

1-1-2006

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Recommended Citation

ÇOBANOĞLU, GÜLŞAH and YAVUZ, MUSTAFA (2006) "Lichen Records from Afyonkarahisar and Isparta Provinces," *Turkish Journal of Botany*: Vol. 30: No. 6, Article 8. Available at: <https://journals.tubitak.gov.tr/botany/vol30/iss6/8>

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Lichen Records from Afyonkarahisar and Isparta Provinces

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Received: 20.03.2006

Accepted: 18.09.2006

Abstract: A list of 89 lichen taxa is reported from the provinces of Afyonkarahisar and Isparta. Fifteen taxa from Afyonkarahisar and 38 from Isparta are new records for these provinces.

Key Words: Lichenized fungi, biodiversity, Turkey

Afyonkarahisar ve Isparta İllerinden Liken Kayıtları

Özet: Afyonkarahisar ve Isparta illerinden toplam 89 liken taksonu listesi rapor edilmiştir. Afyonkarahisar ili için 15 takson, Isparta ili için 38 takson yeni kayıttır.

Anahtar Sözcükler: Likenleşmiş mantarlar, biyoçeşitlilik, Türkiye

Introduction

The number of floristic studies on lichens in Turkey has increased rapidly in recent decades. However, there are still gaps in the knowledge of many provinces. There have been 6 papers referring to lichens in Isparta province (Szatala, 1960; Mayrhofer, 1984; Mayrhofer et al., 1990; Öztürk et al., 1998; Öztürk & Kaynak, 1999; Öztürk et al., 2005). In these papers, 99 lichen species are given from several regions of Isparta province. There is only one lichen record from Afyonkarahisar (Giralt et al., 1992). The present study aims to contribute to the first floristic records in these 2 provinces and to the lichen flora of Turkey.

The study areas in both provinces (Isparta and Afyonkarahisar) are situated in the north-western Mediterranean region of Turkey. According to data from the Isparta meteorological station, the climate is generally Mediterranean with low values of humidity in the north. The average annual mean temperature is 12.1 °C. The annual precipitation is about 600.4 mm. The characteristic Mediterranean maquis elements are prevalent in the study area. Although Dinar is a city in

Afyonkarahisar province, it is closer to Isparta and the study area in Dinar represents similar aspects (Figure 1).

Materials and Methods

The lichen material was collected from 5 sites in Isparta province and 1 in Afyonkarahisar province, in 2002, 2004 and 2005. The geographic coordinates and elevations were recorded as well as the substrate types. The taxa were identified with the aid of flora books and identification keys (Clauzade & Roux, 1985; Purvis et al., 1994; Wirth, 1995; Schultz & Büdel, 2002; Orange, 2004). The lichen specimens are preserved in the Herbarium of the Faculty of Science and Arts, Marmara University, İstanbul (MUFE).

Collecting Sites

ISPARTA:

1. Eğirdir (Akrotiri, Eğridir); Gökçehöyük (Banus) Village, Erenler Hill, 1260-1280 m, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004.

