Morphology: Colour of the flowers of living plants: PP 2/2—2/3. It corresponds to the Latin terms armeniacus usque croceus. In the populations (for instance at Vracov near Kyjov, observation by F. Dvořák of Sept. 12th, 1976) hues of colours up to citrinus PP 3/2 can be found. Plants with citrinus flowers cannot be distinguished from the flowers of *Tragopogon pratensis* L. by the colour.

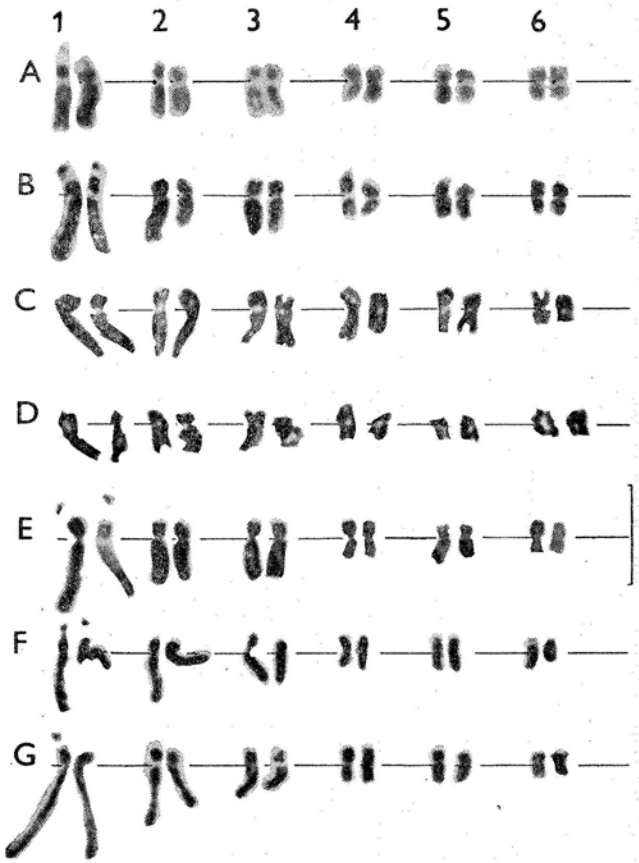

Fig. 1. *Tragopogon orientalis* L. subsp. *orientalis*. Karyograms made from microphotographs (eyepiece FU 6.3, objective 100×). Scale: 10 μm.

2. *Tragopogon orientalis* L. subsp. *leiocarpos* (Sauter) Trnka comb. nova

Basionym: *Tragopogon leiocarpos* Sauter, Flora 40: 178 (1857)

Syn.: *Tragopogon grandiflorus* Sauter, Österr. Bot. Wochenbl. 6: 107 (1856) non Döll 1843. — *Tragopogon praecox* Focke, Abh. Naturw. Ver. Bremen 18 (1): 188 (1905). — *Tragopogon pratensis* L. subsp. *orientalis* (L.) Vollmann var. *grandiflorus* (Sauter) Beger in Hegi, Ill. Fl. Mitteleur. 6 (2): 1053 (1928). — *Tragopogon pratensis* L. subsp. *grandiflorus* (Sauter) Rothm., Exkurs.-Fl. Krit. Ergänz.-Band 342 (1963) comb. inval.

Table 1. *Tragopogon orientalis* L. subsp. *orientalis:* lengths of pairs of homologous chromosomes and of total diploid sets (in μm).

No. of pair	Locality										Mean average length		ČINČURA et HINDÁKOVÁ (1964)
	Hills Pavlovské kopce	Studenec			Kuřim					Klášterisko	$\bar{x} \pm s_{\bar{x}}$	$\pm s$	
					Mean				Mean				
	A	B	C	D	A–D	E	F	G	E–G	H	A–H		
1	13.07	17.12	14.85	11.46	14.48	18.23	15.77	23.69	19.23	10.93	15.64 ± 1.43	±4.05	15.2
2	9.61	10.88	13.77	8.62	11.09	12.15	11.69	14.12	12.65	8.41	11.16 ± 0.78	±2.20	10.0
3	8.92	10.58	11.12	8.46	10.05	11.42	9.88	10.46	10.59	8.63	9.93 ± 0.41	±1.16	9.9
4	7.08	8.12	9.73	6.31	8.05	7.81	6.69	6.78	7.09	6.15	7.33 ± 0.44	±1.23	6.4
5	6.74	6.81	8.54	5.46	6.94	7.65	6.81	6.08	6.85	5.79	6.74 ± 0.37	±1.04	6.0
6	6.12	6.50	6.78	5.31	6.20	6.62	5.42	4.69	5.58	5.36	5.85 ± 0.32	±0.90	6.0
Length of total diploid sets	51.54	60.01	64.79	45.62	56.81	63.88	56.26	65.82	61.99	45.27	56.65 ± 2.73	±7.71	53.5
Mean length of one chromosome	4.29	5.00	5.40	3.80	4.73	5.32	4.69	5.49	5.17	3.77	4.72 ± 0.28	±0.81	4.46

Hab.: Belianske Tatry Mts., Skalné vráta, about 1600 m; July 19th, 1976 F. Dvořák. In Czechoslovak herbaria the oldest record of the occurrence of the species in this locality is Podpěra's gathering of 1922. The species was reported from there by Kotula (1889—1890: 94, 355) and Sagorski et Schneider (1891).

$K(2n) = 12 = 6A^{m} + 6B^{sm}$ — Fig. 2.

Fig. 2. *Tragopogon orientalis* L. subsp. *leiocarpos.* (Sauter) Trnka. Drawings (eyepiece FU 6.3, objective 100×) of mitotic metaphases. Scale: 10 μm.

