

Dandelions in Central Asia: *Taraxacum* sect. *Suavia*

Rod *Taraxacum* v Centrální Asii: sekce *Suavia*

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On the basis of the authors' collections and cultivated material from Asia, a recently described group of dandelions, *Taraxacum* sect. *Suavia*, is revised. In addition to three species described previously (*T. haneltii*, *T. sumneviczii* and *T. formosissimum*), six new species from Mongolia and Kyrgyzstan are recognized. Three of them, *T. suave*, *T. stupendum* and *T. margaritarium*, possess most of the features characterizing the section *Suavia*, one, *T. suasorium*, is regarded as intermediate between sections *Suavia* and *Leucantha*, whilst the remaining two, *T. nobile* and *T. venustus*, exhibit some characters of another related section (*T. sect. Stenoloba*). The members of the section *Suavia* are agamospermous. Detailed descriptions, drawings and an identification key are given.

Key words: agamospermy, the Altai, Kyrgyzstan, Mongolia, *Taraxacum*, taxonomy

Introduction

The sectional taxonomy of steppe and subsaline dandelions in Central Asia was recently summarized (Kirschner & Štěpánek 2004). Several new sections were described including the section *Suavia*. Two species, now classified as members of the section *Suavia*, *T. sumneviczii* Schischk. and *T. haneltii* Soest, were known before this publication in which the type species, *T. formosissimum* Kirschner & Štěpánek, and the section were described. During the analysis of our material it turned out that several new species, clearly belonging to the section *Suavia*, occur in Tien Shan. In the present paper, we give a detailed taxonomic account of the section *Suavia* and describe five new species.

Material and methods

About 60,000 specimens of *Taraxacum* are deposited in the herbarium PRA, Institute of Botany, Academy of Sciences, Průhonice, Czech Republic. Most of the material was collected by expeditions to many regions of the Mediterranean, Middle Asia (the former Soviet Middle Asia, i.e., Kazakhstan, Kyrgyzstan, Tadjikistan, Turkmenistan and Uzbekistan) and Central Asia (mainly S Siberia, Mongolia and NW China) or reared from seed obtained from other botanists, or from roots or seed collected on expeditions. Details of the cultivation methods are given in Kirschner & Štěpánek (1993).

Our expeditions to Central Siberia (1985) and the Altai (1988) were particularly important for the study of the section *Suavia*. Valuable material used in the present study was collected (both fruit and herbarium specimens) by R. Businský in Tien Shan (mostly the

current Kyrgyzstan) and J. Soják (a series of sites along the foot of the Bogdo Ula (Bogduul) mountains in the vicinity of Ulan Bator, Mongolia).

Our study was supplemented by the examination of numerous herbarium collections. Those most relevant to the present study are BM, E, GAT, K, LE, NS, S, UPS, W, WU. It should be added that our revision labels are numbered and refer to the specimen to which they are attached (not to the duplicates).

The mode of reproduction (agamospermy versus sexuality) is easy to determine in living cultivated plants (by means of emasculation or observation of the variation among leaf rosettes of siblings in cultivation). In herbarium material, pollen presence/absence and variation in pollen size are recorded (Nijs et al. 1990); marked variation in pollen size is, with certain exceptions, a reliable indicator of dandelion agamospermy.

Plant nomenclature follows Kirschner & Štěpánek (1997) and the principles of sectional taxonomy outlined in Kirschner & Štěpánek (1996). Achene length in the descriptions includes the cone.

Results

Taraxacum sect. *Suavia* Kirschner et Štěpánek, Folia Geobot. 39: 264 (2004)

Type: *Taraxacum formosissimum* Kirschner et Štěpánek

Description: Main flowering season: spring. Plants small or medium-sized, plant base with a tunica of brownish dry petioles. Leaves deeply lobate, lobation pattern often complicated, lobes most often patent, petioles narrow, unwinged. Scapes densely aranose. Involucre with rounded to slightly truncate base, usually of medium width (ca 7–10 mm wide). Exterior and interior involucre bracts flat, less often slightly callose. Exterior bracts 9–12, in some species to 18, \pm subapically imbricate, adpressed, round-ovate to broadly ovate, usually to 5–6 (7) mm long, pale to dark green, often suffused purplish near the apex, usually corniculate, with broad paler margins, sparsely ciliate or ciliate. Pollen present (variable in size) or absent, stigma yellow or discoloured. Achenes 4.5–5.0 mm long, usually 0.9–1.0 mm thick, gradually and indistinctly narrowing into the cone, achene body greyish stramineous or reddish, or deep red, densely spinulose above, spinules short, thin, cone conical-subcylindrical, 0.4–0.9 mm long. Rostrum slightly thickened, 3–6 mm long, pappus 5–6 mm long, white or whitish-yellowish.

The section comprises species of steppe and semisteppe habitats or gravelly to sandy places in N Mongolia, and adjacent territories of the Altai in the Russian Federation. Another diversity centre of the section is in the Tian Shan, Kyrgyzstan; the occurrence of the section in the Chinese part of the latter mountain range in Xinjiang is highly probable.

The character combination distinguishing the section in Asia includes the deeply dissected leaves with linear, patent lobes and often lobulate interlobes, distinctly hairy scapes, broadly ovate outer bracts with relatively blunt apex (with \pm straight margins near the apex, not acuminate), ciliate and broadly bordered, large fruits with dense spinules, fruit body gradually narrowing into a relatively short cone and a short rostrum to the achene. The group is relatively close to the section *Dissecta* but is distinct in having large, ca 5 mm long achenes very gradually narrowing into a subconical cone and very broadly ovate to \pm round, blunt outer bracts.

Other sections that might be considered as similar or geographically close can be distinguished as follows: The section *Stenoloba* Kirschner & Štěpánek (sect. *Sinensia* auct. p. p. min.) is characterized by smaller, slender achenes with thin cylindrical cones, outer bracts acuminate and usually more numerous. The section *Tibetana* Soest comprises high mountain subglabrous plants with two subgroups – one with broadly ovate bracts with very narrow or even missing paler borders, the other with narrow, distinctly corniculate outer bracts. Achenes of *Tibetana* are shorter and have a conical to cylindrical cone.

From the point of view of its age and origin, the section *Suavia* is of early hybridogenous origin and is either a ‘precursor’ (Richards 1973) or otherwise ancestral section (Kirschner et al. 2003, Wittzell 1999). Although the parental taxa of *Suavia* are uncertain, it is very probable that the sections *Dissecta* and *Suavia* share one of their parental groups.

