Bryoerythrophyllum rubrum (*Pottiaceae*) – a new moss in the Turkish bryophyte flora

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Abstract. *Bryoerythrophyllum rubrum* (*Pottiaceae*, *Bryopsida*) has been recently discovered for the first time in Turkey. The specimens were collected from Yusufeli district in Artvin, a northeastern province of Turkey. A concise site description and illustrations of the Turkish specimen are given, together with notes on its diagnostic characteristics and ecology. This record complements our knowledge on the bryodiversity of the Eastern Black Sea Region of Turkey and closes some gaps in the hitherto known distribution of this species.

Key words: Artvin, *Bryoerytrophylum rubrum,* new record, *Pottiaceae*, Turkey, Yusufeli

Introduction

Mosses have been recently successively investigated in some Turkish provinces and new species are still being added to the moss flora of Turkey. So far most researches have been carried out by local and foreign bryologists on Turkish mosses. The most promising part of the country along these lines corresponds to the Eastern Black Sea Region because of its bryophyte richness. In the last decade the latest additions to the Turkish bryophyte flora came from the eastern part of North Anatolia, namely: Papp 2004; Towsend 2005; Küschner & Parolly 2006 a, b; Abay & al. 2007, 2009; Keçeli & Abay 2007 a, b; Keçeli & al. 2008; Uyar & al. 2008; Özdemir 2008; Özdemir & Uyar 2008; Özdemir & al. 2008; and Lara & al. 2010.

Artvin Province which lies in the Caucasian part of Turkey is an attractive area of steep valleys carved out by the river Çoruh system into the surrounding high mountains (up to 3900 m a.s.l.), and forests belonging to the national parkland, including the Karagöl-Sahara (Fig. 1.). The northeastern part of Turkey as a place of impressive beauty and magnificent wildlife was selected as the research area. The precipitation regime in the study area is of the summer-spring-winter-autumn type and semi-terrestrial origin. The annual rainfall amounts to about 310 mm in Yusufeli. The annual mean temperature is about 14 °C; July to August is the hottest time, with a mean maximum temperature of 32 °C, while January is the coldest month, with a mean minimum temperature of –2.5 °C. The climate of the research area was examined by using data provided by the meteorological station in the Artvin Province (TSMS 2010; Ergül 2007) (Fig. 2.).

The main vegetation types found in the research area in the Yusufeli district were forest, shrubs, grass and stream bank *Ostrya carpinifolia* Scop., *Carpinus betulus* L., *Cornus sanguiena* L., *Sambucus nigra* L., *Rosa canina* L., *Frangula alnus* Mill., *Juniperus oxycedrus* L., *Juniperus foetidissima* Wiild., *Juglans regia* L., *Picea orientalis* (L.) Link., *Pinus sylvestris* L., *Abies nordmanniana* (Steven) Spach, *Acer campestre* L., *Acer platanoides* L., *Acer cappadocicum* Gled, *Salix alba* L., *Populus tremula* L., *Paliurus spina-christii* Mill. and *Corylus avellana* L. are quite common as vegetation types (Anşin 1981; Özhatay 2005; Ergül 2007).

