



Some Lichens From Afyonkarahisar and Kırkkale Provinces

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ABSTRACT

As a result of lichenological study in Turkey, in the provinces of Afyonkarahisar and Kırkkale, we report 120 taxa of lichen. 78 taxa are new to the province of Afyonkarahisar and 22 taxa are new to the provinces of Kırkkale.

Key Words: *biodiversity, lichenized fungi, Kırkkale, new records*

1. INTRODUCTION

Lichen records from many regions of Turkey have been in an increase in recent years. However, there are still a high number of lacking records for lichen taxa. So far, there have been four papers on lichens from Afyonkarahisar province [1-4] whereas in Kırkkale province, there has been no lichen record. The present study adds further informations to our knowledge of the lichen biota of Turkey, which is not sufficiently known yet.

2. MATERIALS AND METHODS

The lichen specimens were collected in the province of Afyonkarahisar 1 January 2008 and 29 March 2009 of Kırkkale. A stereo microscope, light microscope and spot tests for determining lichen compounds and flora books were used in the identification of samples [5-7].

Vouchers are deposited in the herbarium of the Faculty of Science and Arts, Giresun University, Giresun.

The collecting localities were as follows:

1. AFYONKARAHİSAR: Sandıklı, N of Yumruca village, 38°27'17"N, 30°01'53"E, 970 m, 27 Jan. 2008.
2. AFYONKARAHİSAR: Sandıklı, S of Çevrepinar village, Demirlik hill, 38°30'17"N, 29°59'29"E, 1100 m, 27 Jan. 2008.
3. AFYONKARAHİSAR: Sandıklı, W of Çevrepinar village, 38°30'07"N, 29°59'23"E, 985 m, 28 Jan. 2008.
4. KIRIKKALE: Bahşılı, 39°43'14"N, 33°22'45"E, 990 m, 29 Mar. 2009.

2.1. Descriptions of the study areas: In this study, lichens of provinces Afyonkarahisar and Kırkkale were investigated (Fig. 1).

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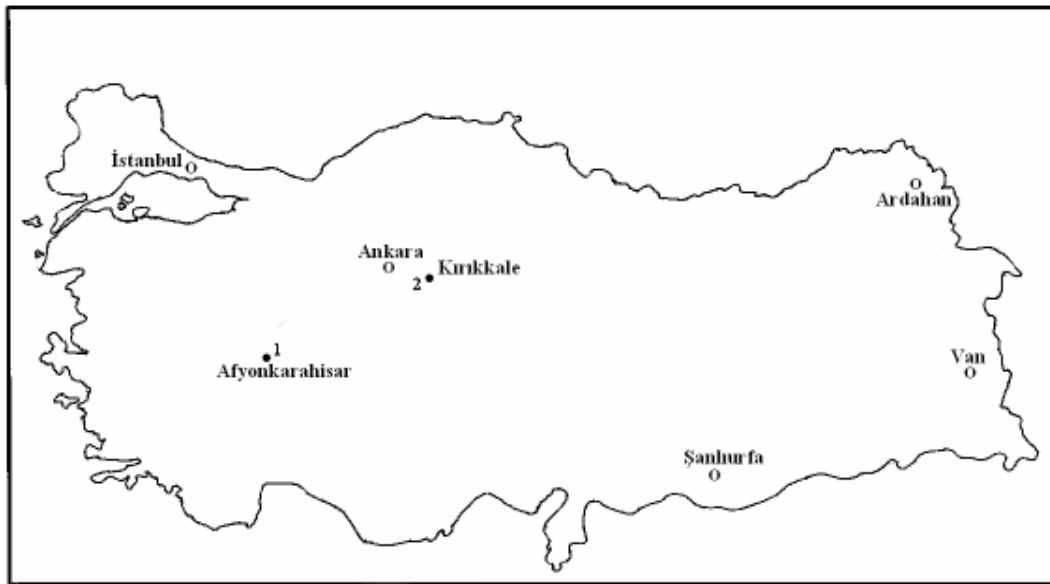


Figure 1. Map of Turkey showing the two areas surveyed in this paper.

1. Afyonkarahisar, 2. Kırıkkale

In Afyonkarahisar the most of the forest areas have been destroyed so forest communities are seen only some areas. *Pinus nigra* Arnold, *P. sylvestris* L., *Quercus* spp. L., *Juniperus* spp. L. and *Castane sativa* Miller. trees are present in high altitudes while *Populus* sp. L., *Salix* sp. L. along streams and gardens [8,9].