The section *Suavia* is comprised of asexually reproducing species. In comparison with other agamospermous groups, species of *Suavia* differ from one another morphologically and are easy to distinguish. In contrast, the sections of the genus *Taraxacum* with mostly or exclusively hybridogenous, agamospermous species are characterized by the existence of marginal taxa (intersectional intermediates). The section *Suavia* is no exception. Nine species have been identified as belonging to this section. Six of them, *T. formosissimum*, *T. sumneviczii*, *T. haneltii*, *T. suave*, *T. stupendum* and *T. margaritarium*, possess all or almost all the diagnostic characters of this section. One species, *T. suasorium*, may be regarded as intermediate between sections *Suavia* and *Leucantha*. The two remaining taxa, *T. venustius* and *T. nobile* have a few features characteristic of another section (they are more or less intermediate between the sections *Suavia* and *Stenoloba*).

Key to the species of sect. *Suavia* in Central Asia

1a	Pollen present	2
b	Pollen absent	5
2a	Outer bracts 8–12	3
b	Outer bracts 16–20	4
3a	Involucre 8–10 mm in diameter; interior bracts corniculate	5. <i>T. stupendum</i>
b	Involucre 6.5–8.5 mm in diameter; interior bracts flat to callose	2. <i>T. haneltii</i>
4a	Achenes deep red, 3.7–3.9 mm long; outer bracts pale greenish; cone ± cylindrical	8. <i>T. nobile</i>
b	Achenes greyish straw-brown, 4.8–5.3 mm long; outer bracts mid-green; cone subconical	9. <i>T. suasorium</i>
5a	Stigmas pure yellow	6
b	Stigmas discoloured (greenish, greyish, with dark hairs etc.)	8
6a	Outer bracts 13–15, acute (subacuminate); achenes fulvous to pale cinnamon; rostrum ca 6 mm long	6. <i>T. margaritarium</i>
b	Outer bracts 9–11, obtuse; achenes red-brown or greyish straw-brown; rostrum 3–4.5 mm long	7
7a	Achenes red-brown	1. <i>T. sumneviczii</i>
b	Achenes greyish straw-brown	3. <i>T. formosissimum</i>
8a	Achenes ± red; cone 0.8–1.0 mm long	4. <i>T. suave</i>
b	Achenes fulvous to pale cinnamon or pale brown; cone 0.5–0.8 mm long	9
9a	Cone ± cylindrical; outer bracts 13–17	7. <i>T. venustius</i>
b	Cone subconical; outer bracts 8–11	5. <i>T. stupendum</i>

Taraxacum sumneviczii Schischk., Sist. Zam. Gerb. Tomsk. Univ. 1–2: 8 (1949).

Type: Altai [valley of the Tshuya R.], near the mouth of R. Kiyak Nar [=Kuyakh-Tonar], 31 Aug 1918, G. Sumnevicz s.n. (holo: LE; iso: TK, n.v.). [In the protologue, the collection date is August 18, 1918, because the

original label date was given according to the old Julian calendar, and 13 days have to be dropped to get the date according to the Gregorian calendar.]

Description: Delicate plants with the base white aranose, covered with dry bases of old petioles. Leaves oblanceolate in outline, usually 5–7 cm long, 1.5–2.0 (–2.5) cm wide, usually mid-green, sparsely aranose to subglabrous, deeply dissected, lateral lobes 5–7, narrowly triangular to \pm linear, acute, patent to slightly downward-pointing, usually 8–12 mm long, 1–3 mm wide. Interlobes and/or distal bases to the lobes usually lobulate, less often sparsely dentate. Interlobes narrow, 1.5–2.5 mm wide, short, up to ca 5 mm long. Petiole narrow, unwinged, usually faintly pink to \pm purple. Scapes densely aranose. Involucre rounded at the base, usually 10–12 mm in diameter, inner bracts dull green to \pm glaucous green, usually 12–14 mm long, relatively broad (2.0–2.5 mm), callose to corniculate at the apex. Outer bracts adpressed, \pm glabrous or sparsely ciliolate, \pm imbricate, 9–11, flat to callose, broadly ovate, 5.5–6.5 (–7.0) mm long, (3.0–) 3.9–4.2 mm wide, \pm acute to subobtusate, with a 0.3–0.4 mm wide membranous margin and often also a paler green margin gradually changing into a dark green (sometimes slightly glaucous) middle strip; overall colour of outer bracts usually dark green, suffused pink throughout or in upper part. Flowers numerous, yellow, outer ligules usually short, \pm flat, striped red-greyish outside, inner ligules \pm cucullate, ligule teeth reddish. Pollen absent, stigmas deep pure yellow. Achenes (pale) brownish red to red-brown, 4.8–5.0 mm long, ca 1 mm wide, gradually narrowing into a \pm thick conical cone (0.5–) 0.6–0.8 (–1.0) mm long (cone base spinulose), achene body densely spinulose above, otherwise tuberculate, spinules dense below the cone, gradually becoming sparser on the lower half of the cone, individual minute spinules often even in the upper part of the cone, rostrum (3.5–) 4.0–4.5 mm long, slightly thickened, pappus \pm white, ca 5.0–5.5 mm long. Agamosperm. – Fig.: Krasnikov (1997: 290, Pl. 45, Fig. 4).

Taraxacum sumneviczii is a tiny plant growing together with *T. formosissimum* and several species of the section *Dissecta* in the type locality region. It is easily distinguished by its large red to red-brown achenes with a \pm thickened conical cone and a conspicuously short rostrum.

Specimens seen: Russia, the Altai, Kosh-Agach District, valley of the river Chuya, village of Chagan-Uzun, sandy and gravelly sites near the mouth of river Kuyakh-Tonar, alt. ca 1900 m, J. Kirschner 20 (PRA, multiplicate), 3402 (PRA, multiplicate).

