

Lichens and lichenicolous fungi from Tunceli Province in Turkey

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Abstract. This study is a contribution to the lichen biota of Turkey. As a result of the examination of lichens and lichenicolous fungi from 133 stations, 373 lichens, six of which lichenicolous lichens and 21 lichenicolous fungi, were identified. While *Karschia talcophila*, a lichenicolous fungus, is new to Turkey, 313 lichens and 18 lichenicolous fungi are new records for Tunceli. Furthermore, 25 lichenized and three lichenicolous fungi were found for the second time in Turkey.

Key words: Ascomycota, biodiversity, lichen, Tunceli, Turkey

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Introduction

Studies on lichens and lichenicolous fungi in Turkey have increased in recent years and, although approximately 2000 lichens and 250 lichenicolous fungi have been reported, still many more areas remain in need to be further investigated on the subject (John & Türk 2017; John & al. 2020; Güvenç & al. 2020). No comprehensive study has been carried out in Tunceli before; 93 lichens and two lichenicolous fungi have so far been reported from the Tunceli Province (Çobanoğlu & Doğan 2010; Song & al. 2019; Yazıcı & al. 2019a, b; Yazıcı & Aslan 2019, 2021). However, the former studies do not reflect the lichen and lichenicolous fungus flora of the region.

The present paper contributes to the checklist of lichens of the Tunceli Province. Tunceli lies between 38°19' and 40°26' East and 39°36' and 38°46' North. Mountains constitute 70% of the province, 25% are plateaus, and 5% are plains. Located in the Upper Euphrates section of the Eastern Anatolia Region, Tunceli is surrounded by the Munzur Mts, which are an extension of the Eastern Taurus Mts, and river Karasu from the northwest; Mercan Mts from the north; Mt Bağırpaşa from the northeast; Bingöl Mts and Peri Suyu Valley from the east and southeast; Keban Dam Lake from the south; and Pülümür Stream Valley from the West (URL-1).

The highest points of the Munzur Mts, over 3000 meters, within the borders of Tunceli are Mt

Eğripınar (3111 m), Mt Fekrik (3362 m), Mt Koçgölbaşı (3339 m) and Kadırdagi (3129 m), Visittepe (3071 m) and Bağırpaşa mountains (3293 m). In the section descending to the Pülümür Stream Valley in the southeast and east, plateaus are lined up on various elevation steps (URL-1). The dominant trees in the Munzur Valley National Park, which is very rich in vegetation, are the *Quercus* spp. The rich vegetation consists of *Ulmus*, *Acer*, *Alnus*, *Fraxinus*, *Platanus*, *Betulus*, *Juglans*, *Corylus*, *Populus*, *Salix* and various shrub species mixed on the valley floor and along the watercourses (Baytop & Denizci 1963).

Climate of Tunceli is generally continental, with short summers, hot and dry, and rainy, cold and long winters. It usually rains in autumn and spring, and snows in winter. The average annual precipitation in the Province varies between 550-1080 mm. Less precipitation falls in summer, and it is most ample in autumn and winter. In summer, the climate is dry, with strong northwesterly winds. In winter, there are not so strong southwester-

ly winds. The annual average temperature in Tunceli is 12.8 °C. The average temperature in January is -2.5 °C, and in July is 27.2 °C (Akman 1999).

The region is located on the Taurus orogenic belt in Eastern Anatolia. The oldest outcrops in the region are Lower Permian metasediments and Upper Permian subcrystalline limestones. The Lower Cretaceous flysch unconformably overlies the Upper Permian limestone, which is partially eroded. Flysch, tuff, basaltic-andesitic flows, and limestone form the Lower Cretaceous, Upper Cretaceous and Lower Eocene deposits, and the beds belonging to each period are separated by discordances. (Afshar 1965).

Material and methods

The lichenized and lichenicolous fungi were collected at 133 different localities in the Tunceli Province, between 21.06.2018 and 24.08.2020 (Table 1, Fig. 1).

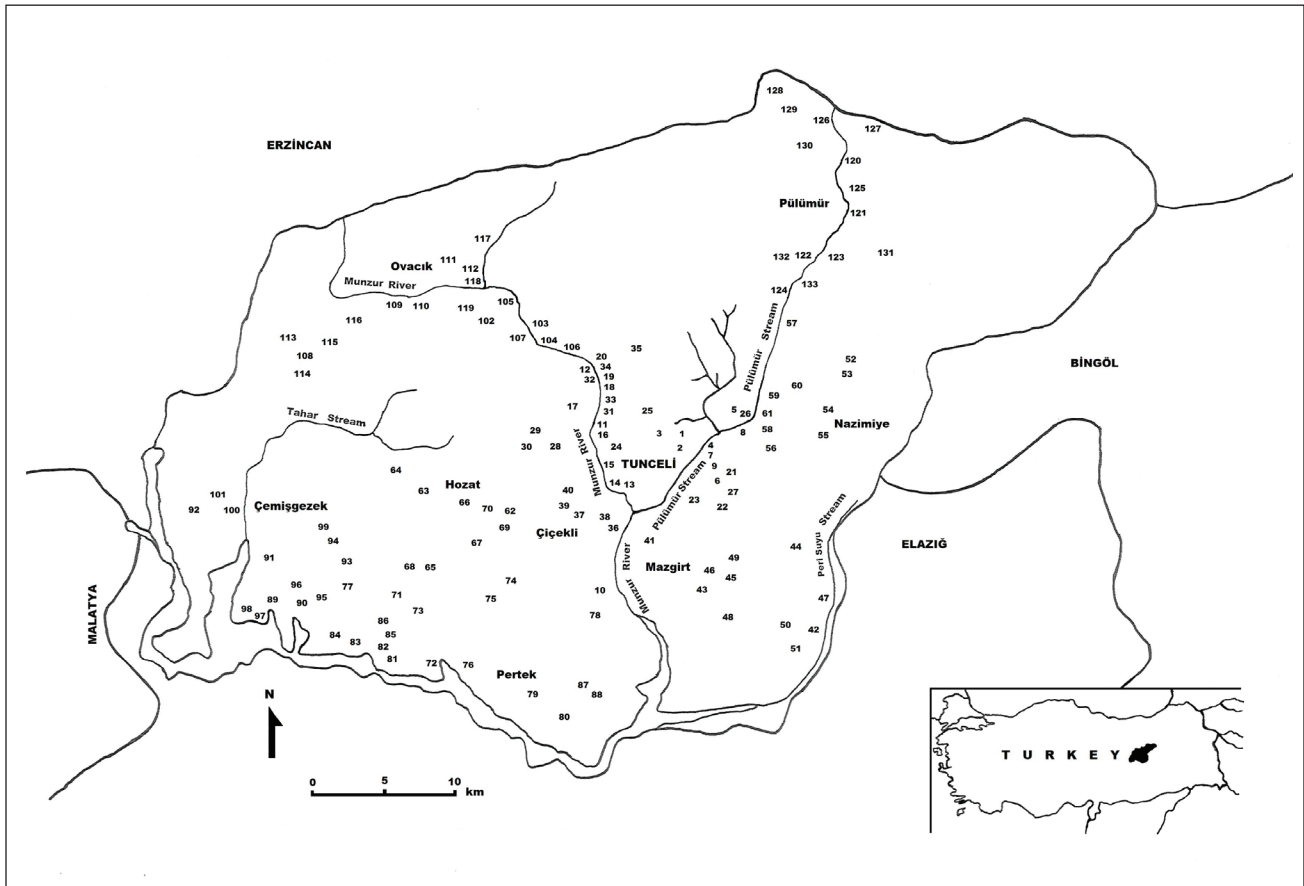


Fig. 1. Map of Turkey showing the Tunceli Province and the study sites.

Microscopical examination of the hand-cut sections was performed in water (incl. all measurements). Air-dried samples were observed and studied by a Zeiss Stemi 2000-c stereomicroscope and a Zeiss Axio Imager A2 light microscope. Secondary metabolites were identified by the usual spot tests and TLC method (Orange & al. 2011). The lichens were identified by consulting the relevant literature (Arup & al. 2013; Brodo & al. 2001; Blanco & al. 2004; Calatayud & al. 2002; Darmostuk 2016; Dobson 2005; Esslinger 1997; Etayo & Calatayud 1997; Galloway & Moberg 2005; Giralt 2001; Navarro-Rosinés & al. 2009; Nordin & al. 2010; Smith & al. 2009). Specimens were deposited in the Herbarium of the Biology Department, Faculty of Science, Karadeniz Technical University, Turkey (KTUB).

Results and discussion

A total of 373 lichenized and 20 lichenicolous fungi, four of which are varieties, have been identified from 133 different localities in the Tunceli Province (Turkey). *Karschia talcophila*, a lichenicolous fungus, is new to Turkey. Three hundred and thirteen lichens and 18 lichenicolous fungi are new records for Tunceli. Furthermore, 25 lichens and three lichenicolous fungi were found for the second time in Turkey.

(Güvenç & al. 2020; John & Türk 2017; John & al. 2020)

The taxa are listed alphabetically. Indications: (*) indicates a new record for Turkey; (#) is second-time sighting in Turkey; (+) stands for a lichenicolous fungus, while a lichenicolous lichen is marked by (-).

Table 1. List of collecting localities

STATION No	STATION	COORDINATE	ALTITUDE (m)	DATE
1	Tunceli, center, 2 km from Sütlüce village, roadside	39°07'19"N 39°34'12"E	1095	17.07.2018
2	Tunceli, center, on the road to Sütlüce village	39°07'02"N 39°34'11"E	1086	08.09.2018
3	Tunceli: center, Sütlüce village road, Kocalar village road turn, roadside	39°08'22"N 39°34'42"E	1101	02.08.2019
4	Tunceli, center, on the Tunceli-Pülümür main road	39°09'39"N 39°40'01"E	970	09.09.2018
5	Tunceli, center, main road, 10 km from Tunceli, Pülümür Stream, close to the main road, near the facility	39°11'25.69"N 39°41'12.05"E	997	17.07.2018
6	Tunceli, center, Tunceli-Pülümür, on the main road	39°06'25"N 39°36'50"E	933	17.07.2018
7	Tunceli, center, Tunceli-Pülümür, on the main road	39°09'35"N 39°39'56"E	971	17.07.2018
8	Tunceli, center, on the Pülümür-Tunceli main road, towards the 1st Tunnel	39°10'53"N 39°41'12"E	994	17.07.2018
9	Tunceli, center, on the Pulumur-Tunceli main road, across Gömemiş village	39°08'39"N 39°38'35"E	954	17.07.2018
10	Tunceli, center, 1 km from Yolkonak village	38°59'14"N 39°28'55"E	1194	17.07.2018
11	Tunceli: center, Tunceli-Ovacık road, Karşilar outpost-Aşağıtorunoba-Ovacık road, 2 km after Karşilar outpost, main roadside, by the Munzur river	39°10'51"N 39°27'35"E	1033	22.07.2019
12	Tunceli: center, on Tunceli-Ovacık road, Karşilar Gendarmerie station -Aşağıtorunoba-Ovacık main road, 2-3 km after Venk bridge (Tunceli: towards the center-Ovacık border), Side of Munzur river	39°15'04"N 39°28'50"E	1034	22.07.2019

STATION No	STATION	COORDINATE	ALTITUDE (m)	DATE
13	Tunceli: center, Tunceli-Ovacık road, Tunceli-Karşılar Gendarme station, side of Munzur river	39°07'14"N 39°31'46"E	927	22.07.2019
14	Tunceli: centre: Tunceli-Ovacık road, between Tunceli-Karşılar Gendarme station, 2-3 km ahead, side of Munzur river	38°08'19"N 39°29'26"E	940	23.07.2019
15	Tunceli: centre: Tunceli-Ovacık road, between Tunceli-Karşılar Gendarme station, 3-4 km ahead	39°09'20"N 39°29'17"E	972	23.07.2019
16	Tunceli: center, Tunceli-Ovacık road, between Tunceli-Karşılar Gendarme station, 5-6 km ahead, side of Munzur river	39°09'49"N 39°28'21"E	995	23.07.2019
17	Tunceli: center, Tunceli-Ovacık road, Karşılar village	39°10'26"N 39°26'27"E	1222	22.07.2019
18	Tunceli: center, Tunceli-Ovacık road, 5-6 km ahead of the Karşılar Gendarme station, around the Balı (Avsugar) bridge, side of Munzur river	39°11'50"N 39°28'18"E	1010	24.07.2019
19	Tunceli: center, Ovacık-Tunceli road, Aşağıtorunoba-Karşılar Gendarme station, main road, Munzur riverside	39°11'55"N 39°27'48"E	1000	24.07.2019
20	Tunceli: center, Ovacık-Tunceli road, Aşağıtorunoba- Karşılar Gendarme station, main road, side of Munzur river	39°15'40"N 39°27'55"E	1070	24.07.2019
21	Tunceli: merkez, north of Sinan village	39°07'01"N 39°38'38"E	133	01.08.2019
22	Tunceli: center, south of Ambar village, roadside	39°04'55"N 39°38'24"E	1206	01.08.2019
23	Tunceli: center, around Atlanti village	39°05'12"N 39°36'30"E	1082	01.08.2019
24	Tunceli: center, on the main road of Tüllük region	39°09'23"N 39°31'14"E	1399	02.08.2019
25	Tunceli: center, between Tüllük and Süvat villages	39°10'01"N 39°32'01"E	1511	02.08.2019
26	Tunceli: center, Tunceli-Pülümür-Nazimiye road, Munzur riverside, opposite of Gökçek village (east)	39°11'25"N 39°41'29"E	980	16.08.2019
27	Tunceli: Center, on Kocakoç road, opposite of Çukur village, roadside	39°06'17"N 39°41'51"E	1300	16.08.2019
28	Tunceli: center, road to Geyiksuyu village, 4 km west	39°09'29"N 39°26'00"E	1325	30.08.2019
29	Tunceli: center, after Geyiklisuyu village, opposite of Atadoğdu village, on the main road	39°09'54"N 39°20'39"E	1245	29.08.2019
30	Tunceli: center, Geyiklisuyu village road, after Atadoğdu village, Hozat border, 500-600 m before Tatlılı village (Hozat)	39°10'25"N 39°19'34"E	1355	29.08.2019
31	Tunceli: center, Tunceli-Ovacık road, between Karşılar Gendarme station and Aşağıtorunoba, 4 km ahead of Karşılar police station, side of Munzur river	39°11'08"N 39°27'49"E	992	30.08.2019
32	Tunceli: center, Tunceli-Ovacık road, between Karşılar Gendarme station and Aşağıtorunoba, 10-11 km ahead from Karşılar Gendarme station, main road, side of Munzur river	39°13'51"N 39°28'59"E	1021	30.08.2019
33	Tunceli: center, Tunceli-Ovacık road, between Karşılar Gendarme station and Aşağıtorunoba, 7-8 km ahead of Karşılar Gendarme station, side of main road and Munzur river	39°11'34"N 39°28'01"E	992	30.08.2019

