Arctoa (2017) **26**: *58–67*
doi: 10.15298/arctoa.26.05

THE BRYOPHYTE CHECKLIST OF TRABZON PROVINCE OF TURKEY

СПИСОК МХОВ ПРОВИНЦИИ ТРАБЗОН, ТУРЦИЯ

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Abstract

A checklist of the bryophyte species recorded in Trabzon Province located in the northeast of Turkey has been compiled basing on data appeared during the past 110 years. Altogether 373 taxa have been recorded including 323 mosses, 49 liverworts and 1 hornwort. The largest number of species have *Orthotrichum* (12), *Sphagnum* (12), *Grimmia* (12), *Ptychostomum* (11), *Brachythecium* (9), *Dicranum* (8), *Hypnum* (8), *Racomitrium* (8), *Didymodon* (7), *Plagiomnium* (7), *Plagiothecium* (7), *Tortella* (7), *Fissidens* (6) *Schistidium* (6), *Polytrichum* (6), *Lewinskya* (5), *Sciuro-hypnum* (5), *Mnium* (5), *Philonotis* (5) and *Tortula* (5) in mosses; *Porella* (5), *Bazzania* (3), *Calypogeia* (3), *Lophocolea* (3) and *Scapania* (3) are the richest in species number in liverworts, and *Anthoceros* is the only genus of hornworts represented in the checklist. The checklist is alphabetically ordered by scientific names. A bibliography of supporting references is included.

Резюме

Список видов мохообразных провинции Трабзон, расположенной на северо-востоке Турции, составлен в результате обобщения накопленных на последние 100 лет данных. Он включает 373 видов, из них 323 мхов, 49 печеночников и один антоцерот. Самые крупные по числу видов роды мхов – это *Orthotrichum* (12 видов), *Sphagnum* (12), *Grimmia* (12), *Ptychostomum* (11), *Brachythecium* (9), *Dicranum* (8), *Hypnum* (8), *Racomitrium* (8), *Didymodon* (7), *Plagiomnium* (7), *Plagiothecium* (7), *Tortella* (7), *Fissidens* (6) *Schistidium* (6), *Polytrichum* (6), *Lewinskya* (5), *Sciuro-hypnum* (5), *Mnium* (5), *Philonotis* (5) и *Tortula*; самые крупные роды печеночников – *Porella* (5), *Bazzania* (3), *Calypogeia* (3), *Lophocolea* (3) *Scapania* (3); антоцеротовые представлены единственным родом *Anthoceros* с одним видом. Названия видов приводятся в алфавитном порядке. Дана полная библиография работ, на которых основан данный чеклист.

KEYWORDS: checklist, Bryophytes, Trabzon, Turkey

INTRODUCTION

Turkey has three main floristic regions: Euro-Siberian, Mediterranean and Irano-Turanian. Diverse conditions in these regions provide a multitude of habitats which support a rich bryophyte flora. The province Trabzon is situated within the colchis section of the Euro-Siberian floristic region which has an Eastern Black sea oceanic rainfall regime with no dry season.

Trabzon Province is situated between 40°33'and 41° 07' N latitudes and 39°07'and 40°30' E longitudes in the Eastern Black Sea Region. It occupies 6% of the territory of Turkey with an area of 4685 km^2 (22% are agricultural land, 26% are pasture land, 43% are forest land and 9% are non-agricultural lands). Trabzon is a very mountainous region like other Eastern Black Sea regions. 30% of the land is mountainous. 60% of the province consists of areas with a 25–30% slope towards the south and only 10% of the area consists of flat areas.

Generaly, Eastern Black Sea Region, especially Trabzon Province, is very rich in terms of water resources. There are many rivers in the province of Trabzon. The precipitation seen in all seasons nourishes these rivers. The main streams of the province of Trabzon are Değirmendere, Karadere, Solaklı Stream and Baltaci Stream. The total average flows of these streams and other small rivers forming the supernatant water are 3486 hm^3/ year. The main lakes of Trabzon Province are Uzungöl, Sera and Çakırgöl lakes. The total surface of these lakes, along with other small lakes, is 63 ha. In the province of Trabzon, the coasts are under the influence of the Black Sea climate, where the winters are mild, the summers are cool, and all the seasons are rainy. The temperature decreases as the elevation increases, the climate becomes harder and the precipitation increases. Trabzon has the highest average temperatures in July and August, the lowest in January and February. The average temperature measured during the year is 14.6 °C, the highest tem-

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perature is 38.2 °C, and the lowest temperature is 7.4 °C. The predominant wind direction in Trabzon throughout the year is southward and varies according to the month. The maximum rainfall in Trabzon is 119.3 mm in October. The month with the highest number of snowy days was determined as February. The maximum rainfall in Maçka falls to 89.1 mm in May (Akman, 1999; Günal, 2013).

Due to favorable climatic conditions, a rich forest and forest plant communities are developed in Trabzon. The forest limit rises to 2300 m. Up to 400 m forests of broad-leaved tree species occur: *Alnus glutinosa, Quercus petraea, Q. pontica, Castanea sativa, Fagus orientalis, Acer cappadocicum, Tilia rubra* subsp.*causacica, Fraxinus ornus, F. angustifolia, Ulmus sp., Corylus avellana, Salix sp., Populus tremula*; undergrowth plant species include *Rhododendron ponticum, R. luteum, Ilex aquifolium, I. colchia, Vaccinium arctostaphylos, Laurocerasus officinalis, Daphne pontica, Polypodiun vulgare, Buxus sempervirens, Vaccinium arctostaphylos, V. myrtillus, Rubus fruticosus, Cornus sanguinea, C. mas, Hederea helix,* and *H. colchica*. Depending on the increase in the elevation, the number of species decreases and forest density increases. The area of forests around the coastal areas and residential areas has narrowed, the natural balance has been degraded. Broad-leaved tree species grow mixed with coniferous trees up to 1500 m. Forests consisting of coniferous trees such as *Abies nordmanniana, Picea orientalis, Pinus sylvestris,* and *P. nigra* are common between 1500 and 2000 m. Increasing hazelnut farming in the last 20 years caused the forest areas to shrink. Over 2000 m of sparse trees, at 2300 m meadows take place (Günal, 2013).

