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# Lichens from the regions of Gümüşhane, Erzincan and Bayburt (Turkey)

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**Abstract** – A contribution to the lichen flora of Turkey is provided. A total of 206 taxa, of which 2 are subspecies and 4 are variety, from 102 different stations in the Turkish provinces of Gümüşhane, Erzincan and Bayburt. 8 of which are new records for the lichen flora of Turkey. These are *Acarospora nitrophila* H. Magn., *Immersaria cuproatra* (Nyl.) Cabotayud & Rambold., *Lecidea berengeriana* (Massal.) Nyl., *Placodiopsis tenella* (Nyl.) Zahlbr., *Pleopsidium flavum* (Bellardi) Körber., *Ramalina arabum* (Ach.) Mey. ex Flot., *Sarcogyne fallax* H. Magn., *Teloschistes contortublicatus* (Ach.) Clauz. et Rond.

**Lichen / New records / Flora / Turkey**

## INTRODUCTION

The studies on lichens in Turkey are not extensive as in other countries. So the lichen flora of Turkey is still largely unknown. The previous lichenological research work in the study area has been performed by John and Szatala. They defined 50 different lichen species (John, 2000; Szatala 1960). Nevertheless according to own most recent literature 14 studies were conducted nearby (Anşin, 1979; Aslan, 2000; Aslan and Öztürk, 1994; Aslan *et al.,* 1998; 2002a, b; Cevahir, 1992; Yazıcı, 1995a, b, c, 1996; 1999; Yazıcı and Aslan, 2000a, b). This paper offers additional records to them for the lichen flora of Gümüşhane, Erzincan and Bayburt province.

## MATERIALS AND METHODS

The lichen samples were collected from 102 different stations between 1997-2001 in Gümüşhane, Erzincan and Bayburt provinces (Table 1). After dried at the room temperature, the lichen samples were identified using reference books, a stereo microscope, a light microscope and a color identification method with various reactives (Dobson, 1981; Moberg, 1992; Poelt, 1974; Poelt and Vězda, 1981; Purvis *et al.*, 1992; Wirth, 1995). After being identified, the lichen specimens were

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Table 1. The number of the station and sites collected samples.

| PROVINCE Region | | Altitude | Latitude | Longitude | Date of Collection |
|---|---|---|---|---|---|
| **GÜMÜŞHANE** | 1. Camiboğazı high plateau | 2800 m | 40°34'50'' | 39°40'00'' | 05.vii.1997 |
| | 2. Deveboynu high plateau | 2850 m | 40°32'50'' | 39°42'00'' | 12.vii.1997 |
| | 3. Balehor high plateau | 2800 m | 40°30'00'' | 39°58'00'' | 18.vii.1997 |
| | 4. Kocayokuş high plateau | 2100 m | 40°19'00'' | 39°51'00'' | 30.ix.2000 |
| | 5. Güvercinlik | 1950 m | 40°22'00'' | 39°50'50'' | 03.ix.2001 |
| **Torul** | 6. Kocadal | 2200 m | 40°21'30'' | 39°15'00'' | 03.vii.2000 |
| | 7. Işık | 2000 m | 40°23'30'' | 39°16'30'' | 03.vii.2000 |
| | 8. Kalecik | 1850 m | 40°26'15'' | 39°19'00'' | 06.vii.2000 |
| | 9. Bahçelik | 1950 m | 40°28'30'' | 39°20'00'' | 07.vii.2000 |
| | 10. Övündü | 1700 m | 40°31'50'' | 39°20'15'' | 07.vii.2000 |
| | 11. Adisa high plateau | 2100 m | 40°29'00'' | 39°12'30'' | 09.vii.2000 |
| | 12. Olukman high plateau | 2150 m | 40°27'30'' | 39°02'30'' | 10.vii.2000 |
| | 13. Güzeloluk high plateau | 2100 m | 40°30'10'' | 39°05'30'' | 09.vii.2000 |
| | 14. Herek high plateau | 2300 m | 40°34'50'' | 39°10'30'' | 12.vii.2000 |
| | 15. Tokcam | 2050 m | 40°36'10'' | 39°12'50'' | 12.vii.2000 |
| | 16. Kirazlık | 1800 m | 40°37'50'' | 39°15'00'' | 13.vii.2000 |
| | 17. Zigana high plateau | 2000 m | 40°36'30'' | 39°22'15'' | 14.vii.2000 |
| | 18. Seranoy high plateau | 2000 m | 40°35'50'' | 39°24'45'' | 14.vii.2000 |
| | 19. Kalkanlı high plateau | 2200 m | 40°38'30'' | 39°25'00'' | 16.vii.2000 |
| | 20. Köstüre high plateau | 2000 m | 40°39'15'' | 39°20'30'' | 13.vii.2000 |
| | 21. Demirtaş high plateau | 2150 m | 40°36'30'' | 39°27'45'' | 16.vii.2000 |
| | 22. Ayliye high plateau | 2100 m | 40°35'00'' | 39°22'15'' | 04.vii.2000 |
| **Köse** | 23. Yaylım high plateau | 2100 m | 40°17'30'' | 39°46'00'' | 17.ix.2000 |
| | 24. Tanzut | 2200 m | 40°14'30'' | 39°45'05'' | 17.ix.2000 |
| | 25. Salyazı | 2250 m | 40°15'30'' | 39°48'50'' | 18.ix.2000 |
| | 26. Altıntaş | 2250 m | 40°17'50'' | 39°49'00'' | 18.ix.2000 |
| | 27. Şurut high plateau | 2400 m | 40°17'30'' | 39°41'30'' | 23.ix.2000 |
| | 28. Akbaba high plateau | 2100 m | 40°12'30'' | 39°35'00'' | 24.ix.2000 |
| | 29. Kayadibi high plateau | 2000 m | 40°13'45'' | 39°36'00'' | 24.ix.2000 |
| **Şiran** | 30. Günyüzü | 2300 m | 40°16'00'' | 39°09'00'' | 01.x.2000 |
| | 31. Selimiye high plateau | 2350 m | 40°19'00'' | 39°05'00'' | 04.x.2000 |
| | 32. Lorşan high plateau | 2200 m | 40°15'45'' | 39°07'00'' | 07.x.2000 |
| | 33. Konaklı high plateau | 2000 m | 40°14'50'' | 38°59'50'' | 08.x.2000 |
| | 34. Tersun mountain | 2000 m | 40°18'50'' | 39°18'10'' | 15.x.2000 |
| | 35. Yolbilen high plateau | 2100 m | 40°12'30'' | 38°57'00'' | 14.x.2000 |
| | 36. Akbulak high plateau | 2150 m | 40°17'15'' | 39°05'00'' | 04.x.2000 |
| | 37. Alıç high plateau | 2100 m | 40°10'10'' | 38°56'05'' | 14.x.2000 |
| | 38. Çevrepınar | 2300 m | 40°15'50'' | 39°17'55'' | 15.x.2000 |
| | 39. Alacahan | 2200 m | 40°12'30'' | 39°10'00'' | 01.x.2000 |
| **Kürtün** | 40. Günyüzü | 500 m | 40°44'30'' | 39°01'00'' | 19.v.2001 |
| | 41. Taşlıca | 700 m | 40°43'30'' | 39°05'50'' | 19.v.2001 |
| | 42. Sürme | 700 m | 40°41'30'' | 39°08'00'' | 19.v.2001 |
| | 43. a. Çıkrıkdüzü high plateau | 2400 m | 40°35'30'' | 39°03'00'' | 02.vi.2001 |
| | b.Örümcek forests | 1900 m | 40°35'30'' | 39°03'30'' | 02.vi.2001 |
| | 44. Kazıkbeli high plateau | 2400 m | 40°32'50'' | 38°56'00'' | 03.vi.2001 |
| | 45. Çatak high plateau | 2350 m | 40°34'00'' | 38°59'10'' | 02.vi.2001 |
| | 46. Kanyas high Plateau | 2400 m | 40°36'00'' | 38°55'00'' | 09.vi.2001 |
| | 47. Yukarıdere high plateau | 2300 m | 40°32'50'' | 38°51'00'' | 09.vi.2001 |
| | 48. Çayırağzı high plateau | 2200 m | 40°43'10'' | 39°06'00'' | 26.v. 2001 |
| | 49. Karaçukur high plateau | 1200 m | 40°41'00'' | 39°59'00'' | 20.v. 2001 |
| | 50. Kırgeliş | 1500 m | 40°30'10'' | 39°12'50'' | 20.v. 2001 |
| | 51. Arpacık | 2000 m | 40°32'30'' | 39°01'50'' | 18.vi.2001 |
| | 52. Akçababa high plateau | 2400 m | 40°33'45'' | 38°55'00'' | 03.vi.2001 |

