

# Bryofloristic records of mosses in Kayseri – Yahyalı Hacer forest

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Received: March 21, 2010 ▷ Accepted: May 21, 2010

**Abstract.** In this study, 83 taxa belonging to 44 genera and 16 families were determined from the provinces of Kayseri. Of these, 34 taxa are new for this grid. The research area lies in square B8 of the grid system and in the Irano-Turanian phytogeographical region.

**Key words:** flora, Kayseri-Hacer forest, mosses, Turkey

## Introduction

From the end of the nineteen-century onwards bryophyte records have been contributed from the Anatolian Peninsula to the world literature (Müller 1829; Juratzka & Milde 1870; Wettstein 1889; Schiffner 1896, 1897). That early period of work that was continued in the 20<sup>th</sup> century is illustrated by the works of Fritsch (1899), Handel-Mazzetti (1909) and Schiffner (1908, 1913). Regarded as a new post-war era were the studies of Henderson (1957, 1961a, b, 1964), Walther & Lelebici (1969) and Walther (1970, 1975, 1979). Contributions to the bryophyte flora of Turkey have increased in the last decades (Mazimpaka & al. 2000; Yayıntaş 2000, 2001; Abay & Çetin 2003; Papp 2004; Uyar & Çetin 2004; Kürschner & Erdağ 2005; Uyar & Ören 2005; Yayıntaş & Glime 2005; Kırmacı & Ağcaçıl 2009; Kırmacı & Erdağ 2009; Yayıntaş 2009; Yayıntaş & Allen 2009), but the southern and central part of Turkey still remain bryologically poorly known. There are some reports on the central part of Turkey by Kara & al. (2006), and Everest & Ellis (1999, 2003). Türkoğlu & Gezer (2006) have researched the Hacer forest macrofungi.

Yahyalı townships are connected to the Kayseri Province. This area borders on the Erciyes Mountain in the north, Kizilirmak Basin in the northeast, Nevşehir and Niğde provinces in the west, Adana Province in the south and Seyhan Basin in the east. The Erciyes Mountain (3.916 m) is the most dominant feature of the area. Kapuzbaşı waterfalls lie 76 km southwards of Kayseri. In this beautiful natural site seven different springs fall from heights between 30 and 70 meters on the mountainside. Kapuzbaşı waterfall is fed by the snow and the glaciers on top of the Aladağ Mountain. Yeşilköy waterfall is located on the banks of river Zamantı, at the head of a 20 meters wide natural bridge across the river. The most widespread plants in the province are *Astragalus* sp., *Ferula* sp., *Styrax officinalis* L., *Salvia* sp., *Populus* sp., *Salix* sp., and *Tamarix* sp. Furthermore, *Pinus brutia* Ten., *Pinus nigra* subsp. *nigra* var. *caramanica* (Loud.) Reh., *Cedrus libani* A. Rich., *Abies cilicica* (Ant. & Kotschy) Carr. subsp. *cilicica*, *Juniperus oxycedrus* L., *J. excelsa* M. Bieb., and *Quercus cerris* L. are very common in the southern districts of Yahyalı. One of the most important sections of Aladağ is the Hacer Valley, which is part of the study area. Hacer forest is a transitory region between

Central Anatolia and the Mediterranean. Thus it offers variety of biotopes with greater diversity of bryophytes. The investigated area has semi-arid, Mediterranean type of climate, very cold in winter, and climate effects changeable with the elevation. The annual average temperature is 10.4 °C; the annual precipitation is 375 mm on the average; spring is the rainy season in the Yahyalı province. In summer, the average temperature reaches 29 °C; in winter, the average temperature is -2 °C. The aim of this study is to contribute to the moss flora of Turkey (Akman 1990).

