PHYTOLOGIA BALCANICA 21(2): 149–154, Sofia, 2015

Taraxacum limnoticum (*Asteraceae*) from the Aegean, Greece

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Received: January 4, 2015 ▷ Accepted: June 7, 2015

Abstract. *Taraxacum limnoticum* is described as a new agamospermous species. It is known from a number of localities in the northern Aegean region and in districts of Central Macedonia and Thessaly in north-eastern Greece as well as on the E Aegean islands and northern Kiklades. It is believed to be endemic to this region and is related to *T. hellenicum* in *Taraxacum* section *Scariosa.*

Key words: *Asteraceae*, endemic species, *Taraxacum* sect. *Scariosa*

Introduction

Taraxacum sect. *Scariosa* Hand.-Mazz. is a group characterizing the flora of the broader Mediterranean, absent from other regions. A high diversity of its taxa and characters is found in Greece, on Aegean Islands and the coasts of southern Anatolia. Lower numbers of taxa occur in N. Africa, Italy and the western Mediterranean, individual members grow along the Black Sea coast (Bulgaria, Crimea), in the easternmost Mediterranean (Izrael, Syria etc.) and in inland habitats (Bulgaria, Turkey). More than 20 species are included in sect. *Scariosa*. The section is characterized by outer phyllaries imbricate, appressed to erect, lanceolate to ovate, usually with broad distinct white or paler margins, a thick long taproot, and achenes relatively thick, usually subabruptly narrowing into cylindrical to subcylindrical cone, achene body with distinct long spinules, sometimes also squamules in the upper 1/3. Achenes may be light greyish straw-coloured but also variously reddish or brown. The most important literature sources are either rather old (Dahlstedt 1926) or not very reliable (Doll 1976), and sect. *Scariosa* requires both a revision and interpretation of older names and a study of populations in the field. It should be added that in most regions agamospermous *Scariosa* plants prevail but sexuality is scattered at least in the eastern and central parts of the section's range (*T. minimum* auct. and *T. aphrogenes* Meikle are known to include sexual plants). From the region of the highest diversity of sect. *Scariosa*, the following novelty is reported.

Material and methods

During floristic explorations in March 2013, within the scope of the Flora Hellenica project (Strid 1991), the second author gathered *Taraxacum* from different sites including sandy beaches on the island of Limnos. When examined by the first author, one sample from maritime sand near Ormos Avionas, north of Myrina, proved to be a member of *Taraxacum* sect. *Scariosa*, obviously new to science. More material was gathered

subsequently in March 2014. As a result, four separate populations were found along the western coast of the island, north and south of the small city of Myrina, capital of Limnos. Later on, the new taxon was compared with rich gatherings of sect. *Scariosa* in herbarium collections (mainly those of R. Willing & E. Willing, deposited in B, and S. Snogerup & B. Snogerup, in LD) by J. Štěpánek, and it turned out that it is relatively widely distributed in the northern Aegean region, not only on islands but also in the districts of Central Macedonia and Thessaly.

Description of species

Taraxacum limnoticum A.J. Richards, **sp. nov.** (Figs. 1–3).

Type: GREECE. Nomos Lesvou, Eparchia Limnou: N of Myrina, dunes with open phrygana at beach of Ormos Avionas, 3–10 m a.s.l., 39°53'42"N, 25°03'55"E, 27 March 2014, *ca*. 50 plants, *Biel* Li14.013 (**holotype** ATH; **isotypes** C, PRA, SOM); *loc. ibid*., *Biel* Li13.040 (**paratype** herb. Biel); Biel Li14.015 (***paratype*** C).

Diagnosis

Plantae vernales foliis olivaceo-viridibus profunde divisis, lobis lateralibus numero 4–5 triangularibus, interlobiis lobulato-dentatis, lobo terminali saepe tripartito, lobulis basalibus arcuato-acutis, saepissime assurgentibus, phyllariis involucralibus exterioribus erectis, late albo-marginatis, atro-corniculatis, stigmatibus obscuris, antheris polline saepissime carentibus, acheniis fumoso-brunneis, perspinulosis, pyramide 0.7–1.0 mm longa.

