

***Taraxacum princeps* sp. nova, a new species of section *Erythrosperma* from Central Europe**

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Abstract: A new *Taraxacum* microspecies of section *Erythrosperma*, *Taraxacum princeps*, is described here. The species is a triploid apomict, which is distributed in SE part of Central Europe. Most of known localities are situated in SW Moravia (Czechia). Specific characteristics, notes on ecology and distribution (including dot maps and images of the species) and comparison with similar taxa (*T. isophyllum* and *T. chelelobatum*) are given and the relation between *T. princeps* and *T. magnolevigatum* and its nomenclature is discussed.

Keywords: Central Europe, *Taraxacum* sect. *Erythrosperma*, new species, taxonomy, geographical distribution, chromosome number.

Introduction

Genus *Taraxacum* WIGG. is widespread in temperate zones of both northern and southern hemisphere. The total of 46 sections (KIRSCHNER & ŠTĚPÁNEK 1997) comprises several sexual diploid species (roughly one sexual species per section) and high number of apomictic polyploid microspecies (mostly at the triploid level). The mode of apomixis in *Taraxacum* is diplospory (type *Taraxacum*) (ASKER & JERLING 1992). Although there have been a few reports of facultative apomixis in *Taraxacum* (RICHARDS 1973), apomixis is generally considered to be obligate in the genus (VAN DIJK 2003).

Section *Erythrosperma* (H. LINDB.) DAHLST. is a derived group within the genus

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Taraxacum (WITZELL 1999, KIRSCHNER et al. 2003). It consists of species characterised by short and usually corniculate outer bracts, usually red (red-brown) achenes with long pyramid and deeply dissected leaves. Species of this section are confined to xerothermic habitats of Europe and south-western Asia. Section *Erythrosperma* has attracted the attention of *Taraxacum* specialists in the western part of Pannonian basin and many species have been mentioned from there (SOEST 1966, RICHARDS 1970, DOLL 1973). The study of natural populations and herbarium material has indicated that the most of the species described from N and W Europe do not occur in western Pannonia (VAŠUT 2001, VAŠUT 2003). Most plants were revised as the diploid species *Taraxacum erythrospermum* ANDRZ. Some western Pannonian types were recognized as a new and yet undescribed species parallels, similar to some species from western Europe (VAŠUT 2001, VAŠUT et al. in prep., SCHMID et al. 2004). One newly recognized species is similar to *T. isophyllum* G. E. HAGL. and *T. chelelobatum* SAHLIN and is described here.

Material and methods

The present study builds upon investigations of lesser dandelions in Moravia (Vašut 2003). Detailed information on plant cultivation, studied herbaria, chromosome counting and flow-cytometric analyses is published *ibidem*. In addition to studies published in the mentioned paper, plants were studied on dozens of localities in Austria, Hungary and Slovakia and a few more herbaria collections were examined (i.e. L, POZNB, STU and the private herbarium collections of P. SACKWITZ and Z. GŁOWACKI from Lower Austria and W Poland, respectively). Plants of *T. magnolevigatum* were studied in L, information on original material in ZT was provided by M. BALTISBERGER and R. NYFFELER.

Description of new species

Taraxacum princeps R. J. VAŠUT et B. TRÁVNÍČEK, sp. nova (Figs. 1-4)

– *Taraxacum laevigatum* auct. florae medioeur. non DC. Cat. Hort. Monsp. 149, 1813, p.p.

– ? *Taraxacum magnolevigatum* W. KOCH ex SOEST Veröff. Geobot. Inst. Rübél E. T. H., 42: 113, 1969, nom. inval. (Art. 37 of ICBN).

