

Some Lichens from Gaziantep, Kahramanmaraş, Kırşehir and Yozgat Provinces (Turkey)

Mehmet Gökhan HALICI*, Ahmet AKSOY, Mustafa KOCAKAYA

Erciyes University, Faculty of Arts and Sciences, Department of Biology, 38039 Kayseri - TURKEY

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Abstract: Fifty genera containing 152 taxa of lichenised and lichenicolous fungi were identified from 15 sampling stations in the Turkish provinces of Gaziantep, Kahramanmaraş, Kırşehir and Yozgat. *Rosellinula frustulosae* (Vouaux) R.Sant. is a new record for Turkey.

Key Words: Lichens, Gaziantep, Kahramanmaraş, Kırşehir, Yozgat, Turkey

Gaziantep, Kahramanmaraş, Kırşehir ve Yozgat İllerinden (Türkiye) Bazı Likenler

Özet: Gaziantep, Kahramanmaraş, Kırşehir ve Yozgat illerinden 15 istasyondan 50 genusa bağlı 152 liken ve likenikol fungus taksonu belirlenmiştir. *Rosellinula frustulosae* (Vouaux) R.Sant. Türkiye için yeni kayıttır.

Anahtar Sözcükler: Liken, Gaziantep, Kahramanmaraş, Kırşehir, Yozgat, Turkey

Introduction

About 360 papers refer to lichens from Turkey (John, 2004). Few lichen taxa have been reported from the study area (Steiner, 1916; John, 1996, 2002; Nimis & John, 1998). Due to the short history of Turkish lichenology, covering no more than 2 decades, large gaps in the knowledge of the distribution of lichens in Turkey are obvious, even for common species. This paper contributes further small pieces to this mosaic of data.

Materials and Methods

Lichen specimens were collected from 2 localities in Gaziantep province, 3 localities in Kahramanmaraş province, 1 locality in Kırşehir province and 9 localities in Yozgat province in 2004 (Figure 1). The lichen samples are stored in the lichen herbarium of the Faculty of Arts and Sciences, Erciyes University, Kayseri. The collecting

sites are given in Table 1. The taxa are listed in alphabetical order for each locality. This allows a rough overview of the association of the lichens at the different localities, covering in each case a comparable small area.

The nomenclature follows Hafellner & Türk (2001) and other modern results (Blanco et al., 2004). Author names are according to Brummitt & Powell (1992). Lichen taxa new to the provinces are indicated by * and new to the country by #.

Results and Discussion

Lichens from Gaziantep

Gaziantep province connects the Mediterranean region and the South-east Anatolian region (Figure 1). The warmest month is July and the coldest month is January. Summers are generally hot and dry and the nights are cool in Gaziantep. The winters are generally

* E-mail: mghalici@erciyes.edu.tr

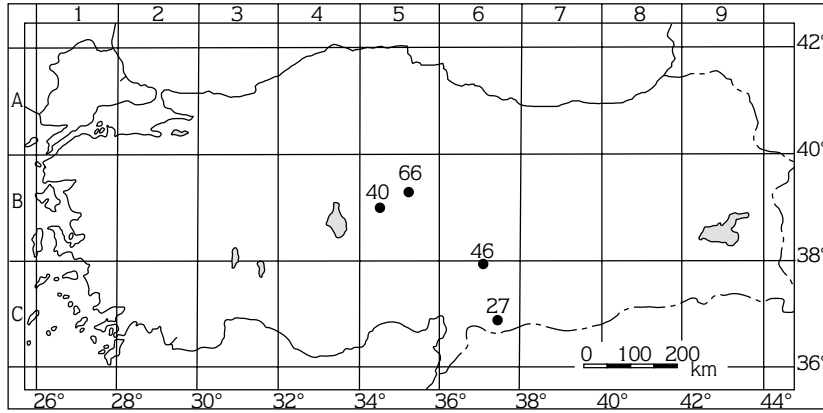


Figure 1. Position of the provinces from which the specimens are collected: 27. Gaziantep, 40. Kırşehir, 46. Kahramanmaraş, 66. Yozgat.

Table 1. Collecting sites.

PROVINCE, Region		Altitude	Latitude	Longitude	Date of Collection
GAZİANTEP	Centre				
	1. Sof Mountain, Near Military Base	1450 m	37° 08'	37° 08'	07.VI.2004
	2. Kızılyazı Region	955 m	37° 09'	37° 15'	07.VI.2004
K.MARAŞ	Narlı				
	3. Narlı, Near the Roadside	600 m	37° 19'	37° 08'	07.VI.2004
	Göksun				
	4. Kurucuova Village	1350 m	37° 56'	36° 34'	29.VIII.2004
	5. Doğanonak Village	1540 m	37° 10'	36° 27'	29.VIII.2004
KIRŞEHİR					
Çiçekdağı	6. Çiçekdağı Mountain	1154 m	39° 25'	34° 24'	27.V.2004
YOZGAT					
Şefaati	7. Şekerci Mountain	910 m	39° 31'	34° 43'	27.V.2004
Yerköy	8. Gaztepesi Village	1090 m	39° 34'	34° 32'	27.V.2004
	9. Delice Village	786 m	39° 36'	34° 30'	27.V.2004
Çayıralan	10. Elçi Village	1460 m	39° 16'	35° 38'	14.VIII.2004
	11. Elçi Village	1720 m	39° 15'	35° 39'	14.VIII.2004
Akdağmaden	12. Yukarıyahyasaray Village	1640 m	39° 16'	35° 38'	14.VIII.2004
	13. Büyük Nalbant Mountain	2065 m	39° 32'	36° 00'	14.VIII.2004
	14. Büyük Nalbant Mountain	2150 m	39° 32'	36° 00'	14.VIII.2004
	15. Between Büyük Nalbant and Kızılkoca Village, Çat Ormanları	1780 m	39° 30'	35° 59'	14.VIII.2004