Description

Perennial. Dwarf, rosette-forming semi-prostrate plant, not exceeding 20 cm in diameter, aestivating and flowering in early spring. Leaves rather dark olive green, subglabrous, mid-rib green to pinkish-orange, narrowly oblong-lanceolate with 4–5 acute, triangular side-lobes; interlobes of outer leaves lobulate-dentate; terminal lobes of outer leaves trident-shaped, trilobate, the central lobe elliptical-acute and narrowed at base, the side-lobes arcuate-acute and often markedly forward-pointing; terminal lobes of inner leaves more often triangular and undivided; petioles unwinged at base, generally pale green, often pinkish-orange above. Scapes shorter than to equalling leaves, glabrous, pinkish. Exterior bracts green, usually 4–5 × 1.0–1.6 mm, erect, with broad white margins more than half width of bract, strongly blackish-corniculate below the pink apex. Interior bracts usually of conspicuously unequal width. Capitulum 18–25 (–35) mm in diameter, mid yellow, ligules short and broad, striped greyish beneath, apical teeth yellow; styles slightly discoloured when fresh, drying dark, lacking pollen (rarely some pollen grains developed, usually hidden in anther tube). Achene body relatively thick, usually 3.4–3.6 mm, greyish-brown to dark grey or deep

Fig. 1. Habitat of *T. limnoticum* at Ormos Avionas.

brown, strongly spinulose in upper half, at least tuberculate throughout, apical spines long, to 0.5 mm; cone ± cylindrical, 0.7–1.0 mm; rostrum slightly thickened, 5 mm; pappus dirty white or yellowish white.

Affinities

A dandelion taxonomist describing a new taxon in sect. *Scariosa* has to cope with a few old names, not yet clearly interpreted in terms of the modern microspecies concept. The oldest name published on the basis of plant material from (or the vicinity of) the Balkan Peninsula is *Leontodon megalorhizon* Forssk. [*Taraxacum megalorhizon* (Forssk.) Hand.-Mazz. ex Halácsy, Österr. Bot. Z. 56: 210 (1906)] coming from "Dardanellos", now Çanakkale Boğazı, Turkey. Original syntypes of this name are preserved in the collections BM and C (lectotype, fide Kirschner & Štěpánek 1997). The taxon remains to be interpreted on this basis but we can conclude that yellow stigmas and asynchronous development of leaves and flowers exclude *T. limnoticum*. Another name to be considered is *Leontodon gymnanthus* Link [*Taraxacum gymnanthum* (Link) DC.] which is based on the material from the eastern Peloponnesos ("circa Naupliam, Poron etc."). We have to point out the asynchronous development of leaves and flowers again, otherwise we have to rely on the protologue because the Link original material was destroyed in Berlin. One element of the original material (Nauplia, H.F. Link, under the name *T. gymnanthum*, B) was cited by Handel-Mazzetti (1907) and also by Dahlstedt (1926), in the protologue of his *T. hellenicum*. Subreflexed outer phyllaries ("phylla exteriora ovata acuta enervia subreflexa"), and the petiole and midvein densely hairy on both sides, do not point to our species, either. *Taraxacum limnoticum* most closely resembles *T. hellenicum* Dahlst., particularly in the strongly trident-shaped terminal lobes of the outer leaves which are rarely seen in other species. *Taraxacum hellenicum* differs in having stramineous achenes, which is a very stable and important feature. Another related species, *T. minimum* auct. (which is another name that remains to be interpreted) is believed to be sexual, and substantially differs from our plants in its leaf shape. Also it is more heterophyllous, so that inner leaves do not resemble earlier outer leaves in shape. Moreover, *T. limnoticum* has grey-brown, grey or almost brown achenes with very long spines, and very wide white borders to the lanceolate bracts. *Taraxacum aleppicum* Dahlst. which occurs in the same region has non-heterophyllous leaves with broad overlapping side lobes, purely yellow stigmas and pale stramineous achenes.

Fig. 2. Holotype of *T. limnoticum* at Ormos Avionas (fruiting capitula insets).

Fig. 3. Scan of *T. limnoticum,* holotype.

Distribution and ecology (Fig. 4).