Taraxacum haneltii Soest in Doll, Feddes Repert. 84 (7–8): 569 (1973)

Type: Mongolia, Zentral-Aimak, Bajazinst-Somon, ca 50 km NO Ulan-Bator, Sajchan-ul, Cingis-ul, S-Abfall auf Verwitterungsgrus (Granit). 27. 5. 1965, Anonymous collector [Mongolisch-Deutsche Expedition] 3055 (holo: GAT, no. det. 11705 [det. as *T. haneltii* by J. L. van Soest]; photo: PRA, K). [On another, handwritten label attached to the sheet, additional information is given: Rand des Tola-Niederung, S-Abfall des Čingis-ül, Bergsteppe]

Description: Plants small, plant base with a tunic. Leaves \pm lanceolate in outline, \pm aranose, usually 6–7 cm long, 1.5–2.3 cm wide, deeply dissected in 5–8 pairs of \pm patent, linear acute lobes usually 0.7–0.9 cm long and 1.0–1.5 mm wide, slightly dilated distally part and sometimes minutely sparsely dentate near the base; interlobes short, narrow, usually lobulate and acutely dentate, usually only 1.0–1.5 mm wide, up to 3–4 mm long; terminal lobe linear, ca 1 cm long, up to 1.5 mm wide. Petiole narrow, unwinged, brownish-pinkish. Scapes aranose to densely aranose. Involucre rounded at the base, 6.5–8.5 in diameter, inner

bracts dull dark green, slightly glaucous, \pm flat to callose, rarely ciliate near the apex, 11–12 mm long, 2.0–2.5 mm wide; outer bracts adpressed, imbricate, 9–12, broadly ovate, 4.5–5.0 (–6.0) mm long, 3.5–4.0 mm wide, obtuse, dark green and usually glaucous near the base, suffused pink towards the apex, distinctly ciliate to sparsely ciliate and at least callose near the apex, membranous margin \pm distinct, often \pm whitish, up to 0.5 mm wide, some bracts with a blackish middle strip. Flowers yellow, outer ligules flat, striped pinkish outside, inner ligules \pm flat, ligule teeth dirty yellow; pollen present, \pm irregular in size, stigmas pale green with dark hairs. Achenes unknown. – Fig.: Doll, loc. cit., Pl. xxiv.

The species is known only from the type material (four plants). Another collection mentioned in the protologue and identified as *T. haneltii* by J. L. van Soest is deposited in herbarium W and comes from NE. China (Manchuria). It undoubtedly belongs to another species (and section). Soest (Doll 1973: 570) stresses the relative regularity in the pollen size. However, the type specimen has pollen irregular, and the original observation of Soest probably refers to the specimen from Manchuria.

Taraxacum formosissimum Kirschner et Štěpánek, Folia Geobot. 39: 264, Fig. 2 (2004)

Type: Russia, the Altai, Kosh-Agach District, valley of the river Chuya, village of Chagan-Uzun, gravelly sites near the mouth of river Kuyakh-Tonar, alt. ca 1900 m, 5. 7. 1988, J. Kirschner 27 (holo: PRA).

Description: Plants small, plant base white aranose, with a tunic. Leaves \pm lanceolate in outline, up to 6 cm long, 1.3–1.7 cm wide, pale greyish green, aranose to sparsely aranose, deeply dissected into 4–6 pairs of acute to subobtuse, patent, \pm remote, linear lobes up to 9 mm long and 1.3–1.8 mm wide, with slightly broader terminal part and often an abrupt widening at the base of the distal margin of the lobe. Interlobes narrow, usually up to 1.5 mm wide, 3–7 mm long, usually entire or with a single lobe-like lobule, terminal lobe lingulate, narrow, ca 0.9–1.5 cm long and 2–3 mm wide near the apex. Petiole narrow, unwinged, aranose, deep greyish-purple. Scapes densely aranose. Involucre rounded to \pm truncate at the base, 8–10 mm in diam., inner bracts dull dark green and slightly glaucous, callose to flat, up to 12–14 mm long, broad (1.5–2.0 mm). Outer bracts adpressed, slightly imbricate, \pm glabrous or rarely ciliate at apex, 9–10, \pm flat to callose, dark green with greyish tinge, slightly suffused pinkish distally, round to very broadly ovate, 5.0–6.5 mm long, 3–4 mm wide, tip very short, blunt, membranous margin indistinct, pale greenish, 0.3–0.8 mm wide, sometimes has a pale green border up to 1 mm wide. Florets numerous, yellow, outer ligules flat, striped red-grey outside, inner ligule teeth blackish or red-grey. Pollen absent, stigmas yellow, slightly greyish. Achenes greyish brownish-stramineous, 4.5–4.9 mm long, up to 1.5 mm wide, gradually and indistinctly narrowing into a short thick conical cone 0.4–0.6 mm long, achene body densely minutely spinulose and tuberculate throughout, upper spinules erect, short, rostrum \pm thick, short, up to 3 mm long, pappus white, ca 5.5 mm long. Agamospermous.

Taraxacum formosissimum is similar to *T. sumneviczii* and *T. haneltii*. From the former it differs in several achene characters (colour, size, cone length, rostrum length), from the latter it can be distinguished by the absence of pollen, much paler stigmas and the leaf shape. *Taraxacum formosissimum* is known to occur at one macrolocality along the lower stream of the river Kuyakh-Tonar in the Altai, Russia.

Specimens seen: Russia, the Altai, Kosh-Agach District, valley of the river Chuya, village of Chagan-Uzun, gravelly sites near the mouth of river Kuyakh-Tonar, alt. ca 1900 m, J. Kirschner 27 (iso: PRA).

***Taraxacum suave* Kirschner et Štěpánek, spec. nova**

T y p e : Asia Media, Tian Shan, Kirghizia [Kyrgyzstan] orient., in parte infer. vallis Inylchek, situ orientali a loco Mayda-Adyr. Alt. 2750 m s.m., 79°17'E 42°06'N. Iulio 1989, L. Businská & R. Businský; planta in horto botanico in Průhonice sub no JŠ 4166 culta, a. 1991 lecta. (holo: PRA, no. det. 15389; iso: K, G, S, PRA, no. det. 16679 & Taraxaca Exs., no. 662)

D e s c r i p t i o : Plantae agamospermae mediocres ad basin dilute fusco-araneosae foliis ambitu late linearibus dissectis lobis lateralibus utrinque 5–8 patentibus vel paulo assurgentibus linearibus vel anguste lingulatis lobo terminali late lineari-lingulato interlobiis latis integris vel sparsissime dentatis. Involucrum ad basin rotundatum squamis exterioribus ± imbricatis, numero 10–14, adpressis, apice dense ciliatis, callosis vel corniculatis, ovatis usque late ovatis ± pallide viridibus et late marginatis subobtusis. Flosculi lutei ligulis exterioribus extus stria rubra usque griseo-rubra notatis antheris polline carentibus stigmatibus sordide luteis obscure pilosis. Achenium dilute rubrum vel rubro-badium 5.0–5.1 mm longum ca 1 mm latum superne dense breviter spinulosum ceterum sparse spinulosum in pyramidem subcylindricam basi sparse spinulosam 0.8–0.9 (–1.0) mm longam sensim abiens, rostro 5.5–6.0 mm longo, pappo albo ca 6 mm longo.

