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Lichens and lichenicolous fungi from Bitlis province in Turkey

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As a result of lichenological exploration in Bitlis province (Turkey), a total of 325 lichens and 21 lichenicolous fungi, which are belonging 113 genera in *Ascomycota* were determined from 92 different localities. *Buellia vouauxii*, a lichenicolous fungus, and is new to Turkey and also new for Asia. *Aspicilia glomerulans*, *Llimoniella muralicola*, *Myriolecis invadens*, *Ochrolechia subviridis*, *Placynthium hungaricum* and *Placynthium posterulum* were reported for the second time from Turkey. Collecting localities and their substrata are presented.

Keywords: *Ascomycota*, biodiversity, Bitlis, lichen, lichenicolous fungi, new records, Turkey

Especially in last years the knowledge about lichen flora and lichenicolous fungi of Turkey has significantly increased. Compared to eastern Anatolia, more studies have been carried out in the Aegean, Black Sea and Mediterranean regions (John and Türk 2017). However there are still many lichenologically unexplored parts of Turkey (e.g. Hakkari, Şırnak, Siirt). Bitlis is such a part: it has never been the subject of a detailed lichenologically study, and only 35 lichenized fungi have thus far been reported from this area (Çobanoğlu and Yavuz 2007, Vondrák et al. 2012, Krisai-Greilhuber et al. 2017, Yazıcı and Aptroot 2017).

Bitlis, a province located 38°59'26"–39°01'18"N and 41°32'41"–43°12'51"E in the east of Turkey, has a part of Van Lake in eastern Anatolia and is surrounded by Ağrı, Batman, Muş, Siirt and Van provinces. It is 8551 km² in area. The topography of the Bitlis province is determined by the mountains located on the south and north of Lake Van, which generally show a volcanic structure, and the flat areas above them. The mountains in the south of the province are in the form of the extension of the southeast Taurus. These were fragmented by river valleys that originate from the immediate vicinity of Lake Van.

Bitlis province constitutes one of the most mountainous regions of the Eastern Anatolia Region.

In Hizan and Mutki Districts there are no plains, 90% of its area is mountainous lands.

Nemrut and Suphan Mountains, which are among the few volcanic mountains of the world, are within the borders of Bitlis province. Nemrut Mountain, which is located in the north of the provincial territory, has the feature of being the last volcanic mountain in Turkey. It is located on the north of the provincial territory and on the west of the Mount Suphan mountain, in a regular mountain range. Plains cover only 10% of the provincial territory. There is no major river within the borders of the province of Bitlis (URL-1, 2, 3).

The common soil types are limeless brown soils, alluvial soils and regosols (Kaya 2001).

The area of in southern part of the Bitlis region, where Hizan, Mutki, Güroymak districts are located, have many hills, trees, valleys and slits, is the most rugged part. The northern part, which also includes Adilcevaz and Ahlat districts, has rough woodless and open areas. Seventy-one percent of the total area is mountains, 16% plateaus, which is situated on ridges amongst peaks of mountains and 13% plains (Baytop and Denizci 1963).

The main vegetation types are forests and anthropogenic steppes. The forest area is mainly characterized by *Quercus* L., in particular *Q. infectoria* subsp. *boissieri* Reuter in higher parts (over 1800 m) of the area. In lower parts and at stream-sides *Populus* L., *Salix* L. and *Ulmus* L. spp. form the main clumps of trees. Phytogeographically the area is in the Irano-Turanian flora sector. Vegetation in Bitlis varies depending on the climate. In some parts of the area, forest cover and steppe are seen side by side. The southern slopes of Mount Nemrut are covered with oak. The wide crater pit on the

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mountain is covered with oak and wild fruit trees. Mount Suphan is completely dry and bare due to the absorbent soil covering that covers it. Forests in the mountainous area in the south of the province are sparse. The main tree species is oak in this region where forest undercover is made up of arid plants. In addition, cold resistant *Juniperus* and wild fruit trees are seen. The number of plant species increases in deep and wet valley bases in the region. There are especially willow, sycamore, poplar and walnut trees in these sections.

The climate is characterized by very cold snowy winters and hot dry short summers, with a temperature range of -21.3°C to 37°C , a mean annual rainfall is around 822.9 mm, and mean annual humidity of 61% (Akman 1999).

The present paper is a contribution to our knowledge of the lichen flora of Turkey and provides the first comprehensive checklist of lichens for Bitlis region.

Material and methods

The lichens and lichenicolous fungi were collected at 92 different localities in Bitlis province between 28 June 2016 and 12 April 2018 (Fig. 1, Table 1). Identification of lichens and lichenicolous fungi were carried out using a stereomicroscope and a light microscope with standard identification methods (Poelt 1969, Poelt and Vězda 1981, Hawksworth 1983, Mayrhofer 1984, Thomson 1984, Vitikainen 1994, Goward et al. 1995, Wirth 1995, Esslinger 1997, Brodo et al. 2001, Giralt 2001, Calatayud et al. 2002, Dobson 2005, Navarro-Rosinés et al. 2009, Smith et al. 2009, Darmostuk 2016). Vouchers are deposited in the herbarium of the

Biology Department, Faculty of Science, Karadeniz Technical University, Turkey (KTUB).

Results and discussion

Lichenological survey in Bitlis province yielded a total of 325 taxa in 113 genera of *Ascomycota*, of which 21 are lichenicolous fungi, and 6 varieties. *Buellia vouauxii*, a lichenicolous fungus, is new to Turkey and also Asia. All taxa are new for Bitlis province except 24 taxa (as shown in list).

The taxa are listed alphabetically. ‘*’ indicate new records for Turkey and Asia, ‘+’ lichenicolous fungus, ‘#’ lichenicolous lichen, while ‘-’ shows reported before from Bitlis.

List of taxa

Acarospora bullata Anzi – Loc. 39, 50, 79, 80, 82: on calcareous rock

Acarospora cervina A. Massal. – Loc. 1, 2, 3, 4, 7, 9, 11, 12, 13, 14, 21, 22, 23, 27, 29, 32, 33, 34, 38, 39, 40, 42, 44, 46, 49, 50, 53, 55, 61, 62, 64, 66, 67, 69, 70, 71, 72, 76, 78, 79, 80, 81, 10, 15, 17, 18, 26, 28, 28a, 28b, 28c, 51, 60, 77, 85, 87, 88, 89: on calcareous rock

Acarospora fuscata (Nyl.) Th. Fr. – Loc. 1, 7, 8, 9, 11, 12, 21, 22, 23, 27, 32, 33, 34, 40, 42, 43, 49, 50, 53, 55, 62, 78, 80, 82, 10, 15, 17, 18, 28, 35, 51, 59, 77, 83, 85, 87, 89: on siliceous rock

Acarospora glaucocarpa (Ach.) Körb. – Loc. 40, 72: on calcareous rock

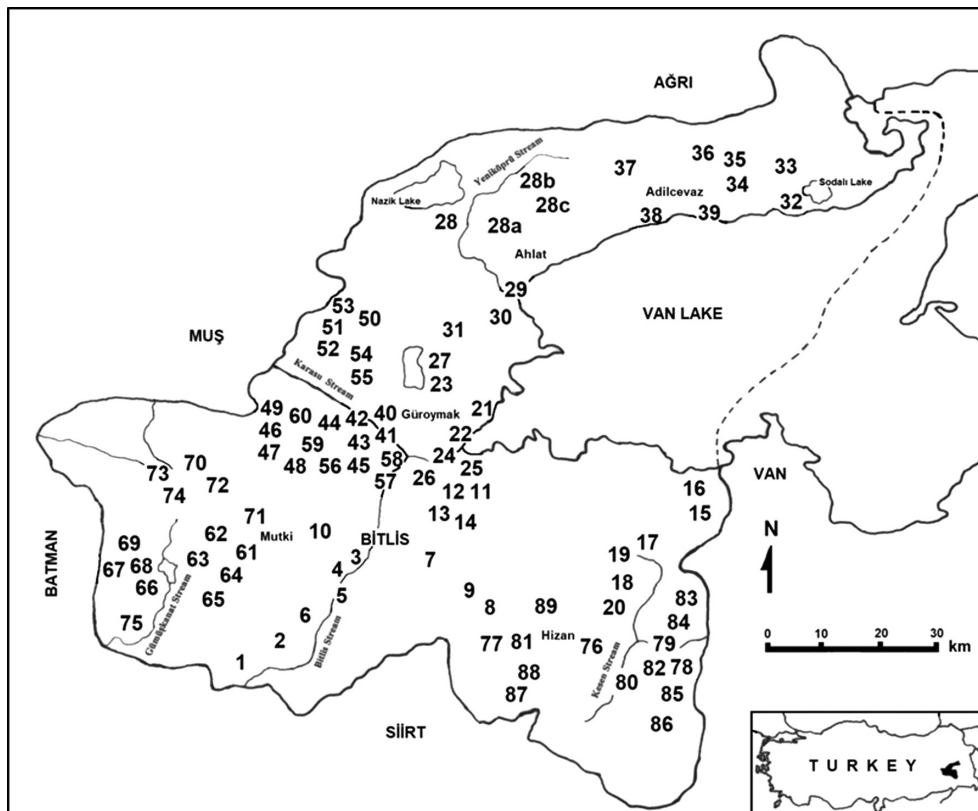


Figure 1. Collection localities in Bitlis Province (Turkey).

Table 1. Collection localities, altitude, coordinates and date in the study area in Bitlis (Turkey).

