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## Saxicolous and Terricolous lichens of Şirvan Mountain (Pınarbaşı, Kayseri)

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**Abstract:** Seventy-three taxa belonging to 27 genera are reported from Şirvan Mountain (Kayseri). All of these taxa are new records for the study area. Of these, 31 taxa are reported for the first time from the province of Kayseri, and 3 taxa, *Caloplaca epiphyta* Lynge, *Lecanora hagenii* (Ach.) Ach. var. *fallax* Hepp and *Sarcogyne regularis* Körb. var. *platycarpoides* (Anzi) N.S.Golubk., are new records for Turkey.

**Key Words:** Ascomycota, Central Anatolia, Turkey

### Şirvan Dağı (Pınarbaşı, Kayseri) Likenleri

**Özet:** Şirvan Dağı'ndan (Kayseri) 27 genusa ait 73 takson rapor edilmiştir. Bu taksonların hepsi çalışma alanı için yeni kayıtlardır. Bunlardan 31 takson Kayseri ilinden ilk defa rapor edilmiştir ve 3 takson; *Caloplaca epiphyta* Lynge, *Lecanora hagenii* (Ach.) Ach. var. *fallax* Hepp ve *Sarcogyne regularis* Körb. var. *platycarpoides* (Anzi) N.S.Golubk. Türkiye için yeni kayıttır.

**Anahtar Sözcükler:** Ascomycota, İç Anadolu, Türkiye

### Introduction

Although several studies on the lichen flora of Kayseri province have been published (Steiner, 1905; Güvenç, 2001; Halıcı & Aksoy, 2004; Halıcı et al., 2005), the lichen flora of this province is not completely known. There is no previous lichenological study on Şirvan Mountain. This is the first overview on the lichen flora of this mountain. This study aims to contribute to the lichen flora of Kayseri province and Turkey.

### Study area

Şirvan Mountain, which is in the east of Central Anatolia, is located 100 km east of Kayseri, in Pınarbaşı district. It is an extension of the Tahtalı Mountain Chain.

Şirvan Mountain is located between 38° and 39° N and 36° and 37° E at 2328 m altitude. The area is bordered by Aygörmez Mountain to the north-west, Tahtalı Mountain to the north-east and Koç Mountain to

the south. The area has a more or less uneven aspect and its geological structure is formed by calcareous parent rock. There is no large river or lake in the study area, only Soğuksu river, running from south to north.

The annual mean precipitation is 405 mm and the annual mean temperature is 7.7 °C in Pınarbaşı (Figure 1). The minimum mean temperature of the coldest month is -9.0 °C and the maximum mean temperature of the hottest month is 27.5 °C.

Steppe vegetation is dominant in the research area, which is included in the Irano-Turanian phytogeographical region. Overgrazing is common and erosion threatens almost the entire region.

### Collecting sites (see Figure 2)

1. Turkey, Kayseri (38), Pınarbaşı, The western slopes of Şirvan Mountain, 38° 43.069' N, 36° 23.948' E, 1545 m, leg. M. G. Halıcı 29.06.2005.

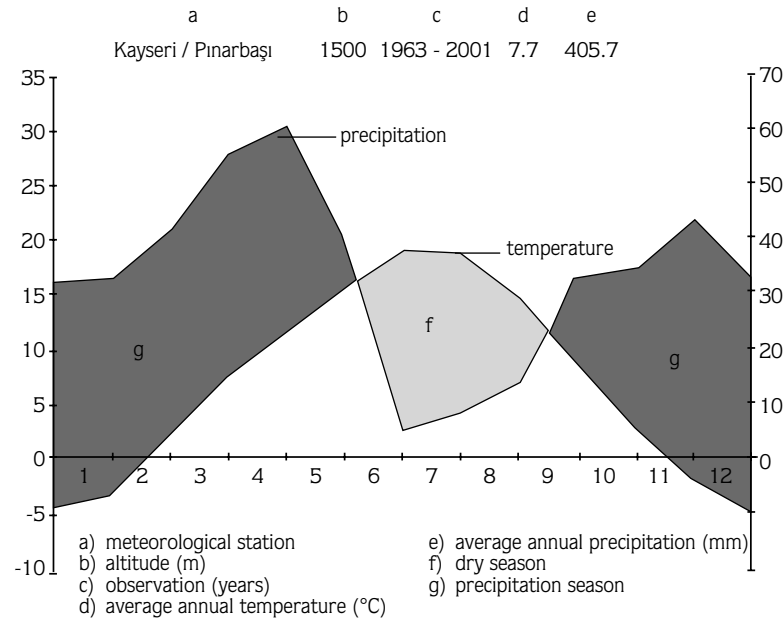


Figure 1. Climatic diagram of Pınarbaşı.

