

New species of *Taraxacum*, sect. *Ruderalia*, found in Central and Northern Europe

Nové druhy rodu *Taraxacum*, sect. *Ruderalia*, ze střední a severní Evropy

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Øllgaard H. (2003): New species of *Taraxacum*, sect. *Ruderalia*, found in Central and Northern Europe. – Preslia, Praha, 75: 137–164.

Examples of *Taraxacum* species (sect. *Ruderalia*) that have a well-known main distribution area and, a few rather isolated, obviously introduced occurrences, are given. The lack of a long tradition of specific knowledge and collection of *Taraxacum* sect. *Ruderalia* specimens have impeded our understanding of the origin of the present distributions. Some views are presented. *Taraxacum ancistratum*, *T. crassum*, *T. deltoidifrons*, *T. infuscatum*, *T. jugiferum*, and *T. lundense*, all belonging to *Taraxacum* sect. *Ruderalia*, are described as new species. Three or four of these species were first found as introductions far away from their supposed main distribution area.

Key words: *Taraxacum*, sect. *Ruderalia*, *Asteraceae*, taxonomy, new species, alien species, Central Europe, Nordic countries

Some *Taraxacum* species that are likely to have been introduced into Nordic countries

Several descriptions of *Taraxacum* species from Nordic countries are based on a few plants, collected in a small area sometimes far from their main distribution area. For example, the sect. *Erythrosperma* species *T. plumbeum* Dahlst. and *T. tortilobum* Florstr., described from Sweden, Gotland, Visby harbour, and Finland, Pori, Reposaari, respectively, are isolated occurrences far away from their main areas in Germany and W Germany, Netherlands, Belgium and N France, respectively. While the native distribution of these two species is well known that of many other, evidently introduced, *Taraxacum* species remains unknown. This is also true of species in sect. *Ruderalia* which occur in a greater diversity of habitats than most other *Taraxacum* sections.

In a series of publications (1957, 1960, 1962, 1964a, 1964b, 1967, 1976–1977) A. Railonsala described many *Taraxacum* species (sect. *Ruderalia*) found on former German military camp sites, mostly in northern Finland (e.g. Kalkkima and Kaakamo), and assumed to have been introduced, e.g. with the hay for horses. They are also present in another German military camp in Finland, Hyrynsalmi, Kangasjärvi, investigated by L. Heikkinen, whose collections were mostly evaluated by B. Saarsoo, Sweden in his papers from 1962.

Out of the 176 supposedly introduced species described by Railonsala only 14 were definitely found outside Finland, eight of them in their probable native regions in Poland, Germany and the Czech Republic where they are more or less common and widespread. They are *T. acervatulum*, *T. chrysophaenum*, *T. corpulentum*, *T. floccosum*, *T. hepaticum*, *T. quadrangulum*, *T. staturale* and *T. violaceinervosum*. A ninth species, *T. horridifrons* Railons., is rare in Finland, but widespread and locally common in the other Scandinavian countries and in Central Europe, and might have come to Finland before the World War II or from the other Nordic countries.

Other species, collected and described by Railonsala from the Finnish camp sites are still not known to occur in Central Europe. They are *T. cumulatum* and *T. cycloides* (both known from Denmark), *T. habile*, (Denmark, Sweden), *T. megalosipteron* (Sweden), and *T. sahlinii* (Sweden, rather common in NE Finland). Their native geographical range is still uncertain. The latter species might, however, be native to the Nordic area, because it thrives and is widely distributed there and is often associated with species regarded as native to the Nordic area.

The former German military camps Kalkkima and Kaakamo were visited by J. Räsänen and the present author in 1999. The *Taraxacum* flora of these “classical” Railonsala sites still deviates considerably from that of average north Finnish ruderal sites in the occurrence of a great number of unusual sect. *Ruderalia* species, many of which were probably introduced during World War II. We also visited another former German military camp, Kangasjärvi near Hyrynsalmi in Finland in 1999. Three of the *Taraxacum* species, described by Saarsoo from this location, were still present there, namely *T. heikkinenii*, *T. paucilacerum*, and *T. subserratifrons*. Two of them, *T. heikkinenii* and *T. subserratifrons*, were also present at Kalkkima and Kaakamo.

This shows that introduced *Taraxacum* species of sect. *Ruderalia* can survive for many years, even if the climate differs from that in their home region. *T. subserratifrons*, as it is found not only in Germany and Poland, but also in southern Finland, Estonia, Sweden, and Denmark, seems to have a wide native distribution rather than being a recent introduction to Finland.

Two species, also described by Saarsoo from the Hyrynsalmi region, namely *T. hyrynsalmense* and *T. sanguinicolor*, have recently been identified in collections from eastern Poland, which indicates that this region may be part of their native distribution area.

After excluding Railonsala’s 35 superfluous *Taraxacum* epithets (synonyms) there still remain 141 taxa, the native distribution ranges of which are not known. There is a need to study material in the Oulu and Helsinki herbaria, where the majority of Railonsala’s type specimens are located. Botanists studying the *Taraxacum* sect. *Ruderalia* flora of e.g. Central Germany, Poland and the Czech Republic might find some of their local species in these collections and at Railonsala’s type locations in N Finland.

Expansion and decrease of species in the *Taraxacum* sect. *Ruderalia*

Due to their different competitive abilities on cultivated or disturbed soil *Taraxacum* species expand or decrease their ranges to different degrees. It is well-known that *Taraxacum* sections with special ecological requirements are influenced dramatically by changes of their preferred habitats (see e.g. Kirschner & Štěpánek 1998). In modern agriculture, the existence of stabilized botanical habitats depends on management regimes. The decrease of specialist *Taraxacum* species is usually caused by sudden habitat changes or vigorous competition.

In section *Ruderalia*, however, the great majority of species are favoured by disturbance, cultivation and high nutrient levels. In such habitats, most species are expected to become more widespread, but not always so. Below examples of decreasing and expanding *Ruderalia* species are cited, with possible explanations for these changes.

When I started collecting and identifying *Taraxacum* about 35 years ago, one of the commonest *Ruderalia* species in the region between Århus, Silkeborg, Herning, Varde, Kolding and Vejle (all in Denmark, Jutland) was *T. acutifidum* M. P. Chr. However, several visits to the same region over the last 5 years have revealed that for unknown reasons this species is now rare.

Another such example is *T. speciosum* Raunk. In an unpublished manuscript (1967, in the author's possession) the Danish taraxacologist M. P. Christiansen records this conspicuous *Ruderalia* species as common in NE Sjælland (Zealand). Although *T. speciosum*, with its dark yellow and large flowerheads, is difficult to overlook by any taraxacologist, it has only been seen a few times during the latest 20 years.

Any conclusions regarding the reasons for changes in species frequency are premature without thorough investigations. However, further examples of *Ruderalia* species that have recently suffered a reduction in distribution area can be mentioned. G. Marklund (1940) in his survey of the *Taraxacum* flora in Nyland (S Finland) records two well-known and conspicuous *Taraxacum* species as common in the Helsinki region, namely *T. crispifolium* and *T. reflexilobum* [= *T. gibbiferum* (Brenner) Brenner]. During an international *Taraxacum* excursion in Helsinki and surroundings in 1998 neither of these two species were seen, although several potential habitats for them were visited and thoroughly investigated.

It may be that species with apomictic reproduction are eventually outcompeted by genetically more flexible competitors.

In the same period of time a remarkable expansion of some *Ruderalia* species was observed. Since the description of *T. distinctilobum* H. Øllg. (1978) this species has recorded from 33 botanical districts in Denmark and Sweden (1978: 9 districts in Denmark only). It is a fact that the presence of a well-known new species is more likely to be recorded than that of an unknown species, but this fact cannot be the only reason for the many new observations. *T. distinctilobum* in its main distribution area (Denmark, Little Belt and Funen) is usually a very common species, which often grows in hundreds in its locations. M. P. Christiansen during his excursions in 1954–1961 investigated about 45 localities, which were the core of the *T. distinctilobum* area when the species was described in 1978. Despite a thorough search of the collections in Botanical Museum, Copenhagen, not one specimen of *T. distinctilobum*, collected by M. P. Christiansen before 1978, was found. It is likely that *T. distinctilobum* was rare when Christiansen made his excursions and has later expanded dramatically, because he is unlikely to have missed such a distinctive species.

Another species that is probably expanding its range is *T. ruptifolium* H. Øllg. (1978), a very conspicuous species, difficult to overlook by any taraxacologist. When this species was described in 1978 it was known only from 5 Danish botanical districts. Now it is known from sites in Germany, Rügen (3 loc.), Sweden, Lund and Malmö (several loc.), and Denmark (16 bot. districts). Neither M. P. Christiansen (in Denmark) or G. Haglund (Lund and Rügen) have collected *T. ruptifolium* during their excursions, and probably not seen it either. Even on this weak evidence it is tempting to assume that *T. ruptifolium* is a strongly expanding species.

In a moment of fantasy one could imagine that these two species and other quickly expanding *Ruderalia* species have an intense but brief existence in local floras. However, this cannot be confirmed or rejected without published *Taraxacum* flora reports from as many regions as possible. As the history of the *Taraxacum* species concept is less than a hundred

years old there is still much work to do in this genus, especially with respect to frequent changes in the section *Ruderalia*.

Long-term investigations are dependent on well-kept *Taraxacum* collections, which should reflect not only the identity of the respective species, but also their frequency. However, the future of *Taraxacum* collections in public herbaria appears is uncertain and financial constraints impede the acquisition of new material and regular revision.

Six new *Taraxacum* species of sect. *Ruderalia*

The following text contains descriptions of six new species of *Taraxacum*, all members of sect. *Ruderalia*, which the author has known and studied for several years without being able to identify them as previously described species. They are all either locally very common or have a distinct and attractive appearance.

Taraxacum crassum is described jointly with B. Trávníček. Both of us independently determined that this species was an undescribed species. We have agreed to keep the name *T. crassum* with two authors. *Taraxacum lundense* was first detected and given a preliminary name by H. Wittzell, who showed the species to the present author and kindly suggested a joint description.

T. ancistratum and *T. jugiferum* both have a strongly disjunct distribution areas involving an isolated introduction to Denmark, together with their supposed area of origin, a more continuous areas of distribution in the Czech Republic and Germany. One single plant of *T. ancistratum*, found in North America, confirms the suggestion that several introduced species, especially members of sect. *Ruderalia*, can be expected to occur in eastern parts of that continent. *T. crassum* and *T. lundense* also seem to have their main distribution area in Central Europe, where *T. crassum* at least is very common. Both are thought to be rather recent additions to the Nordic *Taraxacum* flora, *T. crassum* because of its widely separated locations in Denmark and southern Sweden, and *T. lundense* because of its rather limited area of distribution around Lund, and one single Danish occurrence, a few specimens in a park.

The following abbreviations are used (initials in brackets = public, resp. private, herbaria): BT: B. Trávníček; CIS: C. I. Sahlin; EW: E. Wessberg; HØ: the author; HRY: H. Rydberg; HW: H. Wittzell; IU: I. Uhlemann; JR: J. Räsänen; KJ: K. Jung; TBP: T. Brandt-Pedersen; TN: T. Nilsson; ZG: Z. Głowacki

Taraxacum ancistratum H. Øllg., spec. nova

Holotype [C, HØ 92-161 (Fig. 1)] **Isotypes** [AAU, HØ 92-161 (part of holotype individual); L, HØ 92-160; WSRP, HØ 92-162; PRA, HØ 92-163]: Denmark, Ø. Jylland (E Jutland), TBU-distr. 25, Fredericia, Nørre Voldgade, between "Landsoldaten" and Krudttårnet ("Det hvide vandtårn") (pos.: 55°34'08" N 9°45'18" E), on the old embankment, grassy slope, 6. 5. 1992 H. Øllgaard. Achene (Fig. 2) from paratype: HØ 96-272 (2 parts, see below) (HØ)

Descriptio: Sectio *Ruderalia*. Planta mediocriter alta (20–45 cm). Folia saturate et laete flavoviridia, sat lucida, glabrescentia. Lobi laterales recurvi, ± integri, ± hamati, apice subacuto – subobtusos. Lobus terminalis praesertim in foliis interioribus major, ovatus, apice obtuso, lateribus integris vel saepe paulo rotundato-incisis, lobulis lateralibus saepe valde hamatis. Petioli ± alati, cum nervo mediano pallidi. Scapi glabrescentes, sub involucre magis pilosi. Involucrum obscure viride, paulo pruinatum. Squamae exteriores late lanceolatae, 14–15 mm longae, ca. 4 mm latae, ± patentibus – recurvae, virides, margine plano, margine hyalino nullo. Squamae

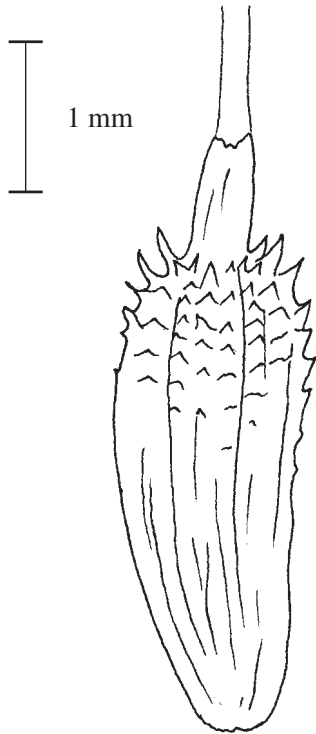


Fig. 2. – *Taraxacum ancistratum*, achene from cultivated specimen of the original collection (HØ 96-272).

interiores latitudine inter se similes. Capitulum ca. 50 mm diametro, luteum, mediocriter densum – sat laxum, convexum, ligulibus planis – canaliculatis, marginalibus subtus stria laete cano-violacea quam ligula angustiore ornatis, denticulis apicalibus luteis. Antherae polliniferae, granis pollinis diametro variis. Stigmata lutea vel rarius paulo virescentia. Achenium (speciminis sub numero HØ 96-272 culti, vide Fig. 2) stramineum, ca. 4 mm longum (pyramide inclusa), spinulis mediocriter longis, mediocriter validis, rectis, pyramide cylindrica laevi, 0.7–0.8 mm longa. Rostrum 10–11 mm longum, pappo albo.