It has a semi-arid, very cold Mediterranean climate [10]. The annual rainfall average is 433.5 mm and the rainfall regime is 'East Mediterranean Rain Regime Type II'. The annual average temperature is 11.5°C in Afyonkarahisar.

29.2°C is the mean highest temperature while 3.5°C is the mean lowest temperature. The annually average humidity is 64.87%.

Quaternary, Paleozoic, Lower-Middle Miocene and Neogen deposits are generally present in Afyonkarahisar [11].

Steppe formation are prevalent in Kırıkkale. Forested areas are small, mainly consisting of trees *Quercus* spp., *Pinus nigra* and *Juniperus* spp. [8].

The average yearly rainfall is 360.9 mm. The annual average temperature is 12.5°C. 29.9°C is the mean highest temperature while 3°C is the mean lowest temperature. The annual average humidity is 63.46%. Summers are generally hot and dry and winters very cold [9].

Neogene, Holocene and Eocene formations are prevail in this region [12].

3. RESULTS

From Afyonkarahisar and Kırıkkale altogether 120 lichen taxa were recorded belonging to 74 genera in *Ascomycotina*. The taxa were listed in alphabetical order, followed by localities, substrata. Author names abbreviated according to Brummit & Powell [13]. The nomenclature follows the recent literatures [14].

- Acarospora badiofusca* (Nyl.) Th.Fr. – Afyonkarahisar: 2 (Kınalıoğlu 1821), on siliceous rock.
- A. cervina* A.Massal. – Afyonkarahisar: 1 (Kınalıoğlu 1822), 3 (Kınalıoğlu 1823), on calcareous rock.
- A. glaucocarpa* (Wahlenb. ex Ach.) Körb. – Afyonkarahisar: 1 (Kınalıoğlu 1824), 3 (Kınalıoğlu 1825), on calcareous rock.
- A. impressula* Th. Fr. – Afyonkarahisar: 2 (Kınalıoğlu 1826), on siliceous rocks.
- A. macrospora* (Hepp) A.Massal. - Afyonkarahisar: 2 (Kınalıoğlu 1827), on calcareous rock.
- A. umbilicata* Bağl. – Afyonkarahisar: 2 (Kınalıoğlu 1828), on calcareous rock.
- A. scabra* (Pers.) Th.Fr. – Kırıkkale: 4 (Kınalıoğlu 1829), on calcareous rock.
- A. smaragdula* (Wahlenb.) A.Massal. - Afyonkarahisar: 2 (Kınalıoğlu 1830), on siliceous rocks.
- A. strigata* (Nyl.) Jatta - Afyonkarahisar: 3 (Kınalıoğlu 1831), on calcareous rock.
- Acrocordia conoidea* (Fr.) Körb., Kırıkkale: 4 (Kınalıoğlu 1832), on siliceous rock.
- Aspicilia caesiocinerea* (Malbr.) Arnold - Afyonkarahisar: 2 (Kınalıoğlu 1833), on siliceous rocks.
- A. calcarea* (L.) Mudd - Afyonkarahisar: 3 (Kınalıoğlu 1834), on calcareous rock.
- A. cinerea* (L.) Körb. - Afyonkarahisar: 2 (Kınalıoğlu 1835), on siliceous rocks.
- A. contorta* subsp. *hoffmanniana* Ekman & Fröberg - Afyonkarahisar: 2 (Kınalıoğlu 1836), on siliceous rocks.

