Contribution to the lichen diversity of Nature Parks in Bolu and Çorum, Anatolia, Turkey

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Abstract: ÇOBANOĞLU, G. & AKDEMİR, B. 2004. Contribution to the lichen diversity of Nature Parks in Bolu and Çorum, Anatolia, Turkey. – Herzogia **17**: 129–136.

A list of 188 lichen taxa is provided from Abant Lake Nature Park in the province of Bolu, and two Nature Parks in the province of Çorum. 71 species are common to both regions. Most of the 153 taxa from Bolu, and of the 109 taxa from Çorum, are new records for these provinces. Five taxa are new to Turkey: *Caloplaca cerina* var. *muscorum*, *Chaenotheca chlorella*, *C. trichialis*, *Lecanora cinereofusca*, and *Usnea substerilis.*

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Eine Liste von 188 Flechtentaxa aus dem Abant-See Naturpark in der Provinz Bolu und aus zwei Naturparks in der Provinz Çorum wird vorgestellt. 71 Arten sind in beiden Gebieten verbreitet. Die meisten der 153 Taxa aus Bolu und der 109 Taxa aus Çorum sind Neufunde für diese Provinzen. Fünf Taxa sind neu für die Türkei: *Caloplaca cerina* var. *muscorum*, *Chaenotheca chlorella*, *Chaenotheca trichialis*, *Lecanora cinereofusca* und *Usnea substerilis*.

Key words: Lichenized ascomycetes, biodiversity.

Introduction

The lichen flora of many Turkish provinces is still poorly documented. The knowledge of the distribution of lichens in Turkey is still insufficient for both rare and even common species. As lichenology in Turkey has started to develop only in the last decades, even "bare" lists of lichens are of value, if they cover special areas and if they are comprehensive to some extent. The following study focuses on three Nature Parks in the provinces Bolu and Çorum. The records from these hitherto unexplored provinces contributes considerably to the forthcoming checklist of Turkish lichens.

Abant Lake Nature Park in the province Bolu covers forests and hills around Lake Abant. It is located in the western Black Sea region of Anatolia (40°N/31°E). The park covers 1.150 ha and is situated 33 km south-west of the city of Bolu. The grid square is A3 according to the flora of Turkey (DAVIS 1965) (fig. 1). The highest elevation of the area is 1700 m south of Lake Abant (1320 m). The climate is intermediate between mediterranean and oceanic, with much humidity. The average annual precipitation is about 800–900 mm (UÇAR & GÜNER 1997). Information on lichens in the area is rare and scattered (AYDIN 1990, KARAMANOĞLU 1971, KÜÇÜKER 1994).

The second area investigated is in the province of Çorum, the centre of ancient Hittite civilization, and in the northern part of central Anatolia (39°54'–41°20'N/34°04'–35°28'E) and is located in grid square A5 (fig. 1). A continental climate is dominant, with a mild impact from the Black Sea. The annual average temperature is 10.4 °C and the annual precipitation is 396 mm. Çatak Nature Park and Boğazköy-Alacahöyük Historical National Park are within the investigated sites. The area consists of plateaux and villages at altitudes between 850–1500 m. There are only a few lichen records from Çorum province (JOHN 1999, JOHN et al. 2000, LEUCKERT & KÜMMERLING 1991, LUMBSCH & FEIGE 1999).

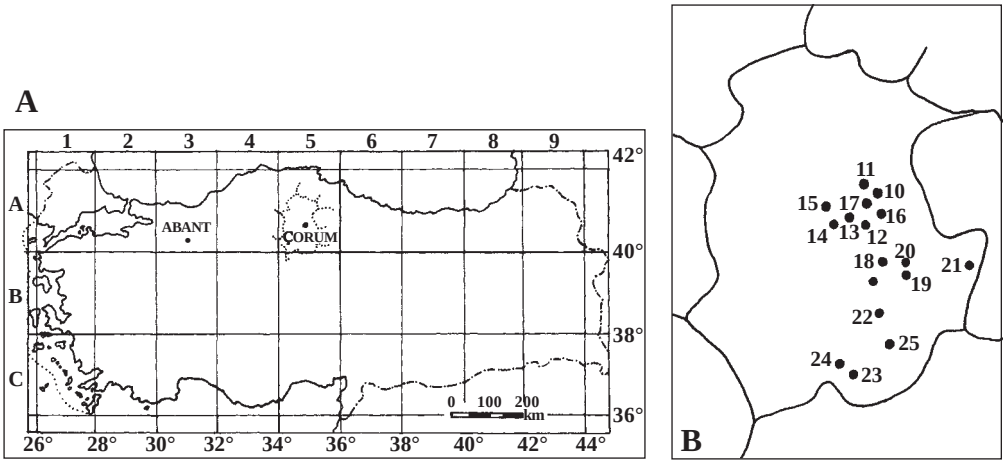

Fig. 1: **A –** Investigated areas. **B –** Localities in Çorum province.