Description: Section *Ruderalia*. Plant medium-sized (20–45 cm). Leaves yellowish deep fresh green, somewhat shiny, glabrescent, unspotted. Leaf lobes recurved, undivided, with upper edge distinctly convex and entire (or almost so) and lower lobe edge almost straight, entire. Lobe apices medium acute. Interlobes acute-angled, flat to faintly or irregularly plicate, green. Terminal lobes conspicuously ovate, obtuse, on inner leaves larger than the side lobes, often with one or two faint, rounded, incisions and the lateral lobules with incurved apices. Petiole wings usually broad. Petiole colour green to white. Midrib green. Scapes mostly glabrous, under buds hairy. Bud dark green, faintly pruinose. Outer bracts 14–15 mm long, ca. 4 mm broad, ± horizontal, regular, greenish, with flat margins without distinct hyaline border. Inner bracts almost equally wide, not coalescent.

Capitulum ca. 50 mm in diameter, medium yellow, medium dense to rather lax, profile ± convex. Ligules flat or canaliculate. Ligule stripe narrower than ligule, greyish. Ligule teeth of inner flowers yellow. Pollen present, grains of varying diameter. Stigmas yellow (to faintly discoloured).

Achene (of a cultivated specimen – No. HØ 96-272) of the original collection (see Fig. 2) straw-coloured or greyish brown, 3.9–4.1 mm long (incl. cone). Achene spinules medium long, medium strong, straight. Achene cone cylindrical, smooth, 0.7–0.8 mm long. Rostrum length 10–11 mm.

Taraxacum ancistratum is best compared with the well-known and widely distributed species *T. ancistrolobum* Dahlst., which has the same hamate leaf lobes, obtuse endlobes, pallid leaf petioles, and size and direction of the outer bracts. From this latter species it is easily separated by its fresh green leaves (not dark, greyish to faintly bluish green as in *T. ancistrolobum*), endlobes of inner leaves with more incurved side lobule apices and with faint, rounded, incisions on one or both sides. The stigmas of *T. ancistratum* are yellowish, not discoloured as in *T. ancistrolobum*.

Cultivation of a transplanted specimen of the original collection in my garden for several years has confirmed the constancy of the specific features of *T. ancistratum*.

Habitat and distribution: *Taraxacum ancistratum* was found on \pm disturbed roadsides and verges near forest and cultivated meadows in Europe: Czech Republic, apparently widespread but scarce in E Moravia; Denmark, E Jutland, rare, district 25, Fredericia; North America: USA, Washington DC.

Voucher specimens: **Czech Republic:** E Moravia (all specimens, quoted here, were collected by P. Lustyk, BT and HØ): Moravskoslezské Beskydy, Morávka 6 km tds. SSW, Mohelnice-valley, Sihly, roadside, 13. 5. 1998 HØ 98-383, -384 (HØ); Jablunkov 9 km tds. WSW, Horní Lomná, Tatínky (550 m), roadside at forest, 13. 5. 1998 HØ 98-372 (HØ); Hnojník 7 km tds. SSE, Příslop (520 m) unmanured meadow, 13. 5. 1998 HØ 98-377, -378 (HØ); Slezské Beskydy, Třinec, Nýdek 2 km tds. E, Střelma, roadside in forest, 13. 5. 1998 HØ 98-360, -361 (HØ). – **Denmark:** E Jutland (Ø. Jylland): TBU-distr. 25, Fredericia, Nørre Voldgade betw. "Land-soldaten" and Krudttårnet ("Det hvide vandtårn"), grassy embankment, 6. 5. 1992 HØ (type collection, see above); specimens collected from a transplanted specimen (root) of the original collection: HØ 93-223 (HØ), and 96-272 (Paratype with described achenes (2 parts) (HØ)). – **North America, USA:** Washington DC, Memorial Park, grassy verge, 27. 4. 1950 C. E. Sonck (herb. Sonck).

Taraxacum crassum H. Øllg. et Trávníček, **spec. nova**

[*T. crassum* H. Ollg. et Trávníček, nomen, in Meierott (2001: 116)]

Holotype [PRA, HØ 92-155 (Fig. 3)] **Isotypes** [C, HØ 92-156; AAU, HØ 92-157; H, HØ 92-158; S, HØ 92-159]: Denmark, Ø. Jylland (E Jutland), TBU-distr. 25, Fredericia, Nørre Voldgade, old embankment betw. "Landsoldaten" and "Det hvide vandtårn" (55°34'08" N 9°45'18" E) lawn, 6. 5. 1992 H. Øllgaard.

Description: Sectio *Ruderalia*. Planta magnitudine mediocris ad sat robusta, 30–45 cm alta vel altior. Folia late lanceolata ad oblonga, sat multilobata (lobis 5–6 utrimque), laete flavescenti-vel canescenti-viridia, glabrescentia. Lobi laterales deltoidei parum recurvi, integri, margine proximali fere recto ad concaviore, apicibus omnibus acutis vel subacutis. Interlobia rotundata ad angulata, plerumque subundulata et plicata, viridia. Lobus terminalis mediocriter magnus, acutus ad obtusus vel in apicem brevem latum plus vel minus abrupte protractus. Petioli anguste ad late alati, foliorum exteriorum pallidi el parum rosei, intermediorum et interiorum rubri vel rosei, nervo mediano pallido vel parce brunnescente striatulo. Scapi sub involucris valde araneosi, ceterum glabrescentes. Involucrum subobscurum viride, parce pruinosum. Squamae exteriores numerosi (18–25), 15–16 (–18) mm longae, plerumque circa 5 (interdum ad 7) mm latae, valde curvato-reflexae vel retroflexae, bene ordinatae, cano-virides et plus vel minus pruinosae, marginibus planis emarginatis, ad apicem virides, interiores latitudine inter se fere similes. Capitulum luteum, 45–60 mm diametro, convexum, mediocriter densum. Ligulae marginales 2.2–2.6 mm latae, parum canaliculatae, subtus stria cano-violacea quam ligula angustiore ornatae, denticulis apicalibus luteis. Antherae polliniferae, granis pollinis diametro variis. Stigmata virescentia. Achenium stramineum, 3.5–3.9 (–4.1) mm longum (pyramide inclusa), superne spinulosum, spinulis mediocriter longis, mediocriter validis, rectis, pyramide 0.4–0.6 mm longa, fere cylindrica, levi ad levissime spinulosa. Rostrum 13–15 mm longum.

Description: Section *Ruderalia*. Plant medium sized to rather tall and robust, 30–45 cm or taller. Leaves broadly lanceolate to oblong, rather multilobate (5–6 lobes on both sides), light green, faintly glabrescent above, unspotted. Sidelobes slightly recurved (shaped deltoid), undivided, entire (or almost), lower lobe edge almost straight or somewhat concave, lobe apices (in upper leaf half) all medium acute. Inter-lobes (in upper leaf half) broadly rounded to angular, usually somewhat undulate and plicate, green. Terminal lobe usually not distinctly larger than lateral lobes, obtuse to acute, without or with a rather short linguulate tip. Petiole wings narrow to broad. Petiole colour on outer leaves greenish, on inner leaves red, sometimes with all petioles pink to red. Midrib usually pallid to faintly brownish. Scapes rather glabrous, under buds hairy. Bud darkish green, faintly pruinose. Outer bracts numerous (18–25), 15–16 (–18) mm long, about 5.0 mm broad (sometimes 6–7 mm), curved-reflexed with tips bent outwards, rather regularly arranged, light green and whitish pruinose, not with red tip, margins flat and without hyaline border. Inner bracts almost equally wide, not coalescent. Capitulum 45–60 mm in diameter, medium



Fig. 1. – *Taraxacum ancistratum*, holotype.



Fig. 3. – *Taraxacum crassum*, holotype.

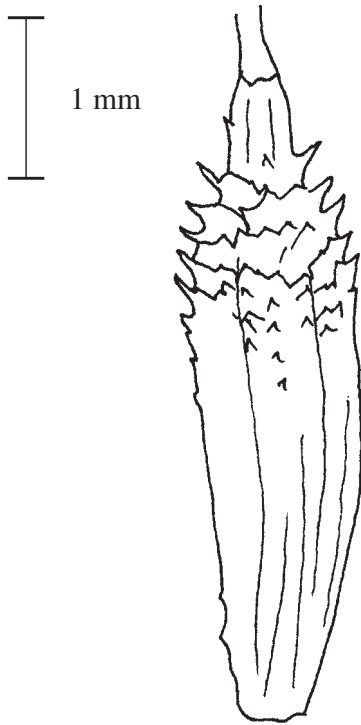


Fig. 4. – *Taraxacum crassum*, achene of holotype.

dense, with a convex profile. Outer ligules narrow (2.2–2.6 mm broad), slightly canaliculate, on the underside with a greyish stripe which is narrower than the ligule. The apical teeth are yellow. Pollen present, heterogenous. Stigmas discoloured. Achene straw-coloured, 3.5–3.9 (–4.1) mm long (incl. cone). Achene spinules medium long, medium strong, straight, cone almost cylindrical, smooth, rarely faintly spinulose, 0.4–0.6 mm long. Rostrum 13–15 mm long.

Taraxacum crassum is a typical member of sect. *Ruderalia*, recognized by its pale leaf colour, equally sized and equally shaped side lobes, and reflexed, sigmoid, broad outer bracts. The closest morphological relative of *T. crassum* is *T. hepaticum* Railons., which has a similar leaf morphology, yet usually with a darker leaf colour and frequently tar-coloured interlobes (Fig. 5). The interlobes of typically developed outer (sometimes also middle) leaves of *T. hepaticum* are well-defined, angular, sometimes with a conspicuous tooth, not undulate and plicate, whereas those of *T. crassum*, when well-defined, are entire or only rarely more than subulate-toothed, often distinctly undulate and plicate (see Fig. 4). The outer involucre bracts of *T. crassum* are numerous (18–25), moderately reflexed with their tips bent outwards, whereas the

bracts of *T. hepaticum* are usually 16–20 in number, retroflexed with their tips usually touching the scape under the bud. The outer flower ligules of *T. hepaticum* are wider (2.5–2.9 mm) than those of *T. crassum*. *T. crassum* somewhat resembles *T. rhamphodes* Hagl., but the latter species has mid-green leaves with the terminal lobes often rounded at the base. Besides, the outer involucre bracts of *T. rhamphodes* are bordered and red-tipped. Weakly developed specimens also look like *T. lingulatum* Markl., but have a different (lighter) leaf colour, more regularly arranged leaf lobes and different position of outer bracts (strongly retroflexed in *T. lingulatum*). When fully developed *T. lingulatum*, unlike *T. crassum*, often has some leaves with one or two lobe apices quite obtuse, and distant lobe pairs shaped more or less like birds' wings.

Habitat and distribution: *Taraxacum crassum* is found in typical sect. *Ruderalia* habitats, such as roadsides, cultivated grass fields, lawns, and on \pm disturbed soil in gardens and parks. The known distribution area is as follows:

Bulgaria (N part). – **Czech Republic** (in the following phytogeographical regions; the number after the district refers to the number of localities): 15b. Hradecké Polabí (1), 15c. Pardubické Polabí (1), 16. Znojemsko-brněnská pahorkatina (2), 17a. Dunajovické kopce (1), 18a. Dyjsko-svratecký úval (2), 18b. Dolnomoravský úval (4), 19. Bílé Karpaty stepní (7), 20a. Bučovická pahorkatina (6), 20b. Hustopečská pahorkatina (5), 21a. Hanácká pahorkatina (8), 21b. Hornomoravský úval (16), 24a. Chebská pánev (1), 26. Český les (1), 27. Tachovská brázda (1), 28d. Toužimská vrchovina (2), 28f. Svojišinská pahorkatina (1), 31a. Plzeňská pahorkatina vlastní (1), 32.