The province of Trabzon has a very steep and mountainous structure. 78% of the provincial lands are from the mountains and 22% are from plains. The plains consist of the small plains on the coast, the small Degirmendere and Karadere valleys in the valleys. Some of the Eastern Black Sea Mountains are located in the province of Trabzon. The mountains extend to the south of the province and are parallel to the shore. These mountains represent three blocks. The mountains in the west of Değirmendere Valley are called Zigana Mountains, the mountains between Değirmendere and Solaklı Stream are called Trabzon Mountains and the mountains to the east of Solaklı Stream are called Soganlı Mountains. The Zigana Mountains are shattered by deep valleys extending to the shore and the Zigana Pass, the most important passage of the Eastern Black Sea Mountains, is here. The road connection between Trabzon and Eastern Anatolia is provided by this gate. The height of the passage is 2036 m and the highest point of the Zigana Mountains is 2356 m. The main mountains of the Trabzon – Kırklar Mt. (3450 m), Kemer Mt. (2856 m) and Karakaya Mt. (3193 m) – are located in this area. The highest point of the Soğanlı Mountains is Çakırgöl Mountain (3063 m). The foothills of the mountains consist of plateaus and springs. Their height is between 1750–2250 m. Main of them are the Mescit Plateau, Sultan Murad Plateau, Aşot and Reşadiye Plateau, Fikonov Plateau, Beypınarı Plateau, Maçka Plateau, Sakaltutan Plateau and Derinoba Plateau (Günal, 2013; Çiftçit, 2015).

The first contribution to the Turkish bryophyte flora was made by F.A. Müller in (1829). Later in the late 19th century Tchihatcheff (1860) Juratzka and Milde (1870), Wettstein (1889), Barbey (1890) and Schiffner (1896, 1897) continued briological studies if Turkey. In the first half of the 20th century we see that made by Fritsch (1900), Schiffner (1903, 1908), Penther and Zederbauer (1905), Bornmüller (1908, 1909) and Czeczott (1939). During World War II, the work on this subject has been interrupted. In the second half of the 20th century, Henderson and Muirhead (1955) gave brophyte records from various parts of Turkey; it was followed by publications of Henderson (1957, 1958, 1961a, b, 1964), Jovet-Ast (1957), and Walther (1967, 1970). These studies were compiled by Henderson & Prentice (1969), using the Turkish square system; they provided the last briyofloristic list according to square distributions. In 1986, a list of recent liverworts and mosses (143 taxa) was compiled by Gökler (1986) and Çetin (1988a, b). After that, the studies that have been increasing rapidly continued. Uyar and Çetin have published the current checklist of mosses of Turkey (Uyar & Çetin 2004). Then, Kürschner & Erdağ (2005) published an explanatory reference list for the Turkish bryophytes, along with synonyms of the species according to the latest literature (Kürschner & Erdağ, 2005). Finally, a checklist showing the distributions of liverworts and hornworts of Turkey (Özenoğlu Kiremit & Keçeli, 2009) and a list of mosses representing north of Turkey (Ursavaş *et al*., 2009; Ursavaş & Abay 2009a, b; Abay *et al*., 2009; Özdemir, 2009; Şahin *et al*., 2009b) were published. After that studies were continued by Kürschner and Frey (2011) and Ros *et al*. (2013). There are also some local checklists of on Turkish bryophytes (Abay *et al*., 2009, 2010; Şahin *et al*., 2009 a, b; Ursavaş & Abay, 2009; Özdemir, 2009; Ursavaş *et al*., 2010; Keçeli *et al*., 2011).

In total, there are 4 taxa from Anthocerotophyta, 186 taxa from Marchantiophytla and 786 taxa from Bryophyta in the last checklists (Özenoğlu Kiremit & Keçeli, 2009; Uyar & Çetin, 2004; Erdağ & Kürschner, 2005; Hazer, 2010) of Turkish bryophytes.

The first records of bryophytes from Trabzon Province seems to be made by Handel-Mazzetti (1909). After that date, there has been no significant work on bryophytes of Trabzon for a long time. The main works began in the 1990s and have come up to date. These are the important studies carried out in Trabzon until this day (Gökler, 1998; Papp, 2004; Townsend, 2005; Lara *et al*., 2010; Batan & Özdemir, 2011; Kirmaci *et. al*., 2012; Batan *et al*., 2013; Kırmacı & Kürschner, 2013; Batan & Özdemir, 2013 and Abay *et al.* 2016).

The aim of this work is to update the catalogue of bryophytes for the province of Trabzon. This checklist will contribute to a better understanding of the ecology, distribution and conservation status of the bryophytes of this province.

MATERIALS AND MATHOD

This checklist was created by bringing together taxonomic studies (Handel-Mazzetti, 1907; Özdemir, 1994; Baytar & Özdemir, 1996; Gökler, 1998; Özdemir & Çetin, 1999; Papp, 2004; Townsend, 2005; Lara *et al*., 2010; Batan & Özdemir, 2011; Kirmaci *et al*., 2012; Batan *et al*., 2013; Kırmacı & Kürschner, 2013; Batan & Özdemir, 2013) on bryophytes in Trabzon Province between 1907 and 2017. The valid names and synonyms of the taxa were based on Ros *et al*. (2007, 2013) and Lara *et al*., (2016). In addition, it was been benefited from publications such as Uyar & Çetin (2004), Kürschner & Erdağ (2005), and Özenoğlu Kiremit & Keçeli (2009). Nomenclature of species and lower taxa bases on the lists of European bryophytes (Hodgetts, 2015) for the valid names and synonyms of some taxa. On the other hand, 50 taxa (5 liverworts and 45 mosses) were added as new records for this list as a result of the field works that conducted by the authors on the Kanuni Campus Area of Karadeniz Technical University (KTU) and its vicinity in 2016. The specimens were deposited in the Herbarium of Karadeniz Technical University, Faculty of Science, Department of Biology, Trabzon.

SPECIES LIST

ANTHOCEROTOPHYTA (HORNWORTS)

Anthoceros punctatus L.