Materials and methods

This study is based on specimens collected from 1997 to 2000 on different substrata from 26 localities. The habitats include gravestones, ancient temple walls, sphinx, ruins dating back to 4000–5000 BC, different types of siliceous and calcareous rocks, bark and twigs of trees and shrubs, soil, and bryophytes. Selected taxa are documented by colour pictures, taken with a binocular dissecting microscope (Olympus SZ 40). Voucher specimens are preserved in the herbarium of the Faculty of Science and Arts, Marmara University, Istanbul (MUFE).

Localities

Bolu (A3)

01: East of Lake Abant, Boğaz Pınarı region; north slopes, 1350 m, 1.I.1997.
02: West of Lake Abant, Örencik plateau; 1400–1450 m, 6.VIII.1997.
03: South of Lake Abant, TV- R/L Station-hill; north slopes, 1680 m, 26.VII.1998.
04: South-east of Lake Abant, TV- R/L Station-hill; lower north slopes, 1640 m, 2.VIII.1998.
05: South-east of Lake Abant, TV-R/L Station-hill; the road down from the lower north slopes, 1520 m, 30.VIII.1998.
06: North-east of Lake Abant, *Abies* forest; Yayla Camii road, 1260 m, 6.IX.1998.
07: North of Lake Abant, Abant Palace Hotel area; the hill behind the hotel; south slopes, 1350 m, 10.X.1998
08: North-west of Lake Abant, Örencik plateau; 1350 m, 10.X.1998.
09: South of Lake Abant, Kızlar Çalı Hill; north slopes, 1350 m, 4.VI.1999.

Çorum (A5)

10: North of Çorum, Laçin district; road to Çomar village, graveyard, 890 m, 4.XII.1999.
11: North of Çorum, Laçin district; Çomar village, various trees, 900 m, 4.XII.1999.
12: North of Çorum, Çatak Nature Park; Peak way to the park, 1300 m, 15.IV.2000.
13: North of Çorum, Çatak Nature Park; 25 km north of Çorum, pine forest, 1400 m, 15.IV.2000.
14: North-west of Çorum, Çayyayla village; 1450 m, 15.IV.2000.
15: 22 km north-west of Çorum, Çatak Nature Park; Çayyayla peak, 1500 m, 15.IV.2000.

16: North of Çorum, Kırkdilim village; 940 m, 16.IV.2000.
17: North of Çorum, northern exit of Kırkdilim village; 1020 m, 16.IV.2000.
18: South-east of Çorum, Eskiekin village; road to Elmali district, 850 m, 2.VII.2000.
19: South-east of Çorum, Kırklar hill; the peak, 1410 m, 2.VII.2000.
20: South-east of Çorum, Kırklar hill; lower south slopes, 1400 m, 2.VII.2000.
21: South-east of Çorum, Mecitözü district; on the highway to border of the province Amasya, 1380 m, 2.VII.2000.
22: South of Çorum, Cemilbey-Alaca road; Kılavuz village, 1040 m, 2.VII.2000.
23: South of Çorum, Sungurlu-Boğazkale district; Boğazköy-Alacahöyük Historical National Park, Yazılıkaya ruins, 1000 m, 2.VII.2000.
24: 82 km south of Çorum, Boğazkale district; Boğazköy-Alacahöyük Historical National Park, Boğazköy-Hattusa ruins, 1100 m, 2.VII.2000.
25: 45 km south of Çorum, Alaca district; Boğazköy-Alacahöyük Historical National Park, Alacahöyük-Büyükkale ruins, 900 m, 2.VII.2000.
26: South of Çorum, highway to Alaca district; Koparan region, 830 m, 2.VII.2000.

Abbreviations of substrates used in the species list

A	*Abies nordmanniana*	**C**	*Carpinus betulus*
Cr	*Crataegus tanacetifolia*	**J**	*Juniperus communis*
P	*Pinus sylvestris*	**Po**	*Populus nigra*
Pr	*Prunus* sp.	**Py**	*Pyracantha coccinea*
Cy	*Cydonia* sp.	**Ju**	*Juglans* sp.
Ma	*Malus* sp.	**Q**	*Quercus* sp.
S	*Salix* sp.	**cal**	calcareous rocks
sil	siliceous rocks		
ter	soil	**M**	bryophytes

List of taxa

Species are arranged alphabethically. Numbers from 01 to 26 correspond to the localities; the abbreviations following these numbers correspond to the substrates listed above. An asterisk (*) indicates a new record for Turkey.