D e s c r i p t i o n : Plants medium-sized, ± pale brownish araneose at the base. Leaves broadly linear (-lanceolate) in outline, usually 8–14 cm long and 1.5–2.0 cm wide, mid-green to paler green, sparsely araneose beneath, deeply dissected into 5–8 pairs of patent (sometimes ± forward-pointing) linear to lingulate lateral lobes usually 0.7–1.0 cm long and 3–4 mm wide, interlobes ± broad, usually 5–7 mm long and 3–6 mm wide, ± entire or with very sparse teeth or lobules; terminal lobe broadly linear to lingulate, usually 1.2–1.8 cm long, 3.5–6.0 mm wide. Petioles narrowly winged, usually purple. Scapes densely araneose. Involucre rounded at the base, usually 10–12 mm wide, inner bracts dull green, often slightly glaucous, corniculate, 12–14 mm long, usually 2.0–2.5 mm wide; outer



Fig. 1. – *Taraxacum suave*. General habit. Drawn by A. Skoumalová-Hadačová.

bracts adpressed, \pm imbricate, 10–14, callose to corniculate, aranose-ciliate to serrulate at the apex, ovate to broadly ovate, 5–7 mm long, 3.5–4.0 mm wide, pale green to mid-green, with an inconspicuous membranous margin 0.4–0.5 mm wide, gradually changing into a paler green border 0.4–0.6 mm wide, middle strip darker green, more distinct and darker in the distal part of bracts. Florets numerous, yellow, outer ligules flat, striped red to greyish red outside, inner ligules \pm cucullate, with dark teeth. Pollen absent, stigmas dirty yellow with dark hairs. Achenes (pale brownish) red, 5.0–5.1 mm long, ca 1 mm wide, gradually narrowing into a subcylindrical cone 0.8–0.9 (–1.0) mm long, achene body with \pm dense short thin acute spinules above (cone base sparsely spinulose), rostrum \pm thin, 5.5–6.0 mm long, pappus white, ca 6 mm long. Agamosperm. – Fig. 1, 6a.

Taraxacum suave is a very distinctive species characterized by large red achenes, absence of pollen, discoloured stigmas and the leaf shape (broadly linear lateral lobes).

Specimens seen: Kyrgyzstan: ad pedem boreal. montis Pik Nansen in parte centr. vallis Inylchek. Alt. 2800–2980 m s.m., 79°36'30"E 42°11'N, 16 Jul. 1989, L. Businská & R. Businský; cult. under no JŠ 4174A (PRA, no. det. 16920), JŠ 4176D (PRA, no. det. 16923). – In parte infer. vallis Inylchek, situ orientali a loco Mayda-Adyr. Alt. 2750 m s.m., 79°17'E 42°06'N. Iulio 1989, L. Businská & R. Businský; cult. under no JŠ 4175A (PRA, no. det. 16922, type locality).

***Taraxacum stupendum* Kirschner et Štěpánek, spec. nova**

Type: Asia Media, Tian Shan centralis, Kirghizia [Kyrgyzstan] orient., ad pedem boreal. montis Pik Nansen in parte centr. vallis Inylchek. Alt. 2800–2980 m s.m., 79°36'30"E 42°11'N, 16 Jul. 1989, L. Businská & R. Businský; planta in horto botanico in Průhonice sub no JŠ 4174 culta, a. 1991 lecta. (holo: PRA, no. det. 15388; iso: K, G, S, PRA, no. det. 16670).

Description: Plantae agamospermae graciles foliis ambitu anguste lanceolatis dissectis lobis lateralibus utrinque 5–8 patentibus linearibus lobo terminali late lineari interlobiis angustis distincte sparse dentatis. Involucrum ad basin rotundatum vel paulo truncatum squamis exterioribus adpressis vix imbricatis, numero 8–11, ovatis usque late ovatis apice ciliatis, corniculatis, obtusis vel subobtusis, marginibus albidis distinctis 0.15–0.30 mm latis. Flosculi exteriores canaliculati lutei interdum epolliniferi ligulis extus stria griseo-violacea notatis, flosculi interiores polliniferi (pollinis granula diametro valde variantia) \pm tubulosi apice violaceo-denticulatis; stigmata virescentia. Achenium fulvo-cinnamomeum 4.7–5.1 mm longum 1.0–1.3 mm latum, in pyramidem subconicam 0.7–0.9 (–1.0) mm longam ad basin sparse spinulosam sensim abiens, superne dense spinulosum ceterum tuberculatum, rostro subcrassiusculo 5.5–6.0 mm longo, pappo albo vel sordide albo ca 6 mm longo.

Description: Plants small, pale brownish-aranose at the base. Leaves lanceolate in outline, usually 7–10 cm long, 1.3–1.7 cm wide, mid-green to paler green, subglabrous, middle and inner leaves deeply dissected into 5–8 pairs of patent, acute, linear lateral lobes usually 5–8 mm long and 1–2 mm wide (near the base), lobes sometimes narrowly triangular, interlobes usually narrow, usually 5–9 mm long, 1.5–2.0 (–3.0) mm wide, usually with 1–2 large acute teeth or rarely entire. Terminal lobe broadly linear to lingulate, usually 1.5–3.0 mm wide and 0.7–1.0 (–1.5) cm long. Scapes initially densely aranose, later sparsely floccose-aranose. Involucre rounded to slightly truncate at the base, 8–10 mm in diameter, inner bracts dark green, corniculate, usually 11–12 mm long, ca 1.5–2.5 mm wide, sometimes neighbouring bracts coalesced and up to 4 mm wide; outer bracts adpressed, slightly to indistinctly imbricate, 8–11, usually conspicuously ciliate and sparsely denticulate in the distal 1/4, corniculate, ovate to broadly ovate (the innermost ones ovate-lanceolate to elliptical, quite broad in the distal 1/3), 5–6 (–7) mm long, ca (2.8–) 3.0–4.0 mm wide, evenly blackish green, glaucous, with a distinct, whitish border ca