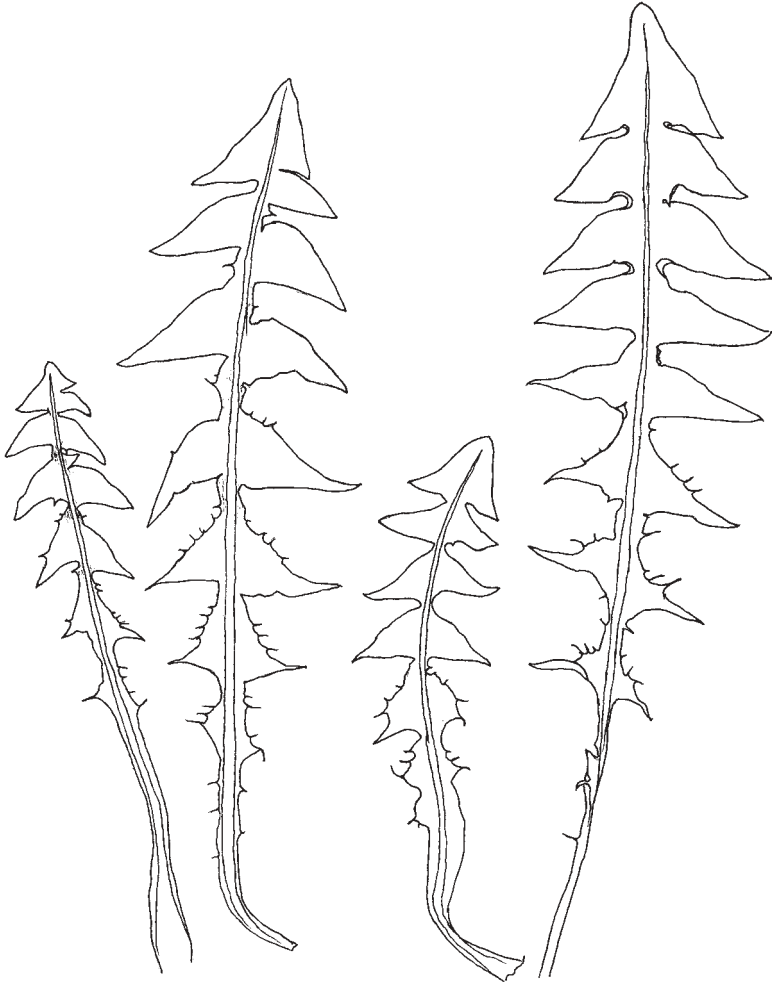


Fig. 5. – Outer (a) and middle (b) leaf of *Taraxacum hepaticum* (left) and *T. crassum* (right) (*T. hepaticum*: Denmark, S Jutland, Højer, specimen HØ 01-156 (HØ), *T. crassum*: original collection).

Křivoklátsko (1), 34. Plánický hřeben (1), 36a. Blatensko (1), 37d. Čkynské vápence (1), 37e. Volyňské Předšumaví (2), 37f. Strakonické vápence (1), 37i. Chvalšinské Předšumaví (1), 37l. Českokrumlovské Předšumaví (2), 37m. Vyšebrodsko (1), 43a. Čertovo břemeno (1), 47. Šluknovská pahorkatina (3), 58b. Polická kotlina (1), 58g. Broumovské stěny (1), 59. Orlické podhůří (1), 61a. Křivina (1), 61c. Chvojenská plošina (1), 62. Litomyšlská pánev (2), 63f. Českotřebovský úval (1), 63g. Opatovské rozvodí (1), 63i. Hřebečovská vrchovina (1), 63j. Lanškrounská kotlina (1), 63l. Malá Haná (1), 64a. Průhonická plošina (1), 67. Českomoravská vrchovina (1), 68. Moravské podhůří Vysočiny (3), 69b. Sečská vrchovina (1), 70. Moravský kras (4), 71a. Bouzovská pahorkatina (2), 71b. Dražanská plošina (6), 71c. Dražanské podhůří (5), 72. Zábřežsko-uničovský úval (4), 73a. Rychlebská vrchovina (2), 73b. Hanušovická vrchovina (1), 74a. Vidnavsko-osoblažská pahorkatina (5), 74b. Opavská pahorkatina (9), 75. Jesenické podhůří (9), 76a. Moravská brána vlastní (10), 76b. Tršická pahorkatina (5), 77a. Žďánický les (1), 77b. Litenčické vrchy (6), 77c. Chřiby (7), 78. Bílé Karpaty lesní (12), 79. Zlínské vrchy (9), 80a. Vsetínská kotlina (10), 80b. Veřovické vrchy (1), 81. Hostýnské vrchy (4), 82. Javorníky (6), 83. Ostravská pánev (6), 84a. Beskydské podhůří (12), 84b. Jablunkovské mezihoří (1), 88a. Královský hvozď (4), 88b. Šumavské pláně (4), 88c. Javorník (1), 88g. Hornovltavská kotlina (ca. 10), 88h. Svatotomášská hornatina (2), 91. Žďárské vrchy (2), 95a. Český hřeben (2), 97. Hrubý Jeseník (1), 98. Nízký Jeseník (3), 99a.

Radhošské Beskydy (15). – **Denmark** (Ø. Jylland and Zealand, TBU-districts 14, 25, 40, 42, 45b). – **Germany** (Baden-Württemberg, Bayern, Hessen, Mecklenburg-Vorpommern, Niedersachsen, Rheinland-Pfalz, Sachsen, Schleswig-Holstein). – **Poland** (Kielce, Warszawa). – **Slovakia** (W part). – **Sweden** (Skåne).

The centre of distribution of *Taraxacum crassum* is seemingly the Czech Republic and Central Germany, where it is one of the commonest species, often abundant. In Denmark and Sweden it is seemingly a recent introduction. In Denmark, Jutland, Thorning, it is found growing together with some very rare, partly undescribed, species of sect. *Ruderalia*. However, in the Danish *T. crassum* localities, seen by the Danish author, including the type location, it is abundant.

Voucher specimens: **Bulgaria:** Stara planina Mts., Šipka near Kazanlak, road margin near Bezludža Mt. (1441 m), ca. 1200–1300 m a.s.l. (ca. 42°45' N 25°23' E) (OL) – the plant collected in nature as radix (by R. Bělohávková, 22. 7. 1998), cultivated and collected in botanical garden Průhonice in 1999 sub no. JŠ 6815. – **Czech Republic:** Central Bohemia: Zdice 4 km tds. W, Stroupinský Mlýn, meadow in forest, 8. 5. 1998 HØ et al. HØ 98-117 (H). W Bohemia: Konstantinovy Lázně 100 m E of hotel Jitřenka, lawn, 14. 5. 1992 HØ 92-199 (AAU, OL); do., in the town park, lawn, 14. 5. 1992 BT as *T. pileus-napoleoni* ined. (HØ); distr. phytogeogr. 28d. Toužimská vrchovina: Hanov (near Mariánské Lázně), 1 km N of the village, wet meadow near road, ca. 650 m s. m. (49°55'05" N 12°52'13" E), 14. 5. 1993 BT (OL). S Bohemia: distr. phytogeogr. 36a. Blatensko: Řečice, meadow W from the pond near S margin of the village (49°25'60" N 13°50'48" E), 7. 5. 1994 BT (OL); distr. phytogeogr. 37l. Českokrumlovské Předšumaví: Květušín near Hořice na Šumavě, lawns in the settlement (48°47'01" N 14°08'06" E), 25. 5. 1997 BT (OL); distr. phytogeogr. 88a. Královský hvozď: Špičák near Železná Ruda, meadow near road in the village (49°09'40" N 13°13'35" E), 25. 5. 1996 BT (OL); distr. phytogeogr. 88b. Šumavské pláně: Filipova Huť near Modrava, lawns in the village (49°01'46" N 13°31'10" E), 28. 5. 1995 BT (OL); distr. phytogeogr. 88b. Šumavské pláně: Nové Hutě, meadows S from the crossroads ca. 2 km NNW of the village (49°03'08" N 13°38'06" E), 27. 5. 1995 BT (OL); distr. phytogeogr. 88g. Hornovltavská kotlina: Bližší Lhota near Horní Planá, meadow near W margin of the settlement (48°45'23" N 14°00'33" E), 24. 5. 1997 BT (OL); distr. phytogeogr. 88g. Hornovltavská kotlina: Volary, lawns in the town (48°54'38" N 13°53'26" E), 24. 5. 1997 BT (OL); distr. phytogeogr. 88h. Svatotomášská hornatina: Svatý Tomáš near Frymburk, lawns in the settlement (48°38'29" N 14°06'11" E), 24. 5. 1997 BT (OL); E Bohemia: distr. phytogeogr. 62. Litomyšlská pánev: Sruby, meadow at overpass of railway ca. 1.5 km E (-ESE) of the railway station (49°59'39" N 16°09'12" E), 11. 5. 1997 BT (OL); distr. phytogeogr. 62. Litomyšlská pánev: Choceň, meadow at the road Choceň – Dvořičko ca. 1.5 km SW of the railway station (49°59'08" N 16°12'25" E), 11. 5. 1997 BT (OL); N Moravia: Ostravská pánev: Český Těšín, 1.2 km NW of the railway station, town lawn at a bathing pool (49°45'05" N 18°36'38" E), 29. 4. 1990 BT T699/90 (HØ); Beskydské podhůří: Dobrá (near Frýdek-Místek), 1.1 km WNW of the railway station, lawn at the railroad (49°40'28" N 18°23'53" E), 30. 4. 1990 BT T696/90 (HØ); Opavská pahorkatina, Zábřeh (near Opava), wet meadow just SW of the village, nature reserve “Zábřežské loučky” (49°55'10" N 18°04'38" E), 6. 5. 1992 BT (HØ); Ostravská pánev, Šenov (near Havířov), ESE of the railway station, wet meadows along the Lučina River (49°46'54" N 18°23'01" E), 9. 5. 1992 BT (HØ); distr. phytogeogr. 74a. Vidnavsko-osoblažská pahorkatina: Vidnava, wet meadow NE of the village, nature reserve “Vidnavské loučky”, ca. 230 m s. m. (50°22'55" N 17°11'53" E), 2. 5. 1994 BT (OL); distr. phytogeogr. 74a. Vidnavsko-osoblažská pahorkatina: Liptaň, margins of the road Liptaň-Dívčí Hrad, ca. 350 m s. m. (50°13'50" N 17°36'55" E), 9. 5. 1995 BT (OL); distr. phytogeogr. 74b. Opavská pahorkatina: Štáblovice, lawns near the railway station, ca. 280 m s. m. (49°54'03" N 17°49'24" E), 6. 5. 1993 BT (OL); distr. phytogeogr. 75. Jesenícké podhůří: Dvorce, meadows in the Lomnice Brook valley, ca. 1.7 km E of the village, ca. 560 m s. m. (49°49'57" N 17°34'07" E), 18. 5. 1994 BT (OL); distr. phytogeogr. 84a. Beskydské podhůří: Myslík, meadow ca. 1.5 km NE of the southern village margin (49°37'16" N 18°16'33" E), 9. 5. 1997 BT (OL); distr. phytogeogr. 84a. Beskydské podhůří: Tichá, meadow at the Tichávka Brook in western part of the village (49°34'26" N 18°11'43" E), 9. 5. 1997 BT (OL). Central Moravia: Chropyně, ca. 0.8 km SW of the railway station, moist meadow 190 m s. m., 26. 4. 1994 BT as *T. pileus-napoleoni* ined. (distributed by J. Kirschner & J. Štěpánek: *Taraxaca Exsiccata*, fasc. IX (1995–1996), No. 394); distr. phytogeogr. 21b. Hornomoravský úval: Popůvky near Kojetín, wet meadows W of the village, ca. 190 m s. m. (49°19'43" N 17°17'35" E), 30. 4. 1994 BT (OL); distr. phytogeogr. 21b. Hornomoravský úval: Olomouc, meadows in the nature reserve “Planě loučky” ca. 1 km N from the railway station “Olomouc-Repčín”, ca. 210 m s. m. (49°37'19" N 17°13'53" E), 26. 4. 1994 BT (OL); distr. phytogeogr. 72. Zábřežsko-uničovský úval: Moravičany, lawns at the eastern margin of the village (49°45'15" N 16°58'23" E), 15. 5. 1996 BT (OL); distr. phytogeogr. 76b. Tršická pahorkatina: Velký Újezd, meadow in the valley of the Říka Brook ca. 1.6 km SE of the village, ca. 360 m

