

## *Scapania gracilis* Lindb. (Hepaticae, Scapaniaceae), new to bryophyte flora of Turkey

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**Abstract:** *Scapania gracilis* Lindb. is a hygro- to mesophytic liverwort species which is reported for the first time from Turkey. The species is described from material collected from the north-west Anatolia (Sakarya) which has very warm summers and mild winters with high annual rainfall (800–1000 mm) in Marmara region and very humid conditions. Turkish plants are described and illustrated.

### INTRODUCTION

The genus *Scapania* (Dumort.) Dumort. is the largest genus of leafy hepatic family Scapaniaceae. About 230 species have been described in the world, they are widespread mainly in temperate regions (Ben-Rong et al., 2007). According to the latest list of Turkish liverworts (Kürschner & Erdağ, 2005; Özenoğlu Kiremit & Keçeli, 2009) eleven taxa of the genus (*S. aequiloba* (Schwägr.) Dumort., *S. aspera* Bernet et M. Bernet, *S. compacta* (Roth) Dumort., *S. curta* (Mart.) Dumort., *S. irrigua* (Nees) Nees, *S. paludosa* (Müll. Frib.) Müll. Frib., *S. nemorea* (L.) Grolle, *S. subalpina* (Nees ex Lindenb.) Dumort., *S. umbrosa* (Schrad.) Dumort., *S. undulata* (L.) Dumort., *S. verrucosa* Heeg) have been recognized as occurring in Turkey.

In this study *Scapania gracilis* Lindb. is recorded for Turkey as twelfth species. Description and illustrations of the species further contribute to the liverwort flora of Turkey.

### MATERIAL AND RESULTS

***Scapania gracilis*** Lindberg, Morgonblad et (Helsinki) 1873(286): 2. 1873.

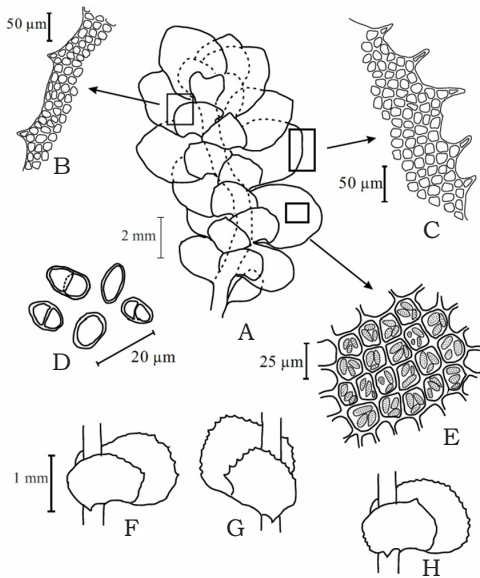
Description of the Turkish specimens: plants medium size to robust, yellowish brown or pale brown; leafy shoots to 5(7) cm long and 2.5–3.5 mm wide, procumbent to erect; stem dark reddish brown, occasionally branched; leaves unequally bilobed, antical lobe not decurrent or slightly decurrent, ovate or ovate-orbicular, 0.9 mm long, 0.7 mm wide, apex rounded to obtuse, entire to strongly ciliate-dentate at base, postical

lobe ovate or ovate-lingulate with slightly curved, winged keel, 1.7 mm long, 0.9 mm wide, decurrent, apex usually broadly rounded, margins dentate or dentate-serrate, teeth 1–3 cells long; leaf cells in middle of postical lobe 15–20 µm wide; oil-bodies 2–4 per cell; gemmae abundant, in green clusters, ovate to ellipsoid, 1–2 celled, thick-walled, 12–20 µm long (Fig. 1 and Fig. 2). Sporophytes unknown in Turkey.

Specimens examined: Turkey, north-west Anatolia. Sakarya: Akyazı district, on soil, alt. ca 223 m, (40°39'37.56"N 30°38'42.99"E), 08 Nov 2011, herbarium no T.E. 1702 and R.K.1741 (Herbarium of Niğde University and special collections of EZER & KARA (Niğde) (Fig. 1 and Fig. 2).