## Material and methods

The bryophyte specimens were collected across the various study areas on different substrata and habitats in 2000–2003 (Fig. 1). The samples were identified with the aid of various floras and identification keys (Crum & Anderson 1981; Nyholm 1981; Frey & al. 1995; Heyn & Hernnstadt 2004; Smith 2004; Kürschner 2006, 2007, 2008). Furthermore, all species were compared to the recent Turkish checklists (Uyar & Çetin 2004; Kürschner & Erdağ 2005). Moss classification lists were provided by Buck & Goffinet (2000) and Goffinet & Buck (2004). The specimens are stored

at the Herbarium (CNH, Çanakkale) of the Faculty of Arts and Sciences, Canakkale Onsekiz Mart University, Canakkale. The B8 grid square of the new taxa is indicated with an asterisk (\*).

## Results

### BRYOPHYTA

#### Furnariidae

##### Encalyptaceae

\* *Encalypta rhapsocarpa* Schwägr.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 19.05.2001, 1000–1560 m, T. 1106.

\* *E. streptocarpa* Hedw.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on humus-rich soil, 19.05.2001, 1000–1560 m, T. 1105, 1108.

*E. vulgaris* Hedw.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on soil, 05.05.2001, 1000 m, T. 1003, 1007; Kapuzbaşı village, Kapuzbaşı waterfalls, on soil, 19.05.2001, 1000 m, T. 1152.

#### Funariaceae

*Funaria hygrometrica* Hedw.

Kayseri: Yahyalı county, Kapuzbaşı village, Kapuzbaşı waterfalls, on soil, 1000 m, 05.05.2001, T. 1041; Aladağ National Park, Hacer forest, on rock, 800 m, 19.05.2001, T. 1145.

#### Dicranidae

##### Dicranaceae

\* *Dicranella heteromalla* (Hedw.) Schimp.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on wet rock, 06.05.2001, 800–1200 m, T. 1065.

\* *Dicranum scoparium* Hedw.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on soil, 06.05.2001, 800–1200 m, T. 1049, 1055.

#### Fissidentaceae

\* *Fissidens adianthoides* Hedw.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on wet soil, 800–1200 m, 06.05.2001, T. 1066.

#### Grimmiaceae

*Grimmia laevigata* (Brid.) Brid.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 05.05.2001, 1000 m, T. 1000.

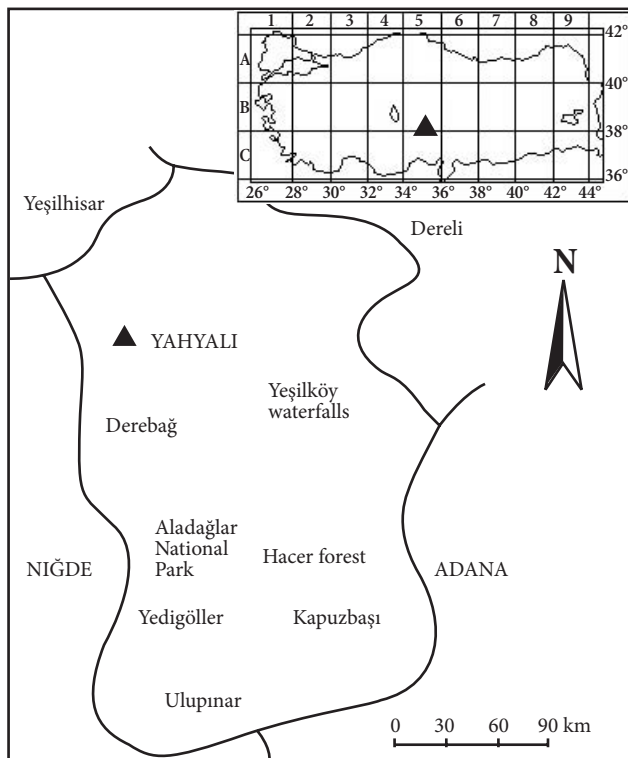


Fig. 1. The investigated area (▲) Yahyalı – Kayseri.

\* *G. lisae* De Not.

Kayseri: Yahyalı county, Kapuzbaşı village, Kapuzbaşı waterfalls, on rock, 1000 m, 19.05.2001, T. 1149.

*G. longirostris* Hook.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on rock, 800–1200 m, 06.05.2001, T. 1073.

\* *G. ovalis* (Hedw.) Lindb.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 05.05.2001, T. 1003, 1004, 1005, 1007; Aladağ National Park, Hacer forest, on rock, 800–1200 m, 06.05.2001, T. 1058.