s. m. (49°34'06" N 17°29'54" E), 4. 5. 1994 BT (OL); distr. phytogeogr. 77b. Litenčické vrchy: Troubky (near Morkovice), meadow at brook near the crossroad in the eastern part of the village (49°13'38" N 17°16'42" E), 3. 5. 1997 BT (OL); W Moravia: Dražanská plošina: Holštejn (near Blansko), 0.6 km NE of the village, meadow in the valley of Bílá voda River (49°24'33" N 16°47'06" E), 9. 5. 1990 BT T690/90 (HØ); distr. phytogeogr. 68. Moravské podhůří Vysočiny: Svitávka, meadow between road and railway ca. 0.5 km NW from the railway station (49°30'19" N 16°35'15" E), 18. 5. 1996 BT (OL); distr. phytogeogr. 71b. Dražanská plošina: Křtiny, meadows in brook valley near the arboretum ca. 2.5 km N of the village, ca. 470 m s. m. (49°19'12" N 16°44'39" E), 12. 5. 1994 BT (OL); distr. phytogeogr. 71c. Dražanské podhůří: Křtiny, meadows along the road Křtiny-Jedovnice near N margin of the village, ca. 440 m s. m. (49°18'20" N 16°44'46" E), 12. 5. 1994 BT (OL). S Moravia: distr. phytogeogr. 18a. Dyjsko-svratecký úval: Kostice, meadows ca. 1.5 km SE of the village, ca. 160 m s. m. (48°44'17" N 16°59'39" E), 30. 4. 1995 BT (OL); distr. phytogeogr. 20a. Bučovická pahorkatina: Nesovice, wet meadow along Litava Brook in the village (49°09'03" N 17°05'16" E), 3. 5. 1997 BT (OL); distr. phytogeogr. 20a. Bučovická pahorkatina: Zlobice, lucerne field along road ca. 1 km SW of the village (49°17'55" N 17°18'02" E), 3. 5. 1997 BT (OL); distr. phytogeogr. 77c. Chřiby: Buchlovice, meadow at brook ca. 1 km WNW from the water reservoir "Smrdávka" (49°04'46" N 17°19'06" E), 6. 5. 1997 BT (OL); distr. phytogeogr. 77c. Chřiby: Staré Hutě, meadow at road near SW margin of the village (49°07'34" N 17°16'18" E), 6. 5. 1997 BT (OL); distr. phytogeogr. 78. Bílé Karpaty lesní: Vyškovec, marsh at brook ca. 1.3 km SE from the Príslop Hill (711 m), nature reserve "Chmelinec", ca. 450 m s. m. (48°56'26" N 17°51'10" E), 10. 5. 1994 BT (OL). E Moravia: Moravskoslezské Beskydy, Prostřední Bečva, S of the village, 0.5 km N of the hill Hákovský vrch (671 m), pasture, ca. 550 m s. m., 16. 5. 1993 BT as *T. pilleus-napoleoni* ined. (distributed by J. Kirschner & J. Štěpánek: *Taraxaca Exsiccata*, fasc. IX (1995–1996), No. 395); Distr. phytogeogr. 79. Zlínské vrchy, Bílovice, grassy area in the arboretum of the village, 8. 5. 1996 BT (distributed by J. Kirschner & J. Štěpánek: *Taraxaca Exsiccata*, fasc. XI (1998), No. 547); Rožnov pod Radhoštěm, 4 km tds. Vsetínske Vrchy, Hutisko, 1 km tds. Soláň, meadow, 12. 5. 1998 HØ & BT HØ-98-333 (H); Rožnov pod Radhoštěm, 5 km tds. Vsetínské vrchy, Valašská Bystřice, in the village, ruderal ground, 12. 5. 1998 HØ & BT HØ-98-347 (OL); distr. phytogeogr. 82. Javorníky: Karolínka, meadows in the Stanovnice Brook valley, ca. 3–4 km SE of the railway station (near settlement Stanovnice), ca. 600 m s. m. (49°19'48" N 18°16'31" E), 14. 5. 1994 BT (OL); distr. phytogeogr. 82. Javorníky: Velké Karlovice, small meadow at the railway station "Velké Karlovice-zastávka", ca. 520 m s. m. (49°21'27" N 18°17'09" E), 14. 5. 1994 BT (OL). – **Denmark:** E Jutland (Ø.Jylland): TBU-distr. 14, Thorning, A 13, N of the crossroads, roadside, 7. 5. 1974 HØ 74-144 (O), 74-145 (HØ), 74-146 (OL), 74-148 (HØ); Thorning, Foghsvej, roadside, 10. 5. 1978 HØ 78-58 (OL), 78-59 (L); do., shrubbery, 6. 5. 1982 HØ 82-85 (OL), 82-86 (HØ), 82-87 (AAU), 82-88 (C), 82-89 (H); do., roadside, 15. 5. 1988 HØ & EW EW-13193 (EW). TBU-distr. 25, Fredericia, Nørre Voldgade, embankment betw. Landsoldaten and Krudttårnet, lawn, 6. 5. 1992 HØ (type collection, see above). Zealand (Sjælland): TBU-distr. 40, Køge 3.5 km tds. NNE, at the road tds. Ølsemagle Revle, Ølsemagle Revlevej, coastal common, 7. 5. 1995 EW-18773 (EW); TBU-distr. 42, Sejerø, 2 km NW of Sejerby, tds. Gniben Fyr, Åsen, grassy slope, 22. 5. 1983 HØ 83-218, 83-219 (AAU); TBU-distr. 45b, Helsingør, tds. Hillerød, Brunemark, roadside, 24. 5. 1980 EW 5252 (EW). – **Germany:** Bayern: Birnfeld, ca. 1.5 km tds. NE, roadside in forest, 6. 5. 1998 KJ et al. HØ 98-404 (C); Hessen: Wolfhagen 5 km tds. E, Isth, N outsk., grass field, 4. 5. 1973 CIS 63155, 63158 (GB); Niederweidbach, Mudersbacher Str. 3, sandy hill, 6. 5. 1991 KJ 18/91 (KJ); do., at a pond in the town, ruderal area, 10. 5. 1993 KJ 146-93-2 (AAU); Bad König tds. E, W of Groh-Mühle, road slope, 9. 4. 1994 KJ et al. 027/94 (KJ); Rollshausen, tds. Altenvers (220 m s. m.), road slope, 16. 4. 1994 KJ 047/94 (KJ); Niederweidbach, Mudersbacher Str. 3, lawn in orchard, 24. 4. 1994 KJ 076/94 (KJ); Herborn, Burg, 2 km tds. Dillenburg, grass field, 30. 4. 1994 HØ et al. HØ 94-33 (C); Niederweidbach, Mudersbacher Str. 3, lawn, 8. 5. 1994 KJ 102/94 (KJ); do., 14. 5. 1994 KJ 143/94 (KJ); do., 16. 5. 1994 KJ 152/94, 153/94 (KJ); do., 17. 5. 1994 KJ 166/94, 167/94, 170/94 (KJ); Niederweidbach, meadows and along roads in the village (MTB 5216/44), May 1996 KJ 320.13 (distributed by J. Kirschner & J. Štěpánek: *Taraxaca Exsiccata*, fasc. XI (1998) No. 533); Leun tds. N, Leuner Bachtal, meadow, 10. 4. 1999 KJ 037/99 (C); Schelder Wald, Eisemroth SW, Grube Castor tds. NW (340 m), meadow, 16. 4. 1999 KJ 052/99 (C); Mecklenburg-Vorpommern: Rügen, Wittow, Altenkirchen, ca. 2 km tds. NE, Hof Wollin, grassy roadside, 16. 5. 1999 HØ et al.; do., outsk. tds. SE, ruderal vaste area, 17. 5. 1999 HØ et al.. Rheinland-Pfalz: Nassau, 5 km tds. Limburg, Obernhof, wine hill, roadside, 29. 4. 1994 HØ et al. HØ 94-14 (C). Sachsen: Reinhardtsgrimma, Hauptstrasse 85, garden, 3. 5. 1994 IU 313/94 (AAU). – **Poland:** Kielce: Busko-Zdroj, parking ground near the park ("zdrojowego"), lawn, 24. 4. 1999 ZG 99-117 (WSRP). Warszawa: Warszawa, Powisle, Czerniakowska street, Ksiazeccy exit turn, grassy area, 16. 5. 1996 ZG (WSRP). – **Slovakia:** Záhorská nížina Lowland, Vysoká pri Morave, meadows ca. 1 km NW of the village, ca. 150 m s. m., 1991 BT (OL). – **Sweden:** Skåne (Scania): Skrävlinge parish, Teckomatörp, 500 m SSE of the railway station, roadside, 6. 5. 1995 HW 4106 (HW); Malmö, S of Södra Bulltofta-vägen, W of the railroad, waste ground, 11. 5. 1997 HW 4716 (HW).

Taraxacum deltoidifrons H. Øllg., spec. nova

Holotype [C, HØ 99-51 (Fig. 6)] **Isotype** [AAU, HØ 99-50]: Denmark, E Jutland (Ø.Jylland), TBU-distr. 22a, Djursland, Helgenæs, Fejrup church, grassy slope (pos.: 56°07'58" N 10°30'43" E), 1. 5. 1999 TBP & HØ. Paratype with fruits, used for description, in C: Denmark, E Jutland, Falledsgårde, HØ 00-181.

Descriptio: Sectio *Ruderalia*. Folia mediocriter viridia ad sat obscure canoviridia, plerumque araneosa, maculis dispersis nullis. Petioli anguste ad late alati, ± purpurei. Nervus medianus viridis ad parce rubescens vel brunnescens, colore non striatulo. Lobi laterales deltoidei integri, foliorum exteriorum parte apicali saepe subclavata, apicibus loborum lateralium in parte exteriori foliorum plerumque mediocriter acutis, margine superiore loborum recto ad sinuoso, in foliis exterioribus saepissime uno dente conspicuo instructo, in foliis intermediis magis et varie dentato, margine inferiore loborum fere recto vel vario, plerumque fere integro, raro dente conspicuo. Lobus terminalis plerumque parvus, tamen interdum in foliis interioribus major, lobulo apicali subobtusato ad acuto, mucrone bene definito nullo. Interlobia partis exterioris folii acutangula vel angulata et bene definita, plana ad parum plicata, viridia vel subpiceata, ad nervum medianum saepe stria fusca angustissima instructa. Scapi sub involucrio valde, ceterum minus, araneosi. Involucrum laete ad obscure viride, parce pruinosum. Squamae exteriores 16–17 mm longae, 4.0–4.9 mm latae, sordide rubescenti-viridia ad ± obscure rubescentes, regulares, retroflexae, marginibus planis non hyalinae, apice laevi. Squamae interiores latitudine inter se similes. Capitulum luteum, apertissime florens 50–55 mm diametro, mediocriter densum, convexum. Ligulae planae, denticulis apicalibus rubris, subtus stria quam ligula angustiore pallide canorubescens ornatae. Antherae polliniferae, granis pollinis diametro variis. Stigmata virescentia. Achenium (vide Fig. 7) paratypei fructiferi) fusco-stramineum, 3.9–4.1 mm longum (pyramide inclusa), pyramide 0.6–0.7 mm longa subcylindrica laevi vel interdum subspinulosa, superne spinulosum, spinulis mediocriter longis, perrobustis, rectis. Rostrum 12 mm longum vel longius. Pappus sordide albus.

Description. Section *Ruderalia*. Leaves mid-green to dull greyish green, usually hairy, unspotted. The petioles are narrowly to broadly winged, ± coloured purplish red. Midrib green to faintly reddish or brownish, not with striatulate pattern. Leaf lobes deltoid, undivided, in outer leaves often with a ± club-shaped outer part. The upper edge of the leaf lobes is straight to sinuose, in outer leaves very often with one conspicuous tooth, in middle leaves with more teeth of irregular size. Lobe apices (in upper leaf half) usually medium acute. Lower lobe edge straight or irregular, usually entire, rarely with a ± conspicuous tooth. Terminal lobe usually small, but larger endlobes in inner leaves are sometimes developed, apical lobule obtuse to acute, without distinct tip. Interlobes (in upper leaf half) acute angled or well differentiated, angular, flat to faintly or irregularly plicate, with or without tar colour, but often with stripes of tar colour along the midrib. The scapes are faintly hairy, under the buds strongly arachnoid. The buds are light to dark green, not (or faintly) pruinose. The outer involucral bracts are long, about 16–17 mm long, medium broad (4.0–4.9 mm), greenish to ± dark reddish, rather regularly arranged, straight, deflexed (almost vertical), with almost flat, unbordered margins and tips without corniculations. Inner bracts almost equally wide, not coalescent. The fully flowering capitulum is 50–55 mm in diameter, medium dense, with a ± convex profile. The flower colour is medium yellow. The ligules are flat, with reddish apical teeth. The outer ligules are striped beneath, the stripe is narrower than the total ligule width and of a faintly reddish grey colour. Pollen is produced, the pollen grains heterogenous as to diameter. The stigmas are discoloured. The achene (Fig. 7) described from a paratype, HØ 00-181 (see below) is straw-coloured to greyish brown, 3.9–4.1 mm long (incl. cone). The achene cone is 0.6–0.7 mm long, almost cylindrical, smooth or sometimes ± spinulose. The achene spinules are present, especially in the upper achene half, they are medium long, very robust, straight. The rostrum length is 12 mm or more.

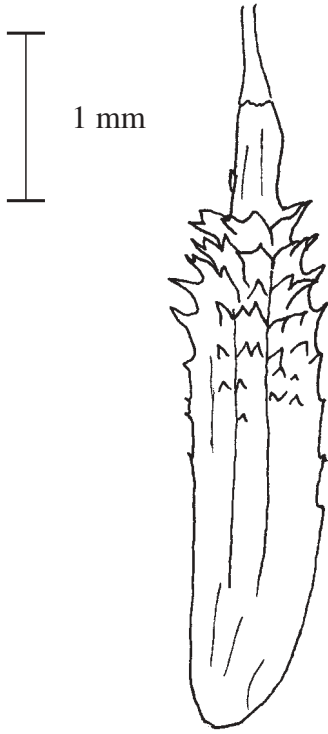


Fig. 7. – *Taraxacum deltooidifrons*, achene of paratype HØ 00-181.