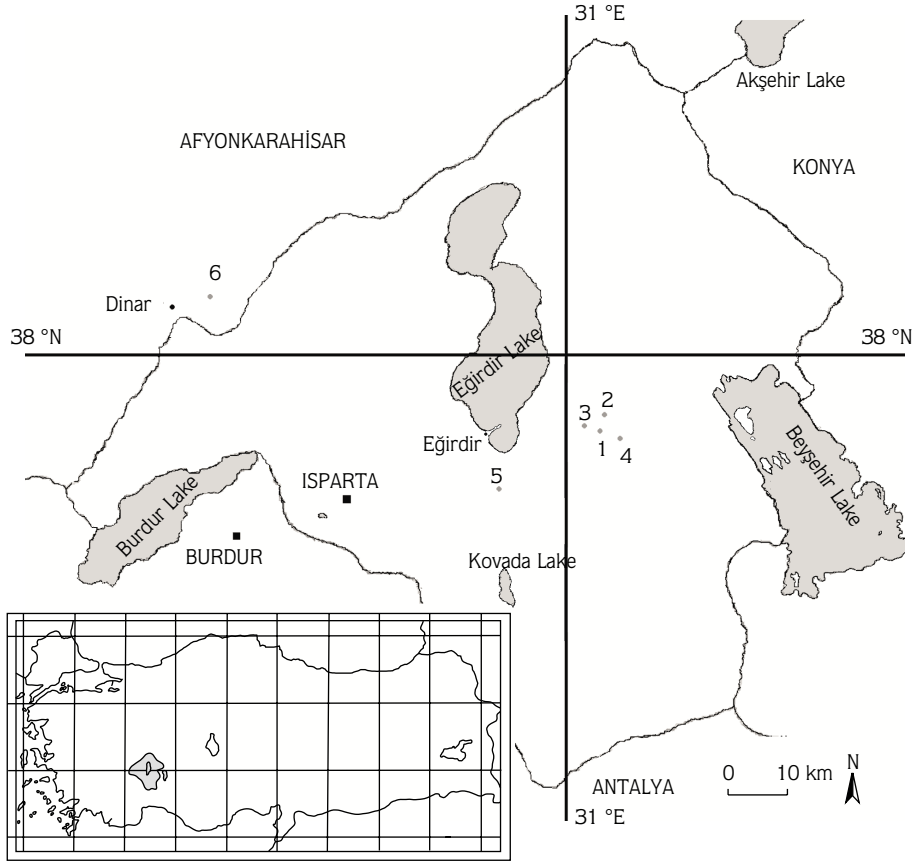


Figure 1. The study area and collecting sites indicated with numbers.

2. Egridir (Akrotiri, Egridir); Gökçeşöyük (Banus) Village, Akçapınar Hill, 1310-1320 m, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004.
 3. Egridir (Akrotiri, Egridir); Gökçeşöyük (Banus) Village, Mezarönü District, 1226 m, 37° 52' 51.4" N - 31° 00' 02.0" E, 31.VII.2005.
 4. Egridir (Akrotiri, Egridir); Gökçeşöyük (Banus) Village, Sırçalı District, 1640 m, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005.
 5. Egridir (Akrotiri, Egridir); Eyüpler Village, 970 m, 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002.
- AFYONKARAHISAR:
6. Dinar (Apamea); Bülüçalan Village, 960-1000 m, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002.

Results

Eighty-nine lichen taxa from the provinces of Afyonkarahisar (36 taxa) and Isparta (53 taxa) are listed alphabetically. Fifteen taxa are new records for Afyonkarahisar, 38 taxa are new for Isparta and 4 taxa are new for both provinces. An asterisk (*) indicates a new record for the province of Isparta and a number sign (#) indicates a new record for the province of Afyonkarahisar. The herbarium numbers pertain to Gülşah Çobanoğlu (G.Ç.) in MUFÉ.

The names of authors are abbreviated according to Brummitt & Powell (1992). The nomenclature follows the recent literature (Søchting et al., 2002; Blanco et al., 2004a, 2004b; Santesson et al., 2004). The taxonomical order follows Purvis et al. (1992).

Below are the abbreviations used for substrata data in the list of taxa:

BR: on brick
 SO: on soil
 WM: with moss

CR: on calcareous rock
 SR: on siliceous rock

CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1541).

***Aspicilia cinerea** (L.) Körb.

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, SR., 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1681).

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

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1676). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1534).

Lobothallia radiosa (Hoffm.) Hafellner

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1636). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1557).

Megaspora verrucosa (Ach.) Hafellner & V.Wirth

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1612). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1578).

Family: Rhizocarpaceae

***Rhizocarpon geographicum** (L.) DC.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, SR, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1624). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, SR 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1682).

Family: Squamarinaceae

Squamarina cartilaginea (With.) P.James

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1545).

Squamarina lentigera (Weber) Poelt

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1546).

List of Taxa

Ascomycotina

Order: Graphidales

Family: Thelotremataceae

Diploschistes ocellatus (Vill.) Norman

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1553).

Order: Lecanorales

Family: Acarosporaceae

Acarospora cervina A.Massal.

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1671). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1535).

