



SOME LICHEN RECORDS FROM ÇAT FORESTS (GEMEREK, SIVAS)

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ABSTRACT

Sixty taxa belonging to 34 genera are reported from Çat Forests (Gemerek, Sivas). There is no published data about lichenized and lichenicolous fungi composition of Çat Forests, because of this reason all of the reported taxa in this paper are new records for the study area. Besides, 49 taxa are new records for Sivas province. Two taxa namely, *Rinodina plana* H.Magn. and *Thelidium decipiens* (Nyl.) Kremp. are reported for the first time from Turkey.

Keywords: Ascomycota; Coelomycetes; Central Anatolia.

ÇAT ORMANLARI'NDAN (GEMEREK, SİVAS) BAZI LİKEN KAYITLARI

ÖZET

Çat Ormanları'ndan (Gemerek, Sivas) 34 cinse ait 60 taxon rapor edilmiştir. Çat Ormanlarının liken ve likenikol fungus kompozisyonu hakkında yayınlanmış bilgi mevcut değildir, bu yüzden bu makalede rapor edilen taksonların hepsi çalışma alanı için yeni kayıttır. Ayrıca 49 takson Sivas ili için yeni kayıttır. İki takson, *Rinodina plana* H.Magn. ve *Thelidium decipiens* (Nyl.) Kremp. Türkiye'den ilk defa rapor edilmektedir.

Anahtar kelimeler: Ascomycota; Coelomycetes; İç Anadolu.

1. INTRODUCTION

Only few numbers of lichenized and lichenicolous fungi taxa were reported from Sivas Province [1-4]. Besides, there is no published data about lichen and lichenicolous fungi composition of Çat Forests in borders of Sivas Province. However Halıcı et al. (2007) published several lichen taxa from Çat Forests in the borders of Yozgat Province [5]. In the summer of 2005, Biology Club of Erciyes University organized a field excursion to Çat Forests to show the biological diversity of the area to the students. The author mainly collected *Pseudevernia furfuracea* which have a large cover on the acidic barks of *Abies* sp. for a planned biomonitoring study in the future. Besides, some lichen and lichenicolous fungi specimens were collected. The determined taxa of lichens and lichenicolous fungi collected from the study area are presented here to give an overview about the lichen composition of the study area.

2. MATERIALS AND METHODS

The list of lichens is based on original collections of the author in 2005. Specimens collected from the study area are stored in the herbarium of Erciyes Üniversitesi, Fen Edebiyat Fakültesi, Biyoloji Bölümü, Kayseri. The nomenclature follows Hafellner & Türk (2001) [6] and other modern results [7]. Author names are according to Brummitt & Powell (1992) [8].



Figure 1. The map of the study area.

Collecting sites:

1. Turkey, Sivas (58), Gemerek, Çat Ormanları, 39° 24.665' N, 35° 51.369' E, 1582 m, 04 June 2005.
2. Turkey, Sivas (58), Gemerek, Çat Ormanları, 39° 24.320' N, 35° 73.470' E, 1510 m, 04 June 2005.
3. Turkey, Sivas (58), Gemerek, Çat Ormanları, 39° 23.820' N, 35° 93.270' E, 1620 m, 04 June 2005.
4. Turkey, Sivas (58), Gemerek, Çat Ormanları, 39° 23.970' N, 35° 91.745' E, 1660 m, 04 June 2005.

3. STUDY AREA

Çat Forests, which is in the north east of Central Anatolia, is located 120 km south of Sivas, in Gemerek district. The main elevations surrounding the study area are Karababa Mountain (2346 m) and Şama Mountain (1712 m) in the north and Karadağ (1611 m) in the south (Figure 1). The study area is situated in the Irano-Turanian phytogeographical region. Brown soil forests and calcareous parent rocks are predominant in the study area.

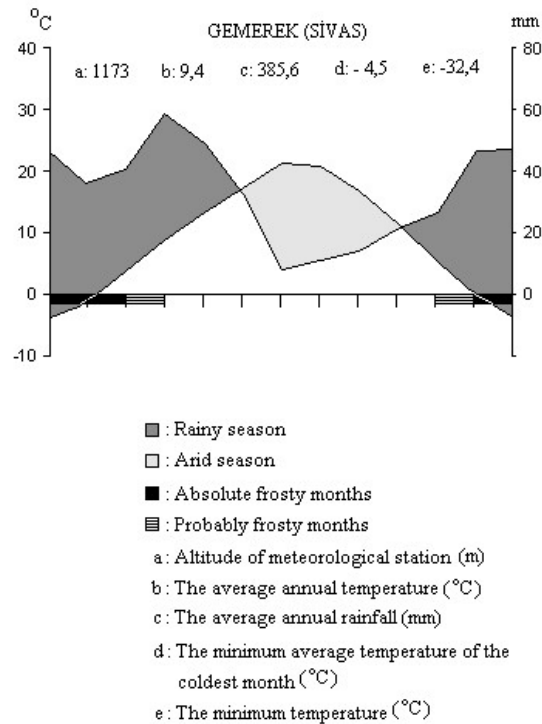


Figure 2. The climatic diagram of Gemerek (Sivas).