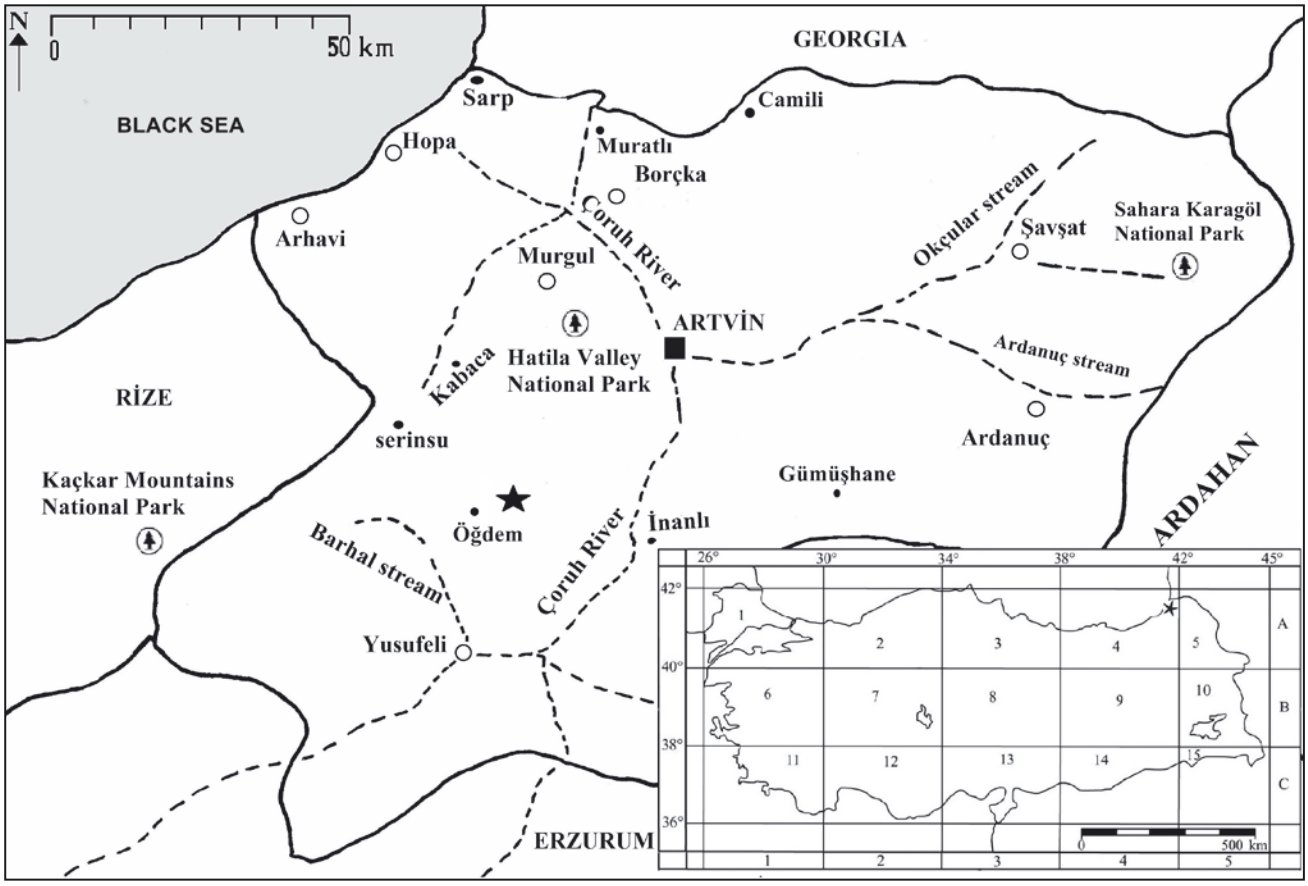

Fig.1. Map of the study area (★ – locality of the collected specimen, *B. rubrum*).

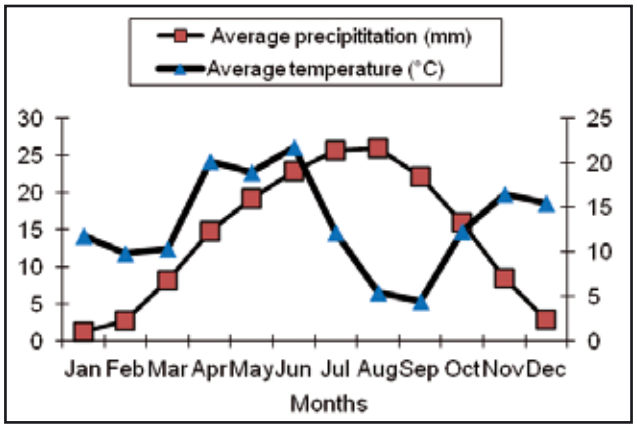

Fig. 2. Climatic diagram of the Yusufeli district (TSMS 2010, Ergül 2007)

Material and methods

The bryophyte specimen was collected by the authors in the Artvin Province of Turkey in 2011. The following references were used for identification and nomenclature of the bryophyte specimens: (Watson 1981; Noguchi & Iwatsuki 1988; Frey & al. 2006; Cortini Pedrotti 2001, 2006; Smith 2004; Fedosov & Ignatova 2008). The specimen is kept in the individual herbarium of Özdemir and Batan at the Department of Biology of the Science Faculty at Karadeniz Technical University.

Results and discussion

During the latest investigations in the oceanic zones of the Caucasian part of Turkey, we have encountered a specimen belonging to genus *Bryoerytrophyllum* and determined it as *Bryoerytrophyllum rubrum* (Jur. ex Geh.) P.C. Chen. The genus *Bryoerytrophyllum* has been represented in Turkey by three species: *B. ferruginescens* (Stirt.) Giacom., *B. inaequalifolium* and *B. recurvirostrum* (Hedw.) P. C. Chen. (Uyar & Çetin 2004; Kürschner & Erdağ 2005). *B. rubrum* is the fourth species recorded from Turkey.

Examined specimen

The locality of *Bryoerythrophyllum rubrum* in Turkey: Artvin Province, Yusufeli district, Öğdem region (40° 54' 38" N – 41° 38' 04" E), at 1507 m a.s.l., on wet rock, 20 May 2011, BAT 1232.