***Acarospora fuscata** (Nyl.) Arnold

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1673).

#Sarcogyne privigna var. **calicicola** H.Magn.

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1562).

Family: Hymeneliaceae

Aspicilia calcarea (L.) Mudd

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1633). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1675). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1674). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m,

Family: Biatoraceae

***Lecania inundata** (Hepp ex Körb.) M.Mayrhofer

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1677). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1678).

#Lecania turicensis (Hepp) Müll.Arg.

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1538).

#Toninia candida (Weber) Th.Fr.

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1537).

Toninia sedifolia (Scop.) Timdal

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1538).

#Toninia squalida (Ach.) A.Massal.

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1539).

Family: Candelariaceae

Candelariella aurella (Hoffm.) Zahlbr.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, CR, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1581). Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1638). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1663). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1664). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1550).

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

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, SR., 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1666). Eğirdir; Gökçeşhöyük Village,

Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1665). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1552).

***Candelariella xanthostigma** (Pers. ex Ach.) Lettau

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Cupressus sempervirens*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1586). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1614). Eğirdir; Gökçeşhöyük Village, Mezarönü District, 1226 m, on *Prunus domesticus*, 37° 52' 51.4" N - 31° 00' 02.0" E, 31.VII.2005, (G.Ç. 1645). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, on *Cupressus sempervirens*, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1650). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1567).

Family: Lecanoraceae

***Lecanora argentata** (Ach.) Malme

Isparta: Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1573).

***Lecanora carpinea** (L.) Vain.

Isparta: Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1576).

Lecanora chlarotera Nyl.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1598). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1577).

Lecanora crenulata Hook.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, CR, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1582). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1547).

Lecanora dispersa (Pers.) Sommerf.

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E,

01.VIII.2005, (G.Ç. 1680). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1679). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1555).

***Lecanora piniperda** Körb.

Isparta: Eğirdir; Gökçeşhöyük Village, Mezarönü District, 1226 m, on *Prunus domestica*, 37° 52' 51.4" N - 31° 00' 02.0" E, 31.VII.2005, (G.Ç. 1643). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, on *Cupressus sempervirens*, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1652).

***Lecanora sambuci** (Pers.) Nyl.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Cupressus sempervirens*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1587). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1626).

***Lecanora varia** (Hoffm.) Ach.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1617). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1619).

Lecidella elaeochroma (Ach.) M.Choisy

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1615). Eğirdir; Eyüpler Village, 970 m, on *Juniperus sp.*, 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1566).

***Lecidella stigmatea** (Ach.) Hertel & Leuckert

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1639).

Protoparmeliopsis muralis (Schreb.) M.Choisy

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, CR, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1583). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1623). Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004,

(G.Ç. 1635). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, SR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1662). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1660). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1661). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1560).

Family: Parmeliaceae

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

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1592). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1608).

***Melanohalea septentrionalis** (Lynge) O.Blanco et al.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1591).

***Parmelina pastillifera** (Harm.) Hale

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, CR, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1584). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1610).

***Parmelina tiliacea** (Hoffm.) Hale

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1593). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1609). Eğirdir; Eyüpler Village, 970 m, on *Juniperus sp.*, 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1570).

Pseudevernia furfuracea (L.) Zopf var. *ceratea* (Ach.) D.Hawksw.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31°

00' 24.4" E, 22.VII.2004, (G.Ç. 1602). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1564).

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

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, SR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1589).

Family: Physciaceae

Anaptychia ciliaris (L.) Körb. ex A.Massal.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1603).

**Buellia disciformis* (Fr.) Mudd

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1616).

**Buellia pulverulenta* (Anzi) Jatta

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1618).

Diplotomma alboatrum (Hoffm.) Flot.

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1634). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1554).

#**Phaeophyscia orbicularis* (Neck.) Moberg

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1597). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1620). Eğirdir; Gökçeşhöyük Village, Mezarönü District, 1226 m, on *Prunus domestica*, 37° 52' 51.4" N - 31° 00' 02.0" E, 31.VII.2005, (G.Ç. 1647). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1544).