Plantae subgraciles usque mediocres. Folia suberecta, angusta, elliptica vel oblanceolata, plerumque (5–)7–15(–20) cm longa et (1.0–)1.5–2.5(–3.5) cm lata, cano-viridia subglabra. Lobus terminalis foliorum interiorum triangularis usque galeatus, margina proximalia concava, margina distalia integra vel irregulariter dentata, ad folia exteriora brevis, ad apicem obtusus, leviter contractus. Lobi laterales plerumque numero 4–5 utrobique, foliorum exteriorum et intermediorum fere oppositi, foliorum interiorum remoti vel interdum, praesertim ad apicem, leviter approximati, fere oppositi, triangulari, ± recurvati vel sigmoidei, ad apicem acuti, saepe subito contracti; margina distalia conspicue convexa, vel sigmoidea, denticulata; margina proximalia recta integraque. Interlobia foliorum exteriorum angusta, integra, foliorum interiorum omnia vel media angustis dentibus

denticulata usque dentata. Petiolus angustus vel anguste alatus, subrosaceus usque subviolaceus, nervus medianus in parte basali subviolaceus. Scapus folia superans, pallidus, tempore deflorationis violaceus, ad apicem araneus. Calathia distincte convexi, ad 2.5 cm in diametro, flavi, ligulae marginales planae, extus luteolo-olivaceo-brunneo colorae praetextae, ad apicem interdum subrubicundae. Squamae involucri interiores pruinosae, obscure virides, ad apicem corniculatae; squamae exteriores anguste ovatae, inordinate recurvatae, numero 9-12, supra griseo-virides vel subrubicundae, ad apicem corniculatae. Stigmata cano-viridia, sicca nigra. Antherae polliniferae. Achenia purpureo-brunnea, sicca brunnea, immatura luteo-rutila, parte superiori sat dense spinulosa, in inferiore parte turbecalata vel levia, obtusa, 3.5–4.2 longa (pyramide inclusa), 0.8–1.0 mm lata. Pyramida longa et angusta, cyllindrica, 0.9–1.1 mm longa. Rostrum 8–10 mm longum, pappus 5–6 mm longus, sordide albidus. Species apomicta e sectione *Erythrospermorum*. $2n=3x=24$.

Holotypus: in PR conservatur – colectio typorum, no. 11641 (Fig. 1): Czechia: Moravia austro-occidentalis, distr. Znojmo, pagus Kravsko: in graminosis siccis arenosisque in viis silvestribus, 1 km merid.-occidentali ab castello in centrum pagi, 360 m s. m., 48°55'N 15°58'E. Leg. R. J. VAŠUT, 26. IV. 2000. No. herb. 184.5.

Isotypi: in OL, PRA et herb. R. J. VAŠUT.

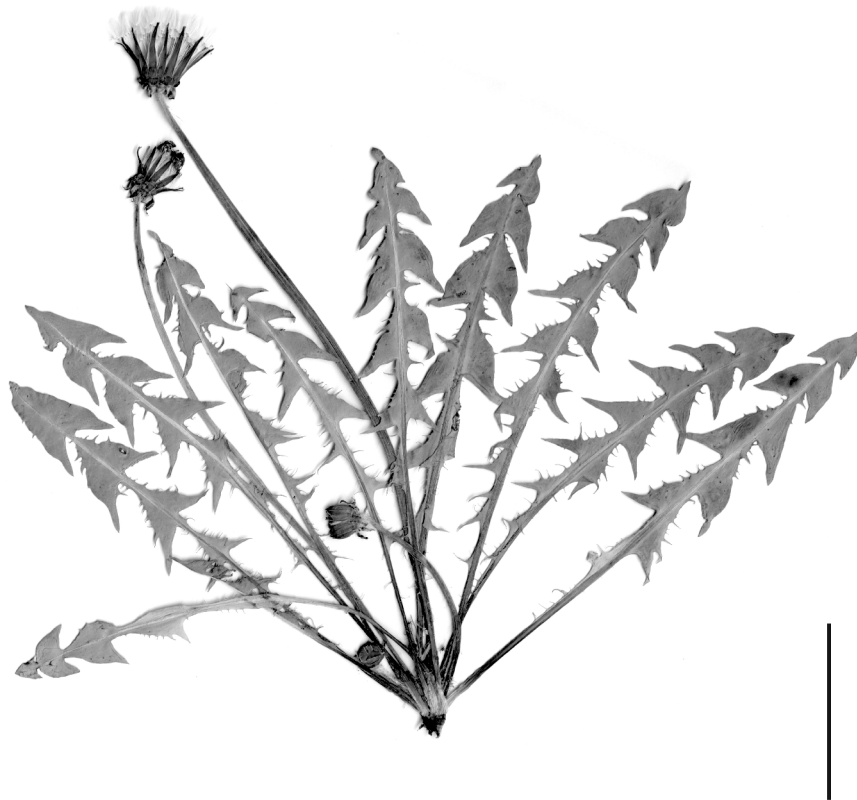
T. princeps is on the type locality growing together with species *T. parnassicum* DAHLST., *T. proximum* (DAHLST.) RAUNK. and two other likely undescribed species.