Taraxacum deltooidifrons is intermediate between the two relatively well-known species *T. la-cinosifrons* Wiinst. et M. P. Chr. and *T. stenoglossum* Brenner (syn.: *T. dahlstedtii* Lindb.f.). In some cases *T. deltooidifrons* is difficult to separate from both with certainty, especially if the number of specimens at a locality is small. Drawings of the leaves of typical specimens of the 3 species (Fig. 8) together with the comparison of the morphological differences between them (Table 1) might help in the identification.

All three species were cultivated to confirm stability of their characters.

Habitat and distribution: *Taraxacum deltooidifrons* is a typical representative of sect. *Ruderalia*, growing in disturbed and cultivated soil such as roadsides, fallow fields, gardens, parks, lawns, waste sites etc. It has been found in the Czech Republic, Germany, and Denmark.

Voucher specimens: **Germany:** Bayern: Kr. Schweinfurt, Hofheim 9.5 km tds. NW, Birnfeld, ca. 1.5 km tds. NE, roadside in forest, 6. 5. 1998 HØ et al. HØ 98-475 (HØ); do., betw. Löffelsterz and Reichmannshausen, Die heiligen Wiesen, unfertilized meadow, 6. 5. 1998 HØ et al. HØ 98-414 (HØ). Hessen: Kr. Rotenburg a.d.Fulda, betw. Bebra and Breitenbach, at river Fulda, roadside, 12. 5. 1970 CIS 60380 (HØ). Mecklenburg-Vorpommern: Rügen, Freetz 1 km tds. Vilmnitz, roadside, 18. 5. 1999 HØ et al. HØ 99-279 (HØ). Nordrhein-Westfalen: Kr. Borken, Borken, outsk. tds. Rhede, 6. 5. 1973

CIS 63218 (HØ). Rheinland-Pfalz: Kr. Prüm, Schönecken, tds. Wetteldorf, at a castle ruin, roadside, 9. 5. 1972 CIS & K. Sahlin CIS 62286 (HØ). – **Czech Republic:** Central Bohemia: NW of Zdice, Karlov, roadside in forest, 8. 5. 1998 L. Drábková et al. HØ 98-127 (HØ); Žebrák 4.5 km tds. NW, (475 m), dry hay meadow, 8. 5. 1998 L. Drábková et al. HØ 98-121, -122 (HØ). E Bohemia: Chlumec n. Cidl. tds. S, Levin, grassy roadside, 13. 5. 1983 Kirschner et al. (HØ). N Bohemia: Děčín, in the village Bynovec (alt. 380–390 m a.s.l.), grassy area, 15. 5. 1997 J. Štěpánek & P. Bauer (HØ); Nový Bor, 4 km tds. NNW, Kytlice, near the railway, ruderal ground, 9. 5. 1998 L. Drábková et al. HØ 98-144 (HØ); Varnsdorf W outsk., Studánka, tds. Varnsdorf, fallow field, 9. 5. 1998 L. Drábková et al. HØ 98-134 (HØ). – **Denmark:** N Jutland (Jylland): TBU-distr. 9, Glyngøre, near the Sallingsund bridge, slope, 13. 5. 1982 EW-10337 (EW); Søndergårde, meadow, 19. 5. 1985 EW-11212 (EW); TBU-distr. 11, Hadsund (N part), Lindalsvej at Hornbechsvej, pathside, 1. 5. 2001 HØ & TBP HØ 01-16 (HØ). E Jutland (Jylland): TBU-distr. 13a, Randers 10 km tds. SE, Ørslev tds. Hørning, gravel-pit, 24. 4. 1973 EW-1434 (EW); Randers 7 km tds. E, Assentoft, Sandagervej 13, garden, 24. 4. 1973 EW-1429 (EW); Værum 2 km tds. SW, at road 46, roadside, 23. 5. 1976 HØ et al. HØ 76-171 (AAU); Udby, tds. Ryderne, field, 4. 6. 1979 EW-4676 (EW); Uggelhusse tds. N, Piggen (in Randers Fjord), 8. 5. 1990 EW-14949 (EW); Hevring, 500 m tds. N, fallow field, 2. 5. 1998 HØ 98-86 (HØ), 98-87 (AAU), 98-88 (DR); Udby, 1.8 km N of Udby church, Ringvang, fallow field, 2. 5. 1998 HØ 98-76 (HØ), 98-77, -78 (AAU); Auning SW outskirts, Industrivej, road verge, 28. 4. 2000 HØ & TBP HØ 00-27 (HØ); Kristrup, at Kristelig Fagforening, lawn, 28. 4. 2000 HØ & TBP HØ 00-35 (HØ); TBU-distr. 13b, Randers, in the park “Skovbakken”, slope, 25. 4. 1973 EW-1430 (EW); Hobro 6.5 km tds. E, Katbjerg Odde, unmanured meadow, 26. 5. 1986 EW & J. C. Schou EW-12006 (EW); Randers N outsk., at the road Nordskellet, verge, 28. 4. 1999 HØ & TBP HØ 99-10 (AAU); Spentrup, at the sports hall, ruderal soil, 1. 5. 2001 HØ & TBP HØ 01-6 (HØ); TBU-distr. 14, Viborg, Asmildkloster Skov, park area, 9. 5. 1978 HØ 78-52 (WSRP); Almind 1 km tds. Rindsholm, Tolstrupvej, roadside, 16. 5. 1978 HØ 78-112 (UPS); Funder, outsk. tds. Silkeborg, at Café “Hyttefadet”, roadside, 1. 5. 1982 EW-8472 (EW); Bøstrup 500 m tds. N, outsk. tds. Houlbjerg, 5. 5. 1984

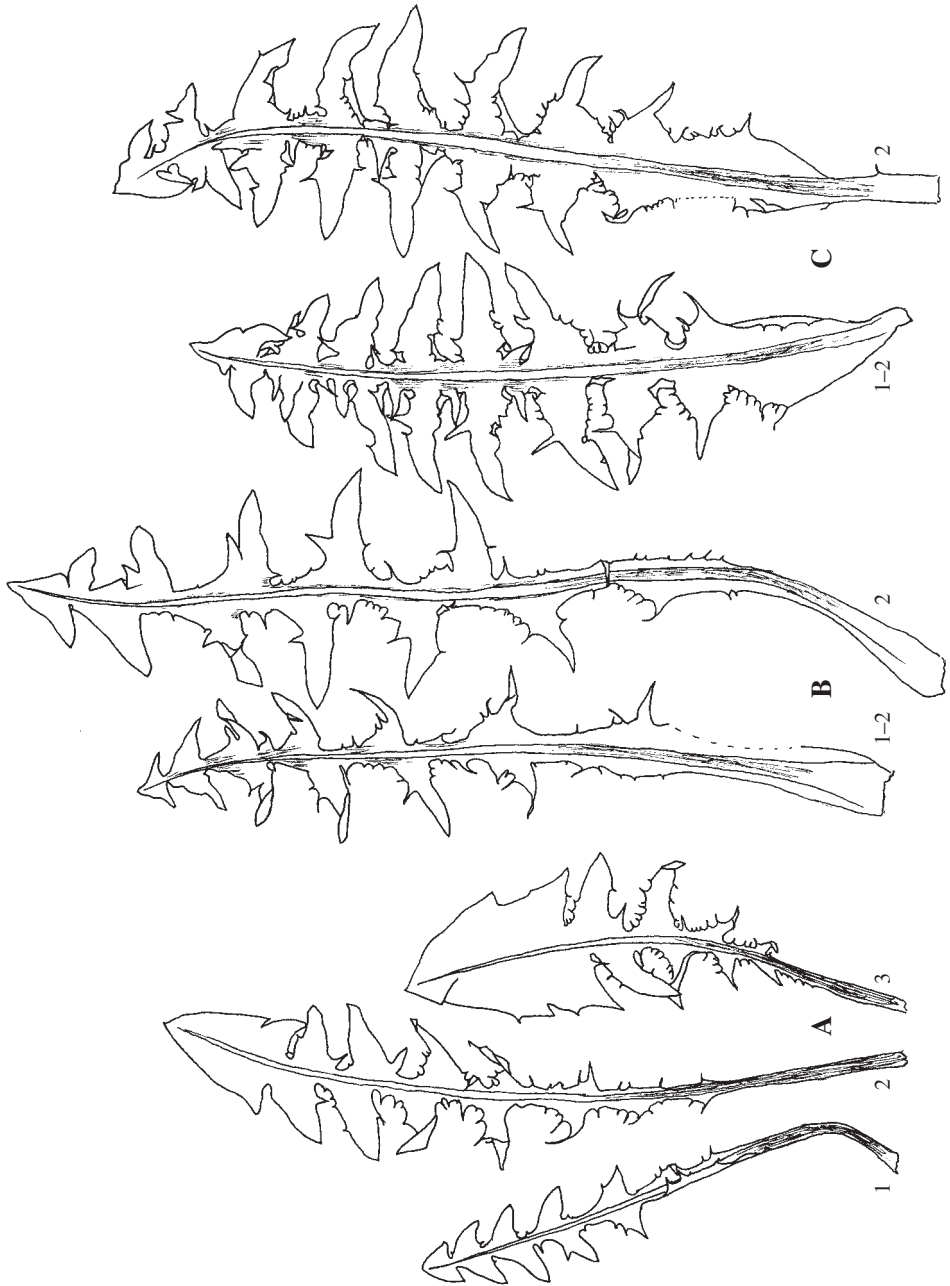


Fig. 8. – Outer leaf (1), middle leaf (2), and inner leaf (3) of A: *Taraxacum stenoglossum* (HØ 00-136 in herb. HØ), B: *T. deltoidifrons* (HØ 01-23 in herb. HØ), and C: *T. lacinosifrons* (HØ 546 in herb. HØ).

Table 1. – Morphological differences between three species of *Taraxacum*. Characters of living plants are described.

Character	<i>T. deltoidifrons</i>	<i>T. stenoglossum</i>	<i>T. lacinosifrons</i>
Leaves habit	± prostrate	± erect	± prostrate
Leaf colour	dull grey green	bluish green	yellowish green
Petiole wings	present	absent	present
Petiole colour	medium red	strongly red	medium red
Interlobes habit	flat	flat	crispate
Tar stripes along midrib	often present	absent	usually present
Lobes density resp. direction	normal, recurved	normal, recurved	crowded, patent
Outer leaves lobe apex	± club-shaped	normal	normal
Outer bracts colour	± dirty purplish	green	green
Ligule teeth	red	yellow	yellow

EW-10349 (EW); Viborg, W end of the road betw. the lakes, Brænderigården, earth slope, 29. 4. 1999 HØ 99-19 (HW); Viborg 6 km tds. S, Birgittelyst, Tostrupvej 200 m E of Kløverstien, fallow field, 4. 5. 1999 HØ 99-94 (HW), 99-95 (C); Bigum, in the village, fallow field, 5. 5. 1999 HØ & TBP HØ 99-101, -102 (DR); Viborg, road A 13 tds. S, Nonbo, at the 86.6 km roadmark, 200 m W of the road, fallow field, 6. 5. 1999 HØ 99-125 (L), 99-126 (HØ); Viborg, W end of the road betw. the lakes, Brænderigården, earth slope, 27. 4. 2000 HØ 00-21, 00-22 (HØ); Falledsgårde tds. Grønhøj, 500 m from road A 12, fallow field, 9. 5. 2000 HØ 00-181 (Paratypus fructifer) (C); Viborg S part, at Liseborg-centret, the football ground, grassy dike, 2. 5. 2001 HØ & TBP HØ 01-23 (HØ); TBU-distr. 21, Hadsten, western ring road, at the road tds. Sølund, road verge, 3. 5. 1998 HØ & TBP HØ 98-115 (C); Hinnerup, Rønbækcentret, between bushes, 3. 5. 1998 HØ & TBP HØ 98-94, 98-95 (L); do., S outsk., Århusvej, at the Grundfør road exit turn, roadside, 3. 5. 1998 HØ & TBP HØ 98-89 (AAU), 98-90 (L); do., outsk. tds. Haldum, at Haldum-Hinnerupskolen, road verge, 3. 5. 1998 HØ & TBP HØ 98-108 (L); Kolt, at road 170, near Pilegårdsvvej, lawn/verge, 4. 5. 2001 HØ & TBP HØ 01-33 (HØ); TBU-distr. 22a, Mejlbjby, 2 km tds. Hornslet, roadside, 12. 5. 1981 EW-10338 (EW); Kalø Slot, at the ruin, unmanured pasture, 6. 5. 1983 EW-9538 (EW); Fuglsø, at the village pond, meadow, 1. 5. 1999 HØ & TBP HØ 99-38 (C); Helgenæs, Fejrup church, grass slope, 1. 5. 1999 HØ & TBP (type collection, see above); TBU-distr. 22b, Grenå 2 km tds. S, Hessel Plantage, roadside, 30. 5. 1982 EW-11211 (EW); Glatved 1.7 km tds. Glatved Strand, Glatved Kalkværk ca. 700 m from the coast, fallow field, 5. 5. 2000 HØ & TBP HØ 00-130 (HØ). W Jutland (W Jylland): TBU-distr. 16, Idom, the church village, Idom Kirkevej, at No. 23, roadside, 11. 5. 1982 EW-10335 (EW); TBU-distr. 18, Sunds, outskirts tds. Karup, fallow field, 1. 5. 2000 HØ & TBP HØ 00-56 (HØ). S Jutland: TBU-distr. 49, Løgumkloster NW-outskirts, at a horse riding ground, lawn, 10. 5. 2001 HØ & TBP HØ 01-136 (HØ); TBU-distr. 53, Sønderborg, N outsk., park area at the road Udsigten, grassy area, 5. 5. 2001 HØ & TBP HØ 01-71 (HØ). Funen (Fyn): TBU-distr. 28, Middelfart, outsk. tds. Bogense, Lollandsvej, ruderal ground, 10. 5. 1999 HØ & TBP HØ 99-171, 99-172 (L); TBU-distr. 32, Store Rallen, (small island S of Tåsinge), fallow field, 6. 5. 1994 EW-17238 (EW). Zealand (Sjælland): TBU-distr. 45b, Birkerød, roadside, 19. 5. 1962 M. P. Christiansen (C).