*G. pulvinata* Hedw.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 1000 m, 05.05.2001, T. 1010, 1017, 1018; Aladağ National Park, Hacer forest, on rock, 800–1200 m, 06.05.2001, T. 1047, 1050, 1052; 19.05.2001, T. 1115, 1116, 1148; Kapuzbaşı village, Kapuzbaşı waterfalls, on rock, 1000 m, 19.05.2001, T. 1150.

*G. trichophylla* Grev.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 800–1200 m, 05.05.2001, T. 1009.

*Schistidium apocarpum* (Hedw.) Bruch & Schimp.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 800–1200 m, 05.05.2001, T. 1007, 1008; Aladağ National Park, Hacer forest, on soil, 1000 m, 19.05.2001, T. 1055, 1105, 1130, 1136.

### **Pottiaceae**

*Barbula convulata* Hedw. var. *commutata* (Jur.) Husn.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on soil, 800–1000 m, 05.05.2001, T. 1006.

*B. convoluta* Hedw. var. *convoluta*

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on *Quercus* sp. tree, 1000–1560 m, 06.05.2001, T. 1076.

*Bryoerythrophyllum recurvirostrum* (Hedw.) P.C. Chen.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 1000 m, 06.05.2001, T. 1064.

\* *Cinclidotus aquaticus* (Hedw.) Bruch & Schimp.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on wet rock, 1000 m, 05.05.2001, T. 1014, 1015.

\* *C. fontinaloides* (Hedw.) P. Beauv.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on wet rock, 1000 m, 05.05.2001, T. 1012, 1013, 1025.

\* *C. riparius* (Brid.) Arn.

Kayseri: Yahyalı county, Kapuzbaşı village, Kapuzbaşı waterfalls, on rock, 1000 m, 19.05.2001, T. 1081, 1082.

\* *Dialytrichia mucronata* (Brid.) Broth.

Kayseri: Kapuzbaşı village, near the Kapuzbaşı waterfalls, on rock, 1200 m, 07.12.2002, T. 2043, 2061.

*Didymodon sinuosus* (Mitt.) Delogne

Kayseri: Derebağ village, on soil, 1250 m, 28.02.2003, T. 2085.

*D. vinealis* (Brid.) R.H. Zander var. *flaccidus* (Bruch & Schimp.) R.H. Zander

Kayseri: Derebağ village, on soil, 1250 m, 28.02.2003, T. 2100.

*Gymnostomum aeruginosum* Sm.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 1000–1560 m, 06.05.2001, T. 1065; 19.05.2001, T. 1121.

*Syntrichia inermis* (Brid.) Bruch

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 800 m, 05.05.2001, T. 1021, 1022; Kapuzbaşı village, Kapuzbaşı waterfalls, on rock, 1000 m, 19.05.2001, T. 1151, 1153; Aladağ National Park, Hacer forest, on soil, 1250 m, 19.05.2001, T. 1090, 1111, 1123, 1129.

\* *S. intermedia* Brid.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 05.05.2001, T. 1003, 1004; Aladağ National Park, Hacer forest, on rock, 19.05.2001, 1000–1560 m, T. 1147; Kapuzbaşı village, Kapuzbaşı waterfalls, on rock, 19.05.2001, 1000–1560 m, T. 1149.

*S. mucronifolia* (Schwägr.) Brid.

Kayseri: Hacer forest, Soğuk Pınar district, on soil, 1700 m, 07.12.2002, T. 2001.

*S. ruralis* (Hedw.) F. Weber & D. Mohr

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 800–1200 m, 05.05.2001, T. 1021; Aladağ National Park, Hacer forest, on rock, 1000 m, 19.05.2001, T. 1058; 19.05.2001, T. 1109, 1116, 1131, 1135, 1136.

*S. subulata* (Hedw.) F. Weber & D. Mohr

var. *subinermis* (Bruch & Schimp.) Wilson.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on soil, 975 m, 28.02.2003, T. 2098.

\* *S. virescens* (De Not.) Ochyra

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 1000 m, 19.05.2001, T. 1102.