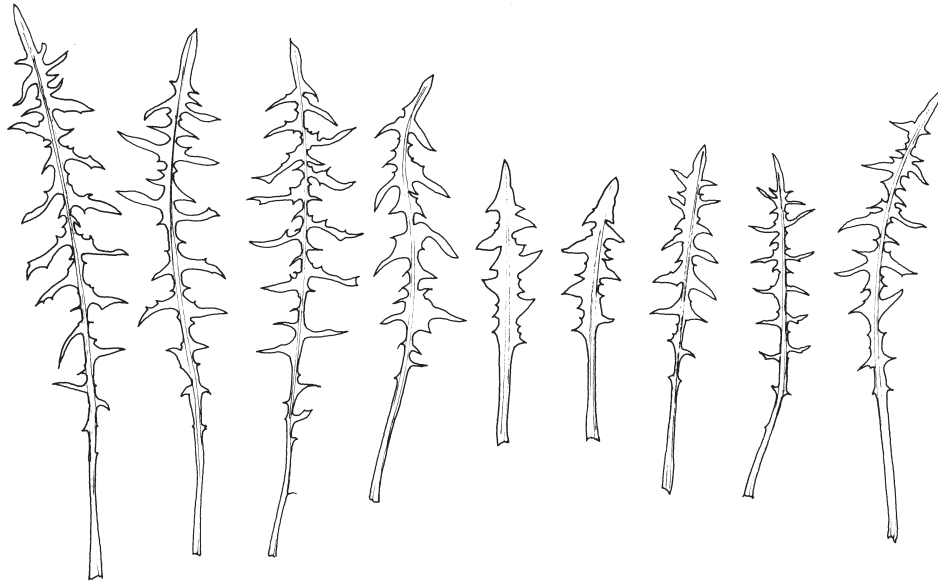


Fig. 2. – *Taraxacum stupendum*. Leaves. Drawn by A. Skoumalová-Hadačová.

0.15–0.30 mm wide, apex often suffused purplish, \pm blunt and slightly mucronate. Capitulum usually does not open fully. Florets numerous, yellow (pale greenish yellow when dry), outer ligules \pm canaliculate, striped greyish violet outside, inner ligules \pm cucullate, with grey-violet teeth. Inner florets polliniferous (pollen irregular), outer florets sometimes apolline, stigmas yellow-green, with dark hairs, usually not exerted. Achenes fulvous to pale brownish-cinnamon, 4.7–5.1 mm long, 1.0–1.3 mm wide, gradually or indistinctly narrowing into a \pm thick subconical cone 0.7–0.9 (–1.0) mm long, achene body \pm densely spinulose above, tuberculate below, base of cone often spinulose, spinules short, rostrum thicker, 5.5–6.0 mm long, pappus white, ca 6 mm long. Agamosperm. – Fig. 2, 6b.

Fulvous or pale cinnamon achenes are found in two members of the section *Suavia*, *T. stupendum* and *T. margaritarium*. The pure yellow stigmas and acute to subacuminate outer bracts of the latter are diagnostic. Moreover, achenes of *T. stupendum* have a shorter cone and thicker rostrum.

Specimens seen: Kyrgyzstan: ad pedem boreal. montis Pik Nansen in parte centr. vallis Inylchek. Alt. 2800–2980 m s.m., 79°36'30"E 42°11'N, 16 Jul. 1989, L. Businská & R. Businský; cult. under no JŠ 4177B (PRA, no. det. 16924, type locality), ibidem JŠ4176E (PRA, no. det. 16671).

***Taraxacum margaritarium* Kirschner et Štěpánek, spec. nova**

Type: Asia Media, Tian Shan centralis, Kirghizia [Kyrgyzstan] orient., in valle Sary Dzhaz. Alt. 2800–2900 m s.m., 79° 16' E 42° 20' N, 5 Jul. 1989, L. Businská & R. Businský; planta in horto botanico in Průhonice sub no JŠ 4167 culta, a. 1991 lecta. (holo: PRA, no. det. 15387; iso: K, G, S, PRA, no. det. 16678 & *Taraxaca* Exs., no. 661).

Description: Plantae agamospermae graciles vel mediocres, ad basin albo– vel fusco-araneosae foliis ambitu lineari-oblongatis dissectis lobis lateralibus utrinque 3–6 patentibus ac divaricatis e basi latiore lingulatis vel linearibus lobo terminali anguste triangulari vel lingulato interlobiis angustis sparse dentatis vel lobulatis.



Fig. 3. – *Taraxacum margaritarium*. General habit. Drawn by A. Skoumalová-Hadačová.

Involucrum ad basin rotundatum squamis exterioribus adpressis \pm imbricatis, numero 13–15, ovatis usque ovato-lanceolatis sparse ciliolatis ecallosis usque corniculatis, pallide marginatis, acutis. Flosculi lutei ligulis exterioribus saepe subinvolutis extus stria rubra vel rubro-cinerea notatis antheris polline carentibus stigmatibus saturate luteis. Achenium fulvum usque pallide cinnamomeum 4.5–4.6 mm longum 1.1–1.3 mm latum superne dense spinulosum ceterum \pm tuberculatum, in pyramidem subcylindricam subcrassam 0.7–0.8 mm longam subsensim abiens, rostro ca 6 mm longo, pappo albo vel sordide albo ca 6.5 mm longo.