Table 2. *Tragopogon orientalis* L. subsp. *leiocarpos* (Sauter) Trnka: lengths of pairs of homologous chromosomes and of total diploid sets (in μm).

No. of pair	Locality: Skalné vráta						Mean average length	
	A	B	C	D	E	F	$\bar{x} \pm s_{\bar{x}}$	$\pm s$
1	12.21	19.16	11.95	14.78	13.76	14.16	14.34 ± 1.07	±2.64
2	8.94	12.52	8.14	8.32	10.22	9.96	9.68 ± 0.67	±1.65
3	8.76	12.04	8.14	9.69	9.82	8.32	9.46 ± 0.60	±1.46
4	5.71	7.96	6.37	6.51	7.08	5.75	6.56 ± 0.36	±0.88
5	5.53	9.11	5.66	6.06	6.51	5.71	6.43 ± 0.56	±1.38
6	5.18	7.16	5.62	5.13	6.69	5.13	5.82 ± 0.36	±0.88
Length of total diploid sets	46.33	67.95	45.88	50.49	54.08	49.03	52.29 ± 3.26	±7.98
Mean length of one chromosome	3.86	5.66	3.82	4.21	4.51	4.09	4.36 ± 0.30	±0.73

Kar.: The length of the pairs of homologous chromosomes and length of the total diploid sets (in μm) are shown in Tab. 2. *r*-Indices: see Tab. 9. Deviation of *r*-indices from 1.00 calculated for one chromosome: 0.819.

Tax.: SAUTER (1956: 107) described the taxon as follows: „Die ... Wiesen um Salzburg schmückt ... ein *Tragopogon* mit grossen, hellgelben Blumen, ... welcher von dem etwas später blühenden *pratensis* sich durch 12blätterige Hülle, halb- oder nochmal so lange Randblüthen als Hüllblätter, bis auf ein Paar rauhe Punkte am Halse glatte Früchte mit kürzerem, steifem Schnabel so wesentlich unterscheidet, dass ich ihn ... *grandiflorus* taufe." The name was a later homonym. That is why SAUTER (1857) validly published new name with a Latin diagnosis which is, however, not complete and requires further specifying and supplementing:

Plantae (20—) 30—50 cm altae; caulis pauciramosus, interdum eramosus uniflorus; folia basalia erecta usque arrecta, longitudine cauli subaequilonga; foliorum lamina plana, e basi ovate lanceolata et 10—12 mm lata abrupte in partem terminalem acuminatam angustata; anthodia magna; involucri bracteae 8—12, 25—30 mm longae, flores anthodii longitudine 2—5 mm superantes; flores flavi (PP 3/3), flosculorum ligulatorum marginalium pars abaxialis saepe ferrugineo usque sepiaceo (PP 2/6—PP 2/9) striata; antherarum tubus ±6 mm longus, flavus (PP 3/3), superne solum vel per longitudinem totam sepiaceo (PP 2/9) quinquestriatus; achenia marginalia subglabra, superne (ante rostrum) solum squamis paucis brevibus tecta, in rostrum achenio ± aequilongum sensim attenuata. Flores: VI—VIII. Descriptionem P. TRNKA elaboravit.

Chor.: The subalpine and alpine populations of *Tragopogon* (Goat's-beard) relatively rarely drew the attention of botanists. The problem of their occurrence and taxonomic evaluation deserves, however, detailed study. In the first place it is a question of their primary occurrence at higher elevations. FOCKE (1905) considered the taxon to be native in Switzerland and Tyrol at elevations from 400 m up to 1 200 m. BEGER (in HEGI 1928), on the other hand, considered the hybrid origin of the taxon. HADAČ and ŠMARDA (1960) believed that *T. orientalis* L. came into the subalpine belt only recently, having been introduced by grazing. However, *T. orientalis* L. grows in natural plant communities where it has a penalpine character. It ascends to higher elevations where it can use the proper physical quality of the limestone substratum which, to a degree, lessens the unfavourable effect of subalpine and alpine climate. Karyological study of the plants from Skalné vráta suggests also a certain genetic difference.

The following specimens are referred to subsp. *leiocarpos* as revised by P. TRNKA:

Carpaticum occidentale

Eu-Carpaticum

77. Fatra Mts., b. Malá Fatra Kriváňská Mts.: Veľký Stoh, 1600 m (ŠMARDOVÁ 1951); between Stoh and Chleb (DUDA 1951); Chleb — Čierna skala, 1644 m (DOMIN 1912, ŠMARDA 1951); Suchý vrch, 1250—1400 m (ŠVESTKA 1924, KRIST 1933).
c. Velká Fatra Mts.: Perušín, about 1250 m (ČERVENKA 1926).
78. Nízké Tatry Mts.: Salatín, 1630 m (ŠMARDA 1934); Kečka above Saltus, about 1200 m (HRABĚTOVÁ 1950).
79. Tatry Mts., a Západní Tatry Mts.: valley Tomanova dolina, below Rozpadlý Grúň, 1464 m (SEDLÁČKOVÁ 1958, 1959); valley Tomanova dolina, "Opálené" (UNAR and LIŠKOVÁ 1955); valley Tomanova dolina, below the valley Hvížďalka, about 1700 m (UNAR 1968); valley Tichá dolina, "Štrky", about 1350 m (ŠMARDA 1959).
c. Belanské Tatry Mts.: Skalné vráta, about 1600 m (PODPĚRA 1922, F. DVOŘÁK 1976); Havran, ca. 2000 m (DOMIN 1929); below the southern wall of Muráň (SOUČEK 1935); NW slope of Muráň, 1850 m (VICHEREK 1955).