www.biodicon.com Biological Diversity and Conservation

ISSN 1308-8084 Online; ISSN 1308-5301 Print 7/1 (2014) 32-34

Research note/Araştırma notu

A note on *Riccia canaliculata* (Ricciaceae, Hepaticopsida) in Turkey

Hatice ÖZENOĞLU KİREMİT [1], Ayşe Dilek ÖZÇELİK [2], Muhammet ÖREN [*2], Güray UYAR [3]

[1] Department of Biology Education, Faculty of Education, Adnan Menderes University, 09010, Kepez, Aydın, Turkey
[2] Department of Biology, Faculty of Science and Art, Bülent Ecevit University, 67100, Zonguldak, Turkey
[3] Department of Biology, Polatlı Faculty of Science and Art, Gazi University, 06900, Polatlı/Ankara, Turkey

Abstract

In this study, *Riccia canaliculata* Hoffm. (Channelled Crystalwort) which was first given by Jovet-Ast from West Anatolia without locality details was collected for the second time. The species is described in detail and illustrated. The ecology and distribution of the species are reviewed.

Key words: Liverwort, *Riccia canaliculata*, Hepaticopsida, Turkey

---------- * ----------

Türkiye'deki *Riccia canaliculata* (Ricciaceae, Hepaticopsida) üzerine bir not

Özet

Bu çalışmada, Jovet-Ast tarafından Batı Anadolu'dan lokalitesi belirtilmeksizin kaydı verilen *Ricca canaliculata* (Kanallı Kristalotu) türü ikinci kez toplanmıştır. Tür ayrıntılı olarak tanıtılmış, çizimi yapılmış, ekolojik ve dağılım özellikleri gözden geçirilmiştir.

Anahtar kelimeler: Ciğerotu, *Riccia canaliculata*, Hepaticopsida, Türkiye

1. Introduction

The *Riccia* genus comprises about 200 species, with a worldwide distribution up to the Arctic and Antarctic, but is more frequent in areas with Mediterranean-type climates (Jovet Ast, 1986). About 40 species are widely distributed in Europe and SW Asia (Heyn and Herrnstadt, 2004; Kürschner and Frey, 2011). The *Ricciaceae* is one of the richest families among the Turkish Liverworts. The genus *Riccia* L. accounts for the great majority of taxa, with 23 taxa reported up to now (Gökler and Öztürk, 1991; Kürschner and Erdağ, 2005; Ros *et al*., 2007; Özenoğlu Kiremit and Keçeli, 2009; Özenoğlu Kiremit and Hugonnot, 2010; Özenoğlu Kiremit, 2011). This genus is recorded from Northwest, West and South Anatolia areas with Mediterranean-type climates (Walther, 1967, 1970; Crundwell and Nyholm, 1979; Gökler, 1992; Gökler and Aysel, 1998; Gökler *et al.*, 2000; Özenoğlu and Gökler, 2002; Özenoğlu Kiremit, 2007; Özenoğlu Kiremit *et al.*, 2007).

Riccia genus is divided into two subgenus: *Riccia* and *Ricciella*. Of the species recorded so far 14 belongs to the subgenus *Riccia*: *R. bicarinata*, *R. bifurca*, *R. ciliata*, *R. ciliifera*, *R. crozalsii*, *R. glauca*, *R. gougetiana*, *R. lamellosa*, *R. macrocarpa*, *R. michelii*, *R. nigrella*, *R. papillosa*, *R. sorocarpa* and *R. trabutiana.* The other five species belongs to the subgenus *Ricciella* (*Riccia canaliculata*, *R. crystallina*, *R. fluitans*, *R. frostii* and *R. rhenana*).

This paper contributes new record locality that intend to increase our knowledge on the distribution of *R. canaliculata* in Turkey (Figure 1).

* *Corresponding author* / Haberleşmeden sorumlu yazar: Tel.: +903722574010; Fax.: +903722574181; E-mail: muhammetoren@hotmail.com
 BioDiCon. 332-0613