MARCHANTIOPHYTA (LIVERWORTS)

Apometzgeria pubescens (Schrank) Kuwah.
Bazzania flaccida (Dumort.) Grolle [1]
B. tricrenata (Wahlenb.) Lindb.
B. trilobata (L.) Gray
Blepharostoma trichophyllum (L.) Dumort.
Calypogeia arguta Nees & Mont.
C. azurea Stotler & Crotz
C. fissa (L.) Raddi. [2]
Chiloscyphus pallescens (Ehrh. *ex* Hoffm.)Dumort.
C. polyanthos (L.) Corda
Conocephalum conicum (L.) Dumort.
Diplophyllum albicans (L.) Dumort.
D. taxifolium (Wahlenb.) Dumort. [3]
Fossombronia pusilla (L.) Nees
Frullania dilatata (L.) Dumort.
F. tamarisci (L.) Dumort.
Jubula hutchinsiae (Hook.) Dumort. subsp. *caucasica* Konstant. & Vilnet [4]
Jungermannia atrovirens Dumort. [5]
J. laevigata Schrad.
Leiocolea bantriensis (Hook.) Joerg. [6]
Lejeunea cavifolia (Ehrh.) Lindb.
L. lamacerina (Steph.) Schiffn.
Leptoscyphus cuneifolius (Hook.) Mitt. [7]
Lophocolea bidentata (L.) Dumort. [8]
L. heterophylla (Schrad.) Dumort.
L. minor Nees
Lunularia cruciata (L.) Lindb.
Marchantia paleacea Bertol.
M. polymorpha subsp. *ruderalis* Bischl. & Boisselier
Metzgeria conjugata Lindb.
M. furcata (L.) Dumort.
Nardia scalaris Gray
Pellia endiviifolia (Dicks.) Dumort.
P. epiphylla (L.) Corda
Plagiochila asplenioides (L. emend. Taylor) Dumort.
P. porelloides (Torrey *ex* Nees) Lindenb.
Porella arboris-vitae (With.) Grolle
P. cordaeana (Huebener) Moore
P. obtusata (Taylor) Trevis.
P. pinnata L. [9]
P. platyphylla (L.) Pfeiff.
Radula complanata (L.) Dumort.
R. lindenbergiana Gottsche *ex* C. Hartm.
Reboulia hemisphaerica (L.) Raddi
Riccardia chamedryfolia (With.) Grolle
Scapania aequiloba (Schwägr.) Dumort.
S. nemorea (L.) Grolle
S. undulata (L.) Dumort.
Trichocolea tomentella (Ehrh.) Dumort.

BRYOPHYTA (MOSSES)

Abietinella abietina var. *abietina* (Hedw.) M. Fleisch
A. abietina var. *hystricosa* (Mitt.) Sakurai
Alleniella besseri (Lobarz.) S. Olsson, Enroth & D. Quandt
A. complanata (Hedw.) S. Olsson, Enroth & D. Quandt
Amblystegium serpens (Hedw.) Schimp.
Amphidium mougeotii (Schimp.) Schimp.
Anomodon attenuatus (Hedw.) Huebener
A. rugelii (Müll. Hal.) Keissl.
A. viticulosus (Hedw.) Hook. & Taylor
Antitrichia curtipendula (Timm *ex* Hedw.) Brid.
A. californica Sull. [10]
Atrichum angustatum (Brid.) Bruch & Schimp.
A. undulatum (Hedw.) P. Beauv.
Aulacomnium palustre (Hedw.) Schwägr.
Barbula convoluta Hedw.
B. unguiculata Hedw.
Bartramia halleriana Hedw.
B. ithyphylla Brid.
B. pomiformis Hedw.
B. stricta Brid.
Brachytheciastrum velutinum (Hedw.) Ignatov & Huttunen
B. velutinum var. *salicinum* (Schimp.) Ochyra & Zarnowiec
Brachythecium albicans (Hedw.) Schimp.
B. campestre (Müll. Hal.) Schimp. [11]
B. geheebii Milde [12]
B. glareosum (Bruch *ex* Spruce) Schimp.
B. laetum (Brid.) Schimp. [13]
B. mildeanum (Schimp.) Schimp. *ex* Milde
B. rivulare Schimp.
B. rutabulum (Hedw.) Schimp.
B. salebrosum (Hoffm. *ex* F. Weber & D. Mohr) Schimp.
Bryoerythrophyllum recurvirostre (Hedw.) P.C. Chen
B. rubrum (Jur.) P.C. Chen [14]
Bryum argenteum Hedw.
B. dichotomum Hedw. [15]
B. rubens Mitt. [16]
B. schleicheri DC.
Calliergonella cuspidata (Hedw.) Loeske