Description: Plants small to medium-sized, whitish to \pm pale brownish aranose at the base. Leaves linear-ob lanceolate in outline, usually 8–10 cm long, up to 2 cm wide, medium green to slightly greyish green, sparsely aranose beneath, deeply dissected into 3–6 pairs of \pm patent or irregular (often curved forwards) lateral lobes, from broad base lingulate to \pm linear, usually 7–9 mm long and ca 2 mm wide, broad distal edge of lobe base often divided into acute lobules, or sparsely dentate or entire, interlobes up to 8–10 mm long, ca 2 mm wide, usually with sparse lobules or teeth. Terminal lobe narrowly triangular to lingulate, 1.0–1.5 cm long, 2–3 mm wide in the narrowest part. Petioles narrow, \pm unwinged, greyish purple. Scapes densely aranose. Involucre rounded at the base, 7–9 mm in diameter, inner bracts dull green to slightly greyish green, \pm flat, ca 12–14 mm long, usually ca 2 mm wide. Outer bracts adpressed, \pm imbricate, 13–15, ovate to ovate-lanceolate, \pm acute, usually 5.5–7.0 mm long, 2.5–3.5 mm wide, usually sparsely ciliate, flat to corniculate, pale to mid green, with an inconspicuous membranous margin 0.2–0.4 mm wide and a paler greenish border usually up to 0.7–0.8 mm wide, middle strip usually narrow, dark, apical part of the bract suffused pinkish. Florets numerous, yellow, outer ligules slightly involute, striped red greyish outside, inner ligules \pm cucullate, pollen absent, stigmas pure deep yellow. Achenes fulvous (pale cinnamon), 4.5–4.6 mm long, ca

1.1–1.3 mm wide, subabruptly narrowing into a thicker subcylindrical cone 0.7–0.8 mm long, achene body densely spinulose above, spinules long, thin to medium thick, often erect, cone base with few spinules, rostrum thin, ca 6 mm long, pappus white to pale whitish-yellow, ca 6.5 mm long. Agamosperm. – Fig. 3, 6c.

Specimens seen: Kyrgyzstan: in parte infer. vallis Inylchek, situ orientali a loco Mayda-Adyr. Alt. 2750 m s.m., 79°17'E 42°06'N. Iulio 1989, L. Businská & R. Businský; cult. under no JŠ 4166A (PRA, no. det. 16919).

***Taraxacum venustius* Kirschner et Štěpánek, spec. nova**

Type: Asia Media, Tian Shan centralis, Kirghizia [Kyrgyzstan] orient., in valle Sary Dzhaz, Alt. 2800–2900 m s.m., 79° 16' E 42° 20' N, 5 Iul. 1989, L. Businská & R. Businský; planta in horto botanico in Průhonice sub no JŠ 4168 culta, a. 1991 lecta. (holo: PRA, no. det. 15386; iso: K, G, S, PRA, no. det. 16680 & *Taraxaca* Exs., no. 663).

Description: Plantae agamospermae, inter sectiones *Suavia* et *Stenoloba* quasi intermediae, mediocres, foliis ambitu ± linearibus griseo-viridibus conspicue araneosis dissectis lobis lateralibus utrinque 4–6 patentibus ac subrecurvis anguste triangularibus lobo terminali anguste triangulari-hastato et saepe elongato interlobiis angustissimis. Involucrum basi ± rotundatum vel subturbatum squamis exterioribus adpressis ± imbricatis, numero 13–17, ovatis brevibus apice ciliolatis, corniculatis, acutis, pallide marginatis. Flosculi lutei ligulis exterioribus saepe ± involutis extus stria obscure griseo-rubra notatis antheris polline carentibus stigmatibus atroviridibus. Achenium pallide brunneum 4.4–4.5 mm longum superne dense spinulosum in pyramidem ± cylindricam, ca 0.8 mm longam ± sensim vel subabrupte abiens rostro paulo incrassato ca 4–5 mm longo, pappo albido ca 6.5 mm longo.

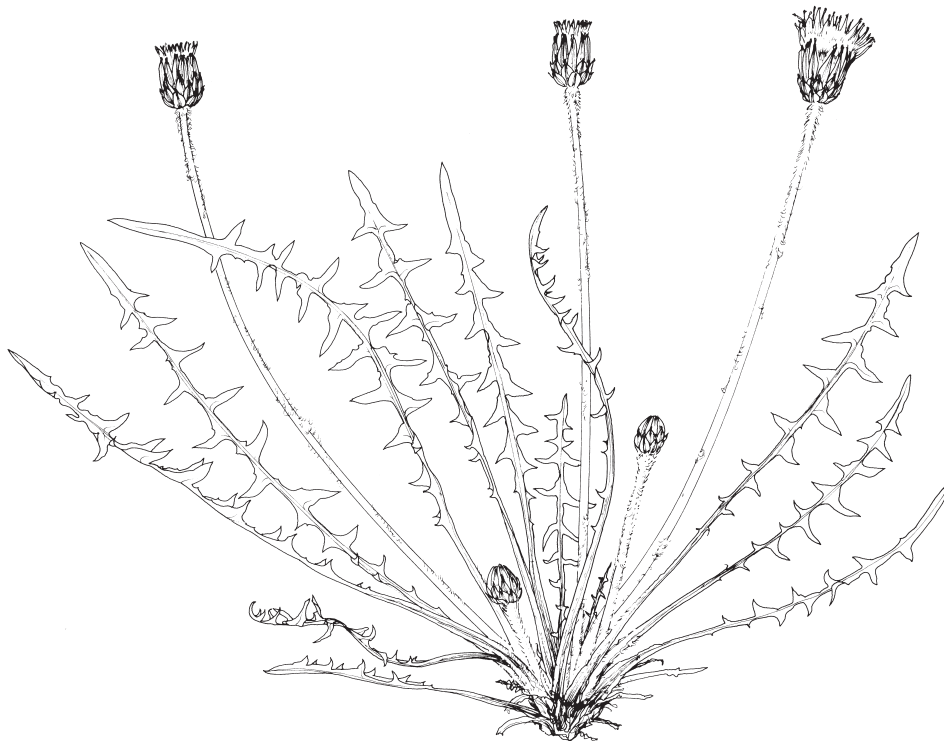


Fig. 4. – *Taraxacum venustius*. General habit. Drawn by A. Skoumalová-Hadačová.