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34	Tunceli: center, Tunceli-Ovacık road, between Karşılar Gendarme station and Aşağıtorunoba, main road, Munzur riverside, 500 meters from Venk bridge	39°14'12"N 39°29'06"E	1059	30.08.2019
35	Tunceli, center, 1 km from Sarıtaş village, roadside, streamside	39°15'52"N 39°30'06"E	1140	03.06.2020
36	Tunceli, Çiçekli entrance	39°03'04"N 39°29'14"E	1037	18.07.2018
37	Tunceli, Çiçek (Buğulu sub-district), above the Gendarme	39°03'48"N 39°26'32"E	1204	18.07.2018
38	Tunceli, Çiçekli, 1 km to Gendarme	39°03'42"N 39°27'16"E	1118	18.07.2018
39	Tunceli: Çiçekli, Çiçekli-Hozat road, 1.5 km south	39°04'31"N 39°26'17"E	1340	18.07.2018
40	Tunceli: Çiçekli, center	39°04'39"N 39°26'42"E	1355	10.09.2018
41	Tunceli: Mazgirt, entrance, Köklüce village	39°03'12"N 39°33'29"E	1232	21.06.2018
42	Tunceli, Mazgirt, Sülüntaş village	38°56'25"N 39°49'22"E	1071	21.06.2018
43	Tunceli, Mazgirt, Yukarıoyumca village, crossroads	39°00'42"N 39°38'42"E	1419	21.06.2018
44	Tunceli, Mazgirt, Ataçınar junction, close to Güleç village	39°02'25"N 39°48'27"E	1128	21.06.2018
45	Tunceli, Mazgirt, Gümüşgün village	39°01'16"N 39°40'43"E	1503	21.06.2018
46	Tunceli, Mazgirt, Kaleköy	39°01'22"N 39°40'23"E	1468	21.06.2018
47	Tunceli, Mazgirt, Darıkent-Ricik junction, 2 km to Darıkent village	38°58'48"N 39°49'12"E	1296	21.06.2018
48	Tunceli, Mazgirt, 500 m to Danaburan village	38°57'39"N 39°40'15"E	1094	21.06.2018
49	Tunceli, Mazgirt, opposite of Oymadal village	39°01'52"N 39°41'24"E	1707	21.06.2018
50	Tunceli: Mazgirt, Özdek village, on the main road	38°57'20"N 39°47'29"E	1316	31.07.2019
51	Tunceli: Mazgirt, Ortaharman village, on the main road	38°55'27"N 39°47'53"E	1219	31.07.2019
52	Tunceli, Nazimiye, Dereoba Waterfall	39°16'06"N 39°52'37"E	1667	19.07.2018
53	Tunceli, Nazimiye, on the way to Dereoba Waterfall	39°15'37"N 39°52'22"E	1578	19.07.2018
54	Tunceli, Nazimiye, Nazimiye-Dereoba Waterfall road, opposite of Beytaş village, roadside	39°13'08"N 39°50'31"E	1459	19.07.2018
55	Tunceli, Nazimiye, Above Güneycik village, side of Dereoba road	39°11'48"N 39°50'16"E	1707	19.07.2018

STATION No	STATION	COORDINATE	ALTITUDE (m)	DATE
56	Tunceli, Nazimiye, On the way to Nazimiye, between the martyr Mehmet Gengarme station and Nazimiye	39°11'31"N 39°44'06"E	1119	19.07.2018
57	Tunceli: Nazimiye, Tunceli-Nazimiye-Pülümür road, on the main road, Hanköy (Uzuntarla village)	39°20'01"N 39°47'10"E	1160	16.08.2019
58	Tunceli: Nazimiye, Tunceli-Nazimiye-Pülümür road, opposite Demirce village (west side, west of the river)	39°12'23"N 39°44'59"E	1035	16.08.2019
59	Tunceli: Nazimiye, On the Tunceli-Nazimiye-Pülümür road, on the Büyükyurt village road	39°13'25"N 39°45'19"E 39°13'22"N 39°45'09"E	1056, 1042	30.08.2019
60	Tunceli: Nazimiye, north of Büyükyurt village	39°15'12"N 39°47'47"E	1742	30.09.2019
61	Tunceli: Nazimiye, West of Demirce village (east of the river), on the main road	39°12'30"N 39°45'01"E	1400	30.08.2019
62	Tunceli, Hozat, Hozat-Demirkapı road	39°05'48"N 39°21'18"E	1687	06.07.2018
63	Tunceli, Hozat, Çaytaşı village	39°07'38"N 39°11'08"E	1769	06.07.2018
64	Tunceli, Hozat, Kuru village	39°08'45"N 39°10'10"E	1647	06.07.2018
65	Tunceli, Hozat, On the Hozat road, next to the old village community center (new nursing home)	38°59'31"N 39°11'32"E	1292	06.07.2018
66	Tunceli, Hozat, Karacaköy	39°07'03"N 39°14'35"E	1585	06.07.2018
67	Tunceli, Hozat, İn Village	39°03'14"N 39°15'18"E	1498	06.07.2018
68	Tunceli, Hozat, entrance	38°58'54"N 39°11'27"E	1251	06.07.2018
69	Tunceli: Hozat, Çığırlı village road, north	39°05'33"N 39°20'39"E	1579	03.08.2019
70	Tunceli: Hozat, north of Dervişcemal village	39°06'11"N 39°16'47"E	1744	03.08.2019
71	Tunceli, Pertek, Akdemir village	38°59'10"N 39°10'24"E	1205	22.06.2018
72	Tunceli, Pertek, Opposite of Geçityaka village, martyrs hill, side of the main road	38°54'19"N 39°13'03"E	955	22.06.2018
73	Tunceli, Pertek, 200 m to Çemişgezek-Hozat junction	38°58'30"N 39°11'28"E	1252	22.06.2018
74	Tunceli, Pertek, Dereköyü, roadside	38°59'38"N 39°20'10"E	1612	22.06.2018
75	Tunceli, Pertek, 4 km to Dereköyü, roadside	38°59'00"N 39°19'07"E	1389	22.06.2018
76	Tunceli, Pertek, Çakırbahçe village, towards Akdemir, dam edge, along the main road	38°53'05"N 39°15'35"E	960	22.06.2018
77	Tunceli, Pertek, Akdemir-Çemişgezek border, main roadside	38°59'45"N 39°04'32"E	1055	05.07.2018, 04.07.2018

STATION No	STATION	COORDINATE	ALTITUDE (m)	DATE
78	Tunceli, Pertek, Entrance to Pertek, main road, after Yolkonak village	38°57'36"N 39°28'45"E	1253	05.07.2018
79	Tunceli, Pertek, 4 km TO Pertek, main roadside	35°51'10"N 39°23'17"E	1333	05.07.2018
80	Tunceli, Pertek, 7km to Pertek, main roadside	38°52'27"N 39°24'58"E	1499	05.07.2018
81	Tunceli: Pertek, Ballı Dut village, 1 km east of the village, roadside	38°54'33"N 39°08'26"E	1022	11.08.2020
82	Tunceli: Pertek, Gövdeli village	38°55'06"N 39°07'20"E	904	11.08.2020
83	Tunceli: Pertek, Çukurca village	38°55'06"N 39°04'43"E	911	11.08.2020
84	Tunceli: Pertek, Ayazpınar village, southwest, roadside	38°55'23"N 39°03'03"E	935	11.08.2020
85	Tunceli: Pertek, After Yukarı Gülbahçe village, on the roadside, west	38°57'16"N 39°09'55"E	1164	12.08.2020
86	Tunceli: Pertek, Yukarı Gülbahçe-Akdemir road, 2-3 km from Akdemir village, right side, east	38°58'22"N 39°09'06"E	1211	12.08.2020
87	Tunceli: Pertek, Pınarlar Subdistrict, South	38°51'45"N 39°28'34"E	1306	13.08.2020
88	Tunceli: Pertek, Biçmekaya village road	38°51'11"N 39°29'30"E	1253	13.08.2020
89	Tunceli, Çemişgezek, Payamdüzü entrance	38°58'01"N 38°59'37"E	876	04.07.2018
90	Tunceli, Çemişgezek, Doğanlar village road turn	38°58'26"N 39°01'57"E	870	04.07.2018
91	Tunceli, Çemişgezek, 2 km to Çemişgezek	39°02'18"N 38°55'29"E	1109	04.07.2018
92	Tunceli, Çemişgezek, Gedikler Subdistrict	39°05'14"N 38°48'23"E	1180	04.07.2018
93	Tunceli: Çemişgezek, Bozağaç village road, from the west	39°01'37"N 39°05'11"E	1122	22.08.2020
94	Tunceli: Çemişgezek, Ulukale village around	39°02'33"N 39°01'21"E	1096	22.08.2020
95	Tunceli: Çemişgezek, north of Doğan village, roadside	38°59'32"N 39°02'31"E	933	22.08.2020
96	Tunceli: Çemişgezek, Sarıbalta village	39°00'05"N 38°56'31"E	1180	23.08.2020
97	Tunceli: Çemişgezek, Akçapınar subdistrict	38°57'02"N 38°56'49"E	845	23.08.2020
98	Tunceli: Çemişgezek, Uzungöl village	38°57'13"N 38°54'14"E	915	23.08.2020
99	Tunceli: Çemişgezek, West of Toraltı village, roadside	39°03'34"N 39°00'22"E	1354	24.08.2020

STATION No	STATION	COORDINATE	ALTITUDE (m)	DATE
100	Tunceli: Çemişgezek, Northwest of Çemişgezek, towards Alakuş village, towards Gedikler Subdistrict, roadside	39°04'53"N 38°53'13"E	1153	24.08.2020
101	Tunceli: Çemişgezek, Surrounding of Alakuş village and roadside	39°05'28"N 38°49'53"E	1323	24.08.2020
102	Tunceli: Ovacık, Tunceli-Ovacık road, between Aşağıtorunoba-Ovacık, 15 km ahead towards Ovacık, by the Munzur river	39°20'46"N 39°17'55"E	1220	23.07.2019
103	Tunceli: Ovacık, Tunceli-Ovacık road, between Aşağıtorunoba-Ovacık, 5 km ahead towards Ovacık, by the Munzur river	39°20'12"N 39°21'11"E	1188	23.07.2019
104	Tunceli: Ovacık, Tunceli-Ovacık road, between Aşağıtorunoba-Ovacık, behind Aşağıtorunoba Gendarme station, roadside, Munzur riverside	39°17'53"N 39°21'54"E	1157	23.07.2019
105	Tunceli: Ovacık, Tunceli-Ovacık road, between Aşağıtorunoba-Ovacık, 10 km ahead towards Ovacık, by the Munzur river	39°21'25"N 39°20'17"E	1209	23.07.2019
106	Tunceli: Ovacık, Ovacık-Tunceli road, Aşağıtorunoba-Karşılar Gendarme station, main road, Munzur riverside	39°17'34"N 39°22'49"E	1156	24.07.2019
107	Tunceli: Ovacık, Ovacık-Tunceli road, between Ovacık-Aşağıtorunoba, 3 km from Aşağıtorunoba Gendarme station, main road, Munzur riverside	39°19'16"N 39°20'54"E	1176	24.07.2019
108	Tunceli: Ovacık, 7 km further from Ovacık, Gözeler locality, place of Ziyaret, main roadside	39°20'13"N 39°04'39"E 39°20'10"N 39°04'24"E	1309, 1321	24.07.2019
109	Tunceli:Ovacık, northwest of Köşeler village	39°22'53"N 39°10'11"E	1421	03.06.2020
110	Tunceli:Ovacık, Paşadüzü village	39°22'30"N 39°11'29"E	1298	03.06.2020
111	Tunceli:Ovacık, north of Gözeler	39°24'30"N 39°14'03"E	1436	03.06.2020
112	Tunceli:Ovacık, Havuzlu, east of Gözeler	39°24'06"N 39°16'13"E	1404	03.06.2020
113	Tunceli:Ovacık, Eğripinar village and surroundings	39°19'08"N 39°01'33"E	1344	04.06.2020
114	Tunceli:Ovacık, Around Topuzlu village, south of Ziyaret Village	39°17'55"N 39°03'56"E	1347	04.06.2020
115	Tunceli:Ovacık, Around Burnak village, south of Ziyaret village	39°18'15"N 39°04'31"E	1334	04.06.2020
116	Tunceli: Ovacık, Around Kızık village, south of Ziyaret village	39°18'32"N 39°05'18"E	1329	04.06.2020
117	Tunceli:Ovacık, Northeast of Havuzlu village, Yazören village road and its surroundings	39°25'07"N 39°18'08"E	1452	05.06.2020
118	Tunceli:Ovacık, northeast of Akyayık village	39°23'19"N 39°16'12"E	1346	05.06.2020
119	Tunceli:Ovacık, South of Akyayık villag	39°22'11"N 39°16'42"E	1280	05.06.2020
120	Tunceli: Pülümür, Erzincan-Pülümür road, in the direction of Pulumur, by the main road	39°33'17"N 39°53'28"E	1493	15.08.2019

STATION No	STATION	COORDINATE	ALTITUDE (m)	DATE
121	Tunceli: Pülümür, Pülümür: center	39°28'52"N 39°53'44"E	1483	15.08.2019
122	Tunceli: Pülümür, Pülümür-Tunceli road, Pülümür, towards Kangallı village, 5 km from Pulumür in the direction of Tunceli road, 1 km before Kangallı village	39°27'11"N 39°51'51"E	1352	15.08.2019
123	Tunceli: Pülümür, Pülümür-Tunceli road, Pülümür: towards Kangallı village	39°27'28"N 39°53'16"E	1386	16.08.2019
124	Tunceli: Pülümür, Pülümür-Nazimiye border, on the way to Tunceli-Pülümür-Nazimiye	39°21'07"N 39°47'24"E	1189	16.08.2019
125	Tunceli: Pülümür, Erzincan-Pülümür-Tunceli road, in the direction of Pülümür, by the roadside	39°32'58"N 39°53'53"E	1526	17.08.2019
126	Tunceli: Pülümür, Erzincan-Pülümür-Tunceli road, Pülümür entrance, main roadside	39°35'01"N 39°51'35"E	1262	31.08.2019
127	Tunceli: Pülümür, Kemik village	39°34'42"N 39°53'55"E	1402	02.08.2020
128	Tunceli: Pülümür, Salkımözü village	39°35'56"N 39°48'21"E	1433	02.08.2020
129	Tunceli: Pülümür, Dereköyü,	39°35'01"N 39°48'49"E	1551	02.08.2020
130	Tunceli: Pülümür, Kırkmeşe village road	39°34'21"N 39°50'22"E	1671	03.08.2020
131	Tunceli: Pülümür, Turnadere village road, northwest	39°27'29"N 39°55'07"E	1456	03.08.2020
132	Tunceli: Pülümür, Kabadal village (north of Kangallı village)	39°27'02"N 39°50'33"E	1532	03.08.2020
133	Tunceli: Pülümür, Gökçekonak village road, southwest	39°24'27"N 39°50'53"E	1480	04.08.2020

List of taxa

+*Abrothallus parmeliarum* (Sommerf.) Arnold – Loc. 107: on *Melanelixia glabra*.