| | | | | | |
|---|---|---|---|---|---|
| | 53. Pazarcı high plateau | 1950 m | 40°43'45'' | 38°59'10'' | 26.v. 2001 |
| | 54. Aksu high plateau | 2400 m | 40°32'00'' | 38°55'00'' | 16.vi.2001 |
| | 55. Kadırga high plateau | 2400 m | 40°43'00'' | 39°17'50'' | 27.v. 2001 |
| **ERZİNCAN** | | | | | |
| **Çayırlı** | 56. Karahüseyin | 2100 m | 39°43'00'' | 40°11'00'' | 17.x.2000 |
| | 57. Ortaköy | 2200 m | 39°43'15'' | 40°08'00'' | 17.x.2000 |
| | 58. Göller | 2200 m | 39°48'00'' | 39°58'00'' | 06.v.2001 |
| | 59. Bulmuş | 2200 m | 39°40'00'' | 40°06'45'' | 12.v.2001 |
| | 60. Pınarlı | 2000 m | 39°45'00'' | 40°06'30'' | 12.v.2001 |
| | 61. Sucuali | 2150 m | 39°43'00'' | 40°14'00'' | 17.x.2000 |
| | 62. Saygılı | 1900 m | 39°48'15'' | 40°06'00'' | 18.x.2000 |
| | 63. Balıklı | 2000 m | 39°51'00'' | 40°00'15'' | 22.x.2000 |
| | 64. Bozağa | 1800 m | 39°52'30'' | 40°03'30'' | 22.x.2000 |
| | 65. Mirzaoğlu | 2200 m | 39°56'15'' | 40°05'45'' | 21.x.2000 |
| | 66. Doluca | 2500 m | 39°57'00'' | 40°11'50'' | 21.x.2000 |
| | 67. Mazlumağa | 1800 m | 39°48'00'' | 40°10'15'' | 18.x.2000 |
| | 68. Esendoruk | 2200 m | 39°51'45'' | 39°46'00'' | 06.v.2001 |
| | 69. Oğultaşı | 2250 m | 39°44'15'' | 40°03'45'' | 06.v.2001 |
| **Tercan** | 70. Altınkaya | 1950 m | 39°54'45'' | 40°13'00'' | 28.x.2000 |
| | 71. Karaçay | 2000 m | 39°54'30'' | 40°16'45'' | 06.xi.2000 |
| | 72. Beykonak | 2300 m | 39°52'45'' | 40°23'00'' | 05.xi.2000 |
| | 73. Yamanlar | 2300 m | 39°51'30'' | 40°29'30'' | 05.xi.2000 |
| | 74. Çadırkaya | 1900 m | 39°50'45'' | 40°10'30'' | 04.xi.2000 |
| | 75. Çatakdere | 1900 m | 39°48'15'' | 40°17'45'' | 04.xi.2000 |
| | 76. Mercan | 1750 m | 39°45'00'' | 40°00'15'' | 29.x.2000 |
| | 77. Altunkent | 1750 m | 39°43'15'' | 40°12'00'' | 28.iv.2001 |
| | 78. Üçpınar | 1950 m | 39°44'00'' | 40°17'45'' | 29.x.2000 |
| | 79. Yalınkaş | 2200 m | 39°43'00'' | 40°22'15'' | 28.x.2000 |
| **Üzümlü** | 80. Pınarlıkaya | 2150 m | 39°39'10'' | 39°52'00'' | 06.vii.2001 |
| | 81. Bayırbağ | 1900 m | 39°42'00'' | 39°14'00'' | 08.vii.2001 |
| | 82. Çardaklı | 1900 m | 39°39'45'' | 39°48'30'' | 10.vii.2001 |
| | 83. Pelitli | 2000 m | 39°35'45'' | 40°00'00'' | 12.vii.2001 |
| | 84. Bağlar | 2000 m | 39°34'30'' | 40°06'15'' | 15.vii.2001 |
| | 85. Ahmetağa | 2400 m | 39°43'30'' | 39°50'30'' | 25.viii.2001 |
| | 86. Çadırtepe | 1700 m | 39°42'45'' | 39°39'50'' | 01.ix.2001 |
| **Otlukbeli** | 87. Bölükova | 1900 m | 39°53'00'' | 40°03'00'' | 21.vi.2001 |
| | 88. Karadivan | 1900 m | 39°57'15'' | 40°04'30'' | 23.vi.2001 |
| | 89. Söğütlü | 1950 m | 39°58'30'' | 40°07'45'' | 24.vi.2001 |
| | 90. Yeniköy | 1800 m | 39°59'00'' | 40°07'30'' | 27.vi.2001 |
| | 91. Umurlu | 1900 m | 40°01'05'' | 40°07'45'' | 27.vi.2001 |
| | 92. Coşan | 2850 m | 40°01'15'' | 40°17'00'' | 29.vi.2001 |
| | 93. Çataksu | 2200 m | 39°59'00'' | 40°12'15'' | 29.vi.2001 |
| | 94. Ördekhacı | 1950 m | 40°01'45'' | 40°10'30'' | 30.vi.2001 |
| | 95. Ağamçağam | 2000 m | 40°01'00'' | 40°04'00'' | 01.vii.2001 |
| | 96. Avcıçayırı | 1950 m | 39°48'50'' | 39°53'00'' | 03.vii.2001 |
| **BAYBURT** | 97. Saruhan | 2550 m | 40°04'45'' | 40°08'00'' | 28.iv.2001 |
| | 98. Saraycık | 2000 m | 40°08'30'' | 40°04'00'' | 29.iv.2001 |
| | 99. Güder | 2000 m | 40°08'30'' | 40°09'00'' | 29.iv.2001 |
| | 100. Söğütlü | 2050 m | 40°12'30'' | 40°03'00'' | 05.v.2001 |
| | 101. Kırkpınar | 2075 m | 40°16'50'' | 39°59'00'' | 05.v.2001 |
| | 102. Kitre | 2100 m | 40°18'45'' | 39°52'15'' | 03.ix.2001 |

stored in the herbarium of the Biology Department, Fatih Education Faculty, Karadeniz Technical University.

