

Six new *Taraxacum* species (Asteraceae) from Finland and adjacent countries

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We describe six new species of *Taraxacum* from the Nordic countries, in sect. *Borea* *T. rhusiolepium* and *T. scalare*, and in sect. *Ruderalia* *T. carptum*, *T. erici*, *T. laudabile*, and *T. spissum*. We include a comparison of respective morphologically related species, and a survey of their known distribution.

Key words: Asteraceae, new species, *Taraxacum*, taxonomy

After several years of cooperation on the Finnish *Taraxacum* flora, including excursions in different parts of Finland, with complementary herbarium studies in Helsinki, Oulu, and Stockholm, we are able to publish six new *Taraxacum* species in this paper. We controlled them all through several years of cultivation. One of them, *T. rhusiolepium*, has been cited by its name in the literature. Having now found and learnt that species we here take the opportunity to validate its name. Two of the species, *T. erici* and *T. laudabile*, were not found in public herbaria, the other four species were found both in the wild and as intercalated herbarium specimens with different names, mainly in H. In the latter case we have always given our grounds for our respective redeterminations.

Taraxacum scalare and *T. spissum* are examples of the taxonomic advantage of lectotypification. Without the typification of *T. triangulare* H. Lindb. and *T. praeradians* Dahlst. (Lundevall & Øllgaard 1999) we would have only weak arguments for “cleaning” the *T. triangulare* and *T.*

praeradians collections by removing the “confusing” elements *T. scalare* and *T. spissum* from them.

The holotypes of the new species are all kept in H. Voucher specimens, cited from private herbaria, will be distributed to public herbaria in due time.

The abbreviations used in the distributional data and collectors: Bh(+Gb) = Bohuslän (+ Gothenburg); CES = Carl Eric Sonck; Dls = Dalsland; EH(Ta) = Etelä-Häme (*Tavastia australis*); EK(Ka) = Etelä-Karjala (*Karelia australis*); EP(Oa) = Etelä-Pohjanmaa (*Ostrobothnia australis*); ES(Sa) = Etelä-Savo (*Savonia australis*); HØ = Hans Øllgaard and HØ, = the private herbarium of Hans Øllgaard; HW = Håkan Wittzell; JR = Juhani Räsänen and JR, = the private herbarium of Juhani Räsänen; LK(Kl) = Russia: *Karelia ladogensis*; MK = Matti Kääntönen (MK + collection number refers to the private herbarium of M. Kääntönen); Nb = Norrbotten; Pk(Kb) = Pohjois Karjala (*Karelia borealis*); POv = Piet Oosterveld; PSIT: pseudoisotype (= cul-



Fig. 1. Holotype of *Taraxacum carptum*.

tivated offspring from the original collection); Srm = Södermanland; St = Satakunta; TBUxx = Topografisk Botanisk Undersøgelse, district No.; U(N) = Uusimaa (*Nylandia*); Upl = Uppland; V(Ab) = Varsinais-Suomi (*Regio aboënsis*).

***Taraxacum* (sect. *Ruderalia*) *carptum* H.
Øllg. & J. Räsänen, *sp. nova* (Fig. 1)**

HOLOTYPE: Finland. "PK, Joensuu, Linnunlahti, Pajutie 1. Leikkikentän nurmikolla 11.VI.1998, leg. Juhani Räsänen. Grid 27°E 69472:6401 Ark.n:o 6801 Tutk.n:o S231" (H 812831). Pos.: 62°36'10"N, 29°43'37"E. Fruits of holotype cultivated in Joensuu, Linnunlahti, Pajutie 1 B 4, 4.VI.2004, legit Juhani Räsänen 4/53 (H 812832).

Planta mediae magnitudinis, 20–40 cm alta, rosula suberecta. Folia subobscura olivaceo-viridia, supra glabrescentia, petiolo ± alato purpureo. Interlobia bene definita, ± plicata, fere

integra vel ± dentata, parce piceo-maculata. Involucrum pallide vel obscurius viride valde pruinatum, basi rotundata. Squamae exteriores late lanceolatae, ca. 14–15 × 4.5 mm, canescenti-virides vel paullo rubescentes, regulares, parum reflexae vel sat reflexae, margine angustissime hyalino, apice non vel raro corniculato. Calathium ca. 45–55 mm diametro, sat densum, convexum. Antherae polliniferae. Stigmata obscure virescentia. Achenium fusco-stramineum, pyramide inclusa 3.4–3.6 mm longum, pyramide ca. 0.6 mm longa cylindrica laevi.

Taraxacum carptum is ca. 20–40 cm tall, with a suberect rosette. All leaves lobed, darkish mid-green, glabrescent, unspotted. Petioles narrowly winged, moderately red-coloured on all petioles. Lateral leaf lobes undivided, with a distinctly convex almost entire upper margin, and with uniformly medium acute or very acute tip. Proximal lobe margin ± straight, entire. Terminal lobe usually small, with a well-differentiated tip. Interlobes angular, somewhat plicate and toothed, with faint or missing tar-colour. Scapes mainly hairy under the involucre, elsewhere glabrescent. Involucre pale to dark green, strongly pruinose. Outer phyllaries 14–15 mm × 4.5 mm, ± dark greyish green, often with an indistinctly reddish hue, rather regularly arranged, moderately reflexed, all with flat narrowly hyaline border, without corniculations. Fully flowering capitulum ca. 45–55 mm in diameter, dense, with a ± convex profile. Ligules flat or canaliculate, medium yellow, with yellow ligule teeth. Outermost ligules striped greyish. Pollen present. Stigmas discoloured. Achene greyish brown, (3.4–)3.6(–3.8) mm long (incl. cone), spinulose in the distal part, the spinules being medium long or very long, medium strong, straight or recurved. Achene cone about 0.6 mm long, cylindrical, usually smooth. Rostrum length 10–11 mm. Pappus white.