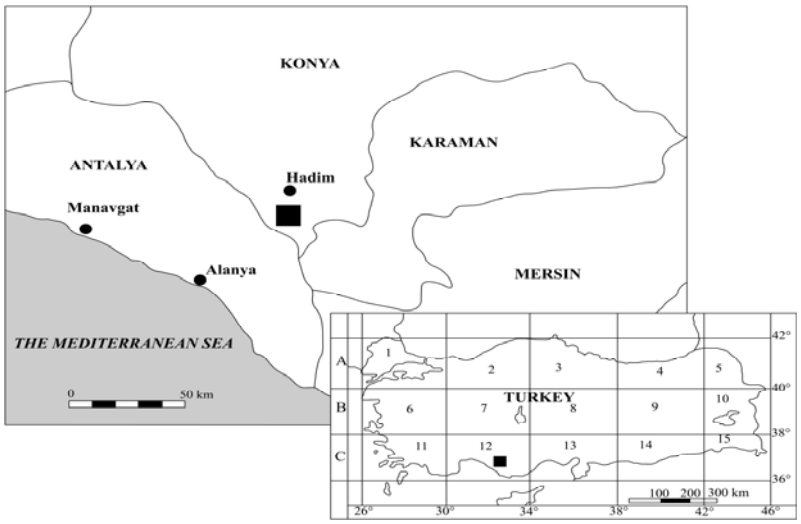

Figure 1. The Grid-Square System of Turkey Bryophyte Flora (Henderson, 1961) and distribution of *Riccia canaliculata* (■) in the Turkey.

3. Results

2.1 Description of Riccia canaliculata Hoffm. (Channelled Crystalwort)

Plants terrestrial, intricate mats, bright green and some of thalli margins violet; thalli thick, 2-4 furcate, branches 08-1 mm wide, ovate to linear, apex narrowly rounded; median groove narrow, at least older parts of thallus channelled, margins thick. Dorsal surface with pores but not appearing areolate areas. Ventral scales conspicuous, curved up and over apex and on to dorsal surface, cells (17) 21 x 70 (80) µm (Fig. 2). Thallus sections 240 - 360 µm high and 2-2,5 (3) times as wide, two or three layers of air-chambers layer; parenchyma poorly differentiated (Fig. 3). The material collected in Turkey was notably devoid of spores.

R. canaliculata can be easily recognized by the narrow chambered thalli with the apex of the branches distinctly narrowed and covered by the apical ventral scale and by the shape of the half-scales.

Figure 2. General view of *R. canaliculata*. Photographs by G. Uyar.

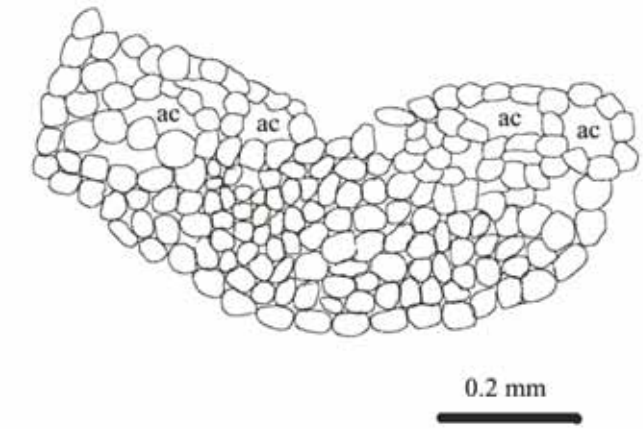

Figure 3. Transverse section of plants; ac: air chamber. Drawn by Hatice Özenoğlu Kiremit.

Specimen examined: Turkey, Konya, Hadim, Beyreli Plateau way, 1956 m altitude; 36°52′06.1″N, 032°25′29.1″E, 21.04.2013; ADÖ 118. The locality belongs to the grid square C 12 according to the system adopted by Henderson (1961).

2.2. Distribution

R. canaliculata is recorded from Corsica, Crete, Algeria, Spain, France, Greece, Italy, Israel, Morocco, Portugal, Sardinia and Tunisia in the Mediterranean Region (Ros *et al*., 2007).

2.3. Ecology

R. canaliculata has been found in sub-alpine vegetation. It was growing on wet soil near ponds, in mudy grassland. This specimen was associated with *Aneura pinguis* (L.) Dumort., *Palustriella falcata* (Brid.) Hedenäs, *Bryum pseudotriquetrum* (Hedw.) J.R.Spence & H.P.Ramsay, *Calliergonella cuspidata* (Hedw.) Loeske and *Ceratodon purpureus* (Hedw.) Brid..

4. Conclusions

In Turkey, 4 of the 23 *Riccia* taxa have been given by Jovet-Ast (1986) from West Anatolia without locality details. These are *R. canaliculata, R. gougetiana* var. *armatissima, R. lamellosa* and *R. papillosa*. Among them, *R. lamellosa* is recorded for the second time from Turkey (Özenoğlu Kiremit and Kırmacı, 2012). In this study, *R canaliculata* from these species was collected for the second time and expanded to the its distribution area where restricted from Western Anatolia to South Anatolia. It is a very common species in Mediterranean Region, Europe and Southwest Asia (Jovet-Ast, 1986; Ros *et al*., 2007; Özenoğlu Kiremit and Keçeli, 2009; Kürschner and Frey, 2011). It can be easily recognized by the narrow chambered thalli with the apex of the branches distinctly narrowed and covered by the apical ventral scale and by the shape of the half-scales.