Acarospora bullata Anzi – Loc. 73: on calcareous rock.

Acarospora cervina A. Massal. – Loc. 1–9, 11, 13–17, 22, 23, 26–30, 34, 37, 39, 41, 43, 45–49, 51, 54, 55, 57–67, 70–73, 75–82, 85, 86, 88–92, 94, 96, 99, 102, 103, 105, 106, 108, 121, 123–125, 131, 132: on calcareous rocks.

Acarospora fuscata (Ach.) Arnold – Loc. 8, 9, 22, 26, 28, 30, 43, 47, 67, 71, 73, 75, 76, 77, 79, 80, 85, 86, 89, 90, 91, 122, 123, 126, 133: on siliceous rocks.

–*Acarospora hospitans* H. Magn. – Loc. 16, 22, 43, 47, 56, 65, 73, 77, 79, 125, 126: on siliceous rocks, 3, 19, 48, 67, 103, 131: on *Aspicilia* sp.

Acarospora impressula Th. Fr. – Loc. 45, 61, 88: on siliceous rocks.

Acarospora macrospora (Hepp ex Nyl.) A. Massal. – Loc. 39, 89: on siliceous rocks.

Acarospora peliscypha (Wahlenb.) Th. Fr. – Loc. 89: on siliceous rock.

Acarospora pseudofuscata Sipman – Loc. 3, 19, 67, 89, 107, 121: on siliceous rocks.

Acarospora scabra (Pers.) Th. Fr. – Loc. 85, 86, 91, 122, 123, 126, 132: on siliceous rocks.

Acarospora strigata (Nyl.) Jatta – Loc. 79, 90, 91, 94, 122: on calcareous rocks.

Acarospora umbilicata Bagl. – Loc. 3, 47, 61, 67, 71, 73, 78, 85, 86, 121: on siliceous rocks.

Acarospora veronensis A. Massal. – Loc. 47, 51, 67, 70, 88, 91, 96, 99, 105, 106, 107, 121, 122: on siliceous rocks.

Acarospora versicolor Bagl. & Carestia – Loc. 73, 79, 123: on siliceous rocks.

Acrocordia conoidea (Fr.) Körb. – Loc. 64: on calcareous rock.

Agonimia tristicula (Nyl.) Zahlbr. – Loc. 5, 8, 11, 26, 32, 33, 34, 46, 59, 60, 68, 108, 113, 116, 121, 124, 126: on mosses.

Anema tumidulum Henssen ex P.M. Jørg., M. Schultze & Guttová – Loc. 26: on calcareous rock.

+*Arthonia clemens* (Tul.) Th. Fr. – Loc. 79: on *Rhizoplaca melanophthalma*.

Arthonia didyma Körb. – Loc. 57: on *Fraxinus* sp.
+*Arthonia protoparmeliopsis* Etayo & Diederich – Loc. 79: on *Protoparmeliopsis muralis*.

+*Arthonia varians* (Davies) Nyl. – Loc. 22, 43, 61, 65, 80, 88, 107, 121, 125: on *Lecanora rupicola*.

Aspicilia albosparsa (Werner) S.Y. Kondr. – Loc. 89, 105: on siliceous rocks.

Aspicilia aquatica (Fr.) Körb. – Loc. 20: on siliceous rock.

Aspicilia candida (Anzi) Hue – Loc. 5, 61, 68, 72, 80, 92, 99, 108, 120, 125, 131: on calcareous rocks.

Aspicilia cinerea (L.) Körb. – Loc. 1, 3, 4, 5, 6, 7, 8, 11, 14, 15, 16, 17, 19, 21, 22, 26, 27, 28, 29, 30, 35, 37, 39, 41, 43, 44, 45, 46, 47, 49, 51, 56, 58, 59, 60, 61, 63, 64, 65, 66, 67, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 85, 86, 88, 89, 90, 91, 94, 96, 102, 103, 105, 106, 107, 108, 112, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 131, 132, 133: on siliceous rocks.

Aspicilia coronata (A. Massal.) B. de Lesd. – Loc. 1, 2, 3, 30, 46, 52, 54, 63, 122, 123: on calcareous rocks.

Aspicilia desertorum (Kremp.) Mereschk. – Loc. 4, 6, 7, 8, 9, 11, 15, 16, 21, 22, 26, 27, 28, 34, 37, 39, 41, 42, 44, 46, 47, 48, 52, 53, 55, 56, 57, 59, 63, 64, 66, 67, 68, 71, 72, 75, 76, 77, 79, 80, 81, 82, 89, 90, 91, 92, 103, 104, 105, 106, 107, 108, 120, 121, 122, 123, 124, 125, 126: on siliceous rocks.

#*Aspicilia glomerulans* (Poelt) Poelt – Loc. 3, 65, 89, 122, 125, 126: on calcareous rocks

Aspicilia laevata (Ach.) Arnold – Loc. 28, 103, 105, 122: on siliceous rocks.

Aspicilia polychroma Anzi – Loc. 3, 16, 29, 30, 49, 51, 52, 57, 61, 79, 85, 86, 89, 94, 103, 104, 105, 107, 120, 122, 123, 125, 126, 131: on calcareous rocks.

Aspicilia viridescens (A. Massal.) Hue – Loc. 76: on calcareous rocks.

#*Aspicilia cupreoglauca* (B. de Lesd.) Zakeri, Divakar & Otte – Loc. 10, 19, 29, 30, 43, 47, 61, 65, 70, 71, 73, 74, 75, 85, 86, 89, 90, 91, 94, 131: on siliceous rocks.

Athallia holocarpa (Hoffm.) Arup, Frödén & Søchting – Loc. 30, 41, 45, 48, 91: on *Quercus* sp., 104: *Fraxinus* sp. and *Alnus glutinosa*, 120, 133: on calcareous rocks.

Athallia inconnexa (Nylander) S.Y. Kondr. & L. Lőkös – Loc. 39, 80: on calcareous rocks.

Athallia pyracea (Ach.) Arup, Frödén & Søchting – Loc. 11, 12, 15, 17, 19, 20, 23, 28, 29, 30, 31, 36, 41, 51, 61, 70, 78, 85, 86, 94, 96, 99, 103, 105, 113, 115, 116, 118, 119, 122, 123, 126, 127, 128, 130, 131, 132, 133: on *Fraxinus* sp. and *Juglans* sp., 32: on *Fraxinus* sp., 33: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 34: on *Fraxinus* sp. and *Quercus* sp., 102: on *Alnus glutinosa*.

Bagliettoa baldensis (A. Massal.) Vězda – Loc. 1, 8, 46, 55, 57, 61, 63, 64, 72, 99, 110: on calcareous rocks.

Bagliettoa calciseda (A. Massal.) Vězda – Loc. 1, 5, 9, 23, 29, 30, 41, 44, 49, 51, 61, 62, 70, 72, 81, 82, 85, 86, 88, 94, 99, 100, 101, 102, 105, 109, 110, 118, 119, 124, 127, 132: on calcareous rocks.

Bagliettoa marmorea (Scop.) Gueidan & Cl. Roux – Loc. 30, 41, 61, 81, 82, 85, 86, 88, 93, 94, 99, 100, 101, 113, 118, 110: on calcareous rocks.

Bellemerea cupreoatra (Nyl.) Clauzade & Roux – Loc. 17, 22, 28, 30, 43, 47, 75, 85, 86, 88, 102, 103, 105, 107, 121, 122, 125: on siliceous rocks.

Bellemerea sanguinea (Kremp.) Hafellner & Cl. Roux – Loc. 5: on siliceous rock.

Bilimbia sabuletorum (Schreb.) Arnold – Loc. 118: on mosses.

Blastenia ferruginea (Huds.) A. Massal. – Loc. 51, 131, 132: on *Quercus* sp.

Blennothallia crispa (Huds.) Otálora, P.M. Jørg. & Wedin – Loc. 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 21, 23, 27, 29, 30, 34, 38, 39, 41, 46, 54, 55, 57, 59, 60, 62, 67, 68, 80, 85, 86, 91, 92, 108, 118, 119, 128: on calcareous rocks.

Bryobilimbia sanguineoatra (Wulfen) Fryday, Printzen & S. Ekman – Loc. 23: on mosses.

+*Bryostigma epiphyscium* (Nyl.) S.Y. Kondr. & Hur – Loc. 28: on *Physcia dubia*.

Bryostigma lapidicola (Taylor) S.Y. Kondr. & Hur – Loc. 49, 54, 61, 67, 79, 88, 89, 91, 94, 99, 107, 122, 118, 119, 131, 133: on calcareous rocks.

+*Bryostigma phaeophysciae* (Grube & Matzer) S.Y. Kondr. & Hur – Loc. 31: on *Phaeophyscia orbicularis*.

Buellia aethalea (Ach.) Th. Fr. – Loc. 13, 16, 61, 121, 122, 123: on siliceous rocks.

Buellia badia (Fr.) A. Massal. – Loc. 48, 70, 71, 73, 76, 77, 79, 88, 89, 90, 91, 92, 99, 110: on siliceous rocks.

Buellia epigaea (Hoffm.) Tuck. – Loc. 51: on soil.
-#*Buellia imshaugii* Hafellner – Loc. 75: on *Aspicilia* sp.

#*Buellia ocellata* (Flörke ex Flot.) Körb. – Loc. 70, 79, 93, 121: on siliceous rocks.

Buellia stellulata (Taylor) Mudd – Loc. 121: on siliceous rock.

Calogaya biatorina (A. Massal.) Arup, Frödén & Søchting – Loc. 54, 71, 108: on calcareous rocks.

Calogaya decipiens (Arnold) Arup, Frödén & Søchting – Loc. 8, 15, 21, 27, 55, 61, 79, 85, 86, 92, 94, 96, 118: on calcareous rocks.

Calogaya saxicola (Hoffm.) Vondrák – Loc. 8, 9, 14, 26, 21, 27, 29, 30, 41, 43, 48, 57, 66, 67, 70, 71, 76, 78, 79, 80, 85, 86, 88, 89, 90, 91, 92, 99, 108, 113, 120, 121, 122, 123, 125, 126, 127: on calcareous rocks.

Calogaya schistidii (Anzi) Arup, Frödén & Søchting – Loc. 5, 34, 63, 64, 67, 118, 119: on mosses.

Caloplaca agardhiana (Flot.) Flagey – Loc. 30, 51, 54, 55, 62, 63, 103, 108, 129: on calcareous rocks.

Caloplaca albopruinosa (Arnold) H. Olivier – Loc. 19, 20, 37, 39, 54, 55, 57, 62, 63, 64, 108: on calcareous rocks.

Caloplaca areolata (Zahlbr.) Clauzade – Loc. 104, 105: on siliceous rocks.

Caloplaca ceracea J.R. Laundon – Loc. 17, 28, 29, 30, 46, 63, 64, 65, 67, 71, 73, 74, 75, 79, 80, 90, 91, 123: on calcareous rocks.

Caloplaca cerina (Hedw.) Th. Fr. – Loc. 5, 8, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 27, 29, 30, 34, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 52, 53, 54, 56, 57, 58, 59, 60, 62, 65, 68, 73, 75, 78, 90, 91, 103, 104, 113, 118, 119, 120, 122, 125, 127, 128: on *Quercus* sp., 1, 33: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 28: on *Fraxinus* sp. and *Quercus* sp., 31: on *Fraxinus* sp. and *Juglans* sp., 67, 71, 79, 107, 121: on mosses, 77: on *Crataegus* sp., 102: on *Alnus glutinosa*, 105, 126: on *Quercus* sp. and mosses, 123: on *Quercus* sp. and *Fraxinus* sp.

Caloplaca chlorina (Flot.) Sandst. – Loc. 16, 132: on siliceous rocks.

Caloplaca conglomerata (Bagl.) Jatta – Loc. 79: on

calcareous rock.

Caloplaca herbidella (Arnold) H. Magn. – Loc. 18, 57: on *Quercus* sp.

Caloplaca lactea (A. Massal.) Zahlbr. – Loc. 1, 2, 30, 32, 37, 39, 41, 49, 52, 56, 57, 62, 79, 91, 104, 105, 118, 122, 123, 133: on calcareous rocks.

Caloplaca obscurella (J. Lahm.) Th. Fr. – Loc. 43, 123: on siliceous rocks.

Caloplaca ochracea (Schaer.) Flagey – Loc. 3: on calcareous rock.

Caloplaca pellodella (Nyl.) Hasse – Loc. 41, 44: on siliceous rocks.

#*Caloplaca soralifera* Vondrák & Hrouzek – Loc. 121: on calcareous rock.

Caloplaca sororicida M. Steiner & Poelt – Loc. 8, 57: on calcareous rocks.

Caloplaca teicholyta (Ach.) J. Steiner – Loc. 3: on calcareous rock.

Caloplaca viridirufa (Ach.) Zahlbr. – Loc. 3: on siliceous rock.

Caloplaca xerica Poelt & Vězda – Loc. 91: on siliceous rock.

#*Candelariella antennaria* Räsänen – Loc. 2, 3, 5, 8, 9, 11, 12, 14, 15, 17, 18, 19, 20, 21, 23, 27, 28, 29, 30, 32, 34, 35, 36, 37, 38, 39, 41, 42, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 59, 60, 61, 62, 70, 75, 78, 80, 85, 86, 88, 90, 94, 96, 99, 104, 105, 107, 109, 110, 112, 113, 114, 115, 116, 117, 118, 119, 126, 127, 128, 130, 131, 132, 133: on *Quercus* sp., 1: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 31: on *Fraxinus* sp., *Juglans* sp., 33: on *Juglans* sp. and *Quercus* sp., 77: on *Crataegus* sp., 123: on *Quercus* sp. and *Fraxinus* sp.

Candelariella aurella (Hoffm.) Zahlbr. – Loc. 1, 2, 4, 5, 6, 8, 9, 11, 14, 15, 17, 21, 26, 27, 28, 29, 30, 34, 36, 37, 38, 39, 41, 42, 43, 44, 48, 52, 53, 54, 56, 57, 59, 60, 61, 62, 63, 66, 68, 70, 72, 74, 75, 76, 77, 79, 80, 82, 88, 90, 91, 92, 94, 99, 102, 103, 104, 107, 108, 113, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 131, 132: on calcareous rocks.

Candelariella coralliza (Nyl.) H. Magn. – Loc. 3, 23, 128: on siliceous rocks.

#*Candelariella kuusamoensis* Räsänen – Loc. 12, 57, 61, 71, 72: on mosses.