Exsiccata: J. KIRSCHNER et J. ŠTĚPÁNEK, *Taraxaca* Exsiccata, Fasc. XIII (2003), No. 609.

Ethymologia: princeps = *first*, figurative *noble*, according to its long terminal lobe (like a episcopal mitre).

Taraxacum princeps is an apomictic microspecies (at the triploid level, with pollen grains of varying diameter). It is morphologically distinct species, which is characterised by quite narrow leaves with short lobes with conspicuously convex and often denticulate distal margins (Fig. 2). Achenes are reddish brown, obtuse at the base and have long, narrow pyramid (Fig. 3). Outer bracts are inordinately recurved and have an inconspicuous white hyaline margin.

Species *T. chelelobatum* SAHLIN has a similar leaf-shape, but a shorter pyramid (0.5–0.6 mm), dark-violet stripes of outer ligules and the upper surface of the inner leaves is araneous (see SAHLIN 1981). Another superficially similar species is *T. isophyllum* G. E. HAGL., which particularly resembles young or poorly developed plants. *T. isophyllum* differs from *T. princeps* in that its anthers lack pollen, lateral lobes have an entire distal margin and its achenes are wider and have a shorter pyramid (ca. 0.7 mm long). Main characteristic differences among *T. princeps*, *T. isophyllum* and *T. chelelobatum* are summarized in Table 1.



Taraxacum princeps VAŠUT et TRÁVNÍČEK, sp. nov.
HOLOTYPUS
rev. 28. VI. 2001, Radim J. Vašut.

FLORA MORAVICA

Taraxacum princeps nom. provís.
Taraxacum sect. *Erythrosperma* (LINDB. fl.) DAHLST.

loc. Ph. r. 68 – Moravské podhůří Vysočiny, distr. Znojmo;
Krajsko: in graminosis siccis arenosisque in viis
silvestribus, 1 km merid. occidentali ab castello in centrum
pagi; 360 m s. m. 7061b.

die 26. IV. 2000.
No herb. T-184.5

leg. RADIM J. VAŠUT

Fig. 1. Holotype of *Taraxacum princeps*. The voucher specimen is deposited in PR (colectio typorum no. 11641). Bar = 5 cm.

Tab. 1. Main differences among species *T. princeps*, *T. chelelobatum* and *T. isophyllum*.