Campyliadelphus chrysophyllus (Brid.) R.S. Chopra
Campylophyllum calcareum (Crundw. & Nyholm) Hedenäs
Campylopus atrovirens De Not.
C. fragilis (Brid.) Bruch & Schimp.
Ceratodon purpureus (Hedw.) Brid.
Cirriphyllum crassinervium (Taylor) Loeske & M. Fleisch.
C. piliferum (Hedw.) Grout
Climacium dendroides (Hedw.) F. Weber & D. Mohr
Coscinodon cribosus (Hedw.) Spruce
Cratoneuron filicinum (Hedw.) Spruce
Ctenidium molluscum (Hedw.) Mitt.
Cynodontium polycarpon (Hedw.) Schimp.
Dendrocryphaea lamyana (Mont.) P. Rao. [17]
Dichodontium pellucidum (Hedw.) Schimp.
Dicranella heteromalla (Hedw.) Schimp.
D. rufescens (With.) Schimp. [18]
D. varia (Hedw.) Schimp. [19]
Dicranodontium denudatum (Brid.) E. Britton
D. uncinatum (Harv.) A. Jaeger [20]
Dicranoweisia cirrata (Hedw.) Lindb. [21]
Dicranum bonjeanii De Not.
D. fulvum Hook.
D. fuscescens Sm.
D. majus Turner
D. scoparium Hedw.
D. starkei var. *subdenticulatum* (Limpr.) J.J. Amann
D. tauricum Sapjegin
D. viride (Sull. & Lesq.) Lindb.
Didymodon acutus (Brid.) K. Saito
D. ferrugineus (Schimp. *ex* Besch.) M.O. Hill
D. insulanus (De Not.) M.O. Hill
D. luridus Hornsch.
D. rigidulus Hedw. [22]
D. tophaceus (Brid.) Lisa
D. vinealis (Brid.) R.H. Zander [23]
Distichium capillaceum(Hedw.) Bruch & Schimp.
Ditrichum gracile (Mitt.) Kunze
D. heteromallum (Hedw.) Britt.
Drepanocladus aduncus (Hedw.) Warnst.
Encalypta streptocarpa Hedw.
E. vulgaris Hedw.
Entodon concinnus (De Not.) Paris [24]
E. schleicheri (Schimp.) Demet. [25]
Entosthodon attenuatus (Dicks.) Bryhn
Epipterygium tozeri (Grev.) Lindb. [26]
Eucladium verticillatum (With.) Bruch & Schimp.
Eurhynchiastrum pulchellum (Hedw.) Ignatov & Huttunen
E. pulchellum var. *diversifolium* (Schimp.) Ochyra & Zarnowiec
E. angustirete (Broth.) T.J. Kop.
E. crassinervium (Taylor) Loeske & M. Fleisch. [27]
E. striatum (Hedw.) Schimp.
Exsertotheca crispa (Hedw.) S. Olsson, Enroth & D. Quandt
Fissidens adianthoides Hedw.
F. bryoides Hedw.
F. dubius P. Beauv.
F. pusillus (Wilson) Milde
F. taxifolius Hedw.
F. viridulus complex
Funaria hygrometrica Hedw.
Grimmia alpestris (F. Weber & D. Mohr) Schleich
G. anodon Bruch & Schimp. [28]
G. dissimulata E. Maier [29]
G. donniana Sm. [30]
G. elatior Bruch *ex* Bals.-Criv. & De Not.
G. elongata Kaulf. [31]
G. hartmannii Schimp.
G. orbicularis Bruch *ex* Wilson
G. ovalis (Hedw.) Lindb. [32]
G. pulvinata (Hedw.) Sm.
G. tergestina Tomm. *ex* Bruch & Schimp. [33]
G. trichophylla Grev.
Gymnostomum aeruginosum Sm.
G. calcareum Nees & Hornsch. [34]
Gyroweisia tenuis (Schrad. *ex* Hedw.) Schimp.
Habrodon perpusillus (De Not.) Lindb.
Hedwigia ciliata (Hedw.) P. Beauv.
Heterocladium dimorphum (Brid.) Schimp.
Homalia trichomanoides (Hedw.) Schimp.
Homalothecium lutescens (Hedw.) H. Rob.
H. philippeanum (Spruce) Schimp.
H. sericeum (Hedw.) Schimp.
Hookeria acutifolia Hook. & Grev. [35]
H. lucens (Hedw.) Sm.
Hygroamblystegium humile (P.Beauv.) Vanderp., Goffinet & Hedenäs [36]
H. tenax (Hedw.) Jenn.
H. varium (Hedw.) Mönk.
H. varium var. *humile* (P. Beauv.) Vanderp. & Hedenäs
Hygrohypnum luridum (Hedw.) Jenn.
Hylocomium brevirostre (Brid.) B.S.G.
H. flagellare (Schimp.) Kindb.
H. splendens (Hedw.) Schimp.
Hymenostylium recurvirostrum (Hedw.) Dixon
Hypnum andoi A.J.E. Sm.
H. callichroum Brid.
H. cupressiforme var. c*upressiforme* Hedw.
H. cupressiforme var. *lacunosum* Brid.
H. cupressiforme var. *resupinatum* (Taylor) Schimp.
H. jutlandicum Holmen & E.Warncke [37]
H. revolutum (Mitt.) Lindb. [38]
H. vaucheri Lesq.
Imbribryum alpinum (Huds. *ex* With.) N. Pedersen
I. mildeanum (Jur.) J.R. Spence
Isopterygiopsis pulchella (Hedw.) Z. Iwats.
Isothecium alopecuroides (Dubois) Isov.
I. myosuroides Brid.
Kindbergia praelonga (Hedw.) Ochyra
Leptodictyum riparium (Hedw.) Warnst.
Leucobryum glaucum (Hedw.) Ångstr.
L. juniperoideum (Brid.) Müll. Hal.
Leucodon immersus Lindb.
L. sciuroides (Hedw.) Schwägr.
Lewinskya affinis (Schrad. *ex* Brid.) F.Lara, Garilleti & Goffinet
L. rupestris (Schleich. *ex* Schwägr.) F.Lara, Garilleti & Goffinet
L. sordida (Sull. & Lesq. *in* Austin) F.Lara, Garilleti & Goffinet [39]
L. speciosa (Nees) F.Lara, Garilleti & Goffinet
L. vladikavkana (Venturi *in* Husnot) F.Lara, Garilleti & Goffinet [40]
Mnium hornum Hedw.
M. marginatum (Dicks. *ex* With.) P. Beauv.
M. spinosum (Voit) Schwägr.
M. spinulosum Bruch & Schimp.
M. stellare Hedw. [31]