2. Turkey, Kayseri (38), Pınarbaşı, The western slopes of Şirvan Mountain, 38° 43.078' N, 36° 23.920' E, 1620 m, leg. M. G. Halıcı 29.06.2005.
3. Turkey, Kayseri (38), Pınarbaşı, The eastern slopes of Şirvan Mountain, 38° 43.082' N, 36° 23.996' E, 1555 m, leg. M. G. Halıcı 29.06.2005.
4. Turkey, Kayseri (38), Pınarbaşı, The eastern slopes of Şirvan Mountain, 38° 43.193' N, 36° 23.912' E, 1505 m, leg. M. G. Halıcı 07.07.2005.
5. Turkey, Kayseri (38), Pınarbaşı, The southern slopes of Şirvan Mountain, 38° 43.018' N, 36° 23.934' E, 1545 m, leg. M. G. Halıcı 07.07.2005.
6. Turkey, Kayseri (38), Pınarbaşı, The southern slopes of Şirvan Mountain, 38° 42.949' N, 36° 24.013' E, 1700 m, leg. M. G. Halıcı 07.07.2005.

## Materials and Methods

The list of lichens is based on original collections by one of the authors (MGH) in 2005. Specimens collected from the study area are stored in the herbarium of Erciyes Üniversitesi, Fen Edebiyat Fakültesi, Biyoloji Bölümü, Kayseri. The nomenclature is mainly according to Hafellner & Türk (2001) and the author names follow Brummitt & Powell (1992).

## Results

The taxa are listed in alphabetical order, followed by their collection site numbers. Lichen taxa new to Turkey are indicated by # and those new to Kayseri province by \*.

- Acarospora cervina* A.Massal. 1, 2, 3, 4, 5  
 \**Acarospora glaucocarpa* (Ach.) Körb. 2  
 \**Acarospora scabra* (Pers.) Th.Fr. 3, 4, 6  
*Aspicilia calcarea* (L.) Mudd 1, 3, 4, 5, 6  
*Aspicilia contorta* (Hoffm.) Kremp. subsp. *contorta* 1, 6  
*Aspicilia contorta* (Hoffm.) Kremp. subsp. *hoffmanniana* S.Ekman & Fröberg 3, 5  
*Aspicilia desertorum* (Kremp.) Mereschk. 3, 6  
*Aspicilia viridescens* (A.Massal.) Hue 1  
*Caloplaca chalybaea* (Fr.) Müll.Arg. 5  
 \**Caloplaca circumalbata* (Delile) Wunder 5  
 \**Caloplaca coronata* (Körb.) J.Steiner 4  
*Caloplaca decipiens* (Arnold) Blomb. & Forssell 1, 2, 3, 5  
*Caloplaca dolomiticola* (Hue) Zahlbr. 3, 6  
 #*Caloplaca epiphyta* Lynge 3

