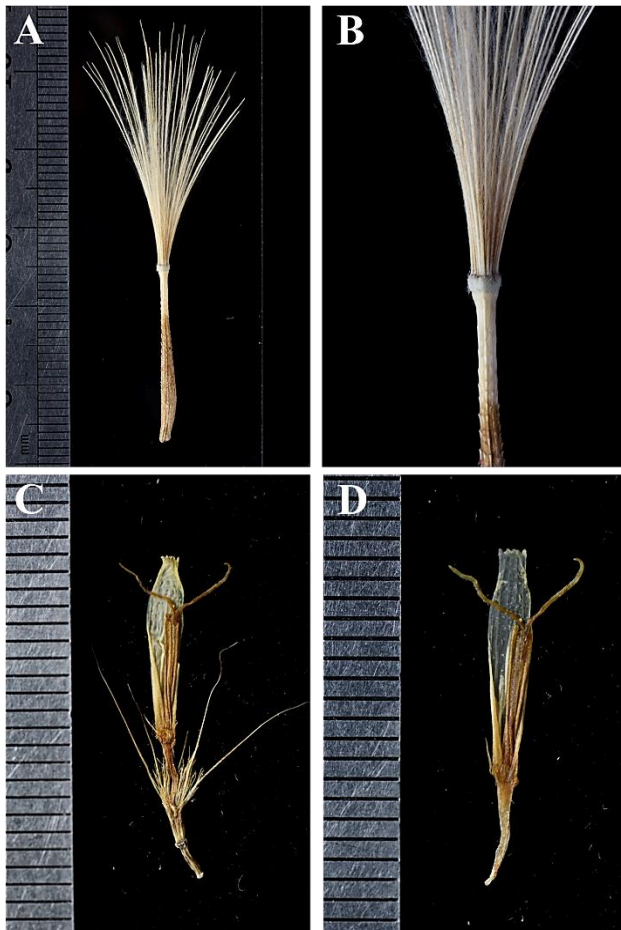


Fig. 2. *Tragopogon pashtunianus*, A, B). Cypsel, C). Ligule, D). Ligule with pappus and ovary removed.

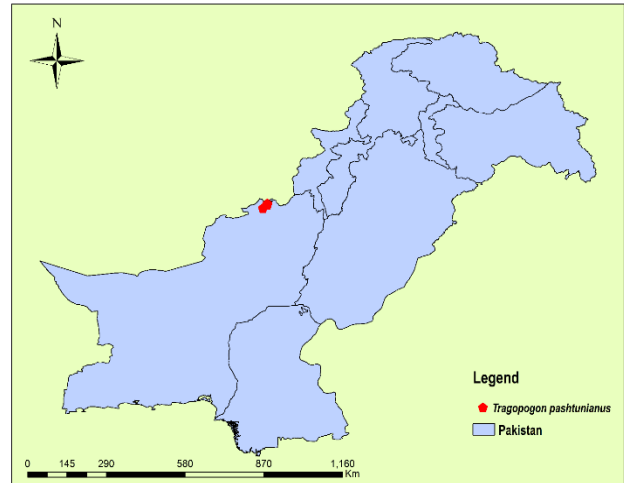


Fig. 3. Distribution of *Tragopogon pashtunianus* in south western Pakistan.

Description: Perennial herb, 10-20 cm tall, tap roots deep, with white milky latex. Stem cylindrical, glabrescent, simple to branched from base, sometime tinged purplish. Leaves basal and cauline, semi-amplexicaule, linear to lanceolate, 2-13 × 0.5-0.9 cm, 7-9 nerved, purplish-tinged at base and margins, apex acute to acuminate, margins undulate or not, scabrid. Capitula solitary, 25-40 flowered. Peduncle 7.5-12.5 cm long, glabrous. Receptacle scrobiculate. Involucre conical. Phyllaries 9, linear to lanceolate, acute to acuminate, 25-35 × 3-4 mm in flower to 35-50 × 3-5 mm in fruit, longer than ligules. Ligule white, yellow at base, slightly purplish-tinged on abaxial surface, elliptic, 20-25 × c. 3 mm. Anther tube yellow, 5-8 mm. Stigma c. 5 mm yellow, scaberulous. Style c. 9 mm. Cypsel 18-19 mm × 1-2 mm, fusiform, pale brown, straight to slightly curved, 10-ribbed, muricate; beak 5-7 mm, glabrous, uninflated; pappus 20-30 mm, yellowish-white, with an annulus at base, plumose.

Vernacular name: Charanska.

Phenology: April to May.

Etymology: The specific epithets refers to the local name of Northern Balochistan “Suali Pashtunkhwa”

Distribution: D – 5, Khutkundai (31°31'42"N, 68°16'02"E, elev. 2030 m), Batailawai (31° 38' 26" N, 68° 25' 12" E), Qamardin Karez (31° 40' 01" N, 68° 25' 16" E, elev. 2046 m) and Ahdees Cheena, Qamardin Karez (31° 40' 12" N 68° 24' 37" E, elev.2049 m) in Zhob district of Northern Balochistan, Pakistan.

Ecology: Found in sandy loam soil.

Ethnobotany: The plant is grazed by goats and sheep.

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Amended key to *Tragopogon* species of Pakistan (modified from Ghafoor *et al.*, 2017)

- 1 + Florets yellow, light yellow or white, sometimes with purplish or pink-streaked ligules 2
 - Florets pink, purple or pinkish-purple 8
 2 + Phyllaries usually more than 8 3
 - Phyllaries usually less than 8 or 8 6
 3 + Fruiting peduncles thickened or swollen below the capitula 5
 - Fruiting peduncles neither thickened nor swollen below the capitula 4
 4 + Ligule yellow, phyllaries shorter than ligules, pappus 1.6 cm long *T. orientalis*
 - Ligule white, phyllaries longer than ligules, pappus 2-3 cm long *T. pashtunianus*
 5 + Pappus 1.2–2.5 cm long. Ligules without purple-streaks *T. dubius*
 - Pappus 2.5–4 cm long. Ligules with purple streaks *T. kashmirianus*
 6 + Plants perennial, caespitose, with flocculose young shoots. Florets turning lilac on drying. Beak of cypselas 5–7 mm long. Anthers purple *T. gracilis*
 - Plants erect, with glabrescent young shoots. Florets remaining yellow on drying. Beak of cypselas more than 10 mm long 7
 7 + Phyllaries 5. Leaves 10 – 15 mm broad *T. albomarginatus*
 - Phyllaries 7-8. Leaves 3 – 5 mm broad *T. pratensis*
 8 + Peduncles thickened below the capitula. Pappus as long as or twice the size of the body of cypselas 9
 - Peduncles not thickened below the capitula. Pappus thrice the size of body of cypselas *T. gaudanicus*
 9 + Plants up to 60 cm long or less, usually simple. Cypselas c. 15 mm long excluding \pm 3 cm long, yellowish pappus bristles pappus bristles dirty white *T. afghanicus*
 - Plants usually taller than 60 cm and branched above middle. Cypselas more than 15 long excluding 2.5-3.7 cm long, pappus bristles dirty white *T. porrifolius*

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