The genus is in urgent need of a modern revision that would take benefit from molecular methods. A great number of taxa are, in spite of the numerous works of Jovet-Ast, still poorly known both from the taxonomic and distributional points of view..

Acknowledgements

We thank to the The Scientific and Technological Research Council of Turkey (TBAG 112T653) and Research Fund of Bülent Ecevit University (Project No: 2012-10-06-03) for the financial support.

References

Crundwell A.C., Nyholm E. 1979. Some additions to the bryophyte flora of Turkey I. Hepaticae. J. Bryol. 10: 479-489.
Gökler İ., 1992. Batı Anadolu ciğerotları üzerine bir araştırma, Doğa Tr. J. of Bot. 16: 1-8.
Gökler İ., Aysel V. 1998. A new aquatic liverwort for the flora of Turkey. Turk. J. Bot. 22: 355-357.
Gökler İ., Özenoğlu H., Kiremit F. 2000. A new liverwort for the flora of Turkey. Turk. J. Bot. 10: 81-83.
Gökler, İ., Öztürk, M. 1991. Liverworts of Turkey and their position in South-West Asia. Candollea. 46/2: 359-366.
Henderson, D.M. 1961. Contribution to the Bryophyte Flora of Turkey: IV. Notes from Royal Botanic Garden Edinburgh. 23: 263-278.
Heyn CC & Herrnstadt I (eds.) (2004). The Bryophyte Flora of Israel and Adjacent Regions. Jerusalem, Israel: The Israel Academy of Sciences and Humanities.
Jovet-Ast, S. 1986. Les Riccia de la région méditerranéenne. Cryptogamie, Bryologie et Lichéenologie. 7: 287-431.
Kürschner, H., Erdağ, A. 2005. Bryophytes of Turkey: An annotated reference list of the species with synonyms from the recent literature and an annotated list of Turkish bryological literature, Turkish Journal of Botany. 29/2: 95-154.
Kürschner, H., Frey, W. 2011. Liverworts, mosses and horn worts of Southwest Asia. (Marchantiophyta, Bryophyta, Anthocerotophyta), Nova Hedwigia Beih. 139: 1–240.
Özenoğlu, H., Gökler, İ. 2002. Liverworts (Marchantiopsida) of the Dilek Peninsula National Park, Turk. J. Bot. 26: 297-301.
Özenoğlu Kiremit, H., Hugonnot, V. 2010. *Riccia perennis* Steph. (Ricciaceae, Hepaticae) new to South-West Asia, Cryptogamie, Bryologie. 31/3: 297-302.
Özenoğlu Kiremit, H. 2007. Investigation on the flora of hornworts (Antocerotopsida) and liverworts (Marchantiopsida) of Bafa Lake National Park (C11), Pakistan Journal of Biological Sciences 10 (12): 2048-2055.
Özenoğlu Kiremit, H., Kırmacı, M. 2012. Notes on *Riccia fluitans* and *Riccia lamellosa* (Ricciaceae, Hepaticae) in Turkey, Biological Diversity and Conservation. 5/2: 81-84.
Özenoğlu Kiremit, H. 2011. *Riccia subbifurca* Warnst. ex Croz. (Ricciaceae) new to Turkey, Cryptogamie, Bryologie. 32/1: 83-86.
Özenoğlu Kiremit, H., Keçeli, T. 2009. An annotated check-list of the Hepaticae and Anthocerotae of Turkey, Cryptogamie, Bryologie. 30/3: 343-356.
Özenoğlu Kiremit, H., Sukatar, A., Gökler, İ. 2007. Studies on the hornworts and liverworts flora of Antalya. Turk. J. Bot. 31: 529-537.
Ros R.M., Mazimpaka V., Abou-Salama U., Aleffi M., Blockeel T.L., Brugués M., Cano M.J., Cros R.M., Dia M.G., Dirkse, G.M., El Saadawi W., Erdağ A., Ganeva A., González-Mancebo J.M., Herrnstadt I., Khalil K., Kürschner H., Lanfranco E., Losada-Lima A., Refai M.S., Rodríguez-Nuñez S., Sabovljević M., Sérgio C., Shabbara H., Sim-Sim M., Söderström L. 2007. Hepatics and Anthocerotes of the Mediterranean, an annotated checklist. Cryptogamie, Bryologie. 28/4: 351-437.
Walther, K. 1967. Beiträge zur moosflora Westanatoliens I., Mitt. Staatsinst. Allg. Bot. Band 12: 129-186, Hamburg.
Walther, K. 1970. Beitrage zur Moosflora Westanatoliens II. Mitt. Staatsinst. Allg. Bot. Band 13: 168-180, Hamburg.

(Received for publication 12 June 2013; The date of publication 15 April 2014)