Nogopterium gracile (Hedw.) Crosby & W.R. Buck
Nyholmiella obtusifolia (Brid.) Holmen & Warncke
Oncophorus virens (Hedw.) Brid.
Orthothecium intricatum (Hartm.) Schimp.
O. anomalum Hedw.
O. callistomum Fisch.-Oost. *ex* Bruch & Schimp. [42]
O. consobrinum Cardot [43]
O. denticulatum Lewinsky
O. diaphanum Brid.
O. hispanicum F. Lara, Garilleti & Mazimpaka [44]
O. microcarpum De Not.
O. pallens Bruch *ex* Brid.
O. scanicum Grönvall
O. schimperi Hammar
O. stellatum Brid. [45]
Oxyrrhynchium hians (Hedw.) Loeske
O. pumilum (Wilson) Loeske [46]
O. scleicheri (R.Hedw.) Röll. [47]
O. speciosum (Brid.) Warnst.
Oxystegus tenuirostris (Hook. & Taylor) Lindb.
Palamocladium euchloron (Bruch *ex* Müll. Hal.) Wijk & Margad.
Palustriella commutata (Hedw.) Ochyra [48]
P. falcata (Brid.) Hedenäs [49]
Paraleucobryum longifolium (Ehrh. *ex* Hedw.) Loeske
Philonotis calcarea (Bruch & Schimp.) Schimp.
P. capillaris Lindb.
P. fontana (Hedw.) Brid.
P. marchica (Hedw.) Brid.
P. tomentella Molendo
Physcomitrium pyriforme (Hedw.) Hampe
Plagiomnium affine (Blandow *ex* Funck) T.J. Kop.)
P. cuspidatum (Hedw.) T.J. Kop.
P. elatum (Bruch & Schimp.) T.J. Kop.
P. ellipticum (Brid.) T.J. Kop.
P. medium (Bruch & Schimp.) T.J. Kop.
P. rostratum (Schrad.) T.J.Kop. [50]
P. undulatum (Hedw.) T.J. Kop.
Plagiothecium cavifolium (Brid.) Z. Iwats. [51]
P. curvifolium Schlieph. *ex* Limpr.
P. laetum Schimp. [52]
P. latebricola Schimp.
P. nemorale (Mitt.) A.Jaeger
P. platyphyllum Mönk.
P. succulentum (Wilson) Lindb.
Plasteurhynchium striatulum (Spruce) M. Fleisch.
Platygyrium repens (Brid.) Schimp.
Pleuridium subulatum (Hedw.) Rabenh.
Pleurozium schreberi (Willd. *ex* Brid.) Mitt.
Pogonatum aloides (Hedw.) P. Beauv.
P. urnigerum (Hedw.) P. Beauv.
Pohlia annotina (Hedw.) Lindb.
P. cruda (Hedw.) Lindb
P. ludwigii (Spreng. *ex* Schwägr.) Broth.
P. wahlenbergii (F. Weber & D. Mohr) A.L. Andrews [53]
Polytrichastrum alpinum (Hedw.) G.L. Sm.
Polytrichum commune Hedw.
P. formosum Hedw.
P. juniperinum Hedw.
P. longisetum Sw. *ex* Brid.
P. piliferum Hedw.
P. strictum Menzies *ex* Brid.
Pseudoamblystegium subtile (Hedw.) Vanderp. & Hedenäs
Pseudoleskea incurvata (Hedw.) Loeske
Pseudoleskeella nervosa (Brid.) Nyholm
Pseudoscleropodium purum (Hedw.) M. Fleisch.
Pterigynandrum filiforme Hedw.
Ptychostomum archangelicum (Bruch & Schimp.) J.R. Spence
P. boreale (F. Weber & D. Mohr) Ochyra & Bednarek-Ochyra
P. capillare (Hedw.) Holyoak & N. Pedersen
P. creberrimum (Taylor) J.R. Spence & H.P. Ramsay
P. donianum (Grev.) Holyoak & N. Pedersen
P. imbricatulum (Müll. Hal.) Holyoak & N. Pedersen [54]
P. moravicum (Podp.) Ros & Mazimpaka [55]
P. pallens (Sw.) J.R. Spence
P. pseudotriquetrum (Hedw.) J.R. Spence & H.P. Ramsay
P. pseudotriquetrum var. *bimum* (Schreb.) Holyoak
P. zieri (Hedw.) Holyoak & N. Pedersen & N. Pedersen
Pylaisia polyantha (Hedw.) Schimp.
Racomitrium aciculare (Hedw.) Brid.
R. affine (F. Weber & D. Mohr) Lindb. [56]
R. canescens (Hedw.) Brid.
R. ellipticum (Turner) Bruch & Schimp.
R. ericoides Brid.
R. heterostichum (Hedw.) Brid.
R. lanuginosum (Hedw.) Brid.
R. sudeticum (Funck) Bruch & Schimp.
Rhabdoweisia crenulata (Mitt.) H. Jameson [57]
Rhizomnium punctatum (Hedw.) T.J. Kop.
Rhodobryum ontariense (Kindb.) Paris
R. roseum (Hedw.) Limpr.
Rhynchostegiella tenella (Dicks.) Limpr. [58]
R. litorea (De Not.) Limpr.
Rhynchostegium confertum (Dicks.) Schimp. [59]
R. riparioides (Hedw.) Cardot
R. rotundifolium (Scop. *ex* Brid.) Schimp.
Rhytidiadelphus calvescens (Wils.) Loeske
R. subpinnatus (Lindb.) T.J. Kop.
R. triquetrus (Hedw.) Warnst.
Rhytidium rugosum (Ehrh. *ex* Hedw.) Kindb.
Sanionia uncinata (Hedw.) Loeske
Sarmentypnum exannulatum (Schimp.) Hedenäs
Schistidium apocarpum (Hedw.) Bruch & Schimp.
S. boreale Poelt.
S. papillosum Culm.
S. rivulare (Brid.)Podp. [60]
S. strictum (Turner) Loeske *ex* Mårtensson
S. trichodon (Brid.) Poelt
Sciuro-hypnum flotowianum (Sendtn.) Ignatov & Huttunen [61]
S. plumosum (Hedw.) Ignatov & Huttunen
S. populeum (Hedw.) Ignatov & Huttunen
S. reflexum (Starke) Ignatov & Huttunen
S. starkei (Brid.) Ignatov & Huttunen
Scorpidium revolvens (Sw. *ex* anon.) Rubers
Scorpiurium circinatum (Bruch) M. Fleisch. & Loeske
Sematophyllum demissum (Wilson) Mitt.
Serpoleskea confervoides (Brid.) Kartt.
Sphagnum centrale C.E.O. Jensen
S. compactum Lam. & DC.
S. fallax (H. Klinggr.) H. Klinggr. [62]
S. fuscum (Schimp.) H. Klinggr.
S. girgensohnii Russow [63]
S. inundatum Russow
S. magellanicum Brid. [64]

S. palustre L.
S. platyphyllum (Lindb. *ex* Braithw.) Warnst.
S. rubellum Wilson [65]
S. subsecundum Nees
S. warnstorfii Russow [66]
Stereodon cuspidatus (Hedw.) Brid.
Syntrichia papillosa (Wilson) Jur.
S. ruralis (Hedw.) F. Weber & D. Mohr.
S. ruralis var. *ruraliformis* (Besch.) Delogne [67]
Taxiphyllum densifolium (Lindb. *ex* Broth.) Reimers [68]
T. wissgrillii (Garov.) Wijk & Margad.
Tetraphis pellucida Hedw.
Thamnobryum alopecurum (Hedw.) Gangulee
Thuidium assimile (Mitt.) A. Jaeger
T. delicatulum (Hedw.) Schimp.
T. tamariscinum (Hedw.) Schimp.
Timmia austriaca Hedw. [69]
Timmiella barbuloides (Brid.) Mönk.
*Tortella fragilis (*Hook. & Wilson) Limpr.
T. humilis (Hedw.) Jenn.
T. inclinata var. *densa* (Lorentz & Molendo) Limpr.
T. inflexa (Bruch) Broth. [70]
T. nitida (Lindb.) Broth.
T. squarrosa (Brid.) Limpr.
T. tortuosa (Hedw.) Limpr.
Tortula atrovirens (Sm.) Lindb.
T. canescens Mont.
T. caucasica Broth.
T. modica R.H.Zander [71]
T. muralis Hedw.
Trichostomum brachydontium Bruch
T. crispulum Bruch
Ulota coarctata (P. Beauv.) Hammar [72]
U. crispa (Hedw.) Brid.
U. rehmannii Jur. [73]
Weissia controversa Hedw.
W. controversa var. *crispata* (Nees & Hornsch.) Nyholm
W. rutilans (Hedw.) Lindb. [74]
Zygodon dentatus (Limpr.) Kartt. [75]
Z. gracilis Wilson [76]