- A. desertorum* (Kremp.) Mereschk. - Afyonkarahisar: 2 (Kinalioğlu 1837), Kırıkkale: 4 (Kinalioğlu 1838), on siliceous rock.
- A. intermutans* (Nyl.) Arnold - Kırıkkale: 4 (Kinalioğlu 1839), on siliceous rock.
- A. tuberculosa* (Ach.) J.R.Laundon - Afyonkarahisar: 2 (Kinalioğlu 1840), on siliceous rocks.
- Buellia badia* (Fr.) A.Massal. - Afyonkarahisar: 3 (Kinalioğlu 1841), on siliceous rock.
- Caloplaca alociza* (A.Massal.) Mig. - Afyonkarahisar: 1 (Kinalioğlu 1842), 3 (Kinalioğlu 1843), on calcareous rock.
- C. arnoldii* (Wedd.) Zahlbr. ex Ginzb. - Afyonkarahisar: 2 (Kinalioğlu 1844), on calcareous rock.
- C. biatorina* (Trevis.) J.Steiner - Afyonkarahisar: 3 (Kinalioğlu 1845), on calcareous rock.
- C. cerinella* (Nyl.) Flagey - Afyonkarahisar: 2 (Kinalioğlu 1846), on *Quercus* sp., Afyonkarahisar: 1 (Kinalioğlu 1847), on *Salix* sp.
- C. cerinelloides* (Erichsen) Poelt - Afyonkarahisar: 3 (Kinalioğlu 1848), on *Quercus* sp., Afyonkarahisar: 1 (Kinalioğlu 1849), on *Salix* sp.
- C. chalybaea* (Fr.) Müll.Arg. - Afyonkarahisar: 3 (Kinalioğlu 1850), on calcareous rock.
- C. citrina* (Hoffm.) Th.Fr. - Afyonkarahisar: 1 (Kinalioğlu 1851), 3 (Kinalioğlu 1852), on calcareous rock.
- C. coronata* (Kremp. ex Körb.) J.Steiner - Afyonkarahisar: 3 (Kinalioğlu 1853), on calcareous rock.
- C. flavorubescens* (Huds.) J.R.Laundon - Afyonkarahisar: 3 (Kinalioğlu 1854), on *Quercus* sp.
- C. lactea* (A.Massal.) Zahlbr. - Afyonkarahisar: 1 (Kinalioğlu 1855), 3 (Kinalioğlu 1856), on calcareous rock.
- C. haematites* (Chaub. ex St.-Amans) Zwackh - Afyonkarahisar: 3 (Kinalioğlu 1857), on *Quercus* sp.
- C. holocarpa* (Hoffm.) A.E.Wade - Afyonkarahisar: 3 (Kinalioğlu 1858), on *Quercus* sp., Afyonkarahisar: 2 (Kinalioğlu 1859), Kırıkkale: 4 (Kinalioğlu 1860), on siliceous rocks.
- C. variabilis* (Pers.) Mull.Arg. - Afyonkarahisar: 1 (Kinalioğlu 1861), 2 (Kinalioğlu 1862), 3 (Kinalioğlu 1863), on calcareous rock.
- Candelariella aurella* (Hoffm.) Zahlbr. - Afyonkarahisar: 3 (Kinalioğlu 1864), on calcareous rock, Afyonkarahisar: 2 (Kinalioğlu 1865), on siliceous rocks.
- C. reflexa* (Nyl.) Lettau - Afyonkarahisar: 3 (Kinalioğlu 1866), on *Quercus* sp.
- C. vitellina* (Hoffm.) Müll.Arg. - Afyonkarahisar: 3 (Kinalioğlu 1867), on calcareous rock, Afyonkarahisar: 2 (Kinalioğlu 1868), 3 (Kinalioğlu 1869), on *Quercus* sp., Kırıkkale: 4 (Kinalioğlu 1870), on *Salix* sp., Afyonkarahisar: 2 (Kinalioğlu 1871), on siliceous rocks.
- C. xanthostigma* (Pers.) Lettau - Afyonkarahisar: 3 (Kinalioğlu 1872), on *Quercus* sp., Afyonkarahisar: 1 (Kinalioğlu 1873), on *Salix* sp.
- Catapyrenium squamulosum* (Ach.) Breuss - Afyonkarahisar: 2 (Kinalioğlu 1874), on soil.