## DESCRIPTION OF THE STUDY AREA

The study area is situated between latitude 39°34'30"-40°44'30" N and longitude 38°51'00"-40°29'30" E at localities with altitudes of 500 to 2850 m (Fig. 1). Most of the study area is located in the south of the East Black Sea Region, and The rest of it is situated in NE Anatolia. Study area is bounded by the East Black Sea Mountains in the north; in the west by Giresun Mountains, Kelkit watershed; in the south west by Otlukbeli Mountains and Esence Mountains; in the south by Fırat River; in the east by Çoruh River, Bayburt Plateau; in the south east by Kılıçkaya Mountains and Tercan Plateau. In the study area there are a lot of streams such as Kelkit, Aksu, Karasu and Harşit. In addition Çoruh and Fırat rivers are also seen. The climate and plant cover are different for Erzincan, Gümüşhane and Bayburt because of their geographical structure. Plant cover is steppe in plains less than 1600 m in Erzincan, Gümüşhane and Bayburt. In uplands higher than 1600-1700 pure or mixed *Picea* sp., *Pinus* sp., *Abies* sp. were observed to be dominant in Gümüşhane. On the other hand in

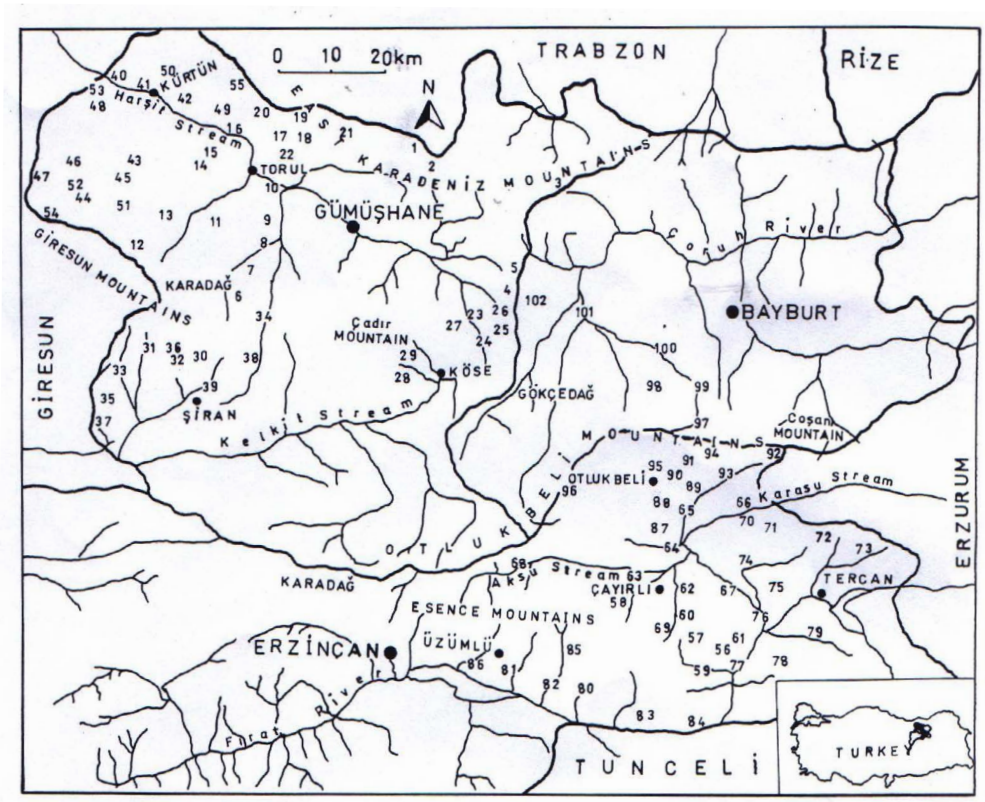


Fig. 1. Map of the collecting area with collecting sites and numbers.

Erzincan and Bayburt it was observed that there are rarely *Pinus* sp., *Abies* sp. and *Quercus* sp. or without trees in these altitudes. In Erzincan and Bayburt decidious such as *Salix* sp., *Populus* sp., *Prunus* sp. and *Pyrus* sp. are seen along the valleies. In Gümüşhane and Bayburt the climate is dry in the summer and very severe in the winter. Continental climate is seen in Erzincan.

## RESULTS

The lichen taxa represented by collection station and substrataum are listed alphabetically, in three groups: new records for Turkey (Table 2), new records for the study area (Table 3), and the list of previously known species for the study area (Table 4).

## DISCUSSION AND CONCLUSION

In this study a total of 206 taxa, of which 4 are variety and 2 are subspecies, was defined in Erzincan, Gümüşhane and Bayburt provinces. 8 of which are new records for Turkey and 180 of which are new records for the study area.

In the study area a total of 50 different lichen species have been defined by John and Szatala so far. 31 of which were defined by John in Gümüşhane in 1971 (John, 2000) and the rest of which were defined by Szatala in 1960 in the same region (Szatala, 1960). 22 species reported in early studies were not found in the study area. On the other hand in this study, 7 of 206 lichen species were identical to those reported previously (Szatala 1960). Of these species, *Parmelia tiliacea* and *Rhizocarpon geographicum* were also defined on mosses and siliceous rock. On the other hand both species were defined on calcareous rock only by Szatala. Comparing to the species defined by John weren't done since he didn't give any substrata for them. Some of re-identified species were frequently collected from various stations and different substrata.

A total of 153 species belong to *Lecanorales*. 45 of which belongs to the family of *Parmeliaceae* and 13 species belong to *Lecanoraceae.* Of the species, 88 are foliose, 68 are crustose, 30 are fruticose, 19 are squamulose, and 1 is leprose. In this study, all of the species were found on 21 different substrata.

A total of 57 species were defined to be epiphytic only, 90 as saxicolous, 9 as terricolous only. In addition it was seen 10 species growing on the mosses only, 21 on the soil and mosses only, 14 on *Picea orientalis* only, 2 on *Pinus* sp. only, 8 on *Picea orientalis* and *Pinus* sp. only and 2 on decayed bark of *Picea orientalis* only.