\* *Tortella humilis* (Hedw.) Jenn.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on soil, 1000 m, 05.05.2001, T. 1004.

*T. tortuosa* (Hedw.) Limpr.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 1000–1560 m, 06.05.2001, T. 1067, 1070; on soil, 19.05.2001, T. 1083, 1086, 1089, 1094, 1096, 1097, 1101, 1103, 1105, 1119, 1126, 1134.

*Tortula muralis* Hedw.

Kayseri: Yahyalı county, Kapuzbaşı village, Kapuzbaşı waterfalls, on rock, 1000 m, 19.05.2001, T. 1150.

*T. obtusifolia* (Schwägr.) Mathieu

Kayseri: Yarpuz, Kızıltepe, on soil, 1900 m, 07.12.2002, T. 2066; Yukarı dereli village, on soil, 300–350 m, 28.02.2003, T. 2097.

*T. subulata* Hedw. var. *subulata*

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 800–1000 m, 19.05.2001, T. 1062, 1067, 1069, 1075; 19.05.2001, T. 1093, 1094, 1097, 1100, 1117, 1121, 1127, 1133.

*Trichostomum brachydontium* Bruch var. *brachydontium*

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on tree, 1000–1560 m, 19.05.2001, T. 1137, 1138, 1139.

*Weisia condensa* (Voit.) Lindb.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 1000–1560 m 06.05.2001, T. 1071.

\* *W. controversa* Hedw. var. *controversa*

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on *Quercus* sp. tree, 1000–1560 m, 06.05.2001, T. 1075.

### **Rhabdoweisiaceae**

*Dicranoweisia crispula* (Hedw.) Milde

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 06.05.2001, 800–1200 m, T. 1071; 19.05.2001, on soil, 800–1200 m, T. 1098.

### **Bryidae**

#### **Amblystegiaceae**

*Amblystegium serpens* (Hedw.) Schimp.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 800–1200 m, 06.05.2001, T. 1061; 19.05.2001, T. 1124, 1125; Kapuzbaşı village, at the roadside of Kapuzbaşı waterfalls, on rock, 1000 m, 05.05.2001, T. 1046, 1047.

*Cratoneuron filicinum* (Hedw.) Spruce var. *filicinum*

Kayseri: Yahyalı county, Kapuzbaşı village, at the roadside of Kapuzbaşı waterfalls, on rock, 1000 m, 19.05.2001, T. 1081.

*Drepanocladus revolvens* (Sw.) Warnst.

Kayseri: Hacer forest, Yağdıze, on rock, 1600 m, 28.02.2003, T. 2070.

\* *Hygrohypnum luridum* (Hedw.) Jenn.

Kayseri: Yahyalı county, Kapuzbaşı village, near Kapuzbaşı waterfalls, on wet rock, 1000 m, 19.05.2001, T. 1038.

\* *Leptodictyum riparium* (Hedw.) Warnst.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 800–1200 m, 05.05.2001, T. 1009, 1023.

\* *Palustriella commutata* (Hedw.) Ochyra

var. *commutata*

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 1000 m, 05.05.2001, T. 1026; Kapuzbaşı village, in the vicinities of Kapuzbaşı waterfalls, on rock, 1000 m, 05.05.2001, T. 1029, 1030, 1033; Derebağ village, in the vicinities of Derebağ waterfalls, on rock, 1400 m, 19.05.2001, T. 1077, 1080.

\* *Sanionia uncinata* (Hedw.) Loeske

Kayseri: Yahyalı county, Kapuzbaşı village, near Kapuzbaşı waterfalls, on rock, 1000 m, 19.05.2001, T. 1031, 1037.

### **Bartramiaceae**

\* *Bartramia pomiformis* Hedw.

Kayseri: Yahyalı county, Aladağ National Park, Hacer forest, on rock, 950 m, 28.02.2003, T. 2089.

### **Brachytheciaceae**

*Brachytheciastrum velutinum* (Hedw.) Ignatov & Hutton

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on humus-rich soil, 800–1200 m, 06.05.2001, T. 1085, 1088, 1099, 1103, 1107, 1109, 1120, 1123.