Taraxacum limnoticum was first detected in the N Aegean island of Limnos. Further herbarium records (B, LD, PRA) come from a relatively wide range, mainly in the districts of Central Macedonia and Thessaly, but also from other Aegean islands, including Andros,

Chios and Lesbos. So rich representation in herbaria may be accounted for as a consequence of synchronous development of leaves and flowers in *T. limnoticum*, so that plants in the field attract the interest of collectors more than species developing leaves and flowering scapes separately (a common feature in most species of sect. *Scariosa*).The majority of sites are found on sandy shore places, or near coastal sites, with altitudes of 1 m to 50 m a.s.l. Only a minority of localities are at altitudes above 100 m, and one above 200 m, one above 300 m a.s.l. The higher altitude sites usually are charcterized as road verges or field margins, sometimes as rocky outcrops. This habitat diversity is known in other members of this section, most notably in *T. aleppicum*, with an even wider ecological range. Unfortunately, we were able to study only a single macrolocality from the viewpoint of the ecological requirements of *T. limnoticum*, and in the absence of other data we give all the relevant data recorded on Limnos. Flowering and fruiting was recorded in March (end of February to early April), in Limnos it is a plant of maritime sand, open coastal phrygana with ample humidity and influence of salt spray (2–10 m a.s.l.). Accompanying taxa noted during the early flowering season include *Alyssum umbellatum, Anchusa undulata* subsp. *hybrida, Anthemis werneri, Arabidopsis thaliana, Arenaria serpyllifolia, Asphodelus ramosus, Biscutella didyma, Brassica tournefortii, Briza maxima, Bromus intermedius, B. tectorum, Cakile maritima, Centaurea spinosa, Cerastium brachypetalum* agg., *C. comatum, Clypeola jonthlaspi* subsp. *microcarpa, Coridothymus capitatus, Crepis sancta, Echium arenarium, Ephedra foemina, Erodium cicutarium, Euphorbia paralias, Geranium dissectum, G. rotundifolium, Holosteum umbellatum, Hordeum bulbosum, Hypecoum imberbe, Hypericum olympicum, H. triquetrifolium, Lamium amplexicaule, Legousia pentagonia, Linum bienne, Lotus conimbricensis, Malcolmia flexuosa* subsp. *naxensis, Matthiola sinuata, Myosotis litoralis, Oenanthe pimpinelloides, Pancratium maritimum, Papaver argemone, Parietaria cretica, Plantago coronopus, Romulea linaresii, Rumex acetosella* subsp. *acetoselloides, R. bucephalophorus* subsp. *aegaeus, R. scutatus, Salvia verbenaca, Senecio vernalis, Silene colorata, S. grisebachii, Sisymbrium officinale, Spartium junceum, Tamarix parviflora, Thlaspi perfoliatum* subsp. *perfoliatum, Tuberaria guttata* and *Verbascum sinuatum. Taraxacum limnoticum* should be considered to be under severe threat in its coastal or near coastal habitats due to development of maritime sites for the tourist industry.

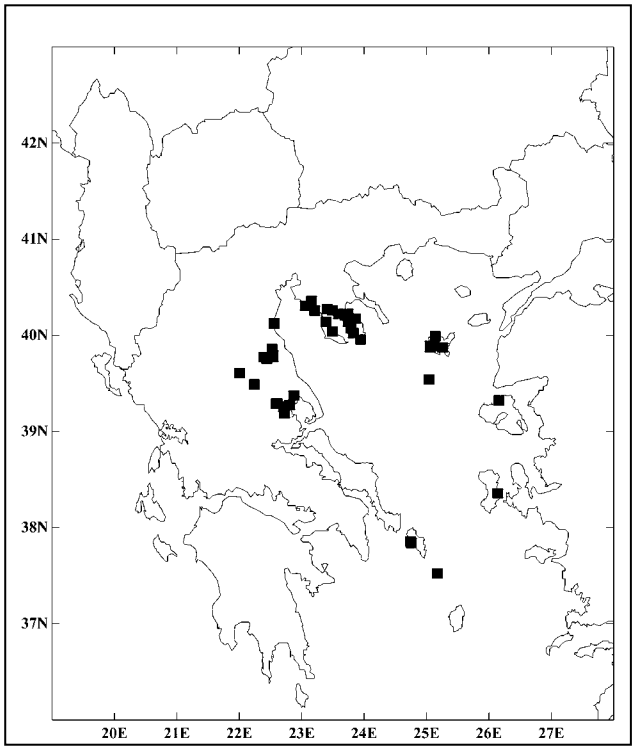

Fig. 4. Distribution of *T. limnoticum*.

