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Leptoscyphus cuneifolius (Lophocoleaceae, Marchantiophyta) new to Southwest Asia

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Abstract – *Leptoscyphus* Mitt. and *Leptoscyphus cuneifolius* (Hook.) Mitt. (Lophocoleaceae, Marchantiophyta) found as new to Turkey and Southwest Asia. Descriptions, illustrations, ecology, geographic distribution and comparisons with morphologically similar taxa are also presented.

Liverworts / Biodiversity / Turkey / *Leptoscyphus*

INTRODUCTION

The details of field studies during the most recent four years led to more remarkable taxa added to the Turkey's bryoflora (Lara *et al*., 2010; Ezer & Kara, 2011; Keçeli *et al*., 2011; Özenoğlu Kiremit, 2011; Batan & Özdemir, 2012; Canli & Çetin, 2012; Ezer & Kara, 2012; Kirmaci *et al*., 2012; Kirmaci & Agcagil, 2012; Ören *et al*., 2012; Özdemir *et al*., 2012; Ursavaş & Çetin, 2012; Batan & Özdemir, 2013; Kirmaci & Kürchner, 2013; Uyar & Ören, 2013), but more studies are needed to form a complete bryophyte flora. The total number of bryophte species of Turkey have been reached 966 (173 liverworts, 789 mosses, 4 hornworts) with the new records. When we compare Turkey with many European countries, bryophyte flora of many regions of Turkey is still unknown. On the other hand, Turkey has the highest bryophyte taxa in all countries in Southwest Asia.

The East Black Sea Mountain range belongs to the North Anatolia of Turkey. The eastern part of the range is high, and lies close to the Black Sea. On the north side of these mountains, the streams and rivers cut deep gorges flow down to the sea.

Due to the moist climate, this region supports the largest parts of closed forest in Turkey. The research area has a typical oceanic climate. There is lack of

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drought season in this region and the annual precipitation is 2300 mm. The average annual temperature is 18.5°C, the coldest month is January with 6°C, and the warmest one is July with 24°C (Anşin, 1981; Akman, 1999; Papp, 2004).

The northern slope of the East Black Sea Mountain range is covered with mixed forests. The dominate trees of vegetation are *Alnus glutinosa* (L.) Gaertn., *Corylus avellana* L., *Fagus orientalis* Lipsky, *Picea orientalis* (L.) Link., *Rhododendron ponticum* L., *R. luteum* Sweet., *Laurus nobilis* L., *Buxus sempervirens* L., *Ilex colchica* Pojk., *Daphne pontica* L., *Castanea sativa* Mill., *Carpinus betulus* L., *Tilia rubra* DC, *Salix* sp., and *Betula* sp. (Anşin, 1981; Papp, 2004). The study area is situated on the Black Sea coast in the Euro-Siberian phytogeographical region of Turkey. The area is subject to oceanic climate and heavy rainfall with mild winters.

MATERIAL AND METHODS

The liverwort specimens were collected from the Eastern Black Sea Region (Trabzon province, Araklı district) on 20 May 2012 (Fig. 1). After air-dried samples were examined in the laboratory identification was performed by consulting keys (Smith, 1996 ; Paton, 1999; Schumacker & Vana, 2005). The status of *L. cuneifolius* was evaluated by reviewing the related literature for Turkey (Çetin, 1988; Kürschner & Erdağ, 2005; Ros *et al*., 2007; Kürschner & Frey, 2011), and Southwest Asia (Kürschner & Frey, 2011).

The voucher specimens are deposited at the Herbarium in the Biology Department, Faculty of Science, Karadeniz Technical University, Turkey (KTUB).

