

## New species of *Taraxacum* native to central Europe

Nové indigenní druhy rodu *Taraxacum* ze střední Evropy

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Kirschner J., Štěpánek J., Vašut R. J. & Zámečník J. (2019) New species of *Taraxacum* native to central Europe. – *Preslia* 91: 213–230.

Further taxonomic exploration of the genus *Taraxacum* in central Europe was carried out to update the new identification key to the Czech flora. Within three relatively well explored groups new species were revealed; they are described as *Taraxacum aspectabile* (*T.* sect. *Erythrosperma*), *T. clandestinum* (*T.* sect. *Palustria*) and *T. sparsum* (*T.* sect. *Celtica* s. lat.). *Taraxacum aspectabile* is known to occur in Austria, Bavaria, Czech Republic and Slovakia, usually in grassland growing on alluvial sands but also in other sandy habitats. It is distinct in having deep castaneous-brown to greyish dark brown achenes with a short cone, and numerous triangular lateral leaf segments. *Taraxacum clandestinum* is confined to a few sites in the Píbram district, south-central Bohemia and is endemic to Bohemia. This rare species is characterized by a robust involucre with numerous but non-imbricate, ovate to broadly ovate outer phyllaries, the absence of pollen, yellow stigmas, and slender, long achenes with a thin, long cylindrical cone. *Taraxacum sparsum* is known from numerous localities, all in the lowland eastern part of the Bohemian Chalk Plateau. Its distinctive features include leaves with scattered conspicuous brown-purple spots above, the mid-vein finely striate purplish adaxially, outer phyllaries patent to patent-arcuate, abaxially dark olivaceous brownish green with a narrow white border, and a relatively thick, ± densely and shortly spinulose achene body, subabruptly narrowing into a short, conical cone. *Taraxacum sparsum* is a marginal member of *T.* sect. *Celtica*, with some resemblance to members of the section *Naevosa*. All of these species are polyploid agamosperms.

**Key words:** agamospermy, *Compositae*, *Crepidinae*, Czech Republic, *Taraxacum*, taxonomy

### Introduction

The preparation of a new *Key to the Flora of the Czech Republic* (Kaplan et al. 2019) to replace a previous one (Kubát et al. 2002) triggered further taxonomic and floristic research. In particular, agamospermous dandelions (*Taraxacum* W. H. Wigg., *Compositae* – *Crepidinae*) in Czechia were subjected to continued exploration and since publishing the first edition of the Key (Kubát et al. 2002) the knowledge of *Taraxacum* flora in central Europe has greatly increased (e.g. Vašut 2003, Vašut & Trávníček 2004, Vašut et al. 2005, Uhlemann et al. 2007, Trávníček et al. 2008, Štěpánek et al. 2011, 2013,

Majeský et al. 2012, 2015, Vašut & Majeský 2015, Zeisek et al. 2015, Kirschner et al. 2016, Macháčková et al. 2018). The research carried out by the present authors mainly involved relatively well explored *Taraxacum* groups, such as sect. *Erythrosperma* (H. Lindb.) Dahlst., sect. *Palustria* (H. Lindb.) Dahlst. and the broadly understood sect. *Celtica* A. J. Richards, where any newly identified taxonomic entity can be easily compared with well known taxa. Thus, on the basis of very representative material, we recognized another three noteworthy new species that are characterized and formally described in the present paper.

## Material and methods

A substantial part of the new plant material used in the present study comes from the cultivation of plants in the Experimental Gardens of the Institute of Botany, Průhonice, Czech Republic. Methods of mass cultivation follow those described in Kirschner & Štěpánek (1993). All the voucher specimens from our collections and cultivations are deposited in herbarium PRA (see <http://sweetgum.nybg.org/science/ih>). Other collectors who kindly placed their personal material at our disposal are J. Douda, B. Trávníček, V. Žíla, W. Till, Z. Kaplan and M. Soukup.

The taxonomic concept of species and section in the genus *Taraxacum* is based on the principles summarized in the introductory chapters to Kirschner & Štěpánek (1998) and Ge et al. (2011). Two of the three new species described in the present paper are documented by a standard exsiccate series edited and distributed by the present authors (see also Kirschner & Štěpánek 1992, 1997). In the series, of which over 1000 numbers were distributed (which totals more than 25,000 specimens) and copies are deposited in major herbaria with important dandelion collections (e.g. S, H, L, M, PRA) and in the collections of leading specialists (H. Øllgaard, I. Uhlemann, H. Wittzell etc.).

Knowledge of the mode of reproduction (agamospermy versus sexuality) is crucial for this taxonomic study, and there are numerous ways of identifying it, particularly in live, cultivated plants (emasculation or observation of the variation in leaf rosettes of siblings in cultivation). In herbarium material, pollen presence/absence and variation in the size of pollen were studied (den Nijs et al. 1990); a conspicuously variable pollen size is, with certain exceptions, a reliable indicator of dandelion agamospermy. This basic screening of the mode of reproduction was completed with a more detailed observation of the material in cultivation, using the above methods and chromosome counting [with the exception of sect. *Piesis* (DC.) A. J. Richards ex Kirschner & Štěpánek, polyploidy is a reliable indicator of agamospermy in *Taraxacum*].

Achene length in the descriptions includes the cone.

## Taxonomic treatment

### 1. *Taraxacum* sect. *Erythrosperma* (H. Lindb.) Dahlst.

Members of sect. *Erythrosperma* in central Europe occur naturally principally in two types of habitats, (i) various “rock-steppe” habitats, i.e. dry grassland habitats on rocky, more frequently basiphilous than acidophilous substrates (habitats T 3.1 to T 3.3 and

T 3.5 and T 6 of Chytrý et al. 2010), and (ii) dry inland sandy grassland habitats (mainly habitats T 5.1 to T 5.3 of Chytrý et al. 2010). There are, nevertheless, numerous secondary habitats in which members of this section occur, such as dry woodland tracks, old quarries, military training areas etc. Recently, another habitat of sect. *Erythrosperma* was studied in western Slovakia.

During our field research on marsh dandelions (*T.* sect. *Palustria*) in the Záhorie Lowlands in westernmost Slovakia, we explored meadows on the alluvium of Rudava River (a frequently flooded habitat), quite rich in species of sect. *Palustria* (Kirschner & Štěpánek 1998). On sandy grassland elevations alongside the river, we repeatedly collected a distinctive species of sect. *Erythrosperma*. It only occurred scattered in dry sandy sites in the vicinity, where abundant populations of sect. *Erythrosperma* occurred that were dominated by species like *T. danubium* A. J. Rich., *T. cristatum* Kirschner et al., *T. maricum* Vašut et al. and *T. bellicum* Sonck, which rarely occur in humid alluvial sandy grasslands.

We compared these unknown plants with the central-European species in this section and also had an opportunity to use an excellent recent monograph on sections of *Erythrosperma* and *Obliqua* in northern Europe (Wendt & Øllgaard 2015), but found no clear match.

Further research revealed this obviously new species at numerous sites in the Záhorie Lowlands and in other sandy regions, and that it is confined to a wide area in central Europe (Austria, Bavaria, Bohemia and Slovakia, but rarely in the region adjacent to westernmost Slovakia, Moravia).