Candelariella oleaginescens Rondon – Loc. 1, 39, 55, 57, 78, 80, 108: on calcareous rocks.

Candelariella reflexa (Nyl.) Lettau – Loc. 3, 23, 29, 30, 33, 43, 45, 88, 89, 98, 104, 105, 107, 114, 115, 119, 128, 130: on *Quercus* sp.

Candelariella vitellina (Hoffm.) Müll. Arg. – Loc. 1, 5, 13, 14, 15, 16, 17, 19, 22, 21, 24, 25, 27, 28, 29, 30, 37, 39, 41, 43, 44, 45, 46, 47, 48, 49, 56, 57, 61, 62, 63, 64, 65, 66, 67, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 88, 89, 90, 91, 92, 94, 96, 99, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 117, 118, 120, 121, 122, 123, 125, 126, 127, 131, 133: on siliceous rocks.

Candelariella xanthostigma (Pers. ex Ach.) Lettau – Loc. 18, 19, 20, 33, 102, 103, 105, 107, 116, 132: on *Quercus* sp.

+*Carbonea vitellinaria* (Nyl.) Hertel – Loc. 22, 56, 67, 91, 121: on *Candelariella vitellina*.

Carbonea vorticosa (Flörke) Hertel – Loc. 43, 47, 65, 89, 133: on siliceous rocks.

Catapyrenium squamulosum (Ach.) Breuss – Loc. 5, 41, 54, 72, 81, 82, 85, 86, 89, 91, 108, 125, 126: on mosses.

+*Cercidospora macrospora* (Uloth) Hafellner & Nav.-Ros. – Loc. 41, 71: on *Protoparmeliopsis muralis*.

Circinaria caesiocinerea (Nyl. ex Malbr.) A. Nordin, Savić & Tibell – Loc. 5, 8, 16, 22, 28, 30, 43, 44, 45, 65, 73, 74, 75, 76, 77, 78, 89, 90, 91, 92, 103, 105, 107, 108, 121, 122, 123, 125, 126: on siliceous rocks.

Circinaria calcarea (L.) A. Nordin, Savić & Tibell – Loc. 1, 2, 5, 8, 9, 12, 16, 21, 26, 27, 35, 37, 39, 41, 46, 49, 53, 54, 55, 56, 57, 58, 59, 60, 62, 63, 64, 68, 72, 79, 80, 81, 85, 86, 87, 91, 92, 94, 100, 101, 103, 108, 110, 111, 118, 119, 120, 122, 123, 124, 126, 133: on calcareous rocks.

Circinaria contorta (Hoffm.) A. Nordin, Savić & Tibell – Loc. 1, 2, 4, 5, 6, 8, 9, 13, 14, 15, 16, 21, 25, 27, 28, 29, 34, 37, 39, 41, 45, 46, 47, 48, 49, 56, 57, 59, 60, 61, 62, 63, 64, 66, 68, 70, 74, 75, 79, 80, 85, 86, 88, 92, 95, 102, 105, 108, 121, 124, 131, 132: on calcareous rocks.

Circinaria hoffmanniana (S. Ekman & Fröberg ex R. Sant.) A. Nordin – Loc. 1, 3, 6, 8, 11, 12, 13, 14, 27, 30, 32, 37, 39, 41, 46, 47, 53, 59, 63, 68, 78, 102, 125, 126: on calcareous rocks.

Cladonia coniocraea (Flörke) Spreng. – Loc. 47: on mosses.

Cladonia pocillum (Ach.) O.J. Rich. – Loc. 11, 120: on mosses.

Cladonia pyxidata (L.) Hoffm. – Loc. 74, 75, 103,

107, 120, 121, 124, 126: on mosses, 125: on soil.

Collema flaccidum (Ach.) Ach. – Loc. 12, 85, 86: on siliceous rocks.

Collema furfuraceum (Schaer.) Du Rietz – Loc. 18, 50, 104, 105: on *Quercus* sp.

Collema subflaccidum Degel. – Loc. 12: on *Alnus* sp., 18, 33, 104, 107, 113, 114, 131: on *Quercus* sp.

Dermatocarpon intestiniforme (Körb.) Hasse – Loc. 22, 30, 32, 56, 74, 75, 94, 105, 106, 122, 123: on calcareous rocks.

Dermatocarpon miniatum (L.) Mann – Loc. 11, 21, 22, 27, 34, 39, 54, 55, 66, 102, 108, 109, 118, 121, 125: on calcareous rocks.

#*Dermatocarpon miniatum* (L.) W. Mann var. *circosodes* (Ach.) Zahlbr. – Loc. 102: on calcareous rock

Dimelaena oreina (Ach.) Norman – Loc. 1, 44, 61, 120, 122, 126, 133: on siliceous rocks.

Diploschistes caesioplumbeus (Nyl.) Vain. – Loc. 85, 100, 101: on siliceous rocks.

Diploschistes gypsaceus (Ach.) Zahlbr. – Loc. 34: on calcareous rock.

Diploschistes scruposus (Schreb.) Norman – Loc. 11, 14, 17, 24, 26, 28, 30, 34, 45, 70, 71, 75, 85, 86, 89, 90, 91, 103, 110, 118, 119, 121, 122, 123, 125, 126: on siliceous rocks.

Diplotomma alboatrum (Hoffm.) Flot. – Loc. 74, 79: on calcareous rocks.

Diplotomma chlorophaeum (Hepp ex Leight.) Kr.P. Singh & S.R. Singh – Loc. 79: on calcareous rock.

Diplotomma epipolium (Ach.) Arnold – Loc. 3, 9, 16, 30, 41, 48, 57, 61, 62, 63, 64, 67, 75, 76, 79, 80, 83, 84, 89, 90, 91, 92, 105, 108, 122, 124, 125, 126: on calcareous rocks.

Diplotomma venustum (Körb.) Körb. – Loc. 92: on calcareous rock.

Enchylium limosum (Ach.) Otálora, P.M. Jørg & Wedin – Loc. 62: on soil.

Enchylium polycarpon (Hoffm.) Otálora, P.M. Jørg & Wedin – Loc. 11, 12, 34, 37, 61, 109: on calcareous rocks.

Enchylium tenax (Sw.) Gray – Loc. 1, 2, 5, 8, 16, 21, 23, 26, 27, 38, 39, 41, 51, 54, 57, 58, 59, 60, 68, 90, 92, 94, 95, 96, 99, 102, 103, 108, 111, 123, 127: on soil.

Endocarpon adscendens (Anzi) Müll. Arg. – Loc. 18: on soil and mosses, 39: on soil.

+*Endococcus macrosporus* (Hepp ex Arnold) Nyl.
– Loc. 58, 67, 71, 75, 121, 125: on *Rhizocarpon geographicum*, 80: on *Rinodina milvina*.

+*Endococcus verrucosus* Hafellner – Loc. 39: on *Aspicilia cinerea*, 44: on *Aspicilia desertorum*, 45, 73: on *Aspicilia cinerea*

Flavoplaca coronata (Kremp. ex Körb.) Arup, Frödén & Söchting – Loc. 9, 39, 63, 72: on calcareous rocks.

Flavoplaca flavocitrina (Nyl.) Arup, Frödén & Söchting – Loc. 121: on calcareous rock.

Gallowayella fulva (Hoffm.) S.Y. Kondr., Fedorenko, S. Stenroos, Kärnefelt, Elix, Hur & A. Thell – Loc. 5, 8, 9, 11, 14, 15, 16, 17, 19, 20, 21, 23, 27, 31, 32, 33, 37, 38, 39, 41, 43, 45, 48, 52, 53, 56, 57, 58, 59, 68, 73, 75, 80, 81, 82, 87, 103, 105, 107, 120, 122, 123, 126, 127, 130: on *Quercus* sp., 1, 34: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 18: on *Alnus glutinosa*, *Quercus* sp. and *Fraxinus* sp., 24: on *Juglans* sp. and *Quercus* sp., 28: on *Fraxinus* sp. and *Quercus* sp., 102: on *Alnus* sp., 104: on *Alnus* sp. and *Quercus* sp., 106: on *Alnus* sp. and *Fraxinus* sp.

Glaucosmaria bicincta (Ramond) S.Y. Kondr., L. Lökös & Farkas – Loc. 3: on siliceous rock.

Glaucosmaria carpinea (L.) S.Y. Kondr., L. Lökös & Farkas – Loc. 9, 11, 12, 33, 34, 41, 45, 51, 59, 60, 116, 128: on *Quercus* sp., 104: on *Alnus glutinosa*.

Glaucosmaria swartzii (Ach.) S.Y. Kondr., L. Lökös & Farkas – Loc. 3, 43: on siliceous rocks.

Gyalolechia bracteata (Hoffm.) A. Massal. – Loc. 3, 26, 34, 110, 111, 124: on mosses.

Gyalolechia fulgida (Nyl.) Söchting, Frödén & Arup – Loc. 8, 96, 133: on soil.

Gyalolechia scabra (Pers.) Müll. Arg. – Loc. 80, 123: on siliceous rocks.

Gyalolechia flavorubescens (Huds.) Söchting, Frödén & Arup – Loc. 3, 128: on *Quercus* sp.

Gyalolechia flavovirescens (Wulfen) Söchting, Frödén & Arup – Loc. 26, 37: on calcareous rocks.

Gyalolechia fulgens (Sw.) Söchting, Frödén & Arup – Loc. 5, 8, 11, 14, 26, 30, 49, 51, 82, 94, 95, 99, 111, 122, 123, 124: on soil, 13, 29, 34, 35, 57, 61, 72, 81: on mosses.

Gyalolechia subbracteata (Nyl.) Söchting, Frödén & Arup – Loc. 5, 8, 26, 72, 116: on mosses and soil.

Heteroplacidium compactum (A. Massal.) Gueidan

& Cl. Roux – Loc. 39, 46, 59, 66, 73, 80, 81, 82: on siliceous rocks.

Immersaria athroocarpa (Ach.) Rambold & Piet-schm. – Loc. 2, 8, 14, 15, 16, 17, 19, 22, 24, 25, 28, 29, 30, 41, 43, 44, 47, 48, 56, 61, 63, 64, 65, 67, 70, 71, 73, 74, 75, 76, 77, 78, 79, 80, 83, 84, 85, 88, 89, 90, 91, 93, 94, 102, 103, 104, 105, 106, 107, 110, 112, 113, 117, 118, 119, 120, 121, 122, 125, 126, 127, 131: on siliceous rocks.

#*Immersaria usbekica* (Hertel) M. Barbero, Nav.-Ros. & Cl. Roux – Loc. 14, 89, 90: on siliceous rocks.

Ionaspis lacustris (With.) Lutzoni – Loc. 120: on siliceous rock.

*+*Karschia talcophila* (Ach.) Körb. – Loc. 11: on *Diploschistes scruposus*.

–*Lambiella insularis* (Nyl.) T. Sprib. – Loc. 39, 63, 64, 71, 75, 85, 86, 94, 107, 121, 131: on *Lecanora rupicola*.

Lathagrium auriforme (With) Otálora, P.M. Jørg. & Wedin – Loc. 3, 5, 12, 14, 28, 32, 43, 49, 53, 57, 59, 60, 108, 113, 114, 118, 119, 120, 126, 133: on mosses.

Lathagrium cistatum (L.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 2, 4, 5, 6, 8, 9, 11, 13, 14, 15, 21, 27, 29, 30, 31, 34, 37, 38, 39, 41, 42, 46, 48, 50, 54, 56, 57, 58, 59, 60, 61, 62, 63, 64, 68, 70, 79, 80, 81, 82, 83, 84, 85, 86, 92, 94, 95, 96, 99, 100, 101, 102, 105, 108, 109, 118, 120, 122, 123, 124, 126, 127, 131, 132: on calcareous rocks.

Lathagrium fuscovirens (With.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 5, 8, 27, 37, 38, 39, 41, 46, 55, 57, 59, 60, 68, 73, 80, 102, 103, 108, 122, 123: on calcareous rocks.

Lathagrium undulatum (Laurer ex Flot.) Poetsch – Loc. 122: on calcareous rock.

#*Lathagrium undulatum* (Laurer ex Flot.) var. *granulosum* (Degel.) M. Schultz & McCune – Loc. 2, 8, 14, 27, 38, 46, 59: on calcareous rocks.

Lecania crytella (Ach.) Th. Fr. – Loc. 13: on *Quercus* sp.

Lecania fuscella (Schaer.) A. Massal. – Loc. 9, 41, 48: on *Quercus* sp.

Lecania inundata (Hepp ex Körb.) M. Mayrhofer – Loc. 9: on calcareous rock.

Lecania turicensis (Hepp) Müll. Arg. – Loc. 6: on calcareous rock.

Lecanora argentata (Ach.) Malme – Loc. 11, 34, 45, 49, 128: on *Quercus* sp.

Lecanora argopholis (Ach.) Ach. – Loc. 19, 22, 23,

43, 47, 61, 65, 67, 73, 75, 77, 78, 80, 89, 91, 103, 104, 105, 106, 107, 117, 118, 120, 122, 125, 126, 131: on calcareous rocks

Lecanora caesiosora Poelt – Loc. 86, 91: on siliceous rocks.

Lecanora cenisia Ach. – Loc. 19, 22, 59, 60, 105, 106, 109, 121: on siliceous rocks.

Lecanora chlarotera Nyl. – Loc. 20, 59, 60, 130: on *Quercus* sp., 104: on *Fraxinus* sp.

Lecanora frustulosa (Dicks.) Ach. – Loc. 47, 67, 71, 80, 81, 82, 103, 105, 106, 107, 121, 122: on siliceous rocks.

Lecanora gangaleoides Nyl. – Loc. 85, 86: on siliceous rocks.

Lecanora impudens Degel. – Loc. 19, 20, 32, 102, 107: on *Quercus* sp., 106: on *Fraxinus* sp.

#*Lecanora kjachtensis* J. Steiner – Loc. 41, 103: on calcareous rocks.

Lecanora pannonica Szatala – Loc. 3, 22, 71, 82, 89, 91: on siliceous rocks.

Lecanora polytropa (Ehrh.) Rabenh. – Loc. 19, 22, 23, 29, 30, 35, 51, 63, 64, 65, 67, 85, 86, 96, 105, 106, 107, 109, 110, 121, 133: on siliceous rocks.

Lecanora rupicola (L.) Zahlbr. – Loc. 1, 9, 19, 22, 29, 30, 39, 43, 44, 61, 63, 64, 65, 67, 71, 73, 75, 78, 80, 85, 86, 88, 90, 94, 95, 107, 110, 120, 121, 122, 123, 125, 126, 131: on siliceous rocks,

Lecanora rupicola var. *efflorens* Leuckert & Poelt – Loc. 120: on siliceous rock.

Lecanora subcarnea (Sw.) Ach. – Loc. 22, 107, 121: on siliceous rocks.