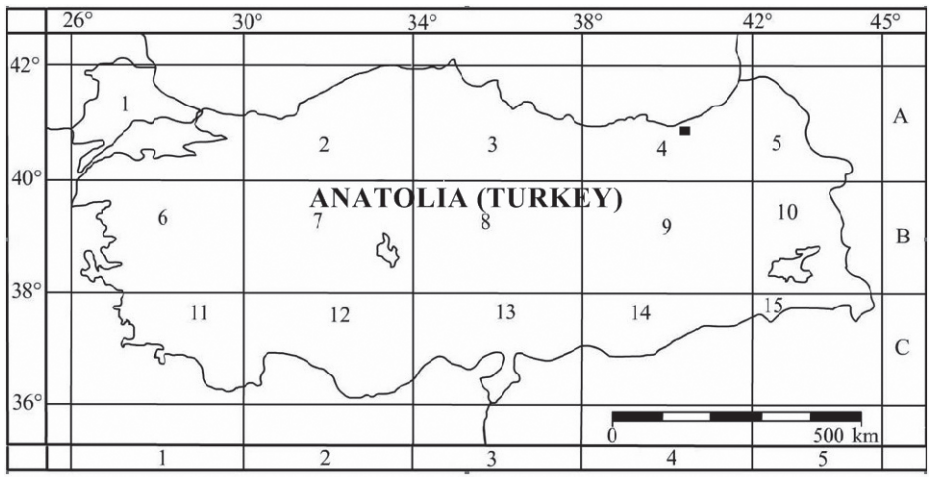


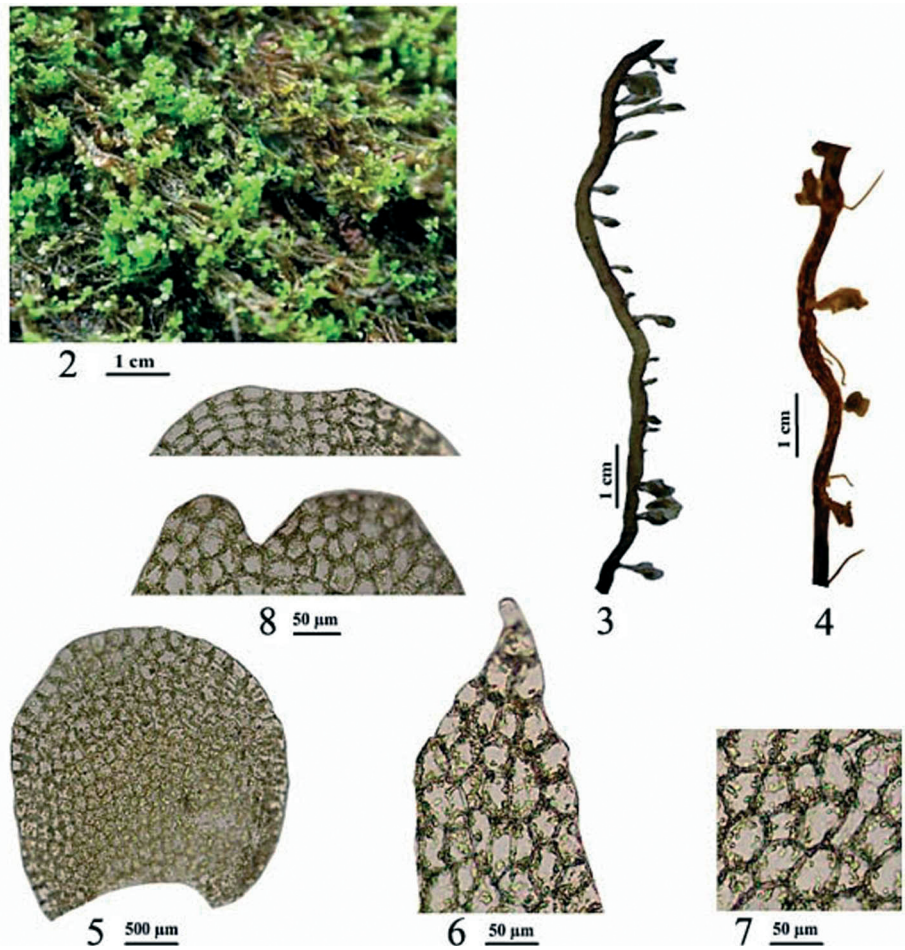
Fig. 1. (■) The locality of *Leptoscyphus cuneifolius* in Turkey.

