

Aksaray linden Liken Kayıtları,

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Özet

Aksaray ilinden 18 familyaya ait 86 liken taksonu tespit edilmiştir. Bunların tamamı, Aksaray için yenidir. Tespit edilen türlerin yaygın alanları ve substratları da verilmektedir.

Anahtar Sözcükler: Aksaray, Biyoçeşitlilik, Flora, Liken

Lichens Records from Aksaray Province

Abstract

A total of 86 lichen taxa belonging to 18 families were determined from Aksaray province. All of the taxa are new records for Aksaray. In addition the distribution and substrata of these taxa are given.

Keywords: Aksaray, Biodiversity, Flora, Lichen

Introduction

In recent years there has been an increasing number of studies on the lichen flora of Turkey (e.g., John & Nimis, 1998; Candan & Özdemir Türk, 2008; Halıcı & Aksoy, 2009; Kınalıoğlu, 2010; Öztürk & Güvenç, 2010; Yazıcı, et al. 2010). However, there are still intact regions. One of these regions is Aksaray. So far there have been no lichen records from Aksaray. The records from this hitherto unexplored province contributes considerably to the forthcoming checklist of Turkish lichens.

Materials and Methods

The collections were identified with standart identification methods of various lichen guides (Purvis et al., 1992; Wirth, 1995; Brodo et al., 2001; Smith et al., 2009). Air dried samples were examined using a stereo microscope and a light microscope. Vouchers are stored in the herbarium of the Faculty of Science and Arts, Giresun University, Giresun, Turkey. The collecting sites are given in Table 1.

Table 1: The collecting sites

Localities	Coordinates	Altitude (m)	Date of Collection
1. Gülp,nar, near the Kay, lake	38°24'22" N 34°22'30" E	1184	10.08.2008
2. Centre	38°20'04" N 34°03'27" E	968	11.08.2008
3. A açören, Yaylak place	38°55'27 "N 33°47'59" E	1275	20.08.2008
4. A açören, Hac,ahmetli Davutlu village	38°48'09" N 33°50'53" E	1200	24.08.2008
5. A açören, west of Sar,a ,l village	38°48'48"N 33°51'44"E	1259	20.08.2008

Description of The Study Area: Aksaray is located in the central Anatolian region of Turkey, between 33°30'-34°40' E and 38°05'-39°05' N (Fig. 1). It, which has an area of 7997 km² and plains and topography. On the other hand there are some altitudes in province. The most important altitudes of Aksaray are Hasan mountain (3268 m), Melendiz mountain (2963 m) and Ekecik mountain (2137 m).

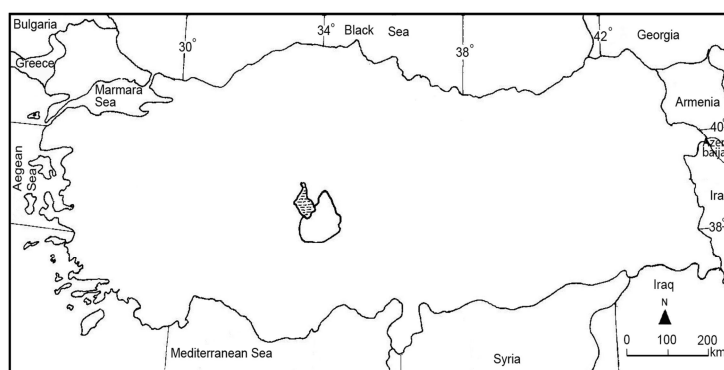


Fig. 1. Position of the study area in Turkey

Aksaray have a continental climate. Summers are hot and dry, while winters are cold and snowy. The mean rainfall per year is 395.2 mm, the highest precipitations occurring in April and May and lowest in January and August. On average there are 84 rainy days and 33 snowy days. The mean annual maximum temperature is 30.5 °C in July, while the mean minimum temperature is -3.7 °C in January. The mean annual humidity is 62%. Neogene age volcanic facies are mostly present in Aksaray.

A large part of its vegetation is composed of steppe. The forests are mostly seen slopes of Hasan Mountain and Ekecik mountain. They are mostly composed of *Acer*, *Cotoneaster*, *Crataegus*, *Juniperus*, *Quercus* and *Populus* (Atalay, 1994). Besides there are rarely small groups of *Populus* trees, *Salix* trees and crop fields in lowlands of Aksaray province.

Results

From Aksaray 86 lichen taxa were yielded, belonging to 29 genera in *Ascomycotina*. The lichen taxa are listed alphabetically. The names of authors are abbreviated according to Brummit & Powell (1992).