Table 2. New Records for Turkey.

| SPECIES | STATIONS | SUBSTRATA |
|---|---|---|
| *Acarospora nitrophila* H. Magn. | 23 | calcareous rock |
| *Immersaria cuproatra* (Nyl.) Cabotayud & Rambold | 56 | siliceous rock |
| *Lecidea berengeriana* (Massal.) Nyl. | 32 | on the soil |
| *Placodiopsis tenella* (Nyl.) Zahlbr. | 32 | siliceous rock |
| *Pleopsidium flavum* (Bellardi) Körber | 32 | siliceous rock |
| *Ramalina arabum* (Ach.) Mey. ex Flot. | 43a | *Picea orientalis* |
| *Sarcogyne fallax* H. Magn. | 23 | calcareous rock |
| *Teloschistes contortublicatus* (Ach.) Clauz. Et Rond | 23, 24 | calcareous rock |

Table 3. New Records for the Study Area.

| Species | Stations | substrata |
|---|---|---|
| *Acarospora cervina* A. Massal. | 24, 25, 32, 57, 68 | siliceous rock |
| *Acarospora fuscata* (Nyl.) Arnold | 1, 20<br>57 | calcareous rock<br>siliceous rock |
| *Acarospora macrospora* (Hepp) A. Massal. ex Bagl | 2, 4, 14, 57 | calcareous rock |
| *Alectoria sarmentosa* (Ach.) Ach | 21, 34<br>43a | *Picea orientalis*<br>*Carpinus* sp. |
| *Anaptychia ciliaris* (L.) Körb. Ex A. Massal | 3, 17, 18 | *Picea orientalis* |
| *Anaptychia setifera* Mereschk. ex Räsänen | 12, 13, 17<br>22, 34 | *Picea orientalis*<br>*Pinus sylvestris* |
| *Aspicilia cinerea* (L.) Körb. | 30, 32<br>32, 40 | siliceous rock<br>calcareous rock |
| *Aspicilia desertorum* (Krempelh.) Meresch. | 24, 56 | siliceous rock |
| *Baeomyces rufus* (Hudson) Rebent. | 43a, 43b, 44, 45 | on the soil |
| *Bellemerea sanguinea* (Krempelh.) Hafellner et Roux *in* Clauzade et Roux | 2, 32, 55, 56, 58 | siliceous rock |
| *Bryoria capillaris* (Ach.) Brodo & D. Hawksw | 18, 34 ,35, 43a, 48<br>49, 54, 55 | *Picea orientalis*<br>*Pinus sylvestris* |
| *Bryoria fuscescens* (Gyelnik) Brodo & D. Hawksw. | 1, 4, 18, 34,<br>37<br>47, 52 | *Pinus sylvestris*<br>*Carpinus* sp.<br>*Picea orientalis* |
| *Buellia aethelea* (Ach.) Th.Fr. | 17 | calcareous rock |
| *Caloplaca albolutescens* (Nyl.) Oliv. | 2, 54, 57 | calcareous rock |
| *Caloplaca biatorina* ( Massal.) J. Steiner | 56 | calcareous rock |
| *Caloplaca cerina* (Ehrh. ex Hedwig) Th. Fr. | 17, 57, 62, 63 | calcareous rock |
| *Caloplaca citrina* (Hoffm.) Th. Fr. | 5, 40, 41, 56, 60, 78, 79, 92, 93 | calcareous rock |
| *Caloplaca crenularia* (With) J.R. Laundon | 56 | calcareous rock |
| *Caloplaca decipiens* (Arnold) Blomb. ex Fross. | 10, 42, 56, 65, 100, 101, 102 | calcareous rock |
| *Caloplaca ferruginea* (Hudson) Th.Fr. | 15, 83 | calcareous rock |
| *Caloplaca holocarpa* (Hoffm. ex Ach.) Wade | 16, 94, 95, 99 | calcareous rock |
| *Caloplaca saxicola* (Hoffm.) Nordin | 17 | calcareous rock |
| *Caloplaca thallincola* (Wedd.) Du Rietz. | 1, 2, 39, 55 | siliceous rock |
| *Caloplaca variabilis* (Pers.) Müll. Arg. | 32 | siliceous rock |
| *Candelaria concolor* (Dickson) B. Stein. | 6, 9, 17<br>19, 43b<br>43b | *Picea orientalis*<br>*Carpinus* sp.<br>*Pinus sylvestris* |
| *Candelariella aurella* (Hoffm.) Zahlbr. | 31, 32, 42, 43b, 56, 57, 58, 97, 98 | calcareous rock |
| *Candelariella coralliza* (Nyl.) H. Magn. | 7, 8, 27, 28, 29, 56, 61 | siliceous rock |
| *Cetraria aculeata* (Schreber) Fr. | 11, 38, 43b, 67, 68, 69<br>18, 34, 72, 74 | on soily rock<br>on the mosses |
| *Cetraria delisei* (Bory ex Schaer.) Nyl. | 43a, 43b<br>43b, 81<br>84 | on the soil<br>on the mosses<br>on soily rock |
| *Cetraria ericetorum* Opiz | 43a, 43b, 52<br>71, 80, 82 | on soil<br>on the mosses |
| *Cetraria islandica* (L.) Ach. | 11, 18, 34, 38, 39, 43a<br>43b, 72, 74 | on the mosses<br>on the soil |