cold and rainy (Figure 2). The whole province is under the effect of the Mediterranean climate (GMM, 1999). Dominant soil groups are brown and red brown soils and the parent rocks are calcareous in the collection localities in Gaziantep (KİTSGM, 1972).

So far, 67 lichen species have been reported from Gaziantep province (John, 1996; Nimis & John, 1998). In the present study, we reported 31 taxa on Sof Mountain and in the Kızılyazı region in Gaziantep province. Twenty-one of these taxa are new records for the province.

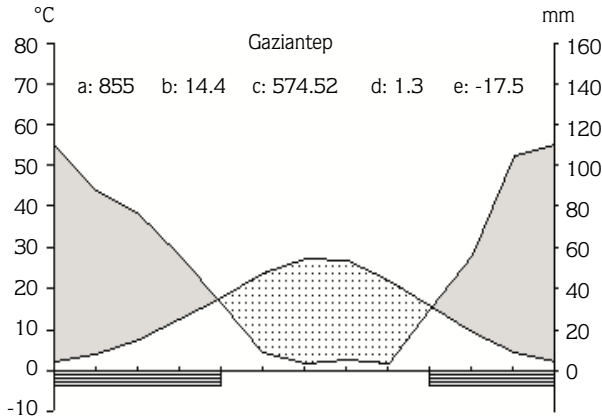


Figure 2. Climate diagram of Gaziantep.

Calcareous rocks are dominant in the study area with *Acarospora cervina*, *Aspicilia calcarea*, *Caloplaca paulsenii*, *C. saxicola*, *Diploschistes ocellatus*, *Protoparmeliopsis muralis* and *Rinodina calcarea*. *Placocarpus schaereri* is a constant parasite on *Protoparmeliopsis muralis* especially in its young stage and *Verrucaria fuscella* is found to be parasitic on various crustose lichens on calcareous rocks. Our observations are in agreement with the literature (Wirth, 1995). *Intralichen christiansenii* is parasitic on the thallus of *Caloplaca variabilis*. This lichenicolous fungus seems to be commensalistic as no damage except a weak discoloration was observed. This species is known in the hymenium of the apothecia or on the thallus of a wide range of lichens and some lichenicolous fungi (van den Boom, 1992; Hawksworth & Cole, 2002). A first list of the most common lichen species is presented below:

Prov. Gaziantep (27), Sof Mountain, Near Military Base, 37° 08' N, 37° 08' E, alt. 1450 m, calcareous rocks, steppe vegetation is dominant, no agriculture in vicinity, 7. VI. 2004, leg. M.G.Halici, det. M.G.Halici, V.John and D.L.Hawksworth (Loc. 1).

Aspicilia calcarea (L.) Mudd

Aspicilia contorta (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg

**Caloplaca circumalbata* (Delile) Wunder var. *circumalbata*

**Caloplaca paulsenii* (Vain.) Zahlbr.

**Caloplaca saxicola* (Hoffm.) Nordin

Caloplaca variabilis (Pers.) Müll.Arg.

Candelariella aurella (Hoffm.) Zahlbr.

Collema cristatum (L.) F.H.Wigg.

**Diploschistes ocellatus* (Vill.) Norman

**Diplotomma epipolium* auct. non (Ach.) Arnold

**Lecanora dispersa* (Pers.) Sommerf.

**Lobothallia radiosa* (Hoffm.) Hafellner

Placocarpus schaereri (Fr.) Breuss

Protoparmeliopsis muralis (Schreb.) M.Choisy

**Rinodina calcarea* (Arnold) Arnold

**Rinodina oleae* Bagl.

Squamarina cartilaginea (With.) P.James

**Verrucaria muralis* Ach.

Verrucaria nigrescens Pers.

Prov. Gaziantep (27), Kızılyazı Region, 37° 09' N, 37° 15' E, alt. 955 m, calcareous rocks, close to the city centre, near the highway and no agriculture in vicinity 7. VI. 2004, leg. M.G.Halici, det. M.G.Halici and V.John (Loc. 2).

**Acarospora cervina* A.Massal.

Aspicilia calcarea (L.) Mudd

Aspicilia contorta (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg

**Caloplaca lactea* (A.Massal.) Zahlbr.

**Caloplaca paulsenii* (Vain.) Zahlbr.

Caloplaca variabilis (Pers.) Müll.Arg.

Candelariella aurella (Hoffm.) Zahlbr.