DISCUSSION. The closest morphological relative of *Taraxacum carptum* seems to be *T. retroflexum* H. Lindb., a widespread and rather well-known species. The latter species, however, has strongly reflexed outer phyllaries, which are lighter green. The lateral lobes of *T. carptum* are far more claw-like than we have ever seen in *T. retroflexum*. *Taraxacum carptum* has relatively smaller terminal lobes of the inner leaves than

those of *T. retroflexum*, and besides, the well-differentiated mucronate tip of the terminal lobes far more dominate the total impression of *T. carptum* than in *T. retroflexum*. The general leaf shape of *T. carptum* is somewhat reminiscent of an, unfortunately badly known, other species described from Gotland, namely *T. capnocarpum* Dahlst., and, in fact, we have chosen a somewhat similar name for our species. However, without having seen *T. capnocarpum* in the wild we are sure that *T. carptum* is different from *T. capnocarpum*. In his description of *T. capnocarpum* Dahlstedt (1910) mentions its narrow outer phyllaries (1.5–2.5 mm) and smaller flower head diameter (35–40 mm).

REPRESENTATIVE SPECIMENS (paratypes). — **Finland.** **EH(Ta):** Pirkkala, Kaitalankulma, Sääksjärvi, Saunapuro, Grid 27°E: 6818:325, pellonlaita, 10.VI.1979, legit M. Kääntönen (MK-159/79). **EP(Oa):** Kristiina, outskirts tds. Lappfjärd, opposite Lappstella (62°15'58''N, 21°25'18''E), roadside 1.VI.2005 legit H. Øllgaard et al. (HØ, HØ-05-361; JR, JR-5/63; OL; herb. POv; herb. Žila). **PK(Kb):** Joensuu, Linnunlahti, Heinäpurontie, 62°36'05''N, 29°43'29''E, tienvarsinurmikolla kasvitiet. puutarhan kohdalla, 11.VI.1998 legit J. Räsänen (JR, JR-S242, -243). Liperi, Lamminniemi, (62°31'06''N, 29°25'33''E), roadside 11.VI.1999 legit H. Øllg., J. Räsänen & E. Reinikka (L, HØ-99-424; HØ, HØ-99-425). Rääkkylä, S of Kompakka, Juhmakka (S of the river) (62°18'15''N, 29°51'22''E), cult. grass field 11.VI.1999 legit H. Øllg., J. Räsänen & E. Reinikka (HØ, HØ-99-416, -417 (2 parts, one of which in herb. HW), -418, -419, -420; JR, JR-T204) Root cult. Eno, in the community, Enontie at the church, 62°36'12''N, 29°46'05''E, road verge 5.VI.2000 legit J. Räsänen (HØ, JR-U-218; JR). Pyhäselkä, Reijola, Reijolantie, 62°32'45''N, 29°49'47''E, tienvarsi, 6.VI.2004 legit J. & M. Räsänen (JR, JR 4/92). **St:** Pori tds. NW, Reposaari (61°36'56''N, 21°26'28''E), cut ruderal lawn 31.V.2005 legit H. Øllgaard et al. (HØ, HØ-05-343; JR, JR-5/36). **U(N):** Helsinki (Helsingfors), Munknäs (Munkkiniemi), roadside 5.VI.1925 legit G. Marklund (H 195077). Marklund det.: *T. retroflexum* Lindb.fil. Parallels in herb. H: H 195078, 195080. Helsinki, Djurgården, Tallbacken, 60°11'00''N, 24°55'47''E, forest roadside 3.VI.1998 legit H. Øllgaard et al. (HØ, HØ-98-283; JR, JR-S157). — **Sweden.** **Kalmar:** Fågelfors, Fågelfors community, near the church, dry grass field 8.V.2004 legit Tommy Nilsson (herb. Nilsson, TN-2789). **Norrbotten:** Älvsbyn, Bredsel, NW-outskirts, 65°51'16''N, 20°26'30''E (RUBIN 25K 2c 3715), old lawn, 7.VI.2003 legit H. Øllgaard, J. Räsänen et al. (HØ, HØ-03-245, 2 parts; parallels in S, Nb-03-0141 (3 parts), and in JR, JR-3/222) Ass.: *Trifolium repens*, *Cirsium helenioides*, *Achillea millefolium*, *Deschampsia caespitosa*, *Alchemilla micans*. **Skåne (Scania):** Norra Åsum, Hovby (10 km WNW of Åhus), in the village, 55°57'43''N, 14°11'46''E, roadside, 20.V.2005 legit H. Øllgaard & H. Wittzell (HØ, HØ-05-324). **Småland:** Växjö, St. Sigrids Sjukhus, 8.V.1963 legit



Fig. 2. Holotype of *Taraxacum erici*.