Acarospora badiofusca (Nyl.) Th.Fr., Loc. 3, 4: on siliceous rock.

A. fuscata (Nyl.) Arnold, Loc. 1, 3, 4: on siliceous rock.

A. macrospora (Hepp) A.Massal., Loc. 3: on siliceous rock.

A. umbilicata Bagl., Loc. 5: on siliceous rock.

Acrocordia gemmata (Ach.) A.Massal., Loc. 2, 3: on *Salix* sp.

Aspicilia calcarea (L.) Mudd, Loc. 1: on calcareous rock,

- A. caesiocinerea* (Nyl. ex Malbr.) Arnold, Loc. 1, 5: on siliceous rock.
- A. contorta* (Hoffm.) Kremp., Loc. 1, 3, 4, 5: on siliceous rock. Loc. 5: on calcareous rock.
- A. desertorum* (Kremp.) Mereschk, Loc. 5: on calcareous rock,
- A. epiglypta* (Norrl. ex Nyl.) Hue., Loc. 1: on siliceous rock.
- A. tuberculosa* (Ach.) J.R. Laundon, Loc. 1, 5: on siliceous rock.
- Caloplaca arenaria* (Pers.) Müll. Arg., Loc. 1: on siliceous rock.
- C. arnoldii* (Wedd.) Zahlbr. ex Ginzbr., Loc. 1: on siliceous rock.
- C. cerina* (Ehrh. ex Hedw.) Th.Fr., Loc. 4: on *Prunus* sp., Loc. 1: on *Salix* sp.
- C. cerinella* (Nyl.) Flagey, Loc. 1, 2, 4: on *Salix* sp., Loc. 4: on *Prunus* sp.
- C. cerinelloides* (Erichsen) Poelt, Loc. 4: on *Prunus* sp., Loc. 1, 3: on *Salix* sp.
- C. cirrochroa* (Ach.) Th.Fr., Loc. 1: on siliceous rock.
- C. citrina* (Hoffm.) Th.Fr., Loc. 1: on siliceous rock.
- C. concilians* (Nyl.) H. Olivier, Loc. 1: on calcareous rock, Loc. 1, 3: on siliceous rock.
- C. flavorubescens* (Huds.) J.R. Laundon, Loc. 4: on *Salix* sp.
- C. decipiens* (Arnold) Blomb. & Forss., Loc. 5: on siliceous rock.
- C. holocarpa* (Hoffm.) A.E. Wade, Loc. 5: on calcareous rock, Loc. 4: on *Prunus* sp., Loc. 1: on *Salix* sp. and on siliceous rock.
- C. scopularis* (Nyl.) Lettau, Loc. 1, 5: on calcareous rock.
- Candelaria concolor* (Dicks.) Stein, Loc. 1, 2: on *Salix* sp.
- Candelariella aurella* (Hoffm.) Zahlbr., Loc. 1, 3: on *Salix* sp., Loc. 1, 4: on siliceous rock.
- C. vitellina* (Hoffm.) Müll. Arg., Loc. 5: on calcareous rock, Loc. 1, 3, 4: on siliceous rock.
- Chrysothrix candelaris* (L.) J.R. Laundon, Loc. 4: on siliceous rock.
- Collema cristatum* (L.) F.H. Wigg., Loc. 1: on moss.
- Dimelaena oreina* (Ach.) Norman, Loc. 4: on siliceous rock.
- Heterodermia obscurata* (Nyl.) Trevis., Loc. 1: on *Salix* sp.
- Hypocenomyce scalaris* (Ach. ex Lilj.) M.Choisy, Loc. 1: on *Salix* sp.
- Immersaria athroocarpa* (Ach.) Rambold & Pietschm., Loc. 1: on calcareous rock and on siliceous rock.
- Lecanora albella* (Pers.) Ach., Loc. 2: *Elaeagnus* sp., Loc. 1, 3: on *Salix* sp
- L. albescens* (Hoffm) Branth & Rostr., Loc. 5: on calcareous rock.
- L. bolcana* (Poll.) Poelt, Loc. 3: on siliceous rock.