Physcia adscendens (Th.Fr.) H.Olivier

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, on *Sorbus takhtajanii*, 1260-1280 m, 37° 52' 21.8" N - 31°

00' 24.4" E, 22.VII.2004, (G.Ç. 1621). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1565). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1558).

Physcia aipolia (Ehrh. ex Humb.) Fűrnr.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1595).

Physcia dubia (Hoffm.) Lettau

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, on *Protoparmeliopsis muralis*, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1659 & G.Ç. 1653). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1540).

Physcia semipinnata (J.F.Gmel.) Moberg

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1601). Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1622). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1569).

Physcia stellaris (L.) Nyl.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1611). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, on *Cupressus sempervirens*, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1649).

Physcia tenella (Scop.) DC.

Isparta: Eğirdir; Gökçeşhöyük Village, Mezarönü District, 1226 m, on *Prunus domestica*, 37° 52' 51.4" N - 31° 00' 02.0" E, 31.VII.2005, (G.Ç. 1646).

**Physcia tribacioides* Nyl.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Cupressus sempervirens*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1588).

**Physconia distorta* (With.) J.R.Laundon

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31°

00' 24.4" E, 22.VII.2004, (G.Ç. 1596). Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, on *Sorbus takhtajanii*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1607). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1568).

***Physconia grisea** (Lam.) Poelt

Isparta: Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, CR, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1585).

Physconia perisidiosa (Erichsen) Moberg

Isparta: Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, SO, with *Cladonia* sp. and WM, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1605).

#Rinodina bischoffii (Hepp) A.Massal.

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1539).

#Rinodina calcarea (Arnold) Arnold

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1561).

Rinodina exigua (Ach.) Gray

Isparta: Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1613). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1574).

***Rinodina gennarii** Bagl.

Isparta: Eğirdir; Gökçe höyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1642).

Family: Collemataceae

Collema crispum (L.) Weber ex F.H. Wigg. var. **crispum**

Isparta: Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, SO, with *Cladonia* sp. and WM, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1606). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1549).

Collema cristatum var. **marginale** (Huds.) Degel.

Isparta: Eğirdir; Gökçe höyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1627).

***Collema subflaccidum** Degel.

Isparta: Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1604). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1575).

Leptogium lichenoides (L.) Zahlbr.

Isparta: Eğirdir; Gökçe höyük Village, Akçapınar Hill, 1310-1320 m, CR, WM, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1628). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, WM, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1556).

Family: Placynthiaceae

Placynthium nigrum (Huds.) Gray

Isparta: Eğirdir; Gökçe höyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1629). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1537).

Family: Pertusariaceae

***Ochrolechia parella** (L.) A.Massal.

Isparta: Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 16594).

***Ochrolechia tartarea** (L.) A.Massal.

Isparta: Eğirdir; Gökçe höyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1599). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1571).

***Pertusaria albescens** (Huds.) M.Choisy & Werner

Isparta: Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1579).

***Pertusaria ophthalmiza** (Nyl.) Nyl.

Isparta: Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1580).

Family: Teloschistaceae

***Caloplaca alociza** (A.Massal.) Mig.

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1637).

Caloplaca aurantia (Pers.) Hellb.

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1542).

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

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Quercus cerris*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1600). Eğirdir; Eyüpler Village, 970 m, on *Juniperus* sp., 37° 46' 07.8" N - 30° 52' 04.7" E, 06.XII.2002, (G.Ç. 1572).

Caloplaca cerina var. *chloroleuca* (Sm.) Th.Fr.

Isparta: Eğirdir; Gökçeşhöyük Village, Mezarönü District, 1226 m, on *Prunus domesticus*, 37° 52' 51.4" N - 31° 00' 02.0" E, 31.VII.2005, (G.Ç. 1648). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, on *Cupressus sempervirens*, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1651).

***Caloplaca chalybaea** (Fr.) Müll.Arg.

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1632).

***Caloplaca crenulatella** (Nyl.) H.Olivier

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1672).

#Caloplaca decipiens (Arnold) Blomb. & Forssell

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1535).

#Caloplaca erythrocarpa (Pers.) Zwackh

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1551).

***Caloplaca flavescens** (Huds.) J.R.Laundon

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1669).