B. Saarsoo 14452 (H). **Södermanland:** Åker, Klockartorp, roadside, 15.V.1990 legit H. Rydberg (herb. Rydberg, HRY-90-077). Oxelösund tds. Nyköping, Stjärnholm, at the railway, 58°41'33''N, 17°01'54''E, roadside, 24.V.2000 legit H. Øllgaard & H. Rydberg (HØ, HØ-00-301). Barva, Strand tds. S, at a bathing ground, sandy grass field; 27.V.1997 legit H. Rydberg (herb. Rydberg, HRY-97-086b). Lilla Malma, 400 m E of Snös vad, pasture; 27.V.2005 legit H. Rydberg (herb. Rydberg, HRY-05-184, -185). **Uppland:** Huddunge, Huddungeby, 60°02'59''N, 16°59'10''E, garden, 15.V.1994 legit C.-F. Lundevall (S, CFL-16615). — **Denmark.** **Østjylland** (E. Jutland): TBU21: Århus, outsk. tds. Randers, Skejby, Skejbyparken, 56°11'44''N, 10°11'21''E, ruderal site, 2.V.2002 legit H. Øllgaard & Th. Brandt (herb. HØ and HW, HØ-02-174 (2 parts)). **Sønderjylland** (S. Jutland): TBU53: Sønderborg, N outsk., park area at the road Udsigten, 54°55'14''N, 09°46'32''E, grassy area, 5.V.2001 legit H. Øllgaard & Th. Brandt (HØ, HØ-01-56, -57, -58).

***Taraxacum* (sect. Ruderalia) *erici* H. Øllg. & J. Räsänen, sp. nova (Fig. 2)**

HOLOTYPE: Finland. "Northern Karelia (district PK (Kb)) Möhkö village W. outskirts, Ruukkimuseo, former iron-works, grassy area 62°38'29''N, 31°17'19''E 13.VI.1999 J.

Räsänen & H. Øllgaard HØ-99-461" (H 812839); isotypes H. HØ-99-462 (*cum fructibus*), -463 (H 812840, 812841); OULU, JR-T249, -253; PSIT*: C, HØ-02-307, -308; HØ, JR-1/249; S, JR-1/265, -5/201.

Planta 20–50 cm alta, rosula suberecta vel ± erecta. Folia canescenti-viridia, supra glabrescentia vel praesertim in foliis interioribus subaraneosa vel araneosa, petiolis plerumque ± alatis foliorum exteriorum et intermediorum pallidis, ceterum ± pallide roseo-purpureis, nervo medio viridi vel inferne parce rubescente, foliorum intermediorum et interiorum saepe apicem versus plus colorato, interdum striolato. Lobi laterales margine distali integro vel minute subulato-denticulato vel lobulato-dentato, apice peracuto. Interlobia rotundata vel subangulata, plana, viridia. Scapi sat pallidi. Involucrum viride vel obscure viride, parce pruinose. Squamae exteriores ca. 16–18 × 3.5–5.0 mm, canovirides, plures retroflexae, singulae irregulares, margine non hyalino, ad apicem saepe ± corniculatae. Calathium 50–60 mm diametro, mediocriter densum convexum. Antherae polliniferae. Stigmata virescentia. Achenium (speciminis numero HØ-99-462) pyramide inclusa ca. 4.2 mm longum, pyramide ca. 0.9 mm longa, cylindrica, laevi.

Taraxacum erici is a rather tall plant, 20–50(–60) cm with greyish green, glabrescent or (in inner leaves) sometimes densely hairy, unspotted leaves. Petioles usually narrowly winged, on outer petioles greenish, on inner petioles ± reddish. Midribs often increasingly darker brownish coloured towards leaf apex, and with striolate pattern. Lateral leaf lobes usually undivided, but sometimes, in exposed specimens, deeply dissected, from a broad antrorse lobe base often recurved, often with a convex, entire or finely toothed distal margin. Proximal lobe margin concave or almost straight, usually entire. Lobe tips very acute. Terminal lobe rather small, obtuse to acute, without distinct tip. Interlobes broadly rounded or indistinctly angular, flat to indistinctly or irregularly plicate, green. Scapes indistinctly coloured, hairy under the involucre, elsewhere glabrescent. Involucre pale to dark green, indistinctly pruinose. Outer phyllaries 16–18 mm × 3.5–5.0 mm, coloured whitish green or irregularly reddish, the majority strongly reflexed, ver-

tical, but some irregularly directed. Margin of outer phyllaries flat, unbordered, the tips often with corniculations. Capitulum 50–60 mm in diameter, medium yellow, medium dense, with a ± convex profile. Ligules flat or canaliculate, with dark red apical teeth. Ligule stripe narrower than ligule, indistinctly reddish grey. Pollen is produced. Stigmas discoloured. Achenes greyish brown, 4.2–4.4 mm long incl. the 0.7–0.9 mm long, cylindrical, smooth cone. Achene spinules medium long, very robust, straight. Rostrum length 10–11 mm.

EPONYMY. *Taraxacum erici* is named for Carl Eric Sonck (1905–2004), professor (Åbo/Turku University); Dr. med. (Helsinki); Doctor honoris causa 1969 (Helsinki University) because of his botanical investigations in Lieksa, North Karelia (1964). Sonck has described almost 100 new species of *Taraxacum*.

DISCUSSION. *Taraxacum erici* is a remarkable species with a ± erect rosette of greyish dull green leaves with ± brownish midribs and ± ragged leaf lobes. Its closest morphological relative is probably *T. verticosum* Railons., which we have had the opportunity to be acquainted with recently, partly through the *Taraxaca Exsiccata* (Kirschner & Štěpánek, Průhonice), fasc. 14: 667 (2005), partly through own finds in 2005. The two species are rather easily separated by their different petiole colour: intense in *T. verticosum*, very faint in *T. erici*. Besides, the former has darker green leaves with somewhat tar-coloured interlobes, and lobes more strongly dentate. *Taraxacum erici* is often seen with ± convex distal lobe edges, whereas in *T. verticosum*, they are straight or concave. As it seems, the outer phyllaries of *T. verticosum* are longer and more irregularly twisted than those of *T. erici*.

