

Taraxacum umbrosum (Asteraceae, Cichorieae), a new species intermediate between sect. Erythrosperma and sect. Erythrocarpa, widespread in the Balkans

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A new, relatively widespread species of Taraxacum from the Balkans, intermediate between sect. Erythrosperma and sect. Erythrocarpa, T. umbrosum Sonck, Kirschner & Štěpánek, is described and illustrated. It occurs in Greece, Bulgaria and F.Y.R. Macedonia, and is characterized by numerous, narrowly-triangular leaf lateral segments, numerous, imbricate, ovate to ovate-lanceolate, dark, distinctly narrowly bordered and conspicuously corniculate outer phyllaries, and brown or castaneous-brown, initially also red-brown achenes usually 4–5 mm long. Taraxacum umbrosum, an agamosperous taxon, is compared with morphologically similar species in sect. Erythrosperma (T. fragosum and T. taraxacoides) and with those in sect. Erythrocarpa (T. olympicum, T. pindicola, T. dorchorcarpum, T. panhellenicum, T. voricola and T. gratum).

One of the regions with the highest diversity of Taraxacum is the eastern half of the northern Mediterranean (van Soest 1975, Richards 1991). The exploration of this region, however, is quite uneven, both taxonomically and phytogeographically. Only sect. Palustria, sect. Piesis (Kirschner & Štěpánek 1994, 1998) and sect. Erythrosperma in Greece are reasonably well known, the last section thanks to the expeditions and studies carried out by Sonck (1984, 1985a, 1985b, 1986, 1988, 1989). The section Erythrocarpa was studied by us in the adjacent regions (Štěpánek et al. 2010, Kirschner & Štěpánek 1985).

To study the genus Taraxacum of the Mediterranean, Carl Eric Sonck (1905–2004, see also Wallgren 2004) undertook a series of excursions to the Balkan Peninsula, mainly to Greece in the 1980s. His studies resulted in a number of publications with descriptions of new dandelions from that area (for a revision, see Štěpánek & Kirschner 2014). The major part of his excellent herbarium material is deposited in H, minor collections being in other herbaria. He made a selection of duplicates and we had an opportunity to study the ones now deposited in PRA.

In the late 1980s, during several visits C.E. Sonck paid to our Průhonice Institute, we jointly consulted herbarium material of a number of species of sect. Erythrosperma from Greece, including our material from the northern parts of the Balkans. Later, we jointly recognized an undescribed species collected by C.E. Sonck in Greece, by the present authors in Bulgaria and by other collectors in the Republic of Macedo-
nia, and coined the name *T. umbrosum* for it. In 1997, we issued herbarium material under that name in our exsiccate series *Taraxaca Exsiccata*.

At present, when we are preparing the *Taraxacum* treatment for volume 12 of *Flora of Bulgaria*, it is necessary to validate the name. The *T. umbrosum* co-authorship of C. E. Sonck is due to the joint preparation of the description in the 1990s, a joint authorship of the name and the rich material gathered and identified by him.

The material used for the study is mainly deposited in H and PRA. As many of the gatherings are relatively recent, there was a possibility to cultivate a number of samples at the Experimental Garden of Institute of Botany, Academy of Sciences, Průhonice, Czech Republic (PRA). The morphological variation and reproduction were studied on living plants (no sexuality detected). Selected duplicates were distributed in the series *Taraxaca Exsiccata*, an exsiccate series edited at PRA, and deposited in several herbaria with major *Taraxacum* collections (such as H, L, LD, S) or in private collections of I. Uhlemann, B. Trávníček, H. Ollgaard, etc.

The method of mass cultivation and identification of reproduction systems were described by Kirschner and Štěpánek (1993) and Kirschner *et al.* (2006).

**Taraxacum umbrosum** Sonck, Kirschner & Štěpánek, *sp. nova* (Figs. 1 and 2)


Plantae agamospermae, foltis 4–9 cm longis, 1–2 cm latis, lobis lateribus (4–)6–8 utrinque, deorsum decrescentibus, saepissime anguste tri-
angularibus, involucris ca. 5 mm in diametro, squamis exterioribus numero (12) 17–23, imbricatis, subappressis, late ovatis usque ovate lanceolatis, plerumque 6–8 mm longis, (2.5–)3–4 mm latis, margine albido 0.1–0.4 mm lato, sub apice corniculo acuto, ca. 0.5 mm longo obsculo arnatis, calathis parvis, stigmatibus flavo-viridibus, antheris pollinifertis, achenis obscure badiis usque castaneis, (3.7–)4.1–5.0(–5.7) mm longis corpore in tertia parte superiore medio-criter dense et ± breviter spinuloso, 0.8–1.1 mm lata, rostro 8–9(–10.5) mm longo, pappo albo-albido, 5–6.5 mm longo.