*B. velutinum* var. *salicinum* (Schimp.) Ochyra & Zarnowic

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 800–1200 m, 19.05.2001, T. 1095, 1102.

\* *Brachythecium albicans* (Hedw.) Schimp.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on rock, 800–1200 m, 06.05.2001, T. 1045.

*B. campestre* (Müll. Hal.) Schimp.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 1000 m, 08.02.2003, T. 2069.

*B. rivulare* Schimp.

Kayseri: Yahyalı county, Kapuzbaşı village, near Kapuzbaşı waterfalls, on wet rock, 1000 m, 19.05.2001, T. 1024, 1028.

*B. rutabulum* (Hedw.) Schimp. var. *rutabulum*

Kayseri: Yahyalı county, Kapuzbaşı village, in the vicinities of Kapuzbaşı waterfalls, on wet rock, 1000 m, 05.05.2001, T. 1036; at the roadside of Kapuzbaşı waterfalls, on wet soil, 1000 m, T. 1046; Aladağ National Park, Hacer forest, on tree, 1560 m, 06.05.2001, T. 1042.

*Eurhynchium praelongum* (Hedw.) Schimp.

Kayseri: Hacer forest, Katran Korusu district, on tree, 1700 m, 28.02.2003, T. 2071.

*E. pulchellum* (Hedw.) Jenn.

Kayseri: Hacer forest, Katran Korusu district, on rock, 1700 m, 28.02.2003, T. 2074.

*Homalothecium sericeum* (Hedw.) Schimp.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 1000 m, 05.05.2001, T. 1016, 1019; Kapuzbaşı village, in the vicinities of Kapuzbaşı waterfalls, on rock, 1000 m, 05.05.2001, T. 1035; Aladağ National Park, Hacer forest, on tree, 800–1200 m, 06.05.2001, T. 1042, 1044; Derebağ village, in the vicinities of Derebağ waterfalls, on tree, 1400 m, 19.05.2001, T. 1077, 1078; Aladağ National Park, Hacer forest, on tree base, 800 m, 19.05.2001, T. 1083, 1091, 1104, 1110.

\* *Oxyrrhynchium schleicheri* (R. Hedw.) Röhl

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 1000 m, 06.05.2001, T. 1074.

*Platyhypnidium riparioides* (Hedw.) Dixon

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 1000 m, 05.05.2001, T. 1015, 1025; Kapuzbaşı village, in the vicinities of Kapuzbaşı waterfalls, on rock, 1000 m, 05.05.2001, T. 1030.

\* *Rhynchostegiella tenella* (Dicks.) Limpr.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on rock, 1200 m, 19.05.2001, T. 1132.

\* *Rhynchostegium murale* (Hedw.) Schimp.

Kayseri: Yahyalı county, Kapuzbaşı village, in the vicinities of Kapuzbaşı waterfalls, 05.05.2001, T. 1039.

*Scorpiurium circinatum* (Brid.) M. Fleisch. & Loeske

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 1000 m, 05.05.2001, T. 1000.

### **Bryaceae**

*Bryum pseudotriquetrum* (Hedw.) P. Gaertn., E. Mey. & Scherb.

Kayseri: Hacer forest, Yedi Göller and in the vicinities, on soil, 1550 m, 28.02.2003, T. 2097.

### **Hedwigiaceae**

\* *Hedwigia ciliata* (Hedw.) P. Beauv.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on *Quercus* sp., 800–1200 m, 06.05.2001, T. 1054, 1059.

### **Hypnaceae**

*Hypnum cupressiforme* Hedw. var. *cupressiforme*

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on tree base (*Pinus brutia*) 06.05.2001, T. 1047, 1051, 1053, 1068; 19.05.2001, T. 1096.

*H. cupressiforme* var. *lacunosum* Brid.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on tree trunk, 1000 m, 06.05.2001, T. 1059, 1063.

*H. vaucheri* Lesq.

Kayseri: Yahyalı; Hacer forest, Aladağ National Park, on rock, 1200–1300 m, 28.02.2003, T. 1067.

### **Leucodontaceae**

*Leucodon sciuroides* (Hedw.) Schwägr.