REPRESENTATIVE SPECIMENS (paratypes). — **Finland.** **EH(Ta):** Tampere, Teisko, Kolunkylä, savipelto ja tienlaita Saarentaan talon S-puolella, 31.5.2005 **M.** Kääntönen (MK-72/05). **PK (Kb):** Joensuu, Mutala, Nurmeksentie, opposite Rakentajankatu, 62°36'58"N, 29°47'27"E, grassy area 8.VI.1999 *legit* H. Øllgaard, J. Räsänen & E. Reinikka (HØ, HØ-99-367, -368, -369, -370, -371, -372; JR, JR-T159, -T160, -T164). Root cult. Birgittelyst. Ditto 11.VI.2001 *legit* J. Räsänen & C.E. Sonck (CES, now H); HØ; JR, JR 1/331). Ilomantsi, Möhkö, W outsk. of the village, Ruukkimuseo, former ironworks, 62°38'29"N, 31°17'19"E, grassy area, 13.VI.1999, *legit* H. Øllgaard & J. Räsänen (HØ, HØ-99-461, -462 (achenes cult. in Birgittelyst, voucher specimens



Fig. 3. Holotype of *Taraxacum laudabile*.

11.V.2002, legit H. Øllgaard (HØ, HØ-02-307, -308); JR, HØ-02-463, JR-T-249).

***Taraxacum* (sect. *Ruderalia*) *laudabile* H. Øllg. & J. Räsänen, sp. nova (Figs. 3 and 4)**

HOLOTYPE: Finland. (N): Helsinki, Kaisaniemi, Unioninkatu 44, Bot. Museum, 60°10'28''N, 24°56'48''E, (Grid 27°E: 66754;3863), N for museumsbygningen, gruset p-plads, 7.VI.1999 legit H. Øllgaard 99-350 (H 812837); isotypes (HØ-99-351 (H 812838) and -352; S, HØ-99-353; C, HØ-99-354 and -355; OULU, JR-T134).

Planta 20–35 cm alta, sat gracilis, rosula suberecta. *Folia* viridia vel obscure viridia, glabrescentia, omnia lobata vel interiora fere integra, petiolo angusto, rubro-purpureo. *Lobi laterales* integri, interdum profunde fissi. *Interlobia* acutangula vel bene definita, plana vel parce plicata, integra vel rarius ± dentata, viridia vel saepe picei-maculata. *Involucrum* pallide vel obscurius viride parce pruinose. *Squamae exteriores* ca. 14–15 × 1.5–2.5 mm, obscure virides,



Fig. 4. *Taraxacum laudabile*. Note the distinctive outer phyllaries.

regulares, pulchre valde recurvae. Calathium ca. 40–50 mm diametro, laxum vel mediocriter densum, convexum. *Antherae polliniferae. Stigmata* virescentia. *Achenium fusco-stramineum, pyramide inclusa* 4.2–4.4 mm longum, pyramide ca. 0.7–0.8 mm longa cylindrica laevi vel parce spinulosa. *Rostrum* ca. 11 mm longum.

Leaves dark green, or pale to dark bluish green, only indistinctly glabrescent above, without scattered spots. Petiole wings absent. Petiole colour on all petioles red or pink. Midrib green to indistinctly reddish or brownish, not striolate. Leaf lobation in outer and middle leaves distinct, in inner leaves indistinct. Lateral leaf lobes recurved (shaped deltoid), usually undivided, but sometimes cleft, with straight to concave or irregular distal margin, lobe apices (in upper leaf half) uniformly medium acute, and with distal margin usually entire, or sometimes with robust teeth of irregular size. Proximal lobe margin straight or irregular, entire or subulate-dentate. Terminal lobe larger than the lateral lobes, at least on inner leaves, obtuse to acute, without distinct tip or gradually elongate or linguata. Interlobes acute angled to well differentiated, angular, flat to indistinctly or irregularly plicate, tar-colour absent or present. Scapes rather glabrous, under buds hairy. Involucre pale to dark green, not (or indistinctly) pruinose. Outer phyllaries 14–15 mm long, 1.5–2.5 mm wide, dark greenish, very regularly arranged, ± curved-reflexed. Margin of outer phyllaries flat, border very indistinct, without apical corniculations. Inner phyllaries almost equally wide, not coalescent. Capitulum ca. 40–50 mm in diameter, lax or medium dense,



Fig. 5. Holotype of *Taraxacum rhusiolepium*.

profile \pm convex. Flower colour medium yellow. Ligules flat or canaliculate, with yellow or dark apical ligule teeth. Ligule stripe as wide as ligule, indistinctly reddish grey. Pollen present. Stigmas discoloured. Achene greyish brown, 4.2–4.4 mm long (incl. cone). Achene cone 0.7–0.8 mm long, cylindrical (or almost so), smooth or \pm spinulose, spinules medium long, medium strong, straight. Rostrum length 10–11 mm.

DISCUSSION. In spite of the very conspicuous and beautiful outer phyllaries of *Taraxacum laudabile* we have failed to find any match in herbarium H, nor elsewhere. In our view only species with similarly narrow outer phyllaries could be confused with the present species, namely e.g. *T. bifforme* Dahlst. and *T. deltoideum* G.E. Haglund. A good field determination mark, often also clearly seen in herbarium specimens, against those two species are the outer phyllaries of *T. laudabile*, which are curved downwards in different height, especially striking just after

anthesis (Fig. 4).