Description: Plants medium-sized. Leaves linear to broadly linear in outline, usually 9–14 cm long, 11–20 mm wide, \pm greyish green, aranose (\pm densely aranose beneath), deeply divided into 4–6 pairs of slightly recurved to \pm patent narrowly triangular lobes up to 10–11 mm long and 3.5–7.0 mm wide (at the base), distal edge of lobes straight to sinuate, entire or with a single minute tooth; interlobes usually very narrow and distinct, usually 4–8 mm long, 1.0–1.5 mm wide, terminal lobe \pm narrowly triangular-hastate to \pm elongated, usually 1.5–2.0 cm long, 4–5 mm wide in the middle. Petioles narrow, unwinged, deep purple. Scapes densely aranose. Involucre \pm small, \pm rounded to subturbinate at the base, usually 6–7 mm in diameter, inner bracts mid-green to \pm greyish green, corniculate, 12–14 mm long, up to 1.5–2.0 mm wide, glabrous; outer bracts adpressed, imbricate, 13–17, ovate, 4.5–5.5 (–7.0) mm long, (2.5–) 3.0–3.5 mm wide, acute to slightly acuminate, ciliate, blackish corniculate, dull green, with a medium distinct whitish membranous margin 0.4 mm wide, and a paler green border up to 0.8 mm wide, median strip dark green, apical part often suffused pinkish. Florets numerous, yellow, outer ligules \pm involute, striped dark grey reddish, inner ligules \pm involute, with dark tips, pollen absent, stigmas dark. Achenes pale brown, 4.4–4.5 mm long, \pm gradually to subabruptly narrowing in a \pm cylindrical cone ca 0.8 mm long, achene body densely spinulose above, spinules long, thin, rostrum thicker, ca 4–5 mm long, pappus whitish, ca 6.5 mm long. Agamosperm. – Fig. 4, 6d.

The numerous outer bracts (in comparison with other members of the section), shorter achenes and an almost cylindrical cone, together with the pale brownish achene colour, characterize *T. venustus* as a distinctive species of the section *Suavia*.

***Taraxacum nobile* Kirschner et Štěpánek, spec. nova**

Type: Mongolia centr.-boreal., urbs Ulan-Bator, in collibus siccis ad pedem montis Bogdo-Ula (Bogd-uul), Aug. 1990, J. Soják s. n.; planta e seminibus in horto botanico in Průhonice culta sub no. 743, a. 1992 lecta. (holo: PRA, no. det. 15384; iso: K, G, S, PRA, no. det. 16672).

Descriptio: Plantae agamospermae squamis exterioribus perlate ovatis ad sectionem *Suavia* pertinentes acheniis brevibus angustisque in pyramidem \pm cylindricam subabrupte abeuntibus et longe tenuirostratis ad sectionem *Stenoloba* accedunt. Plantae mediocres basi fusco-araneosae foliis ambitu anguste lanceolatis dissectis lobis lateralibus utrinque 5–7 patentibus ac divaricatis lineari-lingulatis lobo terminali lineari-lingulato vel acuto interlobiis saepe dentatis vel sparse lobulatis. Involucrum ad basin rotundatum vel \pm truncatum squamis exterioribus adpressis imbricatis perlate ovatis pallide viridibus stria mediana atroviridi notatis pallide marginatis apice ciliolatis ecallosis. Flosculi lutei ligulis exterioribus planis extus stria griseo-viridi & rubescente notatis antheris polliniferis (pollinis granula diametro valde variantia) stigmatibus griseo-luteis obscure pubescentibus. Achenium saturate rubrum 3.7–3.9 mm longum ca 1.0 mm latum superne dense breviter spinulosum in pyramidem cylindricam vel subcylindricam 0.8–0.9 mm longam subabrupte abiens rostro tenui 8–9 mm longo pappo albo ca 6 mm longo.

Description: Plants medium-sized, pale brownish aranose at the base. Leaves narrowly lanceolate in outline, usually 8–11 cm long, 1.8–2.5 cm wide, mid green to \pm greyish green, aranose beneath, sparsely aranose on upper surface, deeply dissected into 5–7 pairs of patent, forward-pointing or rarely slightly recurved lingulate to linear lateral lobes up to 12 mm long and not wider than 2 mm; interlobes and a broader base of the distal edge of lobes usually with 1–2 acute linear lobules and sparse teeth; terminal lobe \pm lingulate to acute-linear, 1.0–1.5 cm long, 1.5–3.0 mm wide. Petiole narrow, unwinged, midrib and petiole deep purple. Scapes densely aranose, later glabrescent. Involucre rounded to truncate at base, 9–10 mm in diameter, inner bracts deep green, darker, ciliate and corniculate



Fig. 5. – *Taraxacum nobile*. General habit. Drawn by A. Skoumalová-Hadačová.

at the apex, ca 10–12 mm long, usually ca 1.5 mm wide, outer bracts adpressed, imbricate, 16–18, broadly ovate, 5.5–6.0 mm long (3.2–) 4.0–5.0 mm wide, pale (yellowish) green with a distinct membranous to whitish margin (0.3–) 0.5 mm wide, and a narrow, ca 0.2–0.4 mm wide dark green middle strip, usually sparsely ciliate and denticulate, \pm flat and slightly reddish near the apex. Florets numerous, yellow, outer ligules flat, striped grey-greenish-pink outside, inner ligules \pm flat, with faintly pinkish apical teeth; pollen present, irregular in size, stigmas grey, dark hairy. Achenes deep red, 3.7–3.9 mm long, ca 1.0 mm wide, subabruptly narrowing into a cylindrical to subcylindrical cone 0.8–0.9 mm long, achene body with dense short spinules above (cone base not spinulose), rostrum thin, 8–9 mm long, pappus white, ca 6 mm long. Agamosperm. – Fig. 5, 6e.

Taraxacum nobile is one of the most distinctive taxa of the genus. The combination of large, round, pale greenish outer bracts with a narrow dark median strip, short red achenes, long thin rostrum and very complicated leaf shape clearly distinguish this new species.

Specimens seen: Mongolia centr.-boreal., urbs Ulan-Bator, in collibus siccis ad pedem montis Bogd-úl. Aug. 1990 leg. J. Soják (plants cultivated from adjacent sites nos. 722, 718A, 724, 728 and 732, all PRA, all multiplicates; also distributed as *Taraxaca Exsiccata*, nos. 656 and 657, PRA, no. det. 16681 & *Taraxaca Exs.*, no. 664).