No.	Locality	Coordinates	Altitude (m)	Date
1	Bitlis, center, Bitlis-Siirt mainroad, 500 m to Narlıdere village road separation	38°13'15.33"N, 41°52'19.21"E	846	08.08.2016
2	Bitlis, center, Bitlis-Siirt, side of mainroad, 2 km to the separation of Narlıdere village	38°14'11.68"N, 41°56'23.90"E	1001	08.08.2016
3	Bitlis, center, Bitlis-Siirt side of mainroad, passing Tatlıkaynak village, 4 km to Bitlis	38°21'36.89"N, 42°03'51.44"E	1416	08.08.2016
4	Bitlis, center, Bitlis-Siirt side of mainroad, opposite of İçmeli village	38°21'25.07"N, 42°02'48.33"E	1361	08.08.2016
5	Bitlis, Deliktaş village	38°20'49.19"N, 42°02'40.72"E	1458	08.08.2016
6	Bitlis, Cumhuriyet village	38°14'48.94"N, 41°56'29.65"E	1088	08.08.2016
7	Bitlis, Tatvan-Hizan mainroad, 3 km to Keklikdüzü	38°20'10"N, 42°14'54"E	1663	07.06.2017
8	Bitlis, Tatvan-Hizan, mainroad, 1 km to Yolalan village	38°16'50"N, 42°17'52"E	1598	07.06.2017
9	Bitlis, Tatvan-Hizan mainroad, opposite of Keklikdüzü village, Bitlis, 4 km to Yolalan village	38°17'33"N, 42°16'19"E	1563	07.06.2017
10	Bitlis, Konuk Sayar	38°24'02"N, 42°01'00"E	1778	30.07.2017
11	Tatvan Tatvan-Hizan, enter to Küçüksu village	38°26'20"N, 42°18'56"E	1762	09.06.2017
12	Tatvan, Tatvan, Küçüksu mainroad, passing 100 m Koyunpınarı village	38°25'42"N, 42°18'12"E	1805	09.06.2017
13	Tatvan, Tatvan-Hizan, 2 km to Küçüksuya	38°24'38"N, 42°16'51"E	1771	07.06.2017
14	Tatvan, Tatvan-Hizan, mainroad, opposite of Kırkbulak village, 3 km to Gendarne office	38°24'39"N, 42°10'52"E	1785	07.06.2017
15	Tatvan, Koruklu	38°21'44"N, 42°40'28"E	1900	02.07.2017
16	Tatvan, Topraklı	38°23'55"N, 42°39'28"E	1770	02.07.2017
17	Tatvan, Sallica village	38°19'51"N, 42°36'34"E	1746	03.07.2017
18	Tatvan, Suboyu passing village	38°17'02"N, 42°32'23"E	1450	03.07.2017
19	Tatvan, Dönertaş village	38°19'01"N, 42°33'41"E	1504	04.07.2017
20	Tatvan, Yumrukaya village	38°15'57"N, 42°33'11"E	1385	04.07.2017
21	Tatvan, Ahlat-Tatvan mainroad, 7 km to Tatvan, edge of Van Lake	38°33'50.19"N, 42°21'43.82"E	1704	28.06.2016
22	Tatvan, Ahlat-Tatvan mainroad, 3 km to Tatvan, side of Van Lake	38°33'18.85"N, 42°21'08.47"E	1724	28.06.2016
23	Tatvan, Nemrut mountain	38°36'08.60"N, 42°15'35.18"E	2360	29.06.2016 30.06.2016 28.06.2016
24	Tatvan, center	38°29'36.62"N, 42°17'27.88"E	1655	30.06.2016
25	Tatvan, center, Dalda village	38°28'19"N, 42°16'22"E	1775	30.06.2016
26	Tatvan, cenetr, Örenlik village	38°28'45"N, 42°14'13"E	1876	30.06.2016
27	Ahlat, Nemrut mountain	38°38'41.33"N, 42°142'2.05"E	2266	28.06.2016 29.06.2016 30.06.2016
28	Ahlat, surrounding of Nazik lake	38°50'09.17"N, 42°15'35.16"E	1818	30.06.2016
28a	Ahlat, Seyrantepe village	38°48'53"N, 42°24'58"E	1017	12.04.2018
28b	Ahlat, Kırkdönüm village	38°52'06"N, 42°27'58"E	1975	12.04.2018
28c	Ahlat, Yuvadamı village	38°49'48"N, 42°28'53"E	2040	12.04.2018
29	Ahlat, Tatvan-Ahlat mainroad, 4 km to Ahlat, side of Van Lake	38°43'59.24"N, 42°26'40.51"E	1650	28.06.2016
30	Ahlat, Saka village	38°42'13.54"N, 42°24'09.77"E	1685	28.06.2016
31	Ahlat, Serinbayır village	38°39'57.09"N, 42°18'06.74"E	2055	30.06.2016
32	Adilcevaz, side of Sodalı Göl, Karşıyaka village	38°49'26.29"N, 42°57'16.60"E	1712	17.07.2016
33	Adilcevaz, Süphan mountain	38°55'1606"N, 42°53'54.94"E	2481	15.07.2016
34	Adilcevaz, edge of Aygır lake	38°51'11.61"N, 42°48'56.00"E 38°50'4102"N, 42°49'09.39"E	2006, 2124	17.07.2016
35	Adilcevaz, Yıldızköy	38°51'54.78"N, 42°50'20.09"E	2200	17.07.2016
36	Adilcevaz, Harmantepe village	38°52'56.60"N, 42°46'10.22"E	2160	17.07.2016
37	Adilcevaz, edge of Batmış lake	38°53'45.65"N, 42°37'36.59"E	2216	17.07.2016
38	Adilcevaz, 4 km to Adilcevaz, edge of Van Lake	38°47'00.85"N, 42°41'00.16"E	1660	28.06.2016
39	Adilcevaz, passing Adilcevaz, edge of Van Lake	38°47'19.91"N, 42°49'19.27"E	1672	28.06.2016
40	Güroymak, passing Güroymak, mainroad, Aşağıkolbaşı village	38°34'04.45"N, 42°04'26.30"E	1425	16.07.2016
41	Güroymak, Aşağıkolbaşı village	38°32'52.51"N, 42°06'34.31"E	1625	16.07.2016
42	Güroymak, Bölmedere village	38°32'51.48"N, 42°01'44.32"E	1369	06.08.2016
43	Güroymak, Kavunlu village	38°32'28.54"N, 42°03'29.95"E	1496	06.08.2016
44	Güroymak, Yayladere village	38°33'26.92"N, 48°00'57.76"E	1431	06.08.2016
45	Güroymak, Yukarı Kolbaşı village	38°30'58.46"N, 42°05'38.92"E	1703	06.08.2016
46	Güroymak, Saklıköy	38°32'47.91"N, 41°58'19.99"E	1682	06.08.2016
47	Güroymak, Çallı village	38°31'21.73"N, 44°56'35.09"E	1676	06.08.2016
48	Güroymak, Çayarası village	38°30'03.72"N, 41°58'52.70"E	1807	06.08.2016
49	Güroymak, Günkırı village	38°34'30.06"N, 41°58'33.94"E	1511	06.08.2016
50	Güroymak, Çıtak village	38°40'36.82"N, 42°08'40.04"E	1876	07.08.2016
51	Güroymak, Taşüstü village	38°40'50.78"N, 42°05'42.59"E	1508	07.08.2016

(Continued)

Table 1. Continued.

No.	Locality	Coordinates	Altitude (m)	Date
52	Güroymak, Özkavak village	38°40'18.34"N, 42°03'33.33"E	1307	07.08.2016
53	Güroymak, Gedikpınar village	38°42'17.11"N, 42°04'04.56"E	1914	07.08.2016
54	Güroymak, Güzelli village	38°39'28.08"N, 42°06'30.00"E	1364	07.08.2016
55	Güroymak, 3 km to Gölbashi village	38°36'36.83"N, 42°05'23.51"E	1376	07.08.2016 18.07.2017
56	Güroymak, Kekliktepe village	38°32'06"N, 42°04'34"E	1621	18.07.2017
57	Güroymak, Yazıkonak village	38°30'15"N, 42°07'23"E	1837	18.07.2017
58	Güroymak, Tahtalı village	38°30'20"N, 42°08'24"E	1836	18.07.2017
59	Güroymak, Yemişveren village	38°30'44"N, 42°00'43"E	2021	19.07.2017
60	Güroymak, Yamaçköy	38°34'36"N, 41°58'51"E	1390	20.07.2017
61	Mutki, Üstyayla village	38°23'54.86"N, 41°53'33.70"E	1727	18.08.2016
62	Mutki, Çaygeçit village	38°24'33.62"N, 41°50'26.04"E	1275	18.08.2016
63	Mutki, Meydan village	38°21'36.37"N, 41°46'09.31"E	935	18.08.2016
64	Mutki, Salman village	38°21'25.70"N, 41°51'08.78"E	1544	18.08.2016
65	Mutki, Geyikpınar mainroad, Açıkalın village, on the way to Salman	38°20'37.43"N, 41°50'16.01"E	1309	18.08.2016
66	Mutki, Bağarası village	38°21'12.28"N, 41°44'28.11"E	1140	19.08.2016
67	Mutki, Ballı village	38°22'41.29"N, 41°38'52.68"E	1462	19.08.2016
68	Mutki, Çatalerik village	38°21'55.76"N, 41°42'17.00"E	1395	19.08.2016
69	Mutki, Kovanlı village	38°23'05.71"N, 41°41'44.63"E	1194	19.08.2016
70	Mutki, opposite of Gendarme office	38°29'01.34"N, 41°49'04.79"E	1365	20.08.2016
71	Mutki, on the way the mainroad of Kavakbaşı-Mutki, opposite of Akıncı village	38°25'03.66"N, 41°54'59.95"E	1408	20.08.2016
72	Mutki, from Kavakbaşı village to Mutki, 200 km to separation of Koyunlu village	38°28'36.17"N, 41°50'56.03"E	1580	20.08.2016
73	Mutki, Çitliyol village	38°29'44.81"N, 41°44'53.56"E	1309	20.08.2016
74	Mutki, Yenidoğan village	38°29'13.68"N, 41°46'19.39"E	1246	20.08.2016, 30.07.2017
75	Mutki, Yazıcık village	38°16'01"N, 41°41'47"E	940	29.07.2017
76	Hizan, on the way the Akşar village	38°12'49"N, 42°27'47"E	1600	09.06.2017
77	Hizan, Tatvan-Hizan mainroad, 5 km to Hizan town	38°14'54"N, 42°19'22"E	1798	07.06.2017
78	Hizan, on the way the Bahçasaray, Derince village	38°07'19"N, 42°37'10"E	1727	08.06.2017
79	Hizan, Bahçasaray-Nurs mainroad, separation, 250 m to Ortaca village	38°08'20"N, 42°35'38"E	1620	08.06.2017
80	Hizan, separation of Soğuksu village	38°06'28"N, 42°33'25"E	1443	08.06.2017
81	Hizan, Tatvan-Hizan mainroad, 2 km to Hizan town	38°13'24"N, 42°20'57"E	1732	07.06.2017
82	Hizan, 500 m to Bahçasaray-Nurs road separation, South of Esenler village, roadside	38°07'15"N, 42°34'47"E	1478	08.06.2017
83	Hizan, Yukarıçalı village	38°10'14"N, 42°38'38"E	1977	21.07.2017
84	Hizan, Ortaca village	38°08'53"N, 42°37'06"E	1725	21.07.2017
85	Hizan, separation of Soğuksu, Sürücüler village	38°04'42"N, 42°36'08"E	1931	22.07.2017
86	Hizan, Soğuksu road separation, Sığınlı town	38°04'01"N, 42°35'40"E	1986	22.07.2017
87	Hizan, Keklik village	38°10'05"N, 42°21'14"E	1611	23.07.2017
88	Hizan, Koçlu village	38°11'30"N, 42°22'19"E	1402	23.07.2017
89	Hizan, Budaklı village	38°15'56"N, 42°24'14"E	1560	02.07.2017