Taraxacum infuscatum H. Øllg., spec. nova

Holotype [C, HØ 90-101 (Fig. 9)] Isotypes [L, HØ 90-98; AAU and PRA, HØ 90-99; S, HØ 90-100]: Denmark, N Jutland, TBU-distr. 9, Skive, Krabbesholm Skov, at Havnegaden (pos.: 56°34'32" N 9°02'46" E), grassy verge, 23. 4. 1990 H. Øllgaard

Descriptio: Planta magnitudine mediocris, scapis folisque patentibus adscendentibus. Folia 25–35 cm longa, multilobata, canescenti-viridia ad mediocriter viridia, parce araneosa. Lobi laterales recurvi, deltoidei, interdum subfalcati, margine superiore recto ad irregulariter subsinuoso, integro vel dentibus longitudine variis robustis instructo, margine inferiore fere recto, integro, apice loborum mediocriter acuto. Interlobia bene definita, angulata, plana ad subplicata, ± piceae-maculata. Lobus terminalis magnitudine loborum lateralium fere aequans, mediocriter acutus, lobulo apicali saepe elongato ad linguati-protracto. Petioli anguste ad late alati, omnes pallidi vel in foliis interioribus parum rubescentes. Nervus medianus viridis vel subbrunnescens. Scapi sub involucris araneosi, ceterum subglabri. Involucrum pallide ad obscure viride, parce pruinatum, squamis exterioribus



Fig. 6. – *Taraxacum deltoidifrons*, holotype.

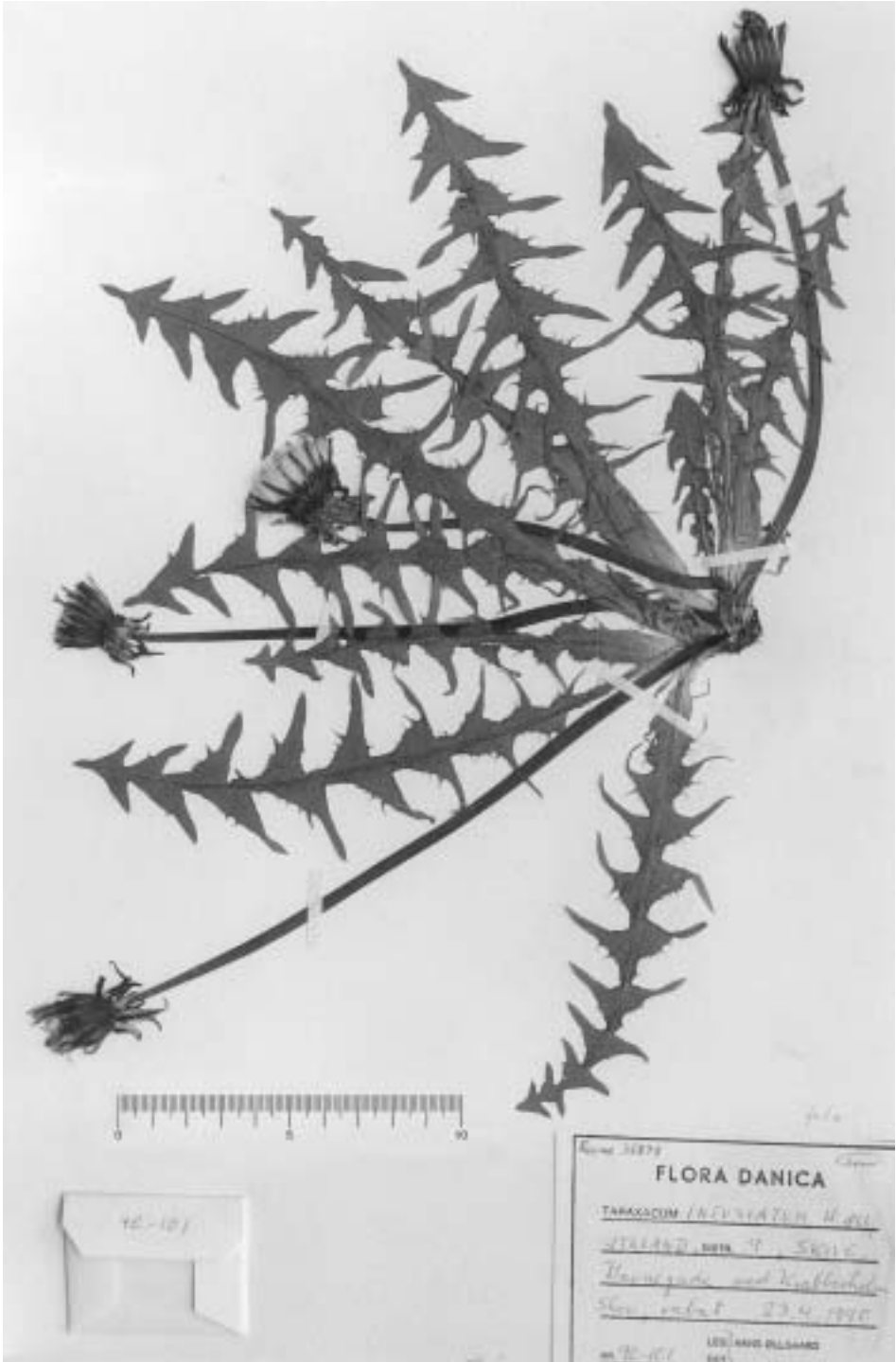


Fig. 9. – *Taraxacum infuscatum*, holotype.

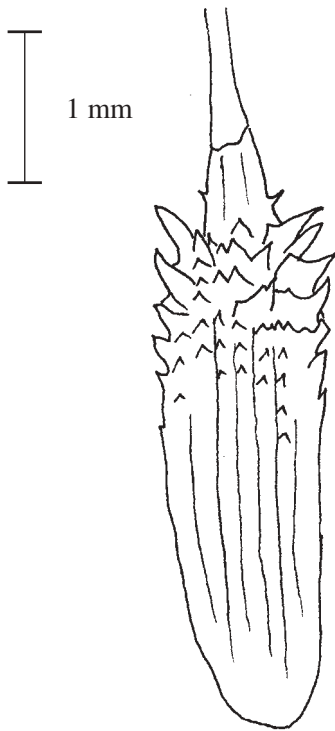


Fig. 10. – *Taraxacum infuscatum*, achene of holotype.

perlongis (18–20 mm vel etiam longioribus), ca. 3.7 mm latis, retroflexis, \pm irregularibus, apicibus tenuibus, levibus, interioribus latitudine inter se fere paribus. Calathium luteum, convexum, mediocriter densum, diametro ca. 55 mm. Ligulae marginales planae, denticulis apicalibus florum siccorum rubris, subtus stria cano-rubescente angusta ornatae. Antherae polliniferae, granis pollinis diametro variis. Stigmata virescentia. Achenium (holotypi) stramineum, ca. 4.1 mm longum (pyramide inclusa), spinulis mediocriter longis, mediocriter robustis, rectis ad parum recurvis. Pyramis cylindrica, levis, 0.6–0.7 mm longa, rostro ca. 12 mm longo.

Description: Section *Ruderalia*. Plant medium-sized to rather large, forming rosettes of 25–30 cm long, ascending leaves. All leaves with many distinct leaf lobes, greyish green to mid-green, faintly glabrescent above, without scattered spots. Leaf lobes recurved, deltoid, sometimes slightly falcate, undivided, with straight to somewhat irregularly shaped upper edge, with robust teeth of irregular size. Lower lobe edge straight (or almost so), entire. Lobe apices medium acute. Interlobes (in upper leaf half) well differentiated, angular, flat to somewhat plicate, \pm blotched (“tar coloured”). Terminal lobe not larger than lateral lobes, medium acute or with gradually elongate or linguat apex. Petiole wings narrow to broad. Petiole colour green to white in all leaves, or with age \pm reddish in inner leaves. Midrib green to faintly brownish, not with striatulate pattern. Scapes arachnoid under the

buds, elsewhere scarcely araneose. Involucre light to dark green, only faintly pruinose. Outer bracts 18–20 mm long (or more), about 3.7 mm broad, deflexed, \pm irregular, coloured whitish or greenish, rarely faintly reddish. Margin of outer bracts flat to recurved, without hyaline border. Bracts tips thin, without corniculations. Inner bracts almost equally wide, not coalescent. Capitulum medium dense, ca. 55 mm in diameter, profile \pm convex. Outer ligules flat, with a narrow, reddish grey stripe. Ligule teeth red, at least in dried material. Pollen present, the pollen grains of varying diameter. Stigmas discoloured, but not blackish. Achene (of holotype, Fig. 10) straw-coloured, about 4.1 mm long (incl. cone). Achene spinules medium long, medium strong, straight to slightly recurved. Achene cone cylindrical, smooth, 0.6–0.7 mm long. Rostrum length about 12 mm.

Taraxacum infuscatum is recognized by its pallid petioles and uniform, multilobed, lustreless leaves of a rather pallid green colour, which emphasize the occurrence of \pm tar-coloured interlobes. The endlobes are small (also on inner leaves). Another specific character is the extremely long outer involucre bracts, which are mainly strongly deflexed, some of them, however, deviating in being irregularly twisted or less strongly reflexed. The tips of the outer involucre bracts are thin and irregularly bent, without corniculations.

Taraxacum infuscatum is a morphological relative of *T. planum* Raunk. emend. H. Øllg., *T. planoides* Hagend., v. Soest et Zevenb., *T. trilobatum* Palmgr., and of several still unsat-

isfactorily known (and undescribed) species of that group in the Netherlands and Germany. The group is characterized by reflexed, often irregular outer involucre bracts, winged petioles, \pm patent habit, and \pm alternate lateral lobes. The type of *T. planoides* has much shorter outer bracts, about 11 mm long. The lateral lobes are less dentate with very acute tips, not subfalcate and the petioles are red. The interlobes are green. *T. trilobatum* has purplish-coloured petioles, a darker greyish green leaf colour and fewer lateral lobes, which are often dissected or tend to be so. The interlobes are green. The outer bracts of *T. trilobatum* are almost regular. *T. planum*, which shows the greatest variation in leaf shape of all 4 species, in its typical appearance is separated from *T. infuscatum*, e.g., by more plicate, pink-petioled, somewhat glossy, yellowish pure green leaves with large endlobes on inner leaves. Again, the interlobes are green. When less typically developed, *T. planum* produces fewer, more irregularly shaped, lateral lobes with longer apical processes.

T. infuscatum is often abundant, which enables collectors to observe the uniform lobation, little variation in tar colour and intensity, petiole colour, bract length etc. The specific epithet reflects the pronounced tendency of the leaves to have dirty, somewhat tar-coloured interlobes.

Habitat and distribution: *Taraxacum infuscatum* occurs on \pm disturbed soil in parks and gardens, on roadsides, grass fields, etc., showing no differences in ecology from the great majority of species in sect. *Ruderalia*. It is not a common species, but it is widely distributed and usually abundant where it occurs. *T. infuscatum* has been found in the following European countries: Czech Republic, Denmark, Finland, France, Germany, Netherlands, Poland, and Sweden.