- Catillaria chalybeia* (Borrer) A.Massal. - Afyonkarahisar: 2 (Kinalioğlu 1875), on siliceous rocks.
- Cetraria aculeata* (Schreb.) Fr. - Afyonkarahisar: 2 (Kinalioğlu 1876), on soil.
- Chrysothrix candelaris* (L.) J.R.Laundon - Afyonkarahisar: 2 (Kinalioğlu 1877), on siliceous rocks.
- Cladonia fimbriata* (L.) Fr. - Afyonkarahisar: 2 (Kinalioğlu 1878), on soil.
- C. foliacea* (Huds.) Willd. - Afyonkarahisar: 2 (Kinalioğlu 1879), on soil.
- C. furcata* (Huds.) Schrad. - Afyonkarahisar: 2 (Kinalioğlu 1880), on soil.
- C. furcata subsp. subrangiformis* (L.Scriba ex Sandst.) Pišút - Afyonkarahisar: 2 (Kinalioğlu 1881), on soil.
- C. rangiformis* Hoffm. - Afyonkarahisar: 2 (Kinalioğlu 1882), on soil.
- C. squamosa* (Scop.) Hoffm. - Afyonkarahisar: 2 (Kinalioğlu 1883), on soil.
- Collema cristatum* (L.) Weber ex F.H.Wigg. - Afyonkarahisar: 1 (Kinalioğlu 1884), 3 (Kinalioğlu 1885), on calcareous rock, Afyonkarahisar: 3 (Kinalioğlu 1886, 1887), on moss and on soil.
- C. polycarpon* Hoffm. - Afyonkarahisar: 3 (Kinalioğlu 1888), on calcareous rock.
- C. tenax* (Sw.) Ach. - Afyonkarahisar: 2 (Kinalioğlu 1889), on soil.
- Diploschistes scruposus* (Schreb.) Norm. - Afyonkarahisar: 2 (Kinalioğlu 1890), on siliceous rocks.
- Diplotomma epipolium* (Ach.) Arnold - Afyonkarahisar: 3 (Kinalioğlu 1891), on calcareous rock.
- Hypocomyce scalaris* (Ach. ex Lilj.) M.Choisy - Kırıkkale: 4 (Kinalioğlu 1892), on *Salix* sp.
- Immersaria athrocarpa* (Ach.) Rambold & Pietschm. - Afyonkarahisar: 3 (Kinalioğlu 1893), on calcareous rock, Kırıkkale: 4 (Kinalioğlu 1894), on siliceous rock.
- Lecanora albella* (Pers.) Ach. - Afyonkarahisar: 2 (Kinalioğlu 1895), 3 (Kinalioğlu 1896), on *Quercus* sp., Kırıkkale: 4 (Kinalioğlu 1897), on *Salix* sp.
- L. bolcana* (Pollini) Poelt - Afyonkarahisar: 2 (Kinalioğlu 1898), on siliceous rocks.
- L. campestris* (Schaer.) Hue - Afyonkarahisar: 2 (Kinalioğlu 1899), on siliceous rocks.
- L. carpinea* (L.) Vain - Afyonkarahisar: 3 (Kinalioğlu 1900), on *Quercus* sp.
- L. chlarotera* Nyl - Afyonkarahisar: 3 (Kinalioğlu 1901), on *Quercus* sp.
- L. dispersa* (Pers.) Sommerf. - Afyonkarahisar: 1 (Kinalioğlu 1902), 2 (Kinalioğlu 1903), on calcareous rock, Afyonkarahisar: 3 (Kinalioğlu 1904, 1905), on *Quercus* sp. and on calcareous rock.
- L. hagenii* (Ach.) Ach. - Afyonkarahisar: 2 (Kinalioğlu 1906), on *Quercus* sp., Afyonkarahisar: 1 (Kinalioğlu 1907), on *Salix* sp., Kırıkkale: 4 (Kinalioğlu 1908), on *Salix* sp., Afyonkarahisar: 3 (Kinalioğlu 1909), on siliceous rock.
- L. frustulosa* (Dicks.) Ach. - Afyonkarahisar: 2 (Kinalioğlu 1910), on siliceous rocks.
- L. polytropa* (Ehrh. ex Hoffm.) Rabenh. - Afyonkarahisar: 3 (Kinalioğlu 1911), on calcareous