Acarospora hospitans H. Magn. – Loc. 7, 8, 13, 21, 22, 23, 27, 32, 33, 34, 40, 42, 44, 48, 50, 53, 64, 85: on *Aspicilia cinerea*

Acarospora impressula Th. Fr. – Loc. 23, 46, 50, 78: on siliceous rock

Acarospora macrospora (Hepp) A. Massal. ex Bagl. – Loc. 69: on calcareous rock

Acarospora oligospora (Nyl.) Arnold – Loc. 42: on calcareous rock

Acarospora scabra (Pers.) Th. Fr. – Loc. 11, 12, 13, 21, 22, 34, 39, 40, 78: on siliceous rock

Acarospora strigata (Nyl.) Jatta – Loc. 32, 33, 34, 81: on calcareous rock

Acarospora umbilicata Bagl. – Loc. 21: on siliceous rock

Acarospora veronensis A. Massal – Loc. 3, 8, 9, 22, 23, 27, 33, 34, 39, 40, 43, 44, 50, 55, 62, 78, 77, 85: on siliceous rock

Acarospora versicolor Bagl. & Carestia – Loc. 2, 49, 55: on calcareous rock

Agonimia tristicula (Nyl.) Zahlbr. – Loc. 7, 9, 23, 27, 32, 40, 64, 65, 71, 72, 86: on mosses

+ *Arthonia clemens* (Tul.) Th. Fr. – Loc. 27, 34: on *Rhizoplaca melanophthalma*

+ *Arthonia epiphyscia* Nyl. – Loc. 23: on the thallus of *Physcia dubia*

Arthonia lapidicola (Taylor) Branth & Rostr. – Loc. 8, 11, 12, 21, 22, 27, 49, 78, 81, 85, 89: on calcareous rock

+ *Arthonia phaeophysciae* Grube & Matzer – Loc. 38: on *Phaeophyscia orbicularis*

+ *Arthonia varians* (Davies) Nyl. – Loc. 7, 9, 21, 22, 23, 27, 32, 33: on *Lecanora rupicola*

– *Aspicilia cinerea* (L.) Körb. – Loc. 1, 2, 3, 7, 8, 9, 10, 11, 12, 13, 14, 21, 22, 23, 27, 29, 32, 33, 34, 40, 42, 43, 44,

- 46, 49, 50, 53, 54, 55, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 76, 78, 79, 80, 81, 82, 10, 17, 28, 31, 35, 51, 77, 84, 85, 86, 89: on siliceous rock
- Aspicilia coronata* (A. Massal.) B. de Lesd. – Loc. 39: on calcareous rock
- Aspicilia desertorum* (Kremp.) Mereschk. – Loc. 1, 2, 3, 4, 7, 8, 9, 11, 12, 13, 14, 20, 22, 23, 27, 32, 33, 34, 40, 42, 43, 44, 46, 49, 50, 53, 55, 57, 61, 62, 63, 64, 66, 67, 68, 69, 70, 71, 76, 78, 79, 80, 82, 74, 85: on siliceous rock
- Aspicilia glomerulans* (Poelt) Poelt – Loc. 7, 8, 12, 14, 22, 23, 32, 33, 54: on calcareous rock
- Aspicilia polychroma* Anzi – Loc. 8, 40, 41, 79, 80, 74, 85: on calcareous rock
- Athallia holocarpa* (Hoffm.) Arup, Frödén & Söchting – Loc. 2, 8, 9, 27, 40: on *Populus* sp., 49, 50: *Quercus* sp., 55, 61: on *Quercus* sp., 63, 68: on *Morus* sp., 70, 71, 81: on *Quercus* sp.
- Bagliettoa baldensis* (A. Massal.) Vězda – Loc. 61, 66, 70, 72, 74: on siliceous rock
- Bagliettoa parmigera* (J. Steiner) Vězda & Poelt – Loc. 39, 49, 66: on siliceous rock
- Bellemerea cupreoatra* (Nyl.) Clauzade & Cl. Roux – Loc. 3, 7, 23, 27, 34, 40, 42, 50, 64, 80, 84: on siliceous rock
- Bilimbia lobulata* (Sommerf.) Hafellner & Coppins – Loc. 72: on mosses
- Bilimbia sabuletorum* (Schreb.) Arnold – Loc. 40, 72: on mosses
- Blastenia crenularia* (With.) Arup, Söchting & Frödén – Loc. 23, 27, 69, 78: on siliceous rock
- Blastenia ferruginea* (Huds.) A. Massal. – Loc. 85: on *Quercus* sp.
- Blennohallia crispa* (Weber ex F.H. Wigg.) Otálora, P.M. Jørg & Wedin – Loc. 81: on mosses
- Buellia aethalea* (Ach.) Th. Fr. – Loc. 65, 67: on siliceous rock
- # *Buellia badia* (Fr.) A. Massal. – Loc. 23, 27: on *Lecanora rupicola*, 29, 32, 34, 40, 50, 76, 85: on *Xanthoparmelia tinctina*
- Buellia epigaea* (Hoffm.) Tuck. – Loc. 23, 25, 27: on soil
- + * *Buellia vouauxii* Calat. & Barreno – Loc. 33: on *Rhizoplaca melanophthalma*
- *Calogaya biatorina* (A. Massal.) Arup, Frödén & Söchting – Loc. 11: on siliceous rock
- Calogaya decipiens* (Arnold) Arup, Frödén & Söchting – Loc. 11, 12, 13, 21, 38, 39, 46, 48, 55, 72, 28, 85: on calcareous rock
- Calogaya lobulata* (Flörke) Arup, Frödén & Söchting – Loc. 3, 13, 14, 21, 48, 64, 69, 72, 73: on *Quercus* sp., 32, 43, 34, 42, 44, 45: on *Populus* sp., 33: on *Berberis* sp., 62, 63, 68: on *Morus* sp.
- Calogaya saxicola* (Hoffm.) Vondrák – Loc. 1, 3, 7, 8, 9, 11, 12, 13, 14, 21, 22, 23, 27, 29, 32, 33, 34, 38, 39, 40, 42, 44, 46, 48, 50, 53, 55, 61, 62, 64, 66, 70, 76, 78, 81: on calcareous rock
- *Calogaya schistidii* (Anzi) Arup, Frödén & Söchting – Loc. 72: on mosses
- Caloplaca albolutescens* (Nyl.) H. Olivier – Loc. 22, 23, 27, 33, 34, 50, 54: on calcareous rock
- Caloplaca anactina* (Fr.) Häyrén – Loc. 7, 50: on siliceous rock
- Caloplaca areolata* (Zahlbr.) Clauzade – Loc. 64, 67: on calcareous rock
- Caloplaca atroflava* (Turner) Mong – Loc. 27, 28, 34, 36, 42, 48, 50, 58, 62, 64, 67, 68, 83, 85, 86: on calcareous rock
- Caloplaca ceracea* J.R. Laundon – Loc. 12, 22, 23, 27, 32, 53, 78: on siliceous rock
- *Caloplaca cerina* (Hedw.) Th. Fr. var. *cerina* – Loc. 1, 46, 71: on *Quercus* sp. 7: on *Juglans* sp., 11, 13, 14, 15, 21, 22, 23, 25, 28a, 32, 34, 40, 55: on mosses, 27: on *Berberis* sp. 33: on *Populus* sp., 48: on *Salix* sp., 58, 62: on *Quercus* sp. and *Juglans* sp., 63: on *Morus* sp. and *Juglans* sp., 67, 68: on *Morus* sp., 70: on *Pyrus elaeagnifolia*, 72, 87, 88, 73: on *Populus* sp., 84: on *Juglans* sp.
- *Caloplaca cerina* (Hedw.) Th. Fr. var. *chloroleuca* (Sm.) Th. Fr. – Loc. 7, 33, 40: on mosses
- Caloplaca chlorina* (Flot.) Sandst. – Loc. 3: on *Quercus* sp., 38, 39, 49, 67, 69: on siliceous rock
- Caloplaca fuscoatroides* J. Steiner – Loc. 23, 27, 32: on siliceous rock
- # – *Caloplaca grimmiae* (Nyl.) H. Olivier – Loc. 22, 23, 27, 32, 33: on *Candelariella vitellina*
- Caloplaca inconnexa* (Nyl.) Zahlbr. – Loc. 11, 12, 38: on siliceous rock
- *Caloplaca lactea* (A. Massal.) Zahlbr. – Loc. 40, 43, 63, 70, 72: on siliceous rock
- Caloplaca necator* Poelt & Clauzade – Loc. 54: on siliceous rock
- Caloplaca obscurella* (J. Lahm.) Th. Fr. – Loc. 62: on siliceous rock (this species is epiphytic but growing on rock is interesting)
- Caloplaca pelloidella* (Nyl.) Hasse – Loc. 2, 22, 33, 42: on siliceous rock
- Caloplaca soralifera* Vondrák & Hrouzek. – Loc. 41, 48, 50, 54: on calcareous rock
- *Caloplaca variabilis* (Pers.) Müll. Arg. – Loc. 1, 2, 8, 9, 11, 12, 23, 27, 34, 38, 39, 44, 46, 48, 49, 52, 55, 61, 63, 64, 66, 67, 68, 69, 70, 71, 72, 76, 77, 80, 81: on siliceous rock
- Caloplaca xerica* Poelt & Vězda – Loc. 27: on calcareous rock
- Candelaria concolor* (Dicks.) Arnold – Loc. 66: on *Quercus* sp.
- Candelariella aurella* (Hoffm.) Zahlbr. – Loc. 1, 9, 11, 12, 13, 23, 34, 38, 39, 40, 42, 44, 46, 48, 69, 71, 72, 73, 78, 79, 80, 81, 84 on *Quercus* sp., 3: on *Quercus* sp. and *Juglans* sp., 4, 7, 55, 49, 50, 61, 62: on *Juglans* sp., 14, 17, 21, 22, 24: on *Pyrus* sp., 27, 29: on *Berberis* sp., 33: on soil and *Berberis* sp., 63, 64, 65, 66, 67, 68: on *Morus* sp., 70: on *Pyrus elaeagnifolia*, 76: on *Alnus glutinosa*
- Candelariella kuusamoensis* Räsänen – Loc. 21: on mossy rock.
- Candelariella reflexa* (Nyl.) Lettau – Loc. 4: on *Juglans* sp., 42, 44, 5, 50, 59, 74: on *Populus* sp., 43: on *Salix* sp., 46, 48, 55, 73: on *Quercus* sp.
- *Candelariella vitellina* (Hoffm.) Müll. Arg. – Loc. 1, 2, 7, 8, 9, 11, 12, 13, 21, 22, 23, 28, 27, 29, 31, 32, 34, 37, 39, 40, 42, 43, 44, 46, 47, 49, 50, 53, 54, 55, 60, 61, 62, 64, 66, 67, 70, 71, 72, 74, 76, 77, 78, 79, 80, 81, 82, 84: on siliceous rock, 33: on mosses and soil, 48: on *Salix* sp.
- Candelariella xanthostigma* (Pers. ex Ach.) Lettau – Loc. 54: on *Populus* sp. 73: on *Quercus* sp.