Acarospora cervina A.Massal.: 04, 05, 07, 08, 09, 10, 16, 17, 18, 19, 20, 21, 22, 23 (cal)
Acarospora fuscata (Schrad.) Th.Fr.: 07 (sil)
Acarospora smaragdula (Wahlenb.) A.Massal.: 12, 14, 15, 26 (sil)
Alectoria sarmentosa (Ach.) Ach. ssp. ***sarmentosa***: 04 (P)
Anaptychia ciliaris (L.) Körb.: 01 (Py), 02 (Pr, Cr, P, C), 05 (ter), 07 (Cr), 09 (Q), 13 (Po), 19, 20, 26 (ter).
Arthonia radiata (Pers.) Ach.: 01 (A), 02, 07 (C)
Aspicilia caesiocinerea (Nyl. ex Malbr.) Arnold: 08 (sil)
Aspicilia calcarea (L.) Mudd: 04, 05, 08, 09, 10, 16, 17, 18, 19, 20, 21, 22, 23, 26 (cal)
Aspicilia cinerea (L.) Körb.: 07, 12, 14, 26 (sil)
Aspicilia contorta (Hoffm.) Kremp.: 05, 08, 09, 12, 17, 18 (cal)
Aspicilia desertorum (Kremp.) Mereschk.: 12 (sil); det. V. John
Bryoria fuscescens (Gyeln.) Brodo & D.Hawksw.: 01 (P, A), 02 (P), 04 (P), 06 (A, P), 07 (P, A), 09 (A)
Buellia aethalea (Ach.) Th.Fr.: 07 (sil)
Buellia disciformis (Fr.) Mudd: 02 (C)
Buellia epipolia (Ach.) Mong.: 17, 18, 19, 21, 22, 23 (cal)
Buellia griseovirens (Turner & Borrer ex Sm.) Almb.: 07 (P); det. V. John
Calicium glaucellum Ach.: 07 (P)
Calicium viride Pers.: 09 (A)
Caloplaca alociza (A.Massal.) Mig.: 18 (cal); det. C. Roux
Caloplaca biatorina (A.Massal.) J.Steiner: 26 (sil); det. V. John
Caloplaca cerina (Ehrh. ex Hedw.) Th.Fr. var. ***cerina***: 01 (P), 02 (Pr, Cr), 06 (A), 09 (Q), 13 (Po), 20, 26 (P, J)
****Caloplaca cerina*** var. ***muscorum*** (A.Massal.) Jatta: 04, 17 (ter-M); conf. C. Roux