Taraxacum bifforme has pale green leaves, not dark green as in *T. laudabile*, and does not produce the unlobed inner leaves often seen in *T. laudabile*. Compared with *T. deltoideum* our species has more irregularly lobed leaves, and somewhat longer and narrower outer phyllaries.

REPRESENTATIVE SPECIMENS (paratypes). — **Finland.** V(Ab): Lohja, Lohja as., Mäntynummi, 60°16'31"N, 24°07'50"E (Grid 27°E: 66883:3414), E-udkant, vej 25, aftag mod Lojo station, under Pinus, skovkant, 2.VI.1998 legit H. Øllgaard, J. Räsänen, C.E. Sonck & al. (HØ, HØ-98-262, -263, -264 (root cult. in DK, Birgittelyst), specimens legit H. Øllgaard 8.V.1999 (HØ, HØ-99-158), -265, -266 (photo); H, CES-98-1 (3 specimens); JR, JR-S142). Lohja, centrum, Postikatu, 60°14'58"N, 24°03'41"E (Grid 27°E: 66856:3374), lok. for tidl. bryggeri, ruderat, 2.VI.1998 legit H. Øllgaard & J. Räsänen, HØ-98-267 (HØ), JR-S134 (JR). U(N): Helsinki, Kaisaniemi, Unioninkatu 44, Bot. Museum, 60°10'28"N, 24°56'48"E, (Grid 27°E: 66754:3863), N for museumsbygningen, gruset p-plads, 3.VI.1998 legit H. Øllgaard & J. Räsänen (JR, JR-S175). Ditto 7.VI.1999 legit H. Øllgaard (HØ, HØ-99-350, -351, -352, -353, -354, -355; JR, JR-T134). Espoo, Latokaski, Ruiskaski 1, 60°10'49"N, 24°39'14"E (Grid 27°E: 66766:3700), pihatien varsi, 30.V.2004 legit J. Räsänen (JR, JR-4/39).

Taraxacum (sect. *Borea*) *rhusiolepium*

[Markl. in Sältin 1965: 15, *nom. nud.*, ex] H. Øllg. & J. Räsänen, *sp. nova* (Fig. 5)

HOLOTYPE: Finland. "N., Esbo, Köklaks, gräsmark vid järnvägen ca. 1 km W om stationen 26.V.1940 Gunnar Marklund H195614"; isotype H195615.

NB: Two specimens of *T. rhusiolepium* (H 195611 and 195612), collected on the same date and locality by Uno Saxén, are obviously collected together with G. Marklund. Still, they are dubious as isotypes, being labelled a little differently. However, we believe they are determined by G. Marklund.

Planta 15–25 cm alta, rosula suberecta. Folia laete vel mediocriter viridia, supra glabrescentia, petiolo angusto vel anguste alato, \pm lucide purpureo. Lobi laterales apicibus acutis vel saepe singulis obtusis. Lobus terminalis vulgo mediae magnitudinis, in foliis interioribus major interdum profunde incisus, apice acuto non contracto. Interlobia acutangula–sat longa, parce plicata, plerumque integra, parce piceo-maculata. Involucrum pallide vel obscurius viride \pm pruinatum. Squamae exteriores ca. 12–13 \times ca. 3.5 mm, canescenti-virides vel praesaepe \pm

rubescentes, regulares, patentis, margine angustissime hyalino. Calathium ca. 45 mm diametro, mediocriter densum, convexum. Ligulae obscure luteae, denticulis apicalibus luteis. Antherae polliniferae. Stigmata virescentia. Achenium fusco-stramineum, pyramide inclusa 3.3–3.5 mm longum, pyramide ca. 0.4–0.5 mm longa conica-cylindrica laevi. Rostrum 10–11 mm longum.

Taraxacum rhusiolepium is a medium-sized species with a patent rosette of pale or mid-green glabrescent and unspotted leaves. Petioles narrowly winged, coloured medium red or lucid purple. Midrib green to faintly reddish, not with striolate pattern. All leaves with distinct lobation, lateral leaf lobes recurved and undivided, with straight to concave or irregular distal edge, mostly very acute tips, but some apices quite rounded. Distal lateral lobe edge entire (or almost). Proximal lobe edge sometimes a little concave or, usually, almost straight or irregular, entire. Terminal lobe larger than lateral lobes, at least on inner leaves, acute, without distinct tip. Interlobes broadly rounded, or well differentiated and angular, flat to faintly or irregularly plicate, tar-colour variable. Scapes distinctly arachnoid especially under the involucre, but sometimes throughout. Involucre light to dark green, ± pruinose. Outer phyllaries ca. 12–13 × ca. 3.5 mm, coloured ± purplish, rather regularly arranged, erect or ± horizontal, with flat margins with a very faint or moderately broad hyaline border. Capitulum in full flower ca. 45 mm in diameter, medium dense, with a ± convex profile. Flower colour darker yellow than average. Ligules flat or canaliculate, the outermost beneath with a greyish stripe narrower than ligule, and with yellow ligule teeth. Pollen present. Stigmas discoloured.

Achenes greyish brown, 3.3–3.5 mm long, incl. a 0.4–0.5 mm long, conical or cylindrical, smooth cone. Achene spinules very short or medium long, very thin, straight. Rostrum 10–11 mm long.