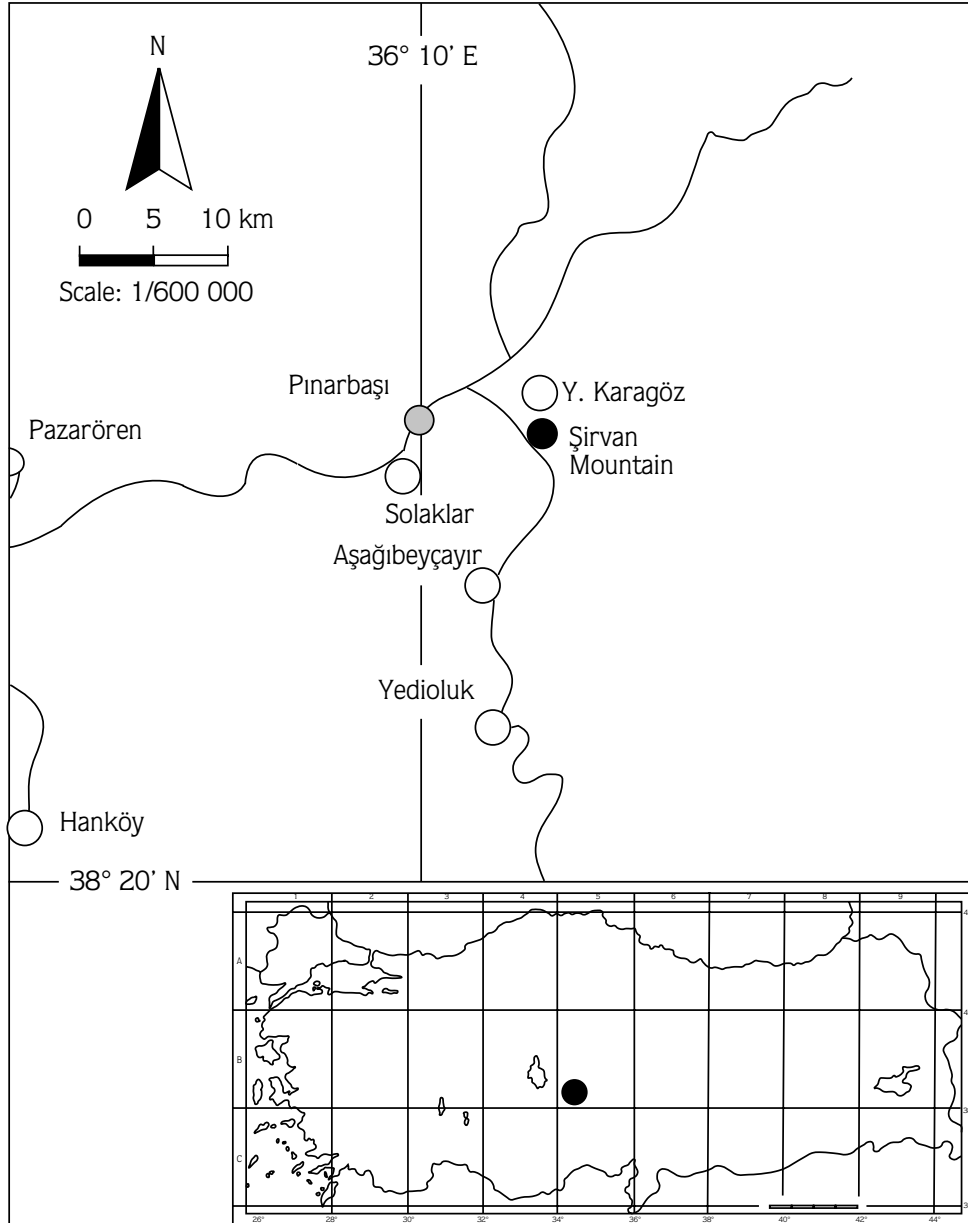


Figure 2. The collecting sites.

*\*Caloplaca flavescens* (Huds.) J.R.Laundon 1, 3, 4, 5  
*Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnth. 1, 3, 4, 5, 6  
*Caloplaca holocarpa* (Hoffm.) A.E.Wade 1  
*\*Caloplaca inconnexa* (Nyl.) Zahlbr. 1, 5  
*Caloplaca lactea* (A.Massal.) Zahlbr. 1, 3, 5, 6  
*Caloplaca saxicola* (Hoffm.) Nordin 1, 2, 3, 5

*Caloplaca tirolensis* Zahlbr. 5  
*\*Caloplaca transcaspica* (Nyl.) Zahlbr. 3, 5  
*Caloplaca variabilis* (Pers.) Müll.Arg. 1, 3, 5, 6  
*\*Caloplaca xantholyta* (Nyl.) Jatta 1  
*Candelariella aurella* (Hoffm.) Zahlbr. 1, 3, 5, 6  
*Candelariella vitellina* (Hoffm.) Müll.Arg. 1, 3, 4, 5  
*Collema crispum* (Huds.) F.H.Wigg. 4

\**Collema cristatum* (L.) F.H.Wigg. 6  
 \**Collema fuscovirens* (With.) J.R.Laundon 1  
*Collema polycarpon* Hoffm. 5  
*Collema tenax* (Sw.) Ach. 1  
 \**Dermatocarpon miniatum* (L.) W.Mann 2, 5  
*Diplotomma epipolium* (Ach.) Arnold 3, 5, 6  
 \**Diplotomma venustum* (Körb.) Körb. 5, 6  
*Fulgensia schistidii* (Anzi) Poelt 5  
*Lecanora albescens* (Hoffm.) Branth & Rostr. 5  
 \**Lecanora crenulata* s. l. 1, 3, 5  
*Lecanora dispersa* (Pers.) Sommerf. 1, 2, 3, 4, 5  
 #*Lecanora hagenii* (Ach.) Ach. var. *fallax* Hepp 5  
*Lecidea tessellata* Flörke 6  
*Lecidella carpathica* Körb. 3  
 \**Lecidella patavina* (A.Massal.) Knoph & Leuckert 3, 4,  
 5  
*Lecidella stigmatea* (Ach.) Hertel & Leuckert 3, 5  
*Leptogium gelatinosum* (With.) J.R.Laundon 5  
 \* *Leptogium plicatile* (Ach.) Leight. 1  
*Lobothallia radiosa* (Hoffm.) Hafellner 1, 2, 3, 4  
*Physconia grisea* (Lam.) Poelt 1, 2, 3  
 \**Placidium squamulosum* (Ach.) Breuss 4  
 \**Placocarpus schaereri* (Fr.) Breuss 1, 3, 4  
 \**Polysporina cyclocarpa* (Anzi) Vézda 2, 3  
*Porpidia speirea* (Ach.) Kremp. 6  
*Protoparmeliopsis muralis* (Schreb.) M.Choisy 1, 3, 4,  
 6  
*Psora decipiens* (Hedw.) Hoffm. 6  
*Rinodina calcarea* (Arnold) Arnold 1, 3, 4, 5  
 \**Rinodina dubyana* (Hepp) J.Steiner 3  
*Rinodina gennarii* Bagl. 1  
 \**Rinodina immersa* (Körb.) Zahlbr. 1, 3  
 \**Rinodina lecanorina* (A.Massal.) A.Massal. 3, 4  
 \**Rinodina teichophila* (Nyl.) Arnold 3  
*Sarcogyne clavus* (DC.) Kremp. 1, 3  
 #*Sarcogyne regularis* Körb. var. *platycarpoides* (Anzi)  
 N.S.Golubk. 1