Discussion

Bryophytes are represented in the checklist by 153 genera, and 373 taxa of infrageneric level (358 species, 13 varieties, and 2 subspecies), that equals 38% of the total moss flora of Turkey. The checklist includes one species of hornworts, 49 taxa of liverworts and 323 taxa of mosses. The largest number of liverwort species were found in the genera *Porella* (5), *Bazzania* (3), *Calypogeia* (3), *Lophocolea* (3) and *Scapania* (3). There are in the list. Some other rich genera are *Orthotrichum* (12), *Sphagnum* (12), *Grimmia* (12), *Ptychostomum* (11), *Brachythecium* (9), *Dicranum* (8), *Hypnum* (8), *Racomitrium* (8), *Didymodon* (7), *Plagiomnium* (7), *Plagiothecium* (7), *Tortella* (7), *Fissidens* (6) *Schistidium* (6), *Polytrichum* (6), *Lewinskya* (5), *Sciuro-hypnum* (5), *Mnium* (5), *Philonotis* (5) and *Tortula* (5) in mosses.

Annotations

[1] *Bazzania flaccida* was reported for the first time by Müller (2013) for Turkey and the whole of SW Asia. An uncertain record of the occurrence of the species in the area was published by Müller (1957) in a passage dealing with *Bazzania tricrenata* (Wahlenb.) Lindb. he wrote in connection with a record from Trabzon (Müller, 2013).

[2] *Calypogeia fissa* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of Karadeniz Technical University (KTU) by Özdemir and Batan (authors of this paper) on 28 March 2016 and 10 April 2016, on rock, near the water, 96–111 m, Öz-Bat 239.

[3] *Diplophyllum taxifolium* was reported by Özdemir and Batan on 2 May 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 62 m, on soil, Öz-Bat 240.

[4] *Jubula hutchinsiae* subsp. *caucasica* was recorded as new for Turkey by Kürschner (2013) in Trabzon from Karadeniz Mountains, 12 km south of Of district, near Çumapazarı, 130 m, on rock near waterfall in Euxine lowland forest, 22 June 2011.

[5] *Jungermannia atrovirens* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 28 March 2016 and 8 June 2016, on wet rock, near the water, 61–96 m, Öz-Bat 241.

[6] *Leiocolea bantriensis* was reported for the first time for Turkey and the whole of SW Asia according to Müller (2013), at Zigana Pass, SSW of Trabzon, *ca* 2000 m.

[7] *Leptoscyphus cuneifolius* was recorded from Trabzon province, Araklı district, on trunk of tree (*Salix* sp.), 68 m by Batan *et al*. (2013) as a new record for Turkey and Southwest Asia.

[8] *Lophocolea bidentata* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 21 May 2016, on wet rock, near the water, 55 m, Öz-Bat 242.

[9] *Porella pinnata* was reported by Özdemir and Batan on 10 April 2016 and 21 May 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 66–112 m, m, on soily wet rock, Öz-Bat 243.

[10] *Antitrichia californica* was idendified by Özdemir and Batan on wet rock, 45–101 m, on 28 March 2016 and 8 June 2016 in the Kanuni Campus Area of KTU, is a new record for Trabzon province, Öz-Bat 244.

[11] *Brachythecium campestre* was reported by Özdemir and Batan on 28 March 2016, 10 April 2016 and 2 May 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 62 m, 101–111 m, on rock and soil, Öz-Bat 245.

[12] *Brachythecium geheebii* was recorded from S.W. of Trabzon, on the top of the castle hill, in sterile tuft on fully exposed calcareous rocks, together with basiphytic bryophytes. (Müller, 2013).

[13] *Brachythecium laetum* was reporded by Papp (2001) from Trabzon province, Pontic mountains (provinces of Trabzon and Rize), Altindere Valley Natural Park, between Macka city center and Sumela monastery, 600 m, 18 July 2001 as a new record for Turkey (Orgaz, 2012).

[14] *Bryoerythrophyllum rubrum* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 10 April 2016 and 2 May 2016, on rock and soil, 62–112 m, Öz-Bat 246.

[15] *Bryum dichotomum* was idendified by Özdemir and Batan on soil, 62–112 m, on 28 March 2016, 10 April 2016 and 2 May 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, Öz-Bat 247.

[16] *Bryum rubens* was reported by Özdemir and Batan on 28 March 2016, 10 April 2016 and 21 May 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 55–112 m, on soily rocks, Öz-Bat 248.

[17] *Dendrocryphaea lamyana* was idendified by Özdemir and Batan on soil on 21 May 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, 55 m, on soil, Öz-Bat 249.

[18] *Dicranella rufescens* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 28 March 2016 and 8 June 2016, on wet soily rock, near the water, 45–101 m, Öz-Bat 250.

[19] *Dicranella varia* was recorded by Nyholm & Engelmark (1974) from Turkey, in Trabzon province, on sandy soil in cave, shore of Black Sea between Trabzon and Rize (Papp, 2004).

[20] *Dicranodontium uncinatum* was idendified by Özdemir and Batan on rock, 51–62 m, on 2 May 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, Öz-Bat 251.

[21] *Dicranoweisia cirrata* was reported by Özdemir and Batan on 10 April 2016, 10 April 2016 and 21 May 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected at 66 m, 100–112 m, on tree trunk, Öz-Bat 252.

[22] *Didymodon rigidulus* is a new record for Trabzon province. It has been collected from the KTU Campus area by Özdemir and Batan on 21 May 2016, on rock, 66 m, Öz-Bat 253.

[23] *Didymodon vinealis* was idendified by Özdemir and Batan on soil and rock, 45–111 m, on 28 March 2016, 10 April 2016, 21 May 2016 and 8 June 2016 in the Kanuni Campus Area of KTU, it is a new record for Trabzon province, Öz-Bat 254.

[24] *Entodon concinnus* was reported by Özdemir and Batan on 28 March 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 101 m, on wet soil, Öz-Bat 255.

[25] *Entodon schleicheri* was registered as new for the Turkish flora by Townsend (1997). Its locality is surroundings of Sumela monastery near Trabzon. In addition, the following new locality is inTrabzon province in valley south of Macka towards Sumela, 25 km SSW of Trabzon (Müller, 2013).