Kayseri: Yahyalı county, Kapuzbaşı village, in the vicinities of Kapuzbaşı waterfalls, on soil, 1000 m, 05.05.2001, T. 1034.

*L. sciuroides* var. *morensis* (Limpr.) De Not.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 1000 m, 05.05.2001, T. 1001.

*Pterogonium gracile* (Hedw.) Sm.

Kayseri: Derebağ village, in the vicinities of Derebağ waterfalls, on tree, 1400 m, 19.05.2001, T. 1077.

### **Mniaceae**

\* *Mnium spinulosum* Bruch & Schimp.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 1000–1560 m, 19.05.2001, T. 1142, 1143.

*Plagiomnium affine* (Blandow) T.J. Kop.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 1000–1560 m, 06.05.2001, T. 1045.

\* *P. confertidens* (Lindb. & Arnell) T.J. Kop.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 800 m, 19.05.2001, T. 1141, 1144.

\* *P. ellipticum* (Brid.) T.J. Kop.

Kayseri: Yahyalı county, Kapuzbaşı village, Kapuzbaşı waterfalls, on soil, 1000 m, 05.05.2001, T. 1046.

\* *P. medium* (Bruch & Schimp.) T.J. Kop.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on soil, 1560 m, 19.05.2001, T. 1140.

\* *P. undulatum* (Hedw.) T.J. Kop.

Kayseri: Yahyalı county, Kapuzbaşı village, Kapuzbaşı waterfalls, on soil, 1000 m, 20.05.2001, T. 1154, 1155.

*Trachycystis ussuriensis* (Maack & Regel) T.J. Kop.

Kayseri, Yahyalı; Hacer Forest, Aladağ National Park, 1700 m, on forest ground, 19.05.2001, T. 1156. This species was given as a new record for Turkey (Yayıntaş 2009).

### Neckeraceae

*Thamnobryum alopecurum* (Hedw.) Nieuwl. ex

Gangulee

Kayseri : Derebağ village, in the vicinities of Derebağ waterfalls, on tree, 1400 m, T. 2092.

### Orthotrichaceae

*Orthotrichum anomalum* Hedw.

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on soil, 1000 m, 05.05.2001, T. 1002, 1017, 1018; Aladağ National Park, Hacer forest, on *Quercus* sp. tree, 1200 m, 19.05.2001, T. 1115.

*O. cupulatum* Brid. var. *cupulatum*

Kayseri: Yahyalı county, Yeşilköy village, near Yeşilköy waterfalls, on rock, 1000 m, 05.05.2001, T. 1011; Kapuzbaşı village, near the Kapuzbaşı waterfalls, on rock, 1200 m, 05.05.2001, T. 1040; Aladağ National Park, Hacer forest, on soil, 1200 m, 06.05.2001, T. 1043, 1045, 1050, 1051, 1054, 1056; 19.05.2001, T. 1084, 1087, 1089.

\* *O. diaphanum* Brid.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on tree, 1000 m, 06.05.2001, T. 1048.

\* *O. pallens* Bruch ex Brid.

Kayseri: Yahyalı, Hacer forest, Katran Korusu district, on tree, 1700 m, 07.12.2002, T. 2052.

*O. rupestre* Schleich. ex Schwägr. var. *rupestre*

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on tree, 1200 m, 06.05.2001, T. 1043.

\* *O. speciosum* Nees

Kayseri: Yahyalı, Hacer forest, Bozarmut district, on soil, 1750 m, 07.12.2002, T. 2077.

\* *O. striatum* Hedw.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on rock, 1560 m, 06.05.2001, T. 1135.

### Plagiotheciaceae

*Plagiothecium cavifolium* (Brid.) Z. Iwats.

Kayseri: Yahyalı county; Aladağ National Park, Hacer forest, on rock, 1000 m, 06.05.2001, T. 1049.