DISCUSSION. *Taraxacum rhusiolepium* is recognised mainly by reddish outer phyllaries, pale leaf color and contrasting strongly purple-coloured leaf petioles. Furthermore, in the same plant the lobes are mainly very acute, but the casual occurrence of quite obtuse lobe apices is a good mark of recognition. The constancy

of these marks has been tested in cultivation. *Taraxacum florstroemii* Markl. is known to also have the character combination of strongly purple-coloured petioles and some obtuse lobe apices. However, the latter species differs in having a darker green leaf colour, less acute lobe apices, smaller terminal lobes with a ± well-defined apical process, and its outer phyllaries are deflexed. The leaf shape of *T. rhusiolepium* somewhat looks like *T. submaculosum* Markl., but the latter species has less intense petiole colour, usually small leaf spots on upper leaf surface, and it is unknown to have casullay obtuse lobe tips.

REPRESENTATIVE SPECIMENS (paratypes). — **Finland.** V(Ab): Lohja, Ahtsalmi, Vellamonkatu, 60°14'48''N, 24°03'22''E (Grid 27°: 66853:3371), kadunvarsinurmikko, 2.VI.1998 legit *H. Øllgaard & J. Räsänen* (HØ, HØ-98-254, cult. in DK, Birgittelyst, voucher specimens legit *H. Øllgaard* 2000, (HØ, HØ-00-96; JR, JR-S136, cult. in FIN, Joensuu JR, JR-3/153). U(N): Par. Kirkkonummi ad stationem ferroviae (Bobäck) in clivo amnis. 21.V.1933 legit *U. Saxen* (H 195613). Esbo, Köklaks, Fiskarudden, 23.V.1939 legit *E. Häyren* (H 195616, 195617). Esbo, Köklaks, gräs-
mark vid järnvägen ca. 1 km W om stationen, 26.V.1940 legit *G. Marklund* (H 195614, 195615). Espoo, Kauklahti, prope stationem ad stradam ferratam, 26.V.1940 legit *U. Saxen* (H 195611). Espoo, Kauklahti ad ferroviam, 26.V.1940 legit *U. Saxen* (H 195612).

Taraxacum (sect. *Borea*) *scalare* H. Øllg. & J. Räsänen, *sp. nova* (Figs. 6–9)

T. euodontum Markl. in sched., non *T. euodontum* Sahlin 1977

HOLOTYPE: Russia. “*Taraxacum euodontum* Markl. KL Sordavala s:n, Kirjavalahi, naturlig äng 4.VI.1910 det. et leg. Gunnar Marklund” (H 202842 in H).

Planta 20–35 cm alta, rosula suberecta. Folia obscure viridia parum glaucescentia, supra glabrescentia, exteriora et intermedia omnia lobata, interiora saepe non lobata, ± grosse dentata, petiolo ± alato purpureo. Lobi laterales apice acuto. Lobus terminalis apice sat late acuto. Interlobia acutangula, plana, fere integra vel parce dentata, viridia. Involucrum pallide vel obscurius viride parce pruinatum. Squamae exteriores ca. 14–15 × ca. 3.5 mm, canescenti-virides vel paullo rubescentes, regulares, arcuato-reflexae vel retroflexae. Calathium ca. 45 mm diametro, densissimum, convexum.



Fig. 6. Holotype of *Taraxacum scalare*.

Ligulae sat obscure luteae, denticulis apicalibus luteis. *Antherae* polline carentes. *Stigmata* modice virescentia. *Achenium* fusco-stramineum, *pyramide inclusa* 3.1–3.4 mm longum, *pyramide* ca. 0.4–0.5 mm longa *cylindrica laevi*. *Rostrum* ca. 11 mm longum.

Taraxacum scalare is a medium-sized plant with a suberect rosette of dark greyish green leaves with a bluish hint, glabrescent above. Petioles narrowly to rather broadly winged, moderately red or pinkish coloured. Midrib green to indistinctly brownish, without striolate pattern. Leaf lobation distinct in outer and middle leaves, but often missing or reduced to gross dentation in inner leaves. Lateral leaf lobes regularly recurved, undivided, with convex or straight distal margin which often bears one or more strong teeth. Proximal lobe edge straight, entire. Lobe tips moderately acute or very acute. Terminal lobe larger than lateral lobes only on inner leaves, obtuse to acute, without differentiated



Fig. 7. Flowerheads of *Taraxacum scalare* (left) and *T. triangulare* (right) from the side.

tip. Interlobes acute angled, indistinctly plicate, scarcely toothed, green. Scapes hairy under the involucre, elsewhere glabrescent. Involucre pale or dark green, indistinctly pruinose. Outer phyllaries ca. 14–15 × ca. 3.5 mm, coloured whitish greenish with an indistinct reddish hint above, rather regularly arranged, ± curved-reflexed or deflexed, with flat, unbordered margins. Capitulum in full flower ca. 45 mm in diameter, very dense, dark yellow, with a ± convex profile. Ligules flat or canaliculate, the outermost striped indistinctly reddish grey beneath, with yellow apical teeth. Pollen absent. Stigmas moderately discoloured. Achenes greyish brown, 3.1–3.4 mm long (incl. cone), in distal part spinulose, the spinules medium long, medium strong, and incurved. Achene cone cylindrical, smooth, 0.4–0.5 mm long. Rostrum length 10–11 mm. Pappus white.