Caloplaca cerinella (Nyl.) Flagey: 02 (P), 13 (Po)
Caloplaca chalybaea (Fr.) Müll.Arg.: 03, 04, 19 (cal)
Caloplaca citrina (Hoffm.) Th.Fr.: 05 (cal), 17, 18, 22, 23 (ter-M)
Caloplaca crenularia (With.) J.R.Laundon: 12, 14, 15, 26 (sil)
Caloplaca decipiens (Arnold) Blomb. & Forssell: 05, 10, 18, 19, 21, 22 (cal)
Caloplaca dolomiticola (Hue) Zahlbr.: 02 (Pr), 04, 08 (cal), 09 (Q), 16, 18, 21 (cal)
Caloplaca haematites (St.Amans) Zwackh: 13 (Po)
Caloplaca herbidella (Hue) H.Magn.: 09 (A), 13 (P)
Caloplaca holocarpa (Hoffm. ex Ach.) A.E.Wade: 02 (Pr, Cr), 07 (sil), 08, 09 (cal)
Caloplaca inconnexa (Nyl.) Zahlbr.: 03, 05, 18 (cal); det. C. Roux
Caloplaca lactea (A.Massal.) Zahlbr.: 03, 04, 17, 18, 19, 20, 22, 23 (cal)
Caloplaca variabilis (Pers.) Müll.Arg.: 03, 04, 05 (cal)
Candelariella aurella (Hoffm.) Zahlbr.: 03, 04, 05, 08, 10, 12, 18, 19, 20, 21, 22, 23 (cal)
Candelariella vitellina (Hoffm.) Müll.Arg.: 07, 14, 15, 16, 17, 18, 21, 22, 23, 26 (sil)
Candelariella xanthostigma (Ach.) Lettau: 02 (Pr, Cr, P, C), 06 (A), 09 (J, A), 11, 13 (Po)
Cetraria aculeata (Schreb.) Fr.: 03, 04, 05, 14, 19 (ter)
Cetraria islandica (L.) Ach.: 03, 05, 19, 20 (ter-M)
****Chaenotheca chlorella*** (Ach.) Müll.Arg.: 11 (Ju)
Chaenotheca chrysocephala (Turner ex Ach.) Th.Fr.: 02 (P, C), 07 (P)
****Chaenotheca trichialis*** (Ach.) Th.Fr.: 09 (A); conf. V. John
Chaenothecopsis consociata (Nádv.) A.Schmidt: 09 (A); det. V. John
Chrysothrix candelaris (L.) J.R.Laundon: 09 (A)
Cladonia chlorophaea (Flörke ex Sommerf.) Spreng.: 01 (P base), 13 (Po base), 14, 15, 19 (ter)
Cladonia coniocraea (Flörke) Spreng.: 02 (C), 07 (P)
Cladonia fimbriata (L.) Fr.: 07 (P mossy base, ter-M), 09 (J base), 13 (P base), 14, 15, 19 (ter)
Cladonia foliacea (Huds.) Willd.: 03, 04, 05, 09, 14, 16, 19, 20 (ter-M)
Cladonia furcata (Huds.) Schrad.: 04, 09, 16, 17, 19 (ter-M)
Cladonia pocillum (Ach.) Grognot: 03, 04, 05 (ter-M)
Cladonia pyxidata (L.) Hoffm.: 07, 17 (ter-M)
Cladonia symphycarpa (Flörke) Fr.: 07, 09, 15 (ter-M)
Collema crispum (Huds.) Weber ex F.H.Wigg.: 17, 18,19, 20, 21, 22, 23 (ter)
Collema cristatum (L.) Weber ex F.H.Wigg.: 17, 18, 19, 20 (cal)
Collema tenax (Sw.) Ach. em. Degel.: 05, 08, 09 (ter)
Collema undulatum Laurer ex Flot.: 08 (cal)
Dermatocarpon intestiniforme (Körb.) Hasse: 05, 08 (cal)
Dermatocarpon miniatum (L.) W.Mann: 05, 09, 16, 17, 19, 20, 21, 22, 23 (cal); conf. C. Roux
Diploschistes muscorum (Scop.) R.Sant.: 07 on *Cladonia symphycarpa* squamules
Diploschistes ocellatus (Vill.) Norman: 16, 17, 18, 21, 22 (cal); det. V. John
Collema nigrescens (Huds.) DC.: 02 (P base)
Diploschistes scruposus (Schreb.) Norman: 07 (sil), 16, 17 (cal)
Evernia divaricata (L.) Ach.: 01 (P), 06 (A), 09 (J, A)
Evernia prunastri (L.) Ach.: 02 (P), 06 (A)
Fulgensia schistidii (Anzi) Poelt: 05, 16, 17, 23 (ter-M)
Hyperphyscia adglutinata (Flörke) H.Mayrhofer & Poelt: 13 (Po)
Hypocenomyce scalaris (Ach.) M.Choisy: 02, 07 (P)
Hypogymnia farinacea Zopf: 02 (Cr, P)
Hypogymnia physodes (L.) Nyl.: 01 (P, A), 02 (P), 06 (A, P), 07 (P, A), 09 (A), 13, 19 (P)
Hypogymnia tubulosa (Schaer.) Hav.: 01 (P), 02 (Cr, P), 06 (A), 07 (P, Cr, A), 09 (A), 13 (P, Po)
Lecania fuscella (Schaer.) A.Massal.: 13 (Po)
Lecania rabenhorstii (Hepp) Arnold: 08 (cal)
Lecanora albella (Pers.) Ach.: 02 (Pr)
Lecanora argentata (Ach.) Malme: 02 (Pr, C), 09 (Q)
Lecanora bolcana (Pollini) Poelt: 07 (sil); det. P. L. Nimis and C. Roux
Lecanora campestris (Schaer.) Hue: 05 (cal)
Lecanora carpinea (L.) Vain.: 01 (P, Py), 02 (Cr, P, C), 06 (A), 07 (C, A), 09 (Q)
Lecanora chlarotera Nyl.: 02 (Cr), 13 (P, Po)
****Lecanora cinereofusca*** H.Magn.: 02 (Cr); conf. H. T. Lumbsch
Lecanora crenulata Hook.: 03, 04, 05, 09, 10 (cal)
Lecanora dispersa (Pers.) Sommerf.: 02 (Pr), 07 (sil), 11 (S), 03, 04, 05, 08, 10, 16, 17, 18 (cal)
Lecanora gangaleoides Nyl.: 26 (sil)
Lecanora intumescens (Rebent.) Rabenh.: 02 (C)
Lecanora muralis (Schreb.) Rabenh. var. ***muralis***: 04, 05, 10, 16, 17, 18, 19, 20, 21, 22, 23 (cal), 07, 15, 26 (sil)
Lecanora muralis var. ***dubyi*** (Müll.Arg.) Poelt: 12, 14 (cal); conf. C. Roux
Lecanora polytropa (Ehrh. ex Hoffm.) Rabenh.: 15 (sil)
Lecanora pulicaris (Pers.) Ach.: 02 (Cr)
Lecanora rupicola (L.) Zahlbr. ssp. ***rupicola***: 07, 14, 15, 18, 19, 26 (sil)
Lecanora saligna (Schrad.) Zahlbr.: 02 (Pr, Cr)