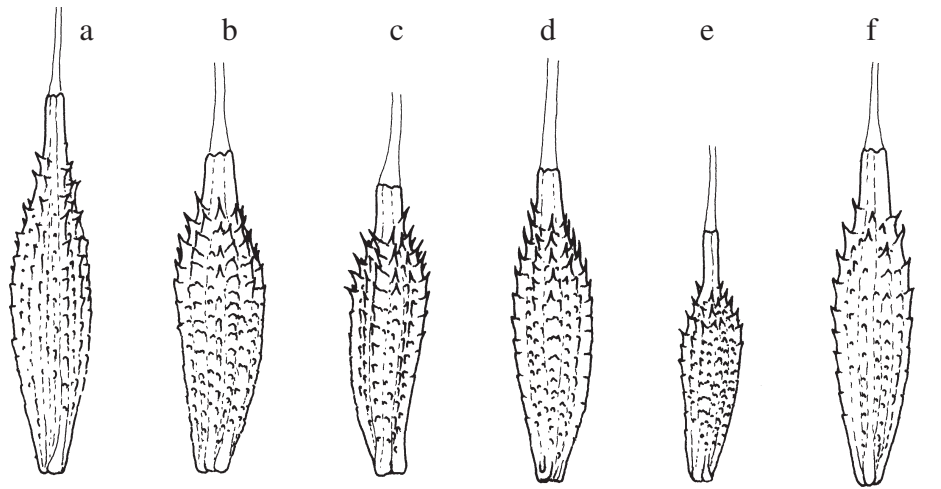


Fig. 6. – Achenes of the new species: a – *T. suave*; b – *T. stupendum*; c – *T. margaritarium*; d – *T. venustius*; e – *T. nobile*; f – *T. suasorium*.

***Taraxacum suasorium* Kirschner et Štěpánek, spec. nova**

Type: Asia Media, Tian Shan, Kirghizia [Kyrgyzstan] orient., in parte infer. vallis Inylchek, in vicinitate loci Mayda-Adyr. Alt. 2600 m s.m., 79° 15' E 42° 05' N. Iulio 1989 leg. L. & R. Businský; planta in horto botanico in Průhonice sub no JŠ 4171 culta, a. 1991 lecta (holo: PRA, no. det. 15385; iso: K, G, S, PRA, no. det. 16681 & *Taraxaca* Exs., no. 664).

Description: Plantae agamospermae, inter sectiones *Suavia* et *Leucantha* quasi intermediae, mediocres, foliis ambitu linearibus profunde lobatis usque dissectis lobis lateralibus utrinque 4–8 anguste usque linearitriangularibus subrecurvis vel patentibus lobo terminali anguste triangulari vel subsagittato interlobiis mediocriter latis subintegris. Involucrum basi rotundatum squamis exterioribus adpressis imbricatis, numero 18–20, ovatis usque late ovatis apice glabris vel sparse ciliolatis callosis usque cornutis anguste (0.2–0.5 mm) marginatis. Flosculi lutei ligulis exterioribus planis extus stria griseo-viridi notatis antheris polliniferis (pollinis granula diametro valde variantia) stigmatibus griseo-lutescentibus obscure pilosis. Achenium griseo-stramineum 4.8–5.3 mm longum 1.0–1.1 mm latum superne subsparse spinulosum in pyramidem crassam subconicam basi sparse spinulosam 0.8–1.3 mm longam sensim abiens, rostro tenui 7–8 mm longo, pappo albo, ca 8 mm longo.

Description: Plants medium-sized, leaves ± linear in outline, usually 10–13 cm long and 15–23 mm wide, ± pale green, sparsely araneous beneath, medium deeply divided into 4–8 pairs of triangular (outer leaves), narrowly triangular (middle leaves) or ± linear-triangular (some middle and inner leaves), downward-pointing to almost patent lateral lobes 7–11 mm long and 2–10 mm wide (at the lobe base), distal edge of lobes sinuate to concave or straight, entire or with 1–2 acute long teeth; interlobes medium broad (ca 2.5–5.0 mm), short or up to ca 6–7 mm long; terminal lobe narrowly triangular to sagittate, usually 1.5–2.5 cm long and 3–4 mm wide. Petioles narrow, unwinged, purplish. Scapes densely araneous to araneous (later sparsely araneous). Involucre rounded at the base, 8–9 mm in diameter; inner bracts deep green, ± flat, ± short, 11–13 mm long when in flower, 1.5–2.0 mm wide; outer bracts adpressed, imbricate, 18–20, ± ovate to broadly ovate, the outermost ones 5.5–6.0 mm long, 3.8–4.5 mm wide, middle ones usually 6–7 mm long, 2.5–3.5 mm wide, callose (early heads) corniculate to cornute, glabrous, often minutely sparsely denticulate and suffused reddish near apex, mid green, with a narrow, 0.2–0.5 mm

wide pale border. Florets numerous, yellow, outer ligules flat, striped grey-green outside, inner ligules slightly cucullate, with yellow to slightly pinkish apical teeth; pollen present, irregular in size, stigmas yellow-grey, dark hairy, usually not exerted. Achenes pale grey to straw coloured, 4.6–5.3 mm long, 1.0–1.1 mm wide, gradually narrowing into a sparsely spinulose, 0.8–1.2 mm long thick subconical cone, achene body \pm sparsely to medium densely spinulose, spinules short to long, thin to medium thick, rostrum \pm thin, 6.5–8.0 mm long, pappus white, ca 7.5–8.0 mm long. Agamosperm. – Fig. 6f.

Discoloured stigmas, numerous and imbricate outer bracts and pale greyish achenes with a long, thick subconical cone characterize this distinctive species.

Specimens seen: Kyrgyzstan: in parte infer. vallis Inylchek, situ orientali a loco Mayda-Adyr. Alt. 2750 m s.m., 79°17'E 42°06'N. Julio 1989, L. Businská & R. Businský; cult. under no JŠ 4172A (PRA, no. det. 16921, type locality).

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Souhrn

Nedávno popsaná sekce *Suavia* rodu *Taraxacum* je podrobena taxonomické revizi. Zahnuje devět druhů rozšířených od nejjihnější Sibíře přes Mongolsko do Střední Asie (Kyrgyzstán). Tři z těchto druhů (*T. formosissimum*, *T. sumnevici* a *T. haneltii*) byly popsány již dříve; zbývajících šest je popisováno v této práci. Tři z nich mají všechny charakteristické znaky sekce *Suavia* (*T. suave*, *T. stupendum* a *T. margaritarium*), *T. suasorium* má některé znaky charakterizující též sekci *Leucantha*, zbývajících dva (*T. nobile* a *T. venustus*) svými znaky patří na pomezí sekcí *Suavia* a *Stenoloba*. Všechny druhy sekce rostou na suchých stepních stanovištích. V sekci byly dosud zjištěny pouze agamospermní druhy. Práce přináší podrobné popisy všech a vyobrazení vybraných taxonů sekce, a též určovací klíč.

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