One of the localities that deserves comment, as it is an exceptional habitat where this new species was introduced in the Middle Ages. It is the ruin of the Příběnice Castle near Tábor, S. Bohemia. Because of the fact that only the existence of the Příběnice castle on the otherwise wooded hill top made it possible for *T. aspectabile* to establish there, we conclude that the occurrence dates back to the period between the early mid 12th century (when the castle is first mentioned as the property of Vítek V of Příběnice and Vok I of Rožmberk) and about 1440 (in 1437, the Hussites of Tábor concluded a peace treaty with the Rožmberks, which included a provision about the demolition of Příběnice castle). Thus, the introduction of *T. aspectabile* to Příběnice is a relatively accurate dating of a local plant colonization (see also Pyšek et al. 2004).

### ***Taraxacum aspectabile* Štěpánek, Kirschner, Vašut et Trávn., spec. nova**

**T y p e:** [Slovakia, town of Malacky, village of Studienka] Slovacia occid., planitia Záhorská nížina, opp. Malacky: in pratis pascuisque in alluvionibus fl. Rudava, ~2 km situ mer.-occid. a pago Studienka, ~190 m s. m., 10 May 1987, J. Kirschner & J. Štěpánek s. n. (holotype: PRA, no. det. 25037).

**Exsiccat:** *Taraxaca Exs.*, no. 1009–1011.

**D i a g n o s i s:** Species nostra ad gregem *Taraxaci proximi* accedens, sed a *T. proximo* pyramide subconica brevi et foliorum lobis lateralibus saepissime angustioribus subintegris, a *T. proximiformi* stigmatibus obscuris, et a *T. pseudoproximo* antheris polline carentibus, capitulis minoribus necnon pyramide brevi statim dignoscenda.

*Description* (Figs 1, 2)

Plants medium-sized to subrobust, usually (10–) 15–22 cm tall. Leaf rosettes rich, plant base not or sparsely covered with old remnants of petioles, brownish hairy. **Leaves** variably erect-patent, upto 16 cm long, sparsely to  $\pm$  densely hairy, not spotted (only interlobes suffused purplish-brownish), leaf blade narrowly elliptical to narrowly oblanceolate in outline, distinctly pinnatisect, terminal segment triangular to broadly so, usually symmetrical, 1.5–2 (–3)  $\times$  1.8–2.8 cm, acute to broadly acute, sometimes acuminate or with lingulate tip, with distal margins entire or with an incision on one side, basal lobules acute, subsagittate, proximal margin usually sigmoid, usually entire, **lateral segments**  $\pm$  opposite, in (4) 5–6 pairs, triangular-deltoid to broadly triangular, slightly recurved to  $\pm$  patent, usually 8–15 mm long, 4–9 mm wide at base, often with an elongated, more patent distal part, distal margin  $\pm$  concave, less often  $\pm$  straight or subsigmoid, entire or less often sparsely filiform-dentate, teeth upto 3.5 mm long, proximal margin usually  $\pm$  straight, entire, rarely with a single conspicuous tooth; interlobes distinct, relatively long and narrow, 5–10  $\times$  2–5 mm, with sparse but relatively long thin teeth, with raised purple margins (sometimes interlobe surface purple); mid-vein distally pale, proximally pink to purplish; petiole 3–5 cm long, not winged, purple. **Scapes** usually 9–15 cm long, purple at base, otherwise pale green, later wholly suffused deep purple, initially densely floccose-aranose, later more sparsely so. Capitulum  $\pm$  flat, yellow, 2.5–3 cm in diameter; **involucre** truncate at base,  $\sim$ 8 mm wide, dark green, not pruinose, **outer phyllaries** 13–18, ovate-lanceolate to narrowly lanceolate, 8–9  $\times$  2.2–3.8 mm,

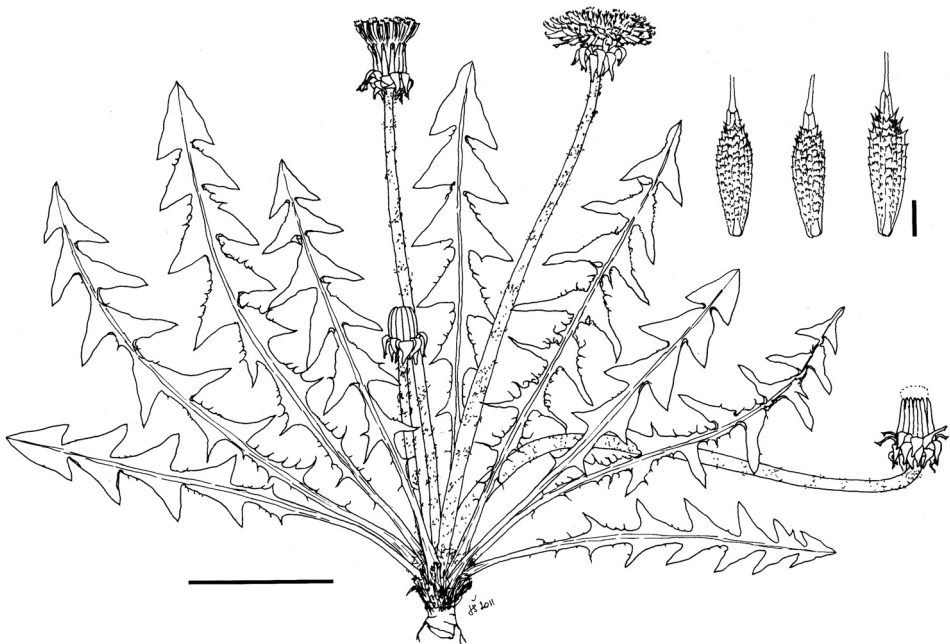


Fig. 1. – *Taraxacum aspectabile*. General habit (scale bar = 5 cm); achenes (scale bar = 1 mm).  
Del. J. Štěpánek.



Fig. 2. – *Taraxacum aspectabile*.  
Holotype (PRA, no. det. 25037).  
Photo M. Hladík.

irregularly arcuate-recurved, dark olivaceous-green abaxially, with whitish-membranous border 0.1–0.2 mm wide, adaxially light glaucous-green, often suffused purple on distal half, apically minutely ciliate, subcorniculate to calles below apex, sometimes almost flat; inner phyllaries of  $\pm$  equal width, 9–11 mm long, dark green, corniculate, apex purplish brown. Outer ligules flat, striped deep grey-purple, inner ligules canaliculate, apical teeth  $\pm$  yellow. **Stigmas** relatively dark, greyish green with blackish pubescence outside. **Pollen** absent, or less often sparsely developed, then its size is irregular. **Achenes** deep castaneous-brown to dark reddish brown or greyish dark brown, 3.5–4.2  $\times$  0.9–1.0 mm, upper half of achene body  $\pm$  densely covered with minute squamules or spinules, only a few of uppermost spinules bigger, conical, lower part of body tuberculate, body gradually narrowing into short subconical cone 0.5–0.7 mm long; beak 7–9 mm, pappus 5–6 mm,  $\pm$  pure white. – Agamosperm.  $2n = \sim 24$  (counted by R. J. Vašut on no. det. 32932, which is less safely identified material of *T. aspectabile*, see below).