The annual mean precipitation is 385.6 mm and the annual mean temperature is 9.4 °C in the study area. The minimum mean temperature of the coldest month is -4.5 °C (Figure 2). The study area is under the influence of Mediterranean climate in general (Akman & Dağet, 1971). According to meteorological data, the seasonal distribution of precipitation is Spring-Winter-Autumn-Summer [9].

4. RESULTS

The taxa are listed in alphabetical order, followed by their collection site numbers and substrates. Lichen taxa new to provinces are indicated by * and new to country by #.

- **Acarospora cervina* A.Massal. 1, 3, 4: calcareous rocks
- **Acarospora glaucocarpa* (Wahlenb. ex Ach.) Körb. 3: calcareous rocks
- **Amandinea punctata* (Hoffm.) Coppins & Scheid. 1: *Abies* sp.
- **Aspicilia calcarea* (L.) Körb. 1, 4: calcareous rocks
- Aspicilia contorta* subsp. *hoffmaniana* S.Ekman & Fröberg 1, 3, 4: calcareous rocks
- **Aspicilia coronata* (A.Massal.) Anzi 4: calcareous rocks
- **Caloplaca agardhiana* (Flot.) Flagey 3: calcareous rocks
- **Caloplaca dolomiticola* (Hue) Zahlbr. 3: calcareous rocks
- **Caloplaca flavovirescens* (Wulfen) Dalla Torre & Saroth. 4: calcareous rocks
- **Caloplaca tirolensis* Zahlbr. 2: plant debris in crevices of calcareous rocks
- **Caloplaca variabilis* (Pers.) Müll.Arg. 1, 3, 4: calcareous rocks
- **Candelariella xanthostigma* (Pers.) Lettau 1, 2: *Abies* sp.
- **Catapyrenium cinereum* (Pers.) Körb. 3: soil
- **Catapyrenium daedalum* 3: soil
- **Cladonia coccifera* (L.) Willd. 2: *Abies* sp.
- **Cladonia fimbriata* (L.) Fr. 1, 4: *Abies* sp.
- **Cladonia pyxidata* (L.) Hoffm. 1, 2, 4: *Abies* sp.
- Collema crispum* (L.) Weber ex F.H.Wigg. 3: calcareous rocks
- Collema tenax* (Sw.) Ach. 3: calcareous soil
- Hypogymnia physodes* (L.) Nyl. 4: *Abies* sp.
- **Hypogymnia tubulosa* (Schaer.) Hav. 1: *Abies* sp.
- **Lecanora argentata* (Ach.) Malme 1, 4: *Abies* sp.
- **Lecanora chlarotera* Nyl. 1, 2, 3, 4: *Abies* sp.
- Lecanora crenulata* Nyl. 1, 3: calcareous rocks

- **Lecanora flotowiana* Spreng. 1, 3: calcareous rocks
 **Lecanora saligna* (Schrad.) Zahlbr. 4: *Abies* sp.
 **Lecanora varia* (Hoffm.) Ach. 2: *Abies* sp.
 **Lecidea turgidula* Fr. 3: *Abies* sp.
Lecidella elaeochroma (Ach.) 1, 3, 4: *Abies* sp.
 **Lecidella patavina* (A.Massal.) Knoph & Leuckert 2: calcareous rocks
Lecidella stigmatea (Ach.) Hertel & Leuckert 2, 4: calcareous rocks
 **Lepraria incana* (L.) Ach. 3: *Abies* sp.
 **Leptogium gelatinosum* (With.) J.R.Laundon 1: on mosses
 **Lichenocodium erodens* M.S.Christ. & D.Hawksw. 2: Lichenicolous on thallus of *Parmeliopsis ambigua*.
 **Lichenocodium pyxidatae* (Oudem.) Petr. & Syd. 2: Lichenicolous on squamules of *C.pyxidata*
 **Letharia vulpina* (L.) Hue 1, 2, 4: *Abies* sp.
Melanohalea exasperatula (Nyl.) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch 4: *Abies* sp.
 **Parmelia sulcata* Taylor 1, 3, 4: *Abies* sp.
Parmeliopsis ambigua (Wulfen) Nyl. 2: *Abies* sp.
 **Peltigera rufescens* (Weiss) Humb. 3: on soil
 **Physcia tribacia* (Ach.) Nyl. 1: *Abies* sp.
 **Placynthium nigrum* (Huds.) Gray 3: calcareous rocks
 **Platismatia glauca* (L.) W.L.Culb. & C.F.Culb. 4: *Abies* sp.
Protoparmeliopsis muralis (Schreb.) M.Choisy 1, 3, 4: calcareous rocks
 **Pseudevernia furfuracea* var. *furfuracea* (L.) Zopf 1, 2, 3, 4: *Abies* sp.
 **Rinodina bischoffii* (Hepp) A.Massal. 2: calcareous rocks
 #*Rinodina plana* H.Magn. 3: *Abies* sp.
 **Rinodina pyrina* (Ach.) Arnold 3: *Abies* sp.
 **Rinodina septentrionalis* Malme 1: *Abies* sp.
 **Sarcogyne clavus* (DC.) Kremp. 2, 4: calcareous rocks
 **Sarcogyne regularis* Körb. 1: calcareous rocks
 **Strangospora moriformis* (Ach.) Stein 3: *Abies* sp.
 #*Thelidium decipiens* (Hepp) Kremp. 1, 4: calcareous rocks
 **Toninia aromatica* (Turner ex Sm.) A. Massal. 2: mosses
 **Usnea subfloridana* Stirt. 2: *Abies* sp.
 **Verrucaria fuscella* (Turner) Winch 1: parasitic on *Caloplaca dolomiticola* on calcareous rocks.
 **Verrucaria muralis* Ach. 3: calcareous rocks