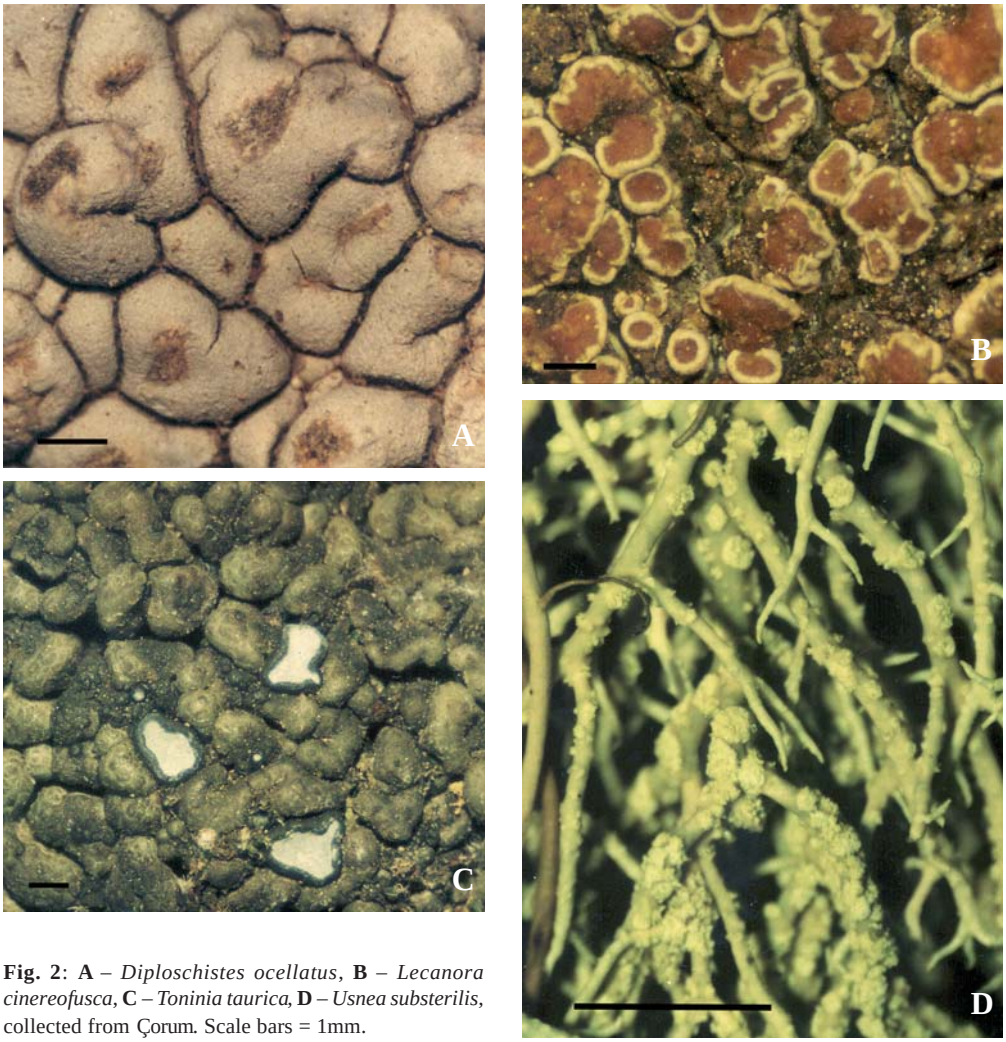

Fig. 2: **A** – *Diploschistes ocellatus*, **B** – *Lecanora cinereofusca*, **C** – *Toninia taurica*, **D** – *Usnea substerilis*, collected from Çorum. Scale bars = 1mm.