Description of the Turkish *B. rubrum* (Fig. 3.): the species can be recognized in the field by its darkreddish-brown patches and height of 8–12 mm (Fig. 3. A, B). In transverse section, cells are circular to indistinctly rounded, consisting of an outer cortex of 2–3 layers of smaller cells (stereid cells), a medulla of thick-walled cells and a strong central strand (Fig. 3. C). Leaves are 2–3 mm long, oblong-ovate and ovate-lanceolate, without any differentiated border (Fig. 3. D). Leaf margins are entire and recurved throughout and slightly crenulated, with a few teeth near the apex (Fig. 3. E). Costa is strong and percurrent.The cells in the upper part are rounded-quadrangular and thickened. The cells of the basal part are oblong and longer and larger than the upper cells (Fig. 3. I), mid-leaf cells are rectangular to trapezoid (Fig. 3. H). Seta is reddish, capsules are short, cylindrical and often yellowish-brown. Calyptra is cuculate (Fig. 3. F).

The species is known from Europe (Austria, France, Germany, Norway, Switzerland), Asia (Russia, Afghanistan, Mongolia, China) and Africa (Malawi, Ethiopia, Kenya, Nepal, Rwanda, Tanzania (Frey & al. 2006; Fedosov & Ignatova 2008)**.**So far it has not been recorded in the Balkans, Caucasus, and West Asia (Hill & al. 2006). The nearest locality of the species is situated in Russia (Ignatov & al. 2006).Thus this report extends its distribution range to Turkey and contributes to a better knowledge of the Turkish moss flora.

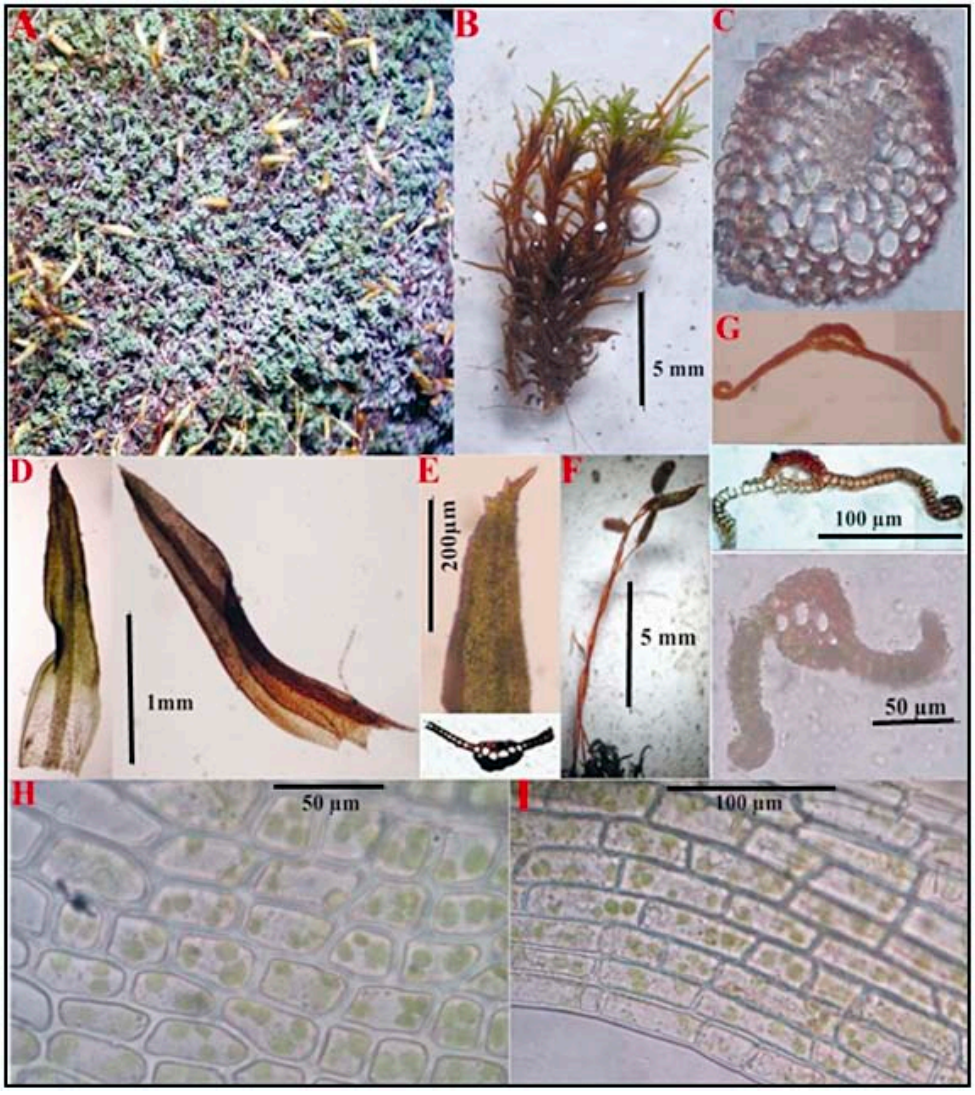

Fig. 3. *Bryoerythrophyllum rubrum*: **A** – habit when dry; **B** – habit when moist; **C** – transverse section of the stem; **D** – leaves; E – leaf apex; F – sporophyte; **G** – transverse section of the leaf; **H** – midleaf cells; **I** – laminal cells near base.

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