	<i>T. princeps</i>	<i>T. chelelobatum</i>	<i>T. isophyllum</i>
pollen	present	present	absent
outer ligule stripes	grey	dark-violet	reddish-brown
position of outer bracts	inordinately spreading to recurved	loosely adpressed	erect to spreading
achene colour	red-brown	red	red
length of achene cone	0.9-1.1 mm	0.5-0.6 mm	0.7 mm

Another similar species is *T. magnolevigatum* W. KOCH ex SOEST nom. inval. According to the original description (VAN SOEST 1969) and original material *T. magnolevigatum* differs from *T. princeps* by several (unreliable) characters such as a larger capitulum, a purple strip on the outer ligules, tar-coloured interlobes, orange coloured achenes, a longer (12 mm) rostrum and the patent (and longer) outer bracts with strongly recurvate ends, but the leaf-shape of both species is quite similar. The shape of the achenes is unknown to us. The identity of the plants named *T. magnolevigatum* by van Soest might be definitively solved by studying its population at the locality he mentioned. Unfortunately, the species has not been found again at that locality since and it is very likely, that it is extinct there (M. SCHMID in litt.).

The status of the name *T. magnolevigatum* is problematic because the holotype specimen was assigned erroneously. VAN SOEST in his original description referred to several herbarium sheets from different collections (including plants from cultivation) as "holotype" (VAN SOEST 1969:114). There is no other explicit remark in his work to indicate which one of these specimens should be considered as the holotype. DOLL (1973) chose a lectotype, but (possibly by mistake) the one he chose (and called a holotype) was a different species, formerly described as *T. gracilens* DAHLST. This lectotypification should be rejected because of the evident discrepancy between the original diagnosis (VAN SOEST 1969) and the selected plant. According to Art. 37 of the International Code of Botanical Nomenclature (GREUTER et al. 1999), we consider the name *Taraxacum magnolevigatum* W. KOCH ex SOEST a nomen invalidum.

Real doubts about whether or not *T. magnolevigatum* and the Central European taxon are identical, which cannot be either confirmed or with certainty rejected (though the evidence favors rejections), together with nomenclatorial status of the name *T. magnolevigatum* (nom. inval. by Art. 37 of ICBN) led us to describe the Central European taxon as a new species.

Karyology: *Taraxacum princeps* is a triploid species, $2n = 3x = 24$: counted from root tips of plants from: southern Moravia – Miroslavské kopce near Miroslav (R. J. VAŠUT 1998 OL). Confirmed by flow-cytometry, $2n \sim 3x$ from: southern Moravia – Oleksovice; southern Moravia – Hluboké Mašůvky; central Moravia – Želeč, Bílá skála: abandoned mining area.