*Taraxacum aspectabile* is distinct in having deep brown or greyish dark brown achenes (sometimes with a reddish hue), with body densely shortly squamulose-spinulose in the upper half and tuberculate below (few large conical spinules, only the uppermost ones),  $\pm$  gradually narrowing into short, thick subconical cone, anther tube usually without pollen, stigmas dark discoloured, and outer phyllaries arcuate-recurved, 8–9  $\times$  2.2–3.8 mm. In the Czech flora there are only a few other similar species with this character combination. The only apolline brown-fruited taxon is *T. proximum* (Dahlst.) Raunk., a species with filiform-dentate distal leaf-lobe margins and much longer cone, to mention only the most important differences. Another two species from the vicinity where *T. proximum* occurred that are similar to *T. aspectabile*, are *T. pseudoproximum* van Soest and *T. proximiforme* van Soest. The former is polliniferous, has ovate-lanceolate outer phyllaries, patent with  $\pm$  recurved apical part, broader lateral lobes with shorter interlobes, larger flower heads (to 4 cm wide), and longer achene cone. *Taraxacum proximiforme* is characterized by pale yellow stigmas and straw-coloured achenes. In the section *Erythrosperma*, another species close to *T. aspectabile* is *T. dahlii* Dahlst.; these two taxa are similar in not producing pollen, having more or less brownish achenes with short cone, recurved outer phyllaries and in the general character of leaf lobes. However, *T. dahlii* has stigmas  $\pm$  yellow, leaf lobes distally filiform-dentate at base, proximal margin of lateral lobes pointing downwards, and the achene colour is yellow-brown.

Specimens studied (Fig. 3): **Slovakia**: SW. Slovakia, Malacky District, Záhorská nížina [Lowlands], alluvial meadows along Rudava R.,  $\sim 2$  km SW of Studienka,  $\sim 190$  m s. m. [ $\sim 48^{\circ}30'30''\text{N}$ ,  $17^{\circ}8'0''\text{E}$ ], 10 May 1987, J. Kirschner & J. Štěpánek (PRA, no. det. 25036, 25047). [Isotypes, also distributed as *Taraxaca Exs.*, no. 1009 & 1010]. – Ibidem, cultivated as JŠ 4102, collected in 1991 (PRA, no. det. 25035). – Ibidem,  $\sim 1.5$  km SW of Studienka,  $\sim 175$  m s. m., 1 May 1986, J. Kirschner & J. Štěpánek (PRA, no. det. 25034). – Ibidem, J. Kirschner (PRA, no. det. 25033). – Ibidem, 2 km SW of Studienka, 175 m s. m., 3 May 1995, Z. Kaplan 95/57 (PRA, no. det. 24027). – Studienka, woods W of the village,  $48^{\circ}31'43''\text{N}$ ,  $17^{\circ}6'57''\text{E}$ , 3 May 1995, B. Trávníček (OL, no. det. 32923). – Studienka, alluvial meadows along Rudava R.,  $\sim 180$  m s. m.,  $48^{\circ}30'39''\text{N}$ ,  $17^{\circ}07'22''\text{E}$ , 3 May 1995, B. Trávníček (OL, no. det. 32921). – Studienka, xerothermic sandy grasslands along tracks in pine woods,  $\sim 3$  km SW of the church in the centre of the village, 25 Apr 2001, R. J. Vašut (OL, no. det. 32931). – Studienka, abundant in dry sandy meadows on a sandy terrace in the alluvium of Rudava R., 2221 m SW of the church in the village,  $48^{\circ}30'38''\text{N}$ ,  $17^{\circ}7'3''\text{E}$ , 28 Apr 2018, J. Zámečník (herb. J. Zámečník, no. det. 34851). – Malacky District, Kuchyňa village, on railway 0.8 km N of the railway station,  $48^{\circ}25'06''\text{N}$ ,  $17^{\circ}08'13''\text{E}$ , 19 Apr 2019, B. Trávníček 1886 (OL). – Malacky District, Plavecký Mikuláš village, dry part of meadow 4 km W of the village centre,  $48^{\circ}30'30''\text{N}$ ,  $17^{\circ}15'03''\text{E}$ , 19 Apr 2019, B. Trávníček 1887 (OL). – Malacky District, Veľké Leváre, sandy lawns near the railway station,  $\sim 160$  m s. m.,  $48^{\circ}30'32''\text{N}$ ,  $17^{\circ}01'5''\text{E}$ , 26 Apr 1990,

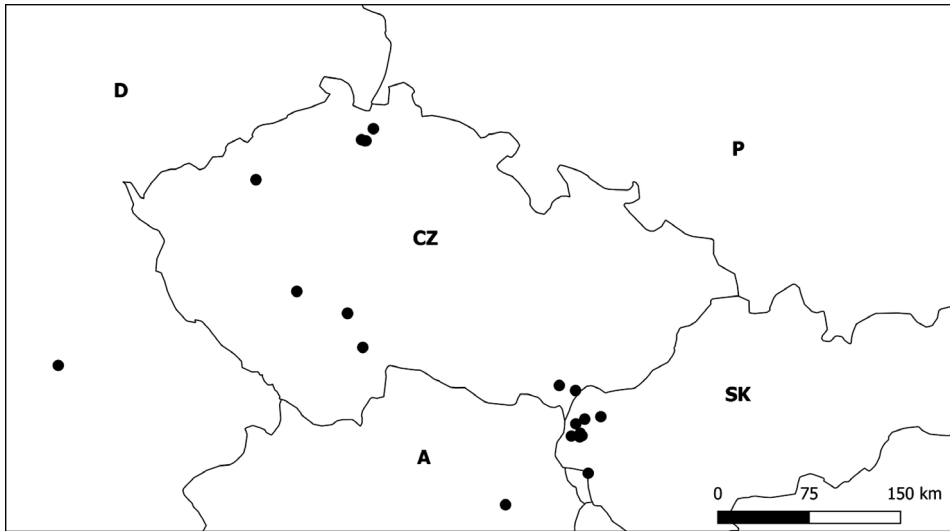


Fig. 3. – Map showing the distribution of *T. aspectabile* in central Europe.