- + *Carbonea vitellinaria* (Nyl.) Hertel – Loc. 23, 27, 33, 49, 50: on *Candelariella vitellina*
- + *Carbonea vorticosa* (Flörke) Hertel – Loc. 12, 13, 21, 23, 27, 33, 34, 38, 39, 40, 62: on *Lecidella carpathica*
- Catapyrenium daedaleum* (Kremp.) Stein – Loc. 71, 77: on soil
- Catapyrenium squamulosum* (Ach.) Breuss – Loc. 7, 40, 67: on soil
- + *Cercidospora melanophthalmae* Nav.-Ros., Calat. & Hafellner – Loc. 23, 34: on *Rhizoplaca melanophthalma*
- *Circinaria caesiocinerea* (Nyl. Ex Malbr.) A. Nordin, Savić & Tibell – Loc. 1, 2, 3, 4, 7, 8, 21, 22, 23, 27, 32, 33, 34, 38, 39, 40, 42, 46, 48, 49, 50, 55, 62, 63, 64, 67, 68, 69, 70, 76, 78, 79, 80, 81, 82: on calcareous rock
- Circinaria calcarea* (L.) A. Nordin Savić & Tibell – Loc. 1, 2, 3, 4, 7, 9, 12, 13, 32, 38, 39, 40, 42, 49, 54, 55, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 74, 76, 79, 80, 81, 82, 83, 84, 86, 88: on calcareous rock
- *Circinaria contorta* (Hoffm.) A. Nordin, Savić & Tibell – Loc. 1, 7, 12, 21, 22, 23, 27, 29, 34, 39, 40, 45, 50, 51, 53, 54, 55, 61, 62, 63, 64, 66, 67, 69, 70, 71, 72, 79, 81, 84, 89: on calcareous rock
- Circinaria fruticulosa* (Eversm.) Sohrabi – Loc. 69: on soil
- Circinaria hoffmanniana* (S. Ekman & Fröberg ex R. Sant.) A. Nordin – Loc. 27, 39, 49, 50, 53, 72: on calcareous rock
- Cladonia coniocraea* (Flörke) Spreng. – Loc. 55: on soil
- Cladonia foliacea* (Huds.) Willd. – Loc. 50: on soil and mosses
- Cladonia pyxidata* (L.) Hoffm. – Loc. 1, 2, 3, 4, 5: on soil and mosses, 27, 40, 46, 48, 50, 55, 83: on mosses
- Collema auriforme* (With.) Coppins & J.R. Laundon – Loc. 4, 66: on mosses
- Collema flaccidum* (Ach.) Ach. – Loc. 34, 86, 89: on siliceous rock
- Collema polycarpon* Hoffm. – Loc. 65: on siliceous rock
- Collema subflaccidum* Degel. – Loc. 34: on siliceous rock
- Collema tenax* (Sw.) Ach. – Loc. 1, 4, 7, 11, 12, 21, 28, 29, 32, 34, 38, 39, 42, 48, 49, 54, 56, 68, 69, 70, 71, 72, 76, 78, 80, 81, 83, 86, 89. 61, 62, 63, 64, 65, 66, 67: on mosses and soil
- + *Dactylospora homoclinella* (Nyl.) Hafellner – Loc. 78: on *Aspicilia cinerea*
- Dermatocarpon intestiniforme* (Körb.) Hasse – Loc. 7, 12, 33, 40: on siliceous rock
- Dermatocarpon miniatum* (L.) W. Mann – Loc. 1, 2, 3, 14, 33, 34, 40, 42, 44, 54, 57, 61, 63, 64, 66, 67, 68, 69, 70, 71, 76, 80, 81: on siliceous rock
- Dimelaena oreina* (Ach.) Norman – Loc. 12, 21, 23, 27, 32, 33, 34, 42, 44, 46, 61, 78, 79, 80, 82: on siliceous rock
- Dimelaena radiata* (Tuck.) Hale & W.L. Culb. – Loc. 79, 80: on siliceous rock
- Diploschistes caesioplumbeus* (Nyl.) Vain. – Loc. 40: on calcareous rock
- Diploschistes diacapsis* (Ach.) Lumsch – Loc. 55: on siliceous rock
- Diploschistes gypsaceus* (Ach.) Zahlbr. – Loc. 27: on siliceous rock
- Diploschistes muscorum* (Scop.) R. Sant. – Loc. 40: on mosses, 55: on soil
- Diploschistes ocellatus* (Fr.) Norman – Loc. 8, 12, 63, 67: on calcareous rock
- Diploschistes scruposus* (Screb.) Norman – Loc. 7, 8, 9, 13, 14, 23, 34, 40, 50, 55, 62, 67, 80, 84: on siliceous rock
- Diplotomma alboatrum* (Hoffm.) Flot. – Loc. 7, 9, 12, 27, 28, 29, 34, 38, 39, 40, 43, 49, 61, 66, 67, 68, 69, 71, 79, 80, 81, 84, 89: on calcareous rock
- Diplotomma epipolium* (Ach.) Arnold – Loc. 12, 22, 49, 61, 68, 72, 81: on calcareous rock
- Diplotomma venustum* (Körb.) Körb. – Loc. 22, 61, 64, 69: on calcareous rock
- Enchylium conglomeratum* (Hoffm.) Otálora, P.M. Jørg. & Wedin – Loc. 11, 69: on *Quercus* sp.
- Endocarpon adscendens* (Anzi) Müll. Arg. – Loc. 5, 6, 9, 32, 39, 54: on soil
- Endocarpon pallidum* Ach. – Loc. 68: on soil
- Endocarpon pusillum* Hedw. – Loc. 7, 68: on soil
- + *Endococcus macrosporus* (Hepp ex Arnold) Nyl. – Loc. 34: on *Rhizocarpon geographicum*
- + *Endococcus rugulosus* Nyl. – Loc. 12: on *Aspicilia cinerea*
- # *Endohyalina insularis* (Arnold) Giralt, van den Boom & Elix – Loc. 39: on *Lecanora rupicola*
- *Flavoplaca coronata* (Kremp. ex Körb.) Arup, Frödén & Söchting – Loc. 11, 12, 13, 14, 38, 39, 50: on calcareous rock
- Flavoplaca flavocitrina* (Nyl.) Arup, Frödén & Söchting – Loc. 33, 46, 54: on calcareous rock
- *Fulgensia bracteata* (Hoffm.) Räsänen var. *bracteata* – Loc. 38, 51, 63: on soil
- Gallowayella fulva* (Hoffm.) S.Y. Kondr., Fedorenko, S. Stenroos, Kärnefelt, Elix, Hur & A. Thell – Loc. 7, 62: on *Juglans* sp., 30, 68: on *Morus* sp., 33: on *Berberis* sp., 25, 28a, 32, 34, 40, 44, 45, 50: on *Populus* sp., 46, 55, 59: on *Salix* sp., 13, 14, 19, 42, 43, 48, 61, 65, 69, 70, 73, 85: on *Quercus* sp.
- Gyalolechia flavorubescens* (Huds.) Söchting, Frödén & Arup – Loc. 1: on *Salix* sp. and *Quercus* sp., 7: on *Juglans* sp., 68: on *Morus* sp.
- Gyalolechia flavovirescens* (Wulfen) Söchting, Frödén & Arup – Loc. 2, 29, 49, 61, 64, 66, 70: on calcareous rock
- Gyalolechia fulgens* (Sw.) Söchting, Frödén & Arup – Loc. 32: on mosses
- Heteroplacidium compactum* (A. Massal.) Gueidan & Cl. Roux – Loc. 12, 49, 61, 72: on siliceous rock
- Immersaria athrocarpa* (Ach.) Rambold & Pietschm. – Loc. 1, 2, 3, 4, 7, 8, 9, 10, 12, 13, 14, 17, 21, 22, 23, 27, 28, 31, 32, 33, 34, 37, 40, 42, 44, 46, 49, 50, 53, 54, 55, 56, 61, 62, 64, 67, 68, 69, 71, 76, 78, 79, 80, 81, 84, 85, 88: on siliceous rock
- Ionaspis lacustris* (With.) Lutzoni – Loc. 23, 26: on siliceous rock
- Lathagrium cristatum* (L.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 12, 31, 34, 49, 61, 63, 64, 65, 66, 68, 69, 70, 72, 81, 83 on calcareous rock, 67: on calcareous rock and soil
- Lathagrium fuscovirens* (With.) Otálora, P.M. Jørg & Wedin – Loc. 40, 61, 64, 65, 71: on calcareous rock
- Lecania erysibe* (Ach.) Mudd – Loc. 33: on calcareous rock
- Lecania fuscella* (Schaer.) A. Massal. – Loc. 73: on *Quercus* sp.
- Lecania inundata* (Hepp ex Körb.) M. Mayrhofer – Loc. 39, 48, 54, 63: on calcareous rock