Lecidea atrobrunnea (DC.) Schaer. – Loc. 19, 22, 43, 44, 63, 64, 65, 67, 71, 73, 74, 75, 80, 85, 86, 89, 90, 91, 107: on siliceous rocks.

Lecidea fuscoatra (L.) Ach. – Loc. 3, 10, 14, 15, 16, 17, 22, 26, 28, 30, 35, 41, 43, 44, 47, 48, 56, 63, 64, 65, 67, 69, 70, 71, 73, 74, 75, 76, 77, 78, 79, 89, 90, 91, 95, 99, 103, 105, 106, 110, 112, 117, 118, 119, 121, 122, 123, 125, 126, 129, 131: on siliceous rocks.

Lecidea lapicida (Ach.) Ach. – Loc. 29, 65, 81, 82, 88, 94, 95, 103, 106, 109, 112, 117: on siliceous rocks.

Lecidea promiscens Nyl. – Loc. 37: on siliceous rock.

Lecidea sarcogynoides Körb. – Loc. 2, 19, 22, 29, 38, 54, 55, 56, 61, 65, 67, 72, 74, 75, 79, 80, 85, 86, 94, 95, 105, 106, 129: on siliceous rocks.

Lecidea tessellata Flörke – Loc. 79, 88, 126: on si-

liceous rocks.

Lecidella asema (Nyl.) Knoph & Hertel – Loc. 91: on siliceous rock.

Lecidella carpathica (Körb.) Szatala – Loc. 2, 14, 17, 19, 22, 28, 29, 30, 37, 41, 43, 44, 45, 47, 48, 49, 53, 55, 56, 61, 63, 64, 65, 66, 67, 69, 71, 72, 73, 74, 75, 77, 80, 83, 84, 85, 86, 87, 89, 90, 91, 93, 96, 99, 102, 103, 104, 105, 106, 107, 112, 117, 120, 121, 122, 123, 124, 125, 126, 130, 133: on siliceous rocks.

Lecidella elaeochroma (Ach.) M. Choisy – Loc. 5, 9, 11, 12, 19, 20, 39, 45, 51, 52, 53, 57, 59, 80, 94, 104, 105, 107, 115, 118, 119, 122, 126, 130, 131, 132: on *Quercus* sp., 18: on *Alnus glutinosa* and *Quercus* sp., 31: on *Juglans* sp., *Fraxinus* sp. and *Quercus* sp., 32, 33, 34: on *Fraxinus* sp. and *Quercus* sp., 102: on *Alnus glutinosa*, 106: on *Alnus glutinosa* and *Fraxinus* sp., 124: on *Juglans* and *Quercus* sp.

Lecidella euphorea (Flörke) Kremp. – Loc. 3, 51, 104, 115: on *Quercus* sp.

Lecidella stigmatea (Ach.) Hertel & Leuckert – Loc. 9, 21, 22, 23, 26, 27, 29, 30, 32, 44, 51, 55, 56, 57, 75, 81, 82, 87, 90, 91, 94, 99, 100, 104, 105, 122, 123, 124, 125, 133: on calcareous rocks.

Lempholemma polyanthes (Schrad.) Malme – Loc. 59, 60, 126: on mosses.

Lepra aspergilla (Ach.) Hafellner – Loc. 3, 120, 121, 122, 123, 125, 126: on siliceous rocks.

Lepra excludens (Nyl.) Hafellner – Loc. 16, 28, 41, 43, 44, 48, 79, 91, 102, 105, 120, 121, 122, 123, 125, 126: on siliceous rocks.

Lepraria incana (L.) Ach. – Loc. 27, 43, 44, 88, 112, 117, 118, 119, 122, 123: on siliceous rocks.

Lepraria membranacea (Dicks.) Vain. – Loc. 15, 43, 59, 60: on mosses.

Lepraria nivalis J.R. Laundon – Loc. 19, 58, 71, 75, 78, 80, 105, 106, 121, 125, 126: on mosses.

Lepraria vouauxii (Hue) R.C. Harris – Loc. 5, 9, 14, 26, 28, 43, 59, 60, 121, 122: on mosses.

Leproplaca chrysodeta (Vain.) J.R. Laundon ex Ahti – Loc. 9, 25, 26: on calcareous rocks.

Leproplaca xantholyta (Nyl.) Nyl. – Loc. 9: on calcareous rock.

Leptochidium albociliatum (Desm.) M. Choisy – Loc. 43, 44, 85, 86: on mosses.

Leptogium cyanescens (Ach.) Körb. – Loc. 43, 85,

86: on mosses.

Leptogium saturninum (Dicks.) Nyl. – Loc. 102: on *Alnus glutinosa*, 128, 130: on *Quercus* sp.

+*Lichenostigma rouxii* Nav.-Ros., Calat. & Hafellner – Loc. 15, 39: on *Squamarina cartilaginea*.

Lichinella algerica (J. Steiner) P.P. Moreno & Egea – Loc. 8, 54: on siliceous rocks.

Lichinella stipatula Nyl. – Loc. 14, 34, 56, 126: on siliceous rocks.

+*Llimoniella fuscoatrae* Hafellner – Loc. 10: on *Lecidea fuscoatra*.

Lobothallia alphoplaca (Vahlenb.) Hafellner – Loc. 6, 9, 22, 23, 41, 76, 78, 79, 85, 86, 126, 132: on siliceous rocks.

Lobothallia cheresina (Müll. Arg.) A. Nordin, Cl. Roux & Sohrabi – Loc. 1, 39, 55, 118, 122: on calcareous rocks.

Lobothallia farinosa (Flörke) A. Nordin, Savić & Tibell – Loc. 52, 57: on calcareous rocks

Lobothallia praeradiosa (Nyl.) Hafellner – Loc. 17, 22, 51, 70, 76, 89, 99, 123, 126, 131: on siliceous rocks.

Lobothallia radiosa (Hoffm.) Hafellner – Loc. 1, 5, 6, 7, 8, 9, 11, 14, 15, 21, 22, 27, 28, 29, 30, 34, 35, 39, 41, 42, 44, 46, 47, 48, 49, 56, 61, 63, 64, 66, 72, 75, 77, 80, 81, 82, 89, 90, 91, 94, 103, 105, 106, 107, 108, 109, 122, 123, 124, 125, 126, 129, 132, 133: on calcareous rocks.

Lobothallia recedens (Taylor) A. Nordin, Savić & Tibell – Loc. 27, 34, 123: on siliceous rocks.

Megaspora rimisorediata Valadb. & A. Nordin – Loc. 1, 27, 52, 57: on *Quercus* sp.

Megaspora verrucosa (Ach.) Arcadia & A. Nordin – Loc. 9, 18, 33, 34, 45, 53, 57, 104, 105, 107, 121, 125, 126: on *Quercus* sp., 34: *Fraxinus* sp., 120, 121, 126: on mosses.

Melanelixia glabra (Schaer.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 3, 5, 11, 12, 14, 16, 17, 19, 20, 23, 24, 25, 29, 30, 32, 36, 41, 45, 49, 57, 59, 60, 61, 81, 82, 83, 84, 85, 86, 93, 98, 99, 104, 105, 107, 112, 113, 114, 115, 117, 118, 119, 122, 124, 127, 128, 131: on *Quercus* sp., 18, 102: on *Alnus glutinosa*, and *Quercus* sp., 28, 34: on *Fraxinus* sp. and *Quercus* sp., 31, 33: on *Fraxinus* sp. *Juglans* sp. and *Quercus* sp.

Melanelixia subargentifera (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 12, 19, 20, 28, 34, 102, 104, 105, 107, 126: on *Quercus* sp.

Melanelixia subaurifera (Nyl.) O. Blanco, A. Cres-

po, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 12, 29, 30, 50, 51, 61, 62, 81, 82, 88, 94, 99, 114, 116, 118, 119, 128, 129, 132, 133: on *Quercus* sp., 102: on *Alnus glutinosa*, 104: on *Alnus glutinosa* and *Quercus* sp.

Melanohalea elegantula (Zahlbr.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 22, 41, 46, 47, 48, 66, 67, 73, 74, 75, 90, 91, 103, 114, 121, 122, 123, 125, 126, 130: on *Quercus* sp.

Melanohalea exasperata (De Not.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 3, 5, 9, 11, 12, 14, 15, 17, 19, 28, 29, 30, 34, 35, 36, 37, 39, 41, 43, 45, 47, 48, 49, 50, 52, 53, 54, 56, 57, 59, 60, 62, 69, 70, 75, 78, 80, 83, 84, 85, 86, 93, 94, 95, 99, 104, 105, 110, 112, 113, 114, 116, 117, 122, 123, 126, 127, 128: on *Quercus* sp., 23, 28: on *Fraxinus* sp. and *Quercus* sp., 102: on *Alnus glutinosa*.

Melanohalea exasperatula (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 47, 104, 107, 130, 132: on *Quercus* sp.

Melanohalea infumata (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch – Loc. 5, 9, 14, 15, 23, 29, 30, 36, 37, 41, 43, 44, 45, 46, 47, 48, 52, 54, 65, 67, 71, 73, 74, 75, 77, 79, 80, 89, 90, 91, 94, 96, 107, 114, 115, 118, 119, 121, 123, 125, 126, 130, 131: on *Quercus* sp., 78, 122: on calcareous rocks.

Menegazzia terebrata (Hoffm.) A. Massal. – Loc. 104: on *Fraxinus* sp.

Miriquidica deusta (Stenh.) Hertel & Rambold – Loc. 3, 15, 16, 19, 22, 71, 74, 75, 79: on siliceous rocks.

Mischoblastia lecanorina A. Massal. – Loc. 1, 2, 5, 8, 9, 11, 15, 21, 27, 30, 34, 39, 57, 58, 63, 64, 65, 67, 72, 75, 80, 92, 105, 108, 129: on calcareous rocks.

Montanelia sorediata (Ach.) Divakar, A. Crespo, Wedin & Essl. – Loc. 44: on siliceous rock.

+*Muellerella erratica* (A. Massal.) Hafellner & Volk. John – Loc. 102: on *Lecidella* sp.

+*Muellerella pygmaea* (Körb.) D. Hawksw. – Loc. 67: on *Rhizocarpon geographicum*, 71, 74, 75, 90: on *Immersaria athrocarpa*, 91: on *Lecidea fuscoatra*.

+*Muellerella ventosicola* (Mudd) D. Hawksw. – Loc. 120, 122: on *Rhizocarpon geographicum*.

Myriolecis crenulata (Ach.) Śliwa, Zhao Xin & Lumbsch – Loc. 1, 2, 3, 5, 9, 29, 30, 35, 37, 38, 39, 40, 41, 48, 49, 51, 54, 57, 62, 63, 64, 65, 76, 79, 80, 85, 86, 92, 93, 94, 96, 108, 118, 119, 121, 123, 131, 132, 133: on

calcareous rocks.

Normandina pulchella (Borrer) Nyl. – Loc. 23, 130: on mosses.

Ochrolechia pallescens (L.) A. Massal. – Loc. 34: on *Quercus* sp.

Ochrolechia parella (L.) A. Massal. – Loc. 28: on siliceous rock.

Ochrolechia subviridis (Høeg) Erichsen – Loc. 28: on siliceous rock.

Omphalodina chrysoleuca (Sm.) S.Y. Kondr., L. Lökös & Farkas – Loc. 46: on siliceous rock.

Oxneria fallax (Arnold) S.Y. Kondr. & Kärnefelt – Loc. 3, 5, 9, 11, 12, 14, 15, 17, 21, 23, 26, 27, 29, 30, 35, 36, 37, 38, 39, 40, 41, 45, 46, 47, 48, 53, 56, 57, 58, 59, 60, 62, 68, 69, 70, 73, 75, 77, 78, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 93, 95, 96, 101, 104, 105, 109, 110, 112, 113, 114, 115, 116, 117, 120, 122, 126, 127, 128, 132: on *Quercus* sp., 1: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 18: on *Alnus glutinosa* and *Quercus* sp., 28: on *Fraxinus* sp. and *Quercus* sp., 31: on *Fraxinus* sp. and *Juglans* sp., 32: on *Fraxinus* sp., 33: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 34: on *Fraxinus* sp. and *Quercus* sp., 123: on *Fraxinus* sp. and *Quercus* sp., 124: on *Juglans* sp. and *Quercus* sp.

Parvoplaca tirolensis (Zahlbr.) Arup, Søchting & Frödén – Loc. 67, 75, 133: on mosses.

Parmelia sulcata Taylor – Loc. 20: on *Quercus* sp., 107: on *Alnus glutinosa* and *Quercus* sp.

Parmelina tiliacea (Hoffm.) Ach. – Loc. 20, 34, 45, 46, 59, 71, 75, 80, 89, 91, 107, 122, 123, 127, 130: on *Quercus* sp., 18: on *Alnus glutinosa* and *Quercus* sp., 31: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 43: on mosses and *Quercus* sp., 102: on *Alnus glutinosa*, 121, 126: calcareous rock and mosses.

Peltigera canina (L.) Willd. – Loc. 43, 50, 112, 113: on mosses.

Peltigera horizontalis (Huds.) Baumg. – Loc. 45, 75, 117: on mosses.

Peltigera malacea (A) Funck – Loc. 45: on mosses.

Peltigera neckeri Hepp ex Müll. Arg. – Loc. 127: on mosses.

Peltigera neopolydactyla (Gyeln.) Gyeln. – Loc. 45: on mosses.

Peltigera ponojensis Gyeln. – Loc. 43: on mosses.

Peltigera praetextata (Flörke ex Sommerf.) Zopf –

Loc. 51, 81, 82, 94, 114, 126, 133, 117: on mosses.

Peltigera rufescens (Weiss) Humb. – Loc. 5, 43, 45, 75, 81, 82, 99, 121, 125, 126, 133: on mosses.

#*Pertusaria chiodectonoides* Bagl. ex A. Massal. – Loc. 28, 71, 121: on calcareous rocks.

Pertusaria flavicans Lamy – Loc. 15: on siliceous rock.
+*Phacographa glaucomaria* (Nyl.) Hafellner – Loc. 43: on *Lecanora rupicola*.

Phaeophyscia ciliata (Hoffm.) Moberg – Loc. 41: on *Quercus* sp.

Phaeophyscia endococcina (Körb.) Moberg – Loc. 28, 32, 41, 74, 75, 78, 105, 121, 126: on calcareous rocks.

#*Phaeophyscia hispidula* (Ach.) Essl. – Loc. 103: on calcareous rock.

Phaeophyscia nigricans (Flörke) Moberg – Loc. 90: *Quercus* sp., 105: on calcareous rock.