B. Trávníček (OL, no. det. 32927). – Pezinok District, Jur pri Bratislave [Svätý Jur], lawns near a chapel 1.5 km SW of the railway station, ~150 m s. m., 48°14'15"N, 17°12'11"E, 31 Mar 1990, B. Trávníček (OL, no. det. 32925). – Senica District, Borský Svätý Jur, xerothermic sandy grasslands along tracks in pine woods, 2 km SE of the church in the village centre, 25 Apr 2001, R. J. Vašut (OL, no. det. 32929). – Senica District, Šaštín-Stráže: ruderal xerothermic grasslands along the road between villages Šaštín-Stráže and Borský Mikuláš, near the railway in E outskirts of the village, ~180 m s. m., 25 Apr 2001, R. J. Vašut (OL, no. det. 32934). – Senica District, Hlboké, about 5 km WSW of the church in the village centre, 199 m s. m., 48°38'58"N, 17°20'29"E, 28 Apr 2018, J. Zámečník (herb. J. Zámečník, no. det. 34849). – Senica District, Tomky settlement, sandy roadside at N margin of the settlement, 48°34'32"N, 17°05'35"E, 22 Apr 2019, B. Trávníček 1893 (OL). – **Czech Republic, Bohemia:** Tábor, Bečice, Příběnice Castle, left bank of Lužnice R. 1 km NNE of the village, 10 May 2003, J. Douda (herb. J. Douda, no. det. 25039). – Tábor, Malšice, along track on the slope below Příběnice Castle, ~430 m s. m., 49°23'35"N, 14°33'41"E, 11 May 2003, V. Žíla & V. Chán (herb. V. Žíla, no. det. 25038). – Tábor, Malšice, the ruin of Příběnice Castle, 3 km NNW of Malšice, ~390 m s. m., 49°23'38"N, 14°33'33"E, 9 Jun 2005, J. Štěpánek, cultivated at Průhonice as JŠ 7985, collected in 2006 (PRA, no. det. 25032). [also distributed as *Taraxaca Exs.*, no. 1011]. – N. Bohemia, Česká Lípa District, Hradčany nad Ploučnicí, a track 474 m ESE of the floodgate of Hradčanský rybník [pond], 50°37'04"N, 14°42'51"E, 380 m s. m., 1 May 2017, J. Zámečník (herb. J. Zámečník, no. det. 34058). – Hradčany nad Ploučnicí, along a track, about 2 km NNE of the summit of Mt. Velká Buková (474 m s. m.), 50°36'38"N, 14°45'49"E, 295 m s. m., 1 May 2017, J. Zámečník (herb. J. Zámečník, no. det. 34055). – Hradčany nad Ploučnicí, the dam of Vavruškův rybník [pond], 1934 m NNW of the summit of Mt. Velká Buková (474 m s. m.), 50°36'36"N, 14°45'02"E, 282 m s. m., 1 May 2017, J. Zámečník (herb. J. Zámečník, no. det. 34053). – Česká Lípa District, Hamr na Jezeře, a sandy track 642 m NW of Mt. Hamerský Špicák (452 m s. m.), 50°41'39"N, 14°50'43"E, 320 m s. m., 1 May 2017, J. Zámečník (herb. J. Zámečník, no. det. 34057). – Hamr na Jezeře, 726 m NW of Mt. Hamerský Špicák (452 m s. m.), 50°41'39"N, 14°50'6"E, 322 m s. m., 1 May 2017, J. Zámečník (herb. J. Zámečník, no. det. 34056). – N. Bohemia, Žatec District, dry grasslands around the railway station, 50°20.3'N, 13°33.3'E, 20 Apr 2003, J. Štěpánek (PRA, no. det. 34147). – Příbram District, Stražiště u Počapel, a lawn near the church, 505 m s. m., 49°32'58"N, 14°00'12"E, 30 Apr 2005, V. Chán, M. Soukup & V. Žíla (herb. M. Soukup, no. det. 34062). – Ibidem, V. Žíla (herb. V. Žíla, no. det. 34079). – S. Bohemia, Tábor District, Vlkov [~49°8'58"N, 14°43'30"E], sandy places, 13 May 1991, A. Blab & J. Kirschner (PRA, no. det. 34089). – **Moravia:** [two less safe identifications:] Hodonín District, Lužice, along the road on W outskirts of the village, ~0.5 km W of the church in the village centre, ~200 m s. m., 48°50'20"N, 17°3'49"E, 24 Apr 2000, R. J. Vašut (OL, no. det. 32936). – Břeclav District, Velké Bílovice, dry slopes of the Zimárky hill (262 m), 3 km NNW of the church in the village centre, ~250 m s.

m., 48°52'32"N, 16°53'9"E, 15 Apr 1999, R. J. Vašut (OL, no. det. 32932). – **Austria:** Niederösterreich, Wienersdorf near Traiskirchen, Schwechatau, 200 m s. m., 9 Apr 1989, W. Till s. n. (herb. W. Till at WU, no. det. 19991). – **Germany:** Bavaria [N of Ingolstadt], W of Haunstetten, Haunstetter Hut, a nature monument [49°1'1"N, 11°23'54"E], 17 May 1988, J. E. Krach s. n., cultivated as JŠ 3783 at Průhonice, collected in 1990 (PRA, no. det. 34096).

## 2. *Taraxacum* sect. *Palustria* (H. Lindb.) Dahlst.

The region of central Europe is fairly extensively covered in our Monograph on *Taraxacum* sect. *Palustria* (Kirschner & Štěpánek 1998). Since then, a few new species in sect. *Palustria* have been described, or nomenclatural adjustments made (Štěpánek & Kirschner 2001, 2012, Schmid 2003, Tikhomirov 2003, Aquaro et al. 2008, Marciniuk et al. 2012, Štěpánek et al. 2013, Øllgaard 2015), but in general, the knowledge of this section there, and in the Czech Republic in particular, was considered relatively complete. A detailed exploration in the vicinity of Příbram and Dobříš in central Bohemia, carried out by R. Hlaváček in 2008, revealed a nice locality, which when studied (2010 and following years) was found to contain a rich population of sect. *Palustria* including a very distinctive form described below as *T. clandestinum*, which was subsequently found at several microlocalities in that area. A comparison with the other known taxa of sect. *Palustria* revealed that *T. clandestinum* does not fall within limits of any of the morphological groups recognized in the Monograph by Kirschner & Štěpánek (1998). The combination of diagnostic characters includes large capitula and broad involucre, absence of pollen, almost yellow stigmas, numerous tightly appressed, ovate to broadly ovate outer phyllaries with a broad paler border, achenes long, slender, with a very thin long cone is unique in this section, and this species (a tetraploid agamosperm) is very remarkable.

### *Taraxacum clandestinum* Zámečník, Štěpánek et Kirschner, **spec. nova**

**T y p e:** Bohemia, Rosovice-Sychrov, Sychrovský rybník (distr. Příbram): druhově velmi bohatá, silně podmáčená slatinná louka nad sz. břehem Sychrovského rybníku, přibližně 1208 m SSV od věže kostela sv. Petra a Pavla v centru obce Rosovice [central Bohemia, Příbram District, between Rosovice and Sychrov, a species-rich fen meadow near the NW shore of Sychrovský Pond, about 1208 m NNE of the steeple in the centre of Rosovice], 418 m s. m., 49°45'57"N, 14°06'52"E, 1 May 2012, J. Zámečník s. n. (holotype: PRA, no. det. 30128; isotypes in herb. J. Zámečník)

**D i a g n o s i s:** Species insignis, ab affinibus *T. webbii* et *T. geminidentato* phyllariis involucre exterioribus pernumeris praeclare distinguitur, pyramide tenui & conspicue longa (1.2–1.4 × 0.20–0.25 mm) necnon acheniis gracilibus ad 0.95 mm latis; a *T. paludoso* foliis plerumque pinnatifidis usque pinnatipartitis, phyllariis exterioribus non-imbricatis et acheniis tenuibus bene distincta.

### *Description* (Fig. 4AB, Fig. 5)

Plants medium-sized to tall, usually 12–18 cm. Plant base with dark brown hairs. **Leaves** variously erect-patent, usually 8–16 × 1–2 cm, light green, glabrous, not spotted; blade linear-oblongate in outline, regularly pinnatifid to pinnatipartite, sometimes only pinnatilobed, **terminal segment** usually conspicuously long, narrowly triangular or narrowly helmet-shaped, usually distally elongated into lingulate tip, 1.5–2.5 × 0.8–1.5 cm, acute, distal margin ± convex or ± distinctly sigmoid, entire, proximal margin concave, entire; **lateral segments** in (2) 4–5 pairs, short and broad at base, usually 3–4 mm long, 5–10 mm wide at base, acute, less often patent, usually sickle-like recurved, distal margin ± sigmoid, entire, rarely with a short minute acute tooth, proximal margin concave,