DISCUSSION. *Taraxacum scalare* has a very dense and beautiful flowerhead, almost unique in *Taraxacum* (Figs. 7 and 8), but unfortunately that character is impossible to keep in herbarium specimens. Most of the specimens quoted in the distribution section (below) were determined as *T. triangulare* H. Lindb., a few specimens as *T. penicilliforme* H. Lindb. Figure 9 shows leaves of *T. scalare* (left) and *T. triangulare* (right), parts of specimens cultivated together in Viborg, Denmark. They both originate from North Karelia where we collected them as living plants and transplanted them to Denmark for cultivation. Differences between *T. scalare* and *T. triangulare* are shown in Table 1.

Taraxacum penicilliforme is easily separated by its paler petioles, less dentate lateral lobes and much broader (4.5–7 mm), clearly bordered, outer phyllaries.

REPRESENTATIVE SPECIMENS (paratypes). — **Finland.**

A(Al): Vårdö, Vargata, (Lidåkersbacken), ängsbacke mellan byn och träsket, 21.V.1939 legit *P. Olofsson* (H 202520). **V(Ab):** Pojo, Kyrkobyn, Folkhögskolan, åkerren, 11.VI.1928 legit *B. Pettersson* (H 202494). **U(N):** Helsinki, Korkeasaari, Itäranta, 5.VI.1928 legit *M. Puolanne* (H 202965, -202966). **St:** Honkilahti, Kyrkobyn, vid odlad äng, 3.VI.1912 legit *B. Florström* (H 202883). **EH(Ta):** Kuusankoski, Kymmene bruk, S om älven, Sääksniemi gårdsplan, 1.VI.1952 legit *F.W. Klingstedt* (H 202868, -202869, -202871, -202872, -202874, -202875). **ES(Sa):** Lappeenranta, Lappvesi, Kausala, 10.VI.1908 legit *H. Buch* (H 202813). **PS(Sb):** Nilsä, keskusta, Nilsäntie, 63°11'49"N, 28°05'36"E (Grid 27°E: 70109:5552), tienpiennar, 16.VI.2005 legit *J. Räsänen JR*, JR-5/264, -5/265; HØ. **PK(Kb):** Kontiolahti, Kontioniemi, at the former hospital, 62°44'43"N, 29°48'19"E, old lawn, 12.VI.1999 legit *H. Øllgaard, J. Räsänen & E. Reinikka* (HØ, HØ-99-434 (2 parts). PC descr. Photo. Cult. (root) in DK, Birgittelyst, voucher specimen, legit *H. Øllgaard* 2.V.2000 (HØ, HØ-00-87; JR, JR-T223 (2 parts). **Kn(Ok):** Hyrnsalmi, Kangasjärvi, 11.VI.1957 legit *L. Heikkinen* (H



Fig. 8. Flowerheads of *Taraxacum scalare* (left) and *T. triangulare* (right) from above.

203840). — **Sweden.** Dls: Ånimskog a:n, ml. Galmen og Kingebo, på hällbacke Ö invid landsvägen, i gräs, 25.V.1951 legit *G. Haglund* (HØ). Bäcke s:n, Teåker, ängsmark vid Teåkersälven, på barjord i buskage, 16.VI.1951 legit *G. Haglund* (HØ). — **Russia.** **EK(Ka):** Viipuri, Monrepos, V.1916 legit *T.J. Hintikka* (H 202932). **LK(Kl):** Sordavala s:n, Kirjavalahki, naturlig äng, 4.VI.1910 legit *G. Marklund* (H 202842) as *T. euodontum* Markl. **PK(Kb):** Kides, Matkaselkä, 27.V.1910 legit *G. Marklund* (H 203877).



Fig. 9. *Taraxacum scalare* (left) and *T. triangulare* (right). Note the differences in the leaves.



Fig. 10. Holotype of *Taraxacum spissum*.

***Taraxacum* (sect. *Ruderalia*) *spissum* H.**
Øllg. & J. Räsänen, *sp. nova* (Fig. 10)

HOLOTYPE: Finland. "U, Elimäki, Nappa, tienpienitäreella Esson huoltoaseman luona 30.V.2000 leg. J. Räsänen Grid 27°E 67498:4766 Ark.n:o 7736 Tutk. n:o U188" (H 812833, Fig. 10); isotype in S. PSIT: 2.VI.2003 JR-3/157 (H 812834), 10.VI.2004 JR-4/172 (2 parts) (H 812835, H 812836)

Planta 25–45 cm alta, rosula suberecta.
Folia canescenti-viridia, interdum rubescentia,

supra glabrescentia, petiolo ± alato purpureo, nervo medio viridi vel plerumque sordidescente, striolis coloratis carente. Lobi laterales margine distali, saepe profunde dissecto, lobulos vel dentes longos parallelos formante. Lobus terminalis hastatus, in apicem elongatum protractus. Interlobia parce plicata, viridia. Involucrum ca. 16–18 × 13–15 mm, pallide vel obscurius viride parce pruinatum, basi rotundata. Squamae exteriores ca. 16–17 × ca. 3–4 mm, canescenti-virides vel paullo rubescentes, regulares, curvato-reflexae. Calathium ca. 45–55 mm diametro, mediocriter densus, convexum. Ligulae mediocriter luteae, denticulis apicalibus rubris. Antherae polliniferae. Stigmata obscure virescentia. Achenium fusco-stramineum, pyramide inclusa 4.1–4.2 mm longum, pyramide 0.6–0.8 mm longa cylindrica laevi. Rostrum ca. 9–10 mm longum.