[26] *Epipterygium tozeri* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 28 March 2016, 10 April 2016 and 2 May 2016 on stone and tree trunk, 62–112 m, Öz-Bat 256.

[27] *Eurhynchium crassinervium* was reported by Özdemir and Batan on 2 May 2016, 28 March 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 51–96 m, on stone, Öz-Bat 257.

[28] *Grimmia anodon* was idendified by Özdemir and Batan on rock, 51–111 m, m on 28 March 2016, 10 April 2016 and 2 May 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, Öz-Bat 258.

[29] *Grimmia dissimulata* was reported by Özdemir and Batan on 28 March 2016, 10 April 2016 and 8 June 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 45–112 m, on rock, Öz-Bat 259.

[30] *Grimmia donniana* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 28 March 2016, 2 May 2016 and 21 May 2016 on rock, 62–101 m, Öz-Bat 260.

[31] *Grimmia elongata* was idendified by Özdemir and Batan on rock from 45–96 m, on 28 March 2016, 21 May 2016 and 8 June 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, Öz-Bat 261.

[32] *Grimmia ovalis* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 21 May 2016 and 8 June 2016 on rock, 45–66 m, Öz-Bat 262.

[33] *Grimmia tergestina* was idendified by Özdemir and Batan on rocks from 100 m on 10 April 2016 and 21 May 2016 in the Kanuni Campus Area of KTU, it is a new record for Trabzon province, Öz-Bat 263.

[34] *Gymnostomum calcareum* was reported by Özdemir and Batan on 28 March 2016 and 10 April 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected at 112 m, on wet soil, Öz-Bat 264.

[35] *Hookeria acutifolia* was newly recorded to Turkey by Uyar & Ören (2013) from Trabzon Province, in Camburnu district of Surmene town, under mixed forest consisting of mainly *Pinus sylvestris* L., on stream sides close to a waterfall in deep shade of evergreens and mixed deciduous forest, ca. 230 m a.s.l., 16 April 2011.

[36] *Hygroamblystegium humile* was idendified by Özdemir and Batan on stones at 111 m on 10 April 2016 in the Kanuni Campus Area of KTU, is a new record for Trabzon province, Öz-Bat 265.

[37] *Hypnum jutlandicum* was reported by Özdemir and Batan on 28 March 2016 and 10 April 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected at 111 m, on soil, Öz-Bat 266.

[38] *Hypnum revolutum* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 28 March 2016 and 2 May 2016 on tree trunk in the forest, 62–96 m, Öz-Bat 267.

[39] *Lewinskya sordida* is a new record for Turkey reported by Lara *et al*. (2010) in Trabzon, northern slopes of the mountains of provinces of Trabzon and Rize, 1150–1450 m, on *Alnus orientalis*, *Picea orientalis*, and *Salix caprea* body.

[40] *Lewinskya vladikavkana* was recorded for Turkey and the Near East by Lara *et al*. (2010). The species was found in a few localities at the northern slopes of the mountains of provinces of Trabzon and Rize, 1150–1550 m, epiphyte on *Alnus orientalis* and *Salix caprea* body.

[41] *Mnium stellare* was idendified by Özdemir and Batan on soily stone, 62 m, on 2 May 2016 in the Kanuni Campus Area of KTU, is a new record for Trabzon province, Öz-Bat 268.

[42] *Orthotrichum callistomum* reported by Lara *et al*.(2010) from Trabzon province in Altındere Valley National Park, 1100–1300 m, on *Salix caprea* and *Alnus orientalis body* in 2009.

[43] *Orthotrichum consobrinum* was newly recordedfor Turkey by Lara *et al*. (2009), near the coast in the provinces of Trabzon, Rize and Artvin (140–350 m) on *Castanea sativa*, *Alnus orientalis*, and *Corylus maxima*. And recorded also Trabzon province, road to Uzungöl lake, exit to Taºhanpazari, 140 m, on branches of *Corylus maxima*, 9 July 2005.

[44] *Orthotrichum hispanicum* is new record for Turkey Lara *et al*. (2010). It was found in a small enclave in the south of Trabzon, 700–1450 m. Epiphyte on twigs and trunks of different trees and shrubs: *Alnus orientalis*, *Picea orientalis* (L.) Link. and *Sambucus nigra*.

[45] *Orthotrichum stellatum* was record for Turkey and Asia by Lara *et al*. (2010) in the province of Trabzon in the vicin-

ity of Sümela Monastery in Maçka district, 1150 m, growing on branches of *Salix caprea*.

[46] *Oxyrrhynchium pumilum* was reported by Özdemir and Batan on 10 April 2016, 2 May 2016 and 21 May 2016 as a new record from the Kanuni Campus Area of KTU, Trabzon province. It has been collected at 55–62 m and 111 m, on rock, Öz-Bat 269.

[47] *Oxyrrhynchium scleicheri* was idendified by Özdemir and Batan on soily rock, 45–55 m, on 21 May 2016 and 8 June 2016 in the Kanuni Campus Area of KTU, it is a new record for Trabzon province, Öz-Bat 270.

[48] *Palustriella commutata* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 10 April 2016 and 21 May 2016, on rock, near the water, 55–111 m, Öz-Bat 271.

[49] *Palustriella falcata* was idendified by Özdemir and Batan on soil, 55–112 m, on 10 April 2016 and 21 May 2016 in the Kanuni Campus Area of KTU, is a new record for Trabzon province, Öz-Bat 272.

[50] *Plagiomnium rostratum* was reported by Özdemir and Batan on 28 March 2016, 28 March 2016 and 10 April 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 96–111 m, on soil, Öz-Bat 273.

[51] *Plagiothecium cavifolium* was reported as a new record for Turkey by Townsend (1997) from Trabzon, surroundings of Vazelon monastery south of Maçka, on rocks. And from Black Sea coast near Camburnu district, on rocky embankment near a path in a coastal wood (Müller, 2013).

[52] *Plagiothecium laetum* was collected from South of Trabzon, surroundings of Sumela monastery, on silicate stones of a shaded slope in a ravine wood in the same locality as *B. Flaccida* by Frey & Kurschner (1991) to Müller (2013).

[53] *Pohlia wahlenbergii* was idendified by Özdemir and Batan on wet soil near the stream, 55-112 m, on 10 April 2016 and 21 May 2016 in the Kanuni Campus Area of KTU, it is a new record for Trabzon province, Öz-Bat 274.