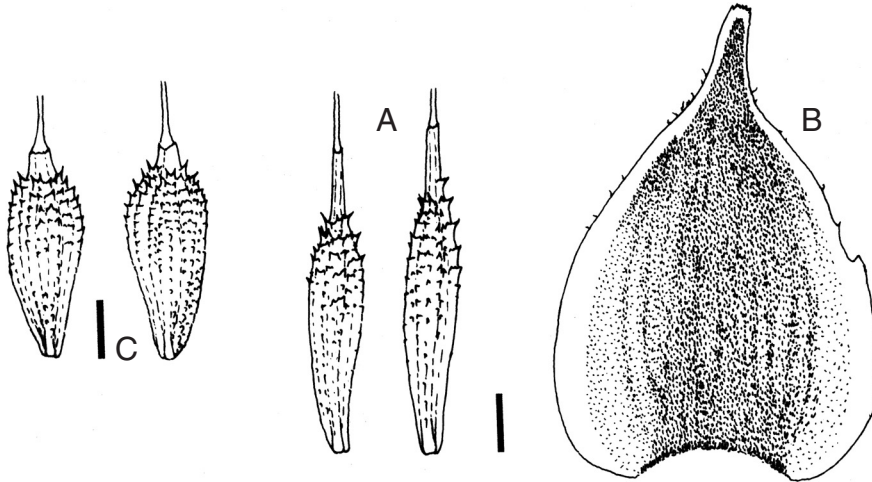


Fig. 4. – *Taraxacum clandestinum*. (A) achenes; (B) outer phyllary. *Taraxacum sparsum*. (C), achenes. Scale bars = 1 mm.

entire; interlobes long, broad, 3–5 mm wide, usually entire; mid-vein pale or pinkish; **petiole** narrow or narrowly winged, usually 3–5 cm, faintly purplish. **Scapes** equalling leaves or longer, very sparsely aranose (more densely below capitulum), later glabrescent, light pinkish at base, otherwise pale, later suffused bronze distally. **Capitulum** relatively large, 3–4 cm in diameter, yellow,  $\pm$  flat. Involucre  $\pm$  rounded at base, 7–8 mm wide,  $\pm$  light green, not pruinose; **outer phyllaries** 13–24,  $\pm$  tightly appressed, not imbricate, ovate to broadly ovate (the lowermost phyllary sometimes narrowly lanceolate), 6–8  $\times$  3.5–4.5 (–5) mm, distally minutely ciliate, with dark olivaceous-green median strip 2–2.5 mm wide, with a  $\pm$  gradual transition into light green to pale green border 0.5–1 mm wide, and a membranous margin 0.2–0.4 mm wide, phyllary apex pinkish-purplish, flat; inner phyllaries of equal width, 11–13 mm long. Outer **ligules** relatively long,  $\pm$  flat, striped grey-olivaceous outside, their apical teeth reddish grey, inner ligules short, canaliculate, apical teeth reddish to orange. **Pollen** absent. Stigmas deep yellow to slightly greyish yellow, with outer pubescence of hyaline hairs with distal part black. **Achenes** light olivaceous-grey to light brownish grey, very long and slender, 4.8–5.6  $\times$  0.85–0.95 mm, with short squamules and spinules on the upper 1/3–1/5, gradually narrowing into a very thin subcylindrical to cylindrical cone 1.2–1.4 mm long, often with a few spinules at base; beak 8–9 mm, pappus 5.5–6 mm, white. – Agamosperm, tetraploid,  $2n = \sim 32$  (chromosomes counted by J. Štěpánek under no. 1/2015)

#### Relationships

According to the most important characters the outer phyllaries, stigmas, absence of pollen and achene features, *T. clandestinum* should be compared with *T. paludosum* (Scop.) Schlechter (which has very different leaves, and outer phyllaries distinctly imbricate), *T. webbii* A. J. Richards (thick short cone, low number of outer phyllaries, different leaf shape) and *T. geminidentatum* Hudziok (with shorter cone and low number of outer phyllaries). Outer phyllaries of *T. clandestinum* are similar to those of *T. domabile*



TARAXACUM *clandestinum* sp. nov.  
 rev./det. J. Kirschner et J. Štěpánek  
 anno: 2015  
 no. det.: 30128 *Holotype!*

HOLOTYPUS

Herbarium Jaroslav Zámečník FLORA REIPUBLICAE BOHEMICAE	
Fyt. BOHEMIA CENTRALIS, Mesophyticum, Mesophyticum Massivi bohemicí, 41. Střední Povltaví	
Lokalita: ROSOVICE – SYCHROV, SYCHROVSKÝ RYBNÍK (dist. Příbram): dnuhové velmi bohaté, silně podmáčené slátnutá louka nad severozápadním břehem Sychrovského rybníku, přibližně 1208 m SSV od věže kostela sv. Petra a Pavla v centru obce Rosovice.	Katastrální území: 741370 - Rosovice Kvadrát síťového mapování: 6250b Souřadnice (WGS84): 49°45'57.690"N, 14°6'52.312"E Substrát: hlinito-jílovitá půda Nadmorská výška: 418 m n. m.
Legit: Zámečník Jaroslav	Datum: 1. 5. 2012
Determinavit:	Datum:

Fig. 5. – *Taraxacum clandestinum*.  
 Holotype (PRA, no. det. 30128).  
 Photo M. Hladík.

Kirschner et Štěpánek, but can be distinguished from it in having fewer outer phyllaries, their imbricate arrangement and a short cone. The leaf shape of *T. clandestinum* is similar to that of *T. austrinum* G. Hagl. The latter is distinct in having a shorter cone and the outer phyllaries with black middle part. Less similar are *T. trilobifolium* Hudziok with imbricate outer phyllaries, shorter cone and developed pollen, or *T. friscum* van Soest, with totally different outer bracts and shorter cone.

We can conclude that *T. clandestinum* is one of the most distinct members of sect. *Palustria* and in all likelihood endemic to Bohemia. Its most conspicuous diagnostic characters include long, very slender achenes with a markedly thin, long, cylindrical cone, yellow stigmas, absence of pollen, and numerous, tightly appressed, non-imbricate, ovate to ovate-lanceolate outer phyllaries.

#### *Distribution, ecology and conservation*

The index that includes rarity and conservation value (Kirschner & Štěpánek 1994, values between 10 and 13 indicate a very high conservation value) is 12 for *T. clandestinum*.

*Taraxacum clandestinum* is confined to two localities, both adjacent to fishponds not far from Příbram, south-central Bohemia. The bigger locality (Sychrov) is also the site richest in species of sect. *Palustria* in the Czech Republic, with 12 species [*T. ancoriferum* Hudziok, *T. bavaricum* van Soest, *T. hollandicum* van Soest, *T. madidum* K. et Š., *T. paucilobum* Hudziok, *T. pauckertianum* Hudziok, *T. spurium* (Beck) Murr, *T. subalpinum* Hudziok, *T. trilobifolium* Hudziok, *T. turfosum* (Schultz-Bip.) van Soest, *T. vindobonense* van Soest], i.e. with four species of the highest conservation value). There are several reasons why there are so many rare plants at this locality. First, it was probably continually mown since before WWII. Secondly, it consists of a narrow strip of land between a forest and the littoral zone of the Sychrovský rybník [pond], which is not suitable for intensive meadow management nor for the application of artificial chemical fertilisers (P. Karlík, R. Hlaváček and J. Zámečník, in litt.). The double mowing each year suppressed tufted grasses (such as *Molinia caerulea* (L.) Moench and *Deschampsia caespitosa* (L.) P. Beauv.) and produced gaps that facilitate the establishment of *Taraxacum* seedlings. At the Sychrov locality, other rare species occurred (*Dactylorhiza majalis* (Rchb.) P. F. Hunt & Summerh., *Gentiana pneumonanthe* L., *Iris sibirica* L., *Pedicularis palustris* L.) but their current status is uncertain. From the phytosociological viewpoint, the Sychrov meadow belongs to the assoc. *Junco effusi-Molinietum caeruleae* Tüxen 1954 (the alliance of *Molinia caeruleae* Walo Koch 1926), i.e. the less basiphilous part of this alliance.

It should be added that the other locality with *T. clandestinum*, although disturbed, harbours as many as seven species of sect. *Palustria*.