DESCRIPTION

Leptoscyphus cuneifolius (Hook.) Mitt., *J. Bot. Kew Gard. Misc.* 3: 358. 1851 **Figs 2-8**

Plants male, procumbent, thin mats, yellow green patches on tree trunk of *Salix* sp., 7-14 mm long and 2-4 mm wide with leaves. Stem leaves erecto-patent or patent concave plane or convex, oblong, cuneiform and margins plane. Leaf apex rounded, retuse, sometimes bilobed rarely up to 1/5-1/6. Underleaves present, well developed, underleaves different from other leaves, of various form and size, but mostly lanceolate or subulate, 70-180 µm long and entire. Mid-leaf cells hexagonal. Oil bodies *ca* 4-8 a per cell.

The plant forms two different stem groups, a suberect stem without rhizoids and a creeping one with rhizoids. Rhizoids are long (up to 1 mm long) in comparison with plant's size and mostly emerging in pairs below the leaves on creeping stems.



Figs 2-8. *Leptoscyphus cuneifolius:* **2.** Habit. **3.** Suberect stem without rhizoids. **4.** Creeping stem with rhizoids. **5.** Leaf. **6.** Underleaf. **7.** Mid-leaf cells. **8.** Apex of leaf.

Specimen examined: TURKEY (Trabzon): Araklı district, 40°52'20.37"N and 40°02'25.27"E, on trunk of tree (*Salix* sp.), 68 m, 20 May 2012, *N. Batan* (KTUB 1576).

Ecology: The area is situated in the Colchis area of the Euro-Siberian floristic region of Turkey. The type of the climate in the eastern Black Sea oceanic rainfall regime occurs in Araklı district (Trabzon) (Akman, 1999). According to Dierben (2001), the habitat of *L. cuneifolius* is considerably-moderately acidic (pH = 4,1-5,6); moderately hygrophytic and sciophytic. The specimen was collected on trunk of *Salix* sp. beside a stream in a very moist area.

DISCUSSION

Leptoscyphus cuneifolius is found in Azores, Madeira, South America (Peru, Colombia, Ecuador, Brazil, Venezuela, Guyana, Chile), Central America (Ecuador, Panama), North America (North Carolina and Tenessee), Carribean Islands (Dominican Republic, Dominique Islands), Tristan da Cunha, Juan Fernandez, NW Europe (UK, Norway), Guadeloupe archipelago, Martinique, (Smith, 1996; Paton, 1999; Söderström *et al*., 2002; Frey *et al*., 2006; Ros *et al*., 2007; Devos & Vanderpoorten, 2009; Lavocat Bernard & Schäfer-Verwimp, 2011; Marline *et al*., 2012; Vanderpoorten *et al*., 2012). The species is new to Southwest Asia (Çetin, 1988; Kürschner & Erdağ, 2005; Özenoğlu Kiremit & Keçeli, 2009; Kürschner & Frey, 2011) in this paper.

This species is recognized in the field by its habitus, it is thin mats, yellow green patches on tree trunk, thin and very thin branching with crowded patches brached. In microscopic examinations it is identified easily by its well-developed and entire underleaves, erecto-patent, concave or convex, caducous, often recurved leaves and oil-bodies in the cells (Fig. 2).

Leptoscyphus cuneifolius is distinguished from other *Leptoscyphus* species by the caducous, obdeltoid or obcuneate leaves and entire underleaves.

The bryoflora of Turkey includes four hornworts (in three genera) and 173 liverworts (in 63 genera) taxa (Özenoğlu Kiremit & Keçeli, 2009; Kürschner & Frey, 2011; Özenoğlu Kiremit, 2011; Keçeli *et al*., 2012). A total number hornworts and liverworts of Turkey have reached 178 taxa, including 167 species and four intraspecific taxa (four hornworts, 174 liverworts) with the addition of the new record.

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