[54] *Ptychostomum imbricatulum* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 10 April 2016 and 02 May 2016 on rock and soil, near the water, 51–111 m, Öz-Bat 275.

[55] *Ptychostomum moravicum* was reported by Özdemir and Batan on 28 March 2016, 10 April 2016 and 8 June 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 45–112 m, 100 m, on rock and soil, Öz-Bat 276.

[56] *Racomitrium affine* was idendified by Özdemir and Batan on rock, 45–96 m, on 28 March 2016 and 8 June 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, Öz-Bat 277.

[57] *Rhabdoweisia crenulata* was reported by Özdemir and Batan on 21 May 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 55 m, on tree body under forest, Öz-Bat 278.

[58] *Rhynchostegiella tenella* is a new record for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 02 and 21 May 2016 on wet soily rock, near the water, 62–66 m, Öz-Bat 279.

[59] *Rhynchostegium confertum* was idendified by Özdemir and Batan on rock, 66 m, 96 m and 101 m, on 28 March 2016 and 21 May 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, Öz-Bat 280.

[60] *Schistidium rivulare* was reported by Özdemir and Batan on 21 May 2016 and 8 June 2016 as a new record from the Kanuni Campus Area of KTU for Trabzon province. It has been collected from 45–66 m, on rock, Öz-Bat 281.

[61] *Sciuro-hypnum flotowianum* was recorded at Döring, Parolly and Tolimir from Trabzon province by Orgaz *et al.* (2011) in Altındere National Valley, above Macka district, on slope above the Sumela monastery, 20 August 1999, as a new record for Turkey.

[62] *Sphagnum fallax* was newly recorded from Trabzon province by Kırmacı and Kürschner (2013), south of Tonya district, between Karakısrak and Sazalan high plateau, at 1750 m, in *Drosera rotundifolia* bog, 18 July 2012, as new to Turkey and Southwest Asia.

[63] *Sphagnum girgensohnii* was first recorded from Turkey in Giresun province, Ezeli district, Kizil Ali High Plateau, 1300 m, by Handel-Mazzetti (1909). It was recorded second time from Turkey by Kırmacı and Kürschner (2013) in Trabzon province in the south of Tonya district, between Karakısrak and Sazalan High Plateau, 1750 m, in *Drosera rotundifolia* bog, 18 July 2012. And was also found in Soğanlı Mountains, south of Sürmene and Köprübaşı districts, in Ağaçbaşı High Plateau, 1980 m, in peat bog, 17 July 2012 by M.Kırmacı & H.Kürschner (2013).

[64] *Sphagnum magellanicum* was found as a new record for Turkey and Southwest Asia by Kırmacı & Kürschner (2013) from Trabzon province, south of Tonya district, between Karakısrak and Sazalan High Plateau, 1750 m, in *Drosera rotundifolia* bog, on 18 July 2012. Also reported from Soğanlı Mountain, south of Sürmene and Köprübaşı districts, Ağaçbaşı high plateau, near crossing to Yangin High Plateau, 1980 m, peat bog, in 17 July 2012 by Kırmacı & Kürschner (2013).

[65] *Sphagnum rubellum* was newly recorded for Turkey and Southwest Asia from Trabzon province in Soğanlı Mountains, in south of Sürmene and Köprübaşı districts, Ağaçbaşı High Plateau, 1980 m, peat bog, 17 July 2012. It was also found on Ağaçbaşı High Plateau at crossing to Yangin High Plateau, 1980 m, in peat bog, on 17 July 2012 by Kırmacı & Kürschner (2013).

[66] *Sphagnum warnstorfii* was recorded for the first time in Turkey by Handel-Mazzetti (1909). Second colletion was made by Kırmacı & Kürschner (2012) in Trabzon province: Soğanlı Mnt, south of Sürmene – Köprübaşı, Ağaçbaşı Plateu, 1980 m, peat bog, 17 July 2012.

[67] *Syntrichia ruralis* var. *ruraliformis* was idendified by Özdemir and Batan on rock, 96–114 m, on 28 March 2016 and 10 April 2016 in the Kanuni Campus Area of KTU. It is a new record for Trabzon province, Öz-Bat 282.

[68] *Taxiphyllum densifolium* was newly recorded for Turkey by Papp (2004), from Pontic Mts, Altindere valley National Park at Trabzon town, at Sumela monastery, volcanic bedrock, 1080–1280 m, on 18 and 19 July 2001.

[69] *Timmia austriaca* was idendified by Özdemir and Batan on soil, 51–62 m, on 2 May 2016 in the Kanuni Campus Area of KTU, is a new record for Trabzon province, Öz-Bat 283.

[70] *Tortella inflexa* is newly recorded for Trabzon province. It has been collected from the Kanuni Campus Area of KTU by Özdemir and Batan on 2 May 2016, on soil, near the water, 51–62 m, Öz-Bat 284.

[71] *Tortula modica* was idendified by Özdemir and Batan on soil, 51–62 m, on 2 May 2016 in the Kanuni Campus Area of KTU, is a new record for Trabzon province, Öz-Bat 285.

[72] *Ulota coarctata* was recorded by Papp according to Lara *et al*. (2010) as new for Turkey and Asia. Found in a few mountain localities (Trabzon and Rize), at 1150–1550 m. Epiphyte on trunks of *Alnus orientalis.*

[73] *Ulota rehmannii* was recorded by Papp according to Lara *et al*. (2010) as new for Turkey. Found in several humid mountainous localities (provinces of Trabzon and Rize), mostly between 1150–1550 m. Epiphyte on trunks of *Alnus orientalis*, branches of *Salix caprea*, and twigs of *Picea orientalis*.

[74]*Weissia rutilans*, was idendified by Özdemir and Batan on soil and rocks, 96–112 m, on 28 March 2016 and 10 April 2016 in the Kanuni Campus Area of KTU, is a new record for Trabzon province, Öz-Bat 286.

[75] *Zygodon dentatus* was recorded by Papp according to Lara *et a*l. (2010) as new for Turkey. Only found in the province of Trabzon, in the surroundings of Sümela Monastery, 1150 m. On *Fagus orientalis* tree trunks (Lara *et al*., 2010).

[76] *Zygodon gracilis* was recorded by Kırmacı and Kurschner (2012) as new for Turkey and Southwest Asia from Trabzon, Of district, towards Uzungol, near Çaykara, 340 m; on rock in *Castanea sativa – Carpinus orientalis* lowland forest, 22 June 2011.

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