Plants small, usually 4–12 cm tall. Plant base covered with remnants of old brown petioles (tunic), densely brownish-white aranose among petiole bases. Leaves variously erect-patent, not spotted, sparsely aranose, later glabrescent; leaf blade narrowly elliptical to narrowly oblanceolate, pinnatisect; terminal segment small, usually 6–11 × 6–14 mm, triangular to broadly triangular in outline, often trilobed, usually with apical lobe lingulate and lateral lobes patent to subrecurved, often elongate-lingulate, distally convex, entire or with a single incision and a big tooth, proximally concave to straight, entire or with a single tooth near its base; lateral segments (4)6–8 pairs, usually patent to subrecurved, 4–12 mm long, 3–7 mm wide at base (most proximal segments often reduced to narrow big teeth), triangular to narrowly so in outline, often wing-like, distal margin most often sigmoid, entire or often with an incision and a big tooth parallel to segment axis, proximal margin ± straight or slightly sigmoid or slightly concave, entire or with a single basal patent tooth; interlobes narrow, usually 3–7 × 1–2 mm, with 1–4 filiform teeth, often dark bordered; midvein adaxially pale or pale brownish; petiole usually 1–2 cm long, not winged, usually faintly greyish brown-purple. Scapes subequaling leaves, faintly purplish at base, densely aranose. Capitulum 2.5–3 cm in diam., flat to slightly convex, deep yellow. Involucre truncate at base, ca. 5 mm wide; outer phyllaries (12)17–23, imbricate, appressed, loosely appressed towards apex, broadly ovate to ovate-lanceolate, usually 6–8 × (2.5–)3–4 mm; abaxially dark olivaceous-green to blackish green (darker towards apex), distinctly pale- to white-bordered, border 0.1–0.4 mm wide, margin distinctly ciliate, with a dark, to 0.5 mm long cornicle below apex; inner phyllaries 11–12 mm long, of equal width. Outer ligules flat, relatively broad, striped purplish deep grey outside, apical teeth greyish or reddish; inner ligules almost flat, apical teeth dirty yellow; stigmas discoloured, yellow-green to greyish green; pollen present, pollen grains variable in size. Achenes brown to dark castaneous-brown (immature dark reddish brown), (3.7–)4.1–5.0(–5.7) mm long, 0.8–1.1 mm wide, achene body medium densely and shortly spinulose in upper 1/3, upper spinules longer, to 0.3 mm long, erect-patent to erect, achene body subabruptly to gradually narrowing into a thin cylindrical to subcylindrical cone (0.6–)0.8–1.0(–1.4) × 0.15–0.25 mm; rostrum 8–9 (–10.5) mm; pappus white, 5–6.5 mm. Agamospermy.

*Taraxacum umbrosum* is intermediate between sect. Erythroseruma (plants very small and achenes variable in size, usually mediumsized) and sect. Erythrocarpa (relatively big outer phyllaries); there are several similar species placed in either section.

*Taraxacum (Erythroseruma) fragosum* may have a similar leaf shape and a similar shape of the outermost phyllaries but is substantially different in its straw-greyish achenes and conspicuously short interlobes. *Taraxacum taraxacoides* (*see also Štěpánek & Kirschner 2013*), a species somewhat similar to our new taxon in its outer phyllaries, can be distinguished by red-brown and shorter achenes with longer rostrum, more numerous leaf lateral segments, smaller outer phyllaries, and usually by the absence of pollen. The Greek members of sect. Erythroseruma have outer phyllaries patent to arcuate-recurved and usually narrower.
Taraxacum olimpophylum is the morphologically closest, and partly sympatric member of sect. Erythrocarpa. It differs from T. umbrosum in having longer outer phyllaries with much wider borders. Also T. pindicola is similar to T. umbrosum and sometimes grows together with it. However, T. pindicola has less toothed and incised leaves, shorter interlobes, broader petioles, yellow stigmas, regular pollen and usually red-brown achenes with cones only 0.4–0.7 mm long. Taraxacum vericola, another member of sect. Erythrocarpa from Greece, has a broadly winged pale-green petiole, broadly bordered outer phyllaries and dark-reddish-purple achenes. As regards the other, rather remotely similar members of this section, T. dorchoecarpum has greyish achenes, winged petioles and longer outer phyllaries, T. panhellenicum is characterized by a frequent absence of pollen and by dark green stigmas, and T. gratum (see also Štěpánek et al. 2010) has more broadly bordered outer phyllaries and lacks pollen.

Taraxacum umbrosum most frequently grows in dry grasslands, stony slopes and open woodlands, usually on calcium-rich substrates from the lower montane to the subalpine belt. It is documented from the western and southern Republic of Macedonia, the SW Bulgaria and NW and central Greece (Fig. 3).

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