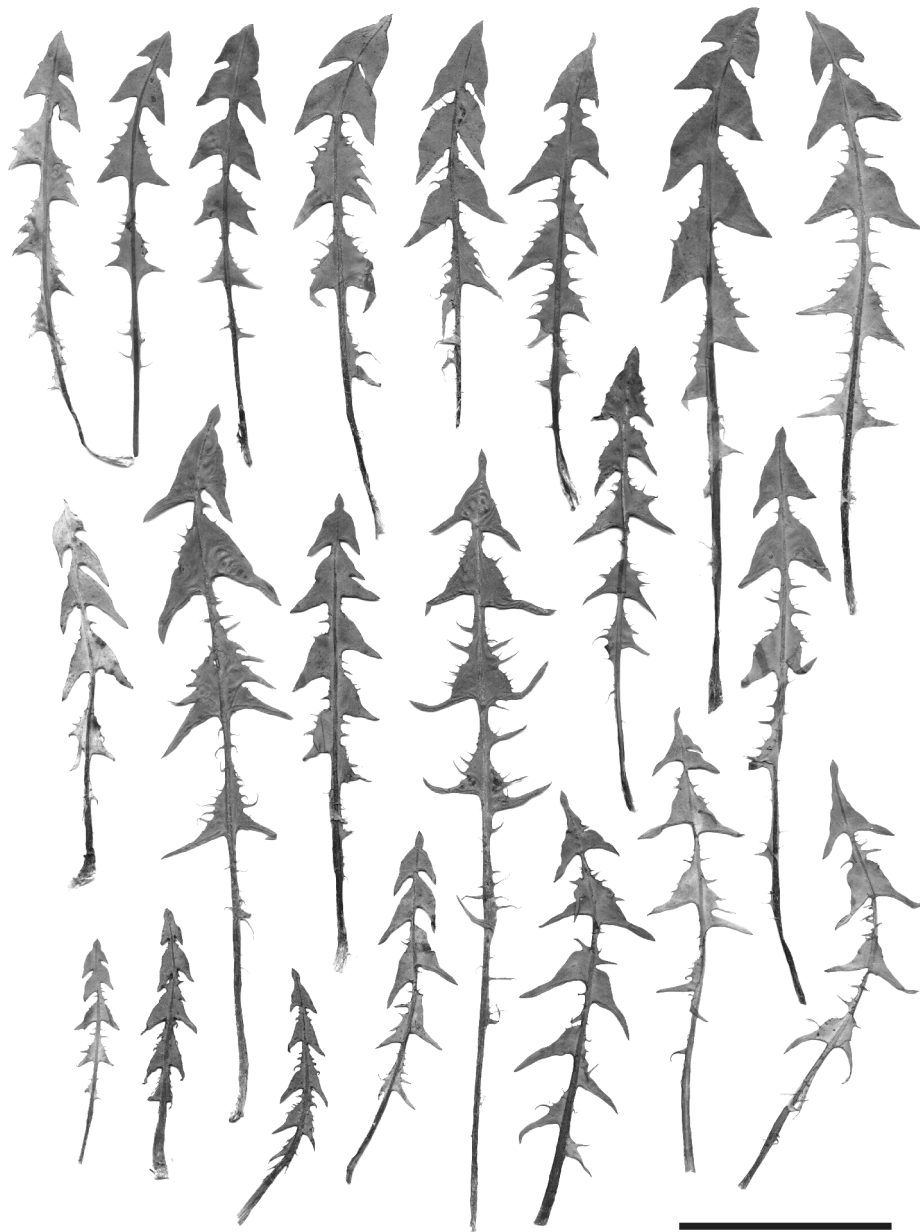


Fig. 2. Variation in leaf-shape in *Taraxacum princeps*. Leaves are from plants growing in different localities and habitats. Bar = 5 cm.

Ecology: The species usually occurs on disturbed dry localities, often on semi-ruderal sites. Mainly it grows on pathways in locust woods in sandy areas (*Balloto nigrae-Robinion* HADAČ & SOFRON 1980) or natural or semi-natural xerothermic grasslands (*Festucion vallesiacaе* KLIKA 1931, *Koelerio-Phleion phleoidis* KORNECK 1974). It can also be found in the vicinity of abandoned mines and rarely also in ruderal areas like pathways or road-margins (*Dauco-Melilotion* GÖRS 1966).

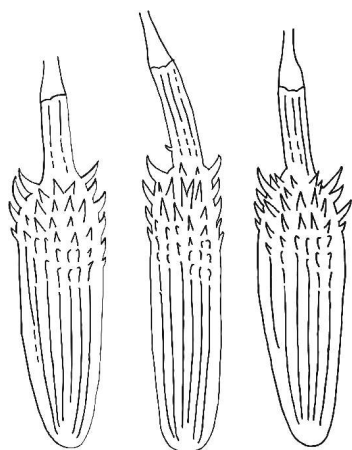


Fig. 3. Achenes of the isotype of *Taraxacum princeps* deposited in OL (RV 184.5). The achenes are characteristically obtuse in bottom end, only slightly spinulose above and often with \pm parallel side margins in middle part of the fruit body. Bar = 1 mm.

Distribution area: *Taraxacum princeps* is a Central European species (Fig. 4). It is known from numerous localities in Moravia and a few localities in Bohemia, Lower Austria and western Slovakia. Several herbarium specimens from western and central Slovakia that were similar to *T. princeps* were examined, but it was impossible to definitively determine the plants due to their imperfect preparation. Their occurrence there is highly probable.