Additional material of *T. limnoticum* examined

Nomos Pierias, Ep. Pierias: NO Litochoro. Ausgedehnte Affodillfluren an Stielküste, viel Ranunculus, 20 m. 40°07'27"N, 22°33'09"E, 10.04.2002, *R. Willing* & *E. Willing 98880* (B 100091728, no. det. 29848). – **Nomos Chalkidikis, Ep. Chalkidikis**. ***Sithonia***: W Nikitas. Krautfluren unter Kiefern, Ackerrand, 20 m. 40°13'38"N, 23°38'21"E, 14.04.2003, *R. Willing* & *E. Willing 111525* (B 100130665, no. det. 29833); NO Toroni. Strassenrand, Felshang unter *Quercus* coccifera-Gebüsch. 39°57'45"N, 23°56'01"E, 18.04.2003, *R. Willing* & *E. Willing 113029* (B 100130649, no. det. 29834); O Nikitas. Felsfluren mit *Q. coccifera*-Gebüsch, 55 m. 40°13'01"N, 23°41'48"E, 14.04.2003, *R. Willing* & *E. Willing 111624* (B 100130640, no. det. 29839); SO Nikitas. Krautiger, felsiger Hang, *Q. coccifera*-Gebüsch, 25 m. 40°12'52"N, 23°41'03"E, 14.04.2003, *R. Willing* & *E. Willing 111592* (B 100130664, no. det. 29851); SO Nea Marmaras. Sandstrand, küstennahe Krautfluren m. Kiefern, 1 m. 40°04'28"N, 23°47'26"E, 16.04.2003,