Specimens studied (Fig. 6): **Czech Republic, Bohemia**, vicinity of Příbram and Dobříš: Rosovice-Sychrov, Sychrovský rybník [pond]... wet meadow near NW shore of the pond, ~1200 m NNE of the church in Rosovice, 418 m s. m., 49°45'57"N, 14°06'52"E., 1 May 2012, J. Zámečník (herb. J. Zámečník, no. det. 30128). – Ibidem: Cultivated as 102/2012 (herb. J. Zámečník, no. det. 30132). – Ibidem: 5 May 2015, field note: J. Štěpánek, B. Trávníček & J. Zámečník. – Rosovice-Sychrov, Sychrovský rybník [pond]... wet hay-meadow above the N shore of the pond, ~1400 m NNE of the church in Rosovice, 416 m s. m., 49°46'2"N, 14°07'2"E, 8 May 2012, J. Zámečník (herb. J. Zámečník, no. det. 30126). – Rosovice-Holšiny, Vackův rybník [pond]... rich wet meadow near the SW shore of the pond, ca. 1577 m NNW of the church in Rosovice, 432 m s. m., 49°45'40"N, 14°05'18"E, 1 May 2012, J. Zámečník (herb. J. Zámečník, no. det. 30130).

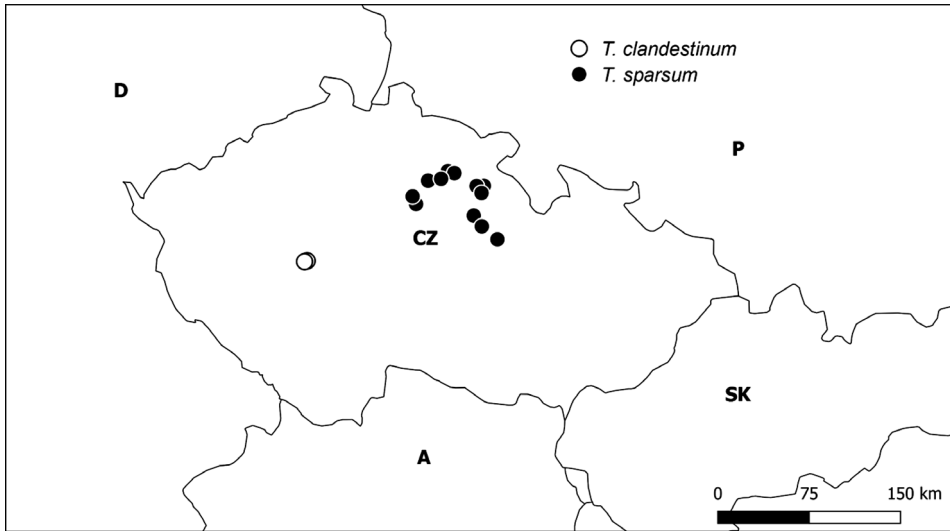


Fig. 6. – Map showing the distribution of *Taraxacum clandestinum* and *T. sparsum* in the Czech Republic.

### 3. *Taraxacum* sect. *Celtica* A. J. Richards

In the Czech Republic, there is only a single species that definitely belongs to sect. *Celtica*. It is *T. nordstedtii* Dahlst., with a number of close relatives in NW. Europe (The Netherlands and Great Britain, in particular). The other Czech taxa classified as members of sect. *Celtica* are less definite members of this group, with some characters indicating sect. *Naevosa* M. P. Christ. (*T. gelertii* Raunk., *T. adamii* Claire, *T. duplidentifrons* Dahlst., *T. excellens* G. Hagl.), sect. *Taraxacum* (*T. duplidentifrons* Dahlst., *T. excellens* G. Hagl.) or sect. *Hamata* (*T. bracteatum* Dahlst.).

At the beginning of our *Taraxacum* studies (in the early 1980s), we came across a distinctive entity, which was placed tentatively (*in litteris*) in sect. *Celtica* by H. Øllgaard, our taraxacological *praeceptor* at that time. We made an effort to find a name for it among the described species but failed. In the meantime, the same species, described as *T. sparsum* below, was collected by J. Zámečník at numerous sites in eastern Bohemia.

Our new species, in terms of morphology, also can be regarded as an entity marginal to sect. *Celtica*, with some features indicating sect. *Naevosa* and resembling *T. conspersum* H. Øllg. and *T. lentiginosum* H. Øllg. in the latter section. The substrate midrib colour pattern and spotted leaf blade surface is a combination otherwise very rare in central-European dandelions. The achene features are quite exceptional, with a short ± dense spinulosity on a relatively thick achene body, and a short conical cone.

In the outer phyllary and some leaf characters *T. sparsum* is similar to *T. leptoglotte* M. P. Christ. in *T.* sect. *Taraxacum*, known from Denmark and Germany. The latter, however, has homogeneously light purple petiole and leaf mid-vein, interlobes ± green, not purple-brown, leaves not spotted, leaf terminal lobe usually with a lingulate elongation, outer phyllaries much wider, and longer achenes (about 4 mm or longer) with spinulosity composed of coarser spinules.

***Taraxacum sparsum* Štěpánek, Zámečník et Kirschner, spec. nova**

**Type:** Bohemia orientalis, Lanžov, osada Lhotka (distr. Trutnov): květnatá slatinná louka..., přibližně 840 m JJV od budovy zámku v Bílých Poličanech [East Bohemia, Trutnov District, Lhotka near Lanžov, a fen meadow about 840 m SSE of the Bílé Poličany Chateau], 300 m s. m., 50°23'3"N, 15°43'59"E, 1 May 2008, J. Zámečník & J. Štěpánek s. n. (holotype: PRA, no. det. 29888).

**Exsiccat:** *Taraxaca* *Exs.*, no. 1092–1097.

**Diagnosis:** Species nostra primo aspectu *T. consperso* (e sect. *Naevosorum*) similis, sed foliis saepissime laete viridibus (nec glauco-viridibus), demum glabrescentibus, phyllariis exterioribus patentibus vel patentiarcuratis (nec arcuato-recurvis) et pyramide conica (nec cylindrica); a *T. leptoglotte* (e sect. *Taraxacum*) petiolo et nervo mediano subtiliter rubro-striatis, lamina brunnescenti-maculata, interlobiis purpureo-brunneis, phyllariis exterioribus angustioribus necnon acheniis brevioribus differt.