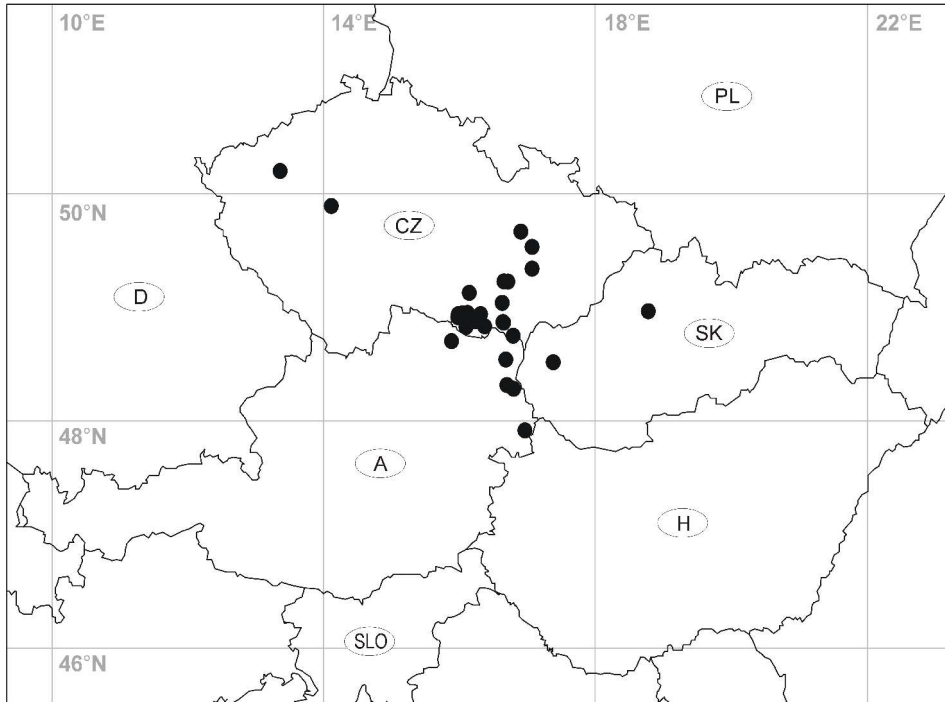


Fig. 4. The presently known distribution of *Taraxacum princeps* in Central Europe.

Selected herbarium specimens

(localities are listed in the original language of the herbarium labels)

Austria – Austria Inferior: Schönfeld im Marchfeld: in graminosis siccis arenosisque in via silvestri (Pinetum) inter pagos Schönfeld et Oberweiden, ca. 2.2 km septentr.-orientali ab ecclesia in centro pagi Schönfeld sita, ca. 160 m s. m. (VAŠUT 2001 OL). – Sulz: in via silvestri (Robinetum), ca. 2 km septentr.-occidentali ab ecclesia in centrum vici Obersulz sita (VAŠUT 2001 OL). – Rohrendorf: in graminosis siccis in declivia aprica, 1 km septentrionali ab centro pagi (VAŠUT 2001 OL). – Strasshof an der Nordbahn: in graminosis siccis arenosisque in via silvestri (Pinetum), 2 km orientali ab ecclesia in centro oppidi sita (VAŠUT 2003 OL).

– Burgenland: Mönchhof: in margine viae in nemo (Robinetum) in regione collina "Pardorfer Heide", ca. 5 km boreo-orientali ab ecclesia in centro oppidi sita (VAŠUT 2003 OL).

Czechia – Bohemia: Podbořany: in fundo lapicidinarum basalticum vetustam in cacumine partis orientali collis Dubový vrch (471 m) (ŠTĚPÁNEK 1991 PRA). – Beroun: vicum Vinařice, in via silvatica in colle Šamor (481 m) (ŠTĚPÁNEK 1991 PRA).

