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Pallavicinia lyellii (Hook.) Carruth. in Turkey, new to southwestern Asia

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Abstract – *Pallavicinia lyellii* (Pallaviciniaceae, Hepaticae) is recorded for the first time in southwestern Asia, from specimens collected in Turkey.

***Pallavicinia lyellii* / Pallaviciniaceae / Hepaticae / Turkey**

Résumé – *Pallavicinia lyellii* (Pallaviciniaceae, Hepaticae) est citeé pour la première fois en Turquie et dans le sud-ouest de l'Asie.

***Pallavicinia lyellii* / Pallaviciniaceae / Hepaticae / Turquie**

INTRODUCTION

Pallavicinia lyellii is widespread in Europe and occurs in all of the major continents except Antarctica. It receives general protection under the Wildlife and Countryside Act 1981, and is classified as vulnerable in Europe as a whole (UK Biodiversity Group, 1999). It is widespread in tropical areas. The worldwide distribution of *P. lyellii* includes Denmark, Ireland, Sweden (regionally extinct), Britain (vulnerable), France, Netherlands, Belgium, Germany, Poland (endangered), Austria (missing), Czech Republic (extinct), Slovakia (extinct), Portugal (vulnerable), Spain (rare), Greece, Lithuania (endangered), Ukraine, Azores, Madeira, China, India, Malaysia and Africa, Western Indian Ocean, Transcaucasia, Eastern Asia, Australasia, some Pacific Islands, Northern and Southern America (Paton, 1999; Söderström *et al.*, 2002). However, the family, genus and species were not known in Turkey (Çetin, 1988) and southwestern Asia (Bischler & Jovet-Ast, 1986; Frey, 1986; Long, 1987; Kürschner, 2001).

During a field trip in April 2004 through the vicinities of Kıyıcık Village (Fındıklı, Rize province), the authors found plants of an unfamiliar thalloid liverwort,

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which was later identified as *Pallavicinia lyellii* (Hook.) Carruth. A small sample was sent to Prof. Dr. Jiri Vana (Charles University, Czech Republic) who confirmed the identification. The aim of this paper is to report on this new discovery.

THE SPECIMENS EXAMINED

Turkey: Rize province, Fındıklı county, between G zeyalı village (Rize) and Kıyıcık village. Both male and female specimens have been found in Turkey, but in different sites. The female plants: 41°19.119' N, 41°14.948' E, 27 m above sea level, 22 April 2004, *Tamer Keçeli*, *TK*-2703. The male specimens: 41°19.163' N, 41°15.026' E, at 20 m a.s.l., 22 April 2004: *Tamer Keçeli*, *TK*-2761. The locality belongs to the grid square A4 (Fig. 1) according to the system adopted by Henderson (1961). Turkish material has central strand of elongated thickened conducting cells visible as a dark line by transmitted light; capsule long-stalked (3.0-4.0 cm), ellipsoid to cylindrical (Figs 2-7); spores reticulate and elaters 2-spiral (Figs 8-11). The specimens are kept at the Herbarium of Ankara University, Faculty of Science, Department of Biology (ANK).

ECOLOGY

The locality of *Pallavicinia lyellii* in Turkey is 20-27 m above sea-level and has a typical "oceanic" climate. There is no drought season in this climate type and annual precipitation is 2313 mm in Rize (Akman, 1999). The basic