- Lecania olivacella* (Nyl.) Zahlbr. – Loc. 50: on calcareous rock
- Lecania rabenhorstii* (Hepp) Arnold – Loc. 12, 40, 49, 71: on calcareous rock
- Lecania turicensis* (Hepp) Müll. Arg. – Loc. 38, 39, 48, 50, 54, 55, 63: on calcareous rock
- Lecanora alpigena* (Ach.) Cl. Roux – Loc. 11, 12, 13, 23, 27, 33, 49, 50, 58, 88: on siliceous rock
- Lecanora argentata* (Ach.) Röhl. – Loc. 11: on *Populus* sp., 12: on *Quercus* sp., 63: on *Juglans* sp.
- Lecanora argopholis* (Ach.) Ach. – Loc. 7, 9, 11, 12, 13, 14, 21, 22, 23, 27, 32, 34, 40, 42, 44, 46, 50, 51, 54, 61, 67: on siliceous rock
- Lecanora bicincta* Ramond var. *bicincta* – Loc. 7, 9, 14, 23, 27, 33, 34, 40: on siliceous rock
- Lecanora caesiosora* Poelt – Loc. 27: on siliceous rock
- Lecanora cenisia* Ach. – Loc. 7, 13, 14, 23, 27, 33, 40, 54, 74: on siliceous rock
- Lecanora concolor* Ramond – Loc. 12, 66, 69: on calcareous rock
- Lecanora conizaeoides* Nyl. ex Cromb. – Loc. 13 on *Quercus* sp.
- Lecanora frustulosa* (Dicks.) Ach. – Loc. 12, 13, 49, 51: on siliceous rock
- Lecanora gangaleoides* Nyl. – Loc. 40, 54, 82: on siliceous rock
- Lecanora garovaglii* (Körb.) Zahlbr. – Loc. 2, 7, 8, 9, 11, 12, 21, 22, 27, 32, 33, 34, 39, 42, 44, 50, 54, 55, 56, 76, 78, 79, 80, 82: on siliceous rock
- Lecanora intricata* (Ach.) Ach. – Loc. 2, 3, 12, 21, 23, 27, 28, 32, 34, 40, 42, 43, 44, 49, 50, 64, 66, 76, 78, 79, 80, 82: on siliceous rock
- Lecanora intumescens* (Rebent.) Rabenh. – Loc. 62: on *Juglans* sp.
- Lecanora pannonica* Szatala – Loc. 3, 4, 6, 7, 23, 40, 67: on siliceous rock
- Lecanora rupicola* (L.) Zahlbr. – Loc. 7, 8, 9, 16, 21, 23, 27, 28, 29, 32, 33, 34, 39, 40, 49, 50, 55, 72, 73: on siliceous rock
- Lecanora rupicola* var. *efflorens* Leuckert & Poelt – Loc. 3, 7, 9, 23, 27, 29, 40, 49, 50: on siliceous rock
- Lecanora subcarnea* (Sw.) Ach. var. *subcarnea* – Loc. 23, 33: on siliceous rock
- *Lecanora subcarnea* (Sw.) Ach. var. *soralifera* H. Magn. – Loc. 23: on calcareous rock
- Lecanora sulphurea* (Hoffm.) Ach. – Loc. 23, 27: on siliceous rock
- Lecanora swartzii* (Ach.) Ach. – Loc. 23, 27, 32, 33, 50: on siliceous rock
- Lecidea atrobrunnea* (DC.) Schaer. – Loc. 7, 21, 23, 27, 32, 33, 34, 54: on siliceous rock
- Lecidea auriculata* Th. Fr. – Loc. 23, 27: on siliceous rock
- Lecidea fuscoatra* (L.) Ach. – Loc. 1, 7, 9, 11, 12, 15, 22, 23, 27, 32, 33, 34, 37, 40, 42, 43, 44, 46, 50, 53, 54, 55, 58, 64, 66, 68, 71, 80, 81, 84: on siliceous rock
- Lecidea grisella* Flörke – Loc. 1, 27, 32: on siliceous rock
- Lecidea lapicida* (Ach.) Ach. – Loc. 31: on siliceous rock
- Lecidea plana* (J. Lahm.) Nyl. – Loc. 8, 21, 27, 29, 32, 33, 55: on siliceous rock
- Lecidea promiscua* Nyl. – Loc. 7, 13: on siliceous rock
- Lecidea sarcogynoides* Körb. – Loc. 4, 5, 7, 8, 9, 12, 22, 23, 27, 28, 32, 34, 37, 64, 78, 80, 86, 87, 89: on siliceous rock
- Lecidea tessellata* Flörke – Loc. 1, 11, 12, 32, 64, 71, 78, 80, 81: on siliceous rock
- Lecidella carpathica* (Körb.) Szatala – Loc. 1, 3, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 21, 22, 23, 27, 32, 33, 34, 38, 39, 40, 42, 43, 44, 49, 50, 53, 55, 57, 62, 66, 68, 69, 70, 78, 79, 80, 81, 82: on calcareous rock
- Lecidella patavina* (A. Massal.) Knoph & Leuckert – Loc. 11, 12, 13, 34, 39, 49: on siliceous rock
- Lecidella stigmatea* Ach. – Loc. 7, 9, 11, 12, 13, 14, 23, 27, 28a, 32, 33, 36, 39, 40, 50, 53, 62, 64, 67, 71, 76, 78, 79, 80, 83, 89: on calcareous rock
- Lempholemma polyanthes* (Schrad.) Malme – Loc. 34, 72: on calcareous rock
- Lepraria incana* (L.) Ach. – Loc. 1, 7, 12, 13, 14, 23, 27, 40, 46, 48, 50, 54, 55, 58, 65, 67, 72, 74, 76, 80, 83: on calcareous rock
- Lepraria lobificans* Nyl. – Loc. 3, 27, 48, 55: on mosses
- Lepraria membranacea* Lynge – Loc. 32, 33, 40, 46, 48, 50, 54, 55, 67, 80: on mosses
- Lepraria nivalis* J.R. Laundon – Loc. 27, 40, 55: on mosses
- Lepraria vouauxii* (Hue) R.C. Harris – Loc. 40, 46, 48, 55, 67, 80: on mosses
- Leproplaca chrysodeta* (Vain.) J.R. Laundon ex Ahti – Loc. 55: on calcareous rock
- Leproplaca xantholyta* (Nyl.) Nyl. – Loc. 29, 38, 39, 83: on calcareous rock
- Leptochidium albociliatum* (Desm.) M. Choisy – Loc. 40: on mosses
- Leptogium cyanescens* (Rabenh.) Körb. – Loc. 71: on mosses
- Leptogium teretiusculum* (Flöheke ex Wallr.) Arnold – Loc. 2, 40, 55, 69: on *Quercus* sp.
- + *Lichenostigma rouxii* Nav.-Ros., Calat. & Hafellner – Loc. 63: on *Squamarina cartilaginea*
- + *Llimoniella muralicola* Halıcı – Loc. 33, 54: on *Protoparmeliopsis muralis*
- Lobothallia alphoplaca* (Wahlenb.) Hafellner – Loc. 23, 27, 40, 41, 64, 83: on siliceous rock
- Lobothallia cheresina* (Müll. Arg.) A. Nordin, Cl. Roux & Sohrabi – Loc. 8, 12, 14, 27, 38, 49, 61, 62, 63, 64, 69, 70, 72, 77, 81, 86, 89: on calcareous rock
- Lobothallia praevalida* (Nyl.) Hafellner – Loc. 4, 8, 12, 13, 27, 40, 42, 43, 44, 48, 51, 55, 62, 63, 68, 69, 70, 78, 80, 83, 86, 89: on siliceous rock
- Lobothallia radiosa* (Hoffm.) Hafellner – Loc. 1, 2, 3, 4, 7, 8, 9, 11, 12, 13, 14, 21, 22, 23, 27, 33, 34, 38, 39, 40, 42, 43, 44, 48, 50, 53, 55, 61, 62, 63, 64, 66, 67, 68, 69, 70, 71, 72, 76, 79, 80, 81, 83: on siliceous rock
- Lobothallia recedens* (Taylor) A. Nordin, Savić & Tibell – Loc. 2, 22, 33, 34, 40, 42, 72, 76, 80: on siliceous rock
- Megaspora verrucosa* (Ach.) Hafellner & V. Wirth – Loc. 32, 33, 34, 40, 52: on soil
- Melanelia subargentifera* (Nyl.) Essl. – Loc. 55: on mosses
- Melanelia subaurifera* (Nyl.) Essl. – Loc. 73: on *Quercus* sp., 26, 59, 84, 87, 89: on *Pyrus* sp.
- Melanelixia glabra* (Schaer.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 1, 69: on *Quercus* sp.
- Melanohalea elegantula* (Zahlbr.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawks. & Lumbsch – Loc. 21, 72: on siliceous rock