Lecanora varia (Hoffm.) Ach.: 01 (A), 06 (A), 07 (C), 11 (Ju)
Lecidea atrobrunnea (Lam. & DC.) Schaer.: 15, 26 (sil) det. V. John
Lecidea lapicida (Ach.) Ach.: 12 (sil)
Lecidella elaeochroma (Ach.) M.Choisy: 01 (A), 02 (Pr, Cr, P, C), 06 (A), 07 (Cr), 09 (J, Q, A), 13, 19 (P, Po)
Lecidella stigmatea (Ach.) Hertel & Leuckert: 03, 04, 07, 08, 09, 10, 18, 19, 20 (cal)
Lepraria incana (L.) Ach.: 02 (Cr, P, C), 09 (A)
Lepraria lobificans Nyl.: 06 (A, P), 07 (sil)
Lepraria vouauxii (Hue) R.C.Harris: 17 (ter-M)
Leptogium gelatinosum (With.) J.R.Laundon: 03, 05, 08 (ter-M)
Leptogium lichenoides (L.) Zahlbr.: 08, 09, 16, 18, 20, 21, 22 (ter-M); det. V. John
Lobaria pulmonaria (L.) Hoffm.: 02 (C base)
Lobothallia radiosa (Hoffm.) Hafellner: 08, 12, 16, 17, 18, 19, 20, 21, 22, 23 (cal)
Megaspora verrucosa (Ach.) Hafellner & V.Wirth: 05 (ter-M), 19, 20 (J)
Melanelia exasperatula (Nyl.) Essl.: 01 (P, A, Py), 02 (Pr, Cr, P, C), 09 (Q), 13 (P), 25 (cal)
Melanelia glabratula (Lamy) Nyl.: 02 (C)
Melanelia subargentifera (Nyl.) Essl.: 11 (Ju, Ma), 16 (cal)
Melanelia subaurifera (Nyl.) Essl.: 13 (Po)
Mycobilimbia lurida (Ach.) Hafellner & Türk: 08, 09, 16, 17, 18, 19, 20, 21, 23 (ter-M)