Voucher specimens: **Czech Republic:** Central Bohemia: Prague 10 km tds. SE, at E 50, Průhonice, tds. N, Botič valley, 26. 4. 1983 J. Kirschner & J. Štěpánek (PRA). – **Denmark:** N Jylland (N Jutland): Nørre Sundby, Hjørringvej, park in former chalk-pit, ruderal ground, 25. 5. 1991 HØ 91-229 (C); do, under bushes, 25. 5. 1995 HØ 95-227 (H); Nørre Uttrup, Sundsholmen, at NT. Transport, roadside, 14. 5. 1977 EW-16944 (EW); Brovst 6 km tds. SE, Øland, Østerby, roadside, 7. 5. 1992 E. & K. Wessberg EW-15802 (EW); Øland, Hammershøj, at the football ground, roadside, 28. 4. 1993 EW-16048 (EW); Skive, Krabbesholm Skov, at Havnegade, roadside, 23. 4. 1990 HØ (type collection, see above); Løgstør 2.5 km tds. NE, at Aggersund Kalkværk, ruderal ground, 24. 5. 1979 HØ 79-183 (HØ), -184 (AAU), -185 (H), -186 (OULU); Aalborg 3 km tds. NE, Rørdal, Lergravsvej, ruderal ground, 24. 5. 1980 HØ 80-257 (JR); do., 13. 5. 2001 HØ & TBP HØ 01-191 (HØ); Aalborg, Hasseris, Lindenbergvej, S of Sofiendalvej, grassy area, 21. 4. 1990 HØ 90-82 (HØ), -83 (H), -84 (WSRP), -85 (AAU), -86 (C); Svenstrup, Flødalsvej, roadside, 21. 4. 1990 HØ 90-53 (JR), -54 (L); do., Runesvinget, betw. road 180 and Flødalsvej, roadside, 21. 4. 1990 HØ 90-46 (PRA), -74 (GB), -75 (JR), -76 (L). E Jutland (Ø.Jylland): Assens 3 km tds. NE, Åmølle, roadside, 4. 5. 1994 HØ 94-42 (L), -43 (HØ); Århus, Høegh Guldbergsgade, at Århus Kunstmuseum, at the entrance, lawn, 1. 5. 1997 HØ 97-28 (AAU), -29 (HØ), -30 (GB), -31 (O); Balle, 1 km tds. Tirstrup, at a gravel-pit, road-side, 5. 5. 1991 HØ & HW HW 2293 (HW), HØ 91-44 (HØ, PRA). Funen/Langeland (Fyn/Langeland): Ærø, Søby, Nørrebro, roadside, 9. 5. 1993 HØ 93-150 (HØ, C). Zealand (Sjælland): Amager, Refshalevej, roadside, 25. 5. 1996 HØ 96-244 (HØ). – **Finland:** Regio aboënsis: Åbo (Turku), Centralsjukhuset, 16. 4. 1974 C. E. Sonck (herb. Sonck). – **France:** Paris: Paris (12e), 1.5 km SW of Château de Vincennes, lawn, 23. 3. 1993 P. Oosterveld & HW HW 2945 (HØ, HW); Val-de-Marne: Villejuif, Rue Guy Môquet, CNRS, grassy wasteground, 9. 4. 1992 HW 2750 (HØ); Yvelines: Versailles, N of the eastern branch of Grand Canal, open forest, 5. 4. 1995 HW 3957 (HW). – **Germany:** Mecklenburg-Vorpommern: Rügen, Breege ca. 1 km tds. SE, Seebad Breege-Juliusruh, sandy road verge, 17. 5. 1999 HØ et al. HØ 99-269 (AAU); do., Lietzow railway station, grassy area at the rails, 17. 5. 1999 HØ & J. Räsänen JR-T-54 (JR); do., Freetz 1 km tds. Vilmnitz, roadside, 18. 5. 1999 HØ et al. HØ 99-278 (C). Sachsen: Dresden, Güntzstrasse, at the Güntz club, verge, 7. 4. 1997 IU-115/97 (DR); do., Trachau, Kopernikusstrasse 31–39, courtyard, lawn, 15. 4. 1997 IU-120/97 (DR). – **Netherlands:** Zuid-Holland: Den Haag, Koninginnegracht, Hubertusviadukt, 8. 4. 1992 P. Oosterveld PO-92-8-1 (herb. Oosterveld); Rijswijk, Vredenburgweg No. 101–105, clubhuis “Te Werve”, roadside, 14. 4. 1992 HØ et al. HØ 92-12 (HØ); Spijkenisse, Hekelingseweg, roadside, 10. 4. 1992 A. Hagendijk (L). N Brabant, Raamsdonkveer (square 44-35-31), roadside, 16. 4. 2001 A. Hagendijk. – **Poland:** Gdansk: Gdynia tds. NE, Hel,

in the community, park near the railway station, under bushes, 8. 5. 1997 HØ et al. HØ 97-131 (AAU) ZG-97-22 (WSRP); do., Morska street, ruderal area, 8. 5. 1997 HØ et al. HØ 97-100 (HØ); Koszalin: Koszalin, outsk. tds. Szczecin, at the firm Hewland, at the ring road, lawn, 10. 5. 1997 HØ 97-170 (HØ). – **Sweden:** Bohuslän: Västra Frölunda parish, Saltholmen, 12. 5. 1934 T. Borgvall as *T. trilobatum* Palmgr. (GB); Göteborg, Skansen Kronan, SW side, grassy area, 14. 5. 1995 HØ 95-127 (HØ); Gotland: Färö parish, betw. the church and the sea, sandy common, 17. 5. 1996 HØ 96-220 (HØ), -221 (C). Kalmar: Oskarshamn, at the church, lawn, 18. 5. 1996 HØ 96-242 (UPS), -243 (HØ); Virserum parish, Virserum, Storgatan, old nursery, gravelly grass field, 17. 5. 2000 TN-2058, -2060, -2062, -2063, -2064 (TN). Skåne: Trelleborg, Alléen-Valldammsgatan, roadside, 7. 5. 1995 HW 4142 (HW); Malmö, S of Södra Bulltoftavägen, W of the railroad, waste ground, 11. 5. 1997 HW 4723 (HW). Småland: Virserum parish, Virserum, at the new cemetery, lawn, 14. 5. 1997 TN 1694 (TN); Gränna parish, Gränna, near Ribbyskolan, ruderal area, 16. 5. 1999 HRY 99-67, -69 (HRY); Barkeryd parish.; at the old Forserum road, exit tds. Källeryd, at the farm Alarp, unfertilized pasture, 18. 5. 2001 HØ & M. Edquist HØ 01-233 (HØ). Uppland: Lidingö, at Stockholmsvägen No. 35, at Nordbanken, grassy verge, 1. 5. 1999 C.-F. Lundevall CFL 20324 (HØ). Västergötland: Hemsjö parish, V., stra Bodarna, railway embankment, 12. 5. 1938 R. Ohlsén as *T. trilobatum* Palmgr. (C); Skallsjö parish, Nossesund (Norsesund) railway station, 16. 5. 1938 R. Ohlsén (GB); Gökhem parish, Västfalbygden, 1 km N of the church, 3. 6. 1961 E. Evers (B. Saarsoo cult. in Växjö 4. 5. 1963 as *T. trilobatum* Palmgr. (AAU); Vilskekleva parish, Västfalbygden, 600 m tds. E, quarry area, fragment of “alvar”, 29. 5. 1964 L. Fridén GB-40296 (GB); Trollhättan, road E 45, Trollhättan Info parking ground, grassy area, 19. 5. 1995 HØ 95-216 (HØ), -217 (AAU); Stenum parish, Hulken, pasture, 27. 5. 1998 HRY 98-151, -152 (HRY). Värmland: Karlstad, Herrhagsparken, grassy area, 18. 5. 1932 R. Ohlsén (G. Haglund det.: *T. crebridens* Lindb. fil.; T. Borgvall det.: *T. trilobatum* Palmgr.) (GB); do., at the eastern railway station, grassy area, 22. 5. 1932 R. Ohlsén (G. Haglund det.: *T. crebridens* Lindb. fil.; T. Borgvall det.: *T. trilobatum* Palmgr.) (GB).

Taraxacum jugiferum H. Øllg., spec. nova

[*Taraxacum jugiferum* H.Øllg., nomen in Meierott (2001: 116)]

Holotype [C, HØ 83-101 (Fig. 11)] **Isotype** [PRA, HØ 83-102]: Denmark, Funen, TBU-distr. 29, Bogense, outskirts tds. Odense, (pos.: 55°33'08" N 9°29'14" E), grass field, 7. 5. 1983 H. Øllgaard. Paratype for achene description from the type locality, collected 14. 5. 1977 (HØ 77-111, in herb. HØ).

Descriptio: Sectio *Ruderalia*. Planta circa 30–50 cm alta, sat gracilis. Folia laete lutescenti-viridia, canescentia, plerumque glabrescentia, maculis dispersis nullis. Petioli foliorum exteriorum anguste alati plerumque laete rosei, foliorum intermedium et interiorum angusti obscurius roseo-purpurei. Nervus medianus pallidus ad parum brunescens, colore non striatulo. Lobi laterales deltoidei integri ± falcati vel margine superiore valde convexo, margine dorsali integro vel minute denticulato, proximali ± concavo integro vel et denticulis minutis et dente majore instructo, apice loborum subacuto. Lobus terminalis mediocriter magnus vel in foliis interioribus conspicue major, lobulo apicali subacuto indefinito vel interdum definito. Interlobia late rotundata, plana, viridia, parce dentata. Scapi sub involucri araneosi, ceterum glabrescentes. Involucri laete ad obscurius viridia, parum pruinosa. Squamae exteriores 13–15 mm longae, circa 4.3 mm latae, laete virides et interdum parum et laete roseae, planae, patentes ad ± arcuato-recurvae, marginibus planis plerumque zona anguste hyalina, apice acuto levi. Squamae interiores latitudine inter se fere similes. Calathium 50–55 mm diametro, laxum ad mediocriter densum, convexum, mediocriter luteum. Ligulae planae ad parum canaliculae, denticulis apicalibus luteis, subtus stria cano-rubescens ornatae. Antherae polliniferae, grani pollinis diametro variis. Stigmata leviter virescentia. Achenium (paratypi, specimenis e loco classico die 14. 5. 1977 s. n. Hf 77–111 collecti; vide Fig. 12) fusco-stramineum, plerumque circa 4.5 mm longum, pyramide circa 0.8 mm longa fere cylindrica ± spinulosa inclusa, superne spinulosum, spinulis longis ad longissimis mediocriter validis, rectis. Rostrum circa 10–11 mm longum. Pappus subsordide albus.

Description: Section *Ruderalia*. Plant rather tall (30–50 cm) and slender. Leaves light yellowish grey-green, usually glabrescent, without dispersed spots. The petioles of the outer leaves are narrowly winged, usually faintly rose-coloured, those of middle and inner leaves are unwinged and intensely rose-coloured. The midrib is green to faintly brownish, without striatulate pattern. The lateral leaf lobes are deltoid and undivided, ± falcate or with a distinctly convex upper edge, which is entire or with many thin and small teeth. The lower lobe edge is ± concave, often with both tiny and bigger tooth. The

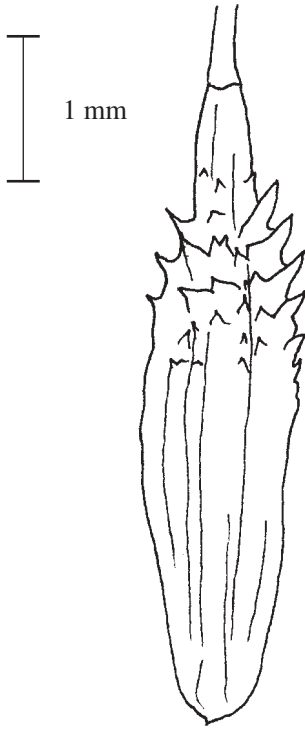


Fig. 12. – *Taraxacum jugiferum*, achene of paratype HØ 77-111.

sidelobe apices are medium acute in the upper leaf half. The endlobe is often conspicuously larger than the side lobes, at least on inner leaves, with a medium acute, sometimes well-differentiated tip on the apical lobule. The interlobes are broadly rounded, flat, green.

The scapes are arachnoid under the buds, elsewhere glabrescent. The buds are light to dark green, not (or faintly) pruinose. The outer bracts are 13–15 mm long, about 4.3 mm broad, light green, sometimes with a pink hue. They are regularly arranged, \pm horizontal to \pm curved-reflexed, with flat margins and usually with a very narrow hyaline border. Bracts corniculations are absent. The inner bracts are almost equally wide, not coalescent. The fully flowering capitulum is 50–55 mm in diameter, lax to medium dense, and with a \pm convex profile. The flower colour is medium yellow. The ligules are flat or faintly canaliculate, with yellow apical teeth, and a reddish grey stripe beneath. Pollen present, irregular as to size. The stigmas are only slightly discoloured.

The achenes (Fig. 12) are straw-coloured to greyish brown, usually ca. 4.5 mm long (incl. cone). The achene cone is ca. 0.8 mm long, cylindrical (or almost so), \pm spinulose. The achene spinules are present in upper half of the achene, they

are medium long to very long, medium strong, straight. The rostrum length is about 10–11 mm.

Taraxacum jugiferum is an elegant, tall, light green species, which cannot be confused with other species. Because of its leaf colour and habit it can be compared with the well-known and widely distributed species *T. amplum* Markl., but the lobe edges of the former usually are densely toothed with tiny subulate-teeth, at least on some leaves. Plants from W Bohemia and Denmark have been in comparative cultivation. A common modification of *T. jugiferum* has lobes shaped like a yoke, which accounts for its Latin name.

Habitat and distribution: *Taraxacum jugiferum* seems to prefer habitats similar to those of most other species of section *Ruderalia*, i.e. grass fields, meadows, waste areas near cities and villages, roadsides, gardens, parks, etc. Like the other *Ruderalia* species it is dependent on disturbance. Repeated visits to the Danish location of this species has shown that it is able to spread abundantly from an old cultivated meadow to a new road-side, with both perennial and annual vegetation.

The native distribution area of *Taraxacum jugiferum* is Bohemia and Central Germany, where the species is commonly found. The Danish location is isolated, but the growth there is abundant. *T. jugiferum* was first found there about 25 years ago, but was probably introduced to the site several years before, maybe with German troupes during World War II, when there was a German camp in the vicinity.