- Melanohalea infumata* (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 3, 7, 8, 9, 11, 12, 13, 21, 34, 40, 42, 44, 54, 55, 78, 83: on mosses, 22, 23, 27, 29, 32, 33: on *Berberis* sp. and mosses, 72: on *Quercus* sp., 43: on calcareous rock
- Miriquidica deusta* (Stenh.) Hertel & Rambold – Loc. 1, 12, 32, 33, 55, 80: on siliceous rock
- Montanelia solediana* (Ach.) Divakar, A. Crespo, Wedin & Essl. – Loc. 80: on siliceous rock
- + *Muellerella erratica* (A. Massal) Hafellner & Volk. John – Loc. 81: on *Lecidea tessellata*
- + *Muellerella pygmaea* (Körb.) D. Hawksw. – Loc. 34: on *Immersaria athrocarpa*, 21: on *Aspicilia* sp., 27: on *Aspicilia cinerea*
- + *Muellerella ventosicola* (Mudd) D. Hawksw. – Loc. 34: on *Rhizocarpon geographicum*
- Myriolecis albescens* (Hoffm.) Śliwa, Zhao Xin & Lumbsch – Loc. 12, 23, 27, 38, 39, 42, 43, 44, 49, 50, 53, 54, 55, 64, 65, 66, 68, 69, 71: on calcareous rock
- Myriolecis crenulata* (Ach.) Śliwa, Zhao Xin & Lumbsch – Loc. 7, 8, 9, 11, 12, 13, 14, 21, 22, 23, 27, 34, 38, 39, 42, 44, 49, 52, 55, 61, 66, 67, 69, 70, 71, 78, 81: on calcareous rock
- Myriolecis dispersa* (Pers.) Śliwa, Zhao Xin & Lumbsch – Loc. 1, 2, 3, 4, 7, 9, 11, 12, 13, 14, 21, 22, 23, 28, on *Populus* sp., 32, 33, 49, 79, 80, 81, 82: on *Populus* sp., 34, 37, 38, 39, 40, 42, 43, 44, 46, 48, 50, 54, 55, 57, 61, 72, 73, 77, 88: on *Quercus* sp., 62, 63, 64, 65, 66, 67, 68, 69, 70, calcareous rock and *Juglans* sp., 27: on calcareous rock, 71: on calcareous rock and *Quercus* sp., 78: on *Alnus glutinosa*, 76: on *Alnus glutinosa*, 89: on *Pyrus* sp. and calcareous rock
- Myriolecis hagenii* (Ach.) Śliwa, Zhao Xin & Lumbsch – Loc. 1, 2, 3, 48, 50, 55, 61, 69, 70, 71, 72, 73, 89: on *Quercus* sp., 4, 62: on *Juglans* sp., 21, 22, 23, 24: on *Prunus* sp., 27, 29, 32, 33: on *Berberis* sp., 34, 40, 42, 44: *Populus* sp., 64, 68: on *Morus* sp.
- Myriolecis invadens* (H. Magn.) Śliwa, Zhao Xin & Lumbsch. – Loc. 34, 71: on soil
- Myriolecis semipallida* (H. Magn.) Śliwa, Zhao Xin & Lumbsch – Loc. 23, 34, 39, 50, 63, 67, 78, 81: on calcareous rock
- + *Nesolechia fusca* (Triebl & Rambold) Pérez-Ort. – Loc. 79: on *Xanthoparmelia tinctina*, 80: on *Xanthoparmelia pulla*
- Ochrolechia subviridis* (Høeg) Erichsen – Loc. 13, 67: on calcareous rock
- Oxneria fallax* (Arnold) S.Y. Kondr. & Kärnefelt – Loc. 24, 16, 17, 56, 62, 73: on *Quercus* sp. and *Prunus* sp., 10: on *Prunus* sp., 15, 20, 35, 58: on *Populus* sp.
- Parmelina tiliacea* (Hoffm.) Hale – Loc. 21, 22, 26, 32, 33, 34, 40, 50, 53, 55, 82, 88: on mosses, 69: on *Quercus* sp.
- Parvoplaca tirolionis* (Zahlbr.) Arup, Søchting & Frödén – Loc. 40, 48, 72: on mosses
- Peltigera canina* (L.) Willd. – Loc. 7, 23, 27, 38, 39, 40, 55, 65, 66, 69: on mosses
- Peltigera horizontalis* (Huds.) Baumg. – Loc. 71: on mosses
- Peltigera neckeri* Hepp ex Müll. Arg. – Loc. 55: on mosses
- Peltigera ponojensis* Gyeln. – Loc. 7, 39, 71: on mosses
- Peltigera praetextata* (Flörke ex Sommerf.) Zopf – Loc. 40: on soil and mosses, 83: on mosses
- Peltigera rufescens* (Weiss.) Humb. – Loc. 1, 2, 4, 5, 7, 9, 12, 14, 21, 23, 27, 40, 48, 55, 62, 65, 66, 67, 68, 71, 72, 80: on mosses, 6: on soil
- Peltula euploca* (Ach.) Poelt ex Pišút – Loc. 2: on siliceous rock
- Pertusaria coccodes* (Ach.) Nyl. – Loc. 27: on siliceous rock
- Pertusaria excludens* Nyl. – Loc. 7, 22, 62, 67, 80, 88: on siliceous rock
- Pertusaria flavicans* Lamy – Loc. 80: on siliceous rock.
- Phaeophyscia cernohorskyi* Nád. – Loc. 7, 8, 11, 12, 13, 14, 22, 27, 32, 34, 38, 39, 40, 42, 61, 62, 78: on mosses, 55, 64, 74, 80: on calcareous rock
- Phaeophyscia ciliata* (Hoffm.) Moberg – Loc. 62: on *Quercus* sp.
- Phaeophyscia endococcina* (Körb.) Moberg – Loc. 13, 23, 27, 32, 39, 40, 58: on calcareous rock
- Phaeophyscia nigricans* (Flörke) Moberg – Loc. 3, 11, 14, 28c, 78: calcareous rock
- Phaeophyscia orbicularis* (Neck.) Moberg – Loc. 2, 3, 16, 17, 18, 28c, 35, 36, 48, 50, 51, 53, 56, 59, 60, 61, 64, 65, 69, 72, 85, 86: on *Quercus* sp., 1: on *Populus* sp. and *Quercus* sp., 70, 71: on *Prunus* sp. and *Quercus* sp., 30, 11, 22, 28a, 88, 12, 14, 78: on *Pyrus* sp., 4, 7, 62: on *Juglans* sp., 68: on *Morus* sp., 63. on *Juglans* sp. and *Morus* sp., 24, 84: on *Prunus* sp., 38, 39, 46: on *Salix* sp., 73: on *Populus* sp., 76: on *Alnus glutinosa*
- Phaeophyscia sciastra* (Ach.) Moberg – Loc. 23, 27: on siliceous rock
- Physcia adscendens* H. Olivier – Loc. 1, 16, 19, 25, 28c, 71, 73: on *Quercus* sp., 32, 44: on *Salix* sp. and *Populus* sp., 41: on *Salix* sp., 43, *Salix* sp. and *Quercus* sp., 15, 45, 57, 60, 84: on *Populus* sp., 76: on *Alnus glutinosa*, 85, 87. on *Salix* sp.
- Physcia aipolia* (Ehrh. Ex Humb.) Fűrnr. – Loc. 10, 14, 19, 25, 43, 46, 50, 60, 61, 71, 72: on *Quercus* sp., 20, 25: on *Pyrus* sp., 13, 20, 23, 26, 28a, 30, 32, 33, 34, 35, 40, 42, 45, 58, 88: on *Populus* sp., 44, 57: on *Salix* sp., 36, 21: on *Pyrus* sp., *Salix* sp. and *Populus* sp., 38, 39: on *Salix* sp. and *Populus* sp.
- Physcia biziana* (A. Massal.) Zahlbr. – Loc. 3, 7, 12, 13, 14, 27, 40, 42, 43, 44, 46, 50, 62, 72, 69, 71: on *Quercus* sp., 24: on *Prunus* sp., 78, 29: on *Prunus* sp., 33: on *Populus* sp., 63: on *Morus* sp. and *Juglans* sp., 64: on *Morus* sp. and *Quercus* sp., 70: on *Pyrus elaeagnifolia* and *Quercus* sp., 76: on *Alnus glutinosa*
- Physcia caesia* (Hoffm.) Hampe ex Fűrnr. – Loc. 14, 23, 27, 28, 29, 33, 40, 83, 89: on calcareous rock, 43, 44, 55, 62, 70, 82: on mosses
- Physcia dimidiata* (Arnold) Nyl. – Loc. 1, 2, 3, 21, 31, 39, 55, 73, 74: on mossy rock, 24: on mossy body of *Prunus* sp., 32: on mossy body of *Berberis* sp., 66, 68: on mossy body of *Morus* sp.
- Physcia dubia* (Hoffm.) Lettau – Loc. 1: on calcareous rock and *Salix* sp., 2:; 3: on *Quercus* sp., 23, 34: on *Populus* sp., 33, 40: on *Berberis* sp. and mosses, 6, 7, 8, 9, 11, 12, 13, 14, 21, 22, 27, 29, 32, 38, 39, 44, 45, 47, 49, 50, 55, 61: on mosses, 42, 43, 46, 54, 48, 62, 64, 66, 67, 69, 73, 79, 78, 80, 81, 82, 74, 77, 85, 86, 87, 88, 89: on calcareous rock
- *Physcia stellaris* (L.) Nyl. – Loc. 1, 3, 70: on *Quercus* sp., 76: *Quercus* sp. and *Alnus glutinosa*, 59: on *Alnus glutinosa*