R. Willing & *E. Willing 112090* (B 100130647, no. det. 29837); SO Nea Marmaras. Sandstrand, felsige Krautfluren, 1 m. 40°01'23"N, 23°49'55"E, 16.04.2003, *R. Willing* & *E. Willing 112264* (B 100130652, no. det. 29836); W Tripotamos. Sandstrand, Kiefernwald, 1 m. 40°08'06"N, 23°44'54"E, 15.04.2003, *R. Willing* & *E. Willing 111917* (B 100130653, no. det. 29850). SO Vourvourou. Platanenaue, Sandstrand, Krautfluren, 1 m. 40°10'13"N, 23°51'15"E, 17.04.2003, *R. Willing* & *E. Willing 112531* (B 100130635, no. det. 29845). SO Ormos Panajias. Krautige Felsen, Kiefern und Hartlaubgebüsch, 6 m. 40°13'51"N, 23°44'08" E, 14.04.2003, *R. Willing* & *E. Willing 111675* (B 100130641, no. det. 29847). ***Kassandhra***: Kryopiji. Sandstrand, Krautfluren, Kiefernwald, Macchie, 5 m. 40°02'27"N, 23°29'05"E, 09.04.2003, *R. Willing* & *E. Willing 109901* (B 100130699, no. det. 29852). .Nea Fokea. Sandstrand, küstennahe Krautfluren, 1 m. 40°08'10"N, 23°23'52"E, 08.04.2003, *R. Willing* & *E. Willing 109763* (B 100130701, no. det. 29849). ***Paralia Kalivon***: Krautiger Kieshang, 1 m. 40°16'45"N, 23°24'13"E, 10.04.2003, *R. Willing* & *E. Willing 110292* (B 100130670, no. det. 29843). ***N Eleohori***: Felsiger Hügel, *Q. coccifera*-Gebüsch, Ackerrand, 205 m. 40°21'13"N, 23°09'52"E, 11.04.2003, *R. Willing* & *E. Willing 110681* (B 100130672, no. det. 29854). ***N Plajia***: Küstennahe Krautfluren, 1 m. 40°15'28"N, 23°12'03"E, 11.04.2003, *R. Willing* & *E. Willing 110543* (B 100130659, no. det. 29846). ***Metamorfosis***: Küstennahe Krautfluren, Kiefernwald, 1 m. 40°13'39"N, 23°35'56"E, 14.04.2003, *R. Willing* & *E. Willing 111459* (B 100130667, no. det. 29835). ***Nea Kallikratia***: Küstennahe Krautfluren, 2 m. 40°18'44"N, 23°03'12"E.", 12.04.2003, *R. Willing* & *E. Willing 110844* (B 100130660, no. det. 29831). ***Psakoudhia***: Sandstrand, küstennahe Krautfluren, 2 m. 40°15'33"N, 23°29'31"E, 10.04.2003, *R. Willing* & *E. Willing 110395* (B 100130668, no. det. 29860). Also cultivated at Průhonice as no. JŠ 8001 (PRA, no. det. 29862, 29864). – **Nomos Trikalon, Ep. Kalambakas**: O Neochori. Felsige Affodillfluren, Ackerrand, 105 m. 39°36'26"N, 22°00'13"E, 24.03.2002, *R. Willing* & *E. Willing 94665* (B 100091705, no. det. 29829). – **Nomos Karditsis, Ep. Karditsis**: NO Sikee. Affodillfluren, 145 m. 39°29'50"N, 22°14'15"E, 28.03.2002, *R. Willing* & *E. Willing 95637* (B 100091766, no. det. 29866). – **Nomos Lárisis, Ep. Tirnavou**: NW Gyrtoni . Krautreicher Hang an Wassergraben, Mandelbaumhain, 70 m. 39°46'23"N, 22°23'56"E, 12.04.2002, *R. Willing* & *E. Willing 99448* (B 100091803, no. det. 29832): NO Gyrtoni. Krautfluren zw. Acker und Strasse, 75 m. 39°45'13"N, 22°26'35"E, 12.04.2002, *R. Willing* & *E. Willing 99414* (B 100091793, no. det. 29840); S Itea. Krautfluren mit Cistus und Cupressus, 20 m. 39°51'36"N, 22°31'10"E, 09. 04.2002, *R. Willing* & *E. Willing 98653* (B 100091754, no. det. 29853). **Ep. Farsalon**: Paleomylos. Krautiger Hang und Weidefluren, 260 m. 39°17'24"N, 22°35'46"E, 01.04.2002, *R. Willing* & *E. Willing 96623* (B 100091724, no. det. 29855); SW Eretria. Krautfluren am Strassenrand, 310 m. 39°17'03"N, 22°36'44"E, 01.04.2002, *R. Willing* & *E. Willing 96568* (B 100091723, no. det. 29868). **Ep. Larisis:** S Elatia. Krautfluren, 100 m. 39°47'23"N, 22°32'13"E, 11.04.2002, *R. Willing* & *E. Willing 99221* (B 100091806, no. det. 29842); SSO Elatia. Krautreiche Hänge, einz. Ölbäume und *Q. coccifera*-Büsche, 95 m. 39°46'35"N, 22°32'30"E, 11.04.2002, *R. Willing* & *E. Willing 99253* (B 100091807, no. det. 29844). – **Nomos Magnisis, Ep. Volou**: WNW Volos. Krautfluren, z.T. felsig, 70 m. 39°22'45"N, 22°52'53"E, 31.03.2002, *R. Willing* & *E. Willing 96263* (B 100091725, no. det. 29856). Also cult. in BG Průhonice as JŠ 7998 (PRA, no. det. 29858); Nea Anchialos. Krautfluren in Ölbaumhain, Felsfluren, 80 m. 39°16'59"N, 22°48'45"E, 30.03.2002, *R. Willing* & *E. Willing 95976* (B 100091744, no. det. 29827). **Ep. Almirou**, W Almyros. Ackerrand, 110 m. 39°11'01"N, 22°43'14"E, 05.04.2002, *R. Willing* & *E. Willing 97565* (B 100091733, no. det. 29841); WSW Mikrothive. Krautfluren in Ackerrand, 165 m. 39°15'14"N, 22°42'15"E., 01.04.2002, *R. Willing* & *E. Willing 96485* (B 100091746, no. det. 29825); W Almyros. Ackerrand, 110 m. 39°11'01"N, 22°43'14"E, 05.04.2002, *R. Willing* & *E. Willing 97566* (B 100091736, no. det. 29838). – **Nomos Lésvou, Ep. Limnou**: island of Limnos, town of Myrina, sandy road margin with pine, at N-end of Ormos Romeikos Gialos, 4 m, 27.03.2014, *Biel* (14.002a+b, herb. Biel); SW Myrina, ruderal site at edge of new harbour, 2 m, 28.03.2014, *Biel* (14.026, herb. Biel); SSW Myrina, sandy area on flat land bridge with pond between coastal hills, SW of Ormos Platys Gialos, 2 m, 28.03.2014, *Biel* (14.033, herb. Biel); Limnos, Paralia Gomati N of Katalakko, 39°59'N, 25°09'E, 08.05.1997, *S. Snogerup* & *B. Snogerup 14111* (LD, no. det. 29819); Limnos. Moudros, N of the harbour, 0–10 m, 39°52'N, 25°15'E, 28.04.1997, *S. Snogerup* & *B. Snogerup 13663* (LD, no. det. 29821); Ag. Evstratios, slopes 4-5 km E of the harbour, 100–200 m, 39.32 N, 25.02 E, 19.05.1988, *S. Snogerup* & *B. Snogerup 5860* (LD, no. det. 29817);