Phaeophyscia orbicularis (Neck.) Moberg – Loc. 3, 5, 8, 9, 11, 14, 15, 16, 17, 21, 23, 26, 27, 29, 30, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 53, 54, 56, 58, 59, 60, 62, 68, 73, 75, 78, 80, 87, 90, 93, 97, 98, 101, 102, 103, 104, 105, 107, 108, 109, 110, 111, 112, 114, 115, 116, 117, 118, 119, 120, 122, 126, 127, 128: on *Quercus* sp., 12: on *Fraxinus* sp. and *Juglans* sp., 18, 19, 20: *Alnus glutinosa*, *Fraxinus* sp. and *Quercus* sp., 1, 31, 32, 33: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 28, 34, 57, 123: on *Fraxinus* sp. and *Quercus* sp., 77: on *Crataegus* sp., 106: on *Alnus glutinosa* and *Fraxinus* sp.

Phaeophyscia sciastra (Ach.) Moberg – Loc. 26, 34, 126: on calcareous rock.

Physcia adscendens H. Olivier – Loc. 2, 5, 8, 9, 15, 16, 19, 20, 21, 27, 36, 37, 41, 45, 48, 52, 53, 57, 59, 68, 73, 75, 105, 122, 126, 130: on *Quercus* sp., 1: on *Fraxinus* sp. *Juglans* sp. and *Quercus* sp., 12, 31, 33: on *Fraxinus* sp. and *Juglans* sp., 18: on *Alnus glutinosa* and *Quercus* sp., 34, 123: on *Fraxinus* sp. and *Quercus* sp., 102: on *Alnus glutinosa*, 106: on *Alnus glutinosa* and *Fraxinus* sp., 124: on *Juglans* sp. and *Quercus* sp.

Physcia albinea (Ach.) Malbr. – Loc. 65, 67, 80: on siliceous rocks.

Physcia aipolia (Ehrh. ex Humb.) Fűrnr. – Loc. 3, 5, 8, 9, 11, 12, 14, 15, 16, 17, 20, 21, 23, 26, 27, 29, 30, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 48, 49, 50, 51, 52, 53, 56, 57, 58, 59, 60, 61, 62, 70, 75, 78, 80, 83, 84, 87, 88, 90, 93, 94, 95, 96, 97, 98, 99, 101, 104, 105, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 122,

126, 127, 128, 130, 131, 132, 133: on *Quercus* sp., 1: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 18: on *Alnus glutinosa* and *Quercus* sp., 31: on *Fraxinus* sp. and *Juglans* sp., 28, 34, 123: *Fraxinus* sp. and *Quercus* sp., 102: on *Alnus glutinosa*, 124: on *Juglans* sp.

Physcia biziana (A. Massal.) Zahlbr. – Loc. 3, 5, 9, 11, 24, 25, 34, 36, 37, 41, 45, 46, 47, 48, 49, 50, 53, 54, 56, 57, 59, 62, 67, 69, 75, 78, 80, 81, 82, 83, 84, 87, 90, 97, 114, 116, 120, 122, 124, 126, 127, 129, 132: *Quercus* sp., 28, 123: on *Fraxinus* sp. and *Quercus* sp., 77: on *Crataegus* sp.

Physcia caesia (Hoffm.) Fürnr. – Loc. 43, 44, 48, 63, 64, 67, 71, 73, 75, 89, 90, 91, 100, 101, 105, 121, 122, 123, 125, 126: on siliceous rocks.

Physcia cernohorskyi Nádv. – Loc. 35, 50, 79, 80, 105, 106, 122, 123, 126, 133: on mosses.

Physcia dimidiata (Arnold) Nyl. – Loc. 27: on *Quercus* sp.

Physcia dubia (Hoffm.) Lettau – Loc. 8, 19, 22, 29, 30, 41, 43, 44, 47, 48, 50, 57, 63, 64, 65, 67, 69, 71, 73, 74, 75, 76, 77, 78, 79, 80, 87, 89, 90, 91, 103, 106, 107, 108, 109, 117, 121, 122, 123, 125, 126, 129: on siliceous rocks, 20, 27, 28, 45, 46, 105: on *Quercus* sp., 102, 104: *Alnus glutinosa*.

Physcia leptalea (Ach.) DC. – Loc. 126: on mosses.

Physcia stellaris (L.) Nyl. – Loc. 9, 14, 45, 47, 124: on *Quercus* sp.

Physcia tenella (Scop.) DC. – Loc. 9, 20, 33, 37, 41, 45, 46, 58, 68, 114: on *Quercus* sp., 18: on *Alnus glutinosa* and *Quercus* sp., 31: on *Fraxinus* sp. and *Juglans* sp., 34: on *Fraxinus* sp. and *Quercus* sp., 102: on *Alnus glutinosa*.

Physcia tribacia (Ach.) Nyl. – Loc. 8, 27, 90, 91, 121, 122, 123, 126: on siliceous rocks.

Physconia detersa (Nyl.) Poelt – Loc. 8: on *Quercus* sp., 77: on *Crataegus* sp., 102: on *Alnus glutinosa*, mosses and *Quercus* sp., 104: on mosses and *Quercus* sp., 106: on *Alnus glutinosa* and *Fraxinus* sp., 107, 122, 126, 133: on mosses.

Physconia distorta (With) J.R. Laundon – Loc. 5, 8, 9, 14, 15, 16, 21, 23, 24, 25, 26, 27, 29, 30, 35, 36, 37, 38, 39, 40, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 56, 57, 58, 59, 60, 61, 68, 69, 70, 78, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 93, 94, 95, 97, 98, 101, 103, 105, 107, 109, 110, 111, 112, 113, 114, 115, 116, 117, 120, 121, 122, 123, 127, 129, 130, 131, 132: on *Quercus* sp., 1, 33: on

Fraxinus sp., *Juglans* sp. and *Quercus* sp., 12: on *Fraxinus* sp. and *Juglans* sp., 17, 18, 19, 20: *Alnus glutinosa*, *Fraxinus* sp. and *Quercus* sp., 28, 34: *Fraxinus* sp. and *Quercus* sp., 31: on *Fraxinus* sp. and *Juglans* sp., 102: on *Alnus glutinosa* and *Quercus* sp., 104: on *Alnus glutinosa*, 106: on *Alnus glutinosa* and *Fraxinus* sp., 124: on *Juglans* sp.

Physconia enteroxantha (Nyl.) Poelt – Loc. 11, 37, 71, 104, 122, 123, 126: on *Quercus* sp., 34: on mosses and *Quercus* sp., 77: *Crataegus* sp., 102: on *Alnus glutinosa*, 44, 75, 121: on mosses.

Physconia grisea (Lam.) Poelt – Loc. 19, 43, 77, 91, 103, 107, 114, 122, 126: on mosses, 34, 71, 89, 102: on *Quercus* sp.

Physconia muscigena (Ach.) Poelt – Loc. 24, 25, 33, 41, 43, 45, 59, 60, 73, 89, 90, 107, 113, 114, 121, 122, 126: on mosses.

Physconia perisidiosa (Erichsen) Moberg – Loc. 34, 43, 50, 59, 71, 83, 89, 103, 105, 107, 114, 120, 121, 122, 126, 133: on *Quercus* sp., 33: on *Fraxinus* sp. and *Juglans* sp., 104: on *Alnus glutinosa*, mosses and *Quercus* sp., 123, 125: on mosses.

Pisutiella grimmiae (Nyl.) S.Y. Kondr., Lökös & Farkas – Loc. 30, 47, 61, 73, 75, 77, 80, 83, 84, 89, 94, 109: on *Candelariella vitellina*.

Placocarpus schaeereri (Fr.) Breuss – Loc. 1, 8, 14, 15, 21, 27, 29, 30, 39, 61, 71, 80, 95, 99, 109, 110: on calcareous rocks.

Placopyrenium bucekii (Nádv. & Servit) Breuss – Loc. 5, 61, 69, 108, 117: on siliceous rocks.

Placopyrenium iranicum Breuss – Loc. 9, 77, 89, 121: on siliceous rocks.

Placopyrenium trachyticum (Hazsl.) Breuss – Loc. 1, 8, 15, 26, 34, 35, 37, 39, 41, 54, 56, 57, 59, 62, 63, 66, 68, 91, 92, 94, 95, 102, 103, 108, 122, 124: on siliceous rocks.

Placynthium asperellum (Ach.) Trevis. – Loc. 41: on siliceous rock.

Placynthium garovaglii (A. Massal.) Malme – Loc. 8, 34, 39, 63, 122, 123: on calcareous rocks.

Placynthium hungaricum Gyeln. – Loc. 8, 34, 39, 46, 62, 64, 122, 123: on calcareous rocks.

Placynthium lismoreense (Cromb.) Vain. – Loc. 56, 57: on calcareous rocks.

Placynthium nigrum (Huds.) Gray – Loc. 1, 4, 5, 6, 7, 8, 9, 11, 14, 15, 21, 23, 26, 27, 34, 35, 37, 38, 39, 40,

41, 46, 54, 56, 57, 58, 61, 62, 63, 64, 67, 68, 72, 80, 90, 91, 93, 105, 108, 117, 122, 123, 124, 129: on calcareous rocks.

Placynthium posterulum (Nyl.) Henssen – Loc. 38, 39, 46: on calcareous rock.

Placynthium stenophyllum (Tuck.) Fink var. *isidiatum* Henssen – Loc. 14: on calcareous rock.

Placynthium subradiatum (Nyl.) Arnold – Loc. 14, 41, 46: on calcareous rocks.

Pleurosticta acetabulum (Neck.) Elix & Lumbsch – Loc. 85: on *Quercus* sp.

Polyblastia cupularis A. Massal. – Loc. 8, 64: on calcareous rock.

Polyblastia dermatodes A. Massal. – Loc. 64: on calcareous rock.

+*Polycoccum evae* Calat. & V.J. Rico – Loc. 120, 126: on *Dimelaena oreina*.

Polyzozia albescens (Hoffm.) S.Y. Kondr., L. Lökös & Farkas – Loc. 1, 5, 26, 39, 41, 44, 48, 54, 59, 62, 63, 64, 68, 72, 75, 79, 90, 91: on calcareous rocks.

Polyzozia dispersa (Pers.) S.Y. Kondr., L. Lökös & Farkas – Loc. 12: on *Fraxinus* sp. and *Juglans* sp., 28: on siliceous rock, *Fraxinus* sp. and *Quercus* sp., 33: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 34: on *Fraxinus* sp. and *Quercus* sp., 32, 47: on siliceous rock and *Quercus* sp., 5, 52: on calcareous rock and *Quercus* sp., 123: on *Fraxinus* sp., *Quercus* sp. and siliceous rock, 105: on *Quercus* sp., 1, 6, 7, 9, 13, 14, 16, 26, 35, 37, 39, 41, 44, 48, 54, 58, 63, 66, 68, 72, 80, 90, 92, 104, 107, 121, 122, 124: on calcareous rocks, 2, 8, 15, 19, 27, 43, 45, 46, 67, 53, 55, 56, 57, 59, 60, 62, 64, 75, 76, 79, 89, 91, 102, 103, 108, 114, 120, 125, 126: on siliceous rocks.

Polyzozia flowersiana (H. Magn.) S.Y. Kondr., Lökös & Farkas – Loc. 92: on calcareous rock.

Polyzozia hagenii (Ach.) S.Y. Kondr., L. Lökös & Farkas – Loc. 2, 3, 5, 8, 9, 11, 12, 14, 15, 17, 19, 20, 21, 23, 24, 25, 26, 27, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 47, 48, 49, 50, 52, 53, 54, 56, 57, 58, 59, 60, 62, 63, 66, 68, 69, 75, 77, 78, 80, 83, 84, 87, 90, 92, 93, 94, 95, 97, 98, 99, 101, 102, 103, 104, 105, 107, 109, 110, 111, 112, 113, 114, 115, 117, 118, 119, 120, 121, 122, 124, 126, 128, 129: on calcareous rocks, 1: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 18: on *Alnus glutinosa* and *Quercus* sp., 28: on *Fraxinus* sp. and *Quercus* sp., 31, 33, 34, 123: on *Fraxinus* sp. and *Quercus* sp., 32: *Fraxi-*

nus sp., 61: on calcareous rock and *Quercus* sp.

Polyzozia invadens (H. Magn.) S.Y. Kondr., L. Lökös & Farkas – Loc. 13, 16, 41, 125: on soil.

Polyzozia persimilis (Th. Fr.) S.Y. Kondr., L. Lökös & Farkas – Loc. 5, 8, 32, 37, 41, 43, 54, 105, 127, 130: on *Quercus* sp.

Polyzozia percrenata (H. Magn.) S.Y. Kondr., Lökös & Farkas – Loc. 23: on calcareous rock

Polyzozia semipallida (H. Magn.) S.Y. Kondr., L. Lökös & Farkas – Loc. 1, 4, 5, 6, 8, 9, 13, 15, 16, 26, 28, 29, 30, 32, 35, 37, 39, 48, 54, 55, 56, 57, 62, 63, 64, 65, 66, 67, 68, 76, 79, 80, 87, 91, 95, 103, 105, 108, 109, 120, 121, 122, 125, 126: on calcareous rocks.

-*Polysporina subfuscescens* (Nyl.) K. Knudsen & Kocourk. – Loc. 73: on *Immersaria athrocarpa*, 90, 91: on *Lecidea fuscoatra*.

Protoblastenia incrustans (DC.) J. Steiner – Loc. 69: on calcareous rock.

Protoblastenia rupestris (Scop.) J. Steiner – Loc. 29, 30, 69, 111: on calcareous rocks.

#*Protoparmelia atriseda* (Fr.) R.Sant. & V. Wirth – Loc. 80, 120: on siliceous rocks.

Protoparmelia badia (Hoffm.) Hafellner – Loc. 85: on calcareous rock.

Protoparmeliopsis bolcana (Pollini) Lumbsch – Loc. 1, 5, 8, 15, 16, 17, 19, 22, 26, 28, 29, 30, 35, 39, 41, 43, 44, 45, 46, 47, 48, 56, 65, 67, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 82, 88, 89, 90, 91, 93, 94, 95, 96, 100, 101, 103, 104, 105, 107, 110, 112, 113, 117, 118, 120, 121, 122, 123, 125, 126, 129, 131: on siliceous rocks.

Protoparmeliopsis garovaglii (Körb.) Arup, Zhao Xin & Lumbsch – Loc. 14, 15, 16, 24, 25, 35, 43, 47, 63, 64, 65, 73, 75, 76, 77, 79, 89, 90, 91, 95, 103, 105, 109, 117, 118, 121, 122, 123, 125, 126: on siliceous rocks.

Protoparmeliopsis klauskalbii (Sipman) Şenkard. – Loc. 1, 2, 3, 5, 6, 8, 9, 13, 14, 15, 22, 26, 27, 41, 50, 72, 82, 87, 90, 131: on siliceous rocks.

Protoparmeliopsis laatokkensis (Räsänen) Moberg & R. Sant. – Loc. 67, 73, 78, 122: on siliceous rocks.

Protoparmeliopsis macrocyclos (H. Magn.) Moberg & R. Sant. – Loc. 69, 71, 73, 77, 80, 89, 90, 91: on siliceous rocks.