**Description** (Fig. 4C, Fig. 7)

Plants medium-sized, most often 13–18 cm tall; plant base without remnants of old petioles, sparsely brownish woolly among petiole bases. **Leaves** variously erect-patent to erect, usually 10–16 × 2–3 cm, greyish to yellowish green, very sparsely aranose and later glabrescent, with adaxially scattered conspicuous brown-purplish spots; leaf blade narrowly elliptical to oblanceolate, pinnatisect, with **terminal segment** medium-sized to dominating, triangular, narrowly triangular or elongated helmet-shaped, usually 1.5–2.5 (–3.5) × 1.5–2.5 cm, acute, sometimes with a short, narrowly lingulate mucro, distal margin ± straight to subconvex or subsigmoid, entire, sometimes with symmetrical subdistal deep incisions, basal lobules slightly recurved, acute, proximal margin subconcave to ± straight, entire; **lateral segments** (3) 4–5 on each side, opposite, usually 1–1.5 cm long, 0.7–1.4 cm wide at base, deltoid-triangular, patent to ± subrecurved, acute, distally often slightly elongated, adaxial surface with conspicuous brown-purplish spots, distal margin subsigmoid to ± straight, entire or with a few short acute teeth, proximal margin ± straight, sometimes subconcave or subsigmoid, usually entire; interlobes usually 3–10 × 2–5 mm, with brown-purplish adaxial surface and margins, entire or with a few small to medium-sized teeth; **mid-vein** distally pale green, proximal half ± light brown-purplish to purple, usually distinctly finely longitudinally striate (similar but less distinct pattern than that in species in sect. *Hamata* H. Øllgaard); **petiole** purple to greyish purple, 3–5 cm long, narrow to narrowly winged. **Scapes** overtopping leaves, pinkish at base, otherwise pale green, later suffused bronze, sparsely aranose to floccose-aranose, more densely so below capitulum. Involucre ± rounded at base, ~8 mm wide, slightly pruinose; **outer phyllaries** 15–21, ± patent to patent-arcuate, rarely subsigmoid, ovate-lanceolate to lanceolate, 7–10 × 3–4.5 mm, abaxially dark olivaceous brownish green, adaxially glaucous green, slightly suffused bluish, with a distinct whitish border 0.1–0.25 mm wide, apex pinkish; inner phyllaries ~12 mm long, bluish green, slightly pruinose, of equal width. **Capitulum** medium-sized, usually 3–3.5 cm wide, deep yellow, ± flat; outer ligules flat, striped dark purplish grey-olivaceous (almost black when dry), apical teeth black, inner ligules subcanaliculate, their apical teeth deep yellow; anthers polliferous, **pollen** grains of variable size; **stigmas** discoloured to darkly discoloured, light grey-green, with a dense, dark pubescence outside. **Achenes** medium grey straw-brown to ± grey, 2.8–3.8 × 0.9–1.1 mm, achene body covered with medium dense, short and acute spinules and low squamules on the upper 1/4, otherwise they are ± smooth, body subabruptly narrowing into short, thick, conical cone (0.3–) 0.4–0.7 mm long; beak 8–10 mm,



**ISOTYPUS**

HERBARIUM INSTITUTI BOTANICI ACAD. SCI. PRŮHONICE – PRA

*Taraxaca 57\** (asi incl. 1 cent.), Lhotka – B. Poličany, 1. V. 2008

*Taraxacum gratum* *q. nov. Isotypus!*  
*nr. det. 29872*

Loc.: Bohemia boreo-orient., opp. Hořice, pagus Bílé Poličany: in prato uliginoso inter viam publicam Bílé Poličany – Lhotka et radicem orient. collis Vinice (361.3 m).

Coord. geogr. (WGS-84): 50° 22' 58" – 23' 01" N, 15° 44' 5–10"E

Die 1. V. 2008

Leg.: J. ŠTĚPÁNEK & J. ZÁMEČNÍK

Fig. 7. – *Taraxacum sparsum*.  
 Isotype (PRA, no. det. 29872).  
 Photo M. Hladík.

pappus 6–7 mm long, white. Agamosperm. –  $2n = 24$  (counted on JŠ 10305 by J. Štěpánek, under no. 2/2016).

This species has been repeatedly documented since the early 1980's, from the initial stage of our exploration of dandelions in the Czech Republic, at that time under the supervision of H. Øllgaard who tentatively placed our material in sect. *Celtica*. The recent survey of fragments of calcareous fen habitats in eastern Bohemia, carried out by J. Zámečník, revealed the occurrence of *T. sparsum* at a number of localities, and the material was quite representative, particularly in terms of plant plasticity, ecology and distribution. This new species is confined to wet, usually calcareous meadows in the lowlands in the eastern part of the Bohemian Chalk Plateau. As regards its ecology, it is found in a variety of wet calcareous meadows, the richest of them similar to that at the type locality, with species such as *Carex panicea* L., *C. tomentosa* L., *C. disticha* Huds., *Dactylorhiza majalis* (Rchb.) P. F. Hunt et Summerh., *Galium wirtgenii* F. W. Schultz, *Salix rosmarinifolia* L., *Serratula tinctoria* L., *Sesleria uliginosa* Opiz, *Taraxacum paucilobum* Hudziok, *T. skalinskanum* Małecka et van Soest, *T. vindobonense* van Soest, *Thalictrum lucidum* L., *Trollius altissimus* Crantz and *Valeriana dioica* L. etc.

The overall screening of the central-European dandelion flora indicates that *T. sparsum* is endemic to the Czech Republic.

Specimens studied (Fig. 6): **Czech Republic, Bohemia:** Jičín District, Dobrá Voda near Hořice, meadows near NW shore of Dobrovodský rybník [pond], ~1516 m WSW of Dobrá Voda railroad stop, 50°20'40"N, 15°35'17"E, 272 m s. m., 2 May 2015 leg. J. Zámečník (herb. J. Zámečník, no. det. 33060). – Dobrá Voda: Dobrovodský rybník [pond], 275 m s. m., 50°20'42"N, 15°35'12"E, 3 May 2008, J. Kučera (herb. J. Kučera, Dobré, no. det. 30924). – Jičín District, Vysoké Veselí, a football pitch, 584 m ENE of St. Mikuláš church in the village centre, 257 m s. m., 50°19'55"N, 15°26'43"E, 21 Apr 2016, J. Zámečník s. n. (herb. J. Zámečník, no. det. 32637). – Ibidem: cultivated as 336/2016 (herb. J. Zámečník, no. det. 34031). – Ibidem: 24 Apr 2018, J. Zámečník s. n. (herb. J. Zámečník, no. det. 34859). – Trutnov District, Lanžov, settlement of Lhotka, rich fen meadow with *Carex disticha* Huds., *C. panicea* L., *C. tomentosa* L., *Dactylorhiza majalis* (Rchb.) P. F. Hunt et Summerh., *Salix rosmarinifolia* L., *Sesleria uliginosa* Opiz, *Trollius altissimus* Crantz etc., ~1730 m WNW of crossing Lanžov – Lhotka, ~300 m s. m., 50°23'3"N, 15°44'2"E, 28 Apr 2009, J. Zámečník (herb. J. Zámečník, no. det. 29888). – Ibidem, 11 May 2009, J. Zámečník, cultivated (herb. J. Zámečník, no. det. 29890). – Hořice, Bílé Poličany, wet fen between the road Bílé Poličany – Lhotka and the E foot of Vinice Hill (361.3 m), 50°23'3"N, 15°44'2"E, 1 May 2008, J. Štěpánek & J. Zámečník (PRA, no. det. 29872). – Trutnov District, Bílé Poličany: a fen meadow at forest margin, 0.5 km SW of the village, 300 m s. m., 6 May 1995, Z. Kaplan 95/94 (PRA, no. det. 34060). – Miletín, Miletínská bažantnice Nature Reserve, rich fen, ~1540 m WSW of Miletín centre, ~315 m, 50°23'56"N, 15°39'46"E, 4 May 2011, J. Zámečník (herb. J. Zámečník, no. det. 29893). – Ibidem, 50°23'56"N, 15°39'46"E, 1 May 2008, J. Štěpánek & J. Zámečník (PRA, no. det. 29878). – Ibidem, cultivated as JŠ 8295 (PRA, no. det. 29876). Distributed also as *Taraxaca Exs.*, no. 1096 (e.g. PRA, no. det. 33587). – Ibidem, 50°23'55"N, 15°39'46"E, 1 May 2008, J. Zámečník & J. Štěpánek (herb. J. Zámečník, no. det. 29894). – Králova Lhota near České Meziříčí, Závěšřák [pond], fen meadow with *Sesleria uliginosa* Opiz, ~1.3 km WNW of the crossing Králova Lhota – Skršice, 269 m, 50°17'39"N, 15°58'40"E, 29 Apr 2011, J. Zámečník (herb. J. Zámečník, no. det. 29892). – Zbytka [meadows] near České Meziříčí, 9 May 1984, J. Kirschner (PRA, no. det. 29874). – Bohuslavice nad Metují, Zbytka Nature Reserve, ~1366 m NE of the crossing in centre of České Meziříčí, 256 m, 50°17'43"N, 16°03'28"E, 27 Apr 2007, J. Zámečník (herb. J. Zámečník, no. det. 29896). – [Opočno] Vysoký Újezd: wet meadow NE of the village, 255 m s. m., 23 Apr 2000, J. Kučera (herb. J. Kučera, Dobré, no. det. 30926). – Rožďalovice Plateau, Dlouhopolsko, Dlouhopolský rybník [pond], wet fen with *Sesleria uliginosa* Opiz, 1189 m SE of the Dlouhopolsko – Žehuň road crossing, 228 m, 50°10'03"N, 15°18'47"E, 23 Apr 2008, J. Zámečník (herb. J. Zámečník, no. det. 29895). – Rožďalovice Plateau, Městec Králové, Štítarský rybník [pond], fragment of fen in valley of Krčský potok [brook], below the S shore of the pond, 209 m s. m., 50°13'18"N, 15°16'30"E, 18 Apr 2014, J. Zámečník (herb. J. Zámečník, no. det. 29879). – East Elbe Basin, Holice, meadow near the NW shore of the Ředický rybník [pond] near Horní Ředice [village], 240 m, 11 May 1984, J. Štěpánek (PRA, no. det. 29880). Distributed also as *Taraxaca Exs.*, no. 1094 (e.g. PRA,