Limnos, 2.5 km W of Ag. Dimitrios, 150 m, 39°54'N, 25°07'E, 29.04.1997, *S. Snogerup* & *B. Snogerup 13731* (LD, no. det. 29824); Limnos, Mirina, Kastro, 80 m, 39°52'N, 25°03'E, 30.04.1997, *S. Snogerup* & *B. Snogerup 13789* (LD, no. det. 29823); Limnos, Moudros, N of the harbour, 0–10 m, 39°52'N, 25°15'E.", 28.04.1997, *S. Snogerup* & *B. Snogerup 13660* (LD, no. det. 29826); Lesbos, opp. Anaxos (ad insulae litorem borealem), supra viam publicam ad opp. Petra, 26.08.2012, *A. Skalická*. Cult. in Průhonice as no. JŠ 9832 (PRA, no. det. 29830). – **Nomos Chiou.** Chios, 100–300 m S of the harbour, ruderal vegetation near the sea, 0–10 m. 38°21'N, 26°08'E, 05.03.1995, *S. Snogerup* & *B. Snogerup 11765* (LD, no. det. 29815). – **Nomos Kikládon, Androu**, ***Gavrionisia***: the islet of Macedonia (= Praso Nisi) S of Akramatis, 07.04.1985, *S. Snogerup* & *B. Snogerup 3505* (LD, no. det. 29814, 29816); NW of Gavrion, 0–5 m, 13.03.1969, S. Snogerup & R. v. Bothmer 38991 (LD, no. det. 29812); the islet of Gaidharos, 12.03.1969, *S. Snogerup* & *R. v. Bothmer 38923* (LD, no. det. 29811); the islet of Macedonia (S of Akramatis), S of Gavrion, 8–10 m high, 03.04.1971, *S. Snogerup* & *M. Gustafsson 41900* (LD, no. det. 29809); the island of Megalonisos, 12.03.1969, *S. Snogerup* & *R. v. Bothmer 38981* (LD, no. det. 29807); the islet of Praso Nisos, (S of Akramatis), 12.03.1969, *S. Snogerup* & *R. v. Bothmer 38938* (LD, no. det. 29818); the islet of Macedonia, 37°51'N, 24°44'E., 25.04.1995, *S. Snogerup* & *B. Snogerup 11996* (LD, no. det. 29813); the islet of Akramatis, 08.04.1985, *S. Snogerup* & *B. Snogerup 3531* (LD, no. det. 29822); **Nomos Kikladon, Ep. Tinou:** Tinos, S of the town, 19.05.1968, *H. Runemark* & *L. Engstrand 36421* (LD, no. det. 29820).

Acknowledgements. The study was supported by the long-term research plan under no. RVO 67985939, as regards the JŠ and JK participation.

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