\**Squamarina lentigera* (Weber) Poelt 1, 6  
*Staurothele areolata* (Ach.) Lettau 5  
 \**Toninia philippea* (Mont.) Timdal 3, 5  
*Toninia sedifolia* (Scop.) Timdal 3  
 \**Verrucaria calciseda* DC. 5  
 \**Verrucaria compacta* (A.Massal.) Jatta 3  
 \**Verrucaria fuscella* (Turner) Winch 1, 2, 3, 5, 6  
*Verrucaria lecideoides* (A.Massal.) Trevisan 3, 4  
*Verrucaria muralis* Ach. 1  
*Verrucaria nigrescens* Pers. 3, 6  
 \**Verrucaria subfuscella* Nyl. 1  
*Xanthoria elegans* (Link) Th.Fr. 1, 3, 4, 6

In this study, 73 taxa belonging to 27 genera are given from Şirvan Mountain (Pınarbaşı, Kayseri). All of the reported taxa are new records for the study area. In addition, 31 taxa are new records for Kayseri province. According to the literature (John, 1992, 1995), 3 taxa, namely *Caloplaca epiphyta* Lyngé, *Lecanora hagenii* (Ach.) Ach. var. *fallax* Hepp and *Sarcogyne regularis* Körb. var. *platycarpoides* (Anzi) N.S.Golubk., are new records for Turkey.

## Discussion

Of the reported taxa, lime-loving lichens such as *Acarospora cervina*, *Aspicilia calcarea*, *Caloplaca decipiens*, *C. flavescens*, *C. flavovirescens*, *C. lactea*, *C. saxicola*, *C. variabilis*, *Candelariella aurella*, *Diplotomma epipolium*, *Lecanora crenulata*, *L. dispersa*, *Lobothallia radiosa*, *Placocarpus schaereri*, *Protoparmeliopsis muralis*, *Rinodina calcarea*, *Verrucaria fuscella* and *Xanthoria elegans* are very abundant on calcareous rocks in the study area.

In the study area, *Caloplaca inconnexa* grows parasitically on *Verrucaria fuscella* and *Verrucaria fuscella* on *Aspicilia contorta* subsp. *hoffmaniana* and many undetermined crustose taxa. Especially *Verrucaria fuscella* starts its life cycle on other crustose lichens. *Placocarpus schaereri* is found to be a constant parasite on *Protoparmeliopsis muralis*, especially in its young stage. These findings are in agreement with the data in the literature (Wirth, 1995).

*Caloplaca epiphyta*, a new record for Turkey, was collected from mosses on exposed calcareous rocks. Thallus is a sorediate crust, pale orange and K + violet. Upper cortex paraplectenchymatous. Apothecia were not observed in the Turkish specimen. *Lecanora hagenii* var. *fallax* was collected on plant debris on calcareous rocks. Thallus crustose, whitish and thin, all chemical reactions are negative. Apothecia frequent with a distinct margin, densely white pruinose and ~ 0.5 mm. Eight ascospores per ascus, colourless, ellipsoid and 1-celled; 12-14 x 6 µm. The other new record for Turkey, *Sarcogyne regularis* var. *platycarpoides*, is collected from calcareous rocks, which have a poor lichen biodiversity but are mixed with *Rinodina immersa*. Thallus unapparent, endolithic.

Apothecia lecideine, discs reddish brown; lightly pruinose and characterised by its thick, raised and persistent apothecial margin. Ascospores colourless, ~ 100 per ascus, narrowly ellipsoid; 5-2 µm.

Air pollution and dry climate may be responsible for the rather low numbers of lichen taxa. Because of agricultural activities around the mountain, nitrophilic genera such as *Caloplaca*, *Physconia* and *Xanthoria* are abundant in the study area.

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