| | | |
|---|---|---|
| *Cetraria muricata* (Ach.) Eckfeldt | 34, 43b, 62, 63, 73, 76<br>11, 18, 38, 72, 74, 76 | on soily rock<br>on the mosses |
| *Cetrelia olivetorum* (Nyl.) W. Culb & C. Culb | 11, 14, 37 | on the mosses |
| *Chaenotheca chrysocephala* (Turner ex Ach.) Th.Fr | 6, 7, 8, 9, 45, 49, 53 | *Picea orientalis* |
| *Cladonia cervicornis* (Ach.) Flotow | 41 | on the soil |
| *Cladonia coniocraea* (Flörke) Sprengel | 11, 12, 43a, 43b, 47, 48,<br>86, 88<br>86, 88 | on decayed bark of<br>*Picea orientalis*<br>on the mosses |
| *Cladonia convoluta* (Lam.) Anders | 42<br>42 | on the soil<br>calcareous rock |
| *Cladonia digitata* (L.) Hoffm. | 18, 43b<br>87, 98 | on the mosses<br>on the soil |
| *Cladonia fimbriata* (L.) Fr. | 17, 18, 30<br>85, 96 | on the soil<br>on the mosses |
| *Cladonia foliacea* (Huds.) Willd. | 17, 34, 40, 41, 42<br>43b, 50, 51 | on the mosses<br>on the soil |
| *Cladonia pyxidata* (L.) Hoffm .ssp. *Pyxidata* | 18, 34, 40, 41, 42<br>43b, 50 | on the mosses<br>on the soil |
| *Cladonia pyxidata* (L.) Hoffm. ssp. *chlorophaea* (Flörke ex Sommerf) V. Wirth | 18, 43b, 91<br>97 | on the soil<br>on the mosses |
| *Cladonia rangiferina* (L.) Weber ex Wigg. | 18, 41<br>42, 43b | on the soil<br>on the mosses |
| *Cladonia rangiformis* Hoffm. | 5, 11, 13, 15, 17, 30, 32,<br>34, 38, 40, 41<br>42, 43a, 43b, 51, 66, 75,<br>83, 90, 91, 100, 102 | on the soil<br><br>on the mosses |
| *Cladonia sulphurina* (Michaux) Fr. | 35, 43b | on decayed bark<br>of *Picea orientalis* |
| *Collema auriforme* (With.) Coppins & J. R. Laundon | 10, 53, 62, 81, 94<br>81, 94 | on the mosses<br>on the soil |
| *Collema crispum* (Hudson) Weber ex Wigg. | 28, 29, 71, 73, 79 | calcareous rock |
| *Collema cristatum* (L.) Weber ex Wigg. | 9, 10, 67<br>75, 76 | on the soil<br>calcareous rock |
| *Collema flaccidum* (Ach.) Ach. | 50, 51 | siliceous rock |
| *Collema furfuraceum* (Arnold) Du Rietz | 26, 64, 70 | *Carpinus* sp. |
| *Collema polycarpon* Hoffm. | 25, 26, 30 | siliceous rock |
| *Cornicularia normoerica* (Gunn.) Du Rietz | 12, 13, 27, 54, 66 | siliceous rock |
| *Dimeleana oreina* (Ach.) Norm | 8, 58, 61, 63, 69,78 | siliceous rock |
| *Diploschistes caesioplumbeus* (Nyl.) Vain. | 25, 26, 29, 74 | siliceous rock |
| *Diploschistes muscorum* (Scop.) R. Sant. | 12, 13, 56, 59, 60<br>13, 60, 82, 86, 87, 96 | on the mosses<br>on the soil |
| *Diploschistes ocellatus* (Vill.) Norman | 6, 8, 89 | calcareous rock |
| *Diploschistes scruposus* (Schreber) Norm. | 25, 93<br>95 | calareous rock<br>siliceous rock |
| *Evernia divaricata* (L.) Ach. | 7, 17, 18, 33, 34, 37, 43a,<br>43b, 56 | *Picea orientalis* |
| *Evernia mesomorpha* Nyl. | 43b, 59<br>17, 43b | calcareous rock<br>*Picea orientalis* |

Table 3. New Records for the Study Area *(suite)*.

| | | |
|---|---|---|
| *Evernia prunastri* (L.) Ach. | 2, 8, 9, 16, 17, 18, 22, 34<br>41, 42<br>17, 18, 43a, 43b, 53, 62 | *Pinus sylvestris*<br>*Quercus* sp.<br>*Picea orientalis* |
| *Farnoldia micropsis* (A. Massal.) Hertel | 57 | calcareous rock |
| *Flavocetraria nivalis* (L.) Ach. | 14, 17, 18, 20, 21<br>22, 38, 39, 43b, 44, 45 | on the mosses<br>on the soil |
| *Glypholechia scabra* (Pers.) Müll. Arg. | 23 | calcareous rock |
| *Graphis scripta* (L.) Ach. | 3, 17, 18, 40,41, 43a<br>17, 43b<br>40, 41 | *Populus* sp.<br>*Carpinus* sp.<br>*Alnus* sp. |
| *Heterodermia speciosa* (Wulf.) Trev. | 13, 17, 18, 34, 43a<br>34, 43a, 43b | on the mosses<br>*Picea orientalis* |
| *Hypogymnia farinacea* Zopf. | 1, 3, 17, 18, 34, 43b | *Picea orientalis* |
| *Hypogymnia tubulosa* (Schaerer) Havaas | 11, 12, 34, 43b, 46 | *Picea orientalis* |
| *Hypogymnia vittata* (Ach.) Nyl. | 11, 17, 18, 34, 43b, 47, 48 | *Picea orientalis* |
| *Lasallia pustulata* (L.) Mérat | 1, 3, 32, 33 | siliceous rock |
| *Lecanora argentata* (Ach.) Malme | 15, 17, 18, 22 | *Carpinus* sp. |
| *Lecanora bolcana* (Pollini) Poelt | 15, 17, 18, 43a, 56, 60, 92 | siliceous rock |
| *Lecanora crenulata* Hooker | 56, 57, 92<br>93, 96 | siliceous rock<br>calcareous rock |
| *Lecanora dispersa* (Pers.) Sommerf | 31, 57, 81, 83 | calcareous rock |
| *Lecanora polytropha* (Ehrh. ex Hoffm.) Rabenh. | 43a, 65, 70, 75, 95 | *Carpinus* sp. |
| *Lecanora pulicaris* (Pers.) Ach | 17, 18, 88, 99, 102 | *Carpinus* sp. |
| *Lecanora rupicola* (L.) Zahlbr. | 17, 18, 32, 34, 87, 94 | siliceous rock |
| *Lecidea atrobrunnea* (Ramond ex Lam.&DC.) Schaer. | 56 | siliceous rock |
| *Lecidea plana* (J.Lahm) Nyl. | 57 | calcareous rock |
| *Lecidella stigmatea* (Ach.) Hertel & Leuckert | 17 | calcareous rock |
| *Lepraria incana* (L.) Ach. | 40, 41, 77<br>77, 78<br>40, 41, 43b | *Ulmus* sp.<br>on the mosses<br>siliceous rock |
| *Leptogium cyanescens* (Rabenh.) Körber | 7, 43b, 50, 53<br>7, 49, 50, 62, 79 | on the mosses<br>amongst mosses of *Carpinus* sp. |
| *Leptogium lichenoides* (L.) Zahlbr. | 40, 41, 62, 81, 82, 89<br>10<br>50 | on the mosses<br>*Fraxinus* sp.<br>*Quercus* sp. |
| *Lobaria scrobiculata* (Scop.) DC. | 91<br>43a, 43b, 44<br>1<br>17 | *Quercus* sp.<br>*Pinus* sp.<br>*Picea* orientalis<br>*Abies* sp. |
| *Megaspora verrucosa* (Ach.) Haf. & V. Wirth | 2 | on the soil |
| *Menegazzia terebrata* (Hoffm.) A. Massal. | 17, 18, 43b, 54 | *Picea orientalis* |
| *Nephroma parile* (Ach.) Ach. | 17, 43b, 46, 47 | on decayed branchs of *Picea orientalis* |
| *Pannaria conoplea* (Ach.) Bory | 43b, 53, 55 | on the mosses |
| *Pannaria leucophaea* (Vahl) P.M.Jørg | 56, 63, 76 | calcareous rock |
| *Pannaria pezizoides* (Weber) Trevisan | 13, 18, 49, 97<br>17, 18, 19<br>17 | calcareous rock<br>on the soil<br>on the mosses |
| *Parmelia caperata* (L.) Ach. | 8, 21, 22, 40, 41,<br>43b, 64, 66, 70, 88 | *Picea orientalis* |