no. det. 33583) & no. 1095 (e.g. PRA, no. det. 33585). – Horní Ředice, Ředický rybník (Pardubice District): wet meadow on the NW shore of Ředický rybník [pond] ~1430 m NW of a road turnoff, 240 m, 50°05'12"N, 15°56'48"E, 10 May 2006, J. Zámečník (herb. J. Zámečník, no. det. 29891). – East Elbe Basin, Pardubice District, Holice, Trusnov, Lodrant [pond], wet meadow 1220 m NW of Trusnov centre, 243 m s. m., 50°00'37"N, 16°02'8"E, 24 Apr 2007, J. Zámečník (herb. J. Zámečník, no. det. 29889). – Eastern Bohemia, Litomyšl Basin, Svitavy District, Cerekvice nad Loučnou, Pekla, wet meadow, ~1349 m N of railroad stop of Cerekvice nad Loučnou, 281 m s. m., 49°55'04"N, 16°12'19"E, 3 May 2011, J. Zámečník (herb. J. Zámečník, no. det. 29887). – Ibidem, 1475 m N of railroad stop of Cerekvice nad Loučnou, 49°55'08"N, 16°12'23"E, 1 May 2011, J. Zámečník (herb. J. Zámečník, no. det. 29885). – Ibidem, 1472 m N of railroad stop of Cerekvice nad Loučnou, 281 m s. m., 49°55'7"N, 16°12'23"E, 4 May 2013, J. Zámečník (herb. J. Zámečník, no. det. 29883). – Ibidem, 25 Apr 2014, J. Zámečník, cult. as 224/2014 (herb. J. Zámečník, no. det. 32639). – Ibidem: 7 May 2015, J. Zámečník, J. Štěpánek & B. Trávníček (herb. J. Zámečník, no. det. 32635). – Ibidem, 24 Apr 2014, J. Zámečník (herb. J. Zámečník, no. det. 29881). Distributed also as *Taraxaca Exs.*, no. 1097 (e.g. PRA, no. det. 33589). – Litomyšl Basin, Vysoké Mýto, village of Hrušová, Pekla [settlement], meadows in valley of Loučná, ~285 m s. m., 49°55'8"N, 16°12'23"E, 7 May 2015, J. Štěpánek, B. Trávníček & J. Zámečník (PRA, no. det. 31207). – Ibidem: *Plantae e seminibus* no. JŠ 10133 in horto bot. in Průhonice sub no. JŠ 10304 *cultae* et a. 2016 *lectae*. (PRA, no. det. 32390). – Ibidem: *Plantae e seminibus in horto bot. in Průhonice* sub no. JŠ 10305 *cultae* et a. 2016 *lectae*. (PRA, no. det. 32389). Distributed also as *Taraxaca Exs.*, no. 1092 (e.g. PRA, no. det. 33579) & no. 1093 (e.g. PRA, no. det. 33581).

## Acknowledgements

The study was supported by the Czech Grant Agency, grant no. 14-36079G (PLADIAS) and by the Institute of Botany, Czech Academy of Sciences, research support no. RVO 67985939. Thanks are due to the keepers of herbarium collections consulted (PRA, WU) and to the collectors of plant material, particularly B. Trávníček, University of Olomouc. We are grateful to P. Karlík and R. Hlaváček for providing valuable information regarding the ecology of *T. clandestinum* and the reviewers for valuable remarks on the manuscript.

## Souhrn

Pokračující výzkum rodu *Taraxacum* ve střední Evropě přinesl řadu novinek, z nichž nejdůležitější jsou využity i v novém vydání Klíče ke květeně České republiky. Podrobné zkoumání bylo soustředěno na poměrně dobře známé skupiny (sekce) tohoto rodu, zejména *T. sect. Erythrosperma*, *T. sect. Palustria* a *T. sect. Celtica*. V sekci *Erythrosperma* byl objeven pozoruhodný taxon s temně hnědými nažkami s krátkou pyramidou, navíc s prašníky bez pylu, zprvu pouze na jz. Slovensku, později na řadě českých lokalit, a též na dvou moravských lokalitách geograficky blízkých slovenským. Navíc se vyskytuje i v Rakousku a v Bavorsku. Je popsán jako *Taraxacum aspectabile* Štěpánek, Kirschner, Vašut et Trávn. Je to triploidní druh s  $2n = 24$ . Pozoruhodným objevem je nález dvou lokalit s četnými vzácnými druhy sekce *Palustria* v okolí Příbrami. Jeden z těchto druhů, charakterizovaný velmi četnými, široce vejčitými zákrovními listy, absencí pylu a žlutými bliznami, je popsán jako *T. clandestinum* Zámečník, Štěpánek et Kirschner. Dosud známé údaje svědčí o tom, že představuje taxon endemický v Čechách. Je to tetraploidní druh s  $2n = 32$ . Poslední podrobněji zkoumanou skupinou je sekce *Celtica*. Již od poloviny 80. let minulého století byl v širší nížinné východní části České křídové tabule sbírán druh považovaný za člena této sekce. Je charakteristický nápadně hnědočerveně skvrnitými listy se střední žilkou na svrchní straně jemně červenofialově žíhanou, zákrovními listy rozestálými až obloukem rozestálými, na abaxiální straně tmavě olivově hnědozelenými, a také pozoruhodnými, poměrně tlustými, hustě kratičce osténkatými těly nažek, dosti náhle přecházejícími v kratičkou kónickou pyramidu. Je to triploidní druh s  $2n = 24$ . Ačkoliv tento druh nemá všechny obvyklé vlastnosti druhů sekce *Celtica* (některými se blíží sekci *Naevoza*), řadíme jej mezi zástupce této sekce. Je popsán jako *T. sparsum* Štěpánek, Zámečník et Kirschner. Všechny tři nové druhy mají agamospermní způsob rozmnožování.



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Received 6 May 2019

Revision received 16 July 2019

Accepted 16 July 2019