According to literature the species is dioecious; male bracts are in 2–8 pairs, bases often weakly inflated; female bracts are similar to and slightly larger than leaves; perianths to 2.5 × 3.5 mm, mouth lacinate with apical cilia 8(12) cells long, mouth sometimes gemmiferous; sporophytes are frequent in March to July; spores 12–16 µm (Smith, 1990; Paton, 1999; Casas et al., 2009).

*S. nemorea* and *S. umbrosa* are similar species to *S. gracilis*. Pale brownish-green colour is characteristic for *S. gracilis* but *S. nemorea* is green or dull green, rarely reddish or brownish. *S. gracilis* has gemmae in greenish clusters, whereas *S. nemorea* has gemmae in brownish clusters. While gemmae of *S. gracilis* are 1–2 celled and thick-walled, gemmae of *S. nemorea* are unicellular and thin-walled. The smallest forms of *S. gracilis* somewhat resemble *S. umbrosa* but *S. umbrosa* is pale or brownish green and has very pointed lobes, and shoot



**Fig. 1.** *Scapania gracilis*. A – sterile shoot, antical view; B – leaf margin of antical lobe; C – leaf margin of postical lobe; D – gemmae; E – cells from middle of postical lobe; F, G, H – leaves.

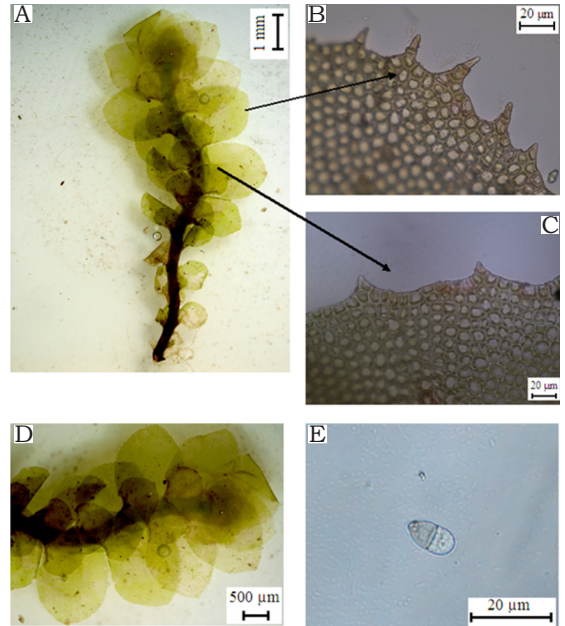
tips deflexed. Also, thin-walled red gemmae are diagnostic of *S. umbrosa*.

**Ecology and distribution.**

*Scapania gracilis* Lindb. is acidophyt-subneutrophytic [pH 4.1–4.8; 5.7–7.0 (–7,5)], hygrophyt-mesophytic, sciophytic-photophytic. The taxon preferentially grows on rocks and tree trunks, scree, ravines, on heaths and moorland, cliffs, occasionally on rotting logs and peat, calcifuge. (Smith, 1990; Paton, 1999). It is one of the characteristic species of the alliance Scapanio-Dicranetum scottiani (Dierssen, 2001) and the association Scapanio gracilis-Dicranetum scottiani Zippel 1998 (Kürschner et al., 2007).

In Turkey *Scapania gracilis* was collected on soil surface from Akyazı district. It was found together with the moss species *Leucobryum juniperoideum* (Brid.) Müll.Hal., *Dicranum scottianum* Turner ex R.R.Scott, *Hypnum cupressiforme* Hedw. and *Atrichum angustatum* (Brid.) Bruch & Schimp., and the liverwort species *Calypogeia fissa* (L.) Raddi and *Cephalozia bicuspidata* (L.) Dumort.

*Scapania gracilis* is distributed in Portugal, Germany, Spain, France, Netherlands, Den-



**Fig. 2.** *Scapania gracilis*. A – wet habit, antical view; B – leaf margin of postical lobe; C – leaf margin of antical lobe; D – apex of leafy shoot, antical view; E – gemma.

mark, Norway, Sweden, Faroe Islands, British Isles and Ireland, Macaronesia, Corsica, Italy, Greece, Romania and Morocco (Sotiaux et al., 1998).

**ACKNOWLEDGEMENTS**

We are indebted to the Scientific and Technological Research Council of Turkey TUBITAK (Project Number: 111T359) for support equipments to take photographs.

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