Neofuscelia pulla (Ach.) Essl.: 07, 14, 26 (sil), 16 (cal)
Nephroma laevigatum Ach. (non auct.): 02 (P, C base)
Ochrolechia pallescens (L.) A.Massal.: 06 (A)
Ochrolechia parella (L.) A.Massal.: 02 (C)
Ochrolechia turneri (Sm.) Hasselrot: 07 (P); det. V. John
Opegrapha vulgata Ach. var. ***vulgata***: 06 (A)
Parmelia saxatilis (L.) Ach.: 02 (P, C), 06 (A)
Parmelia sulcata Taylor: 02 (Cr w/ apothecia!, P, C), 07 (C), 09 (Q, A), 13 (P)
Parmeliopsis ambigua (Wulfen) Nyl.: 01 (P), 02 (P), 06 (A), 07 (P, C), 09 (A), 13 (P)
Peccania coralloides A.Massal.: 21 (ter); det. M. Schultz
Peltigera collina (Ach.) Schrad.: 07 (Cr mossy base)
Peltigera polydactylon (Neck.) Hoffm.: 14 (ter)
Peltigera praetextata (Flörke ex Sommerf.) Zopf: 09 (ter-M)
Peltigera rufescens (Weiss) Humb.: 04, 05, 07, 09, 16, 17, 19, 20, 26 (ter-M), 13 (Po)
Pertusaria albescens (Huds.) M.Choisy & Werner var. ***albescens***: 06 (A), 14, 19, 26 (sil)
Pertusaria amara (Ach.) Nyl.: 02 (C), 06 (A), 09 (A)
Pertusaria aspergilla (Ach.) J.R.Laundon: 07 (sil)
Pertusaria hemisphaerica (Flörke) Erichsen: 06 (A)
Pertusaria lactea (L.) Arnold: 07 (sil)
Phaeophyscia orbicularis (Neck.) Moberg: 02 (C), 07 (sil), 10, 18, 19, 20, 21 (cal)
Phlyctis argena (Spreng.) Flot.: 01 (A), 02 (C mossy base), 06 (A), 09 (A)
Physcia adscendens (Fr.) H.Olivier: 01 (Py), 02 (P), 05 (cal), 11 (S, Ju, Pr, Cy, Q, Ma), 13 (Po)
Physcia aipolia (Ehrh. ex Humb.) Fürnr.: 01 (P), 02 (Pr, Cr, P), 09 (Q), 11 (Ju, Cy, Po, Ma)
Physcia caesia (Hoffm.) Fürnr.: 05 (cal)
Physcia dubia (Hoffm.) Lettau : 05, 18 (cal), 07, 12 (sil)
Physcia semipinnata (J.F.Gmelin) Moberg: 06 (A), 13 (Po)
Physcia stellaris (L.) Nyl.: 13 (Po)
Physcia tribacia (Ach.) Nyl.: 15, 16 (sil), 17 (ter)
Physconia distorta (With.) J.R.Laundon: 02 (P, C), 09 (Q, A)
Physconia enteroxantha (Nyl.) Poelt: 17, 21, 26 (ter-M)
Physconia grisea (Lam.) Poelt: 02 (Pr, C)
Placidium squamulosum (Ach.) Breuss: 05, 08, 16, 17, 21 (ter on cal)
Placocarpus schaereri (Fr.) Breuss: 18 (cal); conf. C. Roux
Placynthium nigrum (Huds.) Gray: 16, 17, 18 (cal)
Placynthium subradiatum (Nyl.) Arnold: 07, 08 (cal); det. M. Tretiach
Platismatia glauca (L.) W.L.Culb. & C.F.Culb.: 01 (A), 06 (A, P)
Pleurosticta acetabulum (Neck.) Elix & Lumbsch: 02 (C)
Polychidium muscicola (Sw.) Gray: 07 (Cr, ter)
Porpidia crustulata (Ach.) Hertel & Knoph: 01 (Py), 07, 08, 15 (sil)
Pseudevernia furfuracea (L.) Zopf var. ***furfuracea***: 01 (P, A), 02 (P), 05 (S), 06 (A, P), 07 (P apothecia! Cr, A), 13 (P, Po)
Pseudevernia furfuracea var. ***ceratea*** (Ach.) D.Hawksw.: 01 (P), 02 (P), 06 (A), 09 (A), 13 (P)
Ramalina farinacea (L.) Ach.: 02 (P), 06 (A), 07 (Cr), 09 (Q, A)
Ramalina fastigiata (Pers.) Ach.: 01 (P), 02 (Cr, P, C), 06 (A), 09 (Q, A)
Ramalina fraxinea (L.) Ach.: 02 (Cr apothecia! C), 09 (Q)
Ramalina pollinaria (Westr.) Ach.: 01 (Py), 02 (Pr, P), 09 (Q)
Rhizocarpon distinctum Th.Fr.: 07 (sil)
Rhizocarpon geminatum Körb.: 17 (sil)
Rhizocarpon geographicum (L.) DC.: 07, 12, 14, 15, 26 (sil); conf. C. Roux
Rhizocarpon umbilicatum (Ramond) Flagey: 07 (cal)
Rimularia insularis (Nyl.) Rambold & Hertel: 07 on *Lecanora rupicola* (sil)
Rinodina bischoffii (Hepp) A.Massal.: 03, 05, 17 (cal)
Rinodina efflorescens Malme: 01 (A)
Rinodina exigua (Ach.) Gray: 02 (Pr, Cr), 06 (A), 09 (J)
Rinodina milvina (Wahlenb.) Th.Fr.: 07, 15 (sil); det. H. Mayrhofer
Rinodina sophodes (Ach.) A.Massal.: 06 (A)
Sarcogyne regularis Körb.: 04 (cal)
Squamarina lentigera (Weber) Poelt: 16, 17, 18, 19 (ter)
Tephromela atra (Huds.) Hafellner: 02 (C), 07, 14, 26 (sil), 19 (cal)
Toninia candida (Weber) Th.Fr.: 08 (ter-M), 17, 18, 19, 20, 21, 22, 23 (cal)
Toninia cinereovirens (Schaer.) A.Massal.: 18 (cal); det. V. John
Toninia diffracta (A.Massal.) Zahlbr.: 17 (ter); det. C. Roux
Toninia sedifolia (Scop.) Timdal: 05, 08, 09 (ter-M), 17, 21, 22, 23 (cal); conf. C. Roux
Toninia taurica (Szatala) Oxner: 16, 17, 21 (ter); conf. C. Roux
Tuckermanopsis chlorophylla (Willd.) Hale in Egan: 06 (A), 07 (P), 09 (A)