- L. campestris* (Schaer.) Hue, Loc. 1: on calcareous rock and on siliceous rock.
- L. carpinea* (L.) Vain., Loc. 1: on *Salix* sp.
- L. cenisia* Ach., Loc. 1: siliceous rock.
- L. dispersa* (Pers.) Sommerf., Loc. 5: on calcareous rock, Loc. 1: on *Salix* sp., Loc. 3: on siliceous rock.
- L. hagenii* (Ach.) Ach., Loc. 2: *Elaeagnus* sp., Loc. 4: on *Prunus* sp., Loc. 4, 5: on siliceous rock, Loc. 1, 3: on *Salix* sp.
- L. polytropa* (Ehrh. ex Hoffm.) Rabenh., Loc. 1, 3: on siliceous rock.
- L. pulicaris* (Pers.) Ach., Loc. 1: on *Salix* sp.
- L. rupicola* (L.) Zahlbr., Loc. 5: on siliceous rock.
- L. saligna* (Schrad.) Zahlbr., Loc. 1: on *Salix* sp.
- L. strobilina* (Spreng.) Kieff., Loc. 2: *Elaeagnus* sp.
- L. varia* (Hoffm.) Ach., Loc. 1: on *Salix* sp.
- Lecidea fuliginosa* Taylor, Loc. 1: on siliceous rock.
- L. fuscoatra* (L.) Ach., Loc. 5: on calcareous rock.
- L. promiscens* Nyl., Loc. 3: on siliceous rock.
- Lobothallia radiosa* (Hoffm.) Hafellner, Loc. 1, 3: on siliceous rock.
- Melanohalea elegantula* (Zahlbr.) O.Blanco et al., Loc. 1, 3: on siliceous rock.
- Pertusaria albescens* (Hudson) M.Choisy & Werner, Loc. 1: on *Salix* sp., and on siliceous rock.
- Phaeophyscia chloantha* (Ach.) Moberg, Loc. 4: on *Prunus* sp., Loc. 1, 3: on *Salix* sp.
- P. nigricans* (Flörke) Moberg, Loc. 1: on calcareous rock and on *Salix* sp.
- P. orbicularis* (Neck.) Moberg, Loc. 2: *Elaeagnus* sp. and on *Salix* sp., Loc. 4: on mortar and on *Populus* sp., Loc. 1: on siliceous rock.
- P. pusilloides* (Zahlbr.) Essl., Loc. 2: on *Salix* sp.
- Physcia aipolia* (Humb.) Hampe, Loc. 1: on *Salix* sp.
- P. dubia* (Hoffm.) Lettau, Loc. 1: on *Salix* sp., Loc. 1, 3: on siliceous rock.
- P. caesia* (Hoffm.) Hampe ex Füm., Loc. 1: on siliceous rock.
- P. tenella* (Scop.) DC., Loc. 1, 3: on *Salix* sp.
- Physconia muscigena* (Ach.) Poelt, Loc. 1: on moss.
- Placocarpus schaeferi* (Fr.), Breuss, Loc. 4: on siliceous rock.
- Placynthium nigrum* (Huds.) Gray, Loc. 5: on siliceous rock.

- Polychidium muscicola* (Sw.) Gray, Loc. 1: on moss.
- Polysporina simplex* (Taylor) V. Zda, Loc. 4: on siliceous rock.
- Porina chlorotica* (Ach.) Müll. Arg., Loc. 1: on *Salix* sp.
- Protoparmeliopsis muralis* (Schreb.) M.Choisy, Loc. 1, 3, 5: on calcareous rock, Loc. 4: on siliceous rock.
- Rhizocarpon geminatum* Körb., Loc. 3, 4: on siliceous rock.
- R. geographicum* (L.) DC., Loc. 1, 4, 5: on siliceous rock.
- R. subgeminatum* Eitner, Loc. 4: on siliceous rock.
- R. lecanorinum* Anders, Loc. 1: on siliceous rock.
- Rinodina exigua* (Ach.) Gray, Loc. 1: on *Salix* sp.
- R. gennari* Bagl., Loc. 1: on calcareous rock.
- R. lecanorina* (A.Massal.) A.Massal., Loc. 1: on calcareous rock.
- R. pyrina* (Ach.) Arnold, Loc. 3: on *Salix* sp.
- R. sophodes* (Ach.) A.Massal., Loc. 2: *Elaeagnus* sp., Loc. 4: on *Prunus* sp., Loc. 1, 3: on *Salix* sp.
- Scoliciosporum umbrinum* (Ach.) Arnold, Loc. 2: *Elaeagnus* sp., Loc. 1, 3: on *Salix* sp.
- Strigula taylorii* (Carroll ex Nyl.) R.C. Haris, Loc. 2: on *Salix* sp.
- Verrucaria lecideoides* (A.Massal.) Trevis., Loc. 5: on calcareous rock.
- V. nigrescens* Pers., Loc. 3: on siliceous rock.
- Xanthoparmelia pulla* (Ach.) O.Blanco et al., Loc. 1, 3, 4: on siliceous rock.
- X. verruculifera* (Ach.) O.Blanco et al., Loc. 1: on siliceous rock.
- Xanthoria elegans* (Link) Th.Fr., Loc. 1, 5: on calcareous rock, Loc. 1, 3: on siliceous rock.
- X. fulva* (Hoffm.) Poelt & Petut., Loc. 2: *Elaeagnus* sp. and on *Salix* sp, Loc. 1, 3: on *Salix* sp., Loc. 4: on *Populus* sp., on *Prunus* sp. and on *Salix* sp.
- X. parietina* (L.) Th.Fr., Loc. 2: *Elaeagnus* sp., Loc. 1, 2: on *Salix* sp.
- X. polycarpa* (Hoffm.) Rieber, Loc. 2: *Elaeagnus* sp., Loc. 4: on *Populus* sp., Loc. 1, 4: on *Salix* sp.