- Physcia tenella* (Scop.) DC. – Loc. 68: on *Morus* sp., 71: on *Quercus* sp., 76: on *Alnus glutinosa*
- *Physcia tribacia* (Ach.) Nyl. – Loc. 67: on mossy body of *Quercus* sp.
- Physconia detersa* (Nyl.) Poelt – Loc. 21, 22: on mossy body of *Quercus* sp.
- Physconia distorta* (With.) J.R. Laundon – Loc. 1: on *Populus* sp. and *Quercus* sp., 2, 3, 13, 14, 25, 32, 40, 43, 44, 46, 61, 65, 69, 71: on *Quercus* sp., 4: on *Juglans* sp., 19: on *Prunus* sp., 27: on *Berberis* sp., 48: on *Populus* sp., 62: on *Quercus* sp. and *Juglans* sp., 63: on *Juglans* sp., 68: on *Morus* sp., 73, 76, 87, 89: on *Alnus glutinosa*
- Physconia enteroxantha* (Nyl.) Poelt – Loc. 21, 55, 62: on mosses
- *Physconia grisea* (Lam.) Poelt – Loc. 8, 52: on mossy body of *Quercus* sp.
- Physconia muscigena* (Ach.) Poelt – Loc. 7, 9, 12, 21, 22, 24, 27, 32, 55, 62, 76, 80, 74: on mossy rocks
- Physconia perisidiosa* (Erichsen) Moberg – Loc. 2, 7, 9, 21, 23, 27, 32, 50, 52, 55, 62, 73, 74: on mossy body of *Quercus* sp.
- Physconia venusta* (Ach.) Poelt – Loc. 2: on *Quercus* sp.
- Placocarpus schaeferi* (Fr.) Breuss – Loc. 10, 29, 31, 38, 38, 52, 63, 69, 77 on calcareous rock
- Placopyrenium bucekii* (Nádv. & Servít) Breuss – Loc. 2, 3, 44, 46, 55, 64, 66, 68, 69: on siliceous rock
- Placopyrenium iranicum* Breuss – Loc. 9, 41, 44, 54, 78: on siliceous rock
- Placopyrenium trachyticum* (Hazsl.) Breuss – Loc. 1, 2, 7, 9, 12, 14, 32, 40, 44, 46, 48, 64, 66, 67, 69, 70, 71, 81: on siliceous rock
- Placynthium hungaricum* Gyeln. – Loc. 72: on calcareous rock
- Placynthium nigrum* (Huds.) Gray – Loc. 2, 9, 11, 13, 14, 28b, 32, 38, 39, 61, 63, 64, 65, 66, 67, 69, 70, 71, 72, 74, 81: on on calcareous rock
- Placynthium posterulum* (Nyl.) Henssen – Loc. 34: on calcareous rock
- Placynthium stenophyllum* (Tuck) Fink – Loc. 1: on calcareous rock
- Polyblastia cupularis* A. Massal. – Loc. 63, 71: on calcareous rock
- *Polycauliona candelaria* (L.) Frödén, Arup & Søchting – Loc. 64: on calcareous rock
- + *Polycoccum pulvinatum* (Eiher) R. Sant. – Loc. 11: on *Physcia* sp.
- Polysporina simplex* (Taylor) Vězda – Loc. 6, 8, 9, 78: on siliceous rock
- Protoblastenia incrustans* (DC.) J. Steiner – Loc. 71: on calcareous rock
- Protoblastenia rupestris* (Scop.) Steiner – Loc. 71, 72: on calcareous rock
- Protoparmelia atriseda* (Fr.) R. Sant. & V. Wirth – Loc. 78, 79, 80: on calcareous rock
- Protoparmelia badia* (Hoffm.) Hafellner – Loc. 81: on siliceous rock
- Protoparmeliopsis bolcana* (Pollini) Lumbsch – Loc. 21, 22, 23, 27, 42, 54, 80, 82: on siliceous rock
- Protoparmeliopsis klauskalbii* (Sipman) Şenkard. – Loc. 63: on calcareous rock
- Protoparmeliopsis laatokkensis* (Räsänen) Moberg & R. Sant. – Loc. 7, 21, 22, 23, 40, 61, 68, 78, 80: on siliceous rock
- Protoparmeliopsis macrocyclos* (H. Magn.) Moberg & R. Sant. – Loc. 40: on siliceous rock
- *Protoparmeliopsis muralis* (Schreb.) M. Choisy – Loc. 1, 2, 4, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 19, 21, 22, 23, 27, 28, 28a, 28b, 28c, 29, 31, 32, 33, 34, 36, 37, 38, 39, 40, 42, 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 66, 72, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 88, 89: on calcareous rock, 67, 68, 69, 70, 71: on calcareous rock and mosses.
- Psora decipiens* (Hedw.) Hoffm. – Loc. 23, 27, 34, 71, 52: on soil
- Psora testacea* Hoffm. – Loc. 63: on soily rock
- Psora vallesiaca* (Schaer.) Timdal – Loc. 63, 71, 72: on soil
- Psorotichia schaeferi* (A. Massal.) Arnold – Loc. 72: on calcareous rock
- Pyrenopsis subareolata* Nyl. – Loc. 66: on siliceous rock
- Ramalina capitata* (Ach.) Nyl. – Loc. 21, 24, 32, 33, 34, 52, 55: on siliceous rock
- Ramalina pollinaria* (Westr.) Ach. – Loc. 55: on siliceous rock
- Rhizocarpon disporum* (Nägeli ex Hepp) Müll. Arg. – Loc. 3, 7, 27, 62, 79, 80: on siliceous rock
- Rhizocarpon distinctum* Th. Fr. – Loc. 11: on siliceous rock
- Rhizocarpon geminatum* Körb. – Loc. 8, 40, 42, 52, 79: on siliceous rock
- Rhizocarpon geographicum* (L.) DC. – Loc. 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 17, 21, 22, 23, 27, 28, 31, 32, 33, 34, 36, 37, 40, 42, 44, 46, 49, 50, 52, 53, 54, 55, 57, 58, 62, 64, 69, 76, 77, 78, 79, 80, 82, 83, 85, 86: on siliceous rock
- Rhizocarpon hochstetteri* (Körb.) Vain. – Loc. 79: on siliceous rock
- Rhizocarpon lecanorinum* Anders – Loc. 7, 9, 49: on siliceous rock
- Rhizoplaca chrysoleuca* (Sm.) Zopf – Loc. 21, 23, 27, 33, 50: on siliceous rock
- Rhizoplaca melanophthalma* (DC.) Leuckert – Loc. 11, 12, 13, 21, 22, 23, 27, 28, 31, 32, 33, 34, 37, 39, 40, 42, 43, 44, 46, 50, 57, 58, 77, 85, 86, 89: on siliceous rock
- Rhizoplaca peltata* (Ramond) Leuckert – Loc. 11, 12, 13, 21, 22, 23, 27, 32, 33, 34, 42, 43, 44, 76, 78, 79, 80, 82: on siliceous rock
- Rinodina albana* (A. Massal.) A. Massal. – Loc. 82: on *Quercus* sp.
- Rinodina bischoffii* (Hepp) A. Massal. – Loc. 7, 9, 14, 11, 12, 33, 38, 39, 40, 43, 44, 49, 54, 61, 63, 64, 66, 67, 69, 70, 71, 72, 76, 81: on calcareous rock
- Rinodina calcarea* (Hepp ex Arnold) Arnold – Loc. 38, 39: on calcareous rock
- Rinodina capensis* Hampe – Loc. 80: on *Alnus glutinosa*
- Rinodina guzzini* Jatta – Loc. 63: on calcareous rock
- Rinodina immersa* (Körb.) J. Steiner – Loc. 23, 28b, 38, 39, 41, 70: on calcareous rock
- Rinodina lecanorina* (A. Massal.) A. Massal. – Loc. 3, 7, 9, 12, 23, 27, 34, 38, 39, 46, 48, 49, 63, 66, 69, 70, 71, 72, 81: on siliceous rock
- Rinodina luridata* (Körb.) H. Mayrhofer, Scheid. & Sheard – Loc. 63, 71: on siliceous rock

- Rinodina milvina* (Wahlenb.) Th. Fr. – Loc. 2, 3, 4, 6, 7, 8, 9, 12, 21, 22, 23, 27, 28b, 29, 32, 33, 34, 38, 39, 40, 42, 46, 48, 49, 50, 55, 62, 63, 64, 65, 66, 69, 70, 72, 78, 79, 80, 81: on calcareous rock
- Rinodina obnascens* (Nyl.) H. Olivier – Loc. 27, 32, 33: on siliceous rock
- Rinodina oleae* Bagl. – Loc. 8: on calcareous rock
- # *Rinodina parasitica* H. Mayrhofer & Poelt – Loc. 8: on *Aspicilia* sp.
- Rinodina pyrina* (Ach.) Arnold – Loc. 27: on *Populus* sp.
- Rinodina rinodinoides* (Anzi) H. Mayrhofer & Scheid. – Loc. 27: on siliceous rock
- Rinodina terrestris* Tomin – Loc. 8: on soil
- *Rinodina zwackhiana* (Kremp.) Körb. – Loc. 3: on calcareous rock
- Romjularia lurida* (Ach.) Timdal – Loc. 2, 7, 11, 20, 32, 34, 37, 40, 67, 71, 72, 77, 79: on soil
- + *Rosellinula haplospora* (Th. Fr. & Almq.) R. Sant. – Loc. 22: on *Circinaria* cf. *calcareae*, 32: on *Aspicilia* sp.
- Rufoplaca arenaria* (Pers.) Arup, Søchting & Frödén – Loc. 2, 7, 9, 12, 13, 14, 22, 23, 27, 29, 33, 34, 42, 47, 50, 53, 54, 62, 64, 67, 68, 69, 70, 71, 80: on siliceous rock
- Sagedia mastrucata* (Wahlenb.) A. Nordin, Savić & Tibell – Loc. 1, 11, 12, 21, 22, 34, 42, 44, 64, 82: on siliceous rock
- Sarcogyne clavus* (DC.) Kremp. – Loc. 3, 27, 34, 38, 39, 49, 52, 61, 63, 66, 76, 78: on siliceous rock
- Sarcogyne privigna* (Ach.) A. Massal. – Loc. 14, 27, 34, 49, 59, 63, 78: on siliceous rock
- Sarcogyne regularis* Körb. – Loc. 7, 9, 39, 49, 52, 58, 63, 64, 66, 70, 71, 72, 76, 85, 89: on siliceous rock
- Schaereria fuscocinerea* (Nyl.) Clauzade & Cl. Roux – Loc. 3, 4, 7, 8, 9, 80, 86: on siliceous rock
- Scoliciosporum umbrinum* (Ach.) Arnold – Loc. 34, 39, 49, 68: on siliceous rock
- Scytinium callopismum* (A. Massal.) Otálora, P.M. Jørg & Wedin – Loc. 29: on calcareous rock
- Scytinium gelatinosum* (With.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 21, 27, 40, 50, 53, 65, 70, 71, 72, 85: on mosses
- Scytinium intermedium* (Arnold) Otálora, P.M. Jørg & Wedin – Loc. 1: on mosses
- Scytinium lichenoides* (L.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 2, 3, 5, 6, 23, 27, 28, 40, 50, 65, 68, 71, 72, 77, 83, 85, 86, 89: on mosses
- Scytinium palmatum* (Huds.) Gray – Loc. 72: on mosses
- Scytinium parvum* (Degel.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 32, 38, 49, 61, 65, 66, 70, 72: on calcareous rock
- Scytinium schraderi* (Ach.) Otálora, P.M. Jørg. & Wedin – Loc. 67: on calcareous rock
- Solenopsora candicans* (Dicks.) J. Steiner – Loc. 50, 67: on calcareous rock
- Solenopsora holophaea* (Mont.) Samp. – Loc. 2, 7, 27, 32, 50, 67: on soil
- Squamarina cartilaginea* (With.) P. James – Loc. 2, 49, 63: on soil
- Squamarina lentigera* (Weber) Poelt – Loc. 2, 21, 22, 63: on soil
- Squamulea subsoluta* (Nyl.) Arup, Søchting & Frödén – Loc. 54: on siliceous rock
- Staurothele areolata* (Ach.) Lettau – Loc. 17, 28, 89: on siliceous rock
- Staurothele caesia* (Arnold) Arnold – Loc. 63, 64, 65, 71: on calcareous rock
- Staurothele fissa* (Taylor) Zwackh – Loc. 2, 14, 34, 40, 42, 50, 70: on siliceous rock
- + *Stigmatidium gyrophorarum* (Arnold) D. Hawksw. – Loc. 33: on the thallus of *Umbilicaria crustulosa*
- Tephromela atra* (Huds.) Hafellner – Loc. 7, 17, 23, 27, 33, 57: on siliceous rock
- Tephromela grumosa* (Pers.) Hafellner & Cl. Roux – Loc. 1, 7, 8, 9, 12, 27, 40: on siliceous rock
- Thelenella muscorum* (Th. Fr.) Vain. – Loc. 55: on mosses
- *Thelidium minutulum* Körb. – Loc. 32: on calcareous rock
- Thyrea confusa* Henssen, in Henssen & Jørgensen – Loc. 1, 2, 41, 44, 55, 63, 68, 86: on calcareous rock
- Toninia candida* (Weber) Th. Fr. – Loc. 14, 29, 63, 65, 66, 68, 71, 72, 77: on soily calcareous rock
- Toninia diffracta* (A. Massal.) Zahlbr. – Loc. 63, 67, 69: on soil
- Toninia opuntioides* (Vill.) Timdal – Loc. 77: on soil
- Toninia sedifolia* (Scop.) Timdal – Loc. 1, 2, 3, 5, 6, 18, 20, 28, 28c, 23, 27, 29, 32, 33, 36, 37, 38, 39, 46, 48, 50, 52, 62, 63, 65, 68, 70, 71, 72, 77, 84: on soil
- Toninia squalida* (Ach.) A. Massal. – Loc. 32, 33, 34, 63, 78, 80: on soil
- Umbilicaria crustulosa* (Ach.) Lamy – Loc. 23, 27, 32, 33, 34: on siliceous rock
- Umbilicaria cylindrica* (L.) Delise – Loc. 27, 42, 43, 44: on siliceous rock
- Umbilicaria decussata* (Vill.) Zahlbr. – Loc. 33: on siliceous rock
- Umbilicaria deusta* (L.) Baumg. – Loc. 33: on siliceous rock
- Umbilicaria hirsuta* (Sw. Ex Westr.) Ach. – Loc. 7, 12, 13, 42: on siliceous rock
- Umbilicaria proboscidea* (L.) Schrad. – Loc. 33: on siliceous rock
- Umbilicaria vellea* (L.) Ach. – Loc. 33, 42, 44: on siliceous rock
- Variospora dolomiticola* (Hue) Arup, Søchting & Frödén – Loc. 39, 61, 71: on calcareous rock
- Verrucaria fuscella* (Turner) Winch – Loc. 1, 21, 32, 34, 39, 62, 67, 70: on calcareous rock
- Verrucaria hochstetteri* Fr. – Loc. 71, 80: on calcareous rock
- Verrucaria latericola* Erichsen – Loc. 48: on calcareous rock
- Verrucaria macrostoma* Dufour ex DC. – Loc. 50: on calcareous rock
- Verrucaria muralis* Ach. – Loc. 4, 23, 27, 34, 39, 42, 63, 67, 76, 80: on calcareous rock
- Verrucaria nigrescens* Pers. – Loc. 1, 2, 3, 7, 8, 9, 11, 12, 28b, 29, 34, 38, 39, 42, 43, 44, 46, 48, 49, 50, 54, 56, 61, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 74, 76, 80, 81, 83, 86, 88: on calcareous rock
- Verrucaria ochrostoma* Borrer – Loc. 9, 11, 38, 46, 50, 62, 64, 65: on calcareous rock
- Verrucaria polysticta* Borrer – Loc. 2, 41: on calcareous rock
- Verrucaria sphaerospora* Anzi – Loc. 12, 13, 33, 39, 46, 48, 61: on calcareous rock
- Verrucaria viridula* (Schrad.) Ach. – Loc. 9, 34, 40, 42, 54, 55, 65, 66, 68, 71, 72, 80: on calcareous rock
- Verruculopsis lecideoides* (A. Massal.) Gueidan & Cl. Roux – Loc. 1, 64, 69: on calcareous rock