Fig. 11. – *Taraxacum jugiferum*, holotype.



Fig. 13. – *Taraxacum lundense*, holotype.

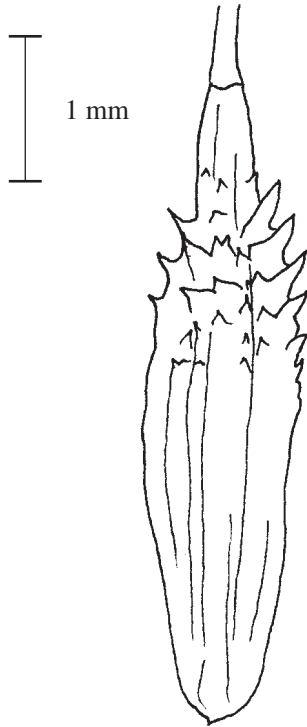


Fig. 14. – *Taraxacum lundense*, achene of isotype (HW 4767).

Voucher specimens: **Germany:** Bayern: Nabburg, Schwarzenfeld 2 km tds. Neiden, parking ground, grass field, 10. 5. 1971 CIS 61344 (HØ), CIS-61349 (H); Vilshofen 8 km tds. NW, Hotel Grubhof, at the river, grass field, 10. 5. 1971 CIS 61320 (C); Parsberg 5 km tds. W, motorway betw. Oberweilung and Klafpenberg, grass field, 11. 5. 1976 CIS. Hessen: Schwalm-Eder-Kreis, the castle Sprangenberg, at the entrance, roadside, 11. 5. 1976 CIS 65139 (AAU). – **Poland:** Kielce: Pinczow 7 km tds. SW, near Młodzawy, Polana Polichno reserve, road-side, 22. 5. 1999 M. Falkowski & J. Krechowski (WSRP). – **Czech Republic:** Central Bohemia: Beroun 10 km tds. E, betw. Srbsko and Koda, at a tourist path, grassy slope, 12. 5. 1983 HØ et al. (AAU); Prague, 1 km SE of Prague-Hlubočepy railway station, Barrandov-sídlíště, grassy area, 5. 5. 1992 J. Štěpánek (PRA). W Bohemia: Cheb, tds. W, ruderal area, 14. 5. 1985 J. Štěpánek (PRA); Konstantinovy Lázně, 100 m E of hotel Jitřenka, lawn, 14. 5. 1992 HØ 92-200, -201 (HØ). E Bohemia: Chrudim 15 km tds. S, 5 km NNE of Nasavrky, near Pila u Libáně, roadside through wood, 13. 5. 1983 HØ et al. (C, AAU); Vysoké Mýto, betw. Zálší and Vračovice, 9. 5. 1985 J. Kirschner, J. Štěpánek et al. (PRA). – **Austria:** Oberösterreich: Mauthausen, Ennsner Donaubrücke W, N bank of Danube, 9. 5. 1971 CIS. – **Denmark:** Funen (Fyn): Bogense, S outsk., at road 317, roadside, 14. 5. 1977 HØ 77-109, -111 (paratypus fructifer), -112 (HØ); do., grass field, 7. 5. 1983 HØ 83-101, -102 (HØ), -106 (HW); do., roadside, 10. 5. 1999 HØ & TBP HØ 99-173 (HØ). Zealand (Sjælland): Køge, road in forest, 13. 5. 1928 M. P. Christiansen (C).

Taraxacum lundense H. Øllg. et Wittzell, **spec. nova**

[*Taraxacum lundense* H. Øllg. et Wittzell, nomen in Svensk Bot. Tidskr. 95: 79, Fig. 1 (2001)]

Holotype [LD, HW 4771, Fig. 13] **Isotypes** [HW, HW 4767, 4768, 4769, 4770, 4772; isotypes will furthermore be represented in several herbaria, distributed through Kirschner & Štěpánek: *Taraxaca exsiccata*, fasc. XIII, No. 601]; Sweden, Scania (Skåne), Borgeby parish, 1.4 km SW of the church, (pos.: 55°44.4' N 13°02.0' E) (RUBIN 2C6f 2507), grassland, 15. 5. 1997 H. Wittzell

Descriptio: Sectio *Ruderalia*. Planta mediocriter alta ad sat alta (20–50 cm), folia ± erecta, robusta, obscure viridia et parum glaucescentia, glabrescentia – (saepe) in foliis interioribus conspicue araneosa, maculis dispersis nullis. Petioli rubri – valde purpurei. Nervus medianus praesertim in foliis interioribus pro maxime parte squalide purpureus, colore non striatulo. Petioli anguste alati. Folia omnia distincte lobata, lobis lateralibus deltoideis, apice subacuto patente, margine dorsali parum sinuato vel irregulari, integro vel (raro) dentato, proximali recto – parum convexo integro. Lobus terminalis mediocriter magnus apiculatus, in foliis interioribus plerumque major – maximus. Interlobia acutangula – angulata, distincta, plana – subplicata, vulgo subpiceata. Scapi sub involuacro valde araneosi, ceterum ± araneosi. Involuacrum viride – obscure viride, non vel parum pruinoso. Squamae exteriores 12–13 mm longae, 3.0–3.9 mm latae, virides vel etiam irregulariter squalide rubescentes vel brunnescentes, regulares, patentes vel subrecurvae, marginibus planis non vel parum hyalino-marginatis, apice non (vel parum) corniculato. Squamae interiores latitudine inter se fere aequales. Capitulum ca. 55 mm diametro, mediocriter densum convexum, colore mediocriter luteo. Ligulae marginales planae, subtus stria quam ligula angustiore cano-violacea ornatae, denticulis apicalibus luteis. Antherae polliniferae, granis pollinis diametro variis. Stigmata virescentia. Achenia (isotypi (HW 4767), Fig. 14) straminea, 4.3–4.6 mm longa (pyramide 0.8–1.0 mm longa, cylindrica ± spinulosa inclusa), spinulis brevibus – mediocriter longis, mediocriter validis, ± incurvis. Rostrum ca. 12 mm longum vel parum longius. Pappus sordide albus.

Description: Section *Ruderalia*. Plant medium-sized to rather tall (20–50 cm). Leaves \pm erect and robust, dark green to bluish green, faintly or (in inner leaves) obviously hairy, and without scattered spots. All leaves have red to dark purplish petioles. Especially on the inner leaves the midribs tend to become brownish to purplish brown throughout, without striatulate pattern. The petioles are narrowly winged. All leaves have distinct, recurved, deltoid, medium acute, undivided leaf lobes with \pm patent tips, and with straight to irregular, entire to (rarely) toothed, upper edge and straight to irregularly convex, entire or subulate-dentate, lower lobe edge. The terminal lobes are medium-sized with differentiated tip, in the inner leaves they are usually conspicuously larger than the side lobes. The interlobes are well differentiated, angular, flat to faintly or irregularly plicate, very often with faint interlobe blots (“tar colour”). The scapes are arachnoid under the buds, elsewhere faintly to distinctly arachnoid. The buds are medium green to dark green, not pruinose (or faintly so). The outer bracts are 12–13 mm long, 3.0–3.9 mm broad, greenish to irregularly dirty reddish to brownish on upper (inner) surface, rather regularly arranged, horizontal to slightly recurved, with flat margins and without a distinct hyaline border. The tips of the involucral bracts have no corniculations. The inner bracts are almost equally wide, not coalescent. The fully flowering capitulum is medium yellow, ca. 55 mm in diameter, medium dense, with a \pm convex profile. The ligules are flat, beneath with a greyish ligule stripe which is narrower than the ligule. The apical ligule teeth of the inner flowers are yellow. Pollen is produced, the pollen grains are heterogenous as to size. The stigmas are discoloured, but not blackish. The achenes (of the isotype specimen HW 4767, Fig. 14) are straw-coloured to greyish brown, 4.3–4.6 mm long (incl. the 0.8–1.0 mm long, cylindrical, \pm spinulose, cone). The achene spinules are short to medium long, medium strong, incurved. Rostrum is 12 mm long or longer, with a dirty white pappus.

Taraxacum lundense is easily distinguished from other *Taraxacum* species of section *Ruderalia* by its leaf characters: the \pm purplish midribs, the rather dark faintly bluish leaf colour, and the large almost entire sidelobes, which are patent in the outer part and are only moderately acute. The almost entire and angular interlobes and the large endlobes of the inner leaves further contribute to the characteristics of this seemingly rather invariable species. *T. lundense* is shown as a photo in Svensk. Bot. Tidskrift 95: 2 (2001), p. 79, Fig. 1.

When *Taraxacum lundense* was first collected in Lund (S Sweden), after which it is named, it was preliminarily concluded that it was a strongly coloured modification of *T. huelphersianum* Dahlst. ex Hagl., with which *T. lundense* shares relatively small, only little recurved outer bracts, and large endlobes on the inner leaves. However, several new records of *T. lundense* from around Lund, and cultivation of this species for several years convinced us that the characteristic dark midrib and petiole colour of this species is stable. *T. lundense* is far less “dusty” in appearance than the greyish *T. huelphersianum*. In addition, the lateral lobes of *T. huelphersianum* are far more acute than those of *T. lundense*.

T. crassum and *T. hepaticum* (resp. described and illustrated above) share several leaf characters with *T. lundense*, but the former 2 species only rarely have purplish midribs and large endlobes on inner leaves, and both have far more recurved outer bracts. Furthermore, as to leaf shape, *T. lundense* might have a slight resemblance to young *T. aequilobum*, but the greenish midrib and the longer, irregularly twisted outer bracts of the latter species are good characters for separating these species.

Habitat and distribution: *Taraxacum lundense* is found growing, often abundantly, in habitats that are typical for members of section *Ruderalia*, i.e. on soil more or less influenced by human activity, such as roadsides, fallow fields, lawns, disturbed areas near towns and villages, etc. The distribution area, disjunct (Czech Republic, Denmark, Sweden) at present, is expected to also include at least Germany and Poland.

Voucher specimens: **Czech Republic:** N Bohemia: Krásná Lípa, 2 km tds. Mikulášovice, Krásný Buk, meadow 9. 5. 1998 L. Drábková et al. HØ 98-137 (HØ); do., Varnsdorf W outskirts, 1 km tds. Studánka, fallow field 9. 5. 1998 L. Drábková et al. HØ 98-135, -136 (HØ); Nový Bor tds. SE, Nové Zákupy S outsk., meadow 10. 5. 1998 J. Kirschner et al. HØ 98-157 (HØ). – **Sweden:** Scania (Skåne): Lund, Klosterkyrkan (= S:t. Peters kapell), verge 1990 and later, HW (HW); do., 12. 5. 1995 HW & HØ HØ 95-100 (HØ); Eslöv E outsk., Pär Håkanssonsväg, roadside 12. 5. 1995 HW & HØ HØ 95-99 (HØ); do., Trehäradsvägen, at a bicycle-track, grassy slope 12. 5. 1995 HW & HØ HØ 95-95, -96 (HØ), HW 4212-4217 (HW); root of parallel specimen planted for cult. in Birgittelyst. Offspring coll. 2. 5. 2000 HØ 00-77, -78, -79, -80 (HØ); Stora Råby parish, Råbytorp, fallow field to the west of the farm 16. 5. 1996 HW 4475 (HW); Borgeby parish, 1.4 km SW of the church, grassland 15. 5. 1997 HW (type collection, see above); Kävlinge parish, 300 m W of the sports ground, tree-planted former field, abundant 9. 5. 1998 HW 5085 (HW); Lund, Norra Nöbbelöv parish, Gunnesbo, 100 m NNE of the railway station, roadside 27. 4. 2000 HW 5600 (HW). – **Denmark:** E Jylland (E Jutland): Hinnerup, Rrnbækcentret, between bushes 3. 5. 1998 HØ & TBP TBP 98-456 (TBP); do., at a cycle path, road slope 3. 5. 1998 HØ & TBP HØ 98-101, -102, -103 (HØ).

Acknowledgements

The Czech, Dutch, and German *Taraxacum* teams, Erik Wessberg, Denmark, and J. Räsänen, Finland, supplied information on the species records in their regions. A. J. Richards, Newcastle, and Tony Dixon, Norwich, kindly corrected the English, and A. J. Richards made some comments on an earlier version of this text. H. Wittzell, Paris, contributed important information. P. Øllgaard, Denmark, photographed the type specimens. All are thanked.

Souhrn

Práce přináší příklady druhů rodu *Taraxacum* (sekce *Ruderalia*), u kterých je dobře známá oblast hlavního rozšíření, ale kromě toho se vyskytují ještě v jedné nebo několika málo dalších oblastech, kam byly zjevně zavlečeny. Studium a sběr pampelišek ze sekce *Ruderalia* nemá příliš dlouhou tradici, což omezovalo naše pochopení toho, jak současné areály vznikly. V práci jsou představeny názory na tuto problematiku. Jsou popsány nové druhy *Taraxacum ancistratum*, *T. crassum*, *T. deltoïdifrons*, *T. infuscatum*, *T. jugiferum* a *T. lundense*. Tři až čtyři tyto druhy byly poprvé objeveny v oblastech druhotného rozšíření, značně vzdálených od předpokládaných primárních areálů.

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Received 3 February 2002
Revision received 3 December 2002
Accepted 21 February 2003