**Verrucaria nigrescens* Pers. 1: calcareous rocks

**Vouauxiella lichenicola* (Linds.) Petr.&Syd. 1: lichenicolous on the apothecia of *Lecanora chlarotera*

**Zwackhiomyces coepulonus* (Norman) Grube & R.Sant. 4: lichenicolous on the apothecia of *Caloplaca flavovirescens*.

In this study, 60 taxa belonging to 34 genera are reported from Çat Forests in borders of Sivas Province. All of the reported taxa are new records for Sivas Province. Besides, 49 taxa are new records for Sivas province. Two taxa namely, *Rinodina plana* H.Magn. and *Thelidium decipiens* (Nyl.) Kremp. are reported for the first time from Turkey.

5. DISCUSSION

In the study area *Abies* sp. has a large cover and the common epiphytic species which are mainly adapted to grow on acidic bark such as *Candelariella xanthostigma*, *Cladonia fimbriata*, *C. pyxidata*, *Lecanora argentata*, *L. chlarotera*, *Lecidella elaochroma*, *Letharia vulpina*, *Parmelia sulcata* and *Pseudevernia furfuracea* var. *furfuracea* were observed abundantly. *Rinodina plana* is reported from Turkey for the first time despite it is a rather common and widely distributed species in the Mediterranean area (Giralt, 2001). *Cladonia* species were mostly observed in the stumps of trees and many specimens of *Cladonia pyxidata* collected in the study area were infected by *Licheniconium pyxidatae* which was only recorded from Bolu province [11]. As the infected squamules of *Cladonia pyxidata* becomes brownish, the specimen seems parasitic to the host. Pycnidia are 100–120 µm and smooth walled conidia are 3–4 × 2–3 µm in Turkish specimen of this species. This is a common lichenicolous coelomycetes species which has a wide distribution range in the world [12]. *Licheniconium erodens* which is collected on thallus of *Parmeliopsis ambigua* is very pathogenic as bleaching occurs in the infected thalli. This is the most pathogenic species of *Licheniconium* according to the literature [12]. Despite it is very common in the study area, previously it was only recorded from Izmir province by Hafellner & John (2006) from Turkey on thallus of *Hypogymnia tubulosa* [6]. Another lichenicolous coelomycetes species; *Vouauxiella lichenicola* was collected from the apothecia of *Lecanora chlarotera* which is very common in the study area. The collected specimens of this species seem to be partly pathogenic as the ascospore productions in the host was suppressed in the infected parts of the apothecia. This species was previously reported from Giresun and Trabzon provinces on apothecia and thallus of *Lecanora chlarotera* and *Lecanora* sp. in Turkey, respectively [6].

Also, lime loving lichens such as *Acarospora cervina*, *Aspicilia calcarea*, *A. contorta* subsp. *hoffmaniana*, *Caloplaca variabilis*, *Lecanora flotowiana*, *Lecidella stigmatae*, *Protoparmeliopsis muralis* and *Sarcogyne clavus* are common on calcareous rocks under forest in the study area. *Thelidium decipiens* was collected for the first time in Turkey in the study area. *Verrucaria fuscella* starts its life cycle on thallus of *Caloplaca dolomiticola* and pathogenic lichenicolous fungus species *Zwackhiomyces coepulonus* was collected on the apothecia of *Caloplaca flavovirescens* on calcareous rocks.

Depending from the short history of “Turkish lichenology” covering no more than two decades, large gaps in the knowledge of the distribution of any lichens in Turkey are obvious, even for common species. This paper contributes like further small pieces to a mosaic of data.

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