Results and Discussion

The list includes 86 lichenized taxa. All of the taxa are new records for Aksaray. A comparison of the investigated localities (Table 2) shows that the richest localities are 1, while the poorest localities are 2.

Table 2: Frequency of lichen growth forms in the investigated localities

Locality	Crustose	Foliose	Fruticose	Total number of species
1. Gülpınar, near the Kayıhan lake	37	20	-	57
2. Centre	9	6	-	15
3. Açıoğlu, Yaylak place	20	9	-	29
4. Açıoğlu, Hac,ahmetli Davutlu village	17	8	-	25
5. Açıoğlu, west of Sarı, village	13	3	-	16

The species were found on 8 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 50 species, 33 of which are silicicolous saxicolous taxa, 10 calciphilous saxicolous taxa and 7 indifferent).

The corticolous taxa are the second most common group (represented by 26 species). Musicolous taxa (*Physconia muscigena* and *Polychidium muscicola*) make up a lower proportion. Besides, 8 taxa were both corticolous and saxicolous.

In this study area; species showing the widest distribution range are: *Aspicilia contorta* (4 localities), *Lecanora hagenii* (4 localities), *Protoparmeliopsis muralis* (4 localities) and *Xanthoria fulva* (4 localities). In addition, all these species are common and widely distributed in Europe (Purvis et al., 1992; Smith et al., 2009).

The most diverse genera are *Lecanora* (14 species), *Caloplaca* (12 species), *Aspicilia* (6 species) and *Rinodina* (9 species). The member of the genera *Lecanora* (5 localities), *Caloplaca* (5 localities), *Aspicilia* (4 localities) and *Rinodina* (4 localities) were found in study area.

Growth forms of the taxa differ. The major group is crustose with 61 species, which is about 71% of the total. Foliose lichens are the second most common group, represented by 25 species, which is 29% of the total.

Crustose lichens were seen all of localities. The most diverse crustose lichen taxa were defined in locality 1 (37 species), and the least in locality 2 (9 species). Generally in these areas those lichen

species taxa prefer to grow mostly on rocks and on bark. *Caloplaca* and *Lecanora* are the most common crustose lichen genera. They were seen all of stations.

Of these, *Caloplaca* species were found on bark trees (on *Prunus* sp. and on *Salix* sp.) and rocks (on calcareous rock and on siliceous rock) habitats in study area. The genus *Lecanora* grows on bark of trees (on *Elaeagnus* sp., on *Prunus* sp. and on *Salix* sp.) and rocks (on calcareous rock and on siliceous rock) habitats in study area.

The most foliose lichen taxa were found in locality 1 (20 species), and the least in localities 5 (3 species). Common foliose lichen taxa in the area are *Xanthoria*, *Phaeophyscia* and *Physcia*. Of these, *Xanthoria* genera were seen in all stations in study area and are very common in localities 1, 2 and 4. Generally in these regions those taxa prefer to grow mostly on bark of trees (on *Elaeagnus* sp., on *Populus* sp. and on *Salix* sp.) and rocks (on calcareous rock and on siliceous rock). *Phaeophyscia* spp. grows on bark of trees (on *Elaeagnus* sp., on *Populus* sp., on *Prunus* sp. and on *Salix* sp.) and rocks (on calcareous rock, on siliceous rock and on mortar) habitats in localities 1, 2, 3 and 4. Members of *Physcia* spp. were mostly seen on *Salix* sp. and on siliceous rocks in locality 1, 3.

As regards substrate choice *Phaeophyscia orbicularis*, *Lecanora hagenii*, *Xanthoria fulva*, were the least sensitive. *Phaeophyscia orbicularis* was found on 5 different substrata, *Lecanora hagenii* and *Xanthoria fulva* grew on 4 different substrata.

There is no published data about lichen composition of Aksaray province, because of this reason all of the reported species in this paper are new records for the province. However, more extensive studies are necessary to complete the lichen biota of Aksaray province.

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