Usnea filipendula Stirt.: 07 (P, A), 09 (A)
Usnea florida (L.) Weber ex F.H.Wigg.: 01 (P), 02 (Cr, P), 06 (A, P), 07 (P, Cr), 09 (A), 13 (P)
Usnea fulvoreagens (Räsänen) Räsänen: 06 (A, P), 07 (P)
Usnea hirta (L.) Weber ex F.H.Wigg.: 01 (P), 02 (Cr, P), 07 (P), 13 (P)
Usnea rigida (Ach.) Mot.: 02 (P), 13 (P)
Usnea scabrata Nyl.: 06 (A); det. P. Clerc
Usnea subfloridana Stirt.: 02 (Pr, Cr, P), 06, 07 (P)
****Usnea substerilis*** Mot.: 02 (Cr, P), 07 (P), 13 (P); det. P. Clerc
Verrucaria glaucina Ach.: 04 (cal)
Verrucaria muralis Ach.: 03, 04, 05, 08, 09, 16, 17, 18, 19, 20, 21, 22, 23 (cal)
Verrucaria nigrescens Pers.: 03, 04, 05, 09, 10, 17, 18, 19, 21, 22, 23 (cal)
Xanthoparmelia conspersa (Ehrh. ex Ach.) Hale: 07, 26 (sil)
Xanthoparmelia somloensis (Gyeln.) Hale: 26 (sil)
Xanthoria elegans (Link) Th.Fr.: 05, 16, 18, 19, 20, 21, 22, 23, 24, 25 (cal) 12, 14, 26 (sil); conf. C. Roux
Xanthoria fulva (Hoffm.) Poelt & Petutschnig: 02 (P), 11 (Cy, Ma)
Xanthoria parietina (L.) Th.Fr.: 01 (P, Py), 02 (Pr, Cr, P), 09 (Q), 11 (S, Ju, Pr, Cy, Q, Ma), 13 (Po), 16 (J)
Xanthoria polycarpa (Hoffm.) Th.Fr. ex Rieber: 11 (S, Pr, Cy, Po, Ma)

Discussion

The list includes 188 taxa, with 186 species, of which 71 are abundant in both regions, while 78 species are only reported from Bolu and 34 only from Çorum. The proportions of growth forms are similar in both provinces with 51 % crustose, 26 % foliose and 23 % fruticose species in Bolu, and 60 % crustose, 28 % foliose and 12 % fruticose species in Çorum. *Caloplaca cerina* var. *muscorum*, *Chaenotheca chlorella*, *C. trichialis*, *Lecanora cinereofusca* and *Usnea substerilis* are new records for Turkey.

Both of the investigated areas are at the same latitude (40° N), but one is situated north (Bolu) and the other south (Çorum) of the line separating the Black Sea ecoregion from the Inner Anatolian ecoregion (ATALAY 2002). The climatic conditions differ considerably in humidity, precipitation and temperature. Thus the areas represent the mediterranean-oceanic and the continental element with different vegetations and land use. Representative indicator species with an oceanic distribution are *Buellia disciformis, Chrysothrix candelaris, Nephroma laevigatum* and *Peltigera collina* in the Bolu area. The continental element in Çorum is represented by *Aspicilia desertorum, Caloplaca biatorina, Diploschistes ocellatus, Placocarpus schaereri* and *Squamarina lentigera.*

Both areas are subject to tourism. Abant Lake Nature Park is covered by forests and popular for visitors because of its natural heritage. The activities of visitors to the Çatak Nature Park and Boğazköy-Alacahöyük Historical National Park concentrate on historical monuments. The influence of tourism on lichens in the investigated sites is comparable. A rather rich diversity with some sensitive species like *Anaptychia ciliaris, Alectoria sarmentosa, Bryoria fuscescens, Lobaria pulmonaria, Ramalina* and *Usnea* species with healthy appearance indicates low immissions of pollutants around Lake Abant.

The epiphytic community in Çorum is rather poor, with 30 % in comparison to 65 % in Bolu. Many of the epiphytes in Çorum are toxitolerant and adapted to dry and warm climates such as *Caloplaca haematites, Hyperphyscia adglutinata, Lecania fuscella* and *Xanthoria polycarpa*.

In Abant Lake Nature Park the number of epiphytic species is higher on evergreen trees, especially on *Abies nordmanniana*, whilst in Çatak Nature Park and Boğazköy-Alacahöyük Historical National Park the majority of epiphytic species is found on deciduous trees.

In order to detect influences of pollution, deterioration or eutrophication, permanent plots should be installed for monitoring, following the procedures outlined by VEREIN DEUTSCHER INGENIEURE (1995, 2002).

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