- rock, Afyonkarahisar: 2 (Kınalıoğlu 1912): on siliceous rocks.
- L. subcarpineae* Szatala - Afyonkarahisar: 2 (Kınalıoğlu 1913), on *Quercus* sp.
- L. varia* (Hoffm.) Ach. - Afyonkarahisar: 2 (Kınalıoğlu 1914), on *Quercus* sp.
- Lecidea promiscens* Nyl. - Kırıkkale: 4 (Kınalıoğlu 1915), on siliceous rock.
- Lecidella elaeochroma* (Ach.) M.Choisy - Afyonkarahisar: 3 (Kınalıoğlu 1916), on *Quercus* sp., Afyonkarahisar: 1 (Kınalıoğlu 1917), on *Salix* sp.
- L. carpathica* Körb. - Afyonkarahisar: 2 (Kınalıoğlu 1918), on siliceous rocks.
- L. stigmatea* (Ach.) Hertel & Leuckert - Afyonkarahisar: 2 (Kınalıoğlu 1919), on siliceous rocks.
- Leptogium plicatile* (Ach.) Leight. - Afyonkarahisar: 2 (Kınalıoğlu 1920), on calcareous rock.
- Lobothallia radiosa* (Hoffm.) Hafellner - Afyonkarahisar: 3 (Kınalıoğlu 1921), on calcareous rock, Afyonkarahisar: 2 (Kınalıoğlu 1922), on siliceous rocks.
- Melanohalea elegantula* (Zahlbr.) O.Blanco et al. - Afyonkarahisar: 2 (Kınalıoğlu 1923), on siliceous rocks.
- M. exasperata* (De Not.) O.Blanco et al. - Afyonkarahisar: 2 (Kınalıoğlu 1924), on *Quercus* sp., Afyonkarahisar: 1 (Kınalıoğlu 1925), on *Salix* sp.
- Peltigera rufescens* (Weiss) Humb. - Afyonkarahisar: 2 (Kınalıoğlu 1926), on soil.
- Pertusaria albescens* (Hudson) M.Choisy & Werner - Afyonkarahisar: 2 (Kınalıoğlu 1927), on siliceous rocks.
- Phaeophyscia clontha* (Ach.) Moberg - Afyonkarahisar: 3 (Kınalıoğlu 1928), on *Quercus* sp., Kırıkkale: 4 (Kınalıoğlu 1929), on *Salix* sp.
- P. nigricans* (Flörke) Moberg - Afyonkarahisar: 3 (Kınalıoğlu 1930), on calcareous rock
- P. orbicularis* (Neck.) Moberg - Afyonkarahisar: 2 (Kınalıoğlu 1931), on calcareous rock, 3, (Kınalıoğlu 1871), on *Quercus* sp., Afyonkarahisar: 1 (Kınalıoğlu 1932), on *Salix* sp.
- Physcia adscendens* (Fr.) H.Olivier - Afyonkarahisar: 2 (Kınalıoğlu 1933), on *Quercus* sp.
- P. aipolia* (Ehrh. ex Humb.) Hampe - Afyonkarahisar: 3 (Kınalıoğlu 1934), on *Quercus* sp., Afyonkarahisar: 1 (Kınalıoğlu 1935), Kırıkkale: 4 (Kınalıoğlu 1936), on *Salix* sp.
- P. stellaris* (L.) Nyl. - Kırıkkale: 4 (Kınalıoğlu 1937), on *Salix* sp
- P. tribacia* (Ach.) Nyl. - Afyonkarahisar: 3 (Kınalıoğlu 1938), on calcareous rock
- Physconia distorta* (With.) J.R.Laundon - Afyonkarahisar: 3 (Kınalıoğlu 1939), on *Quercus* sp.
- P. enteroxantha* (Nyl.) Poelt - Afyonkarahisar: 2 (Kınalıoğlu 1940), on siliceous rocks.
- P. grisea* (Lam.) Poelt - Afyonkarahisar: 3 (Kınalıoğlu 1941), on calcareous rock
- Placidium lachneum* (Ach.) B. de Lesd. - Afyonkarahisar: 3 (Kınalıoğlu 1942), on soil.
- Placynthium nigrum* (Huds.) Gray - Afyonkarahisar: 3 (Kınalıoğlu 1943), on calcareous rock
- P. cf. subradiatum* (Nyl.) Arnold - Afyonkarahisar: 3 (Kınalıoğlu 1944), on soil.
- Porina chlorotica* (Ach.) Müll.Arg. - Afyonkarahisar: 2 (Kınalıoğlu 1945), on siliceous rocks.
- Protoparmeliopsis muralis* (Schreb.) M.Choisy - Afyonkarahisar: 2 (Kınalıoğlu 1946), 3 (Kınalıoğlu 1947), Kırıkkale: 4 (Kınalıoğlu 1948), on siliceous rocks, Afyonkarahisar: 1 (Kınalıoğlu 1949), on calcareous rock.
- Ramalina capitata* (Ach.) Nyl. - Afyonkarahisar: 2 (Kınalıoğlu 1950), on siliceous rocks.
- Rhizocarpon geographicum* (L.) DC. - Afyonkarahisar: 2 (Kınalıoğlu 1951), on siliceous rocks.
- R. lecanorinum* Anders - Afyonkarahisar: 2 (Kınalıoğlu 1952), on siliceous rocks.
- Rinodina bischoffii* (Hepp.) A.Massal. - Afyonkarahisar: 3 (Kınalıoğlu 1953), on calcareous rock.
- R. calcarea* (Arnold) Arnold - Afyonkarahisar: 2 (Kınalıoğlu 1954), on calcareous rock
- R. colobina* (Ach.) Th.Fr. - Afyonkarahisar: 2 (Kınalıoğlu 1955), on *Quercus* sp.
- R. gennarii* Bagl. - Afyonkarahisar: 3 (Kınalıoğlu 1956), on *Quercus* sp.
- R. lecanorina* (A. Massal.) A.Massal. - Afyonkarahisar: 3 (Kınalıoğlu 1957), on calcareous rock
- R. pyrina* (Ach.) Arnold - Kırıkkale: 4 (Kınalıoğlu 1958), on *Salix* sp.
- R. sophodes* (Ach.) A.Massal. - Afyonkarahisar: 3 (Kınalıoğlu 1959), on *Quercus* sp.
- Sarcogyne clavus* (DC.) Kremp. - Afyonkarahisar: 2 (Kınalıoğlu 1960), Kırıkkale: 4 (Kınalıoğlu 1961), on siliceous rock.
- S. regularis* Körb. - Afyonkarahisar: 1 (Kınalıoğlu 1962), 3 (Kınalıoğlu 1963), on calcareous rock.
- Squamarina cartilaginea* (With.) P.James - Afyonkarahisar: 3 (Kınalıoğlu 1964), on soil.
- S. lentigera* (Weber) Poelt, Afyonkarahisar: 2 (Kınalıoğlu 1965), on soil.
- Synalissa symphorea* (Ach.) Nyl. - Afyonkarahisar: 3 (Kınalıoğlu 1966), on soil.
- Tephromela atra* (Huds.) Hafellner - Afyonkarahisar: 3 (Kınalıoğlu 1967), on calcareous rock.
- Toninia tumidula* (Sm.) Zahlbr. - Afyonkarahisar: 3 (Kınalıoğlu 1968), on calcareous rock.
- T. cf. tristis* Th. Fr.) Th. Fr. - Afyonkarahisar: 3 (Kınalıoğlu 1969), on soil.
- Verrucaria fusconigrescens* Nyl. - Afyonkarahisar: 2 (Kınalıoğlu 1970), on siliceous rocks.
- V. macrostoma* Dufour ex DC. - Afyonkarahisar: 1 (Kınalıoğlu 1971), 2 (Kınalıoğlu 1872), 3 (Kınalıoğlu 1973), on calcareous rock.
- V. nigrescens* Pers. - Afyonkarahisar: 2 (Kınalıoğlu 1974), on siliceous rocks.
- V. viridula* (Schrad.) Ach. - Afyonkarahisar: 2 (Kınalıoğlu 1975), on calcareous rock.
- Xanthoparmelia conspersa* (Ehrh. ex Ach.) Hale - Afyonkarahisar: 2 (Kınalıoğlu 1976), on calcareous rock.
- X. loxodes* (Nyl.) O.Blanco et al. - Afyonkarahisar: 2 (Kınalıoğlu 1977), Kırıkkale: 4 (Kınalıoğlu 1978), on siliceous rocks.