Zahlbrucknerella calcarea (Herre) Herre – Loc. 66, 69: on calcareous rock
+ *Zwackhiomyces coepulonus* (Norman) Grube & R. Sant. – Loc. 34: on *Xanthoria elegans*
– *Xanthocarpia crenulatella* (Nyl.) Frödén, Arup & Søching – Loc. 9, 11, 12, 14, 21, 22, 23, 27, 29, 33, 34, 38, 39, 48, 49, 50, 54, 55, 63, 67, 69, 70, 71, 72, 81, 86: on calcareous rock
– *Xanthocarpia marmorata* (Bagl.) Frödén, Arup & Søchting – Loc. 39, 48, 66, 71: on calcareous rock
Xanthoparmelia conspersa (Ehrh. Ex Ach.) Hale – Loc. 42, 43, 44, 79: on siliceous rock
Xanthoparmelia delisei (Duby) O. Blanco, A. Crespo, Elix, D. Hawks. & Lumbsch – Loc. 62: on siliceous rock
Xanthoparmelia pokornyii (Körb.) O. Blanco, A. Crespo, Elix, D. Hawks. & Lumbsch – Loc. 40: on soil
Xanthoparmelia pulla (Ach.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch – Loc. 2, 3, 4, 7, 8, 9, 12, 13, 21, 22, 23, 27, 28, 32, 33, 34, 40: on calcareous rock and mosses, 42, 43, 44, 46, 50, 51, 52, 54, 55, 62: on mosses, 63, 73, 76, 78, 79, 80, 82: on siliceous rock
Xanthoparmelia tinctina (Maheu & A. Gillet) Hale – Loc. 3, 8, 32, 42, 43, 44, 62, 76, 79, 80, 82, 86: on siliceous rock
Xanthoparmelia verruculifera (Nyl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch – Loc. 1, 3, 4, 7, 8, 9, 21, 22, 23, 27, 28, 29, 32, 33, 34, 37, 40, 42, 43, 44, 46, 50, 54, 55, 59, 62, 76, 79, 80, 82: on siliceous rock
– *Xanthoria elegans* (Link.) Th. Fr. – Loc. 3, 7, 8, 9, 11, 12, 13, 14, 15, 21, 22, 23, 27, 28, 32, 33, 34, 36, 39, 40, 43, 44, 50, 54, 55, 61, 62, 66, 69, 78, 81: on siliceous rock
Xanthoria parietina (L.) Th. Fr. – Loc. 19, 59: on *Populus* sp. 57: on *Alnus glutinosa*, 84: on *Pyrus* sp. and *Alnus glutinosa*.

Discussion

Five lichens, *Acarospora hospitans* (on *Aspicilia cinerea*), *Buelia badia* (on *Lecanora rupicola* and *Xanthoparmelia tinctina*), *Caloplaca grimmiae* (on *Candelariella vitellina*), *Endohyalina insularis* (on *Lecanora rupicola*), *Rinodina parasitica* (on *Aspicilia* sp.), were found to grow as lichenicolous lichen on some other lichens.

Excluding lichenicolous fungi and lichenicolous lichens, lichens were found to be growing on different substrates such as siliceous and calcareous rocks, mosses, soil, *Populus*, *Alnus glutinosa*, *Pyrus*, *Quercus*, *Juglans*, *Prunus*, *Berberis*, *Morus* and *Salix*.

Acarospora cervina, *A. fuscata*, *Aspicilia cinerea*, *A. desertorum*, *C. variabilis*, *C. vitellina*, *Gallowayella fulva*, *Lecanora rupicola*, *Lecidea fuscoatra*, *Lecidella carpathica*, *Lobothallia radiosa*, *Myriolecis hagenii*, *Protoparmeliopsis muralis*, *Rhizocarpon geographicum*, *Rhizoplaca melanophthalma*, *Rinodina bischoffii*, *Rinodina milvina*, *Verrucaria nigrescens* and *Xanthoparmelia verruculifera* were seen to grow plentifully in the study area.

Some corticolous and crustose lichen species such as *Calogaya lobulata*, *Caloplaca cerina*, *Candelariella aurella*, *Candelariella reflexa*, *Gallowayella fulva*, *Gyalolechia flavorubescens*, *Lecanora argentata*, *Myriolecis dispersa*, *Myriolecis hagenii*, *Oxneria fallax*, *Phaeophyscia orbicularis*, *Physcia adscendens*,

Physcia biziana, *Physcia dimidiata*, *Physcia dubia*, *Physconia distorta* are not very selective in terms of substrate selection compared to other species, but are very cosmopolitan.

The main vegetation types are forests and steppes. The forest area is mainly characterized by *Quercus* spp. in higher parts (over 1800 m) of the area. Along the stream *Populus*, *Salix* and *Ulmus* are mainly seen.

The vegetation change in Bitlis is caused by the climate. In some areas, forest and steppe vegetations can be found side by side on the research area. In Bitlis because of hard winter and dry summer, low precipitation, soft and anhydrous soil, scarce forest area, the lichens, most of which are crustose, preferred to grow and aggregate on mostly siliceous and calcareous rocks. So terricolous and muscicolous lichens such as *Catapyrenium*, *Cladonia*, *Collema*, *Endocarpon*, *Peltigera*, *Psora* and *Toninia*, which can grow easily on mosses and soil widespreadly, were not found plentifully on these substrata as expected. On the other hand *Gallowayella*, *Caloplaca*, *Lecanora*, *Phaeophyscia*, *Physcia*, *Physconia*, cosmopolitan epiphytic lichens, were found just on some trees of *Quercus*, *Pyrus*, *Prunus* and *Morus*.

Seventy-nine lichen taxa were defined to grow epiphytic. On the other hand 44 species were found on mosses. Two-hundred-twenty-two lichen taxa were found growing on rocks while 32 lichen species preferred to grow on soil. Twenty-one lichenicolous fungi were found to be on different hosts, such as *Aspicilia* sp., *Aspicilia* cf. *calcarea*, *Aspicilia cinerea*, *Candelariella vitellina*, *Immersaria athroocarpa*, *Lecanora rupicola*, *Lecidea tessellata*, *Lecidella carpathica*, *Phaeophyscia orbicularis*, *Physcia* sp., *Physcia dubia*, *Protoparmeliopsis muralis*, *Rhizocarpon geographicum*, *Rhizoplaca melanophthalma*, *Squamarina cartilaginea*, *Umbilicaria crustulosa*, *Xanthoparmelia pulla*, *Xanthoparmelia tinctina* and *Xanthoria elegans*, of these *Carbonea vorticosa* and *Carbonea vitellinaria* are the most common taxa.

Some crustose lichen and lichenicolous species of genera *Aspicilia*, *Llimoniella*, *Placopyrenium*, *Placynthium* and *Rinodina* are known to grow rarely in Turkey, and of these *Aspicilia glomerulans*, *Llimoniella muralicola*, *Myriolecis invadens*, *Ochrolechia subviridis*, *Placynthium hungaricum* and *Placynthium posterulum* were reported for the second time from Turkey (Halıcı 2008, Oran and Öztürk 2010, Aslan and Yazıcı 2013, Aptroot et al. 2015, Yazıcı and Aslan 2016).

In Bitlis province, in a total of 113 genera (excluding lichenicolous fungi), *Lecanora* (20 taxa), *Caloplaca* (18 taxa), *Rinodina* (16 taxa), *Acarospora* (13 taxa), *Verrucaria* and *Physcia* (10 taxa) are the most common genera in the study area respectively.

Localities in south, north and northwest of Güroymak district are very rich about lichen biodiversity and localities in Hizan and Mutki districts are situated near a lime pit in where *Verrucaria baldensis*, *V. calciseda* and *V. nigrescens* are found, they are identified as an indicator species of lime and calcareous substratum (Fig. 1, Table 1).

It has been determined that soil and mosses are not suitable for the development of lichens in Bitlis province. Therefore, it was observed that lichens developed more on rocks and tree trunks and bodies throughout the province. It is observed that lichens can develop very weakly on soil since it is not suitable for soil lichen development. In addition it has

been observed that lichens were determined less on mosses which are not developed much throughout the province.

In the northern part of the province of Bitlis, it has been observed that lichens can mostly develop on the rocks. Therefore, in the northern parts of the province, it has been determined that lichens generally develop on the rocks in Ahlat, Adilcevaz and Güroymak (northern part) districts. Since the southern part of the province is richer in terms of tree than the northern part, we see more lichens on tree trunks and rocks.

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