Caloplaca holocarpa (Hoffm.) A.E.Wade

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1536).

#Caloplaca saxicola (Hoffm.) Nordin

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1543).

Caloplaca variabilis (Pers.) Müll.Arg.

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1657). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1658).

#Fulgensia bracteata var. *bracteata* (Hoffm.) Räsänen

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1544).

Xanthomendoza fulva (Hoffm.) Søchting, Kärnefelt & S.Y.Kondr.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Cupressus sempervirens*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1625).

Xanthoria elegans (Link) Th.Fr.

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1668).

Xanthoria parietina (L.) Th.Fr.

Isparta: Eğirdir; Gökçeşhöyük Village, Erenler Hill, 1260-1280 m, on *Cupressus sempervirens*, 37° 52' 21.8" N - 31° 00' 24.4" E, 22.VII.2004, (G.Ç. 1590). Eğirdir; Gökçeşhöyük Village, Mezarönü District, 1226 m, on *Prunus domesticus*, 37° 52' 51.4" N - 31° 00' 02.0" E, 31.VII.2005, (G.Ç. 1644).

Incertae sedis:

Leproloma membranaceum (Dicks.) Vain.

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1640).

Order: Verrucariales

Family: Verrucariaceae

* *Placidium rufescens* (Ach.) A.Massal.

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, WM, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1641).

Placocarpus schaeferi (Fr.) Breuss

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1667). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1559).

#*Verrucaria fuscella* (Turner) Winch

Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1540).

**Verrucaria glaucina* Ach.

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1655). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, BR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1656).

**Verrucaria hochstetteri* Fr.

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E, 25.VII.2004, (G.Ç. 1631).

#**Verrucaria muralis* Ach.

Isparta: Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1670). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1548).

#**Verrucaria nigrescens* Pers.

Isparta: Eğirdir; Gökçeşhöyük Village, Akçapınar Hill, 1310-1320 m, CR, 37° 53' 06" N - 31° 00' 54.7" E,

25.VII.2004, (G.Ç. 1630). Eğirdir; Gökçeşhöyük Village, Sırçalı District, 1640 m, CR, 37° 51' 46.0" N - 31° 01' 18.6" E, 01.VIII.2005, (G.Ç. 1654). Afyonkarahisar: Dinar; Bülüçalan Village, 960-1000 m, CR, 38° 03' 04.1" N - 30° 11' 47.0" E, 22.IV.2002, (G.Ç. 1543).

Discussion

The list includes 89 taxa (88 species and 1 subspecies) belonging to 38 genera, of which 19 taxa are common for both provinces. The most frequent 4 genera within the study area are *Caloplaca* (represented by 11 species), *Lecanora* (represented by 8 species), *Physcia* (represented by 7 species) and *Verrucaria* (represented by 5 species).

The lichen composition is rather rich at collecting sites 1, 4 and 6. Collecting site 1, a small hill on the western slopes of Mount Kekikdağ, has the highest percentage of taxa (29.2%) on a diversity of substrata. Site 4, a high plateau with some *Cupressus* sp. trees, historical ruins of an ancient basilica and bricks, also has a large number of taxa (22.1%). This is the only collecting site where siliceous rocks were found. At collecting site 6 (Afyonkarahisar), there were no corticolous lichen samples, due to a lack of plant vegetation; only calcicolous taxa were found (23.4%).

The saxicolous taxa are higher in number in all the study sites with 57.1%, 46.1% of which are on calcareous rocks, 7.1% on bricks and 3.9% on siliceous rocks. The terricolous taxa are 1.3% of the total. As no significant forest vegetation is present in the study area, the epiphytic taxa are rather poor (41.6%) and limited to scattered trees such as *Juniperus*, *Prunus*, *Quercus*, *Sorbus* and *Cupressus* spp. The number of corticolous taxa is higher on *Quercus* sp. (14.9%) and *Juniperus* sp. (11%), decreasing on *Cupressus* sp. (5.8%), on *Sorbus* sp. (5.8%) and on *Prunus* sp. (3.9%). Substrate types of all the taxa correspond with those in the literature.

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