- X. pulla* (Ach.) O. Blanco et al. Afyonkarahisar: 2 (Kinalioğlu 1979), Kırıkkale: 4 (Kinalioğlu 1980), on siliceous rocks and on soil.
- X. tinctina* (Maheu & A. Gillet) Hale - Afyonkarahisar: 1 (Kinalioğlu 1981), 2 (Kinalioğlu 1982), on siliceous rocks.
- X. stenophylla* (Ach.) Ahti & D. Hawksw. - Afyonkarahisar: 2 (Kinalioğlu 1983), Kırıkkale: 4 (Kinalioğlu 1984), on siliceous rocks. *X. verruculifera* (Ach.) O. Blanco et al. - Afyonkarahisar: 2 (Kinalioğlu 1985), on siliceous rocks.
- Xanthoria candelaria* (L.) Th. Fr. - Afyonkarahisar: 2 (Kinalioğlu 1986), on *Quercus* sp.
- X. elegans* (Link) Th. Fr. - Afyonkarahisar: 3 (Kinalioğlu 1987), on calcareous rock.
- X. fulva* (Hoffm.) Poelt & Petutschnig. - Afyonkarahisar: 1 (Kinalioğlu 1988), 2 (Kinalioğlu 1989), 3 (Kinalioğlu 1990), on *Quercus* sp., Kırıkkale: 4 (Kinalioğlu 1991) (Kinalioğlu 1992), on *Salix* sp.
- X. parietina* (L.) Th. Fr. - Afyonkarahisar: 2 (Kinalioğlu 1993), 3 (Kinalioğlu 1994), on *Quercus* sp., Afyonkarahisar: 1 (Kinalioğlu 1995), Kırıkkale: 4 (Kinalioğlu 1996), on *Salix* sp.
- X. polycarpa* (Hoffm.) Rieber. - Afyonkarahisar: 2 (Kinalioğlu 1997), 3 (Kinalioğlu 1998), on *Quercus* sp.