Taraxacum spissum is a medium-sized, 25–45 cm tall species with a suberect rosette of glabrescent, greyish green leaves which sometimes have a reddish touch. Petioles ± winged, conspicuously red. Most characteristic for *T. spissum* are the patent, rather uniform leaf lobes which are sometimes dissected into large parallel teeth, or the lobes are entire and separated by interlobes with long parallel teeth. Terminal lobes rather uniform, triangular with elongate lobules or, in less developed plants, with a broadly rounded apical lobule and shorter lateral lobules. Outer phyllaries ca. 16–17 × 3.0–4.0 mm, curved-reflexed, greenish or with a little red, without hyaline border. Inner phyllaries not coalescent. Capitulum 45–55 mm in diameter; medium dense, convex, with medium yellow, plane ligules with red apical teeth, the outermost ligules striped greyish violet beneath. Pollen present. Stigmas discoloured. Achenes straw-coloured, 4.1–4.2 mm long (incl. the cone), in upper part with short, medium robust, straight

Table 1. Morphological differences between *Taraxacum scalare* and *T. triangulare*.

Character	<i>Taraxacum scalare</i>	<i>Taraxacum triangulare</i>
Terminal lobe tip	not protracted	protracted, ± filiform
Flower ligule teeth colour	yellow	red
Fruit length (incl. cone)	3.0–3.5 mm	2.6–2.9 mm
Fruit spinuli	medium long, medium robust	very long, very thin
Rostrum length	10–11 mm	8–9 mm

Table 2. Morphological differences between *Taraxacum spissum* and *T. praeradians*.

Character	<i>Taraxacum spissum</i>	<i>Taraxacum praeradians</i>
Petioles	all petioles distinctly red	outer leaf petioles ± pale, in inner leaves coloured
Lobes	patent, glabrescent	recurved, ± hairy
Outer phyllaries	arcuate-recurved	deflexed
Inner phyllaries	of equal width	± coalescent, of very unequal width

spinules, and with a 0.6–0.7 mm long, cylindrical, smooth cone. Rostrum 9–10 mm long.

DISCUSSION. *Taraxacum spissum* very often has long parallel interlobe teeth (see Fig. 10) and, when present, that character will separate it from any *Taraxacum* species, known by us. *T. spissum* has been collected and determined as *T. praeradians* Dahlst. by several botanists. However, after the typification of the Nordic *Taraxacum* species (Lundevall & Øllgaard 1999) the name *T. praeradians* has been attached to a different species (i.e., p. 131).

Taraxacum acroglossum Dahlst., formerly also confused with *T. praeradians*, is separated from *T. spissum* by its patent rosette, usually recurved lateral lobes, and outer phyllaries more than 5 mm broad. *Taraxacum praeradians* is separated from *T. spissum* e.g. by the characters presented in Table 2.

REPRESENTATIVE SPECIMENS (paratypes): — **Finland.** **U(N):** Elimäki, Nappa, 60°51'29"N, 26°34'00"E (Grid 27°E: 67498:4766), tienpientareella Esson huoltoaseman luona, 30.V.2000 *J. Räsänen* (JR, JR-U188; HØ). **Cult.** in FIN, Joensuu, 2.VI.2003 *legit J. Räsänen* (JR, JR-3/157), 19.VI.2004 (JR, JR-4/172, 2 parts). **St:** Pori, Toejoki, Valajankatu, 61°30'17"N, 21°48'14"E (Grid 27°E: 68328:2237), nurmikko Valajankadun ja Pikietien välissä, 31.V.2005 *legit H. Øllgaard, J. Räsänen & al.* (JR, JR 5/40). **EH(Ta):** Kuusankoski, Kymmene bruk, S om älven, Niskala, 31.V.1952 *legit F.W. Klingstedt* (H 161965, -161966, -161967, -161968, -161969). **ES(Sa):** Luumäki, Motelli, valtatie 6:n piennar, 22.V.2001 *legit J. Räsänen* (JR, JR-1/53, parallel in herb. HØ), **cult.** in FIN, Joensuu, 2.VI.2003 *legit J. Räsänen* (JR, JR-3/165), 11.VI.2004 (JR, JR-4/202). **PK(Kb):** Joensuu, Raatekangas, Lukkotie, 62°37'39"N, 29°46'15"E (Grid

27°E: 69500:6423), tienvarsinurmikolla 5.VI.2000 *legit J. Räsänen* (JR, JR-U221, parallel in herb. HØ). — **Sweden.** **Upl:** Tar. scand. exsicc. VI(1):10 "Taraxacum praeradians Dahlst." in devexo collis graminosi par. Solna, 29.V.1916 *legit H. Dahlstedt* (S). Solna, Räsunda, SW om skolan, 19.V.1935 *legit R. Ohlsén* (S). Lidingö, Kottla, 15.V.1910 *legit H. Dahlstedt* (S). Sollentuna, Norrviken, väggkant, 5.VI.1941 *legit M. Engstedt* (S). Stockholm, Stallmästaregården, gräsvall, 15.V.1907 *legit H. Dahlstedt* (S). **Srm:** Stockholm, Enskede, 2.VI.1912 *legit H. Dahlstedt* (S). **Bh(+Gb):** Forshälla, Sundsbukten, 58°19'26"N, 11°51'34"E, grass field, 19.V.2005 *legit E. Blomgren* (herb. Blomgren, EB-05-239). **Nb:** Pajala, Korpilombolo, Grantorp, 66°46'54"N, 23°17'34"E, old field, 20.VI.2003 *legit H. Øllgaard, J. Räsänen, L. Stenberg & al.* (JR, JR-3/408).

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