Protoparmeliopsis muralis (Schreb.) M. Choisy – Loc. 1, 2, 5, 6, 8, 9, 14, 15, 16, 17, 19, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 37, 39, 41, 42, 43, 44, 47, 48, 49, 52, 53,

55, 56, 57, 58, 59, 60, 61, 63, 64, 65, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 88, 89, 90, 91, 92, 93, 94, 95, 96, 100, 101, 102, 103, 104, 105, 107, 108, 110, 112, 113, 117, 118, 119, 120, 121, 122, 123, 125, 126, 129: on calcareous rocks.

Protoparmeliopsis peltata (Ramond) Arup, Zhao Xin & Lumbsch – Loc. 19, 22, 26, 28, 43, 47, 63, 64, 65, 67, 71, 73, 75, 77, 78, 79, 80, 89, 90, 91, 103, 105, 106, 107, 121, 122, 123, 125: on siliceous rocks.

Pseudoleptogium diffractum (Kremp.) Müll. Arg. – Loc. 8, 13, 14, 37, 39: on calcareous rocks.

Psora decipiens (Hedw.) Hoffm. – Loc. 1, 72, 90, 91: on soil.

Psora globifera (Ach.) A. Massal. – Loc. 59: on soil.

Psora vallesiaca (Schaer.) Timdal – Loc. 5, 8, 11, 14, 15, 34, 46, 57, 67, 81, 82, 120, 125: on soil.

#*Psorotichia murorum* A. Massal. – Loc. 6, 41: on calcareous rocks.

Psorotichia obtenebrans (Nyl.) Forssell – Loc. 6: on calcareous rocks.

Psorotichia schaereri (A. Massal.) Arnold – Loc. 9, 54: on calcareous rocks.

+*Punctelia oxyspora* (Tul.) Divakar, A. Crespo & Lumbsch – Loc. 76, 122: on *Xanthoparmelia tintina*.

Pyrenodesmia alociza (A. Massal.) Arnold – Loc. 57, 63, 64: on calcareous rocks.

Pyrenodesmia aractina (Fr.) S.Y. Kondr. – Loc. 70, 126: on calcareous rocks.

Pyrenodesmia atroflava (Turner) S.Y. Kondr. – Loc. 10, 16, 17, 19, 22, 29, 30, 41, 44, 47, 48, 52, 55, 56, 61, 63, 64, 67, 71, 73, 75, 79, 83, 91, 102, 103, 105, 106, 107, 113, 117, 121, 122, 123, 129: on siliceous rocks.

Pyrenodesmia chalybaea (Fr.) A. Massal. – Loc. 1, 5, 6, 7, 8, 9, 15, 37, 39, 41, 44, 46, 47, 54, 55, 57, 59, 62, 72, 92: on calcareous rocks.

Pyrenodesmia erodens (Tretiach, Pinna & Grube) Söchting, Arup & Frödén – Loc. 24, 25, 55, 80: on calcareous rocks.

Pyrenodesmia variabilis (Pers.) A. Massal. – Loc. 1, 2, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 16, 21, 23, 27, 28, 29, 30, 32, 34, 35, 37, 38, 39, 40, 41, 44, 46, 47, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 66, 69, 70, 72, 75, 76, 79, 80, 83, 84, 87, 91, 92, 93, 100, 101, 108, 109, 110, 111, 112, 113, 117, 118, 123, 124, 125, 127, 128, 131, 133: on calcareous rocks.

Rhizocarpon badioatrum (Flörke ex Spreng.) Th. Fr. – Loc. 28, 85, 88: on siliceous rocks.

Rhizocarpon disporum (Nägeli ex Hepp) Müll. Arg. – Loc. 71, 75, 80, 90, 120, 121, 122, 126: on siliceous rocks.

Rhizocarpon distinctum Th. Fr. – Loc. 28, 71: on siliceous rocks.

Rhizocarpon furfurosum H. Magn. & Poelt – Loc. 28, 67, 71, 89, 90, 91, 105, 121, 122, 123, 125, 126: on siliceous rocks.

Rhizocarpon geminatum Körb. – Loc. 3, 17, 24, 25, 28, 29, 30, 43, 61, 75, 79, 83, 84, 85, 86, 91, 95, 102, 103, 105, 109, 112, 117, 118, 121, 122, 123, 125, 126, 129: on siliceous rocks.

Rhizocarpon geographicum (L.) DC. – Loc. 1, 3, 8, 9, 14, 15, 16, 17, 19, 22, 23, 24, 25, 28, 29, 39, 43, 44, 47, 58, 61, 63, 64, 65, 67, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91, 93, 95, 102, 103, 105, 107, 109, 110, 112, 113, 117, 118, 120, 121, 122, 123, 125, 126, 129: on siliceous rocks.

Rhizocarpon lecanorinum Anders – Loc. 1, 27, 28, 47, 65, 73, 76, 77, 105, 107, 108, 121, 122, 123: on siliceous rocks.

Rhizoplaca melanophthalma (DC.) Leuckert – Loc. 43, 79, 83, 121, 126: on siliceous rocks.

Rinodina bischoffii (Hepp) A. Massal. – Loc. 1, 5, 6, 7, 8, 9, 13, 14, 15, 16, 21, 23, 24, 25, 26, 27, 37, 38, 39, 40, 41, 44, 46, 47, 54, 55, 56, 57, 62, 63, 64, 66, 67, 69, 68, 72, 73, 80, 85, 86, 88, 90, 91, 92, 95, 100, 105, 108, 109, 113, 122, 123, 124: on calcareous rocks.

Rinodina calcarea (Hepp ex Arnold) Arnold – Loc. 9: on siliceous rocks.

Rinodina colobina (Ach.) Th. Fr. – Loc. 18, 19, 20, 34: on *Quercus* sp.

Rinodina confragosa (Ach.) Körb. – Loc. 121: on siliceous rocks.

Rinodina guzzinii Jatta – Loc. 37, 72: on calcareous rocks.

Rinodina immersa (Körb.) J. Steiner – Loc. 5, 23, 24, 25, 27, 29, 30, 37, 40, 46, 54, 57, 62, 66, 69, 70, 90, 92, 95, 108, 113, 122, 123, 124, 131: on calcareous rocks.

Rinodina luridata (Körb.) H. Mayrhofer, Scheid. & Sheard – Loc. 15, 16, 22, 39, 63, 64, 68, 87, 90, 92, 103, 108, 123, 125: on calcareous rocks.

Rinodina milvina (Wahlenb.) Th. Fr. – Loc. 1, 17, 19, 22, 24, 25, 28, 29, 30, 35, 40, 41, 43, 44, 45, 47, 48,

54, 57, 61, 63, 64, 65, 67, 69, 70, 71, 74, 75, 77, 78, 80, 81, 83, 84, 90, 91, 93, 94, 95, 100, 101, 103, 105, 106, 107, 109, 112, 113, 117, 121, 122, 123, 125, 129, 131: on siliceous rocks.

Rinodina obnascens (Nyl.) H. Olivier – Loc. 90: on siliceous rock.

Rinodina occulta (Körb.) Sheard – Loc. 15, 47, 65, 73: on siliceous rocks.

Rinodina poeltii Giralt & Obermayer – Loc. 5, 8, 9, 13, 26, 41, 46, 56, 67, 72: on calcareous rocks.

Rinodina pyrina (Ach.) Arnold – Loc. 5, 15, 20, 23, 35, 37, 41, 47, 55, 56, 58, 62, 69, 75, 78, 80, 83, 87, 93, 94, 95, 98, 101, 109, 112, 115, 116, 117, 126: on *Quercus* sp., 104: on *Alnus glutinosa* and *Quercus* sp.

Rinodina rinodinoides (Anzi) H. Mayrhofer & Scheid. – Loc. 47, 67, 75: on siliceous rocks.

Rinodina sicula H. Mayrhofer & Poelt – Loc. 71: on siliceous rock.

Rinodina sophodes (Ach.) A. Massal. – Loc. 57: on *Quercus* sp.

Rinodina trachytica (A. Massal.) Arnold – Loc. 11, 15, 34, 44, 46, 105, 122, 125: on calcareous rocks.

#*Rinodina trevisanii* (Hepp) Körb. – Loc. 14: on *Quercus* sp.

Romularia lurida (Ach.) Timdal – Loc. 3, 6, 16, 23, 24, 25, 35, 54, 57, 69, 83, 84, 95, 100, 101, 103, 107, 108, 109, 112, 113, 114, 117, 118, 120, 122, 125, 133: on soil.

Rufoplaca arenaria (Pers.) Arup, Søchting & Frödén – Loc. 2, 28, 35, 43, 50, 56, 65, 73, 74, 75, 76, 77, 80, 87, 90, 91, 93, 103, 104, 107, 121, 122, 127, 129: on siliceous rocks.

Sagedia mastrucata (Wahlenb.) A. Nordin, Savić & Tibell – Loc. 48, 125, 126: on siliceous rocks.

Sarcogyne clavus (DC.) Kremp. – Loc. 38, 41, 60, 76, 79, 80, 85, 86, 93, 109, 111: on siliceous rocks.

Sarcogyne privigna (Ach.) A. Massal. – Loc. 23, 24, 25, 35, 40, 50, 79, 81, 82, 84, 95, 100, 101, 111, 113, 117, 131: on siliceous rocks.

Sarcogyne regularis Körb. – Loc. 5, 8, 27, 37, 38, 40, 48, 54, 57, 59, 62, 69, 80, 83, 89, 91, 117, 120, 123, 132: on calcareous rocks.

Schaereria fuscocinerea (Nyl.) Clauzade & Cl. Roux – Loc. 83, 105, 123: on siliceous rocks.

+*Sclerococcum montagnei* Hafellner – Loc. 126
Dimelaena oreina and *Lecanora rupicola*.

Seawardiella lobulata (Flörke) S.Y. Kondr., I. Kärnefelt & A. Thell – Loc. 31: on *Fraxinus* sp. and *Juglans* sp., 34, 123: on *Fraxinus* sp. and *Quercus* sp., 8, 11, 14, 15, 17, 19, 24, 25, 28, 33, 35, 36, 37, 39, 41, 46, 47, 48, 49, 53, 54, 56, 57, 62, 75, 77, 78, 80, 83, 87, 90, 95, 102, 105, 120, 124, 126, 129: on *Quercus* sp.

Scythioria phlogina (Ach.) S.Y. Kondr., I. Kärnefelt, Elix, A. Thell & Hur – Loc. 53, 57: on *Quercus* sp.

Scytinium gelatinosum (With.) Otálora, P.M. Jørg. & Wedin – Loc. 33, 43, 45, 57, 74, 75, 124: on mosses.

Scytinium lichenoides (L.) Otálora, P.M. Jørg. & Wedin – Loc. 12, 31: on *Fraxinus* sp. and *Juglans* sp., 32: on *Fraxinus* sp. and *Juglans* sp., 33: on *Fraxinus* sp., *Juglans* sp. and *Quercus* sp., 34: on *Quercus* sp. and *Fraxinus* sp., 57: on *Quercus* sp. and mosses, 102: on *Alnus glutinosa*, 2, 5, 9, 14, 15, 16, 19, 20, 27, 35, 37, 39, 42, 43, 45, 46, 50, 59, 104: on *Quercus* sp., 1, 21, 24, 25, 26, 60, 69, 93, 95, 97, 98, 103, 110, 111, 112, 114, 117, 121, 122, 123, 126, 127: on mosses.

Scytinium palmatum (Huds.) Gray – Loc. 15, 93: on mosses.

Scytinium parvum (Degel.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 2, 5, 8, 9, 12, 15, 27, 37, 38, 39, 41, 54, 57, 59, 62, 63, 110: on calcareous rocks.

Scytinium plicatile (Ach.) Otálora, P.M. Jørg. & Wedin – Loc. 5, 33, 39, 62: on calcareous rocks.

Scytinium schraderi (Ach.) Otálora, P.M. Jørg. & Wedin – Loc. 1, 5, 14, 35, 108: on mosses.

Silobia rufescens (Ach.) M. Westb. & Wedin – Loc. 10: on siliceous rock.

+*Skyttea elachistophora* (Nyl.) Sherwood & D. Hawksw. – Loc. 5: on *Tephromela atra*

Solenopsis cesatii (A. Massal.) Zahlbr. – Loc. 8, 27, 34: on calcareous rocks.

Sporastatia testudinea (Ach.) A. Massal. – Loc. 71, 73: on siliceous rocks.

Squamarina cartilaginea (With.) P. James – Loc. 6, 14, 39, 42, 59, 72, 89, 126, 131: on soil, 5, 8, 15, 34, 41, 46, 47, 60, 125: on calcareous rocks, 26: on mosses.

Squamarina lentigera (Weber) Poelt – Loc. 6, 9, 34, 41, 46, 72, 120, 126: on calcareous rocks.

Staurothele areolata (Ach.) Lettau – Loc. 17, 23, 24, 25, 28, 35, 37, 50, 57, 62, 63, 64, 66, 69, 70, 79, 87, 88, 91, 92, 93, 95, 99, 103, 105, 106, 109, 121: on siliceous rocks.

Staurothele fissa (Ach.) M. Westb. & Wedin – Loc. 24, 25: on siliceous rocks.

Synalissa symphorea (Ach.) Nyl. – Loc. 6, 14, 21, 27, 34, 46, 62, 108: on calcareous rocks.

Tephromela atra (Huds.) Hafellner – Loc. 3, 5, 24, 25, 89, 113, 121, 123: on siliceous rocks.

Tephromela grumosa (Pers.) Hafellner & Cl. Roux – Loc. 67, 83: on siliceous rocks.

Thalloidima candidum (Weber) A. Massal. – Loc. 9, 16, 26, 34, 39, 46, 48, 57, 58, 59, 63, 64, 102, 120, 122, 126: on calcareous rocks.

Thalloidima opuntioides (Vill.) Kistenich, Timdal, Bendiksby & S. Ekman – Loc. 9, 35, 51, 57, 83, 84, 92, 97, 113, 114, 117: on soil.

Thalloidima physaroides (Opiz) Opiz – Loc. 5, 8, 9, 43, 46, 59, 60, 70, 72, 111, 129: on soil.

Thalloidima sedifolium (Scop.) Kistenich, Timdal, Bendiksby & S. Ekman – Loc. 1, 2, 5, 6, 8, 9, 11, 14, 16, 17, 19, 21, 23, 26, 29, 30, 34, 35, 39, 42, 43, 46, 49, 50, 51, 56, 57, 58, 59, 60, 61, 68, 69, 70, 81, 82, 83, 84, 85, 86, 87, 89, 93, 94, 95, 97, 99, 100, 101, 102, 105, 109, 110, 111, 112, 113, 114, 116, 117, 118, 119, 120, 122, 123, 125, 126, 127, 130, 131, 132, 133: on soil.

Thyrea confusa Henssen – Loc. 26, 54, 57, 122, 123: on calcareous rocks.