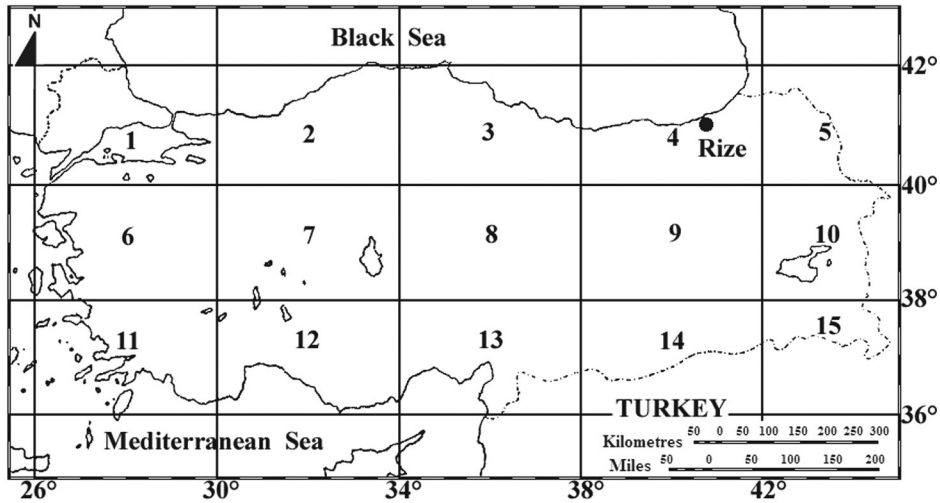
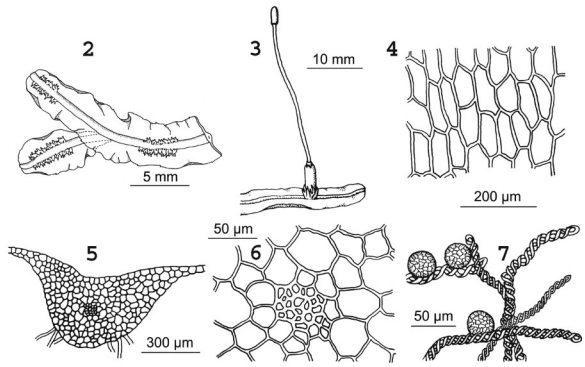
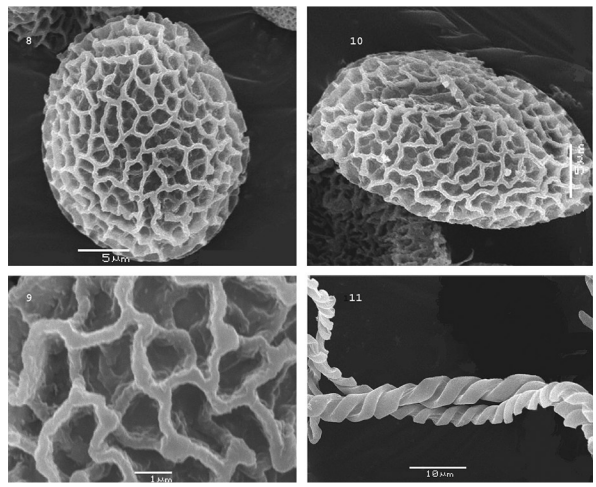


Fig. 1. (●)The locality of *Pallavicinia lyellii* (Hook.) Carruth. in Turkey, belongs to the grid square 4 (Henderson 1961).



Figs 2-7. *Pallavicinia lyellii* (Hook.) Carruth. **2**, dorsal surface of male plant. **3**, thallus with mature sporophyte. **4**, dorsal epidermal cells. **5**, transverse section of thallus showing central strand and rhizoids. **6**, conducting strand of thallus in transverse section of thallus. **7**, spores and elaters. All drawn from Turkish materials by *TK* (2761/A, 2703/B-F).



Figs 8-11. SEM micrographs of spores and elaters of *Pallavicinia lyellii* (Hook.) Carruth; **8**, proximal view of single spore; **9**, finely reticulate surface on proximal view of spore; **10**, lateral and distal views of spore; **11**, elaters (*TK*-2703/a-d).

mother rocks of the study area are flysch, andesite, and sedimentary rocks. According to Dierßen (2001), *Pallavicinia lyellii* grows in the vegetation zones of austral-tropical-hemiboreal. The habitat of *P. lyelii* is moderately acidic (pH 4,9-5,6), hygrophytic and considerably sciophytic to moderately photophytic; heat balance is mesothermophytic, but the species is sensitive against dessication; nutrient availability is oligo-mesotrophic; substrate is humicolous or saprolignic (advanced stages of decay); human impact is ahemerobous (absent) to mesohemerobous (moderate).

Habitat features of *P. lyellii* are same in the Turkish locality. The female plants were collected in the stream bank, on soil rich in humus, associated with

Diplophyllum albicans (L.) Dumort., *Leucobryum enerve* (Hedw.) Ångstr., *Jubula javanica* Steph. and *Calypogeia fissa* (L.) Raddi. The male plants were also collected in the stream bank, on decaying tree log, associated with *Leucobryum enerve* (Hedw.) Ångstr., *Bazzania trilobata* (L.) Gray, *Metzgeria conjugata* Lindb. and *Lejeunea cavifolia* (Ehrh.) Lindb. The vegetation of the study area is basically dominated by *Alnus glutinosa* (L.) Gaertn., *Carpinus orientalis* Mill., *Fagus orientalis* Lipsky, *Tilia rubra* DC. subsp. *caucasica* Rupr., *Rhododendron ponticum* L. and *Corylus avellana* L. We think *Pallavicinia lyellii* could be assigned to VU (vulnerable) category of IUCN in Turkey.

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