| | | |
|---|---|---|
| | 17, 34, 43a | *Pinus* sp. |
| | 56 | calcareous rock |
| | 22, 41, 66 | siliceous rock |
| | 50, 17 | *Carpinus* sp. |
| | 50, 86 | *Alnus* sp. |
| | 56, 86 | *Populus* sp. |
| *Parmelia disjuncta* Erichsen | 56 | calcareous rock |
| | 56 | siliceous rock |
| *Parmelia elegantula* (Zahlbr.) Szatala | 18, 57 | *Pinus* sp. |
| | 18, 34 | *Picea orientalis* |
| *Parmelia exasperata* de Not. | 3, 18, 20, 34, 39 | siliceous rock |
| | 34, 43a | *Picea orientalis* |
| | 43b | *Carpinus* sp. |
| *Parmelia glabratula* (Lamy) Nyl. | 8, 40, 41, 42 | *Picea orientalis* |
| *Parmelia pastillifera* (Harm.) R. Schubert & Klem. | 9, 43b, 57 | siliceous rock |
| | 17, 49 | *Carpinus* sp. |
| *Parmelia quercina* (Willd.) Vainio | 41 | siliceous rock |
| *Parmelia saxatilis* (L.) Ach. | 17, 18, 19, 42, 54 | *Pinus* sp. |
| | 43b | *Picea orientalis* |
| | 18, 19 | on the mosses |
| | 26, 17 | siliceous rock |
| *Parmelia somloensis* Gyelnik | 17, 43b, 56 | siliceous rock |
| *Parmelia stygia* (L.) Ach. | 32, 56, 57 | siliceous rock |
| *Parmelia subrudecta* Nyl. | 7, 8, 62 | calcareous rock |
| | 40 | siliceous rock |
| | 41 | on the mosses |
| *Parmelia sulcata* Taylor | 8, 10, 16, 41, 42 | *Quercus* sp. |
| | 43a, 43b | *Pinus* sp. |
| | 43b | *Picea orientalis* |
| *Parmeliopsis hyperopta* (Ach.) Arnold | 18, 42, 43b | *Pinus* sp. |
| *Parmeliopsis ambigua* (Wulf.) Nyl. | 18, 42, 43b | *Pinus* sp. |
| *Parmotrema chinense* (Osbeck) Hale et Ahti | 6, 7, 50, 53, 56 | *Pyrus* sp. |
| | 62, 64, 67, 82, 96 | *Populus* sp. |
| | 43b, 56 | *Prunus* sp. |
| | 17, 18 | *Pinus* sp. |
| | 8, 42 | *Quercus* sp. |
| | 50 | *Carpinus* sp. |
| | 41 | *Alnus* sp. |
| *Peltigera aphthosa* (L.) Willd. | 85, 86, 100, 101 | on the mosses |
| *Peltigera canina* (L.) Willd. | 34, 43b, 69, 84 | on the soil |
| | 43b, 84 | on the mosses |
| *Peltigera didactyla* (With) J.R. Laundon | 3, 43b, 51 | on the mosses |
| *Peltigera horizontalis* (Huds.) Baumg. | 15, 43b, 90 | on the mosses |
| | 15, 90 | on the soil |
| *Peltigera hymenia* (Ach.) Delise | 40, 91 | on the soil |
| | 17, 18 | on the mosses |
| *Peltigera malacea* (Ach.) Funck | 43b, 83, 84 | on the soil |
| | 18, 84 | on the mosses |
| *Peltigera polydactylon* (Necker) Hoffm. | 66, 71 | on the mosses |
| *Peltigera praetextata* (Flörke ex Sommerf.) Zopf | 3, 4, 28, 29, 34, 43b | on the soil |
| | 61, 65 | on the mosses |
| *Peltigera venosa* (L.) Hoffm. | 17, 18, 19 | on the soil |
| | 17 | on the mosses |

Table 3. New Records for the Study Area *(suite)*.

| | | |
|---|---|---|
| *Pertusaria albescens* (Huds.) M. Choisy & Werner | 16, 17<br>40 | siliceous rock<br>calcareous rock |
| *Pertusaria amara* (Ach.) Nyl. var. *amara* | 17, 32, 40, 42<br>40<br>43b | *Carpinus* sp.<br>siliceous rock<br>*Pinus* sp. |
| *Pertusaria amara* var. *flotowiana* (Flörke) Erichsen | 40, 41 | calcareous rock |
| *Pertusaria pertusa* (Weigel ) Tuck. | 40, 42<br>18 | *Carpinus* sp.<br>siliceous rock |
| *Phaeophyscia orbicularis* (Necker) Moberg | 32, 42, 76, 77<br>32, 41, 77 | *Alnus* sp.<br>*Populus* sp. |
| *Phaeophyscia sciastra* (Ach.) Moberg | 16, 41 42 | siliceous rock |
| *Physcia adscendens* (Fr.) H. Oliv. | 50, 56, 74<br>75, 98, 100<br>56, 102<br>41, 42<br>56 | *Ulmus* sp.<br>*Robinia pseudoacacia*<br>*Populus* sp.<br>*Alnus* sp.<br>*Pyrus* sp. |
| *Physcia caesia* (Hoffm.) Fürnr. | 8, 16, 68, 70, 82, 87<br>16, 41, 56, 67<br>75, 100<br>41 | siliceous rock<br>*Populus* sp.<br>*Robinia pseudoacacia*<br>*Alnus* sp. |
| *Physcia dubia* (Hoffm.) Lettau | 71 | siliceous rock |
| *Physcia stellaris* (L.) Nyl. | 32, 53, 57, 81<br>53, 56<br>56 | *Populus* sp.<br>*Salix* sp.<br>*Pyrus* sp. |
| *Physcia tenella* (Scop.) DC. em Bitt. | 8, 40, 42, 56, 59, 62<br>56, 59<br>41<br>42<br>49 | *Robinia pseudoacacia*<br>*Salix* sp.<br>*Fraxinus* sp.<br>*Acer* sp.<br>*Quercus* sp. |
| *Physconia detersa* (Nyl.) Poelt | 56 | on the mosses |
| *Plachynthium nigrum* (Hudson) S. Gray | 10, 17, 27, 39, 101 | calcareous rock |
| *Placidium squamulosum* (Ach.) Breuss | 72, 92, 99 | on the soil |
| *Platismatia glauca* (L.) W. Culb. & C. Culb. | 18, 48<br>43b<br>43a | on the mosses<br>on the soil<br>*Picea orientalis* |
| *Platismatia norvegica* (Lyngel) W. Culb. & C. Culb. | 17, 43a | on decayed bark of *Picea orientalis* |
| *Porpidia cinereoatra* (Ach.) Hertel & Knoph | 23, 25, 26, 27 | siliceous rock |
| *Porpidia crustulata* (Ach.) Hertel & Knoph | 19, 32 | siliceous rock |
| *Porpidia macrocarpa* (DC.) Hertel & Schwab | 49 | siliceous rock |
| *Porpidia speirea* (Ach.) Krempelh. | 23, 25 | calcareous rock |
| *Protoblastenia incrustans* (D.C.) J. Steiner | 23, 24, 60 | calcareous rock |
| *Protoparmelia badia* (Hoffm.) Hafellner | 20, 21, 41 | siliceous rock |
| *Protoparmelia montagnei* (Fr.) Poelt & Nimis | 56 | siliceous rock |
| *Pseudevernia furfuracea* (L.) Zopf var. *furfuracea* | 1, 17, 18, 34, 38, 39<br>43a, 43b, 55<br>55 | *Picea orientalis*<br>*Pinus* sp.<br>*Abies* sp. |