4. DISCUSSION

The list includes 120 species, of which 115 species are reported from Afyonkarahisar and 22 from Kırıkkale. The 75 are crustose, 37 are foliose and 8 are fruticose in given list of lichens.

Crustose lichens were seen in all localities. The most diverse crustose lichen taxa were defined in locality 2 (42 species), and the least in locality 4 (10 species). Generally in these areas those lichen species taxa prefer to grow mostly on rocks and on the bark of deciduous trees.

Caloplaca, *Lecanora* and *Acarospora* are the most common crustose lichen genera. Among them *Lecanora* is the most common one (found in 4 localities). This genus grows on bark of deciduous trees and rocks (on calcareous rock and siliceous rock) habitats in study area.

The genus *Acarospora* was found mostly on rocks (on calcareous and siliceous) habitats in 4 different stations.

The genus *Caloplaca* taxa were found bark of deciduous trees and rocks (on calcareous rock and on siliceous rock) habitats in 4 different localities.

The most foliose lichen taxa were found in locality 2 (22 species), and the least in localities 1 (5 species).

Of these, *Physcia* and *Xanthoria* genera were seen in all localities in study. Generally in these regions those taxa prefer to grow mostly on bark of *Quercus* sp., *Salix* sp. and calcareous rock.

Xanthoparmelia spp. in occurring only on rocks (on calcareous and siliceous) in exposed areas in 3 different localities.

Fruticose lichen species were only found in locality 2. Most of the fruticose species are *Cladonia* spp. (6 species). Members of *Cladonia* grow on bases of *Quercus* sp. and soil in well-lit in habitats.

The species were found on 5 different substrata. When we analyse the substrata on which the lichen taxa grow, the saxicolous taxa are the most common in the area (represented by 70 species, 33 of which are silicolous saxicolous taxa, 31 calciphilous saxicolous taxa and 6 indifferent).

The taxa on bark of trees are the second most common group (represented by 28 species). Terricolous taxa compose the third group (represented by 15 species).

In addition, 5 taxa were both corticolous and saxicolous, 1 taxa terricolous and saxicolous and 1 muscicolous, saxicolous and terricolous.

In this study area; species showing the widest distribution range are: *Candelariella vitellina* (4 localities), *Lecanora hagenii* (4 localities), *Protoparmeliopsis muralis* (4 localities), *Xanthoria fulva* (4 localities) and *X. parietina* (4 localities).

All these species are also common and widely distributed in Europe (Smith et al. 2009 and Wirth 1995).

Regarding substrate choice *Candelariella vitellina*, *Collema cristatum*, *Lecanora hagenii*, *Phaeophyscia orbicularis* were the least specialized. *Candelariella vitellina* was found on 4 different substrata. Furthermore *Collema cristatum*, *Lecanora hagenii* and *Phaeophyscia orbicularis* grow on 3 different substrata.

Until now the number of taxa recorded from different regions of Afyonkarahisar province was 94 [1-4]. Together with the additional records from this study the number of lichen taxa in Afyonkarahisar reaches 172. As to Kırıkkale, there have been no lichen records from that province before and all of the 22 taxa reported here are new records for the province.

In spite of these figures additional studies are necessary to complete the lichen biota of these provinces. Because large areas of Afyonkarahisar and Kırıkkale remain unexplored.

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