Tonia cinereovirens (Schaer.) A. Massal. – Loc. 125: on siliceous rock.

Tonia diffracta (A. Massal.) Zahlbr. – Loc. 5, 34, 88, 102, 129: on mosses.

Tonia squalida (Ach.) A. Massal. – Loc. 8, 13, 14, 21, 26, 27, 29, 30, 35, 48, 50, 61, 69, 75, 83, 84, 87, 89, 91, 93, 100, 101, 105, 110, 112, 113, 114, 117, 118, 119, 123, 125, 129: on soil, 126: on mosses.

Tonia taurica (Szatala) Oxner – Loc. 23, 39, 57, 59, 120, 125, 126, 129: on soil.

Trapelia placodioides Coppins & P. James – Loc. 28: on siliceous rock.

Umbilicaria crustulosa (Ach.) Lamy – Loc. 126: on siliceous rock.

Umbilicaria cylindrica (L.) Delise – Loc. 83, 109, 129: on siliceous rock.

Umbilicaria hirsuta (Sw. ex Westr.) Ach. – Loc. 24, 25, 120, 121, 126: on siliceous rock.

Umbilicaria vellea (L.) Ach. – Loc. 120: on siliceous rock.

Vahliella leucophaea (Vahl.) P.M. Jørg. – Loc. 123: on siliceous rock.

Variospora dolomiticola (Hue) Arup, Søchting & Frödén – Loc. 6, 41, 54, 89, 108: on calcareous rock.

Verrucaria caerulea DC. – Loc. 62: on calcareous rock.

Verrucaria canella Nyl. – Loc. 67: on calcareous rock.

Verrucaria dufourii DC. – Loc. 5: on calcareous rock.

Verrucaria fuscella (Turner) Winch – Loc. 11, 15, 16, 34, 41, 54, 56, 62, 66, 69, 80, 93, 95, 108: on calcareous rocks.

Verrucaria hochstetteri Fr. – Loc. 5, 41, 57, 62, 69: on calcareous rocks.

Verrucaria latericola Erichsen – Loc. 1, 8: on *Caloplaca* sp.

Verrucaria nigrescens Pers. – Loc. 1, 5, 8, 9, 14, 15, 17, 23, 24, 25, 27, 29, 30, 35, 37, 38, 39, 40, 41, 46, 48, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 64, 68, 70, 72, 80, 83, 84, 87, 88, 93, 100, 101, 102, 103, 109, 113, 117, 123, 124, 125, 126, 127, 128, 129, 132: on calcareous rocks.

Verrucaria ochrostoma Borrer – Loc. 83, 84, 95: on calcareous rocks.

Verrucaria polysticta Borrer – Loc. 8, 9, 26, 39, 57, 66, 107, 117: on calcareous rocks.

Verrucaria sphaerospora B. de Lesd. – Loc. 8, 24, 25, 35, 47, 63, 64, 69, 71, 73, 74, 75, 76, 79, 80, 83, 90, 91, 93, 95, 105, 106, 108, 109, 117, 120, 121, 123, 129: on calcareous rocks.

Verrucaria viridula (Scrad.) Ach. – Loc. 14, 15, 39, 58, 91, 92: on calcareous rocks.

Verruculopsis lecideoides (A. Massal.) Gueidan & Roux – Loc. 9, 24, 25, 66, 69, 83, 117, 129: on calcareous rocks.

Xalocoa ocellata (Fr.) Kraichak, Lücking & Lumbsch – Loc. 5, 6, 8, 9, 34, 72, 120: on calcareous rocks.

Xanthocarpia crenulatella (Nyl.) Frödén, Arup & Søchting – Loc. 1, 2, 5, 6, 7, 9, 13, 14, 15, 21, 23, 24, 25, 26, 27, 35, 37, 38, 39, 40, 41, 44, 43, 52, 53, 54, 59, 60, 62, 63, 64, 69, 72, 78, 80, 83, 84, 91, 92, 93, 95, 100, 101, 108, 109, 112, 113, 117, 123, 129: on calcareous rocks.

Xanthocarpia interfulgens (Nyl.) Frödén, Arup & Søchting – Loc. 5, 8, 41, 62: on calcareous rocks.

Xanthocarpia marmorata (Bagl.) Frödén, Arup & Søchting – Loc. 41, 63, 92: on calcareous rocks.

Xanthoparmelia conspersa (Ehrh. ex Ach.) Hale –

Loc. 28, 41, 91, 121, 122, 126: on siliceous rocks.

Xanthoparmelia delisei (Duby) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch – Loc. 22, 71, 76, 89: on siliceous rocks.

Xanthoparmelia pulla (Ach.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch – Loc. 1, 8, 9, 14, 16, 22, 28, 35, 43, 44, 67, 71, 72, 73, 75, 76, 77, 79, 80, 83, 84, 89, 90, 91, 93, 95, 103, 105, 109, 113, 117, 118, 120, 121, 122, 123, 125, 126, 129: on siliceous rocks.

Xanthoparmelia stenophylla (Ach.) Ahti & D. Hawksw. – Loc. 16, 28, 122, 123, 126: on siliceous rocks.

Xanthoparmelia tinctina (Maheu & A. Gillet) Hale – Loc. 16, 24, 25, 28, 35, 69, 71, 76, 77, 79, 89, 91, 93, 95, 105, 117, 120, 121, 122, 123, 125, 126: on siliceous rocks

Xanthoparmelia verruculifera (Nyl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch – Loc. 1, 3, 6, 8, 13, 14, 15, 16, 19, 23, 24, 25, 28, 29, 30, 35, 43, 44, 48, 65, 69, 71, 73, 74, 75, 76, 77, 78, 79, 80, 83, 84, 85, 86, 88, 89, 90, 91, 93, 94, 95, 100, 105, 107, 109, 113, 117, 118, 121, 122, 123, 125, 126, 129: on siliceous rocks.

Xanthoria aureola (Ach.) Erichsen – Loc. 4: on calcareous rock.

Xanthoria elegans (Link.) Th. Fr. – Loc. 22, 43, 47, 69, 73, 74, 77, 79, 80, 89, 93, 101, 107, 109, 121, 123, 125: on calcareous rocks, 6, 50, 67, 75, 100, 108, 122, 126: on siliceous rocks.

Xanthoria parietina (L.) Th. Fr. – Loc. 87: on *Quercus* sp.

#*Zahlbrucknerella calcarea* (Herre) Zahlbr. – Loc. 69, 83, 102: on calcareous rocks.

As a result of the examination of lichens and lichenicolous fungi from 133 stations, 373 lichens, six of which are lichenicolous lichens, and 21 lichenicolous fungi were identified. *Karschia talcophila*, a lichenicolous fungus, is new to Turkey. Twenty-five lichens and three lichenicolous fungi were found for the second time in Turkey. The fact that the first records of some lichens now recorded for the second time are from intensely studied regions of Turkey and show wide distribution of species once again proves that further researches of lichens are needed in every region of Turkey.

On the other hand, in the present study, some ear-

lier reported species from the Tunceli Province, namely *Diploschistes muscorum*, *Flavoplaca citrina*, *Heterodermia speciosa*, *Lecanora saligna*, *Polycauliona polycarpa*, *Polyzozia sambuci*, *Ophioparma ventosa*, *Psilolechia leprosa*, *Rinodina exigua*, *Scytinium fragrans*, *Verrucaria muralis*, and *Verrucaria subfuscella*, have not been detected at the stations.

As a result of the study, it was determined that lichens and lichenicolous lichens developed on a total of 19 types of substrate (e.g. soil, siliceous rock, calcareous rock, mosses, *Fraxinus* sp., *Quercus* sp., *Juglans* sp., *Crataegus* sp., *Alnus glutinosa*, *Caloplaca* spp., *Candelariella vitellina*, *Lecanora rupicola*, *Aspicilia* sp., *Immersaria athrocarpa*, *Lecidea fuscoatra*, etc.). Some taxa showed more tolerance in terms of substrate selection. Some lichens have been found to be widely distributed on many substrates, while others on only one type of substrate. The species *Athallia pyracea*, *Caloplaca cerina*, *Candelariella antennaria*, *Lecidella elaeochroma*, *Melanohalea exasperata*, *Oxneria fallax*, *Phaeophyscia orbicularis*, *Physcia ascendens*, *Physcia aipolia*, *Phyconia distorta*, *Polyzozia dispersa*, *Polyzozia hagenii*, *Rinodina pyrina*, and *Seawardiella lobulata* proved most tolerant in terms of substrate preference and had the highest number of substrate types (e.g. host tree species).

Considering the general state of the lichen cover in the Tunceli Province, there are many soil areas, where rocks are rare and unsuitable for lichen development, and there are areas without forests, where mostly oak trees are common.

In Tunceli, lichens developed mostly on rocks. Foliose lichens also developed on oaks that do not form forest areas. Lichens growing on soil and mosses were fewer than lichens growing on rocks and tree trunks.

Two hundred and eighty-five lichens were crustose, 77 were foliose, five were fruticose, and six were leprose. While 101 of the identified taxa (except the lichenicolous fungi) were epiphytic, 261 taxa were detected on rocks (saxicolous), 254 taxa were observed only as saxicolous, 34 only as musicolous (on mosses), and 14 only as terricolous (on soil); 44 taxa were observed to grow on mosses. While a total of 63 taxa developed on trees, 53 taxa were observed to develop only on trees (Table 2).

Irrespective of the vegetation formed by broad-leaved trees, such as *Quercus*, *Alnus*, *Fraxinus* etc., crustose species have been mostly found on rocks, because the forest areas are few.

Lichen flora of the Tunceli Province is mostly composed of crustose lichens and mostly develops on rocks. The most common species growing on these substrates are: *Acarospora cervina*, *A. fuscata*, *A. hospitans*, *A. veronensis*, *Aspicilia cinerea*, *A. desertorum*, *Calogaya saxicola*, *Candelariella aurella*, *Candelariella vitellina*, *Circinaria caesiocinerea*, *Circinaria cal-*

carea, *Circinaria contorta*, *Immersaria athroocarpa*, *Lathagrium cristatum*, *Lecanora rupicola*, *Lecidea fuscoatra*, *Lecidella carpathica*, *Lecidella stigmatea*, *Lobothallia radiosa*, *Melanohalea infumata*, *Physcia dubia*, *Polyzosia dispersa*, *Polyzosia hagenii*, *Protoparmeliopsis bolcana*, *Protoparmeliopsis muralis*, *Pyrenodesmia atroflava*, *Pyrenodesmia variabilis*, *Rhizocarpon geographicum*, *Rinodina bischoffii*, *Rinodina milvina*, *Thalloidima sedifolium*, *Verrucaria nigrescens*, *Xanthocarpia crenulatella*, and *Xanthoparmelia verruculifera*.

Table 2. The numbers of taxa based on the growth form and substrate in Tunceli province

The growth forms and substrata	Crustose	Foliose	Fruticose	Leprose	Total
Lichens total	285	77	5	6	373
Epiphytic	48	47	3	3	101
Epiphytic only	40	44	2	3	89
soil	18	-	1	-	19
soil only	14	-	-	-	14
mosses	20	21	3	3	47
mosses only	14	15	2	3	34
rocks	223	33	2	3	261
rocks only	221	28	2	3	254
tree	30	33	-	-	63
tree only	29	24	-	-	53
mosses and soil	2	-	1	-	2
rock, tree and mosses	-	1	-	-	1
mosses and tree	2	5	-	-	7
rock and epiphytic	3	4	-	-	7
<i>Fraxinus</i> spp.	15	15	-	-	30
<i>Quercus</i> spp.	28	33	-	-	61
<i>Juglans</i> spp.	6	12	-	-	18
<i>Crataegus</i> sp.	1	4	-	-	5
<i>Alnus glutinosa</i>	7	19	-	-	26
<i>Caloplaca</i> sp.	1	-	-	-	1
<i>Candelariella vitellina</i>	1	-	-	-	1
<i>Lecanora rupicola</i>	1	-	-	-	1
<i>Aspicilia</i> sp.	2	-	-	-	2
<i>Aspicilia</i> sp. and rock	1	-	-	-	1
<i>Immersaria athroocarpa</i>	1	-	-	-	1
<i>Lecidea fuscoatra</i>	1	-	-	-	1

Some common lichens such as *Candelariella antenaria*, *Melanelixia subaurifera*, *Melanohalea infumata*, *Phaeophyscia orbicularis*, *Physcia aipolia*, *Physcia biziana*, *Physconia distorta*, *Polyozosia dispersa*, *Polyozosia hagenii*, and *Seawardiella lobulata* are growing on broad-leaved trees.

On mosses have been observed such species, as *Agonimia tristicula*, *Calogaya schistidii*, *Catapyrenium squamulosum*, *Cladonia pyxidata*, *Gyalolechia bracteata*, *Gyalolechia fulgens*, *Lathagrium auriforme*, *Lep-raria nivalis*, *Scytinium gelatinosum*, and *Scytinium lichenoides* have been determined more frequently. On soil, such terricolous lichen species as *Enchylium tenax*, *Psora vallesiaca*, *Romjularia lurida*, *Thalloid-ima sedifolium*, and *Toninia squalida*.

Since the lichen-forming fungus has a wide distribution, species with wide ecological tolerance prevail in the studies on lichens. Such studies have been carried out in the eastern part of Turkey (Ardahan, Bitlis, Gümüşhane, Erzincan, Iğdır, and Muş). (Yazıcı & Aslan 2003, 2016a,b, 2019; Osyczka & al. 2011; Yazıcı & al. 2011a,b, 2013, 2018, 2020a,b; Yazıcı & Etayo 2014; Krisai-Greilhuber & al. 2017; Yazıcı & Aptroot 2017).

Many common crustose lichen species, found in the earlier studies in Ardahan, Bitlis, Gümüşhane, Erzincan, Iğdır, and Muş provinces mentioned above, have been also observed and described in this paper. Since Ardahan, Artvin, Bitlis, Gümüşhane, Erzincan, Iğdır, and Muş regions resemble the Tunceli region in terms of climate and terrain, lichen diversity in the above-mentioned provinces is similar to that in the study area in terms of crustose, foliose and fruticose taxa (Yazıcı & Aslan 2003, 2016a,b, 2019; Osyczka & al. 2011; Yazıcı & al. 2011a,b, 2013, 2018, 2020a,b; Yazıcı & Etayo 2014; Krisai-Greilhuber & al. 2017; Yazıcı & Aptroot 2017).

On the other hand, since the forest areas are very dense in the provinces of Ardahan, Artvin and Gümüşhane, foliose lichens have been found extensively in these regions (Aslan & al. 2002, Yazıcı & al. 2011a, Yazıcı & Aslan 2003). Although there are communities formed by broad-leaved trees, such as *Quercus*, *Alnus*, *Fraxinus*, and *Crataegus*, most lichen species, especially the crustose lichens, have been found on rocks in many parts of the Tunceli Province.

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