| | | |
|---|---|---|
| *Pseudevernia furfuracea* (L.) Zopf var. *ceratea* (Ach.) Hawksw | 4, 17, 43b<br>17, 18, 55 | *Picea orientalis*<br>*Pinus* sp. |
| *Psora decipiens* (Hedvig) Hoffm. | 56 | on the soil |
| *Psora globifera* (Ach.) Massal. | 56 | calcareous rock |
| *Ramalina capitata* (Ach.) Nyl. | 33, 17 | siliceous rock |
| *Ramalina farinacea* (L.) Ach. | 15, 16, 40, 42<br>43b, 53, 54<br>21, 28, 43a<br>8, 56, 41<br>8, 40 | *Quercus* sp.<br>*Picea orientalis*<br>*Pinus* sp.<br>*Populus* sp.<br>*Ulmus* sp. |
| *Ramalina siliquosa* (Huds.) A.L.Sm. | 17, 43a, 43b, 76 | siliceous rock |
| *Ramalina thrausta* (Ach.) Nyl. | 12, 18, 34 43b, 55 | *Picea orientalis* |
| *Rhizocarpon lecanorinum* Anders | 23, 25, 55 | siliceous rock |
| *Schaereria fuscocinerea* (Nyl.) Clauzade & Roux | 43a, 55 | siliceous rock |
| *Sporastatia testitunea* (Ach.) A. Massal. | 1, 4, 32, 33, 43a, 55 | siliceous rock |
| *Squamarina cartilaginea* (With.) P. James | 14, 32, 52, 55<br>41, 42 | on the soil<br>calcareous rock |
| *Staurothele fissa* (Taylor) Zwackh | 23 | calcareous rock |
| *Sticta fuliginosa* (Hoffm.) Ach. | 4, 22 | on the mosses |
| *Thamnolia vermicularis* (Sw.) Schaerer | 1, 37, 55, 63 | on the soil |
| *Toninia aromatica* (Sm.) Massal. | 23, 38 | on the soil |
| *Trapelia coarctata* (Sm.) M. Choisy | 23, 24, 26 | siliceous rock |
| *Tuckneraria chlorophylla* (Wild.) Vainio | 18, 21, 43a, 43b, 45, 48 | *Picea orientalis* |
| *Umbilicaria crustulosa* (Ach.) Frey | 2, 3, 32 | siliceous rock |
| *Umbilicaria cylindrica* (L.) Delise ex Duby | 32, 36, 43a, 43b, 46,54, 79, 88, 96 | siliceous rock |
| *Umbilicaria decussata* (Vill.) Frey | 19, 46, 54 | siliceous rock |
| *Umbilicaria deusta* (L.) Baumg. | 17, 18, 43a, 52, 60, 92, 94, 95 | siliceous rock |
| *Umbilicaria polyphylla* (L.) Baumg. | 2 | siliceous rock |
| *Umbilicaria subglabra* (Nyl.) Harm. | 2, 3, 32, 55, 61 | siliceous rock |
| *Umbilicaria vellea* (L.) Hoffm. | 2, 43b, 68, 93, 97, 101 | siliceous rock |
| *Usnea filipendula* Stirton | 18, 20, 34, 38, 43a<br>43b, 55 | *Picea orientalis*<br>*Pinus* sp. |
| *Usnea florida* (L.) Weber ex Wigg. | 17, 18, 34, 35, 43b<br>18, 35 | *Picea orientalis*<br>*Pinus* sp. |
| *Usnea hirta* (L.) Weber ex Wigg. em Mot. | 18, 34 | *Picea orientalis* |
| *Usnea subfloridana* Stirton | 18, 43a | *Picea orientalis* |
| *Vulpicida pinastri* (Scop.) Mattson et Lai | 3, 17, 18, 32, 34, 36, 46<br>34, 43a, 55 | *Pinus* sp.<br>*Picea orientalis* |
| *Xanthoria candelaria* (L.) Th. Fr. | 56 | on decayed wood |
| *Xanthoria fulva* (Hoffm.) Poelt & Petutschning | 32, 56 | on decayed bark of *Populus* sp. |
| *Xanthoria parietina* (Link) Th.Fr. | 8, 10, 16, 40, 41, 42<br>50, 56, 62, 74, 76, 77, 78<br>90, 98<br>41, 56<br>42<br>76, 77<br>41<br>40, 41, 42 | siliceous rock<br>calcareous rock<br>*Populus* sp.<br>*Salix* sp.<br>*Ulmus* sp.<br>*Robinia pseudoacacia*<br>*Fraxinus* sp.<br>*Alnus* sp. |
| *Xanthoria polycarpa* (Hoffm.) Th.Fr. ex Rieber | 32, 42<br>57 | *Populus* sp.<br>*Salix* sp. |

Table 4. List of known species.