– Moravia: Brno – Obřany: údolí Svitavy, pravý břeh (dubohabrový les) na světlině u cesty [Obřany: right bank of the Svitava river] (BUREŠ 1989 BRNU). – Miroslav: in declivi aprico (in semitis in nemo robinietum) in colle Markův kopec (303 m), haud procul a vertice collis (loca conservata "Miroslavské kopce"), 290 m s. m. (VAŠUT 1998, 2000 OL). – Oleksovice: in margine viae in nemo (Robinetum), 1 km orient.-orient.-meridiem ab ecclesia in centro pagi sita, 230 m s. m. (VAŠUT 2000 OL). – Oleksovice: in via silvestri in

nemo (Robinietum), apud loc. cons. "Oleksovické vřesoviště", ca. 0.8 km austr.-occident.-australi ab ecclesia in centro pagi sita, 250 m s. m. (VAŠUT 2001 OL). – Oleksovice: in graminosis in via silvestri in loco "Na pískách", 2 km austr.-orient.-austr. ab ecclesia in centro pagi sita, 225 m s. m. (VAŠUT 2001 OL). – Lechovice: in graminosis in viis silvestris (Robinietum) in peripheria orientali pagi (haud procul ab ecclesia), 220 m s. m. (VAŠUT 2001 OL). – Suchohrdly u Znojma: in via silvestri in silva Purkrábka, 2.5 km septentr.-orientali a centro pagi, 310 m s. m. (VAŠUT 2001 OL; Taraxaca Exs. No. 609 – ut paratypus constitutus). – Mikulovice: in via silvestri, 2 km orient.-austr.-orientali ab ecclesia in centro pagi sita, 320 m s. m. (VAŠUT 2000 OL). – Načeratice: declivia aprica in colle Načeratický kopec (290 m), circa 2 km septentr.-occidentali ab ecclesia in centro pagi sita, 270–290 m s. m. (VAŠUT 2000 OL). – Hrušovany nad Jevišovkou: in semitis in nemo (Robinietum), 2.5 km occidentali ab ecclesia in centro pagi sita, 200 m s. m. (ŠUTORÝ 1974 BRNM; VAŠUT 2000 OL). – Horní Věstonice: apud semitas prope petram Martinka, 1 km occident.-austr.-occidentali a vertice montis Děvín (549 m), 350 m s. m. (VAŠUT 2000 OL). – Židlochovice: Výhon, podél cesty v listnatém lese, ca. 0.9 km V kostela ve městě a ca. 0.3 km Z kóty 331.9 m, 325 m s. m. [Židlochovice, 0.9 km tds. E, Výhon hill] (DANIHELKA 1998 herb. DANIHELKA). – Valtice: loc. cons. Rendez-vous, 2.5 km septentr.-orientali a centro oppidi, 195 m s. m. (VAŠUT 1999 OL). – Želeč: in fundo lapicidarum vastarum inter pagos Drysice et Želeč, loc. cons. "Bílá skála" (TRÁVNÍČEK & VAŠUT 1998 OL). – Hluboké Mašůvky: in graminosis siccis arenosisque in viis silvestribus (Robinietum), 2.8 km septentr.-orientali ab ecclesia in centro pagi sita, 320 m s. m. (VAŠUT 2000 OL). – Stařechovice – Velký Kosíř: křovinaté svahy s JZ expozicí, asi 1.5 km V od obce, ca. 300 m s. m. [Stařechovice: SW slopes of the Velký Kosíř hill] (TRÁVNÍČEK 1990, 1991 OL).

Slovakia: Malé Karpaty: in rupibus calcareis in jugo ca. 0.5 km situ orientali a ruina arcis Ostrý Kameň, inter pagos Buková et Smolenice, 400–600 m s. m. (KIRSCHNER 1984 PRA). – Kláštor pod Znievom: in graminosis siccis in summo collis Zniev (980 m), 3 km austro-occidento-occidentali ab ecclesia in centro pagi sita (VAŠUT 2003 OL).

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