**Candelariella medians* (Nyl.) A.L.Sm.

**Collema crispum* (Huds.) F.H.Wigg.

**Intralichen christiansenii* (D.Hawksw.) D.Hawksw.

**Lecidella carpathica* Körb.

**Lobothallia radiosa* (Hoffm.) Hafellner

Protoparmeliopsis muralis (Schreb.) M.Choisy

**Psora decipiens* (Hedw.) Hoffm.

**Rinodina calcarea* (Arnold) Arnold

**Rinodina dubyana* (Hepp) J.Steiner

**Rinodinella controversa* (A.Massal.) H.Mayrhofer & Poelt

- **Toninia philippea* (Mont.) Timdal
- **Verrucaria fuscella* (Turner) Winch
- **Verrucaria muralis* Ach.
- Verrucaria nigrescens* Pers.

Lichens from Kahramanmaraş

Kahramanmaraş province is part of the East Anatolian region. We collected lichens from 3 different localities. In the study area, bedrock of Mesozoic and Paleozoic phases is present (Pamir, 1975). In Narlı district, siliceous rocks are dominant, whereas calcareous rocks are dominant in Göksun district. Common soil formations are reddish-brown Mediterranean soils (KİTSGM, 1973). Kahramanmaraş has a Mediterranean climate (Figure 3). This is a typical first variant of the east Mediterranean climate (Akman, 1990).

As there have been no lichen records from Kahramanmaraş province before, all of the 53 taxa reported here are new records for the province. In Narlı district, we collected lichens near a highway at the border between Gaziantep and Kahramanmaraş. On siliceous rocks, *Acarospora fuscata*, *Aspicilia cinerea*, *Melanelia disjuncta*, *Rhizocarpon geographicum*, *Xanthoparmelia pulla* and *X. tinctina* are abundant. *Physconia enteroxantha* is abundant on mosses on siliceous rocks. We predict that there is high pollution in the collection locality caused by automobiles on the highway. Lichen species that are sensitive to air pollution are absent in the area.

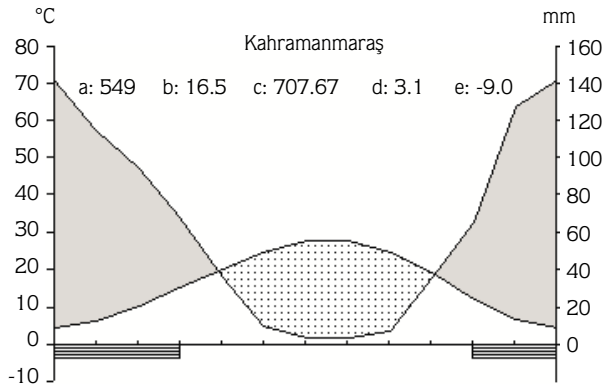


Figure 3. Climate diagram of Kahramanmaraş.

In Göksun district we collected lichens from Kurucuova (1540 m) and Doğankonak village (1350 m). Here calcareous rocks are dominant and genera such as *Acarospora*, *Aspicilia*, *Caloplaca*, *Collema* and *Verrucaria* have a large cover. *Psora testacea*, *Caloplaca xantholyta* and *Verrucaria marmorea* are adapted to grow in shaded habitats.

The collecting localities and the taxa found in these localities are as follows:

Prov. Kahramanmaraş (46), Narlı District, 37° 19' N, 37° 08' E, alt. 600 m, siliceous rocks, near the highway, dense air pollution caused by automobiles, steppe vegetation is dominant, no agriculture in the vicinity, 7. VI. 2004, leg. M.G.Halıcı, det. M.G.Halıcı (Loc. 3).

- **Acarospora fuscata* (Schrad.) Th.Fr.
- **Aspicilia cinerea* (L.) Körb.
- **Aspicilia contorta* (Hoffm.) Kremp. subsp. *contorta*
- **Aspicilia epiglypta* (Norrlin ex Nyl.) Hue
- **Caloplaca crenularia* (With.) J.R.Laundon
- **Caloplaca holocarpa* (Ach.) A.E.Wade
- **Candelariella aurella* (Hoffm.) Zahlbr.
- **Candelariella vitellina* (Hoffm.) Müll.Arg.
- **Lecanora dispersa* (Pers.) Sommerf.
- **Lecidella carpathica* Körb.
- **Melanelia disjuncta* (Erichsen) Essl.
- **Miriquidica deusta* (Stenh.) Hertel & Rambold
- **Physconia enteroxantha* (Nyl.) Poelt
- **Protoparmeliopsis muralis* (Schreb.) M.Choisy
- **Rhizocarpon geminatum* Körb.
- **Rhizocarpon geographicum* (L.) DC.
- **Rinodina oxydata* (A.Massal.) A.Massal.
- **Rinodina trachytica* (A.Massal.) Bagl. & Carestia
- * *Xanthoparmelia pulla* (Ach.) O.Blanco et al.
- * *Xanthoparmelia verruculifera* (Nyl.) O.Blanco et al.
- **Xanthoparmelia tinctina* (Maheu & A.Gillet) Hale

Prov. Kahramanmaraş (46), Göksun District, Kurucuova Village, 37° 56' N, 36° 34' E, alt. 1350 m, calcareous rocks, near highway, dense agriculture in vicinity, 29. VIII. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı and V.John (Loc. 4).