## Discussion

This study deals with a total 83 taxa belonging to Bryopsida and classified into 44 genera and 16 families. Our research area consisted of Yahyalı – Hacer forest for the families with the highest number of taxa, such as *Pottiaceae* (24 taxa) (28.9%), *Brachytheciaceae* (14 taxa) (16.9%), *Grimmiaceae* and *Amblystegiaceae* (7 taxa each) (8.4%), *Mniaceae* and *Orthotrichaceae* (6 taxa each) (7.2%), as well as for other families (19 taxa) (Table 1). The highest number of taxa was reported for *Syntrichia* and *Orthotrichum* (7 taxa each), *Plagiomnium* and *Grimmia* (5 taxa each), *Brachythecium* (4 taxa), *Tortula*, *Cinclidotus*, *Encalypta* and *Hypnum* (with 3 taxa). The remaining seven genera are represented by one species each, with 16 taxa. *Fissidens adianthoides*, *Dicranum scoparium*, *Dicranella heteromalla*, *Gymnostomum aeruginosum*, *Weissia condensa*, *W. controversa* var. *controversa*, *Tortella humilis*, *Cinclidotus aquaticus*, *Dialytrichia mucronata*, *Grimmia lisae*, *G. longirostris*, *Plagiomnium affine*, *P. medium*, *Bartramia pomiformis*, *Orthotrichum pallens*, *Hedwigia ciliata*, *Amblystegium serpens*, *Plagiothecium cavifolium*, *Hypnum cupressiforme* var. *cupressiforme* are new record for B8 square.

Table 1. The distribution of the taxa according to the families.

Families	Number of species	%
<i>Pottiaceae</i>	24	28.9
<i>Brachytheciaceae</i>	14	16.9
<i>Grimmiaceae</i>	7	8.4
<i>Amblystegiaceae</i>	7	8.4
<i>Orthotrichaceae</i>	6	7.2
<i>Plagiomniaceae</i>	5	6.0
<i>Dicranaceae</i>	3	3.6
<i>Encalyptaceae</i>	3	3.6
<i>Leucodontaceae</i>	3	3.6
<i>Hypnaceae</i>	3	3.6
<i>Fissidentaceae</i>	1	1.2
<i>Funariaceae</i>	1	1.2
<i>Bryaceae</i>	1	1.2
<i>Bartramiaceae</i>	1	1.2
<i>Hedwigiaceae</i>	1	1.2
<i>Plagiotheciaceae</i>	1	1.2
<i>Mniaceae</i>	1	1.2
<i>Neckeraceae</i>	1	1.2
Total	83	100

Table 2. Comparison of the diversity of the largest families in the study area and other areas.

Largest families	Kayseri Yahyalı Hacer Forest (Yayıntaş 2009)	Eskişehir and environs (Yücel & Magil 1997)	Çankırı Environs (Abay 2005)	Kayseri İhlara Valley (Yayıntaş & Erdağ 1995)
<i>Pottiaceae</i>	24	5	14	6
<i>Brachytheciaceae</i>	14	3	11	7
<i>Grimmiaceae</i>	7	2	5	5
<i>Amblystegiaceae</i>	7	3	4	1
<i>Orthotrichaceae</i>	6	1	2	2

In the course of our study 28 taxa were found growing on soil, which accounts for 33.7% of all samples. Twenty-five taxa were found on rock (30.1%); nine taxa were found both on rock and soil (11.2%); ten taxa were found on wet rock (12%); seven taxa were found on trees (8.4%), and one species was found on wet soil.

The results of a comparison with the studies of Central Anatolia region are given in Table 2. They show a very high number of taxa of the *Pottiaceae* family, because this family contains many species tolerant to long droughts, such as *Syntrichia* and *Tortula*. The taxonomic diversity of the major pleurocarpous family of *Brachytheciaceae* is almost similar to the values of the Çankırı (Eldivan) Mountains (Abay 2005).

Dry periods occur between late May and early October, so it is not surprising that *Pottiaceae* and *Brachytheciaceae* manifest immense species richness in this area. Considering the fact that 66.3% of the acrocarpous and 33.7% of the pleurocarpous mosses were found in the study area, it could be defined transitional between the Central Anatolia and the Mediterranean region. In spite of the intensive grazing, no decrease of the species richness should be expected in the Aladag Mountain, owing to the measures undertaken for the protection of some key sectors.

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