| SPECIES | STATIONS | SUBSTRATA |
|---|---|---|
| *Acarospora bullata* Anzi | 32 | calcareous rock |
| *Aspicilia caesiocinerea* (Nyl. ex Malbr.) Arnold | 32, 40, 42, 62 | calcareous rock |
| *Aspicilia calcarea* (L.) Mudd | 20, 32, 42 | calcareous rock |
| *Candelariella vitellina* (Hoffm.) Müll. Arg | 28, 32, 60, 65, 66, 90, 91, 99, 100 | siliceous rock |
| | 56 | *Berberis vulgaris* |
| *Dermatocarpon miniatum* (L.) Mann. | 16, 31, 32, 40, 62, 67, 81, 86 | siliceous rock |
| *Hypogymnia austerodes* (Nyl.) Räsänen | 17, 34, 48 | on the mosses |
| | 18 | *Pinus* sp. |
| | 43a | *Picea orientalis* |
| *Lecanora argopholis* (Ach.) Ach. | 56 | siliceous rock |
| *Lecanora muralis* (Schreber) Rabenh. | 3, 7, 13, 15, 20, 22, 32, 33, 37, 38, 39, 43a, | |
| | 58, 60, 62, 65 | calcareous rock |
| | 67, 97, 99 | siliceous rock |
| *Lecidea elaeochroma* (Ach.) M. Choisy | 18, 52, 68, 82 | *Carpinus* sp. |
| *Lobaria pulmonaria* (L.) Hoffm. | 9, 17, 18, 22, 40, 42,43b, 46, 48, 53 | *Picea orientalis* |
| | 40, 42 | *Quercus* sp. |
| | 17 | *Carpinus* sp. |
| *Lobathallia radiosa (*Hoffm.) Poelt & Leuckert | 15, 38, 48, 49, 57 | siliceous rock |
| | 58, 83, 84 | calcareous rock |
| *Parmelia conspersa* (Ach.) Ach. | 4, 6, 7, 8, 19, 53, 80, 82, 101, 102 | siliceous rock |
| *Parmelia pulla* Ach. | 32, 58, 59 | siliceous rock |
| | 17 | *Picea orientalis* |
| | 18 | *Pinus* sp. |
| *Parmelia tiliacea* (Hoffm.) Ach. | 10, 16, 22, 36 | on the mosses |
| | 43a, 43b | siliceous rock |
| *Parmelia exasperatula* Nyl. | 18, 34, 43a | *Picea orientalis* |
| *Peltigera rufescens* (Wiss) Humb. | 18, 56, 64, 69, 74 | on the mosses |
| *Pertusaria aspergilla* (Ach.) Laundon | 40, 41, 42 | siliceous rock |
| *Physcia aipolia* (Ehrh. ex Humb.) Hampe | 9, 16, 31, 41, 43a, 44 | *Quercus* sp. |
| | 56 | *Prunus* sp. |
| | 41, 42 | *Robinia pseudoacacia* |
| | 17, 43b | *Carpinus* sp. |
| *Physconia distorta* (With.) J.R. Laundon | 16, 40, 42, 64, 67 | *Prunus* sp. |
| | 82, 94 | *Carpinus* sp. |
| | 56 | *Populus* sp. |
| *Physconia muscigena* (Ach.) Poelt | 56 | on the mosses |
| *Rhizocarpon geminatum* Körber | 19, 28, 49 | siliceous rock |
| *Rhizocarpon geographicum* (L.) DC. | 1, 2, 3, 19, 20, 21, 22, 32, 33, 36, 38, 43a, 45, 46, 49, 52, 55, 71, 79, 80, 84, 91, 93, 95, 101, 102 | siliceous rock |
| *Rhizoplaca chrysoleuca* (Sm.) Zopf | 1, 2, 3, 31, 32, 33, 35, 37 | siliceous rock |
| *Rhizoplaca melanopthalma* (D.C.) Leuck. & Poelt | 1, 2, 3, 31, 32, 33, 35, 37 | siliceous rock |
| *Tephromela atra* (Huds.) Hafellner ex Kalb | 8, 40, 42, 43a | siliceous rock |
| | 41 | calcareous rock |
| *Toninia sedifolia* (Scop.) Timdal | 32, 40, 42, 43b, 50 | on the soil |
| *Usnea longissima* Ach. | 18, 34, 43a, 43b | *Picea orientalis* |
| | 3 | *Carpinus* sp. |
| *Xanthoria elegans* (Link ) Th. Fr. | 32, 57, 59 | calcareous rock |
| | 59 | siliceous rock |

*Parmotrema chinense,* which was found on *Pyrus* sp., *Populus* sp., *Prunus* sp., *Pinus* sp., *Quercus* sp., *Carpinus* sp. and *Alnus* sp. in 17 stations is the most common epiphytic species. The second common epiphitic species is *Evernia prunastri.* It was defined on *Pinus* sp., *Quercus* sp. and *Picea orientalis* in 14 stations. *Rhizocarpon geographicum,* which was found on high plateau above 1800 m in 26 stations, is the most saxicolous species growing on siliceous rocks.

As regards to chosing substrata *Xanthoria parietina*, *Physcia adscendens, Parmelia caperata, Physcia tenella* were defined to be the least sensitive. *Xanthoria parietina* grew on 8 different substrata (in 15 stations), *Parmelia caperata* grew on

7 different substrata (in 16 stations). *Physcia adscendens* grew on 5 different substrata (in 9 stations). *Physcia tenella* grew on 5 different substrata (in 8 stations).

The most common species is *Rhizocarpon geographicum.* It was found on siliceous rocks in 26 stations. *Cladonia rangiformis*, which is the second common species, was found on soil and mosses in 22 stations. Other common species are *Parmelia caperata*, *Parmotrema chinense*, *Ramalina farinacea*, *Evernia prunastri* respectively.

*Peltigera canina* in 6 stations and *Peltigera praetextata* were commonly seen on mosses and soil in 8 stations (Vitikainen, 1994). *Cetraria islandica* was found and was mostly seen together with *Cetraria aculeata* and *Cetraria muricata* in 7 stations.

In 1960 and 1970 *Cladonia pocillum, Collema subflaccidum, Miriquidica deusta, Leprolema vouauxii, Pertusaria constricta, Pertusaria flavicans, Pertusaria leucosora, Placidium rufescens, Rhizocarpon viridiatrum, Toninia candida, Lecidea auriculata, Sarcogyne simplex, Lecanora subrugosa, Lobathallia pracradiosa, Parmelia aspidata var. persica, Parmelia glabra, Parmelia isidiata, Ramalina fastigiata, Buellia sandstadei, Rinodina sophodes, Physcia pulverulenta* var. *subpapillosa* and *Physcia stellaris* var. *rosulata* found in Gümüşhane by John and Szatala haven't been defined in this study. On the other hand 28 species found by John and Szatala were also found in this study.

As regards trees Bayburt and Erzincan are very poor. Gümüşhane has a richer plant cover than Erzincan and Bayburt, which enable many lichen species to grow in Gümüşhane.

The highest density of species was defined in 43b station which are situated in Gümüşhane province. The second highest concentration was found in the station of 18. The next highest species density was observed in the stations of 17 and 43a.

186 species in Gümüşhane, 102 species in Erzincan and 19 species in Bayburt were defined.

Especially, *Evernia prunastri*, *Ramalina* ssp., *Usnea* ssp., *Pseudevernia* ssp., *Parmelia* ssp., *Hypogymnia* ssp., *Bryoria* ssp. and *Vulpicida pinastri* were observed to grow abundantly on bark of *Picea orientalis, Pinus* sp., *Quercus* sp., *Alnus* sp., *Abies* sp., *Ulmus* sp. and *Carpinus* sp.

Especially economic and medical species such as *Evernia prunastri*, *Pseudevernia furfuracea* var. f*urfuracea, Anaptychia ciliaris, Ramalina farinacea, Lobaria pulmonaria, Xanthoria parietina, Cetraria islandica, Peltigera canina, Cladonia rangiformis* were commonly defined in the study area.

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