- **Acarospora cervina* A.Massal.
 **Aspicilia calcarea* (L.) Mudd.
 **Aspicilia contorta* (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg
 **Aspicilia desertorum* (Kremp.) Mereschk.
 **Caloplaca agardhiana* (A. Massal.) Clauzade & Cl.Roux
 **Caloplaca chalybaea* (Fr.) Müll.Arg.
 **Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnth.
 **Caloplaca xantholyta* (Nyl.) Jatta
 **Clauzadea monticola* (Schaer.) Hafellner & Bellem.
 **Collema crispum* (Huds.) F.H.Wigg.
 **Diplotomma epipolium* auct. non (Ach.) Arnold
 **Fulgensia fulgens* (Sw.) Elenkin
 **Fulgensia schistidii* (Anzi) Poelt
 **Lecanora dispersa* (Pers.) Sommerf.
 **Lecidella stigmatea* (Ach.) Hertel & Leuckert
 **Lobothallia radiosa* (Hoffm.) Hafellner
 **Placidium rufescens* (Ach.) A.Massal.
 **Psora testacea* Hoffm.
 **Rinodina gennarii* Bagl.
 **Sarcogyne regularis* Körb.
 **Verrucaria calciseda* DC.
 **Verrucaria marmorea* (Scop.) Arnold
 **Verrucaria nigrescens* Pers.

Prov. Kahramanmaraş (46), Göksun District, Doğankonak Village, 37° 10' N, 36° 27' E, alt. 1540 m, calcareous rocks, near highway, dense agriculture in vicinity 29. VIII. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı and V.John (Loc. 5).

- **Acarospora cervina* A.Massal.
 **Caloplaca dolomiticola* (Hue) Zahlbr.
 **Caloplaca flavescens* (Huds.) J.R.Laundon
 **Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnth.
 **Caloplaca variabilis* (Pers.) Müll.Arg.
 **Caloplaca xantholyta* (Nyl.) Jatta

- **Collema coccophorum* Tuck.
 **Collema cristatum* (L.) F.H.Wigg.
 **Collema polycarpon* Hoffm.
 **Lecidella patavina* (A.Massal.) Knoph & Leuckert
 **Lecidella stigmatea* (Ach.) Hertel & Leuckert
 **Protoblastenia calva* (Dicks.) Zahlbr.
 **Protoparmeliopsis muralis* (Schreb.) M.Choisy
 **Psora testacea* Hoffm.
 **Rinodina immersa* (Körb.) Zahlbr.
 **Toninia sedifolia* (Scop.) Timdal
 **Verrucaria nigrescens* Pers.

Lichens of Kırşehir

Kırşehir is located in the Central Anatolia region with Çiçekdağı district 70 km north of Kırşehir at the border with Yozgat. The soil groups are brown forest soils, red-brown soils, brown soils and alluvial soils and as naked rocks siliceous rocks are predominant. According to Emberger's Mediterranean bioclimate layers classification, Kırşehir is "semi-arid, very cold and Mediterranean". The total rainfall per year is 383.77 mm (Figure 4) and the distribution of rainfall in all seasons is W.Sp.A.S. (winter, spring, autumn, summer). The rainfall regime is "East Mediterranean Rain Regime Type I" in Kırşehir province (Akman, 1990).

There are some recent lichen records from Kırşehir province by John (2002). We report here 36 taxa, all of which are new records for the province. On siliceous rocks *Acarospora laqueata*, *Aspicilia intermutans*,

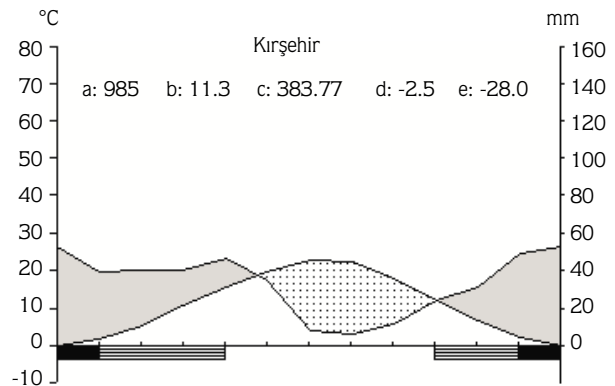


Figure 4. Climate diagram of Kırşehir.

Caloplaca crenularia, *Lecanora pannonica*, *Lecanora rupicola*, *Lecidea fuscoatra*, *Lobothallia alphoplaca*, *Ramalina capitata*, *Rhizocarpon geographicum* and *Xanthoparmelia somloensis* are very common.

Prov. Kırşehir (40), Çiçekdağı District, 39° 25' N, 34° 24' E, alt. 1154 m, siliceous rocks and weakly calcareous rocks, near highway, dense agriculture in vicinity, 27. V. 2004, leg. M.G.Halıcı and A.Aksoy, det. M.G.Halıcı (Loc. 6).

- **Acarospora laqueata* Stizenb.
- **Aspicilia caesiocinerea* (Malbr.) Arnold
- **Aspicilia cinerea* (L.) Körb.
- **Aspicilia contorta* (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg
- **Aspicilia intermutans* (Nyl.) Arnold
- **Buellia aethalea* (Ach.) Th.Fr.
- **Caloplaca atroflava* (Turner) Mong.
- **Caloplaca crenularia* (With.) J.R.Laundon
- **Caloplaca flavescens* (Huds.) J.R.Laundon
- **Candelariella aurella* (Hoffm.) Zahlbr.
- **Candelariella vitellina* (Hoffm.) Müll.Arg.
- **Diplotomma epipolium* auct. non (Ach.) Arnold
- **Lecanora dispersa* (Pers.) Sommerf.
- **Lecanora pannonica* Szatala
- **Lecanora rupicola* (L.) Zahlbr. subsp. *rupicola*
- **Lecanora rupicola* (L.) Zahlbr. subsp. *subplanata* (Nyl.) Leuckert & Poelt
- **Lecidea fuscoatra* (L.) Ach.
- **Lecidea tessellata* Flörke
- **Lecidella carpathica* Körb.
- **Lobothallia alphoplaca* (Wahlenb.) Hafellner
- **Lobothallia radiosa* (Hoffm.) Hafellner
- **Melanohalea elegantula* (Zahlbr.) O.Blanco et al.
- **Physcia dubia* (Hoffm.) Lettau
- **Protoparmeliopsis muralis* (Schreb.) M.Choisy
- **Ramalina capitata* (Ach.) Nyl.
- **Rhizocarpon alpicola* (Anzi) Rabenh.
- **Rhizocarpon geographicum* (L.) DC.
- **Rhizocarpon reductum* Th.Fr.

- **Rhizoplaca melanophthalma* (DC.) Leuckert & Poelt
- **Rhizoplaca peltata* (Ramond) Leuckert & Poelt
- **Tephromela atra* (Huds.) Hafellner
- * *Xanthoparmelia loxodes* (Nyl.) O.Blanco et al.
- * *Xanthoparmelia pulla* (Ach.) O.Blanco et al.
- **Xanthoparmelia somloensis* (Gyeln.) Hale
- * *Xanthoparmelia verruculifera* (Nyl.) O.Blanco et al.
- **Xanthoria elegans* (Link) Th.Fr.

Lichens from Yozgat

Yozgat is located in the Central Anatolian region. The Mediterranean climate is predominant in the area and characterised by hot and dry summers and cold winters. The total rainfall per year is 544.8 mm (Figure 5) and the distribution of rainfall according to season is W.Sp.A.S. (winter, spring, autumn, summer). The rainfall regime is "East Mediterranean Rain Regime Type I" in Yozgat (Erinç, 1988). According to Emberger's Mediterranean bioclimate layers classification, Yozgat is "upper semi-arid and very cold". The formation of calcareous bedrock goes back to the upper Mesozoic period. Two types of soil are seen: brown forest and alluvial soil (Ketin, 1963).

Lichens from Yozgat province were recorded by Steiner (1916) and John (2002). We collected lichens from 9 stations in Şefaati, Yerköy, Çayıralan, and Akdağmadeni. Of the 99 taxa, 92 are new records for Yozgat province. *Rosellinula frustulosae* is a new record for Turkey. On Şekerci Mountain (Şefaati district), siliceous rocks are predominant with *Lobothallia alphoplaca*, *Protoparmeliopsis muralis* and

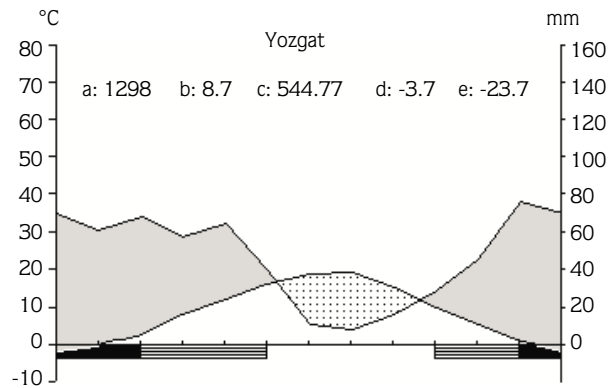


Figure 5. Climate diagram of Yozgat.

Xanthoparmelia tinctina. In Yerköy district, we collected lichens on siliceous rocks and *Quercus*. Species like *Aspicilia intermutans*, *Lecanora cenisia*, *Lobothallia alphoplaca*, *Xanthoparmelia pulla*, *X. somloensis* and *Xanthoria elegans* are very common on rocks. In addition, we found lichenicolous *Rinodina epimilvina* on *Rinodina milvina* and *Rosellinula frustulosae* parasitic on *Lecanora frustulosa*. *Rosellinula frustulosae* is a lichenicolous fungus on thallus and apothecia of *Lecanora frustulosa*. The infected areas of the thallus become bleached (Alstrup & Hawksworth, 1990). These bleachings were also seen in the infected areoles of the Turkish specimen. On the bark of *Quercus*, nitrophilic species like *Physcia stellaris*, *P. tenella*, *Xanthoria parietina* and *X. polycarpa* are very common. This may be the result of agriculture. In Çayıralan district, we collected lichens both on siliceous and calcareous rocks. *Acarospora cervina*, *Aspicilia calcarea*, *Diplotomma epipolium*, *Rinodina calcarea* and *Verrucaria* species are common on calcareous rocks. Especially at high altitudes, *Dimelaena oreina*, *Lecidea atrobrunnea* and *Rhizoplaca melanophthalma* are common on siliceous rocks with the terricolous *Phaeorrhiza nimbosa*. There are few corticolous species here on *Quercus* such as *Lecidella elaeochroma*, *Lecanora hagenii*, *L. horiza*, *L. saligna*, *Physcia stellaris* and *Pseudevernia furfuracea*. On Büyüknalbant Mountain (Akdağmaden district), siliceous rocks are predominant and the species composition is similar to that of the volcanic Erciyes Mountain (Halıcı et al., 2005). *Aspicilia caesiocinerea*, *Caloplaca flavescens*, *C. trachyphylla*, *Lecanora dispersoareolata*, *L. rupicola*, *Lecidea atrobrunnea*, *L. plana*, *Rhizoplaca* species and *Xanthoria elegans* are very common on these siliceous rocks. Moreover, lichenicolous *Caloplaca grimmiae* is found on *Candelariella vitellina* and *Lecanora sulphurea* on *Tephromela atra*. *Caloplaca cerina* var. *muscorum* has a large cover on mosses on exposed siliceous rocks on Büyük Nalbant Mountain. In Çat Forests, between Büyüknalbant Mountain and Kızılkoca village, *Pinus sylvestris* is dominant with *Pseudevernia furfuracea* and *Letharia vulpina* on acidic bark. Crustose corticolous species such as *Caloplaca cerina* var. *cerina*, *Diplotomma alboatrum*, *Lecanora chlarotera*, *L. hagenii* and *Lecidella elaeochroma* have a high dominance together with foliose *Melanohalea exasperatula*, *Parmeliopsis ambigua* and fruticose *Usnea filipendula* and *U. subfloridana*.

Prov. Yozgat (66), Şefaati District, Şekerci Mountain, 39° 31' N, 34° 43' E, alt. 910 m, no influence of roads or agriculture, natural habitat, calcareous-siliceous rocks, 27. V. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı (Loc. 7).

**Aspicilia contorta* (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg

**Caloplaca lactea* (A.Massal.) Zahlbr.

**Candelariella aurella* (Hoffm.) Zahlbr.

**Candelariella vitellina* (Hoffm.) Müll.Arg.

**Lecanora crenulata* auct., non Hook.

**Lecanora dispersa* (Pers.) Sommerf.

**Lecidea auriculata* Th.Fr.

**Lobothallia alphoplaca* (Wahlenb.) Hafellner

**Lobothallia radiosa* (Hoffm.) Hafellner

**Physcia dubia* (Hoffm.) Lettau

**Protoparmeliopsis muralis* (Schreb.) M.Choisy

* *Xanthoparmelia pulla* (Ach.) O.Blanco et al.

**Xanthoparmelia tinctina* (Maheu & A.Gillet) Hale

**Xanthoria elegans* (Link) Th.Fr.

Prov. Yozgat (66), Yerköy District, Gaztepesi Village, 39° 34' N, 34° 32' E, alt. 1090 m, dense agriculture in vicinity, siliceous rocks-*Quercus* forest, 27. V. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı (Loc. 8).

**Candelariella aurella* (Hoffm.) Zahlbr.

**Lecanora dispersa* (Pers.) Sommerf.

**Physcia stellaris* (L.) Nyl.

**Physcia tenella* (Scop.) DC.

**Rinodina epimilvina* H.Mayrhofer

**Rinodina milvina* (Wahlenb.) Th.Fr.

**Rinodina pyrina* (Ach.) Arnold

* *Xanthoparmelia pulla* (Ach.) O.Blanco et al.

**Xanthoria parietina* (L.) Th.Fr.

**Xanthoria polycarpa* (Hoffm.) Rieber

Prov. Yozgat (66), Yerköy District, Delice Village, 39° 36' N, 34° 30' E, alt. 786 m, dense agriculture in vicinity, siliceous-calcareous rocks, 27. V. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı, V.John and D.L.Hawksworth (Loc. 9).

**Aspicilia contorta* (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg

**Aspicilia intermutans* (Nyl.) Arnold

**Caloplaca holocarpa* (Ach.) A.E.Wade

**Candelariella aurella* (Hoffm.) Zahlbr.

**Lecanora frustulosa* (Dicks.) Ach.

**Lecanora crenulata* auct., non Hook.

**Lecanora dispersa* (Pers.) Sommerf.

**Lobothallia alphoplaca* (Wahlenb.) Hafellner

**Lobothallia radiosa* (Hoffm.) Hafellner

**Mycobilimbia lurida* (Ach.) Hafellner & Türk

**Physconia muscigena* (Ach.) Poelt

**Protoparmeliopsis muralis* (Schreb.) M.Choisy

**Rhizocarpon geographicum* (L.) DC.

Rosellinula frustulosae (Vouaux) R.Sant.

**Toninia sedifolia* (Scop.) Timdal

**Xanthoparmelia somloensis* (Gyeln.) Hale

**Xanthoria elegans* (Link) Th.Fr.

Prov. Yozgat (66), Çayıralan District, Elçi Village, 39° 16' N, 35° 38' E, alt. 1460 m, dense agriculture in vicinity, calcareous rocks, 14. VIII. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı (Loc. 10).

**Candelariella aurella* (Hoffm.) Zahlbr.

**Lecanora crenulata* auct., non Hook.

**Lobothallia radiosa* (Hoffm.) Hafellner

**Protoparmeliopsis muralis* (Schreb.) M.Choisy

**Xanthoria elegans* (Link) Th.Fr.

Prov. Yozgat (66), Çayıralan District, Elçi Village, 39° 15' N, 35° 39' E, alt. 1720 m, no influence of roads or agriculture, natural habitat, *Pinus sylvestris-Quercus* forest, siliceous rocks, 14. VIII. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı (Loc. 11).

**Acarospora cervina* A.Massal.

**Aspicilia calcarea* (L.) Mudd.

**Aspicilia contorta* (Hoffm.) Kremp. subsp. *contorta*

**Aspicilia contorta* (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg

**Caloplaca cerina* (Hedw.) Th.Fr. var. *cerina*

**Caloplaca dolomiticola* (Hue) Zahlbr.

**Caloplaca holocarpa* (Ach.) A.E.Wade

**Caloplaca lactea* (A.Massal.) Zahlbr.

**Caloplaca variabilis* (Pers.) Müll.Arg.

**Candelariella aurella* (Hoffm.) Zahlbr.

**Dimelaena oreina* (Ach.) Norman

**Diploschistes scruposus* (Schreb.) Norman

**Diplotomma epipolium* auct. non (Ach.) Arnold

**Lecanora crenulata* auct., non Hook.

**Lecanora hagenii* (Ach.) Ach.

**Lecanora horiza* (Ach.) Linds.

**Lecanora saligna* (Schrad.) Zahlbr.

**Lecidea atrobrunnea* (Lam. & DC.) Schaer.

**Lecidella elaeochroma* (Ach.) M.Choisy

**Melanohalea exasperata* (De Not.) O.Blanco et al.

**Phaeorrhiza nimbose* (Fr.) H.Mayrhofer & Poelt

**Physcia stellaris* (L.) Nyl.

**Protoparmeliopsis muralis* (Schreb.) M.Choisy

**Pseudevernia furfuracea* (L.) Zopf var. *furfuracea*

**Rhizoplaca melanophthalma* (DC.) Leuckert & Poelt

**Rinodina calcarea* (Arnold) Arnold

**Rinodina oleae* Bagl.

**Sarcogyne regularis* Körb.

**Toninia philippea* (Mont.) Timdal

**Verrucaria fuscella* (Turner) Winch

**Verrucaria muralis* Ach.

**Verrucaria nigrescens* Pers.

**Xanthoparmelia pulla* (Ach.) O.Blanco et al.

**Xanthoria elegans* (Link) Th.Fr.

Prov. Yozgat (66), Akdağmaden District, Yukarıyahyasaray Village, 39° 16' N, 35° 38' E, alt. 1640 m, *Pinus sylvestris* forest, no influence of roads or agriculture, natural habitat, 14. VIII. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı (Loc. 12).

**Candelariella aurella* (Hoffm.) Zahlbr.

**Candelariella xanthostigma* (Ach.) Lettau

**Cladonia pyxidata* (L.) Hoffm.

**Hypogymnia farinacea* Zopf

- **Hypogymnia tubulosa* (Schaer.) Hav.
Lecanora chlorotera Nyl.
 **Lecanora hagenii* (Ach.) Ach.
 **Lecanora saligna* (Schröd.) Zahlbr.
 **Lecidella elaeochroma* (Ach.) M.Choisy
 **Melanohalea elegantula* (Zahlbr.) O.Blanco et al.
 **Melanohalea exasperatula* (Nyl.) O.Blanco et al.
Parmeliopsis ambigua (Wulfen) Nyl.
 **Phycia dubia* (Hoffm.) Lettau
 **Phycia semipinnata* (J.F.Gmelin) Moberg
 **Protoparmeliopsis muralis* (Schreb.) M.Choisy
 **Pseudevernia furfuracea* (L.) Zopf var. *furfuracea*
 **Rinodina pyrina* (Ach.) Arnold
 **Usnea filipendula* Stirt.
- Prov. Yozgat (66), Akdağmaden District, Büyük Nalbant Mountain, 39° 32' N, 36° 00' E, alt. 2065 m, no influence of roads or agriculture, natural habitat, siliceous rocks, 14. VIII. 2004, leg. M.G.Halici, A.Aksoy and M.Kocakaya, det. M.G.Halici and V.John (Loc. 13).
- **Aspicilia contorta* (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg
 **Caloplaca cerina* (Hedw.) Th.Fr. var. *muscorum* (A.Massal.) Jatta
 **Caloplaca flavescens* (Huds.) J.R.Laundon
 **Caloplaca grimmiae* (Nyl.) H.Olivier
 **Caloplaca tirolensis* Zahlbr.
 **Caloplaca trachyphylla* (Tuck.) Zahlbr.
 **Candelariella vitellina* (Hoffm.) Müll.Arg.
 **Lecania inundata* (Körb.) M.Mayrhofer
 **Lecanora bicincta* Ramond
 **Lecanora dispersoareolata* (Schaer.) Lamy
 **Lecanora rupicola* (L.) Zahlbr. subsp. *rupicola*
 **Lecidea atrobrunnea* (Lam. & DC.) Schaer.
 **Lecidea plana* (J.Lahm) Nyl.
 **Lecidea silacea* Ach.
 **Phycia dubia* (Hoffm.) Lettau
 **Protoparmeliopsis muralis* (Schreb.) M.Choisy
- **Ramalina polymorpha* (Lilj.) Ach.
 **Rhizocarpon geographicum* (L.) DC.
 **Rhizoplaca melanophthalma* (DC.) Leuckert & Poelt
 **Rhizoplaca peltata* (Ramond) Leuckert & Poelt
 **Xanthoria elegans* (Link) Th.Fr.
- Prov. Yozgat (66), Akdağmaden District, Büyük Nalbant Mountain, 39° 32' N, 36° 00' E, alt. 2150 m, no influence of roads or agriculture, natural habitat, siliceous rocks, 14. VIII. 2004, leg. M.G.Halici, A.Aksoy and M.Kocakaya, det. M.G.Halici and V.John (Loc. 14).
- **Acarospora nitrophila* H.Magn.
 **Arthonia glaucomaria* Nyl.
 **Aspicilia caesiocinerea* (Malbr.) Arnold
 **Caloplaca aractina* (Fr.) Håyrén
 **Caloplaca cerina* (Hedw.) Th.Fr. var. *muscorum* (A.Massal.) Jatta
 **Caloplaca flavescens* (Huds.) J.R.Laundon
 **Candelariella vitellina* (Hoffm.) Müll.Arg.
 **Cetraria muricata* (Ach.) Eckfeldt
 **Lecanora bicincta* Ramond
 * *Lecanora campestris* (Schaer.) Hue
 **Lecanora flotoviana* Spreng.
 **Lecanora hagenii* (Ach.) Ach.
 **Lecanora rupicola* (L.) Zahlbr. subsp. *rupicola*
 **Lecanora sulphurea* (Hoffm.) Ach.
 **Lecidea atrobrunnea* (Lam. & DC.) Schaer.
 **Lecidea tessellata* Flörke
 **Lecidella carpathica* Körb.
 **Lobothallia alphoplaca* (Wahlenb.) Hafellner
 **Lobothallia radiosa* (Hoffm.) Hafellner
 **Phycia dubia* (Hoffm.) Lettau
 **Protoparmeliopsis muralis* (Schreb.) M.Choisy
 **Rhizocarpon geminatum* Körb.
 **Rhizocarpon geographicum* (L.) DC.
 * *Rhizocarpon macrosporum* Räsänen
 **Rhizocarpon viridiatrum* (Wulfen) Körb.
 **Rhizoplaca melanophthalma* (DC.) Leuckert & Poelt

**Rhizoplaca peltata* (Ramond) Leuckert & Poelt

**Rinodina milvina* (Wahlenb.) Th.Fr.

**Tephromela atra* (Huds.) Hafellner

**Xanthoparmelia verruculifera* (Nyl.) O.Blanco et al.

**Xanthoria elegans* (Link) Th.Fr.

Prov. Yozgat (66), Akdağmaden District, Between Büyük Nalbant Mountain and Kızılkoca Village, Çat Forests, 39° 30' N, 35° 59' E, alt. 1780 m, *Pinus sylvestris* forest, no influence of roads or agriculture, natural habitat, 14. VIII. 2004, leg. M.G.Halıcı, A.Aksoy and M.Kocakaya, det. M.G.Halıcı and D.L.Hawksworth (Loc. 15).

**Caloplaca cerina* (Hedw.) Th.Fr. var. *cerina*

**Candelariella aurella* (Hoffm.) Zahlbr.

**Candelariella vitellina* (Hoffm.) Müll.Arg.

**Cladonia fimbriata* (L.) Fr.

**Cladonia pyxidata* (L.) Hoffm.

**Diplotomma alboatrum* (Hoffm.) Flot.

**Lecanora argentata* (Ach.) Malme

Lecanora chlarotera Nyl.

**Lecanora hagenii* (Ach.) Ach.

**Lecanora saligna* (Schrad.) Zahlbr.

**Lecanora varia* (Hoffm.) Ach.

**Lecidella elaeochroma* (Ach.) M.Choisy

Letharia vulpina (L.) Hue

**Melanohalea exasperatula* (Nyl.) O.Blanco et al.

Parmeliopsis ambigua (Wulfen) Nyl.

**Pseudevernia furfuracea* (L.) Zopf var. *furfuracea*

**Ramalina pollinaria* (Westr.) Ach.

**Usnea filipendula* Stirt.

**Usnea subfloridana* Stirt.

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