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GERALD PAROLLY & NORBERT KILIAN

***Scorzonera karabelensis* (Compositae), a new species from SW Anatolia, with a key to the subscapigerous *Scorzonera* species in Turkey**

Abstract

Parolly, G. & Kilian, N.: *Scorzonera karabelensis* (Compositae), a new species from SW Anatolia, with a key to the subscapigerous *Scorzonera* species in Turkey. – Willdenowia 33: 327-335. – ISSN 0511-9618; © 2003 BGBM Berlin-Dahlem.

Scorzonera (sect. *Nervosae*) *karabelensis*, a subscapigerous, calcicolous perennial from the Karabel Geçidi in the Western Taurus range, SW Anatolia, Turkey, allied to *S. pisidica* and *S. ulrichii*, is described as a species new to science and illustrated. Its habitat conditions, conservation status and phytogeographic significance are considered. A key to all facultatively or consistently subscapigerous, entire-leaved *Scorzonera* species growing in the mountains of Turkey is provided. Critical comparison revealed that the recently described *S. gokcheoglui* and *S. aytatchii* are conspecific with *S. ulrichii* and *S. rigida*, respectively, and that the populations of *S. pygmaea* from the Çankırı and Zonguldak vilayets cannot be separated as a distinct subsp. *nutans*. Additional data on the conservation status of *S. ulrichii* are given.

Introduction

The authors recently received from the pharmacist Robert Ulrich (Tübingen, Germany) specimens of a subscapigerous *Scorzonera*, collected in 2002 and 2003 in the Western Taurus Mts, SW Anatolia, Turkey. A particularly attractive, hitherto unknown subscapigerous *Scorzonera* gathered by the same collector some 250 km further east, in the Central Taurus Mts, had just been described as *S. ulrichii* Parolly & N. Kilian (Kilian & Parolly 2002). Ulrich's new gathering, as he himself suspected, again proved to represent a species new to science. Its description, below, provides a suitable opportunity for contributing a key to all entire-leaved, subscapigerous species of *Scorzonera* growing in the mountains of Turkey and additional data on the conservation status of *S. ulrichii*.



Fig. 1. *Scorzonera karabelensis* – photograph, from the type locality, by R. Ulrich, 2003.

***Scorzonera karabelensis* Parolly & N. Kilian, sp. nova**

Holotype: Turkey, C2 Muğla: Fethiye - Korkuteli road, below Karabel Geçidi NE Kemer, 1040 m, steep, gravely, rocky slope, open *Pinus nigra* var. *caramanica* forest, N-exp., limestone, 20.5.2003, R. Ulrich 3/7a (B; isotypes: E, ISTE, herb. Parolly). – Fig. 1-2A.

Affinis *Scorzonerae pisidicae* Hub.-Mor., a qua foliis \pm oblanceolatis, obtusis vel subacutis, 2-5 \times 0.3-1.3 cm (nec lanceolatis vel ellipticis, longe acuminatis, 3-12 \times 0.5-1.5 cm), caulibus floriferis debilibus, arcuato-ascendentibus, c. 2-7 cm longis, 1-2 foliatis (nec validis, erectis, (5-)10-15 cm longis, plurifoliatis) et achaeniis propter pilos densos antrorsos appressos albo-sericeis (nec glabris) differt.

Subscapigerous perennial, 3-6 cm high, covered with a \pm densely sericeous, appressed, white-glossy, \pm evanescent indumentum of 3-5 mm long hairs, the green colour, however, always showing through. *Rootstock* cylindrical, branched or simple and with one or a few crowded leaf rosettes, almost without remains of the bases of former leaves. *Flowering shoots* one to several per rosette, weak, densely sericeous, ascending, 2-7 cm long, usually unbranched and bearing a single capitulum, with a few leaves in their basal part. *Leaves* entire, soft, concave, with flat margins, densely sericeous on both sides, \pm glabrescent with age, the parallel veins little conspicuous; *rosette leaves* 2-5 \times 0.3-1.3 cm, oblanceolate (sometimes very narrowly so), obtuse to acute and gradually narrowed towards the base; *cauline leaves* very similar to the rosette leaves but smaller and subacute. *Flowering and fruiting capitula* 13-16(-18) mm long, cup-shaped, with 15-20 flowers leaning against and little exceeding the involucre bracts. *Involucre* not lengthening significantly during anthesis, sericeous outside, glabrous inside; number and shape of involucre bracts variable; *outer involucre bracts* 6-8(-10), subulate to lanceolate, acute, ($1/3$ -) $1/2$ (- $2/3$) as long as the inner bracts; *inner involucre bracts* (7-)8, linear-lanceolate, acute, subequal, 12-17 \times 2-3 mm, often with up to 5 additional, \pm linear innermost bracts, all adaxially green and with scarious margins. *Flowers* bright yellow, corolla 12-15 mm long, of that the tube c. 3 mm long (ir-

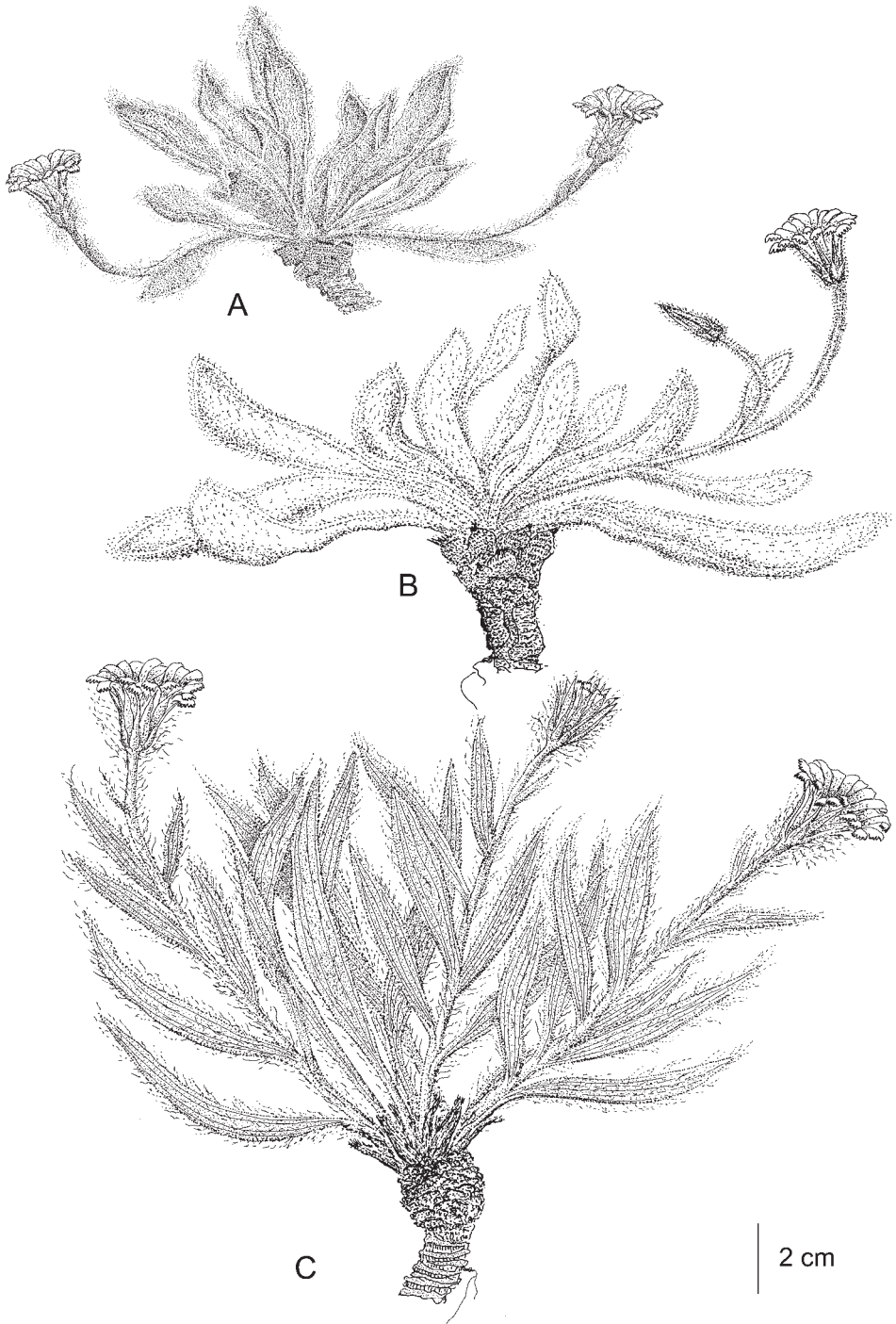


Fig. 2. *Scorzonera karabelensis* (A), *S. ulrichii* (B), *S. pisidica* (C) . – A after R. Ulrich 3/7b, B after R. Ulrich 2/12, C after R. Ulrich 2/22; drawings by Alexander Ehler (BGBM).

reversibly shrinking at the end of anthesis), the limb c. 3.5 mm wide; anther tube (including basal and apical appendages) c. 5 mm long. *Achenes* [not fully mature] 5–6 mm long, slender, prismatic, smooth, densely covered with 3–6 mm long, snow-white, straight, soft, antrorse, appressed hairs. *Pappus* 8–9 mm long, its bristles straw-coloured, plumose with white fimbriae in the basal portion and barbellate above.

Eponymy. – The name refers to the type and only known locality of the new species, the Karabel Geçidi (Geçidi = pass). The plants have been collected below the saddle.

Additional specimens seen. – Type locality, 1090 m, NE-exp., 11.5.2002, *R. Ulrich* 2/15 & 16 (herb. Parolly); *ibid.*, 10.5.2003, N-exp., 13.6.2002, *R. Ulrich* 2/17–2/19 [with achenes] (B, herb. Parolly).

Phenology. – *Scorzonera karabelensis* starts to flower in early May, with a main flowering period from mid May to mid June when the first fruiting specimens were collected. *S. ulrichii*, gathered at comparable altitudes (1200–1430 m; Kilian & Parolly 2002, Ünal & Göktürk 2003, as *S. gokcheoglui*), flowers at least one month later (June to August) and sets fruit till October.

Distribution. – As a local endemic of the Western Taurus (Fig. 3), *Scorzonera karabelensis* is hitherto only known from the upper slopes of the Karabel Geçidi below (= SE) the Akdümen Tepe (1742 m) in the greater Boncuk Dağları range and has a surprisingly narrow altitudinal range (1000–1100 m).

Site conditions and synecology. – The site requirements of *Scorzonera karabelensis* are strikingly similar to those of *S. ulrichii*. Both grow on limestone in montane black pine forest (*Pinus nigra* var. *caramanica* (Loudon) Rehder) with a very open canopy, at comparable altitudes (1200–1430 m and 1000–1100 m, respectively). *S. karabelensis* often grows in masses, as the dominant plant of the herb layer, on steep and gravelly N facing slopes and undulated flats. Densely appressed to the soil surface, it is easily overlooked due to the matching colour of the base rock and the plants' indumentum. At places covered with a compact needle litter, it embellishes the forest floor prominently, locally growing together with *Pteroccephalus pinardii* Boiss. Associated species include *Eryngium pseudothorifolium* Contandr. & Quézel (co-dominant) and, less often, *Centaurea cariensis* subsp. *niveotomentosa* (Hub.-Mor.) Wagenitz, *Ebenus reesei* Hub.-Mor. and *Verbascum bellum* Hub.-Mor. The last four taxa are endemics of the Western Taurus.

Recommended IUCN threat category. – Although there appears to be a strong, healthy population with hundreds of mature individuals, its extremely localised area implies a certain risk of extinction. Hence, *Scorzonera karabelensis* should be classified as “Vulnerable (VU)” according to criterion D of the IUCN Red List Categories (2001).

Relationship. – *Scorzonera karabelensis* belongs to the group of subcaulescent or subscapigerous, perennial mountain species with a rosette of entire leaves and often a more or less dense indumentum, which in Turkey comprises some 20 species belonging to five different groups (Chamberlain 1975, Davis & al. 1988, Güner in Güner & al. 2000, Duran 2002, Duran & Sağıröğlu 2002, Kilian & Parolly 2002, Ünal & Göktürk 2003).

Together with the similar subscapigerous *S. pisidica* Hub.-Mor., *S. cinerea* Boiss., *S. ulrichii* Parolly & N. Kilian [= *S. gokcheoglui* O. Ünal & R. S. Göktürk, **syn. nov.**] (and perhaps *S. boissieri* Lipsch. and *S. sandrasica* Hartvig & Strid), as well as the caulescent *S. argyrea* Boiss., *S. eriophora* DC., *S. latifolia* (Fisch. & C. A. Mey.) DC., *S. tomentosa* L. and *S. veratrifolia* Fenzl, *S. karabelensis* forms a presumably natural group, which has been named *S. sect. Nervosae* Lipsch. (Lipšic 1935). It comprises c. 15 caulescent and, more rarely, subcaulescent perennials, mainly distributed in the mountains of Turkey, the Caucasus, Iraq and Iran (Heller & Heyn 1993, Lipšic 1935, 1964, Rechinger 1977). The members of this section are characterised by rather broad, distinctly parallel-pluriveined, entire, soft, usually hairy leaves, a vertical, non-

tuberous rootstock, a weakly to well developed but always densely leafy flowering stem, usually narrow involuclral bracts, and lanate or glabrous, smooth achenes with an often variably straw-coloured to rusty-red pappus.

Within *Scorzonera* sect. *Nervosae*, *S. karabelensis* shows a strong similarity to *S. pisidica* and, together with *S. ulrichii* and the two caulescent species *S. argyrea* (from Caria) and *S. eriophora*, forms a natural subgroup of closely allied taxa. *S. karabelensis* and *S. pisidica* share the sericeous, appressed, white-glossy, \pm evanescent indumentum of 3–5 mm long hairs, a feature also present *S. eriophora*, that sets all of them clearly apart from *S. ulrichii* with its persistent, dense, white-tomentose indumentum of c. 2 mm long spreading hairs. The leaves of *S. pisidica* are lanceolate (to elliptic), long-attenuate into an acute tip, and with prominent veins, whereas those of *S. karabelensis* are \pm oblanceolate, in general obtuse rather than acute, with much less distinct veins, and are also smaller. The short, weak and thin, ascending, only 1–2-leaved flowering shoot of *S. karabelensis* make for a conspicuous difference in habit when compared to the erect, strong, leafy shoots of *S. pisidica*, which appears to be short-caulescent rather than subscapigerous. The capitula of *S. pisidica* (involucre well over 20 mm long) are clearly larger than those of *S. karabelensis*, and the outer involuclral bracts are subulate and equal the inner in length. The achenes of *S. karabelensis* are densely covered with 3–6 mm long, antrorse, appressed hairs, but those of *S. pisidica* are entirely glabrous. Finally, *S. pisidica*, in contrast to the calcicolous *S. karabelensis*, seems to be an exclusive serpentophyte, known only from a few neighbouring localities on ultramafic soils in C2 Burdur (Nydegger-Hügli 2000 [with photograph]; new record from Fethiye - Çameli road, Tuzla Beli, 14.6.2002, R. Ulrich [herb. Parolly]).

From the species with ovoid-spherical tubers of the *Scorzonera lanata* group (= *S. sect. Tuberosae* Lipsch.), including *S. judaica* Eig (= *S. pseudolanata* Grossh.) and *S. sublanata* Lipsch., *S. karabelensis* differs by its cylindrical taproot.

From those with a caespitose or cushion-like habit of the *Scorzonera sericea* group (*S. sect. Pulvinares* Lipsch.), including *S. sericea* DC., *S. rigida* Aucher (= *S. aytatchii* A. Duran & Sağiroğlu, **syn. nov.**), *S. lasiocarpa* D. F. Chamb., *S. pygmaea* Sm., *S. seidlitzii* Boiss. and, probably, *S. longiana* H. Sümbül, *S. karabelensis* differs by its softer and wider leaves. All but one species of the latter group have glabrous achenes (in *S. rigida* the young achenes are sometimes pubescent, later glabrescent); the exception with lanate achenes is *S. longiana*, a tiny plant with leaves that are only 2–3 cm long and have an undulate margin.

The species of the *Scorzonera suberosa* group (*S. subg. Pseudopodospermum* Lipsch.), including *S. szowitzii* DC., *S. semicana* DC., *S. inaequiscapa* Boiss., *S. phaeopappa* (Boiss.) Boiss., and *S. suberosa* K. Koch, differ from *S. karabelensis* in particular by glabrous achenes with a hollow base, often tuberous roots and, in the case of the last two species, by lilac or purplish flowers.

The single facultatively subscapigerous, name-giving representative of the *Scorzonera parviflora* group (*S. sect. Parviflorae* Lipsch.), in contrast to *S. karabelensis*, is entirely glabrous.

Phytogeography. – *Scorzonera karabelensis*, *S. pisidica* and *S. ulrichii* constitute a group of vicarious species (Fig. 3). *S. karabelensis* and *S. ulrichii* grow in different portions of the Taurus range, the former in the Western Taurus (Lycian Sector), the latter in the western part of the Central Taurus (Pisidian-Isaurian Sector), but in the same type of mountain forest (the forest communities are geo-vicariads, with sectorally differentiated herb and shrub layers). By contrast, *S. pisidica* (Western Taurus) is a substrate vicariant (specialised on ultramafic soils), morphologically closer to *S. karabelensis*.

Assuming that *Scorzonera boisseri* belongs to this group, it would be a pseudovicarious species (differing in altitudinal range and habitat, Chamberlain 1975) of the Cilician Sector, thus completing the often observed pattern of a tripartite division of the Taurus range (Parolly 1995; for the naming of phytogeographic units and the phytogeography of the Taurus System, see Parolly 2004).

The genus *Scorzonera* has an Irano-Turanian centre of diversity, with close to 70 species in the Flora Iranica area (Rechinger 1977). Turkey harbours 46 species, including the present addi-

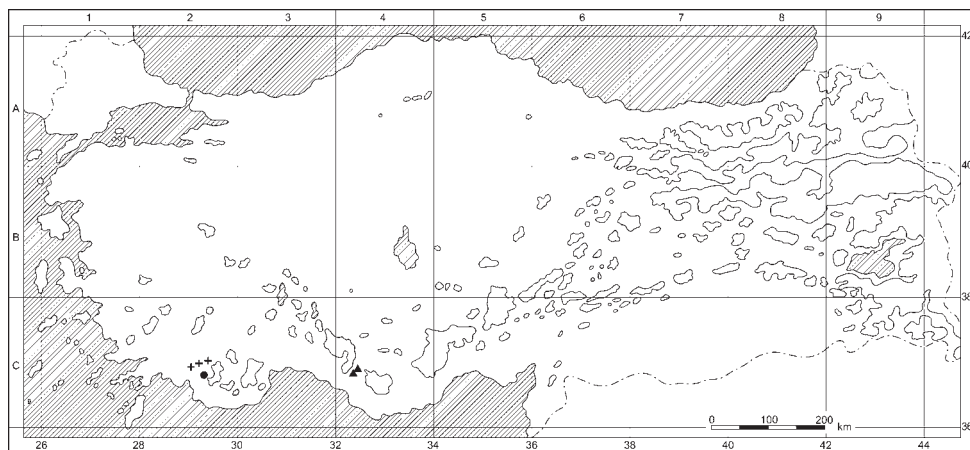


Fig. 3. Distribution of *Scorzonera karabelensis* (●), *S. pisidica* (+) and *S. ulrichii* (▲). – Indication of elevations over 2000 m based on Ekim & Güner (1986).

tion. Thirty-three of the Turkish species represent the Irano-Anatolian chorotype in a wider sense: 16 Anatolian endemics of Irano-Anatolian origin (geno-elements) and 17 Irano-Anatolian species in the strict sense (Chamberlain 1975, Davis & al. 1988, Güner & al. 2000, Duran 2001, Duran & Sağiroğlu 2002). *Scorzonera* is known for including many widespread species along with steno-endemics such as *S. argyrea*, known from a single collection from Caria, *S. pisidica* from a small area in the Burdur and Muğla provinces (Fig. 3), *S. sandrasica* from Sandras Dağı, *S. longiana* from the Taşeli Plateau close to the *S. ulrichii* locality, *S. boissieri* Lipsch. from Bozoğlan Dağı in the Saimbeyli district, *S. davisii* Lipsch. and *S. mirabilis* Lipsch., both from the Hakkari-Taurus, to name only the taxa of the Taurus range.

Scorzonera karabelensis is one more steno-endemic of E Mediterranean (montane) origin, as opposed to the Irano-Anatolian distribution of *S. sect. Nervosae* in general. Its discovery provides additional support to an assumed secondary centre of speciation for this section in the E Mediterranean (*S. argyrea*, *S. boissieri*, *S. pisidica*, *S. ulrichii*), as may also be true for the *S. sericea* group (*S. sect. Pulvinares*).

Key to the entire-leaved subscapigerous *Scorzonera* species of the Turkish mountains

The following key includes all facultatively or consistently subscapigerous entire-leaved *Scorzonera* species of the Anatolian mountain ranges included as such in “Flora of Turkey”, its supplements and subsequent addition (Chamberlain 1975, Davis & al. 1988, Güner & al. 2000, Kilian & Parolly 2002). To these we add *S. eriophora*, which also can sometimes be subscapigerous (e.g., A2 Bilecik, inter Biledschik et Yenisheher, Bornmüller 5241 p.p.; A6 Sivas, Yıldız Dag, Bornmüller 1651 p.p.; C2 Antalya, Elmalu, Bourgeau 168) and *S. (sect. Incisae Lipsch.) violacea* D. F. Chamb., which very occasionally combines entire leaves and a subscapigerous habit.

Description of the rootstock of *Scorzonera semicana* and *S. szowitzii* as either tuberous or cylindrical is contradictory in the standard floras (e.g. Chamberlain 1975, Lipšic 1935, 1964, Rechinger 1977). At least for the latter, all Anatolian material seen by us appears to be non-tuberous. We keep *S. szowitzii* as distinct from *S. mollis* M. Bieb. (following Lipšic 1935, 1964 and Rechinger 1977 rather than Chamberlain 1975).

The features given by Duran & Sağiroğlu (2002) to separate *Scorzonera aytatchii* from *S. rigida* fall fully within the range of variation observed in *S. rigida*. This holds true not only for

the quantitative but also for the qualitative characters: black involucre hairs are by no means restricted to the Aydos Dağı population described as *S. aytatchii*, but often occur in *S. rigida* plants from throughout the Bolkar Dağları range and, more rarely, is found scattered over its entire distributional area. The sparse, short-pilose achene indumentum is not restricted to *S. aytatchii* either. A survey of the rich *S. rigida* material kept at B clearly reveals a much more variable achene morphology than might be concluded from the literature, including (very rarely) shortly hispid (young) achenes, and achenes with hair tufts below the pappus.

The species named *Scorzonera gokcheoglui* by Ünal & Göktürk (2003) was discovered in the immediate neighbourhood of the type locality of *S. ulrichii* and both belong to one and the same species. Publication of the latter by Kilian & Parolly (2002) predates that of the former by several months.

Recent gatherings of *Scorzonera pygmaea* from the Taurus range (C3 Antalya, Beydağları, Eran Dağı, *J. J. Greuter & al.* 86-979; C3 Isparta/Konya, Dedegöl Dağları, *Parolly 6623*) support the view that it is not possible to separate the plants from the Çankırı and Zonguldak vilayets as a distinct subspecies (subsp. *nutans* (Czeczott) D. F. Chamb.) on account of their greater stem and leaf length.

The extremely brief treatment of *Scorzonera seidlitzii* by Chamberlain (1975) is rather misleading; adequate descriptions (as judged from the material at B) were given by Lipšic (1935, 1964 with figure) and Rechinger (1977).

1. Plants with a tuberous rootstock (but see also *S. szowitzii*) 2
- Plants with a cylindrical rootstock 6
2. Flowers yellow 3
- Flowers violet or purple *S. suberosa*
3. Capitula ≥ 18 mm long; ovaries and achenes glabrous 4
- Capitula ≤ 16 mm long; ovaries and achenes lanate 5
4. Involucrum ≤ 25 mm long; achenes ≤ 7 mm long *S. inaequiscapa*
- Involucrum 30-50 mm long; achenes 17-30 mm long *S. semicana*
5. Leaves 2-4(-6) mm wide, margin flat; flowering shoots 10-25 cm long; achenes c. 4 mm long *S. sublanata*
- Leaves (5-)8-15 mm wide, margin undulate; flowering shoots 3-10(-12) cm long; achenes c. 8 mm long *S. judaica*
6. Plants pulvinate, base of rosette shoots densely clad with the persistent, rigid bases of former leaves; leaves usually rigid, 0.5-3(-4) mm wide 7
- Plants not pulvinate, rosette shoots with few or no old leaf bases; leaves usually soft, wider than 4 mm 11
7. Leaves and flowering shoots with a persistent, short, grey to yellowish, glossy, dense sericeous indumentum; flowers pure yellow abaxially; achenes 8.5-9 mm long *S. sericea*
- Leaves sparsely lanate to subglabrous, rarely subsericeous, green to greyish green, usually glabrescent; flowers often suffused with pink abaxially; achenes ≤ 8 mm long 8
8. Plants caespitose; ovaries and achenes glabrous (rarely weakly pubescent in *S. rigida*) 9
- Plants not caespitose; ovaries and achenes densely lanate *S. lasiocarpa*
9. Flowering shoots straight, erect, usually (6-)10-30 cm long; leaves subulate *S. rigida*
- At least some flowering shoots flexuous, ascending, 2-10(-12) cm long; leaves obtuse to acute 10
10. Leaves linear to very narrowly oblanceolate, obtuse to broadly acute, 1-7 cm long, sparsely lanate to subsericeous, with < 2 mm long hairs; outer involucre bracts 3-5 mm long *S. pygmaea*
- Leaves linear, (sharply) acute, often > 10 cm long, distally sparsely, basally more densely lanate, with hairs at least twice as long as the 1-3 mm wide leaves; outer involucre bracts 5-8 mm long *S. seidlitzii*

11. Ovaries and achenes glabrous 12
- Ovaries and achenes lanate or sericeous 19
12. Involucre (20-)25-50 mm long; achenes (10-)15-30 mm long (if < 15 mm then leaves 20-35 mm wide and abruptly contracted into a narrow base); flowers purplish or yellow . . . 13
- Involucre 10-25 mm long; achenes < 10 mm long; flowers always yellow 16
13. Leaves 8-35 mm wide 14
- Leaves 2-5 mm wide 15
14. Leaves coriaceous, abruptly contracted into a narrow base, usually 20-35 mm wide; flowers violet *S. violacea*
- Leaves not coriaceous, gradually tapering basally, ≤ 20 mm wide; flowers yellow *S. semicana*
15. Flowers pinkish to purplish *S. phaeopappa*
- Flowers yellow *S. szowitzii*
16. Leaves glabrous; plants of base-rich or subsaline marshes *S. parviflora*
- Leaves lanate or sericeous; plants of dry habitats 17
17. Leaves broadly ovate to ovate-lanceolate, < 2.5 times as long as wide *S. boissieri*
- Leaves linear to narrowly lanceolate, > 3-4 times as long as wide 18
18. Hairs on leaves and flowering shoots 3-5 mm long *S. pisidica*
- Hairs on leaves and flowering shoots up to c. 1 mm long *S. cinerea*
19. Rosette leaves greenish, hairs < 2 mm long 20
- Rosette leaves white-tomentose or hairs 3-7 mm long 21
20. Rosette leaves weakly undulate, 2-3 cm long, greenish, sericeous; pappus cream; on limestone. *S. longiana*
- Rosette leaves strongly undulate, 3-6 cm long, shortly hispid, sparsely lanate to subglabrous; pappus reddish-violet (on ultramafic soil) *S. sandrasica*
21. Entire plant persistently white-tomentose, felty to the touch, hairs ≤ 2 mm long . . . *S. ulrichii*
- Plants greenish, or dirty white to yellowish, densely appressed-sericeous to lanate-pannose, glabrescent, hairs 3-7 mm long 22
22. Leaves (12-)15-30 mm wide, narrowly lanceolate, acute, tapering to a petiole-like base, distinctly 5-9(-11)-veined; capitula 15-35 mm long; indumentum (also of achenes) dirty white to yellowish; pappus rusty red *S. eriophora*
- Leaves 2-13 mm wide, narrowly oblanceolate, at least some obtuse, narrowed towards base, veins inconspicuous; capitula 13-16(-18) mm long; indumentum white, that of achenes snow-white; pappus straw-coloured *S. karabelensis*

Additional data on the conservation status of *Scorzonera ulrichii*

In July 2003 Robert Ulrich revisited the type locality of *Scorzonera ulrichii* at Emalısu (15 km S Çayarası, distr. Alanya) and its surroundings and communicated the following observations: in the course of nearby road building, a gravel work was constructed in the immediate neighbourhood of the type locality, where limestone rocks carted by large lorries are crushed under considerable dust emission. The broad lorry track runs dangerously close to the *S. ulrichii* site. The dust covers the entire area, and the plants are hidden under a white blanket.

Fortunately, two previously undiscovered, unaffected close-by colonies exist, each with more than 1000 individuals. In the steep, pine-covered slopes between 1250 and 1330 m, *Anchonium elichrysofolium* (DC.) Boiss., *Astragalus pelliger* Fenzl, *Cephalaria gazipashensis* H. Sümbül, *Eryngium palmito* Boiss. & Heldr., *Hirtellina lobelii* (DC.) Dittrich, *Origanum saccatum* P. H. Davis, *Peucedanum longifolium* Waldst. & Kit. and *Psephellus mucroniferus* (DC.) Wagenitz were added to the list of associated species. Considering these new records together with the locality reported by Ünal & Göktürk (2003, as *S. gokcheoglu*), there seems to be no need to revise our assessment of *S. ulrichii* as “Vulnerable